BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Appeal No. 7 of 2024

Under Section 16(h) read with Section 18(1) of the National Green Tribunal Act, 2010

IN THE MATTER OF:

Sanjaya Kumar Mishra

...APPELLANT

Versus

Ministry of Environment, Forest and Climate Change & Ors.

...RESPONDENTS

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Through

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AFFIDAVIT-IN-OPPOSITION FOR AND ON BEHALF OF THE RESPONDENT NO. 3

I, Sanjay Baid, son of Shri Champa Lal Baid, aged about 46 years, resident of Shree Niket, 32/1A Ramkrishna Samadhi Road, Flat G-2, Kolkata – 700054, so solemnly affirm and say as follows:

1. I am a Director at Subhadra Coal Mining Limited ("**Respondent No. 3**" or "**SCML**"), and I am aware of the facts and circumstances of the present case and accordingly I am competent to depose on the contents of the present Appeal.
2. At the outset, I submit that the Respondent No. 3 had preferred an application being I.A. No. 97 (EZ) of 2024 in the Appeal No. 7 (EZ) of 2024 ("**Intervention Application**") along with the supplementary affidavit dated December 3, 2024 ("**Supplementary Affidavit**") praying for leave to

intervene in the Appeal No. 7 (EZ) of 2024 filed on behalf of the Appellant herein ("**Appeal**"). By order dated April 24, 2025, this Hon'ble Tribunal was pleased to allow the Intervention Application of Respondent No. 3 in the Appeal. A copy of the order dated April 24, 2025 is annexed hereto and marked as **Annexure A**.

3. I submit that I have perused a copy of the Appeal and have understood the purport of the same thereof and am filing the instant affidavit in response thereto ("**Reply**").

4. I state and submit that the contents of the said Appeal are entirely unsubstantiated, lack basis and have been made with an aim to mislead this Hon'ble Tribunal. If possible, this Hon'ble Tribunal ought not to place any reliance on the contents of the said Appeal and reject the prayers therein.

5. Without prejudice to the aforesaid, it is stated that the brief facts relevant for the present Appeal are mentioned herein below:

   a. Respondent No. 3 is a company incorporated under the provisions of the Companies Act, 2013. The Respondent No. 3 is a green field project of Essel Mining & Industries Limited, located in Angul District of Odisha. The Respondent No. 3 is a Mine Developer & Operator for Mahanadi Coalfields Limited ("**MCL**"), i.e., the Respondent No. 2 in the instant Appeal.

   b. The Appellant has preferred the instant Appeal seeking prayers *inter alia* to quash the Environmental Clearance ("**EC**") dated March 6, 2024 being Identification No. EC23A0101OR5745830N granted by the Ministry of Environment, Forest and Climate Change ('MoEF'),

i.e., the Respondent No. 1 to the project proponent MCL with respect to Subhadra Open Coal Mines. The said mine, which is managed by MCL is slated for operation with a production capacity of 25 MTPA over an area of 1111.85 hectares in Odisha.

c. The Respondent No. 3 and the project proponent MCL have entered into a Coal Mining Agreement dated June 17, 2022 ("**Mining Agreement**") whereby the Respondent No. 3 has been appointed as a 'Mine Operator' for *inter alia* development of the said mines, operation and maintenance thereof, and excavation and delivery of coal to the project proponent MCL. The entire commercial operation and business sustenance of Respondent No. 3 company is directly dependent upon the operation and development of said mines. A copy of the Mining Agreement is annexed hereto and marked as **Annexure B**.

d. As per Clause 5.1.5 (e) of the Mining Agreement, the Respondent No. 3 was obligated to procure issuance of the EC from MoEF and make payment of statutory costs and fees towards such procurement on behalf of MCL by acting as the project proponent's 'Pure Agent'. Clause 5.1.5 (e) of the Mining Agreement is being set out herein below:

"procure issuance of the environmental clearance from the Ministry of Environment, Forests and Climate Change, Government of India. The Authority authorises the Mine Operator to procure the issuance of such clearance and make payment of statutory costs and fees towards such procurement on behalf of the Authority by acting as the Pure

Agent. The Authority shall reimburse the Mine Operator for the payments so made in accordance with Clause 29.1.6 of this Agreement;"

e. Further, as per Clause 29.1.6 of the Mining Agreement, the Respondent No. 3 and MCL agreed to appoint the Respondent No. 3 as a 'Pure Agent' of MCL by entering into a separate agency agreement. Clause 29.1.6 of the Mining Agreement is being set out herein below:

"Billing and Payment when Mine Operator is Pure Agent

(a) Mine Operator as the Pure Agent: For purpose of undertaking the Rehabilitation and Resettlement of the PAPs for and on behalf of the Authority in accordance with the Applicable Laws, approved R&R Policy and the terms of this Agreement and procuring issuance of the environmental clearance and forest clearances from the Ministry of Environment, Forests and Climate Change, Government of India for and on behalf of the Authority, the Mine Operator shall be appointed as the Pure Agent and in this regard, the Parties shall enter into a pure agency agreement in the format as set forth in Schedule-S."

f. Accordingly, the Respondent No. 3 and MCL entered into a Pure Agency Agreement dated June 17, 2022 ("**Pure Agency Agreement**"). A copy of the Pure Agency Agreement is annexed hereto marked as **Annexure C**. As per Clause 2(a) of the Pure Agency Agreement, the Respondent No. 3 was obligated to procure issuance

of the EC from the MoEF on behalf of the project proponent. Clause 2(a) of the Pure Agency Agreement is also being set out herein below:

"2. Services.

Pursuant to the Project Contract and this Agreement, the Service Provider agrees to perform the following specific services (the "Services") on behalf of the Principal:

a) procure issuance of the environmental clearance from the Ministry of Environment, Forests and Climate Change, Government of India;

b) ..."

g. The Subhadra Open Cast Mine (Utkal-A Coal Mine) was allocated to MCL by the Ministry of Coal through order number NA-103/1/2021-NA dated November 18, 2021. The project is situated in the villages of Gopal Prasad, Kumunda, Nisha, Kankarei, Raijharan, under Nisha P.S. Angul, Tehsil, Talcher Sadar and Chhendipada in the Angul District of Odisha. The instant project falls under Category- A of Activity 1(a) of the Schedule to the Environmental Impact Assessment ("**EIA**") Notification, 2006 dated September 14, 2006 as amended from time to time.

a. MCL submitted an application to MoEF for the Terms of Reference for Subhadra Open Cast Project on October 13, 2021. The MoEF considered this proposal during the 21st meeting of the sectoral Expert Appraisal Committee ("**EAC**"), held on October 27, 2021, through video conferencing. Following the EAC's recommendation, the MoEF granted the Terms of Reference on November 22, 2021 ("**ToR**"), for preparing the Environmental Impact Assessment and

Environmental Management Plan ("**EMP**") reports, including public consultations, as per the provisions of the EIA Notification, 2006, and subsequent amendments. The final approval would remain subject to compliance with standard ToR conditions for opencast coal mines and additional conditions, such as collection of one-season (non-monsoon) primary baseline data on environmental quality. A copy of the Terms of Reference dated November 22, 2021 is annexed hereto and marked as **Annexure D**. Subsequently, MCL submitted an application for an amendment to the ToR on December 11, 2021 to MoEF. The sectoral EAC reviewed the amendment request during its 24th meeting on December 30, 2021 and its 25th meeting held from January 18-20, 2022. Based on the EAC's recommendations, the MoEF approved the amendment on February 28, 2022, while maintaining all conditions stipulated in the original ToR dated November 22, 2021, annexed hereto and marked as **Annexure D 1**.

b. As per the terms of the Pure Agency Agreement, for the purpose of obtaining the EC, the Respondent No. 3 appointed Vardan Environet, a QCI-NABET accredited lab based in Gurgaon, Haryana to conduct EIA studies for the project and to carry out Baseline Monitoring Environmental Study in accordance with the guidelines of EIA issued by the MoEF and the Central Pollution Control Board, New Delhi. A copy of the work order dated August 11, 2022 issued by the Respondent No. 3 to Vardan Environet is annexed hereto and marked as **Annexure E**. A copy of the QCI-NABET accreditation of

the Vardan Environet is annexed hereto and marked as **Annexure F**.

c. As per condition Specific Condition No. (x) of the ToR issued by the MoEF to the project proponent (MCL) with respect to the said mines, the allottee was under obligation to collect one-season non-monsoon primary baseline data on air quality for the purpose of obtaining EC. Accordingly, one season non-monsoon data was collected by Vardan Environet between October to December 2022 at the interval of twice in a week. The Respondent No. 3 has fully complied with the requirement to collect one-season non-monsoon primary baseline data on air quality and other environmental parameters. The collection of data by Vardan Environet between October and December 2022 strictly adhered to the stipulated requirements prescribed in the ToR.

d. The location of the ambient air quality monitoring were eight villages located around the project site as mentioned in Table 3.5 of Chapter 3 of the EIA report submitted by the project proponent. The locations are namely Pidhakhamana, Tangarsahi, Kosala, Korada, Kalikatta, Golabandha, Kumunda, Malibrahmani, for detection of Benzene levels present in the air during the relevant period October 3, 2022 to December 31, 2022. In this regard, copies of Table 3.4 and Table 3.5 of Chapter 3 of the EIA report submitted by the project proponent are annexed hereto and marked as **Annexure G**.

e. Subsequently, Vardan Environet submitted its test reports to the Respondent No. 3 on January 9, 2023 reporting Benzene levels to be

below the limit of quantification ("**BLQ**") during the relevant period of time, *i.e.*, between October 3, 2022 to December 31, 2022. The test results clearly show that the level of Benzene in all the locations was BLQ. The term "Limit of Quantification" ("**LOQ**") is related to the least count of the equipment, i.e. the smallest measurement that the equipment can take accurately, and in line with the National Ambient Air Quality Standard prescribed limit both within the core and buffer zone of the said mines. Copies of the test reports dated January 9, 2023 submitted by Vardan Environet is annexed hereto and marked as **Annexure H**.

f. The said test reports dated January 9, 2023 would indicate that the level of quantification of Benzene is 0.5 microgram per cubic meter according to the test equipment of Vardan Environet and that the results indicate that the Benzene level was below the level of quantification (BLQ) and therefore the same has been reported as "BLQ". Further, as per the National Ambient Air Quality Standards published by the Central Pollution Control Board Notification dated November 18, 2009, the limit of Benzene in ambient air is 5 microgram per cubic meter. Therefore, the test reports would indicate that the level of Benzene is in conformity with the required standards for obtaining the EC. A copy of the Notification dated November 18, 2009 published by the Central Pollution Control Board in this regard is annexed hereto and marked as **Annexure I**.

g. It is further submitted that the testing of Benzene was done as per the *Indian Standard: Methods For Measurement of Air Pollution* (IS:

5182 (P-11): 2006 RA: 2017) published by the Bureau of Indian Standards, a copy of which is annexed hereto and marked as **Annexure J**.

h. As per the said standards, three test methods have been described out of which one of the methods is *Gas Chromatography with Flame Ionization Detector (GC-FID)*, which was used by Vardan Environet for testing of Benzene. The analysis of benzene in ambient air was done as per IS 5182 (P-11): 2006 RA: 2017 Standard ("**IS:5182 (P-11: 2006)**") using the GC-FID Method. Reference may be had to chapter 3 of the EIA report, at table no. 3.8 where test method of benzene has been clearly mentioned as GC-FID Method and technical protocol of IS:5182 (P-11: 2006) has been followed and the same was already part of the EIA Report available in the public domain. In this regard, reference is also brought to the *Guidelines for the Measurement of Ambient Air Pollutants (National Ambient Air Quality Series)* published by the Central Pollution Control Board which explains the GC-FID methods, a copy of which is annexed hereto and marked as **Annexure K**.

i. It is submitted that due process was followed by Vardan Environet for testing the environmental parameters. The sampling, transportation, preservation, and handling protocols were followed as per the Quality Standard Procedures of the laboratory. It is pertinent to note that accreditation by National Accreditation Board for Testing and Calibration Laboratories ("**NABL**") is granted to a laboratory after verification of completeness and implementation of

the Quality Standard Procedures. A copy of the Quality Standard Procedures implemented by the laboratory is annexed hereto and marked as **Annexure L**.

j. It is relevant to note that in accordance with applicable guidelines, a Public Hearing for the project was conducted on August 25, 2023, under the chairmanship of Shree Pratap Pritimaya, O.A.S. (S), ADM, Angul, at the ground near Pirakhaman Primary School under Kankarei Gram Panchayat of Chhendipada Tehsil in Angul District. During this hearing, issues raised by the public in respect of the project were addressed, and an action plan to address these issues was devised and included in Chapter 7 of the Final EIA/EMP report submitted on the PARIVESH portal on October 12, 2023.

k. The proposal for grant of EC of the project was then submitted to the MoEF vide proposal number IA/OR/CMIN/445297/2023 on October 12, 2023, seeking prior EC as per the provisions of the EIA Notification 2006 and its subsequent amendments. This being an application for a Greenfield project a strong Environment Management plan was also drafted and submitted along with the proposal for grant of EC. The proposal was appraised by the Expert Appraisal Committee (EAC) in its 3rd meeting held on November 16-17, 2023. After detailed deliberation, the EAC deferred the project, requesting additional information.

l. It is noteworthy that the required information was duly submitted on the PARIVESH portal, and the proposal was reconsidered by the EAC in its 6th meeting on January 17-18, 2024. The EAC discussed

various project-related issues, including public hearing concerns, the Environment Management Plan (EMP), plantation, mineral transportation, water requirements, and the diversion of nallah within the mining lease area. After thorough deliberation, the EAC recommended the proposal for grant of Environmental Clearance subject to stipulation of specific and standard EC conditions under the EIA Notification, 2006, and its amendments. Relevant extracts of the Minutes of the 3rd and 6th EAC Meeting are annexed hereto and marked as **Annexure M**.

m. It appears that in the meanwhile, a purported representation against the project was received from the Appellant herein at MoEF, New Delhi via e-mail dated February 10, 2024, alleging that the results reported in respect of Benzene in all the villages for December 2022 need review. The allegations stated that the Benzene concentration in these villages varied between 2.2 to 6.4 micrograms per cubic meter, with the maximum being found in Golabandha. However, these allegations, did not contain any evidentiary proof or any supporting documents to substantiate the same.

n. Further, it is submitted that the EAC duly considered the representation and requested project proponent to clarify the issues stated in the representation. In response, MCL submitted a detailed clarification, wherein it has been categorically stated that as per the analysis reports, Benzene levels in the air were BLQ during the relevant period of time, *i.e.*, between October 3, 2022 to December 31, 2022. It was clarified that the parameter Benzene was reported

to be below detection limit, which is 0.5 microgram per cubic meter in all the stations/locations. It is submitted that project proponent MCL responded diligently and promptly to the queries raised by the Appellant before the MoEF. A copy of the email issued by the General Manager of the project proponent MCL to the MoEF is annexed hereto and marked as **Annexure N**.

c. The above reply of MCL was deliberated by EAC in its 7th meeting held on February 12-14, 2024 and it has been well documented in Agenda 7.14 of the 7th EAC Meeting.

p. In the 7th EAC Meeting, based on the submission/reply of MCL, the EAC noted that the EIA/EMP report was prepared by the NABET Accredited consultant and MCL also submitted an undertaking in Form-1 that "*data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information is found to be false or misleading at any stage, the project will be rejected and clearance given, if any, to the project will be revoked at our risk and cost.*" Therefore, in the absence of any merit in the complainant, the Ministry may take further necessary action as per the recommendation already given by the EAC. Consequently, the MoEF granted Environmental Clearance vide letter dated March 6, 2024 to MCL for the Subhadra Open Cast Project. Copies of relevant extract of Minutes of the 7th EAC Meeting held on February 12-14, 2024 is annexed hereto and marked as **Annexure O**.

q. After completion of all necessary steps prescribed in the relevant guidelines, the MoEF finally granted the EC to the project proponent on March 6, 2024 in favour of Subhadra Open Cast Mines). The same has been challenged by the Appellant by way of the instant Appeal.

r. The Appellant has alleged that the EC was issued despite a concern raised by him before the MoEF regarding potential inaccuracies in the test reports of Benzene within the baseline data and failure to consider such baseline data might result in unjustified determinations regarding the environmental impact of the project. In this regard, MCL through its email has already responded to the query raised by the Appellant before the MoEF, which has been annexed hereinabove.

s. The Appellant has further alleged there were alternative findings indicating that during December 2022, the Benzene concentration in the locations/stations/villages ranged between 2.2 to 6.4 micrograms per cubic meter, with the highest concentration observed in village Golabandha.

t. In this regard, reference is made to the EIA report with respect to a Thermal Power Plant at village Malibrahamani operated by Jindal Steel and Power Limited located adjacent to the Subhadra mines. It is submitted that both these projects are located adjacent to each other. A copy of the google earth pictures obtained from the PARIVESH Portal is annexed hereto and marked as **Annexure P**.

u. It is clear from the above EIA report of Jindal Steel and Power Limited that baseline monitoring for such project was conducted for a similar period of time, *i.e.*, from December 2022 to February 2022. It is submitted that ambient air quality monitoring including *inter alia* sampling and analysis of Benzene has been carried out at 8 locations in the 10KM study area and that Benzene has not been detected as per the EIA report. A copy of the relevant extract of the EIA report and analysis report for the Thermal Power Plant of Jindal Steel and Power Limited is annexed hereto collectively and marked as **Annexure Q**.

v. Further, at that relevant time, the data from 2 Continuous Ambient Air Quality Monitoring Stations (CAAQMS) established by the Central Pollution Control Board (CPCB) being (1) Hakimpara, Angul and (2) Talcher: Angul which fall within close proximity of the Subhadra Open Cast Coal Mines is also provided from the CPCB's website. In all the reports from Hakimpada, the benzene concentration was found "None," whereas in Talcher station (where air pollution is much higher than the Subhadra Area) the benzene concentration was reported to be "very much less" than the prescribed standard of 5 micrograms per cubic meter ($\mu g/m^3$) during the same monitoring period (October 3, 2022, to December 31, 2022). Copy of the Reports from the two stations are annexed herewith and collectively marked as **Annexure R**.

w. The Appellant has further alleged that the test reports submitted by Vardan Environet neither bear the NABL symbol nor claim the

issuance of report under NABL accreditation and therefore such discrepancy renders the validity of such report null and void, regardless of the laboratory's accreditation status. In this regard, reference is placed on Chapter 12 of the EIA report submitted by the project proponent to the MoEF, *i.e.*, Disclosure of Consultant where details of the QCI-NABET accreditation of Vardan Environet for preparation of the EIA report and NABL accreditation and MoEF recognition of Vardan Environet have been explicitly mentioned along with copies of the accreditation certificates. The allegation in respect of accreditation is therefore baseless. A copy of Chapter 12 of the EIA report is annexed hereto and marked as **Annexure S**.

x. The Appellant has also alleged that neither the test reports nor the EAC's minutes of meeting declare which method was used to measure the Benzene levels. In this regard, reference is placed on Chapter 3 of the EIA report submitted by the project proponent wherein Table 3.8 clearly indicates that *Gas Chromatography with Flame Ionization Detector* method and technical protocol of *Indian Standard: Methods For Measurement of Air Pollution* (IS: 5182 (P-11): 2006 RA: 2017) published by the Bureau of Indian Standards has been followed. A copy of Table 3.8 of Chapter 3 of the EIA report submitted by the project proponent is annexed hereto and marked as **Annexure T**.

y. Reliance is placed on the 6th EAC minutes of meeting published on February 24, 2024 wherein the EAC has also explicitly mentioned that *Gas Chromatography with Flame Ionization Detector* method and

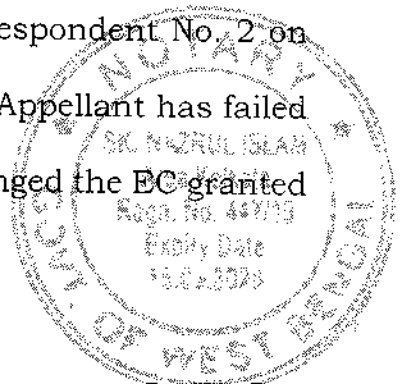
technical protocol of *Indian Standard: Methods For Measurement of Air Pollution* (IS: 5182 (P-11): 2006 RA: 2017) published by the Bureau of Indian Standards has been followed. Further, in this context it is relevant to clarify that the term LOQ is related to the least count of the equipment, *i.e.*, the smallest measurement that the equipment can take accurately, and it has nothing to do with the Indian Standards 5182 (Part 11). Since the permissible amount of benzene in air on annual average is 5 µg/m3 and the least count of the equipment which was used for measurement of benzene has a least count of 0.5 µg/m3 and if the quantity of benzene in the ambient air is nil or less than 0.5 µg/m3, in such cases the result is mentioned as BLQ, which has been done. Thus, so long as the tests are carried out according to the methods and using the instruments as prescribed by the relevant Indian Standards IS 5182 (Part 11), the inability to measure extreme low levels of benzene has nothing to do with compliance or non-compliance with relevant Indian Standards IS 5182 (Part 11). Rather this is an attempt by the Appellant to mislead the Hon'ble Tribunal. Relevant extract of the 6th EAC minutes of meeting is already annexed hereinabove.

6. Without prejudice to the aforesaid, save and except what are matters of record, I categorically deny each and every statement, averment, contention, submission, implication and conclusion made by the Appellant in the instant Appeal that is contrary to and/or inconsistent with what is stated herein in the instant Reply. Unless expressly and

specifically admitted, nothing stated in the Appeal shall be deemed to have been admitted, for want of specific traverse or otherwise.

7. With reference to paragraphs 1 to 4 of the Appeal, the same are denied barring what are strictly matters of record. It is specifically submitted that the Appellant has adduced no evidence demonstrating that the Appellant is an enthusiast promoting environmental awareness or advances environmental conservation, water resource management or sustainable development initiatives. In fact, the Appeal is motivated with a view to derail a perfectly compliant project.

8. With reference to paragraphs 5.1 to 5.3 of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. It is stated that in its email dated March 12, 2024 [*being Annexure A/2 to the Appeal*], the Appellant has stated that "*I have document and I can produce, wherever required. But being a complainant, with limited resources, I have gathered documents, which may be not traceable in terms of quality management. However, as a complainant with limited resources, the documents gathered may not meet the stringent criteria of quality management. In contrast, MCL, being the project proponent, along with the NABET and NABL Accredited organizations, the EIA Consultant and Laboratory, are likely to possess traceable documents. It is imperative to scrutinize their data and information due to its inherent significance.*" It is trite law that no order could be passed in the present Appeal against the Respondent No. 2 on the basis of mere averments in the Appeal. Since the Appellant has failed to produce such reports based on which he has challenged the EC granted



in the project and made allegations pertaining to the purported false reporting of Benzene in the villages surrounding the project and thus, the Appeal cannot be sustained in light of non-submission of the reports relied upon by the Appellant. With specific to reference to paragraph 5.2 of the Appeal, it is stated that reports highlighting certain health concerns, do not negate the thoroughness of the health data presented in the EIA report. The Respondent No. 3 reaffirms that the EIA report and the EC have been prepared with caution and in terms of applicable provisions and requirements. The EIA report has already considered similar health impacts and proposed appropriate mitigation strategies. The Respondent No. 3 denies any negligence in addressing health concerns and reiterates that the EIA report adheres to the principles of sustainable development. It is denied that any challenging legal concern lies regarding the accuracy or the reliability of the information presented in the EIA report. Further, the Respondent No. 3 submits that the report includes a comprehensive assessment of air quality, water quality, and public health impacts, along with detailed mitigation measures to address pollution and any contentions or allegations alleging the contrary are denied and disputed.

9. With reference to paragraphs 5.4 and 5.5 of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed.

10. With reference to paragraphs 5.6 (a) to (c) of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. The Respondent No. 3 repeats and reiterates what has been stated in paragraph 5(w) of the instant Reply

hereinabove. It is disputed that alleged discrepancy under the NABL accreditation, regardless of the laboratory's accreditation status in the test reports rendered the same null or void. It is reiterated that Chapter 12 of the EIA report details the QCI-NABET accreditation of Vardan Environet and NABL accreditation and MoEF recognition of Vardan Environet has been explicitly mentioned. Furthermore, merely because the test report does not mention the NABL symbol does not take away accreditation and it is pertinent to note that there is no dispute regarding the laboratory not being accredited.

11. With reference to paragraphs 5.6 (d) to (f) of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. The Respondent No. 3 repeats and reiterates what has been stated in paragraphs 5(b) to (g) of the instant Reply hereinabove. It is specifically denied that the Indian Standards have not been complied with during testing. It is denied that the Test Reports nor the EAC's MoM do not declare which method for testing benzene was followed. It is denied that claims pertaining to adherence of IS:5182 (P-1) : 2006 standards lacks merit due to absence of specified detection limits, as alleged or at all. It is denied that alleged non-inclusion of the Detection Limit, as purportedly mandated by IS:5182 (P-1) : 2006 is a clear non-compliance with the specified method. It is denied that the claim of conformity to approved protocols is unjustified or warrants the rejection of the reports. It is reiterated that the testing was done as per IS:5182 (P-1) : 2006 standards using the GC-FID Method and that the test results show that the level of benzene in all locations was BLQ. It is also submitted

that the EIA Report clearly indicates in Table 3.7 as to what is the National Ambient Air Quality Standards ("**NAAQS**") vide GSR 826 (E) dated November 16, 2009 and the permissible limit of benzene which has been stated to be 5 micrograms per cubic meter on an annual basis and in Table 3.8 Techniques Adopted/Protocols for Ambient Air Quality Monitoring has been stated. In the table, the method adopted for measuring benzene while preparing the report has been stated to be GC-FID Method falling under IS:5182 (P-11): 2006 standards technical protocol. Despite such information being part of the EIA report and already available in the public domain, the Appellant is attempting to mislead this Hon'ble Tribunal by alleging that there are deficiencies in baseline data or that the test has not been conducted according to IS:5182 (P-11) : 2006 standards and amounts to harassment with the intent to derail a project. It is reiterated that the relevant IS:5182 (P-11) : 2006 prescribes the applicable test method for the analysis to be undertaken. As per IS:5182 (P-11) : 2006, three test methods have been described out of which one of the methods is GC-FID, the M/s Vardan Envirolab has used the GC-FID equipment for testing of benzene. It is submitted that measurement of any pollutant comprise of two main components i.e. sampling and analysis. The IS: 5182 (P-11) : 2006 for analysis of benzene prescribes GC-FID method whereas for sample collection, it gives three methods. These three methods are

1. Active Sampling Using Activated Charcoal Tubes;
2. Active Sampling Using Tenax/Chromosorb and
3. Passive Sampling Using Coconut Shell

Therefore, in sample collection, the first option, i.e. Active Sampling Using Activated Charcoal Tubes has been used and for the analysis of sample, GC-FID has been used.

12. With reference to paragraph 5.6 (f) of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. The Respondent No. 3 repeats and reiterates what has been stated in paragraphs 5(b) to (g) of the instant Reply hereinabove. The term "Limit of Quantification" (LOQ) is related to the analytical equipment used for testing benzene duly accredited by NABL. In short, LOQ is the least count of the machine and it has nothing to do with the IS:5182 (P-11) : 2006. Since the permissible amount of benzene in air on annual average is 5 micrograms per cubic meter, thus the apparatus used to measure is calibrated in such a manner that extremely low level of benzene (<0.5 micrograms per cubic meter) cannot be measured and in such cases the result is displayed below LOQ. Thus, it becomes clear that the inability to measure extreme low levels of benzene has got nothing to do with compliance or non-compliance with relevant IS:5182 (P-11) : 2006, and any allegations or contentions to the contrary are denied. It is denied that the reports are unreliable due to absent critical information or alleged non-inclusion of the Detection Limit, as mandated by IS:5182 (P-11) : 2006 or that the same underscores a clear non-compliance with 9 the specified method, as alleged or at all. It is denied that such purported non-compliance is unjustified or warrants rejection of the report, as alleged or at all.

NOTARY
SK. NAZIBUL ISLAM
Kolkata
Regd. No. 68719
Expiry Date
15.05.2029
GOVT. OF WEST BENGAL

13. With reference to paragraph 5.6 (g) of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. I repeat and reiterate what has been stated in paragraphs 5 (i) of the instant Reply. It is denied that crucial documents were not taken into reference by the EAC pertaining to sample trail or preservation procedures or time intervals between sampling or testing or back-end data such as peaks or graphs. It is reiterated that the sampling, transportation, preservation and handling protocols were followed as per the Quality Standard Procedures of the laboratory and requirement of NABL accreditation has been complied with. It is denied that the report lacks essential details such as the precise location of sampling, or the duration of sampling for benzene samples, or the testing period, or any environmental conditions observed during sampling or testing, as alleged or at all. It is denied that alleged absence of evidence of sample testing or transportation or purported lack of documentation renders the claims of testing Benzene of zero significance, as alleged or at all. It is stated that merely because the reports published by Vardan Envirolab do not contain the logo of National Accreditation Board for Education and Training ("**NABET**") or NABL does not ipso facto invalidate the report. It is stated that Vardan Envirolab has a long-established reputation credited to its expertise in conducting investigations, testing and publishing of reports for various reputed clients. The profile and accreditation of M/s Vardan Envirolab has been disclosed in the EIA report as well. Such disclosure would make it apparent that the accreditation to NABET is valid upto May 4, 2026 and accreditation to NABL is valid upto August 27, 2026.

Therefore, the Appellant's allegations pertaining to such accreditation is misplaced and misconceived and made with an attempt to mislead this Hon'ble Tribunal and the reports cannot be challenged in light of such baseless averments. Documents demonstrating such certification is annexed hereto and marked as **Annexure U**.

14. With reference to paragraph 5.6 (h) of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. I repeat and reiterate what has been stated in paragraphs 5 (e) and (f) of the instant Reply. It is reiterated that the testing was done as per IS:5182 (P-1) : 2006 standards using the GC-FID Method and that the test results show that the level of benzene in all locations was BLQ. Accordingly, the same was in conformity with the prescribed NAAQS limits for benzene at 5.0 micrograms per cubic meter, both within the core and buffer zone of the project. Along with the above, study results of two locations, nearer to the project, during the test period of Central Control Room for Air Quality Management – All India, Govt. of India were also found to be within NAAQS limit. Therefore, the reliance upon the test reports cannot be questioned by the Appellant on purported contentions questioning the adherence of the results to the NAAQS limit. The Respondent No. 3 submits that the Continuous Ambient Air Quality Monitoring Stations (CAAQMS) data referenced by the Appellant is not comparable to the laboratory test results due to differences in methodology, sampling frequency, and detection limits. The CAAQMS data represents real-time, continuous monitoring, whereas laboratory tests are conducted under controlled conditions with specific sampling protocols.

The Appellant's assertion of a discrepancy between the CAAQMS data and laboratory results is based on a flawed comparison. While there are technical differences in methodology between CAAQMS and AAQMS, the overall results are generally consistent, especially when both systems are properly calibrated and operated under standard protocols. In our case, results of both CAAQMS and AAQMS indicate absence of benzene. The Respondent No. 3 further clarifies that the laboratory tests conducted during the period in question adhered to prescribed standards, and the non-detection of Benzene in certain samples does not invalidate the results. The Respondent No. 3 denies any inconsistency or unreliability in the laboratory test results. It is reiterated the LOQ referenced in its submissions is related to the least count of the equipment and is consistent with industry practices. The LOQ is not related to IS 5182 Part 11. The Appellant's reliance on CAAQMS data to allege discrepancies is misplaced, as the two monitoring systems operate under different parameters and cannot be directly compared. The Respondent No. 3 further clarifies that the laboratory's failure to detect Benzene on specific dates does not invalidate the overall results, as detection limits and sampling conditions vary and all allegations to the contrary are denied.

15. With reference to paragraphs 5.7 and 5.8 of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. With reference to the undertaking provided in Form-1, the Respondent's denies any contention or indication being purported by the Appellant that the EAC relied solely on the

undertaking provided in Form-1 or that the EAC neglected to verify the technical aspects that were essential for the appraisal process.

16. With reference to paragraphs 6.1 to 6.3 of the Appeal, save what are matters of record and what may appear therefrom, all allegations to the contrary are denied and disputed. It is denied that the EC is deficient in the baseline data in the test results of Benzene utilized for environmental appraisal or that the reporting of the test results for "Benzene" does not conform to IS: 5182 (P-11): 2006 standards, as alleged or at all. It is denied that the tests results lack proper accreditation specific to NABL accreditation or reporting practices, as alleged or at all. The Respondent No. 3 respectfully submits that the EIA process in the present case has been conducted in strict compliance with the established principles and any statements/allegations to the contrary are strictly denied. The Respondent No. 3 reaffirms that the EIA report embodies a commitment to sustainable development. The Applicant/Intervenor further clarifies that the EAC has diligently verified the technical aspects of the project, and the EC granted is based on a rigorous and scientifically sound appraisal process. It is denied that the EAC has neglected to dutifully or diligently verify the essential technical aspects or that the appraisal process lacks scientific rigor or has been conducted inappropriately, as alleged or at all. It is vehemently denied that the EC lacks merit or cannot be considered valid, as alleged or at all. Further, the entire purport of the Appellant/Respondent to challenge the EC is premised on the allegations surrounding the negligent deliberation of the EAC. It is submitted that the Appellant's allegations questioning the credibility of the EAC and its expert

members without any data or documents adduced in the Appeal to substantiate such claims, are sufficient grounds for dismissing the Appeal. It is further submitted that the EAC conducted a thorough review of all submitted documents, including the EIA report, baseline data, and mitigation measures, before granting the EC. It is submitted that the Appellant has not provided an iota of evidence to substantiate such allegations and is put to strict proof thereof. The Respondent No. 3 reaffirms that the data and information provided in the Intervention Application are true and accurate, and there is no basis for invalidating the impugned EC. The Respondent No. 3 states that the Appellant's request for setting aside of the EC goes against the principles of sustainable development and the same would hamper several aspects of socio-economic welfare and would in result delay implementation of environment management plans and public hearing issues. It is additionally stated that the project commits to keep on monitoring the chromium levels and shall submit the analysis results to MoEF&CC periodically, as may be necessary.

17. With reference to paragraph 7 of the Appeal, the same merits no response.

18. It is clear from the above stated facts and circumstances that due standard operating procedures have been followed by Vardan Environet for conducting the Environment Impact Assessment for the project. The level of Benzene in the ambient air has been correctly reported as below the level of quantification (BLQ). The MoEF has satisfied itself as to the correctness of the test report and the EIA report submitted by the project

proponent pursuant to which the EC was granted to the project proponent MCL.

19. The Appellant has failed to establish any cause of action and therefore the present Appeal challenging the EC granted has no legs to stand on. I state and submit that the contents of the said Appeal are entirely unsubstantiated, lack basis and have been made with an aim to mislead this Hon'ble Tribunal The present Appeal has been filed with the aim of harassing the Respondent No. 3 and MCL, seeking monetary gains and ought to be dismissed by this Learned Tribunal.

20. The statements made in paragraphs Nos 1 to 5 of the foregoing affidavit are true to the best of my knowledge and those contained in paragraphs 6 to 19 are based on records maintained by the Respondent No. 3 and that I verily believe to be true and the rest are my humble submissions before this Hon'ble Tribunal.

For SUBHADRA COAL MINING LIMITED

Director

Deponent

Identified by me

Sagnik Aditya.

Advocate

F/1757/2177/2024

NOTARY
SK. NAZRUL ISLAM
West Bengal
Regd. No. 44778
Expiry Date
19.03.2029
GOVT. OF WEST BENGAL

Solemnly Affirmed and Declared before me on the identification of the Advocate

Notary

SK. Nazrul Islam
Notary, Govt. of W.B.
Govt. No. 44778
City Civil Court, Calcutta

16 JUN 2025

VERIFICATION

I, Sanjay Baid, son of Shri Champa Lal Baid, aged about 46 years, Director at Subhadra Coal Mining Limited being the Respondent No. 3 and resident of Shree Niket, 32/1A Ramkrishna Samadhi Road, Flat G-2, Kolkata – 700054, do hereby declared that all that are stated in above paragraphs are true and correct to the best of my knowledge and belief. No material facts has been concealed. I verify the same on this day of June 2025 at Kolkata.

For SUBHADRA COAL MINING LIMITED

Director

16 JUN 2025

NOTARY
SK. NAZRUL ISLAM
GOVT. OF WEST BENGAL

ANNEXURE – 'A'

Item No.04 Court No.1

BEFORE THE NATIONAL GREEN TRIBUNAL
EASTERN ZONE BENCH, KOLKATA
(THROUGH PHYSICAL HEARING WITH HYBRID MODE)

Appeal No.07/2024/EZ
(I.A. No.38/2024/EZ & I.A. No.97/2024/EZ)

Sanjaya Kumar Mishra Appellant(s)

Versus

Ministry of Environment, Forest
and Climate Change Respondent(s)

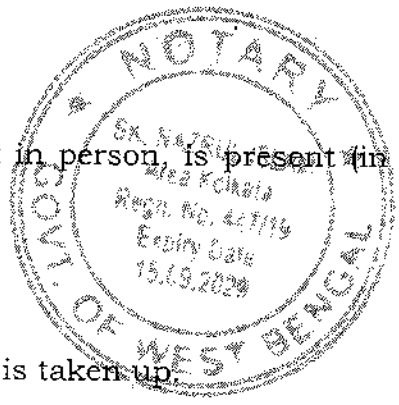
Date of hearing: 24.04.2025

CORAM: HON'BLE MR. JUSTICE B. AMIT STHALEKAR, JUDICIAL MEMBER
HON'BLE DR. VIJAY KULKARNI, EXPERT MEMBER

For Appellant(s) : Mr. Sanjay Kumar Mishra, in person (in Virtual Mode)

For Respondent(s) : Ms. Amrita Pandey, Advocate for R-1 (in Virtual Mode),
Mr. Ayan Poddar, Advocate a/w
Mr. Soham Dutta, Advocate for R-2 (in Virtual Mode),
Mr. Soorjya Ganguly, Advocate (in Virtual Mode) a/w
Ms. Pooja Chakrabarti, Advocate (in Virtual Mode) and
Ms. Devanshi Prasad, Advocate for Intervenor Subhadra
Coal Mining Limited in I.A. No.97/2024/EZ

ORDER



1. Mr. Sanjay Kumar Mishra, the Appellant in person, is present (in Virtual Mode).

I.A. No.38/2024/EZ

2. Interlocutory Application No.38/2024/EZ is taken up.

3. This Interlocutory Application has been filed by the Applicant seeking condonation of delay of 24 days in filing of the present Appeal No.07/2024/EZ.

4. In the application seeking of a condonation of delay, it has been stated that the Appellant had filed the Appeal on 05.04.2024 within

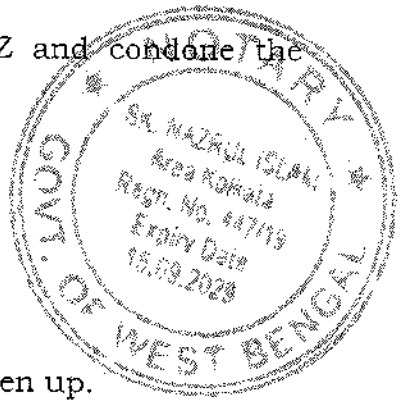
whereas it should have been filed before the Eastern Zone Bench of the National Green Tribunal, Kolkata.

5. Thereafter time was spent in the scrutiny of the Appeal papers by the National Green Tribunal, Principal Bench and certain directions were issued on 11.04.2024 and it is only then the Appellant came to know that the Appeal should have been filed before the Eastern Zone Bench of National Green Tribunal, Kolkata. In this process, 24 days have elapsed.

6. The learned Counsel for the Respondents have fairly stated that in the circumstances of the case, the Appellant would be entitled to the benefit of the principles of law set out in Section 14 of the Limitation Act, 1963 as it appears to be a bonafide mistake on the part of the Appellant in prosecuting the Appeal before the wrong forum.

7. We accordingly allow the I.A. No.38/2024/EZ and condone the delay in filing the Appeal No.07/2024/EZ.

I.A. No.38/2024/EZ is disposed of.



I.A. No.97/2024/EZ

8. Interlocutory Application No.97/2024/EZ is taken up.

9. This Interlocutory Application has been filed by the Applicant therein, Subhadra Coal Mining Limited with the prayer that it may be allowed to intervene in the present Appeal.

10. The grounds taken in support of the Intervention Application is that Subhadra Coal Mining Limited is a Mine Developer & Operator for Mahanadi Coalfields Limited ('**MCL**') i.e., the Respondent No.2 in the present Appeal No.07/2024/EZ (hereinafter referred to as

11. It is stated that the Subhadra Coal Mining Limited entered into a Coal Mining Agreement on 17.06.2022 (**'Mining Agreement'**) whereby it was appointed as a 'Mine Operator' for development of the said mines, operation and maintenance thereof, and excavation and delivery of coal to the project proponent Mahanadi Coalfields Limited (MCL) in respect of the mines in question.

12. An objection has been filed by the Appellant to the I.A. No.97/2024/EZ in which the Appellant has stated that the intervener was informed by the Mahanadi Coalfields Limited (MCL), Respondent No.2 vide letter dated 05.09.2024 about the filing of the present Appeal and in any case, *"the cause of this case has arisen by the acts of M/s Subhadra Coal Mining Limited & its consultant(s)."*

13. It is also alleged by the Appellant that the absence of the INTERVENER's signature on crucial documents like the Undertaking (Form-1) submitted during Environmental Clearance (EC) process unequivocally demonstrates its limited role as a mere backend support provider.

14. Paragraph nos.3 and 4 of the counter-affidavit filed by the Appellant read as under:-

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3. "That in paragraph 7 of the instant I.A., the INTERVENER has stated, "Further, it is also relevant to mention that MCL has, vide letter dated September 5, 2024, intimated the Applicant about the instant Appeal, provided a copy thereof, and instructed the Applicant to intervene therein and make submissions in defense..." However, the letter dated 5th September 2024, issued by MCL

NOTARY SK. NAZRUL ISLAM Advs Kolkata Regn. No. 44719 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

16th August 2024. This indicates that the INTERVENER was informed well before 5th September 2024, contradicting the claim made. Moreover, in the said letter, R/2 in the Appeal directed the INTERVENER to intervene independently, stating that "the cause of this case has arisen by the acts of M/s Subhadra Coal Mining Limited and its consultant(s)." The absence of the INTERVENER's signature on crucial documents like the Undertaking (Form-1) submitted during the Environmental Clearance (EC) process unequivocally demonstrates its limited role as a mere backend support provider. Based on these facts, this intervention lacks merit and appears to be a deliberate attempt to obstruct the pursuit of environment justice.

4. *I respectfully submit that the above-said email dated 5th September 2024, explicitly states that "the cause of this case has arisen by the acts of M/s Subhadra Coal Mining Limited and its consultant(s)," thereby serving as a clear and unequivocal acknowledgment that the actions of the INTERVENER and its consultant(s) are the direct basis of the present Appeal."*

xxxxxxxxxxxxxxxx xxxxxxxxxxxxx xxxxxxxxxxxxxxxxx

15. In this view of the matter, we find that since the allegation of the Appellant is directly against the Mine Operator namely the Subhadra Coal Mine Limited, i.e., the Applicant of the Intervening Application, the Intervener deserves to be heard in the present proceedings.

16. We, therefore, allow the I.A. No.97/2024/EZ and direct the Applicant, M/s Subhadra Coal Mining Limited to be impleaded in the array of Respondents as Respondent No.3 within one week.

No.3 prays for and is granted three weeks time for filing counter-affidavit.

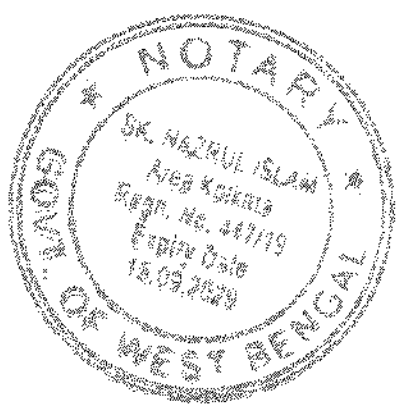
18. The Appellant will have three weeks thereafter for filing his rejoinder response if any.

19. **List for hearing on 30.07.2025.**

.....
B. Amit Sthalekar, JM

.....
Dr. Vijay Kulkarni, EM

April 24, 2025,
Appeal No.07/2024/EZ
I.A. No.38/2024/EZ
&
I.A. No.97/2024/EZ)
OM



DUPLICATE

Contract Agreement

For

Development & Operation of Subhadra OC

[West of Gopalprasad (West) & Utkal – A Block]

Volume: I to IV

17/6/2022

General Manager
Subhadra Area, MCL

17/6/22

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn.No. 447/19

SUBHADRA COAL MINING LIMITED

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
18.08.2023

GOVT. OF WEST BENGAL

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General Manager

DUPLICATE

0060
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(1)

Contract Agreement

for

Development and Operation of Subhadra OCP (West of Gopalprasad (west) & Utkal - A Block).

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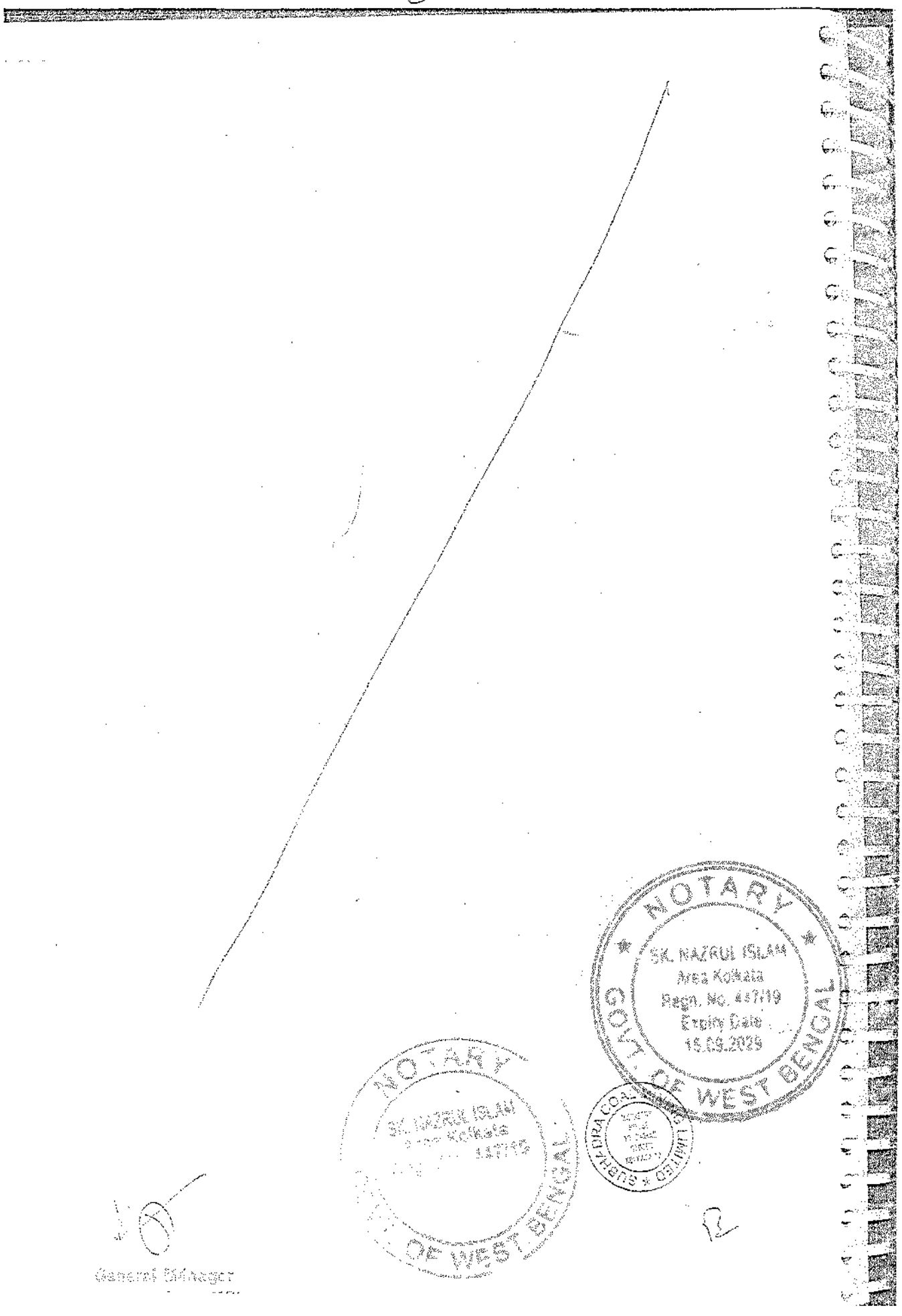
General Manager

SUBHADRA COAL MINING

NOTARY
SK. NAZRUL ISLAM
Reg. No. 44719
Expiry Date
19.09.2029
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NOTARY
SK. NAZRUL ISLAM
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8



General Manager

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 GOVT. OF WEST BENGAL

SUBHADRA COAL MINING LIMITED

General Manager
Subhadra Area, MCL

0003

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SUBHRA CONSULTANTS

General Manager Area, MCL

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Notary Central Govt. Angul

Notary Sk. Nazrul Islam Regd. No. 447/19 Expiry Date 15.09.2020 Govt. of West Bengal

Govt. of West Bengal

Coal Mining Limited

Assistant Manager

0005

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NOTARY CENTRAL GOVT. ANGUL

General Manager

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NOTARY CENTRAL GOVT. ANGUL

NOTARY SHAMSUL ISLAM Regd. No. 44/19 Expiry Date 06.09.2020 GOVT. OF WEST BENGAL

GOVT. OF WEST BENGAL

General Manager

ARDRA COAL MINING LIMITED

0007 DUPLICATE

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NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regd. No. 64778 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regd. No. 64778 GOVT. OF WEST BENGAL

INDIA COAL LIMITED

General Manager

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NOTARY
CENTRAL GOVT.
ANGUL

NOTARY
SK. NAZRUL ISLAM
Alipore Kolkata
Regn. No. 47/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

General Manager
Bolbhadra Area, MCL

NOTARY
SK. NAZRUL ISLAM
Alipore Kolkata
Regn. No. 47/19
SUBHADRA COAL MINING LIMITED
GOVT. OF WEST BENGAL

0003

DUPLICATE

PART I

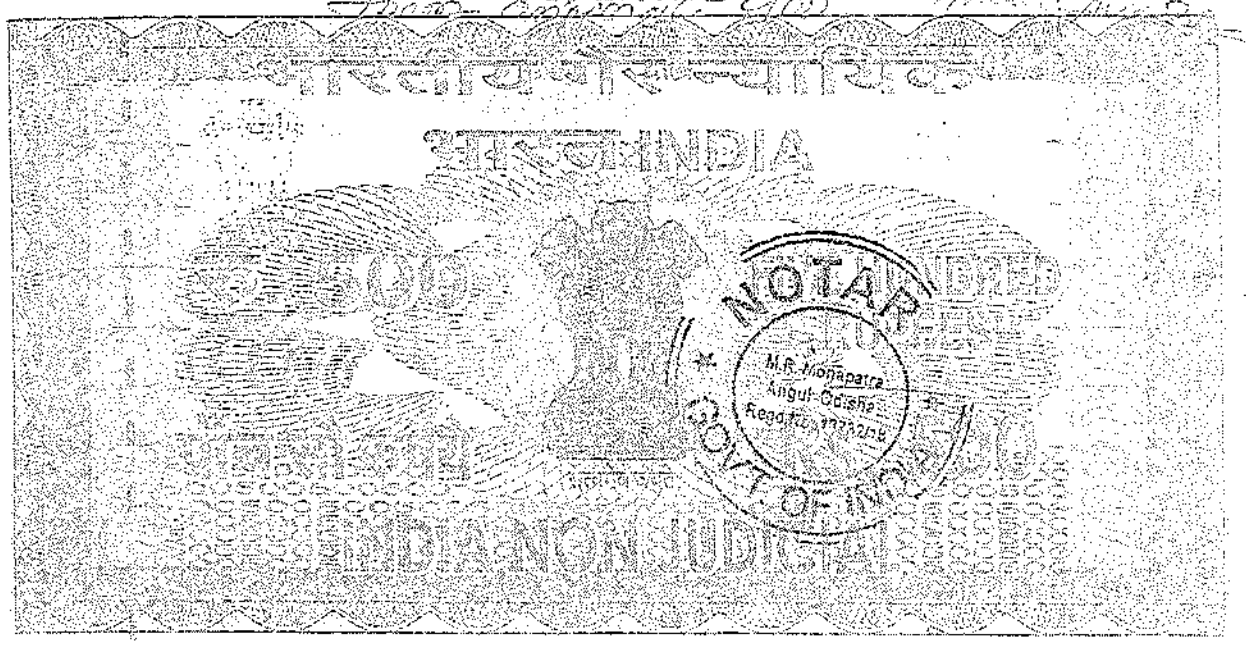
PRELIMINARY

NOTARY
CENTRAL GOVT.
ANGUL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.03.2026
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn.No. 447/19
GOVT. OF INDIA

General Manager
Talcher Area, MCL



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COAL MINING AGREEMENT[1]

THIS AGREEMENT is entered into on the 17th day of June 2022

BETWEEN

Mahanadi Coalfields Limited represented by General Manager, Subhadra Area, MCL and having its offices at PO-Jagruti Vihar, Burla, Dist.-Sambalpur, Odisha-768020 (hereinafter referred to as the "Authority", which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns), of One Part;

AND

2 Subhadra Coal Mining Limited (SCML), a company incorporated under the provisions of the Companies Act, 2013 and having its registered office at Industry House, 18th Floor, 10 Camac Street, Kolkata 700017, West Bengal, (hereinafter referred to as the "MineOperator", which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of Other Part.

WHEREAS:

(A) The Authority had resolved to procure Coal through a contract for, *inter alia*, development of the mines Subhadra OCP (West of Gopalprasad (west) & Utkal - A Block) (the "Mines") in accordance with the terms and conditions set forth in this agreement (the "Agreement").

(B) The Authority had accordingly invited bids from prospective bidders by its Request for Bid No. MCL/SBP/GM(CMC)/NIT-168/2021/376, Dated: 22.08.2021 (the "Request for Bid" or "RFB") that prescribed the technical and commercial terms and conditions for selection of the successful Bidder.

General Manager

0011 DUPLICATE

DIS. ASST TREASURY
ANGUL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44719
Expiry Date
15.03.2026
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44719
GOVT. OF WEST BENGAL

DUPLICATE

0012

Registered No. 900 of 2022
Dated this 17th day of June 2022

(C) After evaluation of the bids received, the Authority had accepted the bid of the the selected Bidder and issued its Letter of Award No. MCL/SBP/GM(CMC)/NIT-168/2022/993, Dated: 22.03.2022 and Addendum to LOA No. MCL/SBP/GM(CMC)/NIT-168/2022/1003, Dated: 25.03.2022 (the "Letter of Award" or "LOA") to the selected Bidder requiring, *inter alia*, the execution of this Agreement within 90 (ninety) days of the date of issue thereof.

(D) The selected Bidder has since promoted and incorporated the Mine Operator, being **Subhadra Coal Mining Limited (SCML)** as a company limited by shares under the Companies Act 2013, and has requested the Authority to accept the Mine Operator as the entity which shall undertake and perform the obligations and exercise the rights of the selected Bidder under the LOA, including the obligation to enter into this Agreement pursuant to the LOA for undertaking the Project.

(E) By its letter dated 06.06.2022, the Mine Operator has also joined in the said request of the selected Bidder to the Authority to accept it as the entity which shallundertake and perform the obligations and exercise the rights of the selected Bidder including the obligation to enter into this Agreement pursuant to the LOA. The Mine Operator has further represented to the effect that it has been promoted by the selected Bidder for the purposes hereof.

(F) The Authority has agreed to the said request of the selected Bidder andthe Mine Operator, and has accordingly agreed to enter into this Agreement with the Mine Operator for development of the Mines, and for mining of Coal and Delivery thereof, subject to and on the terms and conditions set forth hereinafter.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

NOTARY
CENTRAL GOVT.
ANGUL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44/19
Expiry Date
15.09.2024
GOVT. OF WEST BENGAL

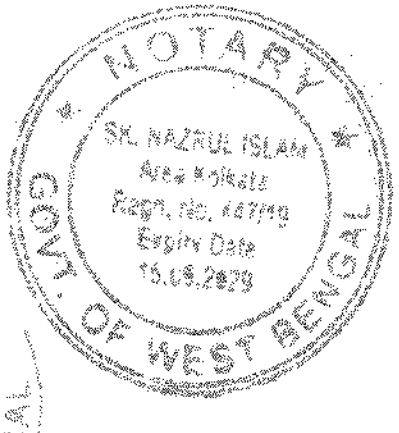
SUBHADRA COAL MINING LIMITED

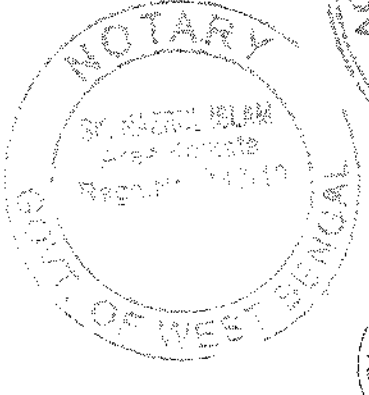
General Manager
Subhadra Area, MCL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44/19
GOVT. OF WEST BENGAL

2

DUPLICATE







General Manager
Subhadra Area, WCL

DUPLICATE

0013

COAL MINING AGREEMENT[1]

(13)

THIS AGREEMENT is entered into on {the ..... day of ..... 20 .....}

BETWEEN

1 Mahanadi Coalfields Limited represented by *** and having its offices at PO-Jagruti Vihar, Burla, Dist.-Sambalpur, Odisha-768020 (hereinafter referred to as the "**Authority**", which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns), of One Part;

AND

2 {*****} Limited, a company incorporated under the provisions of the Companies Act, 2013 and having its registered office at {*****}, (hereinafter referred to as the "**Mine Operator**", which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes) of Other Part.

WHEREAS:

(A) The Authority had resolved to procure Coal through a contract for, *inter alia*, development of the mines Subhadra OCP (West of Gopalprasad (west) & Utkal - A Block) (the "**Mines**") in accordance with the terms and conditions set forth in this agreement (the "**Agreement**").

(B) The Authority had accordingly invited bids from prospective bidders by its Request for Bid No. MCL/SBP/GM(CMC)/NIT-168/2021/376, Dated: 22.08.2021 (the "**Request for Bid**" or "**RFB**") that prescribed the technical and commercial terms and conditions for selection of the successful Bidder.

(C) After evaluation of the bids received, the Authority had accepted the bid of the {the selected Bidder /consortium comprising {*****} and {*****} (collectively the "**Consortium**") with {*****} as its lead member (the "**Lead Member**")} and issued its Letter of Award No. {***** dated *****} (the "**Letter of Award**" or "**LOA**") to the {selected Bidder/ Consortium} requiring, *inter alia*, the execution of this Agreement within 90 (ninety) days of the date of issue thereof}.

(D) {The selected Bidder/ Consortium {has since promoted and incorporated the Mine Operator, being {*****} as a company limited by shares under the Companies Act 2013, and} has requested the Authority to accept the Mine Operator as the entity which shall undertake and perform the obligations and exercise the rights of the {selected Bidder/ Consortium under the LOA,} including the obligation to enter into this Agreement pursuant to the LOA for undertaking the Project}.

(E) {By its letter dated {*****}, the Mine Operator has also joined in the said request of the selected Bidder/ Consortium to the Authority to accept it as the entity which shall undertake and perform the obligations and exercise the rights of the selected Bidder/ Consortium including the obligation to enter into this Agreement pursuant to the LOA. The Mine Operator has further represented to the effect that it has been promoted by the selected Bidder/ Consortium for the purposes hereof}.

(F) The Authority {has agreed to the said request of the selected Bidder/ Consortium and the Mine Operator, and has} accordingly agreed to enter into this Agreement with the

CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Regn. No. 44719 Expiry Date 15.09.2023 WEST BENGAL

General Manager Subhadra Area, MCL

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0014

DUPLICATE

Mine Operator for development of the Mines, and for mining of Coal and Delivery thereof, subject to and on the terms and conditions set forth hereinafter.

(A)

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

NOTARY
CENTRAL GOVT.
ANGUL

ANDHRA COAL MINING LIMITED
SUBSIDIARY OF SIMHADRI

Chief Manager
Subsidiary Area, MCL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
GOVT. OF WEST BENGAL

10

DUPLICATE

0015

ARTICLE 1
DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement (including those in Article 47) shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

(a) references to Applicable Laws or any provision thereof shall include amendment or re-enactment or consolidation of such Applicable Laws or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

(b) references to laws of the State, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

(c) references to a "person" and words denoting a natural person, shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

(d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

(e) the words "**include**" and "**including**" are to be construed without limitation and shall be deemed to be followed by "**without limitation**" or "**but not limited to**" whether or not they are followed by such phrases;

(f) references to "**construction**" or "**building**" include, unless the context otherwise requires, investigation, design, developing, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and "**construct**" or "**build**" shall be construed accordingly;

(g) references to "**development**" include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, upgradation and other activities incidental thereto, and "**develop**" shall be construed accordingly;

(h) references to "**excavation**" include, unless the context otherwise requires, cutting, scooping or digging out a part of solid mass comprising earth, rocks, coal and other materials with the objective of segregating coal from earth,

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 44/19 Regn. Date 15.09.2029 GOVT. OF WEST BENGAL

General Manager Bhubaneswar Area, MCL

SUBHADRA COLLIERY LIMITED

0016

DUPLICATE

rocks and other materials for lifting and transportation thereof to the Coal Depot or Delivery Point, and "**excavate**" shall be construed accordingly;

(i) any reference to any period of time shall mean a reference to that according to Indian Standard Time;

(j) any reference to "**hour**" shall mean a period of 60 (sixty) minutes;

(k) any reference to "**day**" shall mean a reference to a calendar day;

(l) references to a "**business day**" shall be construed as a reference to a day (other than a Sunday or a public holiday) on which Authority is open for general business in the State in which the Project is situated;

(m) any reference to "**month**" shall mean a reference to a calendar month as per the Gregorian calendar;

(n) any reference to "**quarter**" shall mean a reference to the period of three months commencing from April 1, July 1, October 1, and January 1, as the case may be;

(o) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;

(p) any reference to any period commencing "**from**" a specified day or date and "**till**" or "**until**" a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

(q) the words importing singular shall include plural and vice versa;

(r) references to any gender shall include the other and the neutral gender;

(s) "kWh" shall mean kilowatt hour and "kcal" shall mean kilocalories;

(t) "**lakh**" shall mean a hundred thousand (100,000) and "**crore**" means ten million (10,000,000);

(u) "**indebtedness**" shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

(v) references to the "**winding-up**", "**dissolution**", "**insolvency**", or "**reorganisation**" of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, re-organisation, dissolution, arrangement, protection or relief of debtors;

(w) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of any description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this sub-clause (w) shall

SK NAZRUL ISLAM
Sworn Notary
Regn. No. 447/19
Expiry Date
15.09.2025

General Manager
Chandra Area, WCL

not operate so as to increase liabilities or obligations of the Authority hereunder or pursuant hereto in any manner whatsoever;

(x) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party in this behalf and not otherwise;

(y) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

(z) references to Recitals, Articles, Clauses, Sub-clauses, Provisos or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses, Provisos and Schedules of, or to, this Agreement, references to an Annex shall, subject to anything to the contrary specified therein, be construed as a reference to an Annex to the Schedule in which such reference occurs, and references to a Paragraph shall, subject to anything to the contrary specified therein, be construed as a reference to a Paragraph of the Schedule or Annex, as the case may be, in which such reference appears;

(za) the damages payable by either Party to the other, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "Damages");

(zb) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence;

(zc) in the event of any disagreement or dispute between the Mine Operator and the Authority regarding the materiality or reasonableness of any matter including any event, occurrence, circumstance, change, fact, information, document, authorisation, proceeding, act, omission, claims, breach, default or otherwise, the opinion of the Authority as to the materiality or reasonableness of any of the foregoing shall be final and binding on the Mine Operator; and

(zd) where any statement in this Agreement is qualified by the expression "**to the knowledge**" or "**to the best of the knowledge or information or belief**" or any similar expression, that statement shall, save as expressly provided to the contrary herein, be deemed to mean that it has been made after due and careful inquiry by the person making such statement.

1.2.2 Unless expressly provided otherwise in this Agreement, any Documentation required to be provided or furnished by the Mine Operator to the Authority and/or the Engineer in charge shall be provided free of cost and in 3 (three) copies, and if the Authority and/or the Engineer in charge is required to return any such Documentation with their comments and/or approval, they shall be entitled to retain two copies thereof.

1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply.

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 467/19 Expiry Date 15.09.2023 WEST BENGAL

NOTARY CENTRAL GOVT. ANGUL

General Manager
Subhadra Area, MCL

13

EDURA CONSTRUCTION LIMITED

0018

DUPLICATE

1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 Measurements and arithmetic conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down; provided that the drawings, engineering dimensions and tolerances may exceed 2 (two) decimal places, if required.

1.4 Priority of agreements, clauses and schedules

1.4.1 This Agreement, and all other agreements and documents forming part of, or referred to in this Agreement, are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:

(a) this Agreement; and

(b) all other agreements and documents forming part hereof or referred to herein.

i.e. the Agreement at (a) above shall prevail over the agreements and documents at (b) above.

1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:

(a) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;

(b) between the Clauses of this Agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;

(c) between any two Schedules, the Schedule relevant to the issue shall prevail;

(d) between the written description on the Drawings and the Specifications and Standards, the latter shall prevail;

(e) between the dimension scaled from the Drawing and its specific written dimension, the latter shall prevail; and

(f) between any value written in numerals and that in words, the latter shall prevail.

Notary Sk. Nazrul Islam Area Kolkata Regn. No. 44719 Expiry Date 15.03.2023 West Bengal

Notary Sk. Nazrul Islam Area Kolkata Regn. No. 44719 West Bengal

Addl. Govt. Central Govt. Advocate

General Manager Subhadra Area, SCCL

SUBHADRA COAL MINING LIMITED

DUPLICATE

0019

(19)

PART II

SCOPE OF THE PROJECT

NOTARY
CENTRAL GOVT.
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NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.09.2026
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
GOVT. OF WEST BENGAL

General Manager
Subhedra Area, MCL

SUBHEDRA COAL MINING LIMITED

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DUPLICATE

ARTICLE 2

SCOPE OF THE PROJECT

2.1 Scope of the Project

The scope of the Project (the "**Scope of the Project**") shall mean and include, during the Contract Period:

(a) development of the Mines on the Site specified in Schedule-A, in accordance with the provisions of Schedule-B and Schedule-C, and conforming to the Specifications and Standards and the Mining Plan set forth in Schedule-D;

(b) operation and maintenance of the Mines in accordance with the provisions of this Agreement;

(c) excavation and Delivery of Coal in accordance with the provisions of this Agreement; and

(d) performance and fulfillment of all other obligations of the Mine Operator in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Mine Operator under this Agreement.

(e) Brief Scope of the Project:

i). Guaranteed coal production at designated grade and size and OB removal as per the Mining Schedule.

ii). Drilling and blasting operations shall be carried out under the supervision of the MCL officials.

iii). Procurement, operation & maintenance of equipment required for target coal production and OB removal.

iv). Construction of overhead transmission line from Nandira substation of MCL to Subhadra project and to specified site at Project & CHP Substation (Annex-III, Schedule-A of MCA). This overhead transmission line from Nandira substation of MCL to Subhadra project shall be available for use of other Projects of Authority free of cost during the contract period as and when required by any alteration or modification.

Electricity will be sourced from the Nandira 132 KV Substation by the Authority i.e., MCL. Electricity consumed by the Mine Operator is a part of Mining Charge quoted by the Mine Operator. For recovery of electricity bill, amount consumed by the Mine Operator will be made as below:

(a) Actual bill amount at the Nandira 132 KV Substation is to be recovered from the Mine operator.

(b) If the actual consumption of electricity as per billed amount at Nandira Substation is less than 6.05% of the total Mining Charges and price variation on account of electricity as indicated in the Article 47 of Contract Agreement, payable to the Mine Operator for that period, then the difference amount will be recovered from the Bill of the Mine operator.

v). Construction of railway line siding and associated Infrastructure. MDO will have to construct additional rail connectivity from Subhadra–QCP to

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Kea Kolkata Regn. No. 447/19 Expiry Date 19.12.2... GOVT. OF WEST BENGAL

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General Manager
Subhadra Area, MCL

SUBHADRA COAL MINING LIMITED

DUPLICATE

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Balaram Angul Rail line (MCRL Phase-I) (Annex-III, Schedule-A of MCA). This additional rail connectivity from Subhadra OCP to Balaram-Angul Rail line (MCRL Phase-I) shall be available for use of other Projects of Authority free of cost during the contract period as and when required. Authority shall have liberty for Extension/ modification in the rail connectivity for other Projects.

vi). Construction & maintenance of Residential colony & Service Buildings both for MCL and its own.

vii). Construction and maintenance of workshop, store, office and other infrastructure for the HEMM deployed by the Mine Operator.

viii). Supply of explosive as per the requirement.

ix). Design, construction, operation and maintenance of haul road, dozing & grading wherever necessary & activities related to pumping.

x). Effective dust suppression measures, quarry & surface lighting, stock maintenance and other ancillary activities.

xi). Reclamation and compliance with the environmental standards as prescribed in the EMP.

xii). Engage manpower for maintenance and operation at its own terms and conditions, provided that this manpower will have no legal right to employment in MCL at the expiry of the term of agreement. Provision of salary & wages, provident fund, gratuity, health care, compensation to its manpower shall be as per High Power Committee (HPC) wages, Coal Mines Provident Fund and miscellaneous provisions Act 1948 and its amendments, Coal Mines Pension Scheme-1998 and its amendments (CMPS) and other statutory Rules & Regulations applicable for coal mining.

xiii). Safe conduct of mining operations including ensuring safety of the workforce deployed.

xiv). Deployment of adequately qualified, skilled and trained manpower and imparting periodic training as per statute.

xv). Financing of proposed work as per the contract.

xvi). The mine operator will have to construct project substations (I&II), CHP substation and other power supply/distribution system for the purpose of the contracted work. The mine operator will have to obtain all necessary approvals for installation, commissioning, operation and maintenance of substations and other electrical installations from the DGMS. The mine operator shall indicate in detail the power supply requirement with single line electrical diagram as per contract.

xvii). Construction, operation & maintenance of CHP with conveyor system upto the point of rail dispatch.

xviii). Construction, operation & maintenance of RLS with Surge-bin at the point of rail despatch.

xix). All mine developmental works including construction of road and culverts, bridges etc.

xx). Environment clearance including public hearing and all other activities including getting the various studies done as per ToR, preparation of EIA/EMP, Public consultation etc. except preparation of form-1 & Pre-

NOTARY CENTRAL GOVT. ANGUL

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General Manager Subhadra Area, MCL

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Feasibility Report & procurement of the terms of reference ("TOR").

xxi). Forest clearance (Stage-I and Stage-II) including tree enumeration, pallisabha for obtaining NoC from Collector under FRA-2006 and all other activities from grass root level to ministry including DGPS survey of CA land, except submission of online applications with the MoEF, Govt of India.

xxii). Preparation of Wildlife Conservation Plan.

xxiii). Socio-economic Survey of affected villages.

xxiv). Any other study required by MoEF, SPCB, CPCB and other statutory body in connection with EC & FC.

xxv). Obtaining CTE and CTO from SPCB.

xxvi). Ensuring safety due to fire and provisions of fire-fighting at all places of the mine including coal stock railway siding, CHP, RLS etc.

xxvii). Water supply arrangement for mining operation, coal evacuation and domestic use.

xxviii). Effective dust suppression arrangement using all modern and state of art technologies to comply with the statutory Air pollution norms at all points of production, transportation and dispatch.

xxix). Arrangement of digital surveillance system like CCTV camera, PTZ camera with centralized control room.

xxx). Arrangement of proper security system for ensuring no pilferage/theft of coal from any point.

xxxi). Proper lighting and illumination as per statute to be ensured at all operational sites.

NOTARY CENTRAL GOVT ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 47713 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

General Manager

DUPLICATE 0023

ARTICLE 3

APPOINTMENT OF MINE OPERATOR

3.1 Appointment of Mine Operator

3.1.1 Subject to and in accordance with the provisions of this Agreement, the Applicable Laws and the Applicable Permits, the Authority hereby appoints the Mine Operator, as the mine operator to develop and operate the Mines and to excavate Coal for Delivery thereof to the Authority for a period of *25 (twenty five) years commencing from the Appointed Date or life of the Mine or the date of Termination of the agreement or completion of total scheduled quantity of both OB & coal as per Cl. 20.2.1 & 21.2.1, whichever is shorter or the Transfer Date, whichever is earlier*, and theMine Operator hereby accepts such appointment and agrees to implement the Projectsubject to and in accordance with the terms and conditions set forth herein.

Provided that, not later than 1 (one) year before the expiry of the Contract Period, the Parties may, with mutual agreement, extend the Contract Period for such further period and on such terms and conditions as the Parties may mutually agree, but not exceeding 10 (ten) years. Provided that, unless otherwise agreed by the Parties, the terms of this Agreement shall continue to apply to any extended term subject to Clause 9.1.1.

Provided further that, the Contract Period shall be deemed to have expired in the event the Parties mutually agree that the Coal reserves in the Mines are exhausted or cannot be excavated on a commercially viable basis.

3.1.2 Subject to and in accordance with the provisions of this Agreement, the Mine Operator shall be obliged or entitled (as the case may be) to:

(a) access to the Site for the purpose of, and to the extent, conferred by the provisions of this Agreement;

(b) finance and develop the Mines;

(c) manage, operate and maintain the Mines in accordance with this Agreement;

(d) excavate Coal for Delivery thereof to the Authority under and in accordance with the provisions of this Agreement;

(e) receive the Mining Charge from the Authority in respect of excavation and Delivery of Coal subject to and in accordance with this Agreement;

(f) perform and fulfill all of the Mine Operator's obligations under and in accordance with this Agreement;

(g) save as otherwise expressly provided in this Agreement, bear and pay all costs, expenses and charges in connection with or incidental to the performance of the obligations of the Mine Operator under this Agreement; and

(h) neither assign, transfer or sub-let or create any lien or Encumbrance on this Agreement or on the whole or any part of the Mines, nor sell, transfer, exchange, lease, encumber or part possession thereof, save and except as

NOTARY CENTRAL GOVT ANGUL

NOTARY DR. NAZRUL ISLAM Regd. No. 16775 GOVT. OF WEST BENGAL

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expressly permitted by this Agreement. It is hereby clarified that any assignment, transfer or sub-let of, or creation of any lien or Encumbrance on, this Agreement or on the whole or any part of the Mines as may be expressly permitted under this Agreement, shall be subject to the prior written consent of the Authority.

3.2 Substitution of the Authority

The Parties expressly agree that the Authority may, in pursuance of any re-organisation or restructuring, substitute itself by another entity, and upon such substitution, all the functions, rights and obligations of the Authority under this Agreement shall be deemed to be transferred to the substituted entity in accordance with and subject to the Applicable Laws. Provided however that, prior to any substitution hereunder, the Parties shall, on a best endeavour basis, make such arrangements and enter into such further agreements as may be necessary for performance of their respective obligations hereunder. Provided further that the creditworthiness of the substituted entity shall be substantially similar or greater as compared to the Authority and in the event of any shortfall therein, a credit enhancement shall be arranged by the substituted entity to bridge the gap of such shortfall.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447119 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. no. 447119 Expiry Date 15.03.2024 GOVT. OF WEST BENGAL

General Manager Dulhadra Area, MCL

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DUPLICATE 0025

ARTICLE 4

CONDITIONS PRECEDENT

4.1 Conditions Precedent

4.1.1 Save and except as provided in Articles 4, 5, 6, 7, 8, 9, 10, 34, 44 and 46, or unless the context otherwise requires, the respective rights and obligations of the Parties under this Agreement shall be subject to the satisfaction in full of the conditions precedent specified in this Clause 4.1 (the "**Conditions Precedent**"), save and except to the extent of waiver, if any, that a Party may grant in accordance with the provisions of Clauses 4.1.2 or 4.1.3, as the case may be.

4.1.2 The Mine Operator may, upon providing the Performance Security to the Authority in accordance with Article 9, at any time after 30 (thirty) days from the date of provision of such Performance Security, by notice require the Authority to satisfy any or all of the following Conditions Precedent set forth in this Clause 4.1.2 within a period not exceeding 180 (one hundred and eighty) days from the date of the said notice:

(a) procure the issuance of notifications for land acquisition under section 11 of Coal Bearing Areas (Acquisition & Development) Act, 1957 or section 11 of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013, as the case may be, in relation to the Site;

(b) preparation of Form-I & Pre-feasibility report and procure the terms of reference ("**TOR**") for the environmental clearance from the Ministry of Environment, Forests and Climate Change, Government of India following the procedure specified under the Environment Impact Assessment Notification, 2006;

(c) submit online applications with the Ministry of Environment, Forests and Climate Change, Government of India for issuance of environmental clearance and/or the forest clearance (as may be applicable);

(d) procure approval of the Mining Plan in accordance with Applicable Laws; and

(e) deleted;

Provided that if the Authority, despite its best efforts, is unable to fulfill the Conditions Precedent within the stipulated time period, as provided in this Clause 4.1.2, a further extension of a time period of 120 (one hundred and twenty) days shall be available to the Authority to satisfy the Conditions Precedent set out above.

Provided further that, in the event the procurement of certain Conditions Precedent specified hereinabove are delayed for reasons beyond the control of the Authority, the Authority shall be entitled to such extension of time as may be reasonably required for compliance of the procedures specified under the Applicable Laws.

The details of present status of the Conditions Precedent set forth for the Authority at

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Talcher Area, MCL

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the time of invitation of the Bid is set out in Annex-III, Schedule-B.

4.1.3 The Mine Operator shall satisfy the following Conditions Precedent within 240 (two hundred and forty) days from the date of this Agreement:

(a) provide Performance Security to the Authority in accordance with Article 9;

(b) execute and procure execution of the Substitution Agreement, if applicable;

(c) procure all the Applicable Permits, including as specified in Part-I of Schedule-E, unconditionally such that all such Applicable Permits are in full force and effect, or if the effectiveness of such Applicable Permits is subject to fulfillment of any conditions, then the Mine Operator shall procure that all such conditions required to be fulfilled by the date specified therein have been fulfilled in full such that all such Applicable Permits are in full force and effect;

(d) execute the Financing Agreements and deliver to the Authority, 3 (three) true copies thereof, duly attested by a director of the Mine Operator, if applicable;

(e) deliver to the Authority, 3 (three) true copies of the Financial Package and the Financial Model, duly attested by a director of the Mine Operator, along with 3 (three) soft copies of the Financial Model in Microsoft Excel version or any substitute thereof, which is acceptable to the Senior Lenders, if applicable;

(f) deliver to the Authority, a confirmation (from the selected Bidder/ each Consortium Member) on the correctness of the representations and warranties set forth in sub-clauses (k), (l) and (m) of Clause 7.1;

(g) deliver to the Authority, a legal opinion from its legal counsel with respect to the authority of the Mine Operator to enter into this Agreement and the enforceability of the provisions thereof;

(h) procure issuance the environmental clearance from the Ministry of Environment, Forests and Climate Change, Government of India;

(i) procure issuance of the forest clearance from the Ministry of Environment, Forests and Climate Change, Government of India; and

(j) procure all the Applicable Permits relating to environmental protection and conservation of the Site.

(k) procure approval of the plan for Rehabilitation and Resettlement in accordance with Applicable Laws considering Govt. land for the purpose.

Provided that if the Mine Operator, despite its best efforts, is unable to fulfill the Conditions Precedent within the stipulated time period, as provided in this Clause 4.1.3, a further extension of a time period of 120 (one hundred and twenty) days shallbe available to the Mine Operator to satisfy the Conditions Precedent as set out above.

Provided further that, in the event the procurement of certain Conditions Precedent specified hereinabove are delayed for reasons beyond the control of the Mine Operator, the Mine Operator shall be entitled to such extension of time as may be reasonably required for compliance of the procedures specified under the Applicable

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 44/19 WEST BENGAL

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SK. NAZRUL ISLAM NOTARY Regn. No. 44/19 WEST BENGAL

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4.1.4 Each Party shall make all reasonable endeavours to satisfy the Conditions Precedent within the time stipulated and shall provide the other Party with such reasonable co-operation as may be required to assist that Party in satisfying the Conditions Precedent for which that Party is responsible.

4.1.5 The Parties shall notify each other in writing at least once in a month on the progress made in satisfying the respective Conditions Precedent. Each Party shall promptly inform the other Party when any Condition Precedent for which it is responsible has been satisfied.

4.1.6 Immediately upon the fulfillment or waiver of all the Conditions Precedent required to be fulfilled by a Party under Clauses 4.1.2 or 4.1.3 (as applicable to such Party), such Party shall deliver to the other Party, a notice in writing confirming that the Conditions Precedent set out in Clauses 4.1.2 or Clause 4.1.3, as the case may be, have been satisfied and/or waived (in accordance with the terms hereof), together with all necessary supporting documentation to support the statements in such notice (each a "CP Satisfaction Notice"). After Financial Close is achieved and upon receipt of the CP Satisfaction Notice from the Mine Operator, the Authority will certify and declare the satisfaction (or waiver) of all Conditions Precedent under this Clause 4.1 and the date of such certification and declaration shall be the "**Appointed Date**".

4.2 Damages for delay by the Authority

In the event that (a) the Authority does not procure fulfillment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.2 within the period specified in respect thereof (including any extension of time granted), and (b) the delay has not occurred as a result of breach of any provisions of this Agreement by the Mine Operator or due to Force Majeure, the Authority shall pay to the Mine Operator, Damages in an amount calculated at the rate of 0.1% (zero point one per cent) of the Performance Security for each week, or part of a week, of delay until the fulfillment of such Conditions Precedent, Provided, however, that the Damages payable hereunder shall be subject to a maximum amount of 20% (twenty per cent) of the Performance Security.

4.3 Damages for delay by the Mine Operator

In the event that (a) the Mine Operator does not procure fulfillment or waiver of any or all of the Conditions Precedent set forth in Clause 4.1.3 within the period specified in respect thereof (including any extension of time granted); and (ii) the delay has not occurred as a result of failure to fulfill the obligations under Clause 4.1.2 or other breach of this Agreement by the Authority or due to Force Majeure, the Mine Operator shall pay to the Authority, Damages in an amount calculated at the rate of 0.5% (zero point five per cent) of the Performance Security for each week, or part of a week, of delay until the fulfillment of such Conditions Precedent. Provided, however, that the Damages payable hereunder shall be subject to a maximum amount of 30% (thirty per cent) of the Performance Security and upon reaching such maximum amount of Damages payable by the Mine Operator hereunder, the Authority may terminate the Agreement.

4.4 Commencement of Contract Period

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The Contract Period shall commence from the Appointed Date.

4.5 Deemed Termination upon delay

Without prejudice to the provisions of Clauses 4.2 and 4.3 and Article 9 of this Agreement, and unless otherwise agreed between the Parties, in the event the Appointed Date does not occur, for any reason whatsoever, before the 2nd (second) anniversary of the date of this Agreement, or the extended period for fulfillment of the Conditions Precedent provided in accordance with this Agreement, all rights,

privileges, claims and entitlements of the Mine Operator under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Mine Operator, and this Agreement shall be deemed to have been terminated by mutual agreement of the Parties. Provided that, in the event such delay in occurrence of the Appointed Date is for reasons attributable to the Mine Operator, the Authority shall, without prejudice to Clause 4.3, be entitled to appropriate the Performance Security as Damages thereof.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM ANGUL GOVT. OF WEST BENGAL

General Manager
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NOTARY SK. NAZRUL ISLAM Govt. of West Bengal

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ARTICLE 5

OBLIGATIONS OF THE MINE OPERATOR

5.1 Obligations of the Mine Operator

5.1.1 Subject to, and on the terms and conditions of this Agreement, the Mine Operator shall, at its own cost and expense, procure, finance for, and undertake the design, engineering, procurement, construction and operation of the Mines for excavation and Delivery of Coal, and shall observe, fulfill, comply with and perform all its obligations set out in this Agreement or arising hereunder.

5.1.2 The Mine Operator shall comply with all Applicable Laws and Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

5.1.3 Subject to the provisions of Clauses 5.1.1 and 5.1.2, the Mine Operator shall discharge its obligations in accordance with Standard Industry Practice and as a reasonable and prudent person.

5.1.4 The Mine Operator shall ensure compliance in all respects with all Applicable Laws in relation to its employees, independent contractors, sub-contractors, or other persons providing services to or on behalf of the Mine Operator, including all laws relating to wages, hours of work, employment standards, collective bargaining, discrimination, civil rights, safety and health, compensation.

5.1.5 The Mine Operator shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:

(a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars and details as may be required for obtaining the Applicable Permits, and obtain and keep in force and effect such Applicable Permits in conformity with Applicable Laws;

(b) procure, as required, the appropriate proprietary rights, licenses, agreements and permissions for materials, methods, processes, know-how and systems used or incorporated into the development and operation of the Mines and excavation of Coal;

(c) procure and maintain all Applicable Permits, including but not limited to, the procurement of explosives, drilling and blasting and creation of an explosives storage facility considering all conditions specified in the explosives license for such facility. It is hereby clarified that the costs of explosives shall be borne by the Mine Operator though the explosives license shall be procured and issued in the name of the Authority and a copy of such license shall be provided to the Mine Operator;

(d) perform and fulfill its obligations under the Financing Agreements;

(e) procure issuance of the environmental clearance from the Ministry of Environment, Forests and Climate Change, Government of India. The Authority authorises the Mine Operator to procure the issuance of such

NOTARY CENTRAL GOVT. ANGUL

General Manager Bhubaneswar Area, MCL

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clearance and make payment of statutory costs and fees towards such procurement on behalf of the Authority by acting as the Pure Agent. The Authority shall reimburse the Mine Operator for the payments so made in accordance with Clause 29.1.6 of this Agreement;

(f) procure issuance of the forest clearance from the Ministry of Environment, Forests and Climate Change, Government of India. The Authority authorizes the Mine Operator to procure the issuance of such clearance and make payment of statutory costs and fees towards such procurement on behalf of the Authority by acting as the Pure Agent. The Authority shall reimburse the Mine Operator for the payments so made in accordance with Clause 29.1.6 of this Agreement;

(g) make reasonable efforts to maintain harmony and industrial relations among the personnel employed by it or its Contractors in connection with the performance of its obligations under this Agreement;

(h) comply with, ensure and procure that its Contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Mine Operator's obligations under this Agreement, including but not limited to compliance with Applicable Laws in relation to its employees, independent contractors, sub-contractors, or other persons providing services to or on behalf of the Mine Operator;

(i) always act in a manner consistent with the provisions of this Agreement and not cause or fail to do any act, deed or thing, whether intentionally orotherwise, which may in any manner violate any of the provisions of this Agreement;

(j) procure that all equipment and facilities at the Mines are operated and maintained in accordance with the Specifications and Standards, Maintenance Requirements, Safety Requirements and Standard Industry Practice;

(k) support, cooperate with and facilitate the Authority in the implementation and operation of the Project in accordance with the provisions of this Agreement;

(l) take all reasonable precautions for the prevention of accidents at the Mines and provide all reasonable assistance and emergency medical aid to the accident victims; and

(m) transfer the Project Assets to the Authority upon Termination of this Agreement, in accordance with the provisions thereof; and

(n) take all necessary steps in relation to the Project Specific Assets and any other tangible assets, as required, pursuant to and in accordance with Clause 37.3 and Clause 37.5.2 of this Agreement upon Termination of this Agreement on its expiration.

5.2 Obligations relating to Project Agreements

5.2.1 It is expressly agreed that the Mine Operator shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the Project Agreements or any other agreement, and no default under any Project Agreement or any other agreement shall excuse the Mine Operator from its obligations or liability hereunder.

NOTARY CENTRAL GOVT. ANGUL

SK. NAZRUL ISLAM Advocate Regn. No. 447/19 Expiry Date 15.03.2023 GOVT. OF WEST BENGAL

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5.2.2 The Mine Operator shall maintain all Project Agreements, or any amendments or replacements thereto. The Authority reserves the right to call for any such documents as and when required. Within 7 (seven) days from the date of making of such request by the Authority, the Mine Operator shall submit with the Authority a true copy of the requested documents, duly attested by a director of the Mine Operator. The documents so submitted in the aforesaid manner shall be kept with the Authority as confidential records.

5.2.3 The Mine Operator shall not make any addition, replacement or amendments to any of the Financing Agreements without the prior written consent of the Authority if such addition, replacement or amendment has, or may have, the effect of imposing or increasing any financial liability or obligation on the Authority. In the event that any such replacement or amendment is made to any of the Financing Agreements without such prior written consent of the Authority, the Mine Operator shall not enforce such replacement or amendment nor permit enforcement thereof against the Authority. For the avoidance of doubt, the Authority acknowledges and agrees that it shall not unreasonably withhold its consent for restructuring or rescheduling the debt of the Mine Operator.

5.2.4 Notwithstanding anything to the contrary contained in this Agreement, the Mine Operator shall not sub-lease, sub-license, assign or in any manner create an Encumbrance on the Site or on the Coal Depot, as the case may be, without prior written approval of the Authority, which approval the Authority may deny if such sub-license, assignment or Encumbrance has or may have a Material Adverse Effect on the rights and obligations of the Authority under this Agreement or the Applicable Laws.

5.2.5 The Mine Operator shall procure that each of the Project Agreements contain provisions that entitle the Authority to step into such agreement, in its sole discretion, in substitution of the Mine Operator in the event of the Termination or Suspension (the "**Covenant**"). For the avoidance of doubt, it is expressly agreed that in the event the Authority does not exercise such rights of substitution within a period of 90 (ninety) days from the Transfer Date, the Project Agreements shall be deemed to cease to be in force and effect on the Transfer Date without any liability whatsoever on the Authority and the Covenant shall expressly provide for such eventuality. The Mine Operator expressly agrees to include the Covenant in all its Project Agreements and undertakes that it shall, in respect of each of the Project Agreements, procure and deliver to the Authority an acknowledgment and undertaking, in a form acceptable to the Authority, from the counter party(s) of each of the Project Agreements, where under such counter party(s) shall acknowledge and accept the Covenant and undertake to be bound by the same and not to seek any relief or remedy whatsoever from the Authority in the event of Termination or Suspension.

5.2.6 Notwithstanding anything to the contrary contained in this Agreement, the Mine Operator agrees and acknowledges that selection or replacement of an O&M Contractor and execution of the O&M Contract shall be subject to the prior approval of the Authority and the decision of the Authority in this behalf shall be final, conclusive and binding on the Mine Operator. In this regard, the Mine Operator undertakes that it shall not give effect to any such selection or replacement of an O&M Contractor, or execution the O&M Contract, without such prior approval of the Authority. It is also agreed that the Authority shall not be liable in any manner whatsoever on account of grant or otherwise denial of such approval and that such approval or denial thereof shall not in any manner absolve the Mine Operator or its O&M Contractors from any liability or obligation under this Agreement.

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General Manager Subhadra Area, MCL

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5.3 Obligations relating to Change in Ownership

5.3.1 The Mine Operator shall not undertake or permit any Change in Ownership, except with the prior written approval of the Authority.

5.3.2 Notwithstanding anything to the contrary contained in this Agreement, the Mine Operator agrees and acknowledges that:

(a) all acquisitions of Equity by an acquirer, either by itself or with any person acting in concert, directly or indirectly, including by transfer of the direct or indirect legal or beneficial ownership or control of any Equity, in aggregate of 25% (twenty-five per cent) or more of the total Equity of the Mine Operator; or

(b) acquisition of any control directly or indirectly of the board of directors of the Mine Operator by any person either by itself or together with any person or persons acting in concert with him,

shall constitute a Change in Ownership requiring prior approval of the Authority, the decision of the Authority in this behalf being final, conclusive and binding on the Mine Operator, and undertakes that it shall not give effect to any such acquisition of Equity or control of the board of directors of the Mine Operator without such prior approval of the Authority. It is also agreed that the Authority shall not be liable in any manner on account of grant or denial of such approval and that such approval or denial thereof shall not in any manner absolve the Mine Operator from any liability or obligation under this Agreement. For the purposes of this Clause 5.3.2:

(i) the expression "acquirer", "control" and "person acting in concert" shall have the meaning ascribed thereto in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeover) Regulations, 2011 or any statutory re-enactment thereof as in force as on the date of acquisition of Equity, or the control of the board of directors, as the case may be, of the Mine Operator;

(ii) the indirect transfer or control of legal or beneficial ownership of Equity shall mean transfer of the direct or indirect beneficial ownership or control of any company or companies whether in India or abroad which results in the acquirer acquiring control over the shares or voting rights of the Mine Operator; and

(iii) power to appoint, whether by contract or by virtue of control or acquisition of shares of any company, holding directly or through one or more companies (whether situate in India or abroad), the Equity of the Mine Operator, not less than half of the directors on the board of directors of the Mine Operator or of any company, directly or indirectly, whether situate in India or abroad, having ultimate control of 25% (twenty five per cent) or more of the Equity of the Mine Operator shall constitute acquisition of control, directly or indirectly, of the board of directors of the Mine Operator.

5.3.3 Notwithstanding anything to the contrary contained herein, it is hereby expressly agreed by the Mine Operator that no change shall be effected in its shareholding pattern or beneficial ownership or otherwise so as to make it ineligible in terms of the General Financial Rules, 2017 read with the OM no. F.No.6/18/2019-PPD dated 23 July 2020 issued by the Public Procurement Division, Department of Expenditure, Ministry of Finance, Government of India (as amended or supplemented) and the

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Foreign Exchange Management Act, 1999 read with all rules, regulations, circulars, guidelines and notifications issued thereunder (as amended from time to time) to undertake and perform its obligations hereunder.

5.4 Obligations relating to employment of foreign nationals

The Mine Operator acknowledges, agrees and undertakes that employment of foreign personnel by the Mine Operator and/or its Contractors and their sub-contractors shall be subject to grant of requisite Applicable Permits under Applicable Laws, including employment/ residential visas and work permits, if any required, and the obligation to apply for and obtain the same shall and will always be of the Mine Operator and, notwithstanding anything to the contrary contained in this Agreement, refusal of, or inability to obtain any such Applicable Permits by the Mine Operator or any of its Contractors or sub-contractors shall not constitute a Force Majeure Event, and shall not in any manner excuse the Mine Operator from the performance and discharge of its obligations and liabilities under this Agreement.

5.5 Obligations relating to employment of trained personnel

The Mine Operator shall ensure that the personnel engaged by it for the performance of its obligations under this Agreement are at all times properly trained for their respective functions in accordance with the requirements of Applicable Laws and Standard Industry Practice.

5.6 Obligations relating to Taxes

5.6.1. It shall be the obligation of the Mine Operator to comply with all necessary Tax related statutory compliances, including but not limited to the payment of GST at the rates prescribed under the Applicable Laws, in relation to this Agreement.

5.6.2. The Authority shall, upon receiving the GST invoice or debit note (as applicable under the GST Laws) and other supporting documents in relation to the Mining Charge, which is the sole consideration under this Agreement for the Mine Operator, pay the Mining Charge to the Mine Operator along with the amount of GST indicated in GST invoice. The Mine Operator shall issue a GST credit note within the time limit as prescribed under the GST Laws. The Authority shall, upon receiving the credit note adjust the basic amount and taxes thereon while making payment towards the next following GST invoice raised/issued by the Mine Operator.

5.6.3. In case of any loss of input tax credit or any other benefit or incidence of interest or penalty suffered by the Authority in relation to GST due to any non-compliance by the Mine Operator of the Applicable Laws (including but not limited to the Mine Operator's failure to upload details of sale on the GSTN portal, failure to issue GST compliant document(s) within the prescribed time frame or furnishing incorrect or incomplete documents with the relevant Government Instrumentality), the Authority shall have the right to: (a) be compensated by the Mine Operator for such amount of loss or penalty suffered by the Authority, or (b) set-off such loss or penalty against any next amounts payable by the Authority to the Mine Operator under the Agreement. For the avoidance of doubt, it is hereby clarified that any loss of input tax credit or anyother benefit or incidence of interest or penalty shall be recovered/adjusted from next Monthly Invoice or against the Performance Security, as the case may be, at the discretion of the Authority and in case award/loss amount is greater than value of Monthly Invoice or the Performance Security, as the case may be, the Mine Operator shall pay such differential amount to the Authority within 30 (thirty) days from the

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date of demand raised by the Authority. In addition, any delay in uploading the details of sale on the GSTN portal by the Mine Operator resulting in deferment of input tax credit in accordance with the GST Laws, shall entitle the Authority to charge interest at the rate equivalent to the prevailing interest rate charged by the relevant Government Instrumentality for input tax credit reversal under GST Laws.

5.6.4. It is hereby clarified that the Mining Charge shall be exclusive of all royalties, statutory levies, cesses, duties and contribution to District Mineral Fund (DMF) and National Mineral Exploration Trust (NMET) and all other statutory charges applicable from time to time.

5.6.5. Where any damages or compensation becomes payable by either the Authority or the Mine Operator pursuant to any provision of this Agreement, appropriate GST wherever applicable as per the GST Laws in force shall also be payable by the concerned Party in addition to such damages or compensation, upon issuance of GST invoice under GST Laws by the concerned Party which is entitled to receive such payments.

5.6.6. The obligation of the Authority shall be limited to the compliance of obligation of tax deduction at source in relation to income tax and GST on the Mining Charge or any other charges paid to the Mine Operator, as applicable, in accordance with the Applicable Laws.

5.7 Obligations relating to an Owner

Subject to the provisions of this Agreement, the Authority shall be the Owner of the Mines for the purposes of the Mines Act, 1952. For the avoidance of doubt and without prejudice to Mine Operator's obligation to comply with Applicable Laws, the Parties expressly acknowledge and agree that for discharging its obligations under the Mines Act, 1952, the Authority may from time to time give directions to the Mine Operator for compliance with the provisions of the Mines Act, 1952 and the Mine Operator agrees and undertakes to abide by such directions at all times.

5.8 Obligations relating to the Manager and employees

5.8.1 The Authority shall appoint the Agent and the Manager having the prescribed qualifications pursuant to the requirements of the Mines Act, 1952 and rules and regulations thereunder. The Manager shall be responsible for the overall management control, supervision and direction of the Mines in conformity with the provisions of the Mines Act, 1952. The Authority shall either by itself or through its officials also be responsible to:

(a) procure appointment of safety officers, assistant managers, engineers, surveyors, welfare officers, other officials and competent persons; and

(b) make provisions for the safety and proper discipline of the persons employed in the Mines.

The list of manpower, including statutory-manpower, to be provided by the Authority is set out at Schedule-N.

5.8.2 Notwithstanding the appointment of the Manager, the Agent and other officials by the Authority, the Mine Operator shall also be treated as an Agent and shall act on behalf of the Owner as per Section 2(c) of the Mines Act, 1952 and shall continue to be

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responsible and liable for compliance with Applicable Laws and this Agreement and in any event, the liability and responsibilities of the Mine Operator shall be no less than that of the Agent and the Manager.

5.8.3 The Mine Operator shall ensure that the Mines are operated in a manner consistent with Applicable Laws and the provisions of this Agreement. The Mine Operator shall provide all necessary resources in terms of men and material to the Manager to undertake all required actions in conformity with Applicable Laws.

5.8.4 The Mine Operator shall employ suitably qualified and skilled persons for the development and operation of the Project and shall be responsible for payment of wages to them in accordance with Applicable Laws and in consonance with the High Power Committee Recommendations (annexed to the RFB).

5.9 Obligations relating to reporting requirements

All information provided by the Mine Operator to any Government Instrumentality as a part of its operating and reporting obligations under Applicable Laws shall also be provided by the Mine Operator to the Authority simultaneously.

5.10 Sole purpose of the Mine Operator

The Mine Operator having been set up for the sole purpose of exercising the rights and observing and performing its obligations and liabilities under this Agreement, the Mine Operator or any of its subsidiaries shall not, except with the previous written consent of the Authority, be or become directly or indirectly engaged, concerned or interested in any business other than as envisaged herein.

5.11 Obligations relating to Rehabilitation and Resettlement

The Mine Operator shall undertake Rehabilitation and Resettlement operations including socio-economic survey in accordance with the approved R&R Policy and provisions of this Agreement. Upon production of appropriate documentary evidence, the direct and documented R&R Costs incurred by the Mine Operator in undertaking such Rehabilitation and Resettlement operations shall be reimbursed by the Authority in accordance with Clause 29.1.6 of this Agreement and Applicable Laws.

5.12 Obligations relating to Mining Plan

The Mine Operator shall at all times conform with the provisions of the Mining Plan as specified in Schedule-D, or any modification thereof, as may be approved in accordance with Applicable Laws.

5.13 Obligations relating to land acquisition

The Mine Operator shall, in accordance with the provisions of this Agreement and Annex-VI of Schedule B, undertake the activity of obtaining physical possession of the Site. Any failure or default of the Mine Operator to comply with its aforesaid obligation shall be deemed to be a Mine Operator Default for the purposes of Clause 37.1.1 and in addition to any other rights and remedies available to the Authority under this Agreement, the Authority shall be entitled to terminate this Agreement in accordance with Article 37.

Such payment by the Mine operator as pure agent for the purpose of compensation to the

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PAPs shall comply the following:

1. Since the land has been acquired under Coal Bearing Area (Acquisition & development) Act 1957, the provisions of this Act shall also be complied by the Mine Operator.

2. The compensation roll prepared by the mine operator as per the prevalent guidelines/ statutory provisions shall be submitted to the Authority for scrutiny and approval. It is clarified that no compensation shall be paid to PAPs without prior approval of the Authority.

3. Compensation for tenancy land acquired is to be assessed & disbursed after approval by the Authority as per provisions of RFCTLARR Act 2013 & guidelines issued by Govt. of India & Govt. of Odisha in this respect from time to time by the Mine operator.

For acquisition of land (other than a Government land and/or forest land), the cost of such land shall be paid by the Mine Operator as a Pure Agent as per Applicable Laws. All direct and documented cost of such acquisition made by the Mine Operator shall be reimbursed by the Authority to the Mine Operator in accordance with the Clause 29.1.6 of this Agreement. In case of acquisition of land which is a Government land and/or forest land, the Authority shall directly pay to the concerned Government Instrumentality, the cost or net present value of such land, as the case may be.

5.14 Obligations relating to progressive restoration

The Mine Operator shall, in conformity with the approved Mine Closure Plan, Applicable Laws and Standard Industry Practice, undertake progressive restoration of the Site wherever any part of the Site can be restored and closed upon completion of excavation in such part.

The Authority shall open a fixed deposit escrow account along with Coal Controller Office as per the guidelines of Mine Closure Plan. Pursuant to the opening of such escrow account, the Authority shall deposit the requisite yearly amount in the escrow account. The Authority shall recover from Mine Operator, the yearly amount so deposited from the Monthly Invoices raised by the Mine Operator in 12 (twelve) equal installments within 1 (one) year and such recovery shall be occur from the month following the deposit of the amount in the escrow account.

The Mine Operator shall maintain proper records of all costs and expenses incurred by it in relation to the progressive restoration of the Site and upon request from the Authority, the Mine Operator shall furnish to the Authority all details and supporting documents, as may be necessary or required by the Authority to seek reimbursement of such costs and expenses from the concerned Government Instrumentalities. Such reimbursement amount released from escrow account shall be paid to the Mine Operator as and when realized.

5.15 Obligations after closure of Mining

In the event that the Mine Operator is required to undertake a final mine closure of the Mines during the Contract Period, the Mine Operator shall, at its sole cost and expense, undertake all activities for final mine closure of the Mines and restoration of the Site in accordance with the requirements of this Agreement, the approved final Mine Closure Plan, the Mining Plan, Applicable Laws and Standard Industry Practice. The Mine Operator shall maintain proper records of all costs and expenses incurred by it

in relation to the final mine closure and restoration of the Site and upon request from the Authority, the Mine Operator shall furnish to the Authority all details and supporting documents, as may be necessary or required by the Authority to seek reimbursement of such costs and expenses from the concerned Government Instrumentalities. Such reimbursement amount released from the balance amount of escrow account will be paid to the Mine Operator, as and when realized.

Within the Contract Period any costs and expenses related to mine closure (progressive and final) including third party cost shall be borne by the Mine Operator.

In addition, at the time of final mine closure of the Mines, within the Contract Period, the Mine Operator shall remove and dispose all the constructions at its own cost and expenses in terms of the final Mine Closure Plan. If such final mine closure of the Mines is not completed by the Mine Operator as per the approved Mine Closure Plan within the stipulated time period, the Authority shall have right to recover from the Mine Operator, such amount as may be necessary to complete the such mine closure including, but not limited to, through invocation and appropriation of the Performance Security.

For avoidance of doubt, it is clarified that the Authority shall be responsible for undertaking the final mine closure at its cost and expense in the event that such final mine closure occurs at any time after the expiry or termination of this Agreement.

In the event that final mine closure occurs at any time after the expiry of this Agreement, an amount equal to the balance amount of the escrow account opened in accordance with Clause 5.14 of this Agreement, after settlement of all periodic claims in accordance with Applicable Laws, shall be paid to the Mine Operator by the Authority, provided that the Mine Operator has undertaken and completed the progressive restoration of the Mines as per Mine Closure Plan to the full satisfaction of the Authority.

5.16 Obligation towards corporate social responsibility (CSR)

5.16.1 If the Mine Operator is liable to undertake CSR activities and incur expenditure on account of such CSR activities in accordance with the Applicable Laws, then the Mine Operator shall prepare a CSR policy and plan in accordance with which the Mine Operator shall discharge its obligations towards CSR. Such CSR policy and plan shall be duly approved by the Authority. In addition, the Mine Operator shall comply with the requirements in relation to the CSR as stipulated under the Applicable Laws, including Section 135 of the Companies Act, 2013 read with the rules made thereunder.

5.16.2 Subject to the Applicable Laws, it is hereby clarified that the total expenditure on account of CSR activities shall not be less than the amount derived as below in an Accounting Year:

In case the Mine Operator is a subsidiary company = To (mo) x (Tf(csrh) / To(hc))

Where –
To (mo) - Total income of the Mine Operator from the Authority
Tf (csrh) - Total CSR fund of holding company of the Mine Operator
To (hc) - Total income of holding company of the Mine Operator

In case the Mine Operator is an independent entity, then the minimum amount of total expenditure shall be determined in terms of the Applicable Laws

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ARTICLE 6

OBLIGATIONS OF THE AUTHORITY

6.1 Obligations of the Authority

6.1.1 Except as otherwise provided in this Agreement, the Authority shall, at its own cost and expense undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder.

6.1.2 The Authority agrees to provide support to the Mine Operator and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and Applicable Laws, the following:

(a) procure access to the Site;

(b) provide connectivity to the road network inaccordance with the provisions of this Agreement;

(c) depute its representatives for participation in public hearings and attending the meetings with the officials and representatives of the Ministry of Environment, Forests and Climate Change, Government of India for the purposes of procuring environmental clearance and forest clearance in accordance with Applicable Laws;

(d) procure issuance of notification for land acquisition for the Project under section 11 of Coal Bearing Areas (Acquisition & Development) Act, 1957 or section 11 of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013, as applicable, in accordance with the provisions of this Agreement;

(e) reimburse to the Mine Operator all direct and documented R&R Costs incurred by the Mine Operator in accordance with the R&R Policy;

(f) except for acquisition of a Government land and/or forest land, the Authority authorizes the Mine Operator to make payment towards such costs and expenses to third party on behalf of the Authority by acting as Pure Agent. The Authority shall reimburse to the Mine Operator all direct and documented cost of such payment made by the Mine Operator in accordance with Clause 29.1.6 of this Agreement and Applicable Laws;

(g) In case of acquisition of land which is a Government land and/or forest land, the Authority shall directly pay to the concerned Government Instrumentality, the cost or net present value of such land, as the case may be.

(h) upon receipt of details and all necessary supporting Documentation, reimburse to the Mine Operator the statutory cost and fees paid by the Mine Operator for issuance of environmental clearance and forest clearance in accordance with Clause 29.1.6 of this Agreement; It is hereby clarified that the costs and expenses incurred to carry out any study or assessment for fulfilling the requirements of any statutory authority shall not be included in the statutory cost and fees.

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(i) upon written request from the Mine Operator, provide reasonable assistance to the Mine Operator in obtaining access to necessary infrastructure facilities and utilities, including water and electricity at rates and on terms no less favourable to the Mine Operator than those generally available to commercial customers receiving substantially equivalent services;

Electricity will be sourced from the Nandira 132 KV Substation by the Authority i.e.. MCL. Electricity consumed by the Mine Operator is a part of Mining Charge quoted by the Mine Operator. For recovery of electricity bill, amount consumed by the Mine Operator will be made as below:

Actual bill amount at the Nandira 132 KV Substation is to be recovered from the Mine operator.

If the actual consumption of electricity as per billed amount at Nandira Substation is less than 6.05% of the total Mining Charges and price variation on account of electricity as indicated in the Article 47 of Contract Agreement, payable to the Mine Operator for that period, then the difference amount will be recovered from the Bill of the Mine operator.

(j) upon written request from the Mine Operator, and subject to the Mine Operator complying with Applicable Laws, provide all reasonable support and assistance to the Mine Operator in procuring Applicable Permits required by the Mine Operator for performance of its obligations under this Agreement;

(k) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement; and

(l) support, cooperate with and facilitate the Mine Operator in the implementation and operation of the Project in accordance with and subject to the provisions of this Agreement.

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15.03.2020
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ARTICLE 7

REPRESENTATION AND WARRANTIES

7.1 Representations and warranties of the Mine Operator

The Mine Operator represents and warrants to the Authority that:

(a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;

(b) it has taken all necessary corporate and other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;

(c) the ultimate beneficial owner(s) of the Mine Operator do not belong to any country which shares land border with India. For the purposes of this sub-clause determination of 'beneficial owners' shall be made in accordance with the Foreign Exchange Management Act, 1999 read with all rules, regulations, circulars, guidelines and notifications issued thereunder (as amended from time to time);

(d) it has the financial standing and capacity to comply with its obligations under this Agreement and to undertake the Project in accordance with the terms of this Agreement;

(e) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof;

(f) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder, including any obligation, liability or responsibility hereunder;

(g) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement;

(h) the execution, delivery and performance of this Agreement will not conflict with, or, result in the breach of, or, constitute a default under, or accelerate performance required by any of the terms of its Memorandum and Articles of Association (or those of any of the Consortium Members) or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;

(i) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;

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(j) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or Government Instrumentality which results in or may result in a Material Adverse Effect and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

(k) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a Material Adverse Effect;

(l) it shall at no time undertake or permit any Change in Ownership except in accordance with the provisions of Clause 5.3; and that the {selected Bidder/ Consortium Members} shall hold not less than 75% (seventy five per cent) of its issued and paid up Equity; and that each Consortium Member whose technical and financial capacity was evaluated for the purposes of selection in response to the Request for Bid shall, until the 2nd (second) anniversary of COD, hold not less than 26% (twenty-six per cent) of its issued and paid up Equity which shall also be not less than 5% (five per cent) of the Assessed Project Cost; and in no case the Equity shall be less than 15% (fifteen per cent) of the Assessed Project Cost.

(m) {the selected Bidder/ Consortium Members} have the financial standing and resources to fund the required Equity and to raise the debt necessary for undertaking and implementing the Project in accordance with this Agreement;

(n) {the selected Bidder/ each Consortium Member} is duly organized and validly existing under the laws of the jurisdiction of its incorporation, and has requested the Authority to enter into this Agreement with the Mine Operator pursuant to the LOA, and has agreed to and unconditionally accept the terms and conditions set forth in this Agreement;

(o) all its rights and interests in the Mines and Coal Depot shall pass to and vest in the Authority, on the Transfer Date, free and clear of all liens, claims and Encumbrances, without any further act or deed on its part or that of the Authority, and that none of the Project Assets shall be acquired by it, subject to any agreement under which a security interest or other lien or Encumbrance is retained by any person, save and except as expressly provided in this Agreement;

(p) it shall take all necessary steps in relation to the Project Specific Assets and any other tangible assets, as required, pursuant to and in accordance with Clause 37.5.2 of this Agreement upon Termination of this Agreement on its expiration;

(q) no representation or warranty by it contained herein or in any other document furnished by it to the Authority or to any Government Instrumentality in relation to the Applicable Permits contains or will contain any untrue or misleading statement of a material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;

(r) it is in compliance in all respects with all Applicable Laws in relation to its employees, independent contractors, sub-contractors and other persons providing services to or on behalf of the Mine Operator, including all

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Applicable Laws relating to wages, hours, employment standards, collective bargaining, discrimination, civil rights, safety and health and compensation;

(s) it has duly paid all statutory contributions when due and payable and no sum is due and outstanding by the Mine Operator towards the same;

(t) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the Agreement or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Authority in connection therewith;

(u) all information provided by the {selected Bidder/ Consortium Members} in response to the Request for Bid or otherwise, is to the best of its knowledge and belief, true and accurate in all material respects; and

(v) all undertakings and obligations of the {selected Bidder/ Consortium Members} and the Mine Operator arising from the Request for Bid or otherwise shall be binding on the Mine Operator as if they form part of this Agreement, except as modified pursuant to the terms of this Agreement.

7.2 Representations and warranties of the Authority

The Authority represents and warrants to the Mine Operator that:

(a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement and exercise its rights and perform its obligations under this Agreement;

(b) it has taken all necessary actions under Applicable Laws to authorise the execution, delivery and performance of this Agreement;

(c) it has the financial standing and capacity to perform its obligations under this Agreement;

(d) this Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof;

(e) it has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in a Material Adverse Effect; and

(f) it has complied with Applicable Laws in all material respects.

7.3 Disclosure

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any right, remedy or obligation of either Party under this Agreement.

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SK. NAZRUL ISLAM Advocate Regn. No. 447/15 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

SK. NAZRUL ISLAM Advocate Regn. No. 447/15 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

Authorised Signatory
Subhadra Area

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ARTICLE 8

DISCLAIMER

8.1 Disclaimer

8.1.1 The Mine Operator acknowledges that prior to the execution of this Agreement, the Mine Operator has, after a complete and careful examination, made an independent evaluation of the Request for Bid, Scope of the Project, Specifications and Standards, Site, existing structures, local conditions, physical qualities of ground, subsoil and geology and all information provided by the Authority or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. The Authority makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/ or completeness of any assessment, assumption, statement or information provided by it and the Mine Operator confirms that it shall have no claim whatsoever against the Authority in this regard.

8.1.2 The Mine Operator acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above and hereby acknowledges and agrees that the Authority shall not be liable for the same in any manner whatsoever to the Mine Operator, {the selected Bidder/Consortium Members} and {its/ their} Associates or any person claiming through or under any of them.

8.1.3 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 8.1.1 above shall not vitiate this Agreement or render it voidable.

8.1.4 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 8.1.1, that Party shall immediately notify the other Party, specifying the mistake or error; provided however, that a failure on part of the Authority to give any notice pursuant to this Clause 8.1.4 shall not prejudice the disclaimer of the Authority contained in Clause 8.1.1 and shall not in any manner shift to the Authority any risks assumed by the Mine Operator pursuant to this Agreement.

8.1.5 Except as otherwise provided in this Agreement, all risks relating to the Agreement shall be borne by the Mine Operator and the Authority shall not be liable in any manner for such risks or the consequences thereof.

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PART III

DEVELOPMENT AND OPERATIONS

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Area Kolkata
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ARTICLE 9

PERFORMANCE SECURITY

9.1 Performance Security

9.1.1 The Mine Operator shall, as a security for the performance of its obligations under this Agreement, provide to the Authority, no later than 90 (ninety) days from the date of issue of the LOA or within such period as may be extended by the Authority,an irrevocable, unconditional, first demand bank guarantee from a Bank for a sum ofRs. 113.10 crores (Rupees One hundred thirteen crore ten lakhs) substantially in the form set forth in Schedule-F (the "**Performance Security**").

Provided that, in the event that the initial Contract Period is extended pursuant to Clause 3.1.1 ("**Extended Contract Period**"), the Mine Operator shall furnish a replacement Performance Security for a sum of Rs. 113.10 crores (Rupees One hundred thirteen crore ten lakhs), no later than 90 (ninety) days prior to the commencement of the Extended Contract Period.

9.1.2 The Mine Operator shall keep the Performance Security valid, effective and in full force for such value as is required to be maintained in accordance with Clause 9.1.1, until the date that occurs 90 (ninety) days after the expiry of the Contract Period (or the Extended Contract Period, if applicable). It is hereby clarified that the Mine Operator shall keep the Performance Security valid, effective and in full force in an extendable/renewable manner revolving after a period of at least 3 (three) years. In this regard, the Authority reserves the right to call for any documentary evidence from the Mine Operator in relation to such extension or renewal of the Performance Security and the Mine Operator shall be under an obligation to furnish all documents as may be required by the Authority in this regard.

9.1.3 At least 30 (thirty) days prior to expiry of a Performance Security, the Mine Operator shall furnish an extended, renewed or replacement Performance Security to the Authority, failing which the Authority shall be entitled to, after giving 5 (five) days' notice to the Mine Operator, draw down the full remaining value of the Performance Security, and hold the cash as security for performance of the Mine Operator's obligations under this Agreement.

9.2 Appropriation of Performance Security

The Authority shall, without prejudice to its other rights and remedies hereunder, in law or equity, have the unqualified right to encash and appropriate the Performance Security in part or in full, in the event of a failure or default of the Mine Operator to comply with its obligations hereunder, including a Mine Operator Default, the Mine Operator's failure to meet any Condition Precedent, or the Mine Operator's failure to pay any sums (including Damages) due hereunder. The Mine Operator shall, within 15 (fifteen) days from such encashment and appropriation of the Performance Securityby the Authority, (i) in case of a partial appropriation, restore the value of the Performance Security to the value as is required to be maintained pursuant to Clause

General Manager
Subhadra Area, MCL

SK. NAZRUL ISLAM
Advocate
Regn. No. 44779
Expiry Date 41
15.09.2023

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9.1.1; and (ii) in case of a full appropriation, provide a fresh Performance Security in accordance with the requirements of Clause 9.1.1, failing which the Authority shall be entitled to terminate this Agreement in accordance with Article 37.

9.3 References to Performance Security

9.3.1 References to Performance Security occurring in this Agreement for and in respect of any period prior to the delivery of the Performance Security by the Mine Operator to the Authority, or in respect of any period subsequent to the expiry or release thereof, as the case may be, shall be construed solely for the purposes of calculating the amount of Damages payable by the Mine Operator.

9.3.2 Until such time the Performance Security is provided by the Mine Operator pursuant to Clause 9.1.1 and the same comes into effect, the Bid Securing Declaration shall remain in force and effect and the Authority shall be entitled to appropriate any amounts, including Damages, due and payable by the Mine Operator to the Authority under this Agreement. Notwithstanding anything to the contrary contained in this Agreement, in the event the Performance Security is not provided by the Mine Operator within a period of 90 (ninety) days from the date of issue of LOA, the successful bidder and/or Mine Operator shall be banned for a period of two (2) years from being eligible to submit Bids in Coal India Limited and its subsidiaries and entitlements of the Mine Operator under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Mine Operator, and this Agreement shall be deemed to have been terminated by mutual agreement of the Parties.

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 65/19 Expiry Date 5.03.2025 GOVT. OF WEST BENGAL

General Manager Subsidiary Area, IBCL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 65/19 Expiry Date 5.03.2025 GOVT. OF WEST BENGAL

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ARTICLE 10

ACCESS TO THE SITE

10.1 The Site

10.1.1 The Site shall be divided into 03 (three) number of blocks as demarcated in Schedule-A in conformity with the respective phases specified therein. The blocks shall comprise the land on which the Rail Track, township, Coal Depot, Coal Handling Plant, Overhead power line from Nandira Sub-station to Project site and Project Facilities are to be constructed and shall include a mining area sufficient for excavation of Coal and dumping of Overburden in accordance with the Annual Production Programme and the terms of this Agreement, and in respect of which the access to Site shall be granted by the Authority to the Mine Operator commencing from the Appointed Date.

10.2 Access to the Site

10.2.1 During the Development Period, the Authority hereby grants to the Mine Operator access to the Site for carrying out any surveys, investigations and soil tests that the Mine Operator may deem necessary during the Contract Period, it being expressly agreed and understood that the Authority shall have no liability whatsoever in respect of the surveys, investigations and tests carried out or work undertaken by the Mine Operator on or about the Site pursuant hereto in the event of Termination or otherwise.

10.2.2 In consideration of development of Mines, this Agreement and the covenants and warranties on the part of the Mine Operator herein contained, the Authority, in accordance with the terms and conditions set forth herein, hereby grants to the Mine Operator, commencing from the Appointed Date, access to and permission to work or to use in respect of all the land (along with any buildings, constructions or immovable assets, if any, thereon) comprising the real estate, which is more particularly described, delineated and shown in Schedule-A hereto (the "Site"), on an "as is where is" basis to develop, operate and maintain the said Site, for the purposes permitted under this Agreement, and for no other purpose whatsoever. The Mine Operator hereby acknowledges and accepts that the entire Site shall be and shall at all times remain the exclusive and absolute property of the Authority and neither the Mine Operator nor any persons claiming through or under the Mine Operator shall have or shall at any time claim any property, right, title or interest in such Site.

10.2.3 The Mine Operator shall perform its obligations in a manner that the existing roads, if any, along the boundary of the Mines, or an alternative thereof are open to traffic at all times during the Contract Period.

10.2.4 It is expressly agreed that all rights and permissions of the Mine Operator granted hereunder in respect of the Site shall terminate automatically and forthwith, without the need for any action to be taken by the Authority, upon the Termination of this Agreement for any reason whatsoever. For the avoidance of doubt, the Parties expressly agree that notwithstanding any temporary or permanent structures erected on the Site by the Mine Operator, the rights and permissions of the Mine Operator in respect of the Site shall automatically terminate, without any further act of the Parties, upon Termination of this Agreement.

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Area Kolkata Regn. No. 447/10 Expiry Date 15.09.2025

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10.2.5 The Mine Operator hereby irrevocably appoints the Authority (acting directly or through a nominee) to be its true and lawful attorney, to execute and sign in the name of the Mine Operator a surrender of the rights granted hereunder at any time upon the Termination of this Agreement, a sufficient proof of which will be the declaration of any duly authorised officer of the Authority, and the Mine Operator consents to it being registered for this purpose.

10.3 Procurement of the Site

10.3.1 Following the Appointed Date, the Mine Operator shall be responsible for taking over the physical possession of the Site and undertaking the associated activities in respect thereof at its own cost and expense. The Authority agrees and undertakes to provide reasonable assistance and support to the Mine Operator in relation thereto and shall reimburse to the Mine Operator in accordance with the Clause 29.1.6 all direct and documented R&R Costs incurred by the Mine Operator in relation to taking over of physical possession of the Site by the Mine Operator, upon receipt of the details and all necessary documentation in support thereof. However, the cost or net present value of Government land or forest land, as the case may be, shall be paid directly to the concerned Government Instrumentality by the Authority. Following occurrence of the Appointed Date, the Authority Representative and the Mine Operator shall, on a mutually agreed date and time, inspect the Site and prepare a memorandum containing an inventory of the Site including the vacant and unencumbered land, buildings, structures, road works, trees and any other immovable property on or attached to the Site.

10.3.2 Until the Transfer Date, the Mine Operator shall maintain a round-the-clock vigil over the Site and shall ensure and procure that no encroachment thereon takes place, and in the event of any encroachment or occupation on any part thereof, the Mine Operator shall report such encroachment or occupation forthwith to the Authority and undertake its removal at its own cost and expense.

10.3.3 The Mine Operator shall, if so required by the Authority, procure on behalf of the Authority, on the terms and to the extent specified by the Authority, any additional land required for any ancillary buildings in accordance with this Agreement and upon procurement, such land shall vest in the Authority and form part of the Site, provided that the Authority shall be responsible for acquiring such additional land in accordance with Applicable Laws, at its cost and such additional land so acquired by the Authority hereunder shall be deemed to form part of the Site. Provided however that, the Mine Operator shall be responsible for taking over the physical possession of such additional land at its own cost and expense and the provisions of Clause 10.3.1 shall apply *mutatis mutandis* to such additional land.

10.3.4 In the event the Mine Operator fails to procure physical possession of the Site then required for undertaking mining operations for the immediately forthcoming period of 180 (one hundred and eighty) days from the Appointed Date or such further period as may be granted by the Authority in writing, the Authority may be entitled to terminate the Agreement.

10.4 Protection of Site from Encumbrances

During the Contract Period, the Mine Operator shall protect the Site and the Mines from any and all occupations, encroachments or Encumbrances, and shall not place

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or create nor permit any Contractor or other person claiming through or under the Mine Operator to place or create any Encumbrance or security interest over all or any part of the Site, the Mines and/or the Project Assets, or on any rights of the Mine Operator therein or under this Agreement, save and except as otherwise expressly permitted in this Agreement.

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10.5 Special/ temporary right of way

The Mine Operator shall bear all costs and charges for any special or temporary right of way required by it in connection with access to the Site. The Mine Operator shall obtain at its cost such facilities on or outside the Site as may be required by it for the purposes of the Mines and the performance of its obligations under this Agreement.

10.6 Geological and archaeological finds

Save and except as provided in this Agreement, it is expressly agreed that mining, geological or archaeological rights do not form part of the permission granted to the Mine Operator under this Agreement and the Mine Operator hereby acknowledges that it shall not have any mining rights or interest in the underlying minerals, fossils, antiquities, structures or other remnants or things either of particular geological or archaeological interest and that such rights, interest and property on or under the Site shall vest in and belong to the Authority or the concerned Government Instrumentality. The Mine Operator shall take all reasonable precautions to prevent its workmen or any other person from removing or damaging such interest or property and shall inform the Authority forthwith of the discovery thereof and comply with such instructions asthe Authority or the concerned Government Instrumentality may reasonably give for the removal of such interest or property. For the avoidance of doubt, it is agreed that any reasonable expenses incurred by the Mine Operator hereunder shall be reimbursedby the Authority. It is also agreed that the Authority shall procure that the instructions hereunder are issued by it or the concerned Government Instrumentality within a reasonable period so as to enable the Mine Operator to continue its mining operations with such modifications as may be deemed necessary.

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10.7 Resettlement and Rehabilitation of PAPs

The Mine Operator as Pure Agent shall undertake the activities for Rehabilitation and Resettlement of the PAPs in accordance with the approved R&R Policy and Applicable Laws. All direct and documented R&R Costs incurred by the Mine Operator shall be reimbursed by the Authority in accordance with Clause 29.1.6 of this Agreement.

The R&R cost prepared by the mine operator as per the prevalent guidelines/ statutory provisions shall be submitted to the Authority for scrutiny and approval before making payment to the PAPs. It is clarified that no R&R cost shall be paid to PAPs without prior approval of the Authority.

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10.8 Employment of PAPs

Without prejudice to the provisions of Clause 10.7, the Authority shall employ such PAPs as are eligible for employment as per the R&R Policy, on such terms and conditions as may be determined by the Authority in accordance with the approved R&R Policy and Applicable Laws.

General Manager
Subhadra Area, MCL

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ARTICLE 11
UTILITIES AND ROADS

11.1 Existing utilities and roads

Notwithstanding anything to the contrary contained herein, the Mine Operator shall ensure that the respective entities owning the existing roads, right of way or utilities on, under or above the Site are enabled by it to keep such utilities in continuous satisfactory use, if necessary, by providing suitable temporary or permanent diversions with the approval of the controlling body of that road or right of way, and the Authority shall, upon written request from the Mine Operator, initiate and undertake at the Mine Operator's cost, legal proceedings for acquisition of any right of way necessary for such diversion.

11.2 Shifting of obstructing utilities

The Mine Operator shall, subject to Applicable Laws, undertake

(a) construction of diversion channel for Ghurudia and other seasonal streams passing through the coal block, by eastern boundary upto Singhada Jhor

(b) straightening the part of Singhada Jhor having southern meandering

(c) embankment along original & straightened course of Singhada Jhor.

The Mine Operator shall, subject to Applicable Laws and with assistance of the Authority, undertake shifting of any utility including electric lines, water pipes and telephone cables, to an appropriate location or alignment within or outside the Site, if and only if, such utility causes or shall cause a Material Adverse Effect on the development, operation or maintenance of the Mines. The cost of such shifting shall be borne by the Authority or by the entity owning such utility, if the Authority so directs, and in the event of any delay in shifting thereof, the Mine Operator shall be excused for failure to perform any of its obligations hereunder if such failure is a direct consequence of delay on the part of the entity owning such electric lines, water pipes or telephone cables, as the case may be.

11.3 New utilities

The Mine Operator shall allow, subject to such conditions as the Authority may specify, access to, and use of the Site for laying telephone lines, water pipes, electric cables or other public utilities, but only if it does not affect the operations of the Mines. Where such access or use causes any financial loss to the Mine Operator, it may require the user of the Site to pay compensation or damages as per Applicable Laws. For the avoidance of doubt, it is agreed that use of the Site under this Clause 11.3 shall not in any manner relieve the Mine Operator of its obligations to operate and maintain the Mines in accordance with this Agreement and any damage caused by such use shall be restored forthwith.

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NOTARY SK. NAZRUL ISLAM Regd. No. 441/19 Expiry Date 15.09.2046 GOVT. OF WEST BENGAL

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ARTICLE 12

DEVELOPMENT OF THE MINES

12.1 Development of Mines

12.1.1 The Mine Operator shall design, finance, develop and operate the Mines and Equipment having a capacity to excavate and Deliver the Annual Capacity in accordance with the Annual Production Programme.

12.1.2 On or after the Appointed Date, the Mine Operator shall undertake development of the Mines and installation of Equipment as specified in Schedule-B and Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D.

12.1.3 The Mines shall have the following and such other Equipment and facilities, conforming with the Specifications and Standards, as may be necessary for operation of the Mines in accordance with the provisions of this Agreement:

(a) Coal Handling Plant;

(b) rapid loading system;

(c) equipment such as draglines, shovels, dumpers, surface miners, drills, dozers, loaders, graders, etc;

(d) power distribution substation/system;

(e) effluent treatment system;

(f) storage space for equipment and materials;

(g) machine shop for machining and maintenance of equipment and machinery;

(h) calibration laboratory to check all tools, instruments, jigs and fixtures to ensure product conformity with Specifications and Standards;

(i) necessary facilities for testing of Coal;

(j) standby power back-up facility suitable to its requirements;

(k) an administrative office, canteen, rest rooms and staff facilities as required under Applicable Laws;

(l) internal telecommunication infrastructure catering to basic telephony and other value added telecom services;

(m) drainage system for storm water drainage; and

(n) sewage waste water disposal system;

12.1.4 The development of Mines shall include construction of facilities for storage of sufficient quantity Coal.

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NOTARY SK. NAZRUL ISLAM Regd. No. 44/19 Expiry Date 25.3.2029 GOVT. OF WEST BENGAL

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12.1.5 The development of Mines shall include construction of a dedicated rail track, including electric lines and electrical plants, for operation of trains from the Mines to the railway network, as specified in Schedule-B, and in conformity with the Specifications and Standards set forth in Schedule-D (the "Rail Track").

12.2 Obligations prior to commencement of construction

Prior to commencement of Construction Works, the Mine Operator shall:

(a) submit to the Authority, its general arrangement, Drawings, excavation methodology, quality assurance procedures and excavation time schedule for development of the Mines, in accordance with the Project Completion Schedule set forth in Schedule-G;

(b) undertake and perform all such acts, deeds and things as may be necessary or required before commencement of development of the Mines under and in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits; and

(c) make its own arrangements for quarrying and procurement of materials needed for the Mines under and in accordance with Applicable Laws and Applicable Permits.

12.3 Drawings

In respect of the Mine Operator's obligations relating to the Drawings of the Mines as set forth in Schedule-H, the following shall apply:

(a) The Mine Operator shall prepare and submit, with reasonable promptness and in such sequence as is consistent with the Project Completion Schedule, 3 (three) copies each of all Drawings to the Engineer in charge for review.

(b) By submitting the Drawings for review to the Engineer in charge, the Mine Operator shall be deemed to have represented that it has determined and verified that the design and engineering, including field construction criteria related thereto, are in conformity with the Scope of the Project, Specifications and Standards, Applicable Laws and the Standard Industry Practice.

(c) Within 15 (fifteen) days of the receipt of the Drawings, the Engineer in charge shall review the same and convey its observations to the Mine Operator with particular reference to their conformity or otherwise with the Scope of the Project and the Specifications and Standards. The Mine Operator shall not be obliged to await the observations of the Engineer in charge on the Drawings submitted pursuant hereto beyond the said 15 (fifteen) days period and may begin or continue Construction Works at its own discretion and risk.

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2026 GOVT. OF WEST BENGAL

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General Manager Talabadra Area, MCL

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(d) If the aforesaid observations of the Engineer in charge indicate that the Drawings are not in conformity with the Scope of the Project or the Specifications and Standards, such Drawings shall be revised by the Mine Operator and resubmitted to the Engineer in charge for review. The Engineer in charge shall give its observations, if any, within 7 (seven) days of receipt of the revised Drawings.

(e) No review and/or observation of the Engineer in charge and/or its failure to review and/or convey its observations on any Drawings shall relieve the Mine Operator of its obligations and liabilities under this Agreement in any manner nor shall the Engineer in charge or the Authority be liable for the same in any manner.

(f) Within 90 (ninety) days of COD, the Mine Operator shall furnish to the Authority and the Engineer in charge a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Mines as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Mines and of the buildings and structures forming part of Project Facilities.

12.4 Scheduled Completion Date

12.4.1 The Mine Operator agrees and undertakes that development of Mines for excavation and Delivery of Coal shall be undertaken in a manner such that (i) the Commercial Operations Date occurs on or prior to 1825 days from the Appointed Date ("**Scheduled COD**"); and (ii) the Completion occurs on or prior to 2555 days fromthe Appointed Date ("**Scheduled Completion Date**").

12.4.2 In the event that the Mine Operator fails to achieve any Project Milestone within a period of 60 (sixty) days from the date set forth for such Project Milestone in Schedule-G, unless such failure has occurred due to Force Majeure or for reasons solely attributable to the Authority, it shall pay Damages to the Authority in a sum calculated at the rate of 0.2% (zero point two per cent) of the amount of Performance Security for delay of each week, or part of the week, beyond the allowable 60 (sixty) days until such Project Milestone is achieved; provided that if any or all Project Milestones, or the Scheduled COD, or the Scheduled Completion Date are extended in accordance with the provisions of this Agreement, the dates set forth in Schedule-G shall be deemed to be modified accordingly and the provisions of this Agreement shall apply as if Schedule-G has been amended as above. For the avoidance of doubt, it is agreed that recovery of Damages under this Clause 12.4.2 shall be without prejudice to the rights of the Authority under this Agreement, including the right of Termination thereof.

12.5 Provision of infrastructure – Deleted

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SK. NAZRUL ISLAM
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12.6 Development of township

12.6.1 The Mine Operator shall, no later than the 1st (first) anniversary of COD, construct and operate or cause to be constructed and operated, at its own cost and expense, a township comprising of commercial and residential infrastructure specified in Clauses 12.6.2, 12.6.3 and 12.6.4, which shall also be available to the Authority and its employees on a non-discriminatory basis and on the normal terms thereof.

12.6.2 The township specified in Clause 12.6.1 shall be constructed in conformity with Schedule-C and shall include:

(a) a primary health center with 6 (six) beds for in-patient care and associated diagnostic facilities, built in conformity with the standards normally followed by the State Government;

(b) a secondary school in conformity with the standards specified by the Central Board of Secondary Education; and

(c) a community center with an auditorium for social gatherings, functions and other special occasions.

12.6.3 The commercial infrastructure specified in Clause 12.6.1 shall include:

(a) a bank with ATM;

(b) post office;

(c) business center with communication facilities including telephone, internet connectivity and data transaction processing facilities; and

(d) 10 (ten) shops or kiosks.

12.6.4 The Mine Operator shall construct, or cause to be constructed, at least 77 (seventy seven) dwelling units for employees of the Mine Authority as per the following specifications:

Qtr Type	No. of Qtrs	Plinth area of each Qtr. (in sq. m)
A	16	63
B	16	75
C	30	121
D	4	181
Hostel	11	20
Total	77	

- Specifications are as per DPE/CIL norms and as being followed in MCL.
- All residential Buildings and Hostel should be G+3 Storied RCC frame Building with stilt parking.

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- Arrangement for Fire-fighting and provision of single lift in each block should be provided.

Additional dwelling units shall be constructed or caused to be constructed by Mine Operator for its employees or tenants as per the following specifications:

Qtr Type	No. of Qtrs	Plinth area of each Qtr. (Sq. meter) (in sq. m)
A	106	63
B	358	73
C	42	121
D	0	181
Hostel	150	20
Total	656	

The specifications shall be same as those for the Authority.

12.6.5. The Mine Operator shall facilitate the establishment and operation of the infrastructure mentioned at Clause 12.6.2, Clause 12.6.3 and Clause 12.6.4.

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Subhadra Area, MCL

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NOTARY
SK. NAZRUL ISLAM
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Regn. No. 68719
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

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ARTICLE 13

MONITORING OF CONSTRUCTION

13.1 Monthly progress reports

During the Construction Period, the Mine Operator shall, no later than 7 (seven) days after the close of each month, furnish to the Authority and the Engineer in charge, a monthly report on progress of the Construction Works and installation of Equipment, and shall promptly give such other relevant information as may be required by the Engineer in charge.

13.2 Inspection

During the Construction Period, the Engineer in charge shall inspect the Mines regularly and make a report of such inspection (the "**Inspection Report**") stating in reasonable detail the defects or deficiencies, if any, with particular reference to the Scope of the Project and the Specifications and Standards. It shall send a copy of the Inspection Report to the Authority and the Mine Operator within 7 (seven) days of such inspection and upon receipt thereof, the Mine Operator shall rectify and remedy the defects or deficiencies, if any, stated in the Inspection Report. Such inspection or submission of the Inspection Report by the Engineer in charge shall not relieve or absolve the Mine Operator of its obligations and liabilities hereunder in any manner whatsoever.

13.3 Tests

13.3.1 For determining that the Construction Works and Equipment conform to the Specifications and Standards, the Engineer in charge may require the Mine Operator to carry out or cause to be carried out tests, at such time and frequency and in such manner as may be specified by the Engineer in charge from time to time, in accordance with Standard Industry Practice for quality assurance. The size of sample for such tests shall, to the extent possible, not exceed 5% (five per cent) of the quantity and/or number of tests that the owner or builder of such works would normally undertake in accordance with Standard Industry Practice. The Mine Operator shall, with due diligence and at its own cost, carry out or cause to be carried out all the tests in accordance with the instructions of the Engineer in charge and furnish the results thereof to the Authority. 50% (fifty per cent) of the costs incurred by the Mine Operator in carrying out such tests to the extent certified by the Engineer in charge as having been reasonably incurred, shall be reimbursed by the Authority to the Mine Operator. For the avoidance of doubt, the Mine Operator shall carry out all tests necessary for determining the rectification of any defect or deficiency in Construction Works and Equipment, at its sole cost and expense.

13.3.2 In the event that results of any tests conducted under this Clause 13.3 establish any defects or deficiencies in the Construction Works and Equipment, the Mine Operator shall carry out remedial measures and furnish a report to the Engineer in charge in this behalf. The Engineer in charge shall require the Mine Operator to carry out or cause to be carried out tests to determine that such remedial measures have brought the Construction Works and Equipment into compliance with the Specifications and Standards, and the procedure set forth in this Clause 13.3 shall be repeated until such

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Construction Works and Equipment conform to the Specifications and Standards. For the avoidance of doubt, it is agreed that tests pursuant to this Clause 13.3 shall be undertaken in addition to and of the tests that shall be carried out by the Mine Operator for its own quality assurance in accordance with Standard Industry Practice. It is also agreed that a copy of the results of such tests shall be sent by the Mine Operator to the Authority forthwith.

13.4 Delays during construction

Without prejudice to the provisions of Clause 12.4.2, if the Mine Operator does not achieve any of the Project Milestones or the Engineer in charge has reasonably determined that the rate of progress of Construction Works and installation of Equipment is delayed, it shall notify the Mine Operator to this effect, and the Mine Operator shall, within 15 (fifteen) days of such notice, by a communication inform the Engineer in charge in reasonable detail about the steps it proposes to take to expedite progress and the period within which it shall achieve such Project Milestones.

13.5 Video recording

During the Construction Period, the Mine Operator shall provide to the Authority for every calendar quarter, a video recording, which will be compiled into a 3 (three) hour digital video disc or any substitute thereof, covering the status and progress of Construction Works and installation of Equipment in that quarter. The first such video recording shall be provided to the Authority within 30 (thirty) days of the Appointed Date and thereafter, no later than 15 (fifteen) days after the close of each quarter.

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ARTICLE 14

COMPLETION CERTIFICATE

14.1 Tests

14.1.1 No later than 30 (thirty) days prior to the likely achievement of the Commercial Operation Date or the Completion (as applicable), the Mine Operator shall notify the Engineer in charge of its intent to subject the Construction Works and Equipment to Tests. The date and time of each of the Tests shall be determined by the Engineer in charge in consultation with the Mine Operator. The Mine Operator shall provide such assistance as the Engineer in charge may reasonably require for conducting the Tests. In the event of the Mine Operator and the Engineer in charge failing to mutually agree on the dates for conducting the Tests, the Mine Operator shall fix the dates by not less than 10 (ten) days' notice to the Engineer in charge.

14.1.2 All Tests shall be conducted in accordance with Schedule-I at the cost and expense of the Mine Operator. The Engineer in charge shall observe, monitor and review the results of the Tests to determine compliance of the Mines, Construction Works and Equipment with Specifications and Standards and if it is reasonably anticipated or determined by the Engineer in charge during the course of any Test that the performance of any Construction Works or Equipment or Mines does not meet the Specifications and Standards, it shall have the right to suspend or delay such Test and require the Mine Operator to remedy and rectify the defects or deficiencies. Upon completion of each Test, the Mine Operator shall provide to the Authority copies of all Test data including detailed Test results. For the avoidance of doubt, it is expressly agreed that the Engineer in charge may require the Mine Operator to carry out or cause to be carried out additional Tests, in accordance with Standard Industry Practice, for determining the compliance of the Mines with Specifications and Standards.

14.2 Commercial Operation Date

14.2.1 The first day of the succeeding Accounting Year of the year in which the excavation and Delivery of Coal of at least 85% (eighty-five per cent) of the Annual Capacity of that year or 50% (fifty per cent) of the Contracted Capacity is achieved by the Mine Operator, whichever is later, as certified by the Engineer in charge, shall be the "**Commercial Operation Date**" or "**COD**" provided that, the Milestones which are scheduled to be completed up to that Accounting Year, are completed.

14.2.2 In the event that COD does not occur prior to the Scheduled COD, unless the delay is on account of reasons solely attributable to the Authority or due to Force Majeure, the Mine Operator shall pay Damages to the Authority in a sum calculated at the rate of 0.5% (zero point five per cent) of the amount of Performance Security for delay of each week or part of the week until COD is achieved.

14.3 Completion

14.3.1 Upon completion of all Construction Works and achieving all Project Milestone as set forth in Schedule-G and the Engineer in charge determining the Tests to be successful in accordance with the provisions of this Agreement ("**Completion**"), it shall

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forthwith issue to the Mine Operator, a certificate substantially in the form set forth in Schedule-J (the "**Completion Certificate**").

In the event that Completion does not occur within a period of 60 (sixty) days from the Scheduled Completion Date, unless the delay is on account of reasons solely attributable to the Authority or due to Force Majeure, an amount equivalent to 10% (ten percent) of the amount set out in each forthcoming Monthly Invoice of the Mine Operator shall be withheld by the Authority till the Completion occurs and the Completion Certificate is issued in accordance with the Agreement. However, upon the issuance of the Completion Certificate, the amount so withheld by the Authority shall be released to the Mine Operator without incurring any interest thereon. It is hereby clarified that the amount so withheld shall be in addition to the Damages which the Authority is entitled to in accordance with Clause 12.4.2 of this Agreement.

14.4 Withholding of Completion Certificate

14.4.1 If the Engineer in charge determines that the Mines and Equipment or any part thereof do not conform to the provisions of this Agreement, it shall forthwith make a report in this behalf and send copies thereof to the Mine Operator. If the Authority is of the opinion that the Mines and Equipment are not fit and safe for commercial service, it shall, within 7 (seven) days of receiving the aforesaid report, notify the Mine Operator of the defects and deficiencies in the Mines and Equipment and withhold issuance of the Completion Certificate, as the case may be. Upon receipt of such notice, the Mine Operator shall remedy and rectify such defects or deficiencies and thereupon Tests shall be undertaken in accordance with Article 14. Such procedure shall be repeated as necessary until the defects or deficiencies are rectified.

14.4.2 Notwithstanding anything to the contrary contained in Clause 14.4.1, the Authority may, issue a Completion Certificate under Clause 14.3.

14.5 Rescheduling of Tests

If the Authority is unable to issue the Completion Certificate because of events or circumstances on account of which the Tests could not be held or had to be suspended, the Mine Operator shall be entitled to re-schedule the Tests and hold the same as soon as reasonably practicable. Provided, however, that the Mine Operator shall be excused for the delay in Tests arising hereunder if such delay is not solely attributable to the Mine Operator.

NOTARY CENTRAL GOVT ANGUL

General Manager
Kulhadra Area, MCL

NOTARY * SK. NAZRUL ISLAM * Area Pokaria Regn. No. 447/19 Expiry Date 15.09.2020 GOVT. OF WEST BENGAL

SUSHMA COAL MINES LIMITED

NOTARY SK. NAZRUL ISLAM Area Pokaria Regn. No. 447/19 Expiry Date 15.09.2020 GOVT. OF WEST BENGAL

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ARTICLE 15

CHANGE OF SCOPE

15.1 Change of Scope

15.1.1 The Authority may, notwithstanding anything to the contrary contained in this Agreement, require the provision of additional works and services at the Mines, which are not included in the Scope of the Project as contemplated by this Agreement, or reduce the Scope of the Project (the "**Change of Scope**"). Any such Change of Scope shall be made in accordance with and subject to the provisions of this Article 15.

15.1.2 If the Mine Operator determines at any time that a Change of Scope is necessary for safety considerations or any unforeseen circumstances arising out of Force Majeure, it shall by notice in writing require the Authority to consider such Change of Scope. The Authority shall, within 15 (fifteen) days of receipt of such notice, either accept such Change of Scope with modifications, if any, and initiate proceedings in accordance with this Article 15 or inform the Mine Operator in writing of its reasons for not accepting such Change of Scope or for accepting such Change of Scope without any payment obligations hereunder, as the case maybe.

15.1.3 Any works or services which are provided under and in accordance with this Article 15 shall form part of the Scope of the Project and the provisions of this Agreement shall apply *mutatis mutandis* to such works or services.

15.2 Procedure for Change of Scope

15.2.1 In the event of the Authority determining that a Change of Scope is necessary, it shall issue to the Mine Operator, a notice specifying in reasonable detail, the change in works and services contemplated thereunder (the "**Change of Scope Notice**").

15.2.2 Upon receipt of a Change of Scope Notice, the Mine Operator shall, with due diligence, provide to the Authority such information as is necessary, together with preliminary Documentation in support of:

(a) the impact, if any, which the Change of Scope is likely to have on the Project Completion Schedule if such change in works or services are required to be carried out during the Construction Period; and

(b) the options for implementing the proposed Change of Scope and the effects of each such option on the costs and time thereof (if any), including a detailed breakdown by work classifications specifying the material and labour costs calculated in accordance with the schedule of rates applicable to the works assigned by the Authority to its Contractors, along with the proposed premium/discount on such rates; provided that the cost incurred by the Mine Operator in providing such information shall be reimbursed by the Authority to the extent such cost is certified by the Engineer in charge as reasonable. In this regard, the Engineer in charge may call for details and appropriate Documentation from the Mine Operator to verify such costs.

NOTARY CENTRAL GOVT. ANGUL

Sk. Nazrul Islam Advocate Regn. No. 447/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

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15.2.3 Upon receipt of information set forth in Clause 15.2.2, if the Authority decides to proceed with the Change of Scope, it shall convey its preferred option to the Mine Operator, and the Parties shall, thereupon make good faith efforts to agree upon the time and costs for implementation thereof. Upon reaching an agreement, the Authority shall issue an order (the **"Change of Scope Order"**) requiring the Mine Operator to proceed with the performance thereof. In the event that the Parties are unable to agree, the Authority may, by issuing a Change of Scope Order, require the Mine Operator to proceed with the performance thereof pending resolution of the Dispute.

15.2.4 The provisions of this Clause 15.2, are applicable to Construction Works, Tests, operation and maintenance of the Mine.

15.3 Payment for Change of Scope

Pursuant to the issuance of the Change of Scope Order, the Mine Operator shall, after commencement of work, present to the Authority GST invoice/ debit note/ credit note for payment in respect of the works and services in progress or completed works and services, as the case may be, supported by such Documentation as is reasonably sufficient for the Authority to determine the accuracy thereof. In the event the Change of Scope Order results in alteration of costs, the Mine Operator shall raise GST invoice/ debit note/ credit note to reflect such additional/reduced cost incurred by it, which shall be in line with the cost estimate provided by the Mine Operate or pursuant to Clause 15.2.2(b). Within 30 (thirty) days of receipt of such bills, along with the necessary supporting Documentation (as is reasonably sufficient for the Authority to determine the accuracy thereof), the Authority shall disburse to the Mine Operator such additional/reduced amounts as is evidenced in the GST invoice/debit note/ credit note raised by the Mine Operator. The Mine Operator hereby undertakes to pay, within 30 (thirty) days of the Change of Scope Order, any amount that may be payable by the Mine Operator to the Authority (in accordance with the Change of Scope Order) due to reduction in the Scope of the Project. In the event of any Dispute, final adjustments thereto shall be made under and in accordance with the Dispute Resolution Procedure.

15.4 Restrictions on certain works

15.4.1 The Authority shall not require the Mine Operator to undertake any works or services if such works or services are likely to delay completion of the development of Mines by the Scheduled Completion Date; provided that in the event that the Authority considers such works or services to be essential, it may issue a Change of Scope Order, subject to the condition that the works forming part of, or affected by such Change of Scope Order, shall not be reckoned for purposes of determining completion of the Mines.

15.4.2 The Mine Operator shall be entitled to nullify any Change of Scope Order if it causes the cumulative costs relating to all the Change of Scope Orders to exceed 10% (ten per cent) of the Estimated Project Cost in any continuous period of 36 (thirty six) months immediately preceding the date of such Change of Scope Order or if such cumulative costs exceed 25% (twenty five per cent) of the Estimated Project Cost at any time during the Contract Period.

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SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

SUKINDA COAL MINING LIMITED

General Manager
Sukhinda Area, MCL

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ARTICLE 16

OPERATION AND MAINTENANCE

16.1 O&M obligations of the Mine Operator

16.1.1 During the Contract Period, the Mine Operator shall operate and maintain the Mines and Equipment in accordance with this Agreement either by itself, or through the O&M Contractor and if required, modify, repair or otherwise make improvements to the Mines and Equipment to comply with the provisions of this Agreement, Applicable Laws and Applicable Permits, and conform to the Specifications and Standards and Standard Industry Practice. The Mine Operator or the O&M Contractor can operate and maintain the Mines with leased Equipment, provided that the Specifications and Standards are in conformity with Schedule-D and the Equipment are maintained in conformity with the Maintenance Requirements. The obligations of the Mine Operator hereunder shall include:

(a) ensuring safe, smooth and uninterrupted excavation of Coal and Delivery thereof from the Mines, including prevention of loss or damage thereto, during normal operating conditions;

(b) undertaking operation and maintenance of the Mines in an efficient, coordinated and economical manner, in compliance with Applicable Laws and Standard Industry Practice;

(c) procuring that the Overburden is removed and deposited in accordance with the provisions of this Agreement;

(d) minimising disruption to operation of the Mines in the event of accidents or other incidents affecting the safety and operation of the Mines by providing a rapid and effective response and maintaining liaison with emergency services of the State;

(e) carrying out periodic preventive maintenance of the Mines;

(f) undertaking routine maintenance including prompt repairs of all components of the Mines and Equipment so as to ensure compliance with the Maintenance Requirements and the Specifications and Standards;

(g) undertaking major maintenance of Equipment and installations;

(h) preventing, with the assistance of the concerned law enforcement agencies, any encroachments on, or unauthorised entry to the Site;

(i) protection of the environment and provision of equipment and materials therefor;

(j) operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Mines and Equipment and for providing safe, smooth and uninterrupted excavation of Coal and Delivery thereof from the Mines;

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(k) maintaining a public relations unit for interface with and attend to suggestions from Project Affected Persons, government agencies, media and other agencies;

(l) complying with Safety Requirements in accordance with Article 17;

(m) operation and maintenance of all Project Assets diligently and efficiently and in accordance with Standard Industry Practice; and

(n) maintaining reliability in operating the Mines and Delivery of Coal.

(o) Overhead power line, 33KV double circuit double string, from Nandira sub station to Project site no later than the 1st (first) anniversary of the Appointed Date;

(p) a 33 kV/ 6.6 kV (thirty three to six point six kilovolt) electric substation connected with the incoming power line, for supplying electricity to the Mines no later than the 1st (first) anniversary of the Appointed Date;

(q) road connection between the boundary of the Mines and the nearest existing road, no later than the 1st (first) anniversary of the Appointed Date;

(r) rail connection between Balram Angul existing line to the Project site, no later than the 4th (fourth) anniversary of the Appointed Date; and

(s) construction of administrative office building for itself (MDO) and for the Authority no later than the 3rd (third) anniversary of the Appointed Date.

16.1.2 The Mine Operator shall remove all Overburden excavated during the course of development and operations of the Mines in accordance with Applicable Laws, Standard Industry Practice and the provisions of this Agreement.

16.1.3 The Mine Operator shall promptly remove from the Mines, all surplus construction machinery and materials, waste materials (including hazardous materials and waste water), rubbish and other debris (including, without limitation, accident debris) and keep the Mines in a clean, tidy and orderly condition, and in conformity with Applicable Laws, Applicable Permits and Standard Industry Practice.

16.1.4 The Mine Operator shall maintain, in conformity with Standard Industry Practice, all stretches of roads and other structures situated on the Site.

16.1.5 If the Mine Operator fails to comply with any directions issued by a Government Instrumentality, and is liable to pay a penalty under the provisions of Applicable Laws, such penalty shall be borne solely by the Mine Operator, and shall not be claimed from the Authority. For the avoidance of doubt, payment of any penalty under the provisions of Applicable Laws shall be in addition to, and independent of, the Damages payable under this Agreement.

16.2 Maintenance Requirements

The Mine Operator shall procure that at all times during the Operation Period, the Mines and Equipment conform to the maintenance requirements set forth in Schedule-K (the "**Maintenance Requirements**").

16.3 Maintenance Manual

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16.3.1 No later than 90 (ninety) days prior to the Scheduled Completion Date, the Mine Operator shall, in consultation with the Engineer in charge, evolve a repair, operation and maintenance manual (the "**Maintenance Manual**") for the regular and preventive maintenance of the Mines and Equipment in conformity with the Specifications and Standards, Maintenance Requirements, Safety Requirements and Standard Industry Practice, and shall provide 5 (five) copies thereof to the Authority and 2 (two) copies to the Engineer in charge. The Maintenance Manual shall be revised and updated once every 3 (three) Accounting Years and the provisions of this Clause 16.3 shall apply, *mutatis mutandis*, to such revisions and updates.

16.3.2 Without prejudice to the provision of Clause 16.3.1, the Maintenance Manual shall, in particular, provide for life cycle maintenance, routine maintenance and restorative maintenance which may be reasonably necessary for maintenance and repair of the Project Assets, including replacement thereof, such that its overall conditionconforms to Standard Industry Practice.

16.4 Maintenance Programme

16.4.1 On or before COD and no later than 45 (forty five) days prior to the beginning of each Accounting Year during the Operation Period, as the case may be, the Mine Operator shall provide to the Authority and Engineer in charge, its proposed annual programme of preventive, urgent and other scheduled maintenance (the "**Maintenance Programme**") to comply with the Maintenance Requirements, Maintenance Manual and Safety Requirements. Such Maintenance Programme shall include:

(a) preventive maintenance schedule, including the proposed closure, if any, for maintenance;

(b) arrangements and procedures for carrying out urgent repairs;

(c) criteria to be adopted for deciding maintenance needs;

(d) intervals and procedures for carrying out inspection of all elements of the Mines and Equipment;

(e) intervals at which the Mine Operator shall carry out periodic maintenance;

(f) arrangements and procedures for carrying out safety related measures;

(g) intervals for major maintenance works and the scope thereof; and

(h) frequency of carrying out intermediate and periodic overhaul of the Equipment.

16.4.2 Within 15 (fifteen) days of receipt of the Maintenance Programme, the Engineer in charge shall review the same and convey its comments to the Mine Operator with particular reference to its conformity with the Maintenance Requirements, Maintenance Manual and Safety Requirements.

16.4.3 The Mine Operator may modify the Maintenance Programme as may be reasonable in the circumstances, and the procedure specified in Clauses 16.4.1 and 16.4.2 shall apply *mutatis mutandis* to such modifications.

16.4.4 Any maintenance carried out by the Mine Operator as per the Maintenance Programme under this Clause 16.4 shall be deemed to be scheduled maintenance (the

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"Scheduled Maintenance"). For the avoidance of doubt, any Scheduled Maintenance shall not relieve the Mine Operator from its obligation to excavate and Deliver Coal in accordance with the Annual Production Programme under Clause 21.2.1, and, the Mine Operator shall be liable to pay the Damages under Clause 21.5 for any closure, suspension or reduction of Annual Capacity arising out of Scheduled Maintenance.

16.5 Safety, breakdowns and accidents

16.5.1 The Mine Operator shall ensure safe conditions at the Mines, and in the event of unsafe conditions, damage, breakdowns and accidents, it shall follow the relevant operating procedures and undertake removal of obstruction and debris without delay. Such procedures shall conform to the provisions of this Agreement, Applicable Laws, Applicable Permits and Standard Industry Practice.

16.5.2 The Mine Operator's responsibility for rescue operations at the Site shall include safe evacuation of all persons from the affected area as an initial response to any particular incident and shall also include prompt removal of debris or any other obstruction, which may endanger or interrupt the smooth excavation and Delivery of Coal.

16.6 De-commissioning due to Emergency

16.6.1 If, in the reasonable opinion of the Mine Operator, there exists an Emergency which warrants de-commissioning or shut-down of the whole or any part of the Mines and Equipment, the Mine Operator shall be entitled to de-commission or shut down the whole or any part of the Mines and Equipment for so long as such Emergency exists and the consequences thereof warrant; provided that such de-commissioning or shut-down and particulars thereof shall be notified by the Mine Operator to the Authority without any delay, and the Mine Operator shall diligently carry out and abide by any reasonable directions that the Authority may give for dealing with such Emergency. For the avoidance of doubt, the Mine Operator acknowledges and agrees that any de-commissioning or shut-down hereunder shall conform with the provisions of the Mines Act, 1952.

16.6.2 The Mine Operator shall re-commission the Mines and Equipment or any part thereof as quickly as practicable after the circumstances leading to its de-commissioning or shut down have ceased to exist or have so abated as to enable the Mine Operator to re-commission the Mines and Equipment, and shall notify the Authority of the same forthwith.

16.7 Section closure

16.7.1 Save and except as provided in Clause 16.6, the Mine Operator shall not shut down or de-commission any section of the Mines for undertaking maintenance or repair works, not forming part of the Maintenance Programme, except with the prior writtenapproval of the Engineer in charge. Such approval shall be sought by the Mine Operator through a written request to be made to the Engineer in charge, and a copy thereof furnished to the Authority, at least 7 (seven) days before the proposed closureof such section and shall be accompanied by particulars thereof. Within 3 (three) days of receiving such request, the Engineer in charge shall grant permission with such modifications as it may deem necessary and a copy of such permission shall be sent to the Authority.

16.7.2 Upon receiving the permission pursuant to Clause 16.7.1, the Mine Operator shall be entitled to shut down or de-commission the designated section for the period specified

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therein, and in the event of any delay in re-commissioning such section, the Mine Operator shall pay Damages to the Authority calculated at the rate of 1% (one per cent) of the Average Daily Mining Charge for each day of delay until the section has been re-commissioned for excavation and Delivery of Coal.

16.8 Maintenance obligations

16.8.1 The Mine Operator shall repair or rectify any defect or deficiency set forth in the Maintenance Requirements within the period specified therein.

16.9 Authority's right to take remedial measures

16.9.1 In the event the Mine Operator does not maintain and/or repair the Mines and Equipment or any part thereof in conformity with the Maintenance Requirements, the Maintenance Manual or the Maintenance Programme, as the case may be, and fails to commence remedial works within 15 (fifteen) days of receipt of the O&M Inspection Report or a notice in this behalf from the Authority or Engineer in charge, as the case may be, the Authority shall, without prejudice to its rights under this Agreement including Termination thereof, be entitled to undertake such remedial measures at the risk and cost of the Mine Operator, and to recover its costs from the Mine Operator.

16.10 Overriding powers of the Authority

16.10.1 If in the reasonable opinion of the Authority, the Mine Operator is in material breach of its obligations under this Agreement and, in particular, the Maintenance Requirements, and such breach is causing or likely to cause material danger to any person or property, the Authority may, without prejudice to any of its rights under this Agreement including Termination thereof, by notice require the Mine Operator to take reasonable measures immediately for rectifying or removing such hardship or danger, as the case may be.

16.10.2 In the event that the Mine Operator, upon notice under Clause 16.10.1, fails to rectify or remove any hardship or danger within a reasonable period, the Authority may exercise overriding powers under this Clause 16.10.2 and take over the performance of any or all the obligations of the Mine Operator to the extent deemed necessary by it for rectifying or removing such hardship or danger; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required hereunder; provided further that any costs and expenses incurred by the Authority in discharge of its obligations hereunder shall be deemed to be O&M Expenses, and the Authority shall be entitled to recover them from the Mine Operator in accordance with the provisions of Clause 16.9 along with the Damages specified therein.

16.10.3 In the event of a national emergency, civil commotion or any other act specified in Clause 34.3, the Authority may take over the performance of any or all the obligations of the Mine Operator to the extent deemed necessary by it, and exercise such control over the Mines and Equipment or give such directions to the Mine Operator as may be deemed necessary; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required in the circumstances which caused the exercise of such overriding power by the Authority. For the avoidance of doubt, it is agreed that the consequences of such action shall be dealt in accordance with the provisions of Article 34. It is also agreed that the Mine Operator shall comply with such instructions as the Authority may issue

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in pursuance of the provisions of this Clause 16.10.3, and shall provide assistance and cooperation to the Authority, on a best effort basis, for performance of its obligations hereunder.

16.11 Restoration of loss or damage to the Mines

Save and except as otherwise expressly provided in this Agreement, in the event that the Mines and Equipment or any part thereof suffers any loss or damage during the Contract Period from any cause whatsoever, the Mine Operator shall, at its cost and expense, rectify and remedy such loss or damage forthwith so that the Mines and Equipment conform to the provisions of this Agreement.

16.12 Modifications to the Mines

The Mine Operator shall not carry out any material modifications to the Mines and Equipment save and except where such modifications are necessary for the Mines and Equipment to operate in conformity with the Specifications and Standards, Maintenance Requirements, Standard Industry Practice and Applicable Laws; provided that the Mine Operator shall notify the Engineer in charge of the proposed modifications along with particulars thereof at least 15 (fifteen) days before commencing work on such modifications and shall reasonably consider any suggestions that the Engineer in charge may make within 15 (fifteen) days of receiving the Mine Operator's proposal. For the avoidance of doubt, all modifications made hereunder shall comply with the Safety Requirements, Specifications and Standards, Applicable Laws, Standard Industry Practice and the provisions of this Agreement.

16.13 Excuse from performance of obligations

The Mine Operator shall not be considered in breach of its obligations under this Agreement if any part of the Mines and Equipment are not available for excavation of Coal and Delivery thereof on account of any of the following for the duration thereof:

(a) a Force Majeure Event;

(b) measures taken to ensure the safety of the Mines except when unsafe conditions occurred because of failure of the Mine Operator to perform its obligations under this Agreement; or

(c) compliance with a request from the Authority or the directions of any Government Instrumentality, the effect of which is to close all or any part of the Mines except when such closure occurred because of failure of the Mine Operator to perform its obligations under this Agreement or Applicable Laws.

Provided that, any such non-availability and particulars thereof shall be notified by the Mine Operator to the Authority and the Engineer in charge without any delay.

Provided further that, the Mine Operator shall keep available all unaffected parts of the Mines for excavation of Coal and Delivery thereof, provided they can be operated safely.

NOTARY CENTRAL GOVT. ANGUL.

NOTARY SK. NAZRUL ISLAM Area Kokata Regn. No. 447/19 Expiry Date 15.09.2019 GOVT. OF WEST BENGAL

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General Manager
Talcher Area, MCL

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ARTICLE 17

SAFETY REQUIREMENTS

17.1 Safety Requirements

17.1.1 The Mine Operator shall comply with the provisions of this Agreement, Applicable Laws and Applicable Permits and conform to Standard Industry Practice for securing the safety of the Mines, Equipment and individuals on or about the Site. In particular, the Mine Operator shall develop, implement and administer a surveillance and safety programme for providing a safe environment on or about the Mines, and shall comply with the safety requirements set forth in Schedule-L (the "**Safety Requirements**").

17.1.2 The Mine Operator shall impart safety training to its employees and shall at all times be responsible for observance of safety procedures by its staff, Contractors and agents. The Mine Operator shall request the Authority to provide statutory training under the Mines Vocational Training Rules, 1966.

17.1.3 The Mine Operator acknowledges and agrees that the Authority shall be entitled to inspect the Mines to verify adherence to the Applicable Laws, conditions stipulated under the Applicable Permits and the Safety Requirements and the Mine Operator shall be obliged to facilitate such inspection and implement the corrective measures identified in such inspection.

17.1.4 Notwithstanding anything to the contrary contained in this Agreement, the Parties acknowledge and agree that the appropriate Government Instrumentalities shall be entitled to issue directions to the Authority and the Mine Operator for complying with the provisions of the Mines Act, 1952 and the rules made thereunder and such directions shall be binding on them.

17.1.5 If the Mine Operator fails to ensure safety measures regarding usage of machinery, equipment, safety devices and/ or appliances required to carry out the tasks/work as required under this Agreement or fails to ensure that its employees, Contractors, contract labourers or any other person, as deployed by the Mines Operator to work at the Mines, use the personal protective equipment, as needed, for safe working or other provisions, procedures and practices, the Authority may, upon the satisfaction that the Mine Operator is not conforming to the safety and health requirements, direct the Mine Operator for stoppage of work and require the Mine Operator to remedy the defects within a stipulated time period, as determined by the Authority. The Mine Operator shall not proceed with the work in the Mines until it has complied with each direction of the Authority to the satisfaction of the statutory officials appointed by the Authority for the Mines.

17.2 Guiding principles

17.2.1 Safety Requirements aim at reduction of injuries, loss of human life and damage to property resulting from accidents on the Mines and Equipment, irrespective of the person(s) at fault.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM W/o Kolkata Regn. No. 447/19 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

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17.2.2 Safety Requirements shall apply to all phases of development, operation and maintenance of the Mines with emphasis on identification of factors associated with accidents, consideration of the same, and implementation of appropriate remedial measures.

17.3 Expenditure on Safety Requirements

All costs and expenses arising out of or relating to Safety Requirements shall be borne by the Mine Operator.

17.4 Annual Safety Report

17.4.1 The Mine Operator shall submit to the Authority before the 15th (fifteenth) day of January of each calendar year, an annual report (in 10 (ten) copies) containing, without limitation, a detailed list and analysis of all accidents of the preceding calendar year and the measures taken by the Mine Operator for averting or minimizing such accidents in future ("**Annual Safety Report**").

17.4.2 Once in every calendar year, a safety audit shall be carried out by the Authority. It shall review and analyse the Annual Safety Report and accident data of the preceding calendar year, and undertake an inspection of the Mines. The Authority shall provide a safety report recommending specific improvements, if any, required to be made in the Mines and Equipment. Such recommendations shall be implemented by the Mine Operator in accordance with Safety Requirements, Specifications and Standards and Applicable Laws in a time bound manner as specified by the Authority in the recommendations. For the avoidance of doubt, the Parties agree that not more than 15 (fifteen) months shall elapse between 2 (two) safety audits to be conducted by the Authority hereunder.

NOTARY CENTRAL GOVT. ANGUL

General Manager
Subhadra Area, SCCL

NOTARY
SK. NAZRUL ISLAM
Regn. No. 44719
GOVT. OF WEST BENGAL

SUBHADRA COAL MINING LIMITED

NOTARY
SK. NAZRUL ISLAM
Regn. No. 44719
Expiry Date 15.09.2029
GOVT. OF WEST BENGAL

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ARTICLE 18

SECURITY OF THE MINES

18.1 Security of the Mines

18.1.1 The Mine Operator shall at all times procure the safety and security of the Mines, Equipment, Coal and all persons in or about the Mines.

18.1.2 The Mine Operator shall procure at all times that the Coal excavated by it shall be transported only by duly authorised personnel and vehicles through the routes notified by the Authority in consultation with the Mine Operator. The loading and movement of such vehicles shall be supervised and monitored in accordance with Standard Industry Practice.

18.1.3 The Coal excavated by the Mine Operator shall be processed and stored only in the areas designated for this purpose in accordance with Schedule-A and Schedule-C, and any modification in the designated areas shall be undertaken only with the prior written consent of the Authority which shall not be unreasonably withheld.

18.2 Installation of Security Equipment

The Mine Operator shall install security and surveillance equipment in conformity with Applicable Laws and Standard Industry Practice to ensure and procure the safety and security of its personnel, Mines, Equipment and Coal.

18.3 Real Time Monitoring of Operations

18.3.1 The Mine Operator shall, for real time monitoring of the movement of dumpers, trucks, excavators and other equipment, install and operate a suitable "Operator Truck Dispatch System".

18.3.2 The Mine Operator shall further install and operate such system which shall monitor movement of Coal through trucks or conveyor belts or any other medium up to the Delivery Point, which shall include all the entry/ exit points, Coal Depot, Coal Handling Plant, buildings, structures, passages used for transporting Overburden/ Coal and other places as advised by the Authority. Such places should also have provision of closed circuit television cameras. The system should have facility of monitoring the entire information through a central control room.

18.3.3 All recording on such surveillance systems shall be classified and stored by the Mine Operator for a period of at least 3 (three) months from the date of such recording.

18.4 Prevention of pilferage of Coal

The Mine Operator shall install fencing and security equipment, engage security guards and take such other measures as may be necessary to prevent pilferage of Coal and shall launch criminal proceedings in cases of theft or unauthorised removal of Coal from the Mines.

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ARTICLE 19

MONITORING OF OPERATION AND MAINTENANCE

19.1 Monthly status reports

19.1.1 During the Operation Period, the Mine Operator shall, no later than 7 (seven) days after the close of each month, furnish to the Authority and the Engineer in charge, a monthly report stating in reasonable detail the condition of the Mines and Equipment including their compliance or otherwise with the Mining Plan, Maintenance Requirements, Maintenance Manual, Maintenance Programme and Safety Requirements, and shall promptly give such other relevant information as may be required by the Engineer in charge or the Authority. In particular, such report shall separately identify and state in reasonable detail the defects and deficiencies that require rectification.

19.1.2 During the Operation Period, the Mine Operator shall, no later than 10 (ten) days after the close of each month, furnish to the Authority and the Engineer in charge, a monthly management report which shall be a summary of:

(a) key performance indicators achieved in the month, along with an analysis of reasons for failures, if any, and proposals to remedy the same;

(b) key operational hurdles and deliverables expected in the succeeding month along with strategies for addressing the same and for otherwise improving the Project's operational performance; and

(c) key financial parameters for the month, as benchmarked against the monthly budget, the reasons for shortfall, if any, and proposals to remedy the same.

19.2 Reports of unusual occurrence

The Mine Operator shall, prior to the close of each day, send to the Authority and Engineer in charge, by facsimile or e-mail, a report stating accidents and unusual occurrences, if any, at the Mines relating to the safety and security of the Mines and persons affected by it. A weekly and monthly summary of such reports shall also be sent within 3 (three) days of the closing of each week and month, as the case may be. For the purposes of this Clause 19.2, accidents and unusual occurrences at the Mines shall include:

(a) death or injury to any person;

(b) any damage or obstruction at the Site;

(c) disablement of any element of the Mines during operation thereof;

(d) flooding of the Mines;

(e) smoke or fire; or

(f) such other relevant information as may be reasonably required by the Authority or the Engineer in charge.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Advocate Regn. No. 44/116 GOVT. OF WEST BENGAL

General Manager Subhadra Area, MCL

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Any occurrence as mentioned under Regulation 8 of the Coal Mines Regulations, 2017 shall be reported immediately as required.

19.3 Inspection

The Engineer in charge shall inspect the Mines and Equipment regularly. It shall make a report of such inspection (the "**O&M Inspection Report**") stating in reasonable detail the defects or deficiencies, if any, with particular reference to the Maintenance Requirements, Maintenance Manual, the Maintenance Programme and Safety Requirements, and send a copy thereof to the Authority and the Mine Operator within 7 (seven) days of such inspection.

19.4 Tests

For determining that the Mines conform to the Maintenance Requirements, the Engineer in charge shall require the Mine Operator to carry out, or cause to be carried out, tests specified by it in accordance with Standard Industry Practice. The Mine Operator shall, with due diligence, carry out or cause to be carried out all such tests in accordance with the instructions of the Engineer in charge and furnish the results of such tests forthwith to the Authority and the Engineer in charge. One half of the costs incurred on such tests, and to the extent certified by the Engineer in charge as reasonable, shall be reimbursed by the Authority to the Mine Operator.

19.5 Remedial measures

19.5.1 The Mine Operator shall repair or rectify the defects or deficiencies, if any, set forth in the O&M Inspection Report or in the test results referred to in Clause 19.4 and furnish a report in respect thereof to the Engineer in charge and the Authority within 15 (fifteen) days of receiving the O&M Inspection Report or the test results, as the case may be; provided that where the remedying of such defects or deficiencies is likely to take more than 15 (fifteen) days, the Mine Operator shall submit progress reports of the repair works once every week until such works are completed in conformity with this Agreement.

19.5.2 The Engineer in charge shall require the Mine Operator to carry out or cause to be carried out tests, at its own cost, to determine that such remedial measures have brought the Mines and Equipment into compliance with the Maintenance Requirements and the procedure set forth in this Clause 19.5 shall be repeated until the Mines and Equipment conform to the Maintenance Requirements.

19.6 Production and Delivery Statements/ Reports

During the Operation Period, the Mine Operator shall furnish to the Authority all the reports and statements required as per the New Code for Uniform System of Maintenance, Control and Verification of Coal Stock in all Mines of Coal India Limited. The Mine Operator shall also furnish to the Authority such other information as the Authority may reasonably require, at specified intervals, in discharge of its statutory functions.

NOTARY CENTRAL GOVT. ANGUL

General Manager
Subsidiary Area, MCL

SK. NAZRUL ISLAM
NOTARY
Regd. No. 44/13
Expiry Date
18.12.2023

SUBHRA COAL MINING LIMITED

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19.7 Annual measurement of excavation

19.7.1 On or before COD, the Engineer in charge shall cause to be measured, by Central Mine Planning and Design Institute Limited ("CMPDI"), using laser technology or photogrammetry method or the latest available technology (the "**Measurement**"), the stockpile of Coal Seams and Overburden at the Mines, and shall convey forthwith to the Authority such particulars thereof as the Authority may reasonably require. The date and time for Measurement shall be notified by the Engineer in charge in consultation with CMPDI, no less than 1 (one) week in advance, to the Mine Operator and the Authority, and the Authority may designate its representative to witness such Measurement or may also carry out its independent Measurement. The Authority may, with the prior approval of its board of directors, engage any other reputed third party agency, other than CMPDI, for undertaking such Measurement. The costs of Measurement shall be borne by the Authority.

19.7.2 The Engineer in charge shall arrange, once every Accounting Year, on or before the commencement of each Accounting Year, to repeat the Measurement in accordance with the provisions of Clause 19.7.1.

19.7.3 In the event that the quantity of Coal dispatched from the Delivery Point during any Accounting Year falls short of the quantity of excavation, as determined by measurement, in respect of that Accounting Year, the Mine Operator shall pay to the Authority, Damages at the rate of notified price of Coal for the shortfall quantity up to 2% (two per cent) and at the rate twice the notified price of Coal for the shortfall quantity exceeding 2% (two per cent) of excavation quantity of Coal.

The amount of Damages shall be recovered from the monthly bill of the Mine Operator. Shortfall quantity shall be reconciled every month and final adjustment shall be done at the end of each Accounting Year. The Parties further agree that conversion of volumetric content to weight of Coal in different stacks shall be in accordance with the New Code for Uniform System of Maintenance, Control and Verification of Coal Stock in all Mines of Coal India Limited. The Parties also agree that in the event of a Dispute relating to the procedure and outcome of any tests or measurements conducted hereunder, the Dispute shall be referred to an Independent Laboratory for conducting tests at such laboratory. The figures on production and Delivery of Coal during the month should be reconciled with the measurement of stockpile at the end of every month and the same should be verified from the in situ measurement to comply with the provisions of New Code for Uniform System of Maintenance, Control and Verification of Coal Stock in all Mines of Coal India Limited.

Explanation:
The notified price of Coal for the purposes of this Clause 19.7.3 shall be the simple average of the notified price of similar coal most recently declared by the Authority.

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NOTARY ... GOVT. OF WEST BENGAL

General Manager
Subhadra Area, MCL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2024 GOVT. OF WEST BENGAL

SUBHADRA COAL MINING LIMITED

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DUPLICATE

ARTICLE 20

REMOVAL OF OVERBURDEN

20.1 Removal of Overburden

20.1.1 The Mine Operator shall, at all times during the Contract Period, ensure and procure the fulfillment of its obligations in respect of excavation, removal and depositing of Overburden in accordance with Applicable Laws, Applicable Permits, Mining Plan, the provisions of this Agreement and Standard Industry Practice.

20.1.2 The Mine Operator acknowledges, agrees and undertakes that the geometry of Mines, including bench height and width of Coal Seams, Overburden and inter - burden, shall at all times conform with the provisions of this Agreement, Applicable Laws and Standard Industry Practice.

20.1.3 The Engineer in charge shall regularly determine the compliance of the provisions of this Article 20 by the Mine Operator.

20.2 Schedule for Removal of Overburden

20.2.1 The Parties expressly agree that during each Accounting Year after the Appointed Date, the Mine Operator shall undertake removal of Overburden to the extent necessary for mining operation in accordance with the terms of this Agreement and the schedule given below ("**Scheduled Overburden Quantity**"):

Accounting year	Overburden to be removed (in Mcum)
1	NIL
2	NIL
3	10.65
4	18.51
5	22.16
6	27.89
7	31.37
8	31.30
9	31.03
10	30.86
11	30.91
12	24.57
13	26.78
14	29.80
15	26.15
16	26.16
17	26.19
18	23.97
19	26.17

NOTARY CENTRAL GOVT. ANGUL

NOTARY Govt. of West Bengal

NOTARY Govt. of West Bengal Regn. No. 4/2019 Expiry Date 15.09.2023

General Manager Subhadra Area, MCL

Accounting year	Overburden to be removed (in Mcum)
20	26.15
21	26.11
22	26.09
23	26.07
24	22.38
25	15.14
TOTAL	586.41

Provided that, in the event of any significant change in the Stripping Ratio, the Scheduled Overburden Quantity shall be modified with the approval of the Authority.

Provided further that, in the event the actual Overburden removal in any Accounting Year is less than the Scheduled Overburden Quantity for that Accounting Year due to the Force Majeure or Authority Default, the Scheduled Overburden Quantity for such Accounting Year shall be pro-rated accordingly on the basis of the loss of working shifts due to such Force Majeure or Authority Default. In this regard, a loss of at least 5 (five) working hours in a working shift shall be considered as loss of 1 (one) working shift.

20.2.2 The Mine Operator may undertake advance removal of Overburden in excess of the Scheduled Overburden Quantity, with the prior written approval of the Authority.

20.2.3 The Authority shall conduct monthly measurement of Overburden benches, using Electronic Total Station, Laser Scanning Technology or any other suitable methodology, in presence of a representative of the Mine Operator to determine compliance with Article 20.

20.3 Overburden Adjustable Amount

20.3.1 Deleted.

20.3.2 Deleted.

20.4 Damages for Failure to remove Overburden

20.4.1 In case the Overburden removed by the Mine Operator is less than the Scheduled Overburden Quantity in any Accounting Year, then the Mine Operator shall submit an irrevocable, unconditional and first demand bank guarantee in favour of the Authority, in a form and manner acceptable to the Authority from a Bank for a sum equivalent to the Mining Charge payable to the Mine Operator for the Overburden Shortfall ("**Overburden Guarantee**"). If the Mine Operator fails to submit the requisite amount of the Overburden Guarantee, the Authority shall withhold the payment of the Monthly Invoice for an equivalent amount of such Overburden Guarantee.

For the purposes of this Clause 20.4, "**Overburden Shortfall**" shall mean the quantity of Coal determined as follows:

(a) *Prior to COD:* the difference between the Scheduled Overburden Quantity and

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Subsidiary Area, WCL

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the Overburden removed, ***divided by*** the Notional Stripping Ratio;

(b) ***On or after the COD:*** the difference between the Scheduled Overburden Quantity and the Overburden removed, ***divided by*** the Stripping Ratio.

20.4.2 The Mine Operator shall keep the Overburden Guarantee valid and effective and in full force until the date that occurs 90 (ninety) days after the expiry of (i) 3 (three) Accounting Years following the Accounting Year in which the relevant Overburden Shortfall occurred; or (ii) Contract Period, whichever is earlier.

20.4.3 At least 30 (thirty) days prior to expiry of the Overburden Guarantee, the Mine Operator shall furnish a replacement Overburden Guarantee to the Authority, failing which the Authority shall be entitled to, after giving 5 (five) days' notice to the Mine Operator, draw down the full value of the Overburden Guarantee, and hold the cash as security for performance of the Mine Operator's obligations under this Clause 20.4.

20.4.4 The Mine Operator shall meet the Overburden Shortfall, within a period of 3 (three) Accounting Years immediately following the Accounting Year in which the relevant Overburden Shortfall occurred and in any event prior to the expiry of the Contract Period, failing which the Authority shall, without prejudice to its other rights and remedies under this Agreement, in law or equity, be entitled to appropriate the Overburden Guarantee in full, as Damages. Without prejudice to the foregoing, in the event of Termination of this Agreement, the Authority shall be entitled to appropriate the Overburden Guarantee in full, as Damages for failure of the Mine Operator to meet the Overburden Shortfall.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. KAZRUL ISLAM Area Kolkata GOVT. OF WEST BENGAL

NOTARY SK. KAZRUL ISLAM Area Kolkata GOVT. OF WEST BENGAL

General Manager
Talcher Area, MCL

SUBHRA COAL MINING

DUPLICATE 0077

ARTICLE 21

PRODUCTION OF COAL

21.1 Production of Coal

The Mine Operator shall excavate and Deliver Coal to the Authority in accordance with the Annual Production Programme specified in this Article 21.

21.2 Annual Production Programme

21.2.1 Subject to the provisions of Clause 21.2.2, the Mine Operator shall excavate and Deliver Coal in accordance with the following annual programme of production for each Accounting Year (the "**Annual Production Programme**").

Accounting year	Coal to be delivered (in Mt)
1	NIL
2	NIL
3	4
4	10
5	15
6	20
7	25
8	25
9	25
10	25
11	25
12	25
13	25
14	25
15	25
16	25
17	25
18	25
19	25
20	25
21	25
22	25
23	25
24	25
25	25
TOTAL	524

NOTARY CENTRAL GOVT. ANGUL

NOTARY NAZRUL ISLAM Regn. No. 447/19 GOVT. OF WEST BENGAL

General Manager Subhadra Area, MCL

NOTARY NAZRUL ISLAM Regn. No. 447/19 Expiry Date 15.05.2020 GOVT. OF WEST BENGAL

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For the purposes of this Agreement, "**Contracted Capacity**" means 25 Million Tonne of Coal per annum. The quantities specified in the Annual Production Programme for each Accounting Year shall be the "**Annual Capacity**", and the "**Monthly Capacity**" for any month in an Accounting Year shall be the Annual Capacity for such Accounting Year pro rated for the months in such Accounting Year. Where an Accounting Year is less than 12 (twelve) months, then the Annual Capacity for suchAccounting Year shall be pro-rated accordingly.

In the event the actual quantity of Coal Delivered in any Accounting Year is less than the scheduled Annual Capacity of that Accounting Year due to the Force Majeure or Authority Default, the Annual Capacity of such Accounting Year shall be pro-rated accordingly on the basis of the loss of working shifts due to Force Majeure or Authority Default. In this regard, a loss of at least 5 (five) working hours in a working shift shall be considered as loss of 1 (one) working shift.

21.2.2 The Authority may, by a notice delivered at least 3 (three) months prior to commencement of an Accounting Year after COD, subject to the condition of environment clearance, modify the Annual Production Programme specified in Clause 21.2.1 by increasing or reducing it up to 15% (fifteen per cent) with respect to such Accounting Year and thereupon the modified Annual Production Programme shall bedeemed to be the Annual Production Programme for such Accounting Year for the purposes of this Agreement. However, an increase of the Annual Production Programme for any Accounting Year by more than 15% (fifteen per cent) shall be made only with the mutual consent of the Parties in writing. It is hereby clarified thatno claim for idling of the equipment due to a reduction in Annual ProductionProgramme shall be entertained by the Authority except as set out in Clause 21.2.3. For the avoidance of doubt, the Parties agree that the Annual Production Programmein the Accounting Year in which the Coal production starts or Transfer Date occurs shallbe proportionate to the period of operation in that Accounting Year.

21.2.3 The Authority agrees and undertakes that it shall ordinarily not reduce the Annual Production Programme by more than the quantity specified in Clause 21.2.2. In the event the Authority reduces the Annual Production Programme below such quantity, it shall pay to the Mine Operator, a charge equal to 25% (twenty-five per cent) of the Mining Charge for and in respect of such reduction below the quantity specified in Clause 21.2.2.

21.2.4 Unless otherwise agreed to by the Parties, it is expressly agreed by the Mine Operator that it shall, in no month of an Accounting Year, Deliver more than 10% (ten per cent) and less than 8% (eight per cent) of the quantity of Coal specified in the Annual Production Programme for that Accounting Year. It is clarified that notwithstanding the foregoing and unless otherwise agreed to by the Parties, the Mine Operator shall not, in any Accounting Year, Deliver more than 100% (one hundred per cent) of the quantity of Coal specified in the Annual Production Programme for that Accounting Year under this Clause 21.2. It is agreed that the provisions of this Clause 21.2.4 shall not apply to any quantity of Coal that is stored in the Coal Depot, and such Coal shall be Delivered by the Mine Operator at the Delivery Points in accordance with the instructions of the Authority.

21.2.5 The Mine Operator shall, no later than the 21st (twenty first) day of every month, furnish to the Authority its weekly target of production for the forthcoming month, and shall make best efforts to fulfil such targets. In the event it expects any shortfall therein, it shall inform the Authority as soon as may be, and furnish its revised targets

General Manager
Subhadra Area, MCL

NOTARY CENTRAL GOVT. ANGUL

NOTARY SUSHANTA KUMAR DAS

GOVT. OF WEST BENGAL
Area Kolkata
Regn. No. 44716
Expiry Date
15.03.2029

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of production.

21.2.6 It is clarified that any modification to the Annual Production Programme pursuant to this Clause 21.2 shall not be deemed to be a Change of Scope and shall not entitle the Mine Operator to a Change of Scope Order pursuant to Article 15.

21.3 Delivery Point

It is expressly agreed by the Mine Operator that unless otherwise authorised in writing by the Authority, all Coal excavated and produced by the Mine Operator shall be Delivered by the Mine Operator only at the Delivery Points and solely to the Authority or its nominees, and to no other person.

21.4 Extension of Annual Production Programme

In the event the Contract Period is extended in accordance with the provisions of this Agreement, the Annual Production Programme shall be deemed to be extended by a corresponding period on the terms and conditions specified in this Agreement, other than in respect of any extension of the Contract Period pursuant to Clause 3.1.

21.5 Damages for shortfall

21.5.1 In the event the excavated and Delivered Coal in any Accounting Year ("Actual Production") is less than the Annual Capacity for such Accounting Year, other than where such shortfall arises directly on account of (i) Force Majeure; or (ii) a default of the Authority; or (iii) non-Delivery of Coal pursuant to Clause 16.13, the Mine Operator shall be liable to pay the following amounts as Damages for the shortfall in Actual Production of Coal, as indicated below. It is clarified that in respect of the Accounting Year during which the appointed date or the Transfer Date occurs, the shortfall will be determined with respect to the Actual Production during the number of months in such Accounting Year subsequent to the appointed date or prior to the Transfer Date (as applicable) and the Annual Capacity for such Accounting Year shall be pro-rated for the number of months in such Accounting Year.

Shortfall in Actual Production expressed as a percentage of Annual Production Programme	Damages to be paid by the Mine Operator
100% to 90%	Nil
90% to 80%	10% of Mining Charge multiplied by the difference between the Actual Production and 90% of the Annual Production Programme.
80% to 70%	(a) 10% of Mining Charge multiplied by 10% of the Annual Production Programme (being the difference between 90% and 80% of the Annual Production Programme); and (b) 20% of Mining Charge multiplied by the difference between Actual Production and 80% of the Annual Production Programme.

NOTARY CENTRAL GOVT. ANGUL

General Manager

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Shortfall in Actual Production expressed as a percentage of Annual Production Programme	Damages to be paid by the Mine Operator
70% to 50%	(a) 10% of Mining Charge multiplied by 10% of the Annual Production Programme (being the difference between 90% and 80% of the Annual Production Programme); (b) 20% of Mining Charge multiplied by 10% of the Annual Production Programme (being the difference between 80% and 70% of the Annual Production Programme); and (c) 30% of Mining Charge multiplied by the difference between Actual Production and 70% of the Annual Production Programme. In addition, the Agreement will be reviewed by a review committee duly constituted by the Authority.
Less than 50%	(a) 10% of Mining Charge multiplied by 10% of the Annual Production Programme (being the difference between 90% and 80% of the Annual Production Programme); (b) 20% of Mining Charge multiplied by 10% of the Annual Production Programme (being the difference between 80% and 70% of the Annual Production Programme); (c) 30% of Mining Charge multiplied by 20% of the Annual Production Programme (being the difference between 70% and 50% of the Annual Production Programme); and (d) 40% of Mining Charge multiplied by the difference between Actual Production and 50% of the Annual Production Programme. In addition, the Agreement will be reviewed by a review committee duly constituted by the Authority to take appropriate decision.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

General Manager
Subsidiary Area, MCL

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ARTICLE 22

COAL DEPOT

22.1 Coal Depot

22.1.1 For discharging its obligations under and in accordance with the provisions of this Agreement, the Mine Operator shall build and operate coal depot(s) for storage of Coal in accordance with the provisions of this Article 22 (the "**Coal Depot**").

22.1.2 The land for the Coal Depot shall be earmarked in accordance with Schedule -A and Schedule-C, and shall form part of the Site, to be provided by the Authority in accordance with the provisions of Article 10.

22.1.3 The Coal Depot shall include spaces required for stocking of Coal, its processing, loading and Delivery in accordance with the provisions of this Agreement.

22.1.4 The Coal Depot shall have the capacity for storage of sufficient quantity of Coal, which shall in any event be not less than the Declared Capacity. The Coal Depot shall be maintained by the Mine Operator as per Standard Industry Practices and be kept free of spontaneous heating and fire by taking suitable measures. At the beginning of each Accounting Year, the Engineer in charge shall, in consultation with the Authority and the Mine Operator, declare the capacity of storage of the Coal Depot for that Accounting Year ("**Declared Capacity**"). Such Declared Capacity may be reviewed every quarter at the written request of either Party.

NOTARY CENTRAL GOVT. ASANSOL

22.1.5 Supply of electricity and water at the Coal Depot shall be procured by the Mine Operator at its own cost and expense.

22.2 Facilities and equipment at Coal Depot

22.2.1 The Mine Operator shall install and operate the facilities and equipment necessary for performing its obligations at the Coal Depot under and in accordance with the provisions of this Agreement.

22.2.2 The Parties may, by mutual agreement, change the location of the Coal Depot; provided, however, that any such change of location pursuant to this Clause 22.2.2 shall require the Authority to provide access to the Mine Operator with respect to the new location of the Coal Depot and provisions of Article 10 shall apply *mutatis mutandis* to the acquisition and takeover of physical possession of such new location.

General Manager
Subhadra Area, SECL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.03.2029
GOVT. OF WEST BENGAL

SUBHADRA COAL MINING LIMITED

SECL
SK. NAZRUL ISLAM
NOTARY
Regn. No. 447/19
BILASPUR

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ARTICLE 23

STORAGE AND TESTING

23.1 Storage of Coal

The Mine Operator may, upon excavation in accordance with Standard Industry Practice and the provisions of this Agreement, store Coal at the Coal Depot, such that it is available for Delivery and transportation thereof in accordance with this Agreement.

23.2 Testing of Coal

23.2.1 For determining that the Coal Delivered conforms to the Specifications and Standards, the Coal Tests shall be conducted at the Delivery Point by an independent laboratory accredited to the National Accreditation Board of Laboratories, as selected by the Authority or any of the Buyer(s) and notified by the Authority to the Mine Operator (the "**Independent Laboratory**"). The Coal Tests shall be carried out in the presence of the representatives of the Authority, the Mine Operator and, if required, the Buyer and such representatives shall sign the results of the Coal Tests. A copy of the reports of all such Coal Tests shall be provided to the Authority and the Mine Operator forthwith and to the Buyer upon request.

23.2.2 The results of the Coal Tests shall be final and binding on the Mine Operator and the Authority.

23.2.3 Subject to Clause 30.1.2 of this Agreement, if the results of the Coal Tests conducted at the Delivery Point indicate a deterioration in grade from the Declared Grade (the "**Grade Slippage**"), then the Mine Operator shall indemnify and shall be liable to forthwith pay to the Authority, 1.25 (one point two five) times the amount equivalent to that portion of the sale price of Coal which the Authority is unable to, or fails to, realize from a Buyer on account of such Grade Slippage, as Damages. In addition, the Mine Operator shall be liable to pay to the Authority the amount of loss incurred by the Authority due to any payment of royalty to the Government. The aforesaid amounts shall be recovered by the Authority from the Monthly Invoices of the Mine Operator.

In case of Referee samples, any recovery from Mine Operator on account of grade variation shall be made after receipt of Referee results.

23.2.4 In the event the results of any of the Coal Tests conducted at the Delivery Point indicate a Grade Slippage for such number of days as may be determined by the Authority, such event shall be deemed to be a Mine Operator Default for the purposes of Clause 37.1.1 and in addition to any other rights and remedies available to the Authority under this Agreement (including pursuant to Clause 23.2.3), the Authority shall be entitled to exercise its right of Suspension under Clause 36.1.

23.2.5 The costs and expense incurred on all Coal Tests carried out under Clause 23.2.1 shall be borne by the Authority.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 44/11 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

General Manager
Subhadra Area, MCL

SUBHADRA COAL MINING LIMITED

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23.3 Reporting of Coal stock

The Mine Operator shall, no later than 07:00 hours on each day, provide a statement to the Authority setting out

(i) the opening stock of Coal at 00:00 hrs of the preceding day

(ii) the arrival of fresh stocks, if any during the preceding day,

(iii) the Delivery of Coal during the preceding day; and

(iv) the closing stock on the preceding day at 24:00 hours.

NOTARY
CENTRAL GOVT.
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General Manager
Subhadra Area, MCL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/15
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

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ARTICLE 24

DISPATCH AND DELIVERY

24.1 Dispatch of Coal

The Authority shall, in accordance with the provisions of this Agreement, issue instructions to the Mine Operator for dispatch of Coal during such period and in such volumes as it may specify in its instructions (the **"Dispatch Instructions"**) and the Mine Operator shall plan and undertake the dispatch and Delivery of Coal thereof accordingly.

24.2 Delivery and loading of Coal

The Mine Operator shall Deliver Coal to the Authority and load it on the trucks, railway wagons or any Coal dispatch system, as the case may be, provided by the Authority at or about the Coal Depot, at its own cost and expense.

Any damages or demurrage claimed by the railway or any Coal dispatch system, as the case may be, due to delay in loading or under loading or over loading or any spillage or loss occurring during the process of Delivery of Coal shall be borne by theMine Operator.

24.3 Title and Risk in Coal

The Mine Operator acknowledges and accepts that the entire Coal mined from the Mines shall be the property of the Authority and the right, title and interest in the Coal including after it is mined shall, at all times, vest in the Authority notwithstanding that the risk of handling the Coal till the Delivery Points and acceptance thereof shall be that of the Mine Operator. The Mine Operator shall supply all Coal mined from the Mines only to the Authority in accordance with the terms of this Agreement and shall not have any right to supply, sell or Deliver the Coal to any other person or otherwise utilize the Coal for any other purpose, except as expressly provided in this Agreement.

MOHARASTRA CENTRAL GOVT. AREA

General Manager
Subhadra Area, MCL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. NO. 447/19
Expiry Date
15.08.2025
GOVT. OF WEST BENGAL

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ARTICLE 25

KEY PERFORMANCE INDICATORS

25.1 Key Performance Indicators

Without prejudice to the obligations specified in this Agreement, the Mine Operator shall operate and maintain the Mines and Equipment such that they achieve the performance indicators specified in this Article 25 (the **"Key Performance Indicators"**).

25.2 Production Programme and Project Milestones

25.2.1 The Mine Operator shall excavate Coal for Delivery thereof to the Authority in accordance with the Annual Production Programme specified in Article 21. The Mine Operator shall pay Damages for any shortfall in Delivery of Coal, equivalent to the Annual Production Programme, in accordance with the provisions of Clause 21.5.

25.2.2 The Mine Operator shall complete the Construction Works in accordance with the Project Milestones.

25.3 Adjustments in Mining Charge

25.3.1 Any recoveries and payments, required to be made in accordance with this Article 25, shall be made on a monthly basis and adjusted in the Mining Charge payable to the Mine Operator.

25.3.2 The aggregate of all Incentives payable by the Authority for any month, in terms of the provisions of this Agreement, shall be deemed as the aggregate Incentive (the **"Aggregate Incentive"**).

25.3.3 The aggregate of all Damages payable by the Mine Operator for any month, in terms of the provisions of this Agreement, shall be deemed as the aggregate Damages (the **"Aggregate Damages"**).

25.3.4 The net of Aggregate Damages and Aggregate Incentives shall be deemed to be due and payable by the Authority or the Mine Operator, as the case may be, under this Article 25.

25.3.5 In the event that the amount payable by the Mine Operator in accordance with the provisions of Clause 25.3.4 shall exceed 10% (ten per cent) of the total Mining Charge receivable during any month, the amount receivable in excess of such 10% (ten per cent) shall be carried forward to the subsequent month. For the avoidance of doubt, if the amount carried forward under this Clause 25.3.5 cannot be adjusted in the subsequent month, it shall continue to be carried forward to the following months until it is fully adjusted, but only within the ceiling of 10% (ten per cent) per month specified herein above.

NOTARY CENTRAL GOVT. ANDAMAN

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 44/19 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

General Manager Subhadra Area, MCL

SOUDAMDRA COAL MINING LIMITED

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25.4 Monthly Report

The Mine Operator shall, no later than 7 (seven) days after the end of each month, furnish to the Authority, a report stating the Key Performance Indicators of the Mines or any phase thereof, as measured on a daily basis. The Mine Operator shall promptly give such other relevant information as may be required by the Authority.

NOTARY GOVT. OF WEST BENGAL

SK. NEZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expire Date
15.09.2023

NOTARY GOVT. OF WEST BENGAL

General Manager
Subhadra Area, MCL

SUBHADRA COAL MINING

ARTICLE 26

ENGINEER IN CHARGE

26.1 Engineer in charge

A senior level officer of the Authority shall be appointed by the Authority as the 'Engineer in charge' to act as its authorised representative for the purpose of administration and supervision of the Project ("**Engineer in charge**"). The appointment shall be made no later than 90 (ninety) days from the date of this Agreement. It is hereby clarified that the Engineer in charge shall always be appointed by the Authority from among its employees/officers.

The Engineer in charge shall be responsible for supervising and administering the Agreement, certifying payment due to the Mine Operator, valuing variations to the Agreement, awarding extension of time and valuing compensation events. The Engineer in charge may, on its behalf, further appoint its representatives i.e., Project manager/any other competent person for carrying out its functions as specified herein and notify to the Mine Operator / Contractor, who is directly responsible for supervising the work being executed at the Site, regarding such appointment of its representatives. However, the Engineer in charge shall at all times be responsible and liable for its obligations, duties and responsibilities under this Agreement.

NOTARY CENTRAL GOVT ANGUL

26.2 Duties and functions

26.2.1 The Engineer in charge shall discharge its duties and functions substantially in accordance with the terms of reference set forth in Schedule-O.

26.2.2 The Engineer in charge shall submit regular periodic reports (at least once every month) to the Authority in respect of its duties and functions set forth in Schedule-O.

26.2.3 A true copy of all communications sent by the Engineer in charge to the Mine Operator and by the Mine Operator to the Engineer in charge shall be sent forthwith by the Engineer in charge to the Authority.

26.3 Replacement of Engineer in charge

26.3.1 The Authority may replace the Engineer in charge at any time with another suitable Engineer in charge.

26.3.2 If the Mine Operator has a reason to believe that the Engineer in charge is not discharging its duties and functions in a fair, efficient and diligent manner, it may make a written representation to the Authority and seek replacement of the Engineer in charge.

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Talabira Area, MCL

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PART IV

FINANCIAL COVENANTS

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 49/19 Expiry Date 15.03.2023 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 49/19 Expiry Date 15.03.2023 GOVT. OF WEST BENGAL

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Subhadra Area, MCL

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ARTICLE 27

MOBILISATION ADVANCE

27.1 Mobilisation Advance

Mobilisation advance for the Mine Operator has not been considered for this Project under the Agreement.

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Govt. of West Bengal

General Manager
Subhadra Area, MCL

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SK. NAZRUL ISLAM
Area Kolkata
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ARTICLE 28

MINING CHARGE AND OTHER CHARGES

28.1 Mining Charge

28.1.1 Subject to and in accordance with the terms of this Agreement, the Authority shall pay to the Mine Operator the mining charge per Tonne of Coal Delivered by the Mine Operator at the Delivery Point(s) in accordance with the provisions of this Agreement (the "**Mining Charge**"), which shall be calculated in the following manner:

(i) The Mining Charge quoted in the Bid is Rs.{****} (Rupees{****}) per Tonne (the "**Base Mining Charge**").

(ii) The Base Mining Charge shall be adjusted yearly after COD for Actual Stripping Ratio as per the Clause no. 28.1.2 below.

(iii) The Base Mining Charge shall be revised every quarter (commencing from the first quarter after the Bid Date) to reflect the variation in Price Index occurring between the Reference Index Date of the quarter preceding the Bid Date and the Reference Index Date for the quarter preceding the date of revision, and the amount so determined shall be the Mining Charge for that quarter.

(iv) **Delivery Point No - 1 (RLS of Subhadra OCP)**: The Mine operator shall deliver the coal into the railway wagons through CHP/ RLS constructed by the Mine Operator at Subhadra OCP Railway Link Line & Siding. This will be marked as "**Delivery Point No - 1**".

(v) **Delivery Point No - 2 (Balram Siding No. 9 & 10)**: The coal shall be delivered into railway wagons by the Mine operator by means of road transport and pay-loader at Balram Siding No. 9 & 10 until the 4th Anniversary from the appointed date or commissioning of CHP/ RLS of Subhadra OCP and Railway Track & Siding, whichever is earlier. This delivery point may also be used as an alternative mode of evacuation during the Contract Period in case there is any operational problem at delivery point no-1. This will be marked as "**Delivery Point No - 2**".

(vi) **Delivery Point No - 3 (Coal Stockyard of Subhadra OCP)**: The Mine operator shall deliver coal by payloader/Truck receiving hoper/any mechanical means to Consumers for Road Dispatch at pit head/coal stock yard of Subhadra OCP. This will be marked as "**Delivery Point No - 3**".

(vii) The payment for the delivered coal at different delivery points will be as below:

(viii) The Mining charge payable to the Mine operator for delivery of coal at **Delivery Point No - 1**, i.e. railway wagons through CHP/ RLS of Subhadra OCP, shall be the Base Mining Charge as per Clause 28.1.1(i) quoted by the Bidder. Therefore, revision of Base Mining charge as per clause no 28.1.1(iii) shall be applicable as per Price Index of Article-47 of MCA.

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SUBHADRA COAL MINING LIMITED

General Manager
Subhadra Area, MCL

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ARTICLE 28

MINING CHARGE AND OTHER CHARGES

Mining Charge

Subject to and in accordance with the terms of this Agreement, the Authority shall pay to the Mine Operator the mining charge per Tonne of Coal Delivered by the Mine Operator at the Delivery Point(s) in accordance with the provisions of this Agreement (the "Mining Charge"), which shall be calculated in the following manner:

(i) The Mining Charge quoted in the Bid is Rs. [redacted] only) per Tonne plus GST as applicable (the "Base Mining Charge").

(ii) The Base Mining Charge shall be adjusted yearly after COD for Actual Stripping Ratio as per the Clause no. 28.1.2 below.

(iii) The Base Mining Charge shall be revised every quarter (commencing from the first quarter after the Bid Date) to reflect the variation in Price Index occurring between the Reference Index Date of the quarter preceding the Bid Date and the Reference Index Date for the quarter preceding the date of revision, and the amount so determined shall be the Mining Charge for that quarter.

(iv) **Delivery Point No - 1 (RLS of Subhadra OCP)**: The Mine operator shall deliver the coal into the railway wagons through CHP/ RLS constructed by the Mine Operator at Subhadra OCP Railway Link Line & Siding. This will be marked as "Delivery Point No - 1".

(v) **Delivery Point No - 2 (Balram Siding No. 9 & 10)**: The coal shall be delivered into railway wagons by the Mine operator by means of road transport and pay-loader at Balram Siding No. 9 & 10 until the 4th Anniversary from the appointed date or commissioning of CHP/ RLS of Subhadra OCP and Railway Track & Siding, whichever is earlier. This delivery point may also be used as an alternative mode of evacuation during the Contract Period in case there is any operational problem at delivery point no-1. This will be marked as "Delivery Point No - 2".

(vi) **Delivery Point No - 3 (Coal Stockyard of Subhadra OCP)**: The Mine operator shall deliver coal by payloader/Truck receiving hoper/any mechanical means to Consumers for Road Dispatch at pit head/coal stock yard of Subhadra OCP. This will be marked as "Delivery Point No - 3".

(vii) The payment for the delivered coal at different delivery points will be as below:

(viii) The Mining charge payable to the Mine operator for delivery of coal at Delivery Point No - 1, i.e. railway wagons through CHP/ RLS of Subhadra OCP, shall be the Base Mining Charge as per Clause 28.1.1(i) quoted by the Bidder. Therefore, revision of Base Mining charge as per clause no 28.1.1(iii) shall be applicable as per Price Index of Article-47 of MCA.

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SUBHADRA COAL MINING LIMITED

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(ix) The Mining charge payable to the Mine operator for delivery of coal at Delivery point No-2, Balram Siding No. 9 & 10 shall constitute two parts, i.e. Part A & Part B:

Part A = [redacted]% Base Mining Charge as per Clause 28.1.1(i) quoted by the Bidder (Winning and conveying/ transporting of Coal from face to RLS of Subhadra OCP and despatch by railway wagons). Also, revision of Base Mining charge as per clause no 28.1.1(iii) shall be applicable for Part A only.

Part B = The Rate shall be the lowest awarded rate of Mines of MCL in Talcher Coalfields for transportation to Balram Siding No. 9 & 10 and loading onto railway wagons by pay loader or 85% of the updated SOR rate whichever is higher.

If the rate is not available for the required lead, then it shall be derived from the lowest awarded rate of Talcher Coalfields by extrapolation/ interpolation of awarded rate.

The formula for extrapolation/ interpolation of awarded rate with change in lead is as given below:

R2 = R1 + [SOR rate at D2 - SOR rate at D1] X (Awarded rate at D1) / (SOR rate at D1)

Where R1= Awarded rate
D1= Awarded lead
D2= New lead
R2= Desired awarded rate at new lead D2

For avoidance of doubt,

- Bifurcation of part-A & part-B shall be made on the Base Mining Charge, prior to revision of Base Mining charge as per clause no 28.1.1(iii)

- Rate/tonne of coal for part B includes the price variation as per prevailing formula for coal transportation, wagon loading or similar activities prescribed in Contract Management Manual (CMM) of Coal India Limited (CIL) manuals (annexed as Schedule-T). Hence revision of price as per clause 28.1.1(iii) shall not be applicable for Part B.

(x) The Mining charge payable to the Mine operator for delivery of coal at Delivery point No-3, i.e. coal stock yard shall be Part-A, i.e. [redacted]% Base Mining Charge as per Clause 28.1.1(i) quoted by the Bidder. Revision of Base Mining charge as per clause no 28.1.1(iii) shall be applicable as per Price Index of Article-47 of MCA.

(xi) After completion of 4th Anniversary from the appointed date or commissioning of RLS at Railway Link Line & Siding, whichever is earlier and after delivering scheduled quantity to JSPL:

a. If coal is delivered through Delivery Point No. 2 due to failure on the

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part of Mine Operator to deliver coal through **Delivery Point No - 1**, then only the quoted **mining charge** shall be payable to Mine Operator.

b. If coal is delivered through **Delivery Point No - 2** due to failure on the part of Authority for availability of delivery of coal through **Delivery Point No - 1**, then payment admissible to the Mine Operator will be sum of **Part A** and **Part B**.

28.1.2 **Adjustment of the Base Mining Charge in Stripping Ratio:**

Adjusted Base Mining Charge for Stripping Ratio (MCn) =

MC ([0.2] + [0.8] x (1/Sg + SRn) / (1/Sg + SRo))

Where:

MCn = Adjusted Base Mining Charge for n-th Accounting Year.

MC = Mining Charge quoted (for Notional Stripping Ratio of 1.12 cum/t)

SRn = Actual Stripping Ratio for the n-th Accounting Year.

SRo = Notional Stripping Ratio i.e 1.12 cum/t

Sg = Specific gravity of Coal = 1.71

The Actual Stripping Ratio ("**Actual Stripping Ratio**") of any Accounting Year after COD shall mean the in-situ volume of Overburden actually removed in cubic metres for each Tonne of Coal produced during the year, as determined through measurement at the end of that Accounting Year. As the value of the Actual Stripping Ratio for a particular Accounting Year shall be known after the completion of that Accounting Year, the monthly payment for Coal production for a period of the 1st (first) 9 (nine) months of any Accounting Year shall be made on the basis of such Stripping Ratio as estimated at the beginning of that Accounting Year. The adjustment of payment shall be started from the 10th (tenth) month of the Accounting Year based on an anticipated Stripping Ratio and the final adjustment of such payment shall be made after determination of the Actual Stripping Ratio of that Accounting Year.

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28.2 Additional Capacity

28.2.1 The Mine Operator may, upon request from the Authority and in accordance with Applicable Laws, Specifications and Standards and Maintenance Requirements, construct, install and operate any excavation capacity which is in addition to and in excess of the Contracted Capacity (the "**Additional Capacity**").

28.2.2 The additional Coal produced under the Additional Capacity installed hereunder shall have the same Mining Charge otherwise payable for the Contracted Capacity.

28.3 Taxes and duties

28.3.1 It shall be the obligation of the Mine Operator to comply with all necessary Tax related statutory compliances, including but not limited to the payment of GST at the rates prescribed under the Applicable Laws, in relation to the Agreement.

28.3.2 The Authority shall, upon receiving the GST invoice or debit note (as applicable under the GST Laws) and other supporting documents in relation to the Mining Charge,

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which is the sole consideration under this Agreement for the Mine Operator, pay the Mining Charge to the Mine Operator along with the amount of GST indicated in GST invoice. The Mine Operator shall issue a GST credit note within the time limit as prescribed under the GST Laws. The Authority shall, upon receiving the credit note adjust the basic amount and taxes thereon while making payment towards the next following GST invoice raised/issued by the Mine Operator.

28.3.3 In case of any loss of input tax credit or any other benefit or incidence of interest or penalty suffered by the Authority in relation to GST due to any non-compliance by the Mine Operator of the Applicable Laws (including but not limited to the Mine Operator's failure to upload details of sale on the GSTN portal, failure to issue GST compliant document(s) within the prescribed time frame or furnishing incorrect or incomplete documents with the relevant Government Instrumentality), the Authority shall have the right to: (a) be compensated by the Mine Operator for such amount of loss or penalty suffered by the Authority, or (b) set-off such loss or penalty against any next amounts payable by the Authority to the Mine Operator under the Agreement. For the avoidance of doubt, it is hereby clarified that any loss of input tax credit or any other benefit or incidence of interest or penalty shall be recovered/adjusted from next Monthly Invoice or against the Performance Security, as the case may be, at the discretion of the Authority and in case award/loss amount is greater than value of Monthly Invoice or the Performance Security, as the case may be, the Mine Operator shall pay such differential amount to the Authority within 30 (thirty) days from the date of demand raised by the Authority. In addition, any delay in uploading the details of sale on the GSTN portal by the Mine Operator resulting in deferment of input tax credit in accordance with the GST Laws, shall entitle the Authority to charge interest at the rate equivalent to the prevailing interest rate charged by the relevant Government Instrumentality for input tax credit reversal under GST Laws.

28.3.4 It is hereby clarified that the Mining Charge shall be exclusive of all royalties, statutory levies, cess, duties and contribution to District Mineral Fund (DMF) and National Mineral Exploration Trust (NMET) and all other statutory charges applicable from time to time.

28.3.5 Where any damages or compensation becomes payable by either the Authority or the Mine Operator pursuant to any provision of this Agreement, appropriate GST wherever applicable as per the GST Laws in force shall also be payable by the concerned Party in addition to such damages or compensation, upon issuance of GST invoice under GST Laws by the concerned Party which is entitled to receive such payments.

28.3.6 The obligation of the Authority shall be limited to the compliance of obligation of tax deduction at source in relation to income tax and GST on the Mining Charge or any other charges paid to the Mine Operator, as applicable, in accordance with the Applicable Laws.

28.4 Stockpiling and Re-handling

28.4.1 In the event there is an insufficient supply of wagons at the Delivery Point or for any other reason the Authority opts to not take Delivery of Coal and instructs the Mine Operator in writing to stock the Coal otherwise available for Delivery, at the Coal

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Depot (the "**Undelivered Coal**"), then subject to and in accordance with the terms of this Agreement, the Authority shall pay to the Mine Operator the following amounts:

(a) 70% (seventy per cent) of the Mining Charge per Tonne of Undelivered Coal; and

(b) 30% (thirty per cent) of the Mining Charge per Tonne of Undelivered Coal, at the time of Delivery of the Undelivered Coal (or part thereof) at the Delivery Point.

It is hereby clarified that no re-handling charge is payable by the Authority to the Mine Operator for re-handling of the Undelivered Coal and the cost of such re-handling of the Undelivered Coal shall be deemed to be included in the Mining Charge.

28.4.2 For payment of undelivered coal at the delivery points the following principles shall apply:

(a) For "**Undelivered Coal**" at **coal stock yard** of Subhadra OCP, Mining charge payable shall be 70 % (Seventy percent) of amount mentioned in Part A of clause no 28.1.1(x).

(b) For "**Undelivered Coal**" at **Balram Siding No. 9 & 10**, Mining charge payable shall be 70 % (Seventy percent) of amount mentioned in Part A of clause no 28.1.1(x) and transportation charges from coal stock yard of Subhadra OCP to Balaram siding No-9 &10 as per Part-B.

(c) For "**Undelivered Coal**" at **ground bunker of RLS** of Subhadra OCP, Mining charge payable shall be 70 % (Seventy percent) of quoted Base Mining Charge of clause no 28.1.1(i).

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ARTICLE 29

BILLING AND PAYMENT

29.1 Billing and Payment

29.1.1 The Mine Operator shall, by the 5th (fifth) day of each month (or, if such day is not a business day, the immediately following business day), submit in triplicate to the Authority, an invoice in the agreed form (the "**Monthly Invoice**") signed by the authorised signatory of the Mine Operator setting out the computation of the Mining Charge payable by the Authority to the Mine Operator in respect of the immediately preceding month in accordance with the provisions of this Agreement.

29.1.2 The Mine Operator shall, with each Monthly Invoice, submit (a) a certificate that the amounts claimed in the invoice are correct and in accordance with the provisions of the Agreement; (b) an estimate of the approximate weight of Coal stored at the Coal Depot at the close of the relevant month; (c) Delivery of Coal to the Authority during the relevant month; (d) official documents in support of the variation in Price Index; (e) detailed calculations of the Mining Charge, and any other amounts payable by the Authority in accordance with this Agreement; (f) details in respect of Taxes payable or reimbursable in accordance with the provisions of this Agreement; (g) details in respect of Aggregate Incentives and Aggregate Damages payable in accordance with the provisions of Articles 25; (h) the net amount payable under the Monthly Invoice; and (i) proof of having complied with the provisions of all Applicable Laws required to be complied with regarding payment of wages and salaries.

29.1.3 Except as set out in Clauses 29.1.1 and 29.1.2, in the event that any sums of money are due from one Party to the other Party under this Agreement (including any amounts payable as Damages), then the Party to whom such sums of money are owed shall send to the other Party an invoice together with relevant supporting documents showing the basis for the calculation of such sums ("**Miscellaneous Invoice**").

29.1.4 Due Dates

(i) Each Monthly Invoice and/ or Miscellaneous Invoice delivered to the Authority shall become due and payable by the Authority within 30 (thirty) days after the receipt of such Monthly Invoice and/ or Miscellaneous Invoice, as the case may be. For any Monthly Invoice and/ or Miscellaneous Invoice, 80 (eighty) % of the amount will be payable by the Authority within 10 (ten) days after receipt of such invoice complete in all respects.

(ii) Subject to Clause 29.2, each Party shall pay on or before the relevant due date, the amount that become due and payable by such Party to the other Party pursuant to a Monthly Invoice or a Miscellaneous Invoice. Such payments shall, unless otherwise stated, be made in Rupees and shall be made by wire transfer, to the bank account designated by the Mine Operator or the Authority, as applicable.

(iii) In the event the full amount under a Monthly Invoice or a Miscellaneous Invoice payable by either Party is not paid when due, any unpaid amount

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thereof shall bear interest from the due date until paid, at the MCLR of State Bank of India. Interest shall be paid on the date when payment of the amount due is made.

29.1.5 The Authority shall be entitled to deduct or set off against any amounts payable by the Mine Operator under this Agreement, any amounts payable by the Authority to the Mine Operator under this Agreement.

29.1.6 Billing and Payment when Mine Operator is Pure Agent

(a) *Mine Operator as the Pure Agent*: For purpose of undertaking the Rehabilitation and Resettlement of the PAPs for and on behalf of the Authority in accordance with the Applicable Laws, approved R&R Policy and the terms of this Agreement and procuring issuance of the environmental clearance and forest clearances from the Ministry of Environment, Forests and Climate Change, Government of India for and on behalf of the Authority, the Mine Operator shall be appointed as the Pure Agent and in this regard, the Parties shall enter into a pure agency agreement in the format as set forth in Schedule-S.

(b) *Submission of details/documents*: In relation to the costs, expenses, fees and other payments/expenditures incurred by the Mine Operator towards discharge of its obligations as the Pure Agent (as stipulated in sub-clause (a) above), the Mine Operator shall be reimbursed by the Authority in accordance with the Applicable Laws and subject to the following provisions:

(i) The Mine Operator shall submit with the Engineer in charge: (A) tax invoice(s) (in its capacity as the Pure Agent) indicating the amounts claimed for reimbursement, in accordance with the Applicable Laws (including the GST Laws); (B) complete details of all direct and documented R&R Cost and/or statutory cost and fees incurred by the Mine Operator; (C) underlying invoices in the name of the Authority evidencing such incurrence; and (D) any other documentation in support of such costs and expenditure, as may be required by the Authority and/or the Engineer in charge.

(ii) The Mine Operator shall submit the documents mentioned at (i) above for certification/acceptance for payment by the Engineer in charge: (A) in relation to the R&R Costs, on a monthly/quarterly basis; (B) in relation to statutory cost and fees, after completion of the service.

The R&R cost prepared by the mine operator as per the prevalent guidelines/ statutory provisions shall be submitted to the Authority for scrutiny and approval before making payment to the PAPs. It is clarified that no R&R cost shall be paid to PAPs without prior approval of the Authority.

(c) *Payments*: The Mine Operator shall be paid towards reimbursement within 30 (thirty) days from: (i) the date of receipt of all details and documents, as specified under this Clause 29.1.6, by the Engineer in charge's office; or (ii) the date of receipt of approval for payment from the competent authority, whichever is later.

29.2 Disputed Amounts

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SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 10.12.2024 NOTARY GOVT. OF WEST BENGAL

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29.2.1 In the event a Party disagrees with an invoice, such Party shall promptly and in no event later than 10 (ten) days of receipt of such invoice notify the other Party of the disagreement and reasons thereof. Within 7 (seven) days of receipt of such notice, the other Party shall present any information or evidence as may reasonably be required for determining that the disputed amounts under an invoice are payable. The disputing Party may, if necessary, meet a representative of the other Party forresolving the dispute and in the event that the dispute is not resolved amicably, the Dispute Resolution Procedure shall apply. Promptly and no later than 30 (thirty) days after resolution of any dispute as to an invoice, the amount of any overpaymentor underpayment shall be paid by the Mine Operator or Authority (as the case may be) to the other Party, together with interest thereon at the MCLR of State Bank of India from the date payment was due to the date of payment. For the avoidance of doubt, the Authority shall be entitled to raise a Dispute regarding any amounts underan invoice, whether due or already paid under this Agreement, at any time.

29.3 Provisional payment against Price Index

In the event authenticated information is not available for and in respect of the Price Index as on the relevant date, the Authority shall make provisional payments on the basis of the Price Index of the last date for which such information is available and the balance shall be paid or recovered, as the case may be, within 30 (thirty) days of the publication of the Price Index for such relevant date.

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ARTICLE 30

DETERMINATION OF GRADE

30.1 Determination of Grade at Coal Seams

30.1.1 The Coal grade will be declared as per the provisions of Colliery Control Rules, 2004 (as amended from time to time). The Mine Operator shall be entitled to participate in sampling and testing of samples collected from Coal Seams for the purpose of declaration of grade. At the start of each Accounting Year, the grade of Coal will be declared in accordance with this Clause 30.1.1 (the "**Declared Grade**"). All costs incidental to declaration of the grade of Coal shall be borne by the Authority.

30.1.2 In case there is a Grade Slippage during an Accounting Year, the Mine Operator may request the revision of the Declared Grade in accordance with the provisions of Colliery Control Rules, 2004 (as amended from time to time) and notifications made thereunder.

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ARTICLE 31

REVENUE SHORTFALL LOAN

Revenue shortfall loan for the Mine Operator has not been considered for this Project under the Agreement.

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ARTICLE 32

INSURANCE

32.1 Insurance during Contract Period

The Mine Operator shall effect and maintain at its own cost, during the Contract Period, such insurances for such maximum sums as may be required under the Financing Agreements and Applicable Laws, and such insurances as may be necessary or prudent in accordance with Standard Industry Practice. The Mine Operator shall also effect and maintain such insurances as may be necessary for mitigating the risks that may devolve on the Authority as a consequence of any act or omission of the Mine Operator during the Contract Period. The Mine Operator shall procure that in each insurance policy, the Authority shall be a co-insured.

32.2 Insurance Cover

Without prejudice to the provisions contained in Clause 32.1, the Mine Operator shall procure and maintain Insurance Cover including, but not limited, to the following:

(a) Loss, damage or destruction of the Project Assets, including assets handed over by the Authority to the Mine Operator, at replacement value;

(b) comprehensive third party liability insurance including injury to or death of personnel of the Authority or others caused by the Project;

(c) the Mine Operator's general liability arising out of the Agreement;

(d) liability to third parties for goods or property damage;

(e) workmen's compensation insurance;

(f) compensation / ex-gratia for loss of life (fatal coal mine accident) shall be as per the directives of Coal India Limited. In this regard, it is hereby clarified that the Mine Operator shall have to adhere to any directive issued by Coal India Limited or any other Government Instrumentality from time to time. The present amount of such compensation / ex-gratia for loss of life is Rs. 15 (fifteen) lakh. However, due to revision of directive, if the Mine Operator is required to pay more than the stipulated amount, the excess amount shall be reimbursed by the Authority; and

(g) any other insurance that may be necessary to protect the Mine Operator and its employees, including all Force Majeure Events that are insurable at commercially reasonable premiums and not otherwise covered in items (a) to (e) above.

32.3 Notice to the Authority

No later than 45 (forty-five) days prior to commencement of the Construction Period or the Operation Period, as the case may be, the Mine Operator shall by notice furnish to the Authority, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Article 32. Within 30 (thirty) days of receipt of such notice, the Authority may require the Mine Operator to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the Dispute Resolution Procedure shall apply.

NOTARY CENTRAL GOVT. ANGUL

NOTARY MD. NAZRUL ISLAM Area Kolkata Regd. No. 447/19 Expiry Date 15.09.2020 GOVT. OF WEST BENGAL

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32.4 Evidence of Insurance Cover

All insurances obtained by the Mine Operator in accordance with this Article 32 shall be maintained with insurers on terms consistent with Standard Industry Practice. Within 15 (fifteen) days of obtaining any insurance cover, the Mine Operator shall furnish to the Authority, notarised true copies of the certificate(s) of insurance, copies of insurance policies and premium payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty five) days after notice of such proposed cancellation, modification or non -renewal has been delivered by the Mine Operator to the Authority.

32.5 Remedy for failure to insure

If the Mine Operator shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Authority shall have the option to either keep in force any such insurances, and pay such premium and recover the costs thereof from the Mine Operator.

32.6 Waiver of subrogation

All insurance policies in respect of the insurance obtained by the Mine Operator pursuant to this Article 32 shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, *inter alia*, the Authority, and its assigns, successors, undertakings and their subsidiaries, affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

32.7 Mine Operator's waiver

The Mine Operator hereby further releases, assigns and waives any and all rights of subrogation or recovery against, *inter alia*, the Authority and its assigns, undertakings and their subsidiaries, affiliates, employees, successors, insurers and underwriters, which the Mine Operator may otherwise have or acquire in or from or in any way connected with any loss, liability or obligation covered by policies of insurance maintained or required to be maintained by the Mine Operator pursuant to this Agreement (other than third party liability insurance policies) or because of deductible clauses in or inadequacy of limits of any such policies of insurance.

32.8 Application of insurance proceeds

The proceeds from all insurance claims, except life and injury, shall be applied by the Mine Operator firstly, for any necessary repair, reconstruction, reinstatement, replacement, improvement or development of the Mines, and the balance remaining, if any, shall be applied in accordance with the provisions contained in this behalf in the Financing Agreements.

NOTARY CENTRAL GOVT ANGUL

SK. NAZRUL ISLAM Add Kolkata Regn. No. 44711 Expiry 9/16 15.09.2023

GOVT. OF WEST BENGAL

General Manager

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ARTICLE 33

ACCOUNTS AND AUDIT

33.1 Audited accounts

33.1.1 The Mine Operator shall maintain books of accounts recording all its receipts (including revenues from Mining Charge and all incomes derived/collected by it from or on account of the Mines and Coal), income, expenditure, payments, assets and liabilities, in accordance with this Agreement, Standard Industry Practice, Applicable Laws and Applicable Permits. The Mine Operator shall provide the copies of its audited balance sheet and profit and loss account, as and when required by the Authority.

33.1.2 On or before the 31st (thirty-first) day of May of each Accounting Year, the Mine Operator shall provide to the Authority, for the preceding Accounting Year, a statement duly audited by its Auditors giving summarised information on (a) receipts on account of Mining Charge, (b) all other revenues from, or account of the Mines, c) list and values (including value addition / depreciation during the year) of the assets (including Capital Works, Project Assets, Moving Equipment etc.) and (d) such other information as the Authority may reasonably require..

33.2 Appointment of auditors

33.2.1 The Mine Operator shall appoint, and have during the subsistence of this Agreement as its Auditors, a firm chosen by it from the list of firms of chartered accountants / cost accountants (the "**Panel of Chartered Accountants and Cost and Management Accountants**"), set forth in Schedule-P. All fees and expenses of the Auditors shall be borne by the Mine Operator. The Authority shall have right to change the Schedule-P from time to time or as and when required.

33.2.2 The Mine Operator may terminate the appointment of its Auditors after a notice of 45 (forty five) days to the Authority, subject to the replacement of Auditors being appointed from the Panel of Chartered Accountants.

33.2.3 Notwithstanding anything to the contrary contained in this Agreement, the Authority shall have the right, but not the obligation, to appoint at its cost from time to time and at any time, another firm (the "**Additional Auditors**") from the Panel of Chartered Accountants to audit and verify all those matters, expenses, costs, realisations and things which the Auditors are required to do, undertake or certify pursuant to this Agreement.

33.3 Certification of claims by Auditors

Any claim or document provided by the Mine Operator to the Authority in connection with or relating to receipts, income, payments, costs, expenses, accounts or audit, and any matter incidental thereto, shall be valid and effective only if audited/vetted by its Auditors. For the avoidance of doubt, such certification shall not be required for exchange of information in the normal course of business.

NOTARY CENTRAL GOVT. ANGUL

SK. NAZRUL ISLAM Advocate Kolkata Regn. No. 847/19 98 Expiry Date 15.06.2029 GOVT. OF WEST BENGAL

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33.4 Set-off

In the event any amount is due and payable by the Authority to the Mine Operator, it may set-off any sums payable to it by the Mine Operator and pay the balance remaining. Any exercise by the Authority of its rights under this Clause 33.4 shall be without prejudice to any other rights or remedies available to it under this Agreement or otherwise.

33.5 Dispute resolution

In the event of there being any difference between the findings of the Additional Auditors and the certification provided by the Auditors, such Auditors shall meet to resolve the differences and if they are unable to resolve the same, such Dispute shall be resolved by the Authority by recourse to the Dispute Resolution Procedure.

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Talcher Area, MCL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expire Date
13.03.2024
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
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PART V

FORCE MAJEURE AND TERMINATION

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NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.09.2028
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
GOVT. OF WEST BENGAL

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ARTICLE 34

FORCE MAJEURE

34.1 Force Majeure

As used in this Agreement, the expression "**Force Majeure**" or "**Force Majeure Event**" shall, save and except as expressly provided otherwise, mean occurrence in India of any or all of Non-Political Event, Indirect Political Event and Political Event, as defined in Clauses 34.2, 34.3 and 34.4 respectively, if it affects the performance by the Party claiming the benefit of Force Majeure (the "**Affected Party**") of its obligations under this Agreement and which act or event (a) is beyond the reasonable control of the Affected Party, and (b) the Affected Party could not have prevented or overcome by exercise of due diligence and following Standard Industry Practice, and (c) has Material Adverse Effect on the Affected Party.

34.2 Non-Political Event

A Non-Political Event shall mean one or more of the following acts or events:

(a) act of God, epidemic, pandemics, outbreak of diseases (including the COVID-19 virus), quarantines, national or regional emergencies, government acts or orders (which a Party is not responsible for), war, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external to the Site);

(b) strikes or boycotts or stoppage of work or 'bandh' (other than those involving the Mine Operator, Contractors or their respective employees/ representatives, or attributable to any act or omission of any of them) interrupting supplies and services to the Mines for a continuous period of 24 (twenty-four) hours and an aggregate period exceeding 7 (seven) days in an Accounting Year, and not being an Indirect Political Event set forth in Clause 34.3;

(c) any failure or delay of a Contractor but only to the extent caused by another Non-Political Event and which does not result in any offsetting compensation being payable to the Mine Operator by or on behalf of such Contractor;

(d) any delay or failure of an overseas contractor to deliver equipment in India if such delay or failure is caused outside India by any event specified in sub-clause (a) above and which does not result in any offsetting compensation being payable to the Mine Operator by or on behalf of such contractor;

(e) any judgment or order of any court of competent jurisdiction or statutory authority made against the Mine Operator in any proceeding for reasons other than (i) on account of breach of any Applicable Law or Applicable Permit or any contract, or (ii) enforcement of this Agreement, or (iii) exercise of any of its rights under this Agreement by the Authority;

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NOTARY Area Raniganj Regn. No. 447/19 WEST BENGAL

General Manager Subsidiary Area, MCL

Area Raniganj Regn. No. 447/19 Expiry Date 15.06.2024 GOVT. OF WEST BENGAL

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(f) the discovery of geological conditions, toxic contamination or archaeological remains on the Site that could not reasonably have been expected to be discovered through inspection of the Site; or

(g) any event or circumstances of a nature analogous to any of the foregoing.

34.3 Indirect Political Event

An Indirect Political Event shall mean one or more of the following acts or events:

(a) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage;

(b) industry-wide or State-wide strikes or industrial action for a continuous period of 24 (twenty four) hours and exceeding an aggregate period of 7 (seven) days in an Accounting Year;

(c) any civil commotion, boycott or political agitation which prevents excavation or Delivery of Coal by the Mine Operator for an aggregate period exceeding 7 (seven) days in an Accounting Year;

(d) failure of the Authority to permit the Mine Operator to continue with the development of Mines, with or without modifications, in the event of stoppage of such works after discovery of any geological or archaeological finds;

(e) any failure or delay of a Contractor to the extent caused by any Indirect Political Event and which does not result in any offsetting compensation being payable to the Mine Operator by or on behalf of such Contractor;

(f) any Indirect Political Event that causes a Non-Political Event; or

(g) any event or circumstances of a nature analogous to any of the foregoing.

34.4 Political Event

A Political Event shall mean one or more of the following acts or events by or on account of any Government Instrumentality:

(a) Change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of Article 41 and its effect, in financial terms, exceeds the sum specified in Clause 41.1;

(b) compulsory acquisition in national interest or expropriation of any Project Assets or rights of the Mine Operator or of the Contractors;

(c) unlawful or unauthorised or without jurisdiction, revocation of, or refusal to renew or grant without valid cause, any clearance, licence, permit, authorisation, no objection certificate, consent, approval or exemption required by the Mine Operator or any of the Contractors to perform their respective obligations under this Agreement and the Project Agreements; provided that such delay, modification, denial, refusal or revocation did not result from the Mine Operator's or any Contractor's inability or failure to

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NOTARY Sk. HAFIZUL ISLAM Regd. No. 447/19 GOVT. OF WEST BENGAL

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comply with any condition relating to grant, maintenance or renewal of such clearance, licence, authorisation, no objection certificate, exemption, consent, approval or permit;

(d) any failure or delay of a Contractor but only to the extent caused by another Political Event and which does not result in any offsetting compensation being payable to the Mine Operator by or on behalf of such Contractor; or

(e) any event or circumstance of a nature analogous to any of the foregoing.

34.5 Duty to report Force Majeure Event

34.5.1 Upon occurrence of a Force Majeure Event, the Affected Party shall by notice report such occurrence to the other Party forthwith. Any notice pursuant hereto shall include full particulars of:

(a) the nature and extent of each Force Majeure Event which is the subject of any claim for relief under this Article 34 with evidence in support thereof;

(b) the estimated duration and the effect or probable effect which such Force Majeure Event is having or will have on the Affected Party's performance of its obligations under this Agreement;

(c) the measures which the Affected Party is taking or proposes to take for alleviating the impact of such Force Majeure Event; and

(d) any other information relevant to the Affected Party's claim.

34.5.2 The Affected Party shall not be entitled to any relief for or in respect of a Force Majeure Event unless it shall have notified the other Party of the occurrence of the Force Majeure Event as soon as reasonably practicable, and in any event no later than 7 (seven) days after the Affected Party knew, or ought reasonably to have known, of its occurrence, and shall have given particulars of the probable material effect that the Force Majeure Event is likely to have on the performance of its obligations under this Agreement.

34.5.3 For so long as the Affected Party continues to claim to be materially affected by such Force Majeure Event, it shall provide the other Party with regular (and not less than weekly) reports containing information as required by Clause 34.5.1, and such other information as the other Party may reasonably request the Affected Party to provide.

34.6 Effect of Force Majeure Event

34.6.1 Upon the occurrence of any Force Majeure Event prior to the Appointed Date, the period set forth in Clause 4.1 for fulfillment of Conditions Precedent shall be extended by a period equal in length to the duration of the Force Majeure Event.

34.6.2 At any time after the Appointed Date, if any Force Majeure Event occurs:

(a) before COD, the Contract Period and the dates set forth in the Project Completion Schedule shall be extended by a period equal in length to the duration for which such Force Majeure Event subsists; or

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(b) after COD, whereupon the Mine Operator is unable to Deliver Coal to the Authority despite making best efforts or it is directed by the Authority to suspend production during the subsistence of such Force Majeure Event, the Contract Period shall be extended by a period equal in length to the period during which the Mine Operator was prevented from production of Coal on account thereof.

34.7 Allocation of costs arising out of Force Majeure

34.7.1 Upon occurrence of any Force Majeure Event, the Parties shall bear their respective costs and no Party shall be required to pay to the other Party any costs thereof.

34.7.2 Save and except as expressly provided in this Article 34, neither Party shall be liable in any manner whatsoever to the other Party in respect of any loss, damage, cost, expense, claims, demands and proceedings relating to or arising out of occurrence or existence of any Force Majeure Event or exercise of any right pursuant hereto.

34.8 Termination Notice for Force Majeure Event

If a Force Majeure Event subsists for a period of 180 (one hundred and eighty) days or more within a continuous period of 365 (three hundred and sixty five) days, either Party may terminate this Agreement by issuing a Termination Notice to the other Party without being liable in any manner whatsoever, save as provided in this Article 34, and upon issue of such Termination Notice, this Agreement shall, notwithstanding anything to the contrary contained herein, stand terminated forthwith; provided that before issuing such Termination Notice, the Party intending to issue the Termination Notice shall inform the other Party of such intention and grant 15 (fifteen) days' time to make a representation, and may after the expiry of such 15 (fifteen) days period, whether or not it is in receipt of such representation, in its sole discretion issue the Termination Notice.

34.9 Dispute resolution

In the event that the Parties are unable to agree in good faith about the occurrence or existence of a Force Majeure Event (or an Unforeseen Event), such Dispute shall be finally settled in accordance with the Dispute Resolution Procedure; provided that the burden of proof as to the occurrence or existence of such Force Majeure Event shall be upon the Party claiming relief and/or excuse on account of such Force Majeure Event.

34.10 Excuse from performance of obligations

If the Affected Party is rendered wholly or partially unable to perform its obligations under this Agreement because of a Force Majeure Event, it shall be excused from performance of such of its obligations to the extent it is unable to perform on account of such Force Majeure Event; provided that:

(a) the suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event;

(b) the Affected Party shall make all reasonable efforts to mitigate or limit damage to the other Party arising out of or as a result of the existence or occurrence of such Force Majeure Event and to cure the same with due diligence; and

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(c) when the Affected Party is able to resume performance of its obligations under this Agreement, it shall give to the other Party notice to that effect and shall promptly resume performance of its obligations hereunder.

34.11 Relief for Unforeseen Events

Upon occurrence of an unforeseen event, situation or similar circumstances not contemplated or referred to in this Agreement, and which could not have been foreseen by a prudent and diligent person (the "**Unforeseen Event**"), any Party may by notice inform the other Party of the occurrence of such Unforeseen Event with the particulars thereof and its effects on the Project. Within 15 (fifteen) days of such notice, the Parties shall meet and make efforts in good faith to determine if such Unforeseen Event has occurred, and upon reaching agreement on occurrence thereof, the Parties shall in good faith determine the manner in which such Unforeseen Event shall be dealt with.

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NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
19.09.2025
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
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General Manager
Subhadra Area, MCL

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ARTICLE 35

COMPENSATION FOR BREACH OF AGREEMENT

35.1 Compensation for default by the Mine Operator

Subject to the provisions of Clause 35.5 and Clause 46.17, in the event of the Mine Operator being in material breach or default of this Agreement, it shall pay to the Authority by way of compensation, all direct costs suffered or incurred by the Authority as a consequence of such material breach or default, within 30 (thirty) days of receipt of the demand supported by necessary particulars thereof; provided that no compensation shall be payable under this Clause 35.1 for any material breach or default in respect of which Damages have been expressly specified and payable under this Agreement or for any consequential losses incurred by the Authority.

35.2 Compensation for default by the Authority

Subject to the provisions of Clause 35.5 and 46.17, in the event of the Authority being in material breach or default of this Agreement at any time after the Appointed Date, it shall pay to the Mine Operator by way of compensation, all direct costs suffered or incurred by the Mine Operator as a consequence of such material breach or default within 30 (thirty) days of receipt of the demand supported by necessary particulars thereof; provided that no such compensation shall be payable for any material breach or default in respect of which Damages have been expressly specified in this Agreement or for any consequential losses incurred by the Authority.

35.3 Extension of Contract Period

Subject to the provisions of Clause 35.5 and 46.17, in the event that a material breach or default of this Agreement set forth in Clause 35.2 causes delay in achieving COD or leads to reduction in the realisation of Mining Charge, as the case may be, the Authority shall, in addition to payment of compensation under Clause 35.2, extend the Contract Period, such extension being equal in duration to the period by which COD was delayed or the payment of Mining Charge was reduced on account thereof, as the case may be; and in the event of reduction in Mining Charge where the daily collection is less than 80% (eighty per cent) of the Average Daily Mining Charge, the Authority shall, in addition to payment of compensation hereunder, extend the Contract Period in proportion to the loss of Mining Charge on a daily basis. For the avoidance of doubt, loss of 25% (twenty five per cent) in the realisation of Mining Charge, as compared to the Average Daily Mining Charge, for four days shall entitle the Mine Operator to extension of one day in the Contract Period.

35.4 Compensation to be in addition

Compensation payable under this Article 35 shall be in addition to, and not in substitution for, or derogation of, Termination Payment, if any.

35.5 Mitigation of costs and damage

The non-defaulting Party shall make all reasonable efforts to mitigate or limit the costs and damage arising out of, or as a result of, breach of this Agreement by the other Party.

NOTARY CENTRAL GOVT. ANGUL

SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

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General Manager Talcher Area, MCL

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ARTICLE 36

SUSPENSION OF MINE OPERATOR'S RIGHTS

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36.1 Suspension upon Mine Operator Default

Upon occurrence of a Mine Operator Default, the Authority shall be entitled, subject to Applicable Laws and without prejudice to its other rights and remedies under this Agreement including its rights of Termination hereunder, to (a) suspend all rights of the Mine Operator under this Agreement including the Mine Operator's right to receive Mining Charge and other amounts under this Agreement, and (b) exercise such rights itself and perform the obligations hereunder or authorise any other person to exercise or perform the same on its behalf during such suspension (the "**Suspension**"). Suspension hereunder shall be effective forthwith upon issue of notice by the Authority to the Mine Operator and may extend up to a period not exceeding 180 (one hundred and eighty) days from the date of issue of such notice; provided that upon written request from the Mine Operator, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by a further period not exceeding 90 (ninety) days.

36.2 Authority to act on behalf of Mine Operator

36.2.1 During the period of Suspension hereunder, all rights and liabilities vested in the Mine Operator in accordance with the provisions of this Agreement shall continue to vest therein and all things done or actions taken, including expenditure incurred by the Authority for discharging the obligations of the Mine Operator under and in accordance with this Agreement and the Project Agreements, shall be deemed to have been done or taken for and on behalf of the Mine Operator and the Mine Operator undertakes to indemnify the Authority for all costs incurred during such period. The Mine Operator hereby licences and sub-licences respectively, the Authority or any other person authorised by it under Clause 36.1 to use during Suspension, all Intellectual Property belonging to or licenced to the Mine Operator with respect to the Mines and its design, engineering, construction, operation and maintenance and which is used or created by the Mine Operator in performing its obligations under the Agreement.

36.3 Revocation of Suspension

36.3.1 In the event that the Authority shall have rectified or removed the cause of Suspension within a period not exceeding 90 (ninety) days from the date of Suspension, it shall revoke the Suspension forthwith and restore all rights of the Mine Operator under this Agreement. For the avoidance of doubt, the Parties expressly agree that the Authority may revoke the Suspension at any time, whether or not the cause of Suspension has been rectified or removed hereunder.

36.3.2 Upon the Mine Operator having cured the Mine Operator Default within a period not exceeding 90 (ninety) days from the date of Suspension, the Authority shall revoke the Suspension forthwith and restore all rights of the Mine Operator under this Agreement.

General Manager
Subhedar Area, SCCL

SK. NAZRUL ISLAM
Advocate
Kolkata
Regn. No. 447/19
Expiry Date
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SUBHADRA COAL MINING LIMITED

SK. NAZRUL ISLAM
Advocate
Kolkata
Regn. No. 447/19
Expiry Date
15.09.2029
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GOVT. OF WEST BENGAL

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36.4 Substitution of Mine Operator

At any time during the period of Suspension, the Lenders' Representative, on behalf of Senior Lenders, shall be entitled to substitute the Mine Operator under and in accordance with the Substitution Agreement, if any, and upon receipt of notice thereunder from the Lenders' Representative, the Authority shall withhold Termination for a period not exceeding 180 (one hundred and eighty) days from the date of Suspension, and any extension thereof under Clause 36.1, for enabling the Lenders' Representative to exercise its rights of substitution on behalf of Senior Lenders.

36.5 Termination

36.5.1 At any time during the period of Suspension under this Article 36, the Mine Operator may by notice require the Authority to revoke the Suspension and issue a Termination Notice. Subject to the rights of the Lenders' Representative to undertake substitution in accordance with the provisions of this Agreement and within the period specified in Clause 36.4, the Authority shall, within 15 (fifteen) days of receipt of such notice, terminate this Agreement under and in accordance with Article 37. It is clarified that all the provisions of this Agreement shall apply, *mutatis mutandis*, to a termination pursuant to this Clause 36.5.1 as if a Termination Notice had been issued by the Authority upon occurrence of a Mine Operator Default

36.5.2 Notwithstanding anything to the contrary contained in this Agreement, in the event that Suspension is not revoked within 180 (one hundred and eighty) days from the date of Suspension hereunder or within the extended period, if any, set forth in Clause 36.1, then unless otherwise agreed by the Parties, this Agreement shall, upon expiry of the aforesaid period, be deemed to have been terminated by mutual agreement of the Parties and all the provisions of this Agreement shall apply, *mutatis mutandis*, to such Termination as if a Termination Notice had been issued by the Authority upon occurrence of a Mine Operator Default.

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General Manager
Subsidiary Area, MCL

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ARTICLE 37

TERMINATION

37.1 Termination for Mine Operator Default

37.1.1 Subject to Applicable Laws and save as otherwise provided in this Agreement, in the event that any of the defaults specified below shall have occurred, and the Mine Operator fails to cure the default within the Cure Period set forth below, or where no Cure Period is specified, then within a Cure Period of 60 (sixty) days, the Mine Operator shall be deemed to be in default of this Agreement (the "**Mine Operator Default**"), unless the default has occurred solely as a result of any breach of this Agreement by the Authority or due to Force Majeure. The defaults referred to herein shall include:

(a) the Performance Security has been encashed and appropriated in accordance with Clause 9.2 and the Mine Operator fails to replenish or provide fresh Performance Security within a Cure Period of 15 (fifteen) days;

(b) the Mine Operator does not achieve the latest outstanding Project Milestone due in accordance with the provisions of Schedule-G and continues to be in default for 180 (one hundred and eighty) days;

(c) the Mine Operator abandons or manifests intention to abandon the development or operation of the Mines without the prior written consent of the Authority;

(d) COD or Completion do not occur within the periods specified in Clause 12.4.1;

(e) the Mine Operator is in breach of the Maintenance Requirements or the Safety Requirements, as the case may be;

(f) the Mine Operator has failed to make any payment to the Authority within the period specified in this Agreement;

(g) if applicable, upon occurrence of a Financial Default, the Lenders' Representative has by notice required the Authority to undertake Suspension or Termination, as the case may be, in accordance with the Substitution Agreement and the Mine Operator fails to cure the default within the Cure Period specified hereinabove;

(h) a breach of any Project Agreement by the Mine Operator has caused a Material Adverse Effect;

(i) the Mine Operator supplies Coal, excavated from the Mines, to any person other than in accordance with this Agreement;

(j) the Mine Operator commits a material breach of the Mining Plan;

(k) the Mine Operator creates any Encumbrance except as expressly permitted under this Agreement;

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(l) the Mine Operator repudiates this Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the Agreement;

(m) a Change in Ownership has occurred in breach of the provisions of Clause 5.3;

(n) the Mine Operator fails to achieve a monthly Actual Production of 75% (seventy five per cent) of the Monthly Capacity for a cumulative period of 6 (six) months within any continuous period of 18 (eighteen) months, save and except to the extent such failure is caused solely by (i) Force Majeure, or (ii) a default of the Authority, not occurring due to any act or omission of the Mine Operator;

(o) there is a transfer, pursuant to Applicable Laws either of (i) the rights and/ or obligations of the Mine Operator under any of the Project Agreements, or of (ii) all or part of the assets or undertaking of the Mine Operator, and such transfer causes a Material Adverse Effect;

(p) an execution levied on any of the assets of the Mine Operator has caused a Material Adverse Effect;

(q) Insolvency:

(i) The Mine Operator is, or is presumed or deemed to be unable or admits inability to pay its debts (or any class of them) as they fall due, suspends making payments on any of its debts or, by reason of actual or anticipated financial difficulties, commences negotiations with one or more of its creditors (or any class of them) with a view to rescheduling any of its indebtedness.

(ii) The Mine Operator commences a voluntary proceeding under any applicable bankruptcy, insolvency, reorganisation, winding up or other similar law now or hereafter in effect, or consents to the entry of an order for relief in an involuntary proceeding under any such law, or consent to the appointment or taking possession by a receiver, liquidator, assignee (or similar official) for any or a substantial part of its property.

(iii) An application in relation to the insolvency resolution process of the Mine Operator has been initiated under the IBC or if the Mine Operator is likely to be declared as a relief undertaking or any proceedings have been filed in relation to the same before any Government Instrumentality or any court or tribunal or a petition being presented or analogous proceeding being taken including for the liquidation, insolvency, winding up or dissolution of the Mine Operator.

(iv) Any analogous procedure or step is taken in any jurisdiction by or against the Mine Operator.

(v) No default shall occur under this Clause 37.1.1(q) if a petition for the winding up, liquidation or insolvency is filed by any person (other than the Mine Operator) and such petition is unconditionally withdrawn or discharged within 30 (thirty) days of filing;

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(r) Any corporate action, legal proceeding or other procedure or step is taken in relation to:

(i) execution of an inter-creditor agreement or commencement and preparation of any resolution plan in connection with the Mine Operator under the Applicable Laws or any other rules, regulations or guidelines by any Government Instrumentality in relation to resolution of stressed assets.

(ii) the suspension of payments, a moratorium of any indebtedness, dissolution, liquidation, administration, provisional supervision or reorganisation (by way of voluntary arrangement, scheme of arrangement or otherwise) of the Mine Operator;

(s) the Mine Operator has been, or is in the process of being dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the Authority, a Material Adverse Effect;

(t) a resolution for winding up of the Mine Operator is passed;

(u) any petition for winding up of the Mine Operator is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 (ninety) days of the date thereof or the Mine Operator is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction; provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of the Mine Operator are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Mine Operator under this Agreement and the Project Agreements; and provided that:

(i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under this Agreement and the Project Agreements;

(ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this Agreement and the Project Agreements and has a credit worthiness at least as good as that of the Mine Operator as at the Appointed Date; and

(iii) each of the Project Agreements remains in full force and effect.

(v) any representation or warranty of the Mine Operator herein contained which is, as of the date hereof, found to be materially false, incorrect or misleading or the Mine Operator is at any time hereafter found to be in breach thereof;

(w) the Mine Operator submits to the Authority any statement, notice or other document, in written or electronic form, which has a material effect on the Authority's rights, obligations or interests and which is false in material particulars;

(x) the Mine Operator has failed to fulfill any obligation, for which failure Termination has been specified in this Agreement;

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(y) the Mine Operator issues a Termination Notice in violation of the provisions of this Agreement;

(z) the Mine Operator commits a default in complying with any other provision of this Agreement if such default causes or may cause a Material Adverse Effect; or

(aa) any other event or occurrence, as may be identified by the Authority as 'Mine Operator Default', under this Agreement has occurred.

37.1.2 Without prejudice to any other rights or remedies which the Authority may have under this Agreement, upon occurrence of a Mine Operator Default, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Mine Operator; provided that before issuing the Termination Notice, the Authority shall by a notice inform the Mine Operator of its intention to issue such Termination Notice and grant 15 (fifteen) days to the Mine Operator to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice, subject to the provisions of Clause 37.1.3.

37.1.3 The Authority shall, if there be Senior Lenders, send a copy of its notice of intention to issue a Termination Notice referred to in Clause 37.1.2 to inform the Lenders' Representative and grant 15 (fifteen) days to the Lenders' Representative, for making a representation on behalf of the Senior Lenders stating the intention to substitute the Mine Operator in accordance with the Substitution Agreement. In the event the Authority receives such representation on behalf of Senior Lenders, it shall either withhold Termination for a period not exceeding 180 (one hundred and eighty) days from the date of such representation or exercise its right of Suspension, as the case may be, for enabling the Lenders' Representative to exercise the Senior Lenders' right of substitution in accordance with the Substitution Agreement:

Provided that the Lenders' Representative may, instead of exercising the Senior Lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid period of 180 (one hundred and eighty) days, and upon such curing thereof, the Authority shall withdraw its notice referred to above and restore all the rights of the Mine Operator;

Provided further that upon written request from the Lenders' Representative and the Mine Operator, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by such further period not exceeding 90 (ninety) days, as the Authority may deem appropriate.

37.2 Termination for Authority Default

37.2.1 In the event that any of the defaults specified below shall have occurred, and the Authority fails to cure such default within a Cure Period of 90 (ninety) days or such longer period as has been expressly provided in this Agreement, the Authority shall be deemed to be in default of this Agreement (the "**Authority Default**") unless the default has occurred as a result of any breach of this Agreement by the Mine Operator or due to Force Majeure. The defaults referred to herein shall include:

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Regn. No. 44710 Expiry Date 15.09.2020 GOVT. OF WEST BENGAL

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(a) the Authority commits a material default in complying with any of the provisions of this Agreement and such default has a Material Adverse Effect on the Mine Operator;

(b) the Authority has failed to make any payment (to the extent undisputed) which is due and payable to the Mine Operator under this Agreement within the period specified in this Agreement; or

(c) the Authority repudiates this Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by this Agreement.

37.2.2 Without prejudice to any other right or remedy which the Mine Operator may have under this Agreement, upon occurrence of a Authority Default, the Mine Operator shall, subject to the provisions of the Substitution Agreement, be entitled to terminate this Agreement by issuing a Termination Notice to the Authority; provided that before issuing the Termination Notice, the Mine Operator shall by a notice inform the Authority of its intention to issue the Termination Notice and grant 15 (fifteen) days to the Authority to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice.

37.3 Termination for expiry

37.3.1 Unless terminated earlier in accordance with Clause 37.1 and Clause 37.2, this Agreement shall be effective for a period of *25 (twenty five) years or until the life of the Mine, whichever is shorter* commencing from the Appointed Date or such further period as mutually extended by the Parties in accordance with Clause 3.1.1 of this Agreement.

37.3.2 Within 30 (thirty) days from the expiry of the term of the Agreement, as set out in Clause 37.3.1, the Mine Operator shall intimate to the Authority the date on which the Agreement is set to expire through issuance of a Termination Notice. The Agreement shall stand terminated effective from the date set out in the Termination Notice.

37.4 Termination Payment

37.4.1 Upon Termination on account of a Mine Operator Default or Force Majeure during the Operation Period, the Authority shall purchase from the Mine Operator the following assets and pay to the Mine Operator by way of Termination Payment, an amount equal to:

(a) the Depreciated Value of the Capital Works; and

(b) the Depreciated Value of the Project Specific Assets.

37.4.2 Upon Termination on account of an Authority Default during the Operation Period, the Authority shall purchase from the Mine Operator the following assets and pay to the Mine Operator by way of Termination Payment, an amount equal to:

(a) the Depreciated Value of the Capital Works;

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(b) the Depreciated Value of the Project Specific Assets; and

(c) an amount equivalent to 4 (four) times the Mining Charge due and payable for and in respect of the month immediately preceding the month in which the Termination Notice is issued.

37.4.3 Upon Termination on account of expiry of the Agreement, as specified in Clause 37.3 above, no Termination Payment shall be payable by the Authority to the Mine Operator.

37.4.4 Notwithstanding anything to the contrary in this Clause 37, the Mine Operator acknowledges, agrees and undertakes that:

(a) the Authority shall not be obligated to purchase from the Mine Operator any Capital Works and/ or Project Specific Assets or pay the Depreciated Value of any Capital Works and/or Project Specific Assets to the Mine Operator unless the Mine Operator has a valid, clear and marketable title to such Capital Works and Project Specific Assets, free and clear of all Encumbrances;

(b) no Termination Payment shall be made by the Authority to the Mine Operator in respect of any Moving Equipment or other movable assets (including but not limited to heavy earth moving machineries) used by the Mine Operator at the Mines;

(c) in the event the Mine Operator enters into any financing agreements or arrangements (including hire purchase) with respect to, or which affect, any of the Capital Works and/ or Project Specific Assets, the Mine Operator shall ensure that the financier or lender under such financing agreement or arrangement expressly recognises and accepts the preferential right of the Authority to purchase the Capital Works and the Project Specific Assets (as the case may be); and

(d) no Termination Payment shall be due and payable prior to COD.

(e) on the Transfer Date (on account of Termination in terms of Clause 37.1, Clause 37.2 or Clause 37.3), the Mine Operator shall remove all the Moving Equipment and other movable assets or machineries (including but not limited to heavy earth moving machineries, vehicles) deployed at the Mines by the Mine Operator.

37.4.5 Termination Payment shall be due and payable to the Mine Operator within 30 (thirty) days of acceptance of demand being made by the Mine Operator to the Authority with the necessary particulars, and in the event of any delay, the Authority shall pay interest at the MCLR of State Bank of India on the amount of Termination Payment remaining unpaid; provided that such delay shall not exceed 90 (ninety) days; provided further that, the Authority shall not be required to make any Termination Payment until the Mine Operator has complied with the Divestment Requirements and has delivered to the Authority possession of the Capital Works and Project Specific Assets in good working order and free and clear of all Encumbrances, to the satisfaction of the Authority. For the avoidance of doubt, it is expressly agreed that Termination Payment shall constitute full discharge by the Authority of its obligations hereunder.

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37.4.6 The Mine Operator expressly agrees that Termination Payment under this Article 37 shall constitute a full and final settlement of all claims and/or rights of the Mine Operator on account of Termination of this Agreement for any reason whatsoever and that the Mine Operator or any shareholder or any other person claiming through or under the Mine Operator thereof shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

37.5 Other rights and obligations of the Authority

37.5.1 Upon Termination for any reason whatsoever, the Authority shall:

(a) take possession and control of the Mines forthwith;

(b) subject to the provisions of Clause 37.4, take possession and control of all materials, stores, implements, construction plants and equipment on or about the Site;

(c) be entitled to restrain the Mine Operator and any person claiming through or under the Mine Operator from entering upon the Site or any part of the Project;

(d) require the Mine Operator to comply with the Divestment Requirements set forth in Clause 38.1; and

(e) succeed upon election by the Authority, without the necessity of any further action by the Mine Operator, to the interests of the Mine Operator under such of the Project Agreements as the Authority may deem appropriate, and shall upon such election be liable to the Contractors only for compensation accruing and becoming due and payable to them under the terms of their respective Project Agreements from and after the date the Authority elects to succeed to the interests of the Mine Operator. For the avoidance of doubt, the Mine Operator acknowledges and agrees that all sums claimed by such Contractors as being due and owing for works and services performed or accruing on account of any act, omission or event prior to such date of election by the Authority shall constitute debt between the Mine Operator and such Contractors, and the Authority shall not in any manner be liable for such sums. It is further agreed that in the event the Authority elects to cure any outstanding defaults under such Project Agreements, the amount expended by the Authority for this purpose shall be deducted from the Termination Payment.

37.5.2 Upon Termination in terms of Clause 37.3, the Authority shall have the right, but not an obligation, to take over the Project Specific Assets and any other tangible assets (such as civil works and equipment including foundations, embankments, pavements, electrical systems, communication systems, relief centers and administrative offices) from the Mine Operator. In the event, the Authority, in its absolute discretion, elects not to take over such Project Specific Assets or other tangible assets, the Mine Operator shall take all necessary steps for the removal and disposal of the Project Specific Assets and any other tangible assets (such as civil works and equipment including foundations, embankments, pavements, electrical systems, communication systems, relief centers and administrative offices) from the Site.

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/13 Expiry Date 15.09.2023 WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/13 WEST BENGAL

Chief Manager Subhadra Area, MCL

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37.6 Survival of rights

Notwithstanding anything to the contrary contained in this Agreement, but subject to the provisions of Clause 37.4, any Termination pursuant to the provisions of this Agreement shall be without prejudice to the accrued rights of either Party including its right to claim and recover money, damages, insurance proceeds, security deposits, and other rights and remedies, which it may have in law or contract. All rights and obligations of either Party under this Agreement, including Termination Payments and Divestment Requirements, shall survive the Termination to the extent such survival is necessary for giving effect to such rights and obligations.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

General Manager Subhadra Area, MCL

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ARTICLE 38

DIVESTMENT OF RIGHTS AND INTEREST

38.1 Divestment Requirements

38.1.1 Upon Termination, the Mine Operator shall comply with and conform to the following divestment requirements ("**Divestment Requirements**"):

(a) notify to the Authority forthwith the location and particulars of all Project Assets;

(b) deliver forthwith the actual or constructive possession of the Mines and Coal Depot, free and clear of all Encumbrances, save and except to the extent set forth in the Substitution Agreement;

(c) cure all Project Assets of all defects and deficiencies so that the Mines is compliant with the Maintenance Requirements; provided that in the event of Termination during the Construction Period, all Project Assets shall be handedover on 'as is where is' basis after bringing them to a safe condition;

(d) cure all Coal of deficiencies so that it is compliant with Specifications and Standards and can be Delivered to the Authority upon payment of Mining Charge for the same;

(e) deliver and transfer relevant records, reports, Intellectual Property and other licences pertaining to the Mines and its design, engineering, construction, operation and maintenance, including all programmes and manuals pertainingthereto and complete Drawings as on the Transfer Date. For the avoidance ofdoubt, the Mine Operator represents and warrants that the Intellectual Property delivered hereunder shall be adequate and complete for the design, engineering, construction, operation and maintenance of the Mines and shall be assigned to the Authority free of any Encumbrance;

(f) transfer and/or deliver all Applicable Permits to the extent permissible under Applicable Laws;

(g) execute such deeds of conveyance, documents and other writings as theAuthority may reasonably require for conveying, divesting and assigning all the rights, title and interest of the Mine Operator in the Project Assets, including manufacturers' warranties in respect of any plant or equipment and the right to receive outstanding insurance claims, to the extent due and payableto the Authority, absolutely unto the Authority or its nominee; and

(h) comply with all other requirements as may be prescribed or required under Applicable Laws for completing the divestment and assignment of all rights, title and interest of the Mine Operator in the Mines, free from all Encumbrances, absolutely unto the Authority or to its nominee.

38.1.2 Subject to the exercise by the Authority of its rights under this Agreement or under any of the Project Agreements to perform or procure the performance by a third partyof any of the obligations of the Mine Operator, the Parties shall continue to perform

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their obligations under this Agreement, notwithstanding the issuance of any Termination Notice, until the Termination of this Agreement becomes effective in accordance with its terms.

38.2 Inspection and cure

Not earlier than 90 (ninety) days prior to Termination but not later than 15 (fifteen) days prior to the effective date of such Termination, the Engineer in charge shall verify,after giving due notice to the Mine Operator specifying the time, date and place of such verification and/or inspection, compliance by the Mine Operator with the Maintenance Requirements, and if required, cause appropriate tests to be carried out at the Mine Operator's cost for this purpose. Defaults, if any, in the Maintenance Requirements shall be cured by the Mine Operator at its cost and the provisions of Article 39 shall apply, *mutatis mutandis*, in relation to curing of defects or deficiencies under this Article 38.

38.3 Cooperation and assistance on transfer of Project

38.3.1 The Parties shall cooperate on a best effort basis and take all necessary measures, in good faith, to achieve a smooth transfer of the Project in accordance with theprovisions of this Agreement so as to protect the safety of, and avoid undue delay or inconvenience to the Buyers and other members of the public.

38.3.2 The Parties shall provide to each other, immediately in the event of either Party conveying to the other Party its intent to issue a Termination Notice, as the case may be, as much information and advice as is reasonably practicable regarding theproposed arrangements for operation of the Project following the Transfer Date. TheMine Operator shall further provide such reasonable advice and assistance as the Authority or its agent may reasonably require for operation of the Project until the expiry of 6 (six) months after the Transfer Date.

38.4 Vesting Certificate

The divestment of all rights, title and interest in the Mines shall be deemed to be complete on the date when all of the Divestment Requirements have been fulfilled, and the Authority shall, without unreasonable delay, thereupon issue a certificate substantially in the form set forth in Schedule-Q (the "**Vesting Certificate**"), which will have the effect of constituting evidence of divestment by the Mine Operator of allof its rights, title and interest in the Mines, and their vesting in the Authority pursuanthereto. It is expressly agreed that any defect or deficiency in the Divestment Requirements shall not in any manner be construed or interpreted as restricting the exercise of any rights by the Authority or its nominee on, or in respect of, the Mines on the footing that all Divestment Requirements have been complied with by the MineOperator.

38.5 Divestment costs etc.

38.5.1 The Mine Operator shall bear and pay all costs incidental to divestment of all of therights, title and interest of the Mine Operator in the Project Assets in favour of the Authority upon Termination, save and except that all stamp duties payable on anydeeds or Documents executed by the Mine Operator in connection with suchdivestment shall be borne by the Authority.

38.5.2 In the event of any dispute relating to matters covered by and under this Article 38,the Dispute Resolution Procedure shall apply.

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ARTICLE 39

DEFECTS LIABILITY AFTER TERMINATION

39.1 Liability for defects after Termination

The Mine Operator shall be responsible for all defects and deficiencies in the Mines for a period of 120 (one hundred and twenty) days after Termination, and it shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies observed by the Engineer in charge in the Mines during the aforesaid period. In the event that the Mine Operator fails to repair or rectify such defect or deficiency within a period of 30 (thirty) days from the date of notice issued by the Authority in this behalf, the Authority shall be entitled to get the same repaired or rectified at the Mine Operator's risk and cost so as to make the Mines conform to the Maintenance Requirements. All costs incurred by the Authority hereunder shall be reimbursed by the Mine Operator to the Authority within 15 (fifteen) days of receipt of demand thereof, and in the event of default in reimbursing such costs, the Authority shall be entitled to recover the same from the funds withheld by the Authority under the provisions of Clause 39.2 or from the Performance Guarantee provided thereunder. For the avoidance of doubt, the provisions of this Article 39 shall not apply if Termination occurs prior to COD.

39.2 Retention

39.2.1 Notwithstanding anything to the contrary contained in this Agreement, but subject to the provisions of Clause 39.2.3, a sum equal to the Mining Charge due and payable for the month immediately preceding the Transfer Date shall be withheld by the Authority for a period of 120 (one hundred and twenty) days after Termination for meeting the liabilities, if any, arising out of or in connection with the provisions of Clause 39.1.

39.2.2 Without prejudice to the provisions of Clause 39.2.1, the Engineer in charge shall carry out an inspection of the Mines at any time between 210 (two hundred and ten) and 180 (one hundred and eighty) days prior to the Termination and if it recommends that the status of the Mines is such that a sum larger than the amount stipulated in Clause 39.2.1 should be withheld and/or for a period longer than the aforesaid 120 (one hundred and twenty) days, the amount recommended by the Engineer in charge shall be withheld by the Authority for the period specified by it.

39.2.3 The Mine Operator may, for the performance of its obligations under this Article 39, provide to the Authority a guarantee from a Bank for a sum equivalent to the amount determined under Clause 39.2.1 or 39.2.2, as the case may be, and for the period specified therein, substantially in the form set forth in Schedule-F (the "**Performance Guarantee**"), to be modified, *mutatis mutandis*, for this purpose, and the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate the required amounts from the Performance Guarantee for undertaking the repairs or rectification at the Mine Operator's risk and cost in accordance with the provisions of this Article 39. Upon furnishing of a Performance Guarantee under this Clause 39.2.3, the amounts withheld by the Authority in terms of Clause 39.2.1 or 39.2.2, as the case may be, shall be released to the Mine Operator to the extent such amounts are due and payable to the Mine Operator in accordance with the terms of this Agreement.

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PART VI

OTHER PROVISIONS

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZAUL ISLAM Addl. Govt. Pleader Regd. No. 447/19 Expiry Date 15.03.2024 GOVT. OF WEST BENGAL

NOTARY SK. NAZAUL ISLAM Addl. Govt. Pleader Regd. No. 447/19 GOVT. OF WEST BENGAL

General Manager Talcher Area, MCL

SUBHRA COAL MINING LIMITED

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ARTICLE 40
ASSIGNMENT AND CHARGES

40.1 Restrictions on assignment and charges

40.1.1 Subject to Clauses 40.2 and 40.3, this Agreement shall not be assigned by the Mine Operator to any person, save and except with the prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

40.1.2 Subject to the provisions of Clause 40.2, the Mine Operator shall not create nor permit to subsist any Encumbrance, or otherwise transfer or dispose of all or any of its rights and benefits under this Agreement or any Project Agreement to which the Mine Operator is a party except with the prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

40.2 Permitted assignment and charges

40.2.1 The restraints set forth in Clause 40.1 shall not apply to:

(a) liens arising by operation of law (or by an agreement evidencing the same) in the ordinary course of business of the Mines;

(b) mortgages/ pledges/ hypothecation of goods/ assets other than Project Assets and their related documents of title, arising or created in the ordinary course of business of the Mines, and as security only for indebtedness to the Senior Lenders under the Financing Agreements and/or for working capital arrangements for the Mines.

(c) assignment of rights, interest and obligations of the Mine Operator to or in favour of the Lenders' Representative as nominee and for the benefit of the Senior Lenders, to the extent covered by and in accordance with the Substitution Agreement as security for financing provided by Senior Lenders under the Financing Agreements; and

(d) liens or Encumbrances required by any Applicable Law.

40.2.2 Notwithstanding anything to the contrary contained in this Agreement, the Mine Operator may mortgage the Moving Equipment to its lenders by way of security for any loan extended by them for acquisition of such Moving Equipment.

40.3 Substitution Agreement

40.3.1 Upon the occurrence of a Mine Operator Default or a Financial Default (as defined in the Substitution Agreement), the Lenders' Representative, on behalf of Senior Lenders, may, with the consent of the Authority, exercise the right to substitute the Mine Operator pursuant to the agreement for substitution of the Mine Operator (the "Substitution Agreement") to be entered into amongst the Mine Operator, the Authority and the Lenders' Representative, on behalf of Senior Lenders, substantially in the form set forth in Schedule-R.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZIMUL ISLAM Regd. No. 44113 Expiry Date 30.11.2025 WEST BENGAL

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Regional Manager Subhadra Area, MCL

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40.3.2 Upon substitution of the Mine Operator under and in accordance with the Substitution Agreement, the Nominated Company shall be deemed to be the Mine Operator under this Agreement and shall enjoy all rights and be responsible for all obligations of the Mine Operator under this Agreement as if it were the original Mine Operator; provided that where the Mine Operator is in breach of this Agreement on the date of such substitution, the Authority shall by notice grant a Cure Period of 120 (one hundred and twenty) days to the Nominated Company for curing such breach.

40.4 Assignment by the Authority

Notwithstanding anything to the contrary contained in this Agreement, the Authority may, after giving 60 (sixty) days' notice to the Mine Operator, assign and/ or transfer any of its rights and benefits and/or obligations under this Agreement to an assignee who is, in the reasonable opinion of the Authority, capable of fulfilling all of the Authority's then outstanding obligations under this Agreement and has the financial standing necessary for this purpose.

40.5 Approvals for assignment

Any assignment under this Article 40 shall be subject to the approvals and consents required therefor under Applicable Laws. Provided, however, that the grant of any consent or approval under Applicable Laws shall not oblige the Authority to grant its approval to such assignment, save and except as provided herein.

NOTARY CENTRAL GOVT. ANGUL

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ARTICLE 41

CHANGE IN LAW

41.1 Increase in costs

If as a result of Change in Law, the Mine Operator suffers an increase in costs or financial burden, the aggregate financial effect of which exceeds the higher of Rs. 50,00,000/- (Rupees Fifty Lakhs only) and 0.1% (zero point one per cent) of the total Mining Charge payable during any Accounting Year, the Mine Operator may so notify the Authority and propose amendments to this Agreement so as to compensate the Mine Operator the increased costs or financial burden as aforesaid. Provided that, the Mine Operator's notification to the Authority and proposal to amend this Agreement shall be supported by clear evidence of the quantum of the increased costs, or financial burden, as the case may be, and a direct co-relation between such increased costs, or financial burden, as the case may be, and the Change in Law. Upon notice by the Mine Operator, the Parties shall meet, as soon as reasonably practicable, but no later than 30 (thirty) days from the date of notice, and either agree on amendments to this Agreement or on any other mutually agreedarrangement.

Provided that if no agreement is reached within 90 (ninety) days of the aforesaid notice, the Mine Operator may by written notice require the Authority to pay an amount to compensate the increased costs or financial burden and within 15 (fifteen) days of receipt of such notice, along with particulars thereof, the Authority shall pay the amount specified therein; provided that if the Authority shall dispute such claim of the Mine Operator, the same shall be settled in accordance with the Dispute Resolution Procedure. For the avoidance of doubt, it is agreed that this Clause 41.1 shall be restricted to Changes in Law directly affecting the Mine Operator's costs of performing its obligations under this Agreement.

41.2 Reduction in costs

If as a result of Change in Law, the Mine Operator benefits from a reduction in costs or financial gains, the aggregate financial effect of which exceeds the higher of Rs. 50,00,000/- (Rupees Fifty Lakh only) and 0.1% (zero point one per cent) of the total Mining Charge payable during any Accounting Year, the Authority may so notify the Mine Operator and propose amendments to this Agreement so as to pass on the decreased costs or financial gains to the Mine Operator as aforesaid. Upon notice by the Authority, the Parties shall meet, as soon as reasonably practicable, but no later than 30 (thirty) days from the date of notice, and either agree on such amendments to this Agreement or on any other mutually agreed arrangement.

Provided that if no agreement is reached within 90 (ninety) days of the aforesaid notice, the Authority may by notice require the Mine Operator to pay an amount equivalent to the decreased cost or financial gains as aforesaid, and within 15 (fifteen) days of receipt of such notice, along with particulars thereof, the Mine Operator shall pay the amount specified therein to the Authority or such specified amount shall be adjusted from the amount payable to the Mine Operator under this Agreement; provided that if the Mine Operator shall dispute such claim of the Authority, the same shall be settled in accordance with the Dispute Resolution

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Procedure. For the avoidance of doubt, it is agreed that this Clause 41.2 shall be restricted to Changes in Law directly affecting the Mine Operator's costs of performing its obligations under this Agreement.

41.3 Procedure for adjustment

In the event the Mine Operator is required to pay an amount in excess of the stipulated threshold (as mentioned in Clause 41.1) due to a Change in Law or imposition of directives by Coal India Limited or by any Government Instrumentality, such excess amount paid by the Mine Operator shall be reimbursed by the Authority, where such payment is a one-time payment by the Mine Operator. In the event such excess amount payable by the Mine Operator is of a recurring nature, such amount shall be included within the Mining Charge payable by the Authority.

In the event the Mine Operator benefits from a reduction in costs or increase financial gains, in excess of the stipulated threshold (as mentioned in Clause 41.2) due to a Change in Law or imposition of directives by Coal India Limited or by any Government Instrumentality, such excess amount gained by the Mine Operator shall be payable to the Authority, where such financial gain is a one-time. In the event such excess amount payable by the Mine Operator is of a recurring nature, such amount shall be adjusted against the Mining Charge payable by the Authority.

If any change in a particular component of the Mining Charge due to a Change in Law is not captured by the respective index already listed in Price Index (as defined in Clause 47.1.1), then the adjusted Mining Charge shall be decided on the basis of percentage of component of cost given in Price Index (as defined in Clause 47.1.1) and the effect on the component due to Change in Law.

It is hereby clarified that disputed amount, if any, under this Clause 41.3 shall be decided as per the provisions given in Clause 29.2 of this Agreement.

41.4 Restriction on compensation

The Parties acknowledge and agree that the demand for compensation under this Article 41 shall be restricted to the effect of Change in Law during the respective Accounting Year and shall be made at any time after commencement of such year, but no later than 1 (one) year from the close of such Accounting Year. Any demand for compensation payable for and in respect of any subsequent Accounting Year shall be made after the commencement of the Accounting Year to which the demand pertains, but no later than 2 (two) years from the close of such Accounting Year.

NOTARY CENTRAL GOVT. ANGUL

General Manager
Subhadra Area, MCL

NOTARY SK. NAZRUL ISLAM Area Kishanganj Regn. No. 44/19 Expiry Date 14.09.2024 GOVT. OF WEST BENGAL

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ARTICLE 42

LIABILITY AND INDEMNITY

42.1 General indemnity

42.1.1 The Mine Operator will indemnify, defend, save and hold harmless the Authority and its officers, servants, agents, Government Instrumentalities and Authority owned and/or controlled entities/enterprises, (the "**Authority Indemnified Persons**") against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach or default by the Mine Operator of any of its obligations under this Agreement or any related agreement or on account of any defect or deficiency in the provision of services to the Authority or from any negligence of the Mine Operator under any contract or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the Authority Indemnified Persons.

42.1.2 The Authority will indemnify, defend, save and hold harmless the Mine Operator against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature arising out of (a) defect in title and/or the rights of the Authority in the land comprised in the Site, and/or (b) breach by the Authority of any of its obligations under this Agreement or any related agreement, which materially and adversely affect the performance by the Mine Operator of its obligations under this Agreement, save and except that where any such claim, suit, proceeding, action, and/or demand has arisen due to a negligent act or omission, or breach of any of its obligations under any provision of this Agreement or any related agreement and/or breach of its statutory duty on the part of the Mine Operator, its subsidiaries, representatives, affiliates, Contractors, servants or agents, the same shall be the liability of the Mine Operator.

42.2 Indemnity by the Mine Operator

42.2.1 Without limiting the generality of Clause 42.1, the Mine Operator shall fully indemnify, hold harmless and defend the Authority and the Authority Indemnified Persons from and against any and all loss and/or damages arising out of or with respect to:

(a) failure of the Mine Operator to comply with Applicable Laws and Applicable Permits;

(b) payment of Taxes required to be made by the Mine Operator in respect of the income or other Taxes of the Mine Operator's Contractors, suppliers and representatives; or

(c) non-payment of amounts due as a result of materials or services furnished to the Mine Operator or any of its Contractors which are payable by the Mine Operator or any of its Contractors.

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General Manager
Talcher Coalfields Area, MCL

SK. NAZRUL ISLAM
Advt Kolkata
Regn. No. 44719
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42.2.2 Without limiting the generality of the provisions of this Article 42, the Mine Operator shall fully indemnify, hold harmless and defend the Authority Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Authority Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other Intellectual Property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Mine Operator or by the Mine Operator's Contractors in performing the Mine Operator's obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Mine Operator shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Mines, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, the Mine Operator shall promptly make every reasonable effort to secure for the Authority a licence, at no cost to the Authority, authorising continued use of the infringing work.If the Mine Operator is unable to secure such licence within a reasonable time, the Mine Operator shall, at its own expense, and without impairing the Specifications andStandards, either replace the affected work, or part, or process thereof with non- infringing work or part or process, or modify the same so that it becomes non- infringing.

42.2.3 As per the terms of allotment agreement, dated 17.06.2021 entered into by the Authority with the Government of India in relation to the Project land, the Authority is required to make upfront payment totaling to Rs. 164.98 Crores at various stages of the Construction Period and Operation Period and also required to submit a performance security amounting to Rs. 554.40 Crores to the Government of India, which is liable to be forfeited/ appropriated by Government of India in accordance with the terms of allotment agreement.

The schedule as per the allotment agreement is as below:

Activities	Completion time	Milestone (MS) No.	Fully Explored Mines	Partially Explored Mines
			% of Performance Security to be appropriated for delay in completion of MS	% of Performance Security to be appropriated for delay in completion of MS
Prospecting License or Notification under section 4 of the CBA Act, 1957, as applicable	-	MS-1	Not Applicable	
Completion of Drilling/ Exploration in accordance with the provisions of Clause 14	-			-
Preparation of Geological Report (GR)	Within 15 months from the date of allocation			0

General Manager
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Activities	Completion time	Milestone (MS) No.	Fully Explored Mines	Partially Explored Mines
			% of Performance Security to be appropriated for delay in completion of MS	% of Performance Security to be appropriated for delay in completion of MS
	After 15 months upto 24 months from the date of allocation		-	25%
	After 24 months upto 30 months from the date of allocation			25% (in addition to previous 25%)
Mining Lease Application	-	MS-2	-	
Submission of Mining Plan subject to the provisions of Clause 15	-		-	
Approval of Mining Plan/Project Report subject to the provisions of Clause 15	6 months from the completion of previous MS/ If MS-1 is not applicable, 6 months from the date of allocation		10%	
Forest Clearance Application	-	MS-3	-	
Environment Clearance Application	-		-	
Forest Clearance (FC)-stage 1	-		-	
Forest Clearance (FC)-stage 2	-		-	
Wildlife Clearance	-		-	
Approval under PESA	-		-	
Environment Clearance (EC)	18 months from the completion of previous MS		10%	
Approval for Nallah /River Diversion	-	MS-4	-	
Approval for diversion of Power line/Rail /Road	-		-	
Permission to draw Water	-		-	
Permission to draw Power	-		-	
Consent to Establish/Operate	-		-	
Grant of Mining Lease or order by the Central Government under section 11 of CBA Act, 1957, as applicable	-		-	
Land Acquisition & possession of land and R&R required to reach rated capacity as per approved mining plan	21 months from the completion of previous MS		25%	

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Activities	Completion time	Milestone (MS) No.	Fully Explored Mines	Partially Explored Mines
			% of Performance Security to be appropriated for delay in completion of MS	% of Performance Security to be appropriated for delay in completion of MS
Intimation to DGMS for Mine opening	-	MS-5	-	
Approval for use of Explosive & License for Storage of Petroleum	-		-	
Permission under Factories Act, 1948	-		-	
Permission for use of Radio Frequency Communication System	-		-	
Labour related Permissions	-		-	
Escrow Account	-		-	
Application for Opening permission	-		-	
Mine Opening Permission	6 months from the completion of previous MS		25%	

Note:

1. Only the activity within the Milestone Number, against which percentage of appropriation of performance security has been assigned in the last column ("Main Activity"), will be monitored for the purpose of appropriation of performance security.

2. Activities other than Main Activity, against which percentage of appropriation of performance security has not been assigned, will be monitored for the purpose of early development of mines. However, in case of default in such activities, penalty will not be imposed.

3. The completion time provided for the Milestones does not bar the Allottee from obtaining clearances concurrently, if allowed under the Applicable Laws.

4. In *bona fide* cases of delays not attributable to the Allottee the Nominated Authority will decide on case to case basis the extension of timeline in Efficiency Parameters from the total time granted for all the Milestones, i.e. 66 months in case of mine where GR is to be prepared (partially explored mines) and 51 months in case of mines where GR is not required to be prepared (fully explored mines). For the said purpose, the Nominated Authority may refer the matter to Scrutiny Committee which will consider the delay caused on case to case basis and furnish its recommendation to the Nominated Authority for taking a decision.

5. For Partially Explored Mines, appropriation for delay in completion of MS-1 and MS-2 shall be from the performance security submitted pursuant to clause 6.1.3 of the

General Manager
Subhadra Area, MCL

NOTARY SK. NAZRUL ISLAM Govt. of Kolkata Regn. No. 447/19 Valid Upto Date 15.08.2029 WEST BENGAL

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Agreement and appropriation for delay in completion of remaining milestones shall be from the revised performance security submitted pursuant the said clause.

6. If the Allottee is able to complete the last Milestone (i.e. Mine Opening Permission/ MS-5) within the total time granted for all the Milestones, i.e. 66 months in case of mine where GR is to be prepared (partially explored mines) and 51 months in case of mines where GR is not required to be prepared (fully explored mines), then the amount of performance security appropriated for delay in completion of any previous Milestone (if any) may be refunded to the Allottee.

If such forfeiture/ appropriation of performance security of the Authority is due to reasons attributable to the Mine Operator, the aforesaid liability, to the extent appropriated by the Government of India, the Authority shall have a right to recover such amounts (a) from the amount payable to Mine Operator under this Agreement and/or; (b) by encashment/ appropriation of the Performance Security and/or performance guarantee pursuant to the Joint Operating Agreement furnished by the Mine Operator.

42.3 Notice and contest of claims

In the event that either Party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Article 42 (the "**Indemnified Party**") it shall notify the other Party (the "**Indemnifying Party**") within 15 (fifteen) days of receipt of the claim or demand and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

42.4 Defense of claims

42.4.1 The Indemnified Party shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against such Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and reasonable costs and expenses thereof shall be indemnified by the Indemnifying Party. If the Indemnifying Party acknowledges in writing its obligation to indemnify the Indemnified Party in respect of loss to the full extent provided by this Article 42, the Indemnifying Party shall be entitled to assume and control the defence of such claim, action, suit or proceeding, liabilities, payments and obligations at its expense and through the counsel of its choice; provided it gives prompt notice of its intention to do so to the Indemnified Party and reimburses the Indemnified Party for the reasonable cost and expenses incurred by the Indemnified Party prior to the assumption by the Indemnifying Party of such defence. The Indemnifying Party shall not be entitled to settle or compromise any claim, demand, action, suit or proceeding without the prior written consent of the Indemnified Party, unless the Indemnifying Party provides such security to the Indemnified Party as shall be reasonably required by the Indemnified Party to secure the loss to be indemnified hereunder to the extent so compromised or settled.

42.4.2 If the Indemnifying Party has exercised its rights under Clause 42.3, the Indemnified Party shall not be entitled to settle or compromise any claim, action, suit or proceeding without the prior written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).

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42.4.3 If the Indemnifying Party exercises its rights under Clause 42.3, the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party, when and as incurred, unless:

(a) the employment of counsel by such party has been authorised in writing by the Indemnifying Party;

(b) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action;

(c) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or

(d) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:

(i) that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or

(ii) that such claim, action, suit or proceeding involves or could have a Material Adverse Effect upon it beyond the scope of this Agreement;

Provided that if sub-clauses (b), (c) or (d) of this Clause 42.4.3 shall be applicable, the counsel for the Indemnified Party shall have the right to direct the defence of such claim, demand, action, suit or proceeding on behalf of the Indemnified Party, and the reasonable fees and disbursements of such counsel shall constitute legal or other expenses hereunder.

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42.5 No consequential claims

Notwithstanding anything to the contrary contained in this Article 42, the indemnities herein provided shall not include any claim or recovery in respect of any cost, expense, loss or damage of an indirect, incidental or consequential nature, including loss of profit, except as expressly provided in this Agreement.

42.6 Survival on Termination

The provisions of this Article 42 shall survive Termination.

General Manager
Subhadra Area, MCL

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SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 457/19
Expiry Date
15.09.2024
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ARTICLE 43

RIGHTS TO WORK AT THE SITE

43.1 Rights to Work at the Site

For the purpose of this Agreement, the Mine Operator shall have rights to the use of the Site in accordance with this Agreement, and to this end, it may regulate the entry and use of the Mines by third parties in accordance with and subject to the provisions of this Agreement.

43.2 Access rights of the Authority and others

43.2.1 The Mine Operator shall allow free access to the Site at all times for the authorised representatives of the Authority, Senior Lenders and the Engineer in charge, and for the persons duly authorised by any Government Instrumentality to inspect the Mines and to investigate any matter within their authority, and upon reasonable notice, the Mine Operator shall provide to such persons reasonable assistance necessary to carry out their respective duties and functions.

43.2.2 The Mine Operator shall, for the purpose of operation and maintenance of any utility or road specified in Article 11, allow free access to the Site at all times for the authorised persons and vehicles of the controlling body of such utility or road.

43.3 Property Taxes

All property Taxes on the Site shall be payable by the Authority as owner of the Site; provided, however, that any such Taxes payable by the Mine Operator under Applicable Laws for use of the Site shall not be reimbursed or payable by the Authority.

43.4 Restriction on sub-license or sub-letting

The Mine Operator shall not sub-license or sub-let the whole or any part of the Site, save and except as may be expressly set forth in this Agreement; provided that nothing contained herein shall be construed or interpreted as restricting the right of the Mine Operator to appoint Contractors for sub-contracting/novation of its rights/obligations in relation to any work involving use of Site, under this Agreement. For avoidance of doubt, it is hereby clarified that any sub-license or sub-let as provided in this Clause 43.4 shall not relieve the Mine Operator from any obligation, duty or responsibility under this Agreement.

43.5 Restriction on sub-contracting or novation

43.5.1 The Mine Operator shall not subcontract or novate any of its rights or obligations under this Agreement save and except as provided in Clause 43.5.2 below.

43.5.2 The Mine Operator shall not sub-contract and/or novate its rights or obligation under this Agreement in relation to any work (in part or full) without the prior written approval of the Authority. Notwithstanding the above, under no circumstances, sub-contracting/novation of: (a) Overburden removal shall exceed 15% (fifteen per cent)

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of the Scheduled Overburden Quantity; and (b) Coal excavation shall exceed 15% (fifteen per cent) of the Annual Capacity for each Accounting Year.

The Mine Operator shall ensure that such sub-contracting is not made to an entity or person which is incorporated, established or registered in any country which shares a land border with India or whose beneficial owner is situated in such a country or who otherwise complies with all the rules and regulations prescribed by the Government of India in this regard, including but not limited to General Financial Rules, 2017 read with the OM no. F.No.6/18/2019-PPD dated 23 July 2020 issued by the Public Procurement Division, Deparment of Expenditure, Ministry of Finance, Government of India.

For avoidance of doubt, it is hereby clarified that nothing contained herein shall be construed or interpreted as restricting the right of the Mine Operator to hire any Equipment/vehicles or sub-contract/novate its rights/obligations in relation to any work with prior written approval of the Authority, in accordance with this Clause 43.5, save and except work pertaining to Overburden removal and Coal excavation.

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 647/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

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Subhadra Area, IMCL

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ARTICLE 44

DISPUTE RESOLUTION

44.1 Dispute resolution

44.1.1 Any dispute, difference or controversy of whatever nature howsoever arising under, or out of, or in relation, to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "**Dispute**") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure set forth in Clause 44.2.

44.1.2 The Parties agree to use their best efforts for resolving all Disputes arising under or in respect of this Agreement promptly, equitably and in good faith, and further agree to provide each other non-privileged records, information and data pertaining to any Dispute.

44.2 Conciliation

44.2.1 In the event of any dispute or differences arising directly or indirectly out of this Agreement or otherwise, the Parties undertake to use all reasonable endeavours to resolve such disputes amicably. In this regard, if the dispute is raised by the Mine Operator, it shall make a request in writing to the Engineer in charge for settlement of such disputes/ claims within 30 (thirty) days of arising of the cause of dispute/ claim failing which no disputes/ claims of the Mine Operator shall be entertained by the Authority. For an amicable resolution of a dispute arising out of difference of opinion between the Mine Operator and the Authority, a high level committee shall be constituted and such committee shall be headed by a board level officer of the Authority. The committee shall have equal representatives from the Mine Operator and the Authority for resolution of such dispute.

44.2.2 If the disputes cannot be settled amicably, the disputes shall be taken for resolution in the manner as set out below:

(a) In case of dispute arising in relation to the commercial contracts with central public sector enterprises ("CPSEs")/ Government departments (excluding disputes concerning railways, income tax, customs and excise departments) shall be taken up by either Party for its resolution through AMRCD or such other mechanism as may be provided under the Applicable Laws; and

(b) In case of any other dispute not covered in sub-clause (a) above, the resolution of dispute shall take place through arbitration mechanism as provided in Clause 44.3 below.

44.3 Arbitration

44.3.1 In the event of any question, dispute or difference arising under the terms and conditions or interpretation of the terms of, or in connection with this Agreement (except as to any matter the decision of which is specially provided for by these

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conditions), the same shall be submitted to arbitration to be conducted in accordance with the Arbitration and Conciliation Act, 1996.

44.3.2 There shall be an arbitral tribunal comprising 3 (three) arbitrators, of whom each Party shall select 1 (one), and the third arbitrator shall be appointed by the 2 (two) arbitrators so selected, and in the event of disagreement between the 2 (two) arbitrators, the appointment shall be made in accordance with the Arbitration and Conciliation Act, 1996.

44.3.3 In the event any of the arbitrator(s), so appointed pursuant to Clause 44.3.2, dies or neglects or refuses to act or resigns or is unable to act for any reason, such arbitrator shall be replaced with another arbitrator, who shall be appointed by the concerned party in accordance with Clause 44.3.2.

44.3.4 The arbitral tribunal shall make a reasoned award (the "Award"). Any Award made in any arbitration held pursuant to this Article 44 shall be final and binding on the Parties as from the date it is made, and the Mine Operator and the Authority agree and undertake to carry out such Award without delay.

44.3.5 The Mine Operator and the Authority agree that an Award may be enforced against the Mine Operator and/or the Authority, as the case may be, and their respective assets wherever situated.

44.3.6 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.

44.4 Adjudication by a tribunal

In the event of constitution of a statutory tribunal with powers to adjudicate upon disputes between the Mine Operator and the Authority, all Disputes arising after such constitution shall, instead of reference to arbitration under Clause 44.3, be adjudicated upon by such tribunal in accordance with Applicable Laws and all references to Dispute Resolution Procedure shall be construed accordingly.

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NOTARY SK. NAZRUL ISLAM Asst Kolkata Regn. No. 44/2019 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

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Subhadra Area, MCL

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ARTICLE 45

DISCLOSURE

45.1 Disclosure of Specified Documents

The Mine Operator shall make available for inspection by any person, copies of this Agreement, the Maintenance Manual, the Maintenance Programme, the Maintenance Requirements and the Safety Requirements (hereinafter collectively referred to as the "**Specified Documents**"), free of charge, during normal business hours on all working days at the Mine Operator's registered office and the Mines and shall provide copies of the same to any person upon payment of copying charges on a `no profit no loss' basis.

45.2 Disclosure of Documents relating to safety

The Mine Operator shall make available for inspection by any person copies of all Documents and data relating to safety of the Mines, free of charge, during normal business hours on all working days, at the Mine Operator's registered office and the Mines. The Mine Operator shall make copies of the same available to any person upon payment of copying charges on a `no profit no loss' basis.

45.3 Withholding disclosure of Protected Documents

Notwithstanding the provisions of Clauses 45.1 and 45.2, but subject to Applicable Laws, the Authority shall be entitled to direct the Mine Operator, from time to time, to withhold the disclosure of Protected Documents (as defined herein below) to any person in pursuance of the aforesaid Clauses.

Explanation:

The expression "**Protected Documents**" shall mean such of the Specified Documents or documents referred to in Clauses 45.1 and 45.2, or portions thereof, the disclosure of which the Authority is entitled to withhold under the provisions of the Right to Information Act, 2005, as amended from time to time.

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 247/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM AREA KOLKATA REGN. NO. 247/19 GOVT. OF WEST BENGAL

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Subhadra Area, MCL

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ARTICLE 46

MISCELLANEOUS

46.1 Governing law and jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and, subject to Clause 44.3, the courts at Sambalpur/High Court of Odisha shall have exclusive jurisdiction over all matters arising out of or relating to this Agreement.

46.2 Waiver of immunity

Each Party unconditionally and irrevocably:

(a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;

(b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Party with respect to its assets;

(c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and

(d) consents generally, in respect of the enforcement of any judgment or award against it in any such proceedings and to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgment that may be made or given in connection therewith).

46.3 Depreciation

For the purposes of depreciation under Applicable Laws, the property representing the capital investment made by the Mine Operator in the Project Assets shall be deemed to be acquired and owned by the Mine Operator. For the avoidance of doubt, it is hereby clarified that the Authority shall not in any manner be liable in respect of any claims for depreciation to be made by the Mine Operator under Applicable Laws.

46.4 Delayed Payment

46.4.1 The Parties hereto agree that payments due from one Party to the other Party under the provisions of this Agreement shall be made within the period set forth therein, and if no such period is specified, within 30 (thirty) days of receiving a demand along with the necessary particulars. Unless otherwise specified in this Agreement, in the event of delay beyond such period, the defaulting Party shall pay interest for the period of

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delay calculated at the MCLR of State Bank of India and recovery thereof shall be without prejudice to the rights of the Parties under this Agreement including Termination thereof.

46.4.2 Unless otherwise specified, any interest payable under this Agreement shall accrue on daily outstanding basis and shall be compounded on the basis of quarterly rests.

46.5 Waiver

46.5.1 Waiver, including partial or conditional waiver, by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this Agreement:

(a) shall not operate or be construed as a waiver of any other or subsequent default hereof, or of other provisions of, or obligations, under this Agreement;

(b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and

(c) shall not affect the validity or enforceability of this Agreement in any manner.

46.5.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

46.6 Liability for review of Documents and Drawings

Except to the extent expressly provided in this Agreement:

(a) no review, comment or approval by the Authority or the Engineer in charge of any Project Agreement, Document or Drawing submitted by the Mine Operator nor any observation or inspection of the construction, operation or maintenance of the Mines nor the failure to review, approve, comment, observe or inspect hereunder shall relieve or absolve the Mine Operator from its obligations, duties and liabilities under this Agreement, Applicable Laws and Applicable Permits; and

(b) the Authority shall not be liable to the Mine Operator by reason of any review, comment, approval, observation or inspection referred to in sub-clause (a) above.

46.7 Exclusion of implied warranties etc.

This Agreement expressly excludes any warranty, condition or other undertaking implied at law or by custom or otherwise arising out of any other agreement between the Parties or any representation by either Party not contained in a binding legal agreement executed by both Parties.

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NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 03.2029 WEST BENGAL

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46.8 Survival

46.8.1 Termination shall:

(a) not relieve the Mine Operator or the Authority, as the case may be, of any obligations hereunder which expressly or by implication survive Termination hereof; and

(b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

46.8.2 All obligations surviving Termination shall only survive for a period of 3 (three) years following the date of such Termination.

46.9 Entire Agreement

This Agreement and the Schedules together constitute a complete and exclusive statement of the terms of the agreement between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties. All prior written or oral understandings, offers or other communications of every kind pertaining to this Agreement are abrogated and withdrawn. For the avoidance of doubt, the Parties hereto agree that any obligations of the Mine Operator arising from the Request for Bid shall be deemed to form part of this Agreement and treated as such.

46.10 Severability

If for any reason whatever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to the Dispute Resolution Procedure set forth under this Agreement or otherwise.

46.11 No partnership

This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

NOTARY CENTRAL GOVT. ANGUL

SK. NAZRUL ISLAM Add'l Collector Regn. No. 447179 Date 2029 NOTARY GOVT. OF WEST BENGAL

General Manager
Subhadra Area, MCL

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46.12 Third parties

This Agreement is intended solely for the benefit of the Parties, and their respective successors and permitted assigns, and nothing in this Agreement shall be construed to create any duty to, standard of care with reference to, or any liability to, any person not a Party to this Agreement.

46.13 Successors and assigns

This Agreement shall be binding upon, and inure to the benefit of the Parties and their respective successors and permitted assigns.

46.14 Notices

Any notice or other communication to be given by any Party to the other Party under or in connection with the matters contemplated by this Agreement shall be in writing and shall:

(a) in the case of the Mine Operator, be given by facsimile or e-mail and by letter delivered by hand to the address given and marked for the attention of the person set out below or to such other person as the Mine Operator may from time to time designate by notice to the Authority; provided that notices or other communications to be given to an address outside the city specified in this sub-clause (a) may, if they are subsequently confirmed by sending a copy thereof by registered acknowledgement due, or by courier, be sent by facsimile or e-mail as the Mine Operator may from time to time designate by notice to the Authority:
Attention:
{Designation:
Address:
Fax No:
Email:}

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(b) in the case of the Authority, be given by facsimile or e-mail and by letter delivered by hand at the address given and marked to the attention of the person set out below with a copy delivered to the Authority Representative or such other person as the Authority may from time to time designate by notice to the Mine Operator; provided that if the Mine Operator does not have an office in the same city as the Authority, it may send such notice by facsimile or e-mail and by registered acknowledgement due, or by courier:
Attention:
{Designation:
Address:
Fax No:
Email:}; and

General Manager
Sukhadra Area, MCL

(c) any notice or communication by a Party to the other Party, given in accordance herewith, shall be deemed to have been delivered when in the normal course of post it ought to have been delivered and in all other cases, it shall be deemed to have been delivered on the actual date of delivery; provided that in the case of facsimile or e-mail, it shall be deemed to have been delivered on the working day following the date of its delivery.

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46.15 Language

All notices required to be given by one Party to the other Party and all other communications, Documentation and proceedings which are in any way relevant to this Agreement shall be in writing and in English language.

46.16 Counterparts

This Agreement may be executed in two counterparts, each of which, when executed and delivered, shall constitute an original of this Agreement.

46.17 Limitation of Liability

46.17.1. Unless otherwise specifically provided, the aggregate liability of each Party shall be determined in the following manner:

(a) <u>During the Construction Period:</u>
For any Accounting Year prior to COD the aggregate liability of each Party shall be limited to Rs. [0.10] x Estimated Project Cost.

(b) <u>During the Operation Period</u>
For any Accounting Year after COD the aggregate liability of each Party shall be limited to Rs. [0.25] x Mining Charge x Contracted Capacity.

It is hereby further clarified that the aggregate liability in (a) & (b) above during any Accounting Year shall not be cumulated in the succeeding Accounting Year. Further, the above limitation shall not apply to the Termination Payment as per Clause 37.4.

46.17.2. Notwithstanding the provisions of Clause 46.17.1 above, there shall not be any limitation of liability for the following:

(a) the indemnity and other payment obligations of the Mine Operator pursuant to Clause 42.2; and

(b) circumstances where the default is attributable to a Party's gross negligence, willful misconduct or fraudulent actions.

46.17.3. It is hereby clarified that during the period prior to the COD, the aforesaid limitation of liability upon Termination shall not preclude the right of the Authority to recover the expenditure incurred by it on any construction made in relation to or in connection with the Project, if any, from the Mine Operator.

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General Manager
Subhadra Area, MCL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regd. No. 47715 Expiry Date 15.03.2029 GOVT. OF WEST BENGAL

NOTARY SK. NAZRUL ISLAM Area Kolkata Regd. No. 47715 GOVT. OF WEST BENGAL

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ARTICLE 47

DEFINITIONS

47.1 Definitions

47.1.1 In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

"**Accounting Year**" shall mean the financial year commencing from the first day of April of any calendar year and ending on the thirty-first day of March of the next calendar year, *provided that*, the first Accounting Year shall commence from the Appointed Date and end on the thirty-first day of March of the next calendar year and the last Accounting Year shall commence on the first day of April of the calendar year during which the Transfer Date occurs and shall end on the Transfer Date;

"**Actual Production**" shall have the meaning set forth in Clause 21.5;

"**Actual Stripping Ratio**" shall have the meaning set forth in Clause 28.1.2

"**Additional Auditors**" shall have the meaning set forth in Clause 33.2.3;

"**Additional Capacity**" shall have the meaning set forth in Clause 28.2.1;

"**Affected Party**" shall have the meaning set forth in Clause 34.1;

"**Agent**" shall have the same meaning ascribed to such term in the Mines Act, 1952;

"**Aggregate Damages**" shall have the meaning set forth in Clause 25.3.3;

"**Aggregate Incentive**" shall have the meaning set forth in Clause 25.3.2;

"**Agreement**" shall have the meaning set forth in Recital (A);

"**AMRCD**" shall mean 'Administrative Mechanism for Resolution of CPSEs Disputes' as provided in office memorandum bearing number F. No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22 May 2018 issued by Ministry of Heavy Industries & Public Enterprises, Department of Public Enterprises, Government of India;

"**Annual Capacity**" shall have the meaning set forth in Clause 21.2.1;

"**Annual Production Programme**" shall have the meaning set forth in Clause 21.2.1;

"**Annual Safety Report**" shall have the meaning set forth in Clause 17.4.1;

"**Applicable Laws**" shall mean all laws, brought into force and effect by Government of India or the Government of any State, including rules, regulations and notifications made thereunder, and judgments, decrees, injunctions, writs and orders of any court of record, applicable to this Agreement and the exercise, performance and discharge of the respective rights and obligations of the Parties hereunder, as may be in force and effect during the subsistence of this Agreement;

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"Applicable Permits" shall mean all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Mines during the subsistence of this Agreement;

"Appointed Date" shall have the meaning set forth in Clause 4.1.6;

"Assessed Project Cost" shall mean the estimated capital cost on construction and financing of the Project, on the part of the Mine Operator only, as assessed by the Mine Operator and shall be a sum of Rs. {*** ****}[5].

"Associate" shall mean, in relation to either Party {and/or Consortium Members}, a person who controls, is controlled by, or is under the common control with such Party {or Consortium Member} (as used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person or the power or right to appoint a majority of directors on the board of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person, whether by operation of law or by contract or otherwise);

"Auditors" shall mean a firm of chartered accountants chartered accountants /cost accountants acting as the auditors of the Mine Operator under the provisions of the Companies Act, 2013, including any re-enactment or amendment thereof, for the time being in force, and appointed in accordance with Clause 33.2.1;

"Authority Default" shall have the meaning set forth in Clause 37.2.1;

"Authority Indemnified Persons" shall have the meaning set forth in Clause 42.1.1;

"Authority Representative" shall mean such person or persons as may be authorised in writing by the Authority to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfil any obligations of the Authority under this Agreement;

"Average Daily Mining Charge" shall mean the amount arrived at by dividing the total Mining Charge due and payable for the immediately preceding Accounting Year by 365 (three hundred and sixty five), and increasing the quotient thereof by 5% (five per cent); provided that the Average Daily Mining Charge for any period prior to completion of the first Accounting Year following COD shall be a simple average of the Mining Charge due and payable with respect to every day during the period between COD and the last day of the month preceding the date on which the event requiring calculation hereof occurred, and in the event that the Mining Charge payable for any segment of the Mines has not been realised for any reason, an assessment thereof shall be made by the Engineer in charge to form part of the Average Daily Mining Charge for such period;

"Award" shall have the meaning set forth in Clause 44.3.3;

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[5] In the case the amount shall be less than 75% (seventy-five per cent) of the 'Estimated Project Cost'.

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"**Applicable Permits**" shall mean all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Mines during the subsistence of this Agreement;

"**Appointed Date**" shall have the meaning set forth in Clause 4.1.6;

"**Assessed Project Cost**" shall mean the estimated capital cost on construction and financing of the Project, on the part of the Mine Operator only, as assessed by the Mine Operator and shall not be less than 75% (seventy five percent) of the 'Estimated' Project cost of Rs. 2261.84 Crores i.e. Rs. 1696.38 Crore.[5]

"**Associate**" shall mean, in relation to either Party {and/or Consortium Members}, a person who controls, is controlled by, or is under the common control with such Party {or Consortium Member} (as used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person or the power or right to appoint a majority of directors on the board of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person, whether by operation of law or by contract or otherwise);

"**Auditors**" shall mean a firm of chartered accountants chartered accountants /cost accountants acting as the auditors of the Mine Operator under the provisions of the Companies Act, 2013, including any re-enactment or amendment thereof, for the time being in force, and appointed in accordance with Clause 33.2.1;

"**Authority Default**" shall have the meaning set forth in Clause 37.2.1;

"**Authority Indemnified Persons**" shall have the meaning set forth in Clause 42.1.1;

"**Authority Representative**" shall mean such person or persons as may be authorised in writing by the Authority to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfil any obligations of the Authority under this Agreement;

"**Average Daily Mining Charge**" shall mean the amount arrived at by dividing the total Mining Charge due and payable for the immediately preceding Accounting Year by 365 (three hundred and sixty five), and increasing the quotient thereof by 5% (five per cent); provided that the Average Daily Mining Charge for any period prior to completion of the first Accounting Year following COD shall be a simple average of the Mining Charge due and payable with respect to every day during the period between COD and the last day of the month preceding the date on which the event requiring calculation hereof occurred, and in the event that the Mining Charge payable for any segment of the Mines has not been realised for any reason, an assessment thereof shall be made by the Engineer in charge to form part of the Average Daily Mining Charge for such period;

"**Award**" shall have the meaning set forth in Clause 44.3.3;

[5] In no case the amount shall be less than 75% (seventy-five per cent) of the 'Estimated Project Cost'.

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NOTARY
SK. NAZRUL ISLAM
Asst. Solicitor
Regd. No. 447/19
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Asst. Solicitor
Regd. No. 447/19
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

General Manager
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"**Bank**" shall mean a scheduled commercial public sector undertaking (PSU) bank or a private commercial bank with net worth over Rs. 300,000,000,000 (Indian Rupees three hundred billion only) as listed under second schedule to the Reserve Bank of India Act, 1934, and acceptable to Senior Lenders, but does not include a bank in which any Senior Lender has an interest.

"**Base Mining Charge**" shall have the meaning set forth in Clause 28.1.1;

"**Bid**" shall mean the documents in their entirety comprised in the bid submitted by the selected Bidder in response to the Request for Bid in accordance with the provisions thereof and "**Bids**" shall mean the bids submitted by any and all pre-qualified Bidders;

"**Bid Date**" shall mean the last date on which the Bid may have been submitted in accordance with the provisions of the Request for Bid;

"**Bidder**" shall have the meaning set forth in the RFB;

"**Bid Securing Declaration**" shall have the meaning set forth in the NIT;

"**Buyer(s)**" shall mean the third parties buying Coal from the Mines, in accordance with the provisions of this Agreement and Applicable Laws;

"**Capital Works**" shall mean the Construction Works described in Annex-IV of Schedule B, the capital cost of which is provided by the Mine Operator;

"**Change in Law**" shall mean the occurrence of any of the following after the Bid Date, to the extent such occurrence was not reasonably foreseeable by the Parties prior to the Bid Date:

(a) the enactment of any new Indian law;

(b) the repeal, modification or re-enactment of any existing Indian law;

(c) a change in the interpretation or application of any Indian law by a judgement of a court of record which has become final, conclusive and binding, as compared to such interpretation or application by a court of record prior to the Bid Date; or

(d) any change in the rates of any of the Taxes that have a direct effect on the Project;

"**Change in Ownership**" shall mean a transfer of the direct and/ or indirect legal or beneficial ownership of any shares, or securities convertible into shares, that causes the aggregate holding of the {selected Bidder/Consortium Members} in the total Equity to decline below (a) 75% (seventy five per cent) thereof during the Construction Period and until the 2nd (second) anniversary of COD, and (b) 26% (twenty six per cent) thereof, or such lower proportion as may be permitted by the Authority during the

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NOTARY S.K. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2024 GOVT. OF WEST BENGAL

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remainder of the Contract Period; provided that any material variation (as compared to the representations made by the {selected Bidder/Consortium Members} during the bidding process for the purposes of meeting the minimum conditions of eligibility or for evaluation of {its/ their} application or Bid, as the case may be,) in the proportion of the equity holding of {the selected Bidder/ any Consortium Member} to the total Equity, if it occurs prior to COD, shall constitute Change in Ownership;

"Change of Scope" shall have the meaning set forth in Clause 15.1.1;

"Change of Scope Notice" shall have the meaning set forth in Clause 15.2.1;

"Change of Scope Order" shall have the meaning set forth in Clause 15.2.3;

"Coal" shall mean a fossilized solid fuel of vegetative origin;

"Coal Depot" shall have the meaning set forth in Clause 22.1.1;

"Coal Handling Plant" shall mean the coal handling plant as described in Annex-I of Schedule B of this Agreement;

"Coal Seam" shall have the meaning ascribed to it in the Mining Plan;

"Coal Tests" shall mean the tests set forth in Schedule-M to determine the conformity of Coal with the provisions of this Agreement;

"COD" or "Commercial Operation Date" shall have the meaning set forth in Clause 14.2.1;

"Completion" shall have the meaning as set forth in Clause 14.3.1;

"Completion Certificate" shall have the meaning as set forth in Clause 14.3.1;

"Conditions Precedent" shall have the meaning set forth in Clause 4.1.1;

{"Consortium" shall have the meaning set forth in Recital (C);}

{"Consortium Member" shall mean a company specified in Recital (C) as a member of the Consortium;}

"Construction Period" shall mean the period beginning from the Appointed Date and ending on COD;

"Construction Works" shall mean all excavation works and things necessary to develop the Mines in accordance with this Agreement and includes the Rail Track;

"Contract Period" shall mean the period starting on and from the Appointed Date and ending on 25th (twenty fifth) anniversary of the Appointed Date or life of the Mine or the date of Termination of the agreement or completion of total scheduled quantity of both OB & coal as per Cl. 20.2.1 & 21.2.1, whichever is shorter or the Transfer Date, whichever is earlier.

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"**Contracted Capacity**" shall have the meaning set forth in Clause 21.2.1;

"**Contractor**" shall mean the person or persons, as the case may be, with whom the Mine Operator has entered into any EPC Contract, O&M Contract or any other material agreement or contract for construction, operation and/or maintenance of the Mines or matters incidental thereto, but does not include a person who has entered into an agreement for providing financial assistance to the Mine Operator;

"**Covenant**" shall have the meaning set forth in Clause 5.2.5;

"**CPI (IW)**" shall mean the consumer price index for industrial workers as published by the Labour Bureau, Government of India and shall include any index which substitutes the CPI (IW), and any reference to CPI (IW) shall, unless the context otherwise requires, be construed as a reference to the CPI (IW) published for the period ending with the preceding quarter, save and except that for the purposes of quarterly revision of the Mining Charge in accordance with the provisions of Clause 28.1.1, the revision due for and in respect of any quarter shall be computed with reference to CPI (IW) as on the last date of the preceding quarter;

"**CP Satisfaction Notice**' shall have the meaning set forth in Clause 4.1.6;

"**Cure Period**" shall mean the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Party responsible for such breach or default and shall;

(a) commence from the date on which a notice is delivered by one Party to the other Party asking the latter to cure the breach or default specified in such notice;

(b) not relieve any Party from liability to pay Damages or compensation under the provisions of this Agreement; and

(c) not in any way be extended by any period of Suspension under this Agreement;

provided that if the cure of any breach by the Mine Operator requires any reasonable action by the Mine Operator that must be approved by the Authority, the applicable Cure Period shall be extended by the period taken by the Authority to accord their approval;

"**Damages**" shall have the meaning set forth in sub-clause (za) of Clause 1.2.1;

"**Debt Service**" shall mean the sum of all payments on account of principal, interest, financing fees and charges due and payable in an Accounting Year to the Senior Lenders under the Financing Agreements;

"**Declared Capacity**" shall have the meaning set forth in Clause 22.1.4;

"**Declared Grade**" shall have the meaning set forth in Clause 30.1.1;

"**Delivery**" shall mean loading and delivery of Coal at the Delivery Point and the terms "**Deliver**" and "**Delivered**" shall be construed according;

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"**Delivery Point**" shall mean any of the sidings or loading points at or adjacent to the Site or other location(s) identified by the Authority, at which the Mine Operator Delivers Coal in accordance with the terms of this Agreement and as defined at Clause 28.1.1 (iv), (v), & (vi);

"**Depreciated Value**" shall mean the lower of: (a) audited book value of the Capital Works or Project Specific Assets (as the case may be); and (b) value of the Capital Works or Project Specific Assets (as the case may be), as assessed by an independent third party valuer who shall be selected and appointed by the Authority, within 15 (fifteen) days of Termination for submitting his assessment within 30 (thirty) days of his appointment hereunder;

"**Development Period**" shall mean the period from the date of this Agreement until the Appointed Date;

"**Dispatch Instructions**" shall have the meaning set forth in Clause 24.1;

"**Dispute**" shall have the meaning set forth in Clause 44.1.1;

"**Dispute Resolution Procedure**" shall mean the procedure for resolution of Disputes set forth in Article 44;

"**Divestment Requirements**" shall mean the obligations of the Mine Operator for and in respect of Termination set forth in Clause 38.1.1;

"**Document**" or "**Documentation**" shall mean documentation in printed or written form, or in tapes, discs, drawings, computer programmes, writings, reports, photographs, films, cassettes, or expressed in any other written, electronic, audio or visual form;

"**Drawings**" shall mean all of the drawings, calculations and documents pertaining to the Mines as set forth in Schedule-H, and shall include 'as built' drawings of the Mines;

"**Emergency**" shall mean a condition or situation that is likely to endanger the security of the individuals on or about the Mines, including Buyers thereof, or which poses an immediate threat of material damage to any of the Project Assets;

"**Encumbrance**" shall mean, any encumbrance such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any insurance policy pertaining to the Mines, where applicable herein but excluding utilities referred to in Clause 11.1;

"**Engineer in charge**" shall have the meaning set forth in Clause 26.1;

"**EPC Contract**" shall mean the engineering, procurement and construction contract or contracts entered into by the Mine Operator with one or more EPC Contractors for, *inter alia*, engineering and construction of the Mines in accordance with the provisions of this Agreement;

"**EPC Contractor**" shall mean the person with whom the Mine Operator has entered into an EPC Contract;

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"**Equipment**" shall mean the tools, machinery, vehicles and other equipment provided or installed at the Mines and used for excavation and Delivery of Coal for purposes incidental or consequential thereto;

"**Equity**" shall mean the sum expressed in Indian Rupees representing the issued and paid up equity share capital of the Mine Operator for meeting the equity component of the Assessed Project Cost, and for the purposes of this Agreement, shall include convertible instruments or other similar forms of capital, which shall compulsorily convert into equity share capital of the Mine Operator, and any interest-free funds advanced by any shareholder of the Mine Operator for meeting such equity component;

"**Estimated Project Cost**" shall mean the capital cost on construction and financing of the Project, on the part of the Mine Operator only, as estimated by the Authority and shall be a sum of Rs. 2261.84 Crores (Rupees two thousand two hundred sixty one crore eighty four lakhs);

"**Financial Close**" shall mean the fulfillment of all Conditions Precedent to the initial availability of funds under the Financing Agreements;

"**Financial Default**" shall have the meaning set forth in Schedule-R;

"**Financial Model**" shall mean the financial model adopted by Senior Lenders, setting forth the capital and operating costs of the Project and revenues therefrom on the basis of which financial viability of the Project has been determined by the Senior Lenders, and includes a description of the assumptions and parameters used for making calculations and projections therein;

"**Financial Package**" shall mean the financing package indicating the total capital cost of the Project and the means of financing thereof, as set forth in the Financial Model and approved by the Senior Lenders, and includes Equity, all financial assistance specified in the Financing Agreements and Subordinated Debt, if any;

"**Financing Agreements**" shall mean the agreements executed by the Mine Operator in respect of financial assistance to be provided by the Senior Lenders by way of loans, guarantees, subscription to non-convertible debentures and other debt instruments including loan agreements, guarantees, notes, debentures, bonds and other debt instruments, security agreements, and other documents relating to the financing (including refinancing) of the Assessed Project Cost, and includes amendments or modifications made in accordance with Clause 5.2.2;

"**Force Majeure**" or "**Force Majeure Event**" shall have the meaning set forth in Clause 34.1;

"**Government**" shall mean the Government of India or the Government of the State having territorial jurisdiction over the Mines, as the case may be;

"**Government Instrumentality**" shall mean any department, division or sub-division of the Government of India or of any State and includes any commission, board, authority, agency or municipal and other local authority or statutory body including Panchayat, under the control of the Government of India or of any State, as the case may be, and having jurisdiction over all or any part of the Mines or the performance of

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General Manager Subhadra Area

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all or any of the services or obligations of the Mine Operator under or pursuant to this Agreement;

"**Grade Slippage**" shall have the meaning set forth in Clause 23.2.3;

"**GST**" shall mean the goods and services tax levied and collected in India;

"**GST Laws**" shall mean the Applicable Laws in relation to GST;

"**IBC**" shall mean the Insolvency and Bankruptcy Code, 2016, read with all rules, regulations, circulars, guidelines and notifications thereunder (as amended from time to time);

"**Incentive**" shall mean a payment due to the Mine Operator, in accordance with the provisions of this Agreement, for any delivery, performance or outcome, as the case may be, which is better than the standards specified in respect thereof;

"**Indemnified Party**" shall mean the Party entitled to the benefit of an indemnity pursuant to Clause 42.3;

"**Indemnifying Party**" shall mean the Party obligated to indemnify the other Party pursuant to Clause 42.3;

"**Independent Laboratory**" shall have the meaning set forth in Clause 23.2.1;

"**Indirect Political Event**" shall have the meaning set forth in Clause 34.3;

"**Inspection Report**" shall have the meaning set forth in Clause 13.2;

"**Insurance Cover**" shall mean the aggregate of the maximum sums insured under the insurances taken out by the Mine Operator pursuant to Article 32, and includes all insurances required to be taken out by the Mine Operator under Clause 32.2 but not actually taken, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable or deemed to be insured and payable in relation to such act or event;

"**Intellectual Property**" shall mean all patents, trademarks, service marks, logos, get-up, trade names, internet domain names, rights in designs, blue prints, programmes and manuals, drawings, copyright (including rights in computer software), database rights, semi-conductor, topography rights, utility models, rights in know-how and other intellectual property rights, in each case, whether registered or unregistered, and including applications for registration, and all rights or forms of protection having equivalent or similar effect anywhere in the world;

"**Key Performance Indicators**" shall have the meaning set forth in Clause 25.1;

"**Measurement**" shall have the meaning set forth in Clause 19.7.1;

{"**Lead Member**" shall have the meaning set forth in Recital (C);}

"**Lenders' Representative**" shall mean the person duly authorised by the Senior Lenders to act for, and on behalf of, the Senior Lenders with regard to matters arising

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SK. NAZRUL ISLAM Advt Kolkata W.B. No. 44719 Exp. to Date

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out of, or in relation to, this Agreement, and includes its successors, assigns and substitutes;

"**LOA**" or "**Letter of Award**" shall mean the letter of award referred to in Recital (C);

"**Maintenance Manual**" shall have the meaning set forth in Clause 16.3.1;

"**Maintenance Programme**" shall have the meaning set forth in Clause 16.4.1;

"**Maintenance Requirements**" shall have the meaning set forth in Clause 16.2;

"**Manager**" shall have the same meaning as ascribed to such term in the Mines Act, 1952 and rules and regulations thereunder;

"**MCLR of State Bank of India**" shall mean the marginal cost lending rates for 1(one) year as determined by State Bank of India from time to time, as the same may be announced through such media as the State Bank of India may deem fit and any such announcement through any media shall be sufficient notice to the Parties.

"**Material Adverse Effect**" shall mean any act or event that materially and adversely affects the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement;

"**Mine Closure Plan**" shall mean the mine closure plan prepared in accordance with the 'Guidelines for Preparation of Mine Closure Plan' issued by the Ministry of Coal, Government of India, from time to time.

"**Mine Operator Default**" shall have the meaning set forth in Clause 37.1.1;

"**Mines**" shall have the meaning set forth in Recital (A);

"**Mining Charge**" shall have the meaning set forth in Clause 28.1.1;

"**Mining Plan**" shall include Mine Closure Plan and shall mean the mining plan prepared and approved under and in accordance with the provisions of the Mineral Concession Rules, 1960, and the latest guidelines issued by the Ministry of Coal, Government of India as amended from time to time, or any substitute thereof;

"**Miscellaneous Invoice**" shall have the meaning set forth in Clause 29.1.3;

"**Monthly Capacity**" shall have the meaning set forth in Clause 21.2.1;

"**Monthly Invoice**" shall have the meaning set forth in Clause 29.1.1;

"**Moving Equipment**" shall mean any equipment or vehicle which is moved around in the normal course of its usage and does not include any equipment which is installed on the ground in a stationery position;

"**MT**" shall mean a million Tonne;

"**New Code for Uniform System of Maintenance, Control and Verification of Coal Stock in all Mines of Coal India Limited**" shall mean the codes approved in the 273rd meeting of the board of directors of Coal India Limited held on 20.09.2011 or any subsequent modifications/ order in this regard.

NOTARY CENTRAL GOVT. ANGUL

NOTARY SK. NAZRUL ISLAM Regd. No. 44/10 GOVT. OF WEST BENGAL

NOTARY GOVT. OF WEST BENGAL

SUBHADRA COAL MINING LTD.

General Manager
Subhadra Area, MCL

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DUPLICATE

"Nominated Company" shall mean a company selected by the Lenders' Representative and proposed to the Authority for substituting the Mine Operator in accordance with the provisions of the Substitution Agreement;

"Non-Political Event" shall have the meaning as set forth in Clause 34.2;

"Notional Stripping Ratio" shall mean the anticipated average stripping ratio for the Contract period, which is 1.12;

"O&M" shall mean the operation and maintenance of the Mines and includes all matters connected with, or incidental to, such operation and maintenance, and provision of services and facilities in accordance with the provisions of this Agreement;

"O&M Contract" shall mean the operation and maintenance contract that may be entered into between the Mine Operator and the O&M Contractor for performance of all or any of the O&M obligations;

"O&M Contractor" shall mean the person, if any, with whom the Mine Operator has entered into an O&M Contract for discharging the O&M obligations for and on behalf of the Mine Operator;

"O&M Expenses" shall mean expenses incurred by or on behalf of the Mine Operator or by the Authority, as the case may be, for all O&M including (a) cost of salaries and other compensation to employees, (b) cost of materials, supplies, utilities and other services, (c) premia for insurance, (d) all Taxes, duties, cess and fees due and payable for O&M, (e) all repair, replacement, reconstruction, reinstatement, improvement and maintenance costs, (f) payments required to be made under the O&M Contract or any other contract in connection with, or incidental to, O&M, and (g) all other expenditure required to be incurred under Applicable Laws, Applicable Permits and this Agreement;

"O&M Inspection Report" shall have the meaning set forth in Clause 19.3;

"Operation Period" shall mean the period commencing from COD and ending on the Transfer Date;

"Overburden" shall mean the rock, soil and ecosystem that lies above the Coal Seam and is removed during surface mining, and may be used to restore an exhausted mining site to a semblance of its appearance before mining began;

"Overburden Adjustable Amount" shall have the meaning set forth in Clause 20.3.1;

"Owner" shall have the meaning ascribed to such term in the Mines Act, 1952;

"Panel of Chartered Accountants and Cost and Management Accountants" shall have the meaning set forth in Clause 33.2.1;

"Parties" shall mean the parties to this Agreement collectively and "Party" shall mean any of the parties to this Agreement individually;

"Performance Guarantee" shall have the meaning set forth in Clause 39.2.2;

NOTARY CENTRAL GOVT. ANGUL

General Manager
Subhadra Area, MCL

DUPLICATE

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"**Performance Security**" shall have the meaning set forth in Clause 9.1.1;

"**Political Event**" shall have the meaning set forth in Clause 34.4;

"**Price Index**" shall be construed in the following manner

(a) 20.14% (twenty point one four per cent) of the component shall be fixed and shall not be subjectedto any escalation whatsoever;

(b) 11.24% (eleven point two four per cent) of the percentage change in the WPI for industrial machinery published by the Ministry of Commerce and Industry, Government of India, for the category 'mining/quarrying/metallurgical machinery/parts';

(c) 2.31% (two point three one per cent) of the percentage change in the WPI for the subcategory 'lubricants' published by the Ministry of Commerce and Industry, Government ofIndia;

(d) 15.96% (fifteen point nine six per cent) of the percentage change in wages of unskilled category employees as per High Power Committee (HPC) recommendation; and

(e) 44.30% (forty four point three per cent) of the percentage change in the WPI for sub-category 'high speed diesel oil';

(f) 6.05% (six point zero five per cent) of the percentage change in applicable electricity tariff.

Electricity will be sourced from the Nandira 132 KV Substation by the Authority i.e. CCL. Electricity consumed by the Mine Operator is a part of Mining Charge quoted by the Mine Operator. For recovery of electricity bill, amount consumed by the Mine Operator will be made as below:

(i). Actual bill amount at the Nandira 132 KV Substation is to be recovered from the Mine operator.

(ii). If the actual consumption of electricity as per billed amount at Nandira Substation is less than 6.05% of the total Mining Charges and price variation on account of electricity as indicated in the Article 47 of Contract Agreement, payable to the Mine Operator for that period, then the difference amount will be recovered from the Bill of the Mine operator.

"**Project**" shall mean the construction, operation and maintenance of the Mines in accordance with the provisions of this Agreement, and includes all works, services and equipment relating to or in respect of the Scope of the Project;

"**Project Affected Persons**" or "**PAPs**" shall have the same meaning as ascribed to such term in the R&R Policy;

"**Project Agreements**" shall mean this Agreement, the Financing Agreements, EPC Contract, O&M Contract and any other material agreements or contracts that may be entered into by the Mine Operator with any person in connection with matters relating to, arising out of, or incidental to the Project, but does not include Substitution Agreement or any agreement for procurement of goods and services involving a

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DUPLICATE

consideration of upto Rs. 45.24 crore (Rupees Forty Five Crore Twenty Four Lakhs);

"**Project Assets**" shall mean physical and other assets relating to and forming part of the Project, including:

(a) rights over the Site;
(b) tangible assets such as civil works and equipment including foundations, embankments, pavements, electrical systems, communication systems, relief centres and administrative offices;
(c) all rights of the Mine Operator under the Project Agreements;
(d) financial assets, such as receivables, security deposits etc;
(e) insurance proceeds; and
(f) Applicable Permits and authorisations relating to, or in respect of, the Mines;

It is hereby clarified that the Moving Equipment and other movable assets (including but not limited to heavy earth moving machinery) shall not be included within the meaning of the Project Assets.

"**Project Completion Schedule**" shall mean the progressive Project Milestones set forth in Schedule-G for completion of the Mines on or before the Scheduled Completion Date;

"**Project Facilities**" shall mean all the amenities and facilities situated on the Site, as described in Schedule-C;

"**Project Milestones**" shall mean the project milestones set forth in Schedule-G;

"**Project Specific Assets**" shall mean the Project Assets, as listed in Annex-V of Schedule B;

"**Pure Agent**" shall mean the "pure agent" as defined under Rule 33 of the Central Goods and Services Tax Rules, 2017 (as amended from time to time) and in this regard, the Parties shall enter into a pure agency agreement in the format as set forth in Schedule-S;

"**Rail Track**" shall have the meaning set forth in Clause 12.1.5;

"**R&R Costs**" shall mean the costs for Rehabilitation and Resettlement including the cost of land as approved under or in accordance with the R&R Policy;

"**R&R Policy**" shall mean the policy on Rehabilitation and Resettlement of Project Affected Persons of the Authority or the State Government, as applicable and notified from time to time;

"**Re.**", "**Rs.**" or "**Rupees**" or "**Indian Rupees**" shall mean the lawful currency of the Republic of India;

"**Reference Index Date**" shall mean, in respect of the specified month or quarter, as the case may be, that last day of the preceding month or quarter with reference to which the Price Index, WPI, price of diesel or tariff of electricity, as the case may be, is revised;

"**Rehabilitation and Resettlement**" shall mean the rehabilitation and resettlement of Project Affected Persons in accordance with the R&R Policy;

"**Request for Bid**" or "**RFB**" shall have the meaning set forth in Recital (B);

General Manager
Subhadra Area, MCL

DUPLICATE

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"Rules" shall have the meaning set forth in Clause 44.3.1;

"Safety Requirements" shall have the meaning set forth in Clause 17.1.1;

"Scheduled COD" shall have the meaning set forth in Clause 12.4.1;

"Scheduled Completion Date" shall have the meaning set forth in Clause 12.4.1;

"Scheduled Maintenance" shall have the meaning set forth in Clause 16.4.4;

"Scheduled Overburden Quantity" shall have the meaning set forth in Clause 20.2.1;

"Scope of the Project" shall have the meaning set forth in Clause 2.1;

"Senior Lenders" shall mean the financial institutions, banks, multilateral lending agencies, trusts, funds and agents or trustees of debenture holders, including their successors and assignees, who have agreed to guarantee or provide finance to the Mine Operator under any of the Financing Agreements for meeting all or any part of the Assessed Project Cost and who hold *pari passu* charge on the assets, rights, title and interests of the Mine Operator;

"Site" shall have the meaning as set forth in Clause 10.2.2;

"Specifications and Standards" shall mean the specifications and standards relating to the quality, quantity, capacity and other requirements for the Mines, as set forth in Schedule-D, and any modifications thereof, or additions thereto, as included in the design and engineering for the Mines submitted by the Mine Operator to, and expressly approved by, the Authority;

"Standard Industry Practice" shall mean the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced operator engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Mine Operator in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner, and includes prudent mining practices generally accepted by mine owners and operators for ensuring safe, economic, reliable and efficient excavation, operation and maintenance of the Mines and for providing safe, economic, reliable and efficient excavation of Coal and Delivery thereof;

"State" shall mean the State or the Union Territory, as the case may be, in which the Project is situate and "State Government" means the government of that State or Union Territory;

"Stripping Ratio" shall mean the in-situ volume of Overburden to be removed in cubic metres for each Tonne of Coal produced. For the avoidance of doubt, the Stripping Ratio shall be reviewed at the beginning of each Accounting Year by the Mine Operator in the presence of the Engineer in charge;

"Subordinated Debt" shall mean the aggregate of the following sums expressed in Indian Rupees or in the currency of debt, as the case may be, outstanding as on the Transfer Date:

(a) the principal amount of debt provided by lenders or the Mine Operator's

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DUPLICATE

shareholders for meeting the Assessed Project Cost and subordinated to the financial assistance provided by the Senior Lenders; and

(b) all accrued interest on the debt referred to in sub-clause (a);

provided that if all or any part of the Subordinated Debt is convertible into Equity at the option of the lenders and/or the Mine Operator's shareholders, it shall for the purposes of this Agreement be deemed to be Subordinated Debt even after such conversion and the principal thereof shall be dealt with as if such conversion had not been undertaken;

"**Substitution Agreement**" shall have the meaning set forth in Clause 40.3.1;

"**Suspension**" shall have the meaning set forth in Clause 36.1;

"**Taxes**" shall mean any Indian taxes including GST, customs duties, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, materials, equipment and services incorporated in and forming part of the Mines, charged, levied or imposed by any Government Instrumentality, but excluding any interest, penalties and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income;

"**Termination**" shall mean the expiry or termination of this Agreement;

"**Termination Notice**" shall mean the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

"**Termination Payment**" shall mean the amount payable under, and in accordance with, this Agreement, by the Authority to the Mine Operator upon Termination. For the avoidance of doubt, it is expressly agreed that the amount payable shall be subject to the limitations specified in Clause 37.4;

"**Tests**" shall mean the tests set forth in Schedule-I to determine the completion of Mines in accordance with the provisions of this Agreement and shall, *mutatis mutandis*, include similar tests to determine completion of Additional Capacity, if any;

"**Tonne**" shall mean a metric tonne equal to 1000kg;

"**Transfer Date**" shall mean the date on which this Agreement expires pursuant to the provisions of this Agreement or is terminated by a Termination Notice;

"**Undelivered Coal**" shall have the meaning set forth in Clause 28.4.1;

"**Unforeseen Event**" shall have the meaning set forth in Clause 34.1.1;

"**Vesting Certificate**" shall have the meaning set forth in Clause 38.4;

"**WPI**" shall mean the wholesale price index for all commodities as published by the Ministry of Commerce and Industry, Government of India and shall include any index which substitutes the WPI, and any reference to WPI shall, unless the context otherwise requires, be construed as a reference to the WPI published for the period ending with the preceding month, save and except that for the purposes of quarterly revision of the Mining Charge in accordance with the provisions of Clause 28.1.1, the revision due for and in respect of any quarter shall be computed with reference to WPI as on the last date of the preceding quarter.

NOTARY ... CENTRAL GOVT. ... ASANSOL

NOTARY ... SK. NAJIFUL ISLAM ... Regn. No. 44/19 ... Expiry Date 15.06.2023 ... WEST BENGAL

NOTARY ... SK. NAJIFUL ISLAM ... Regn. No. 44/19 ... Expiry Date 15.06.2023 ... WEST BENGAL

General Manager
Subhadra Area, WCL

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DUPLICATE

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DAY, MONTH AND YEAR FIRST ABOVE WRITTEN.

(163)

THE COMMON SEAL OF MINE OPERATOR has been affixed pursuant to the resolution passed by the Board of Directors of the Mine Operator at its meeting held on the 16th day of May 2022 hereunto affixed in the presence of Mr Dhananjoy Karmakar and Mr Rakesh Sharma, Authorised Officers, who have countersigned the same in token thereof[$]:

SIGNED, SEALED AND DELIVERED For and on behalf of AUTHORITY by:

Dhananjoy Karmakar

Rakesh Sharma

Signature

Name: Sanjay Baid
Director
Address: Subhadra Coal Mining Limited,
Industry House, 18th Floor,
10 Camac Street,
Kolkata, 700017,
West Bengal.

NOTARY
CENTRAL GOVT.
ANGUL

Signature

Name: R V Ringe
Designation: General Manager
Address: Office of the General Manager,
Subhadra Area, MCL
Near Biju Maidan,
P.o/Dist.- Angul, 759122
Odisha.
e-mail address: gm-subhadra.mcl@coalindia.in

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.06.2025
GOVT. OF WEST BENGAL

In the presence of:

1.

2.

(S. K. Sahu)

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Reg... 447/19
GOVT. OF WEST BENGAL

SUBHADRA COAL MINING LIMITED

General Manager
Subhadra Area, MCL

[$] To be affixed in accordance with the articles of association of the Mine Operator and the resolution passed by its Board of Directors

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DUPLICATE

NOTARY
CENTRAL GOVT.
ANGUL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 47/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 47/19
GOVT. OF WEST BENGAL

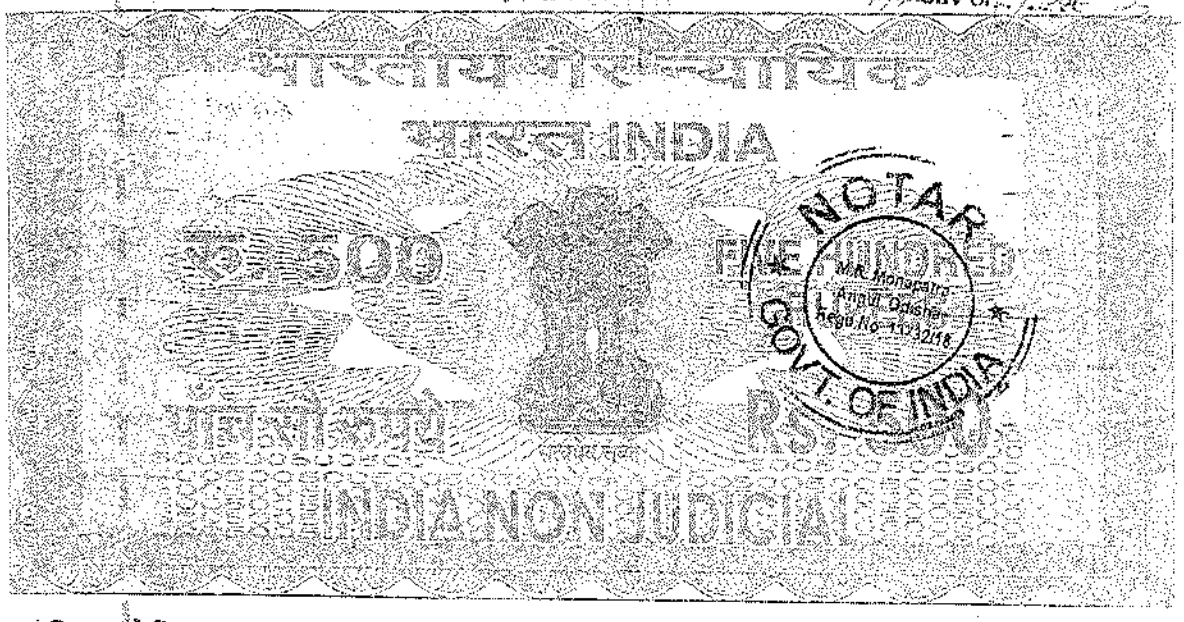
General Manager
Talcher Area, MCL

ANNEXURE - 'C'

~~ANNEXURE - 'A'~~

DUPLICATE

Registered No. 20 of 20202263
dated this 25th day of Dec



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SCHEDULE - S

(See Clause 29.1.6)

NOTARY CENTRAL GOVT. ANGUL

PURE AGENCY AGREEMENT

This Pure Agency Agreement (the "**Agreement**") is entered into 17th June, 2022(the "**Effective Date**"), by and between Mahanadi Coalfields Limited represented by General Manager with an address of **Subhadra Area, Mahanadi Coalfields Ltd., Near Biju Maidan, PO/Dist. Angul 759 122, Odisha**(the "**Recipient of supply**" or "**Principal**") and **Subhadra Coal Mining Limited**, with an address of **Industry House, 18th Floor, 10, Camac Street, Kolkata 700017, West Bengal**, (the "**Service Provider**" or "**Pure Agent**"), collectively the "**Parties.**"

NOTARY SK. NAZRUL ISLAM Regn. No. 44/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

WHEREAS, the Parties have entered into an agreement dated 17th June, 2022 ("**Project Contract**") to undertake development and operation of the Mines, subject to and on the terms and conditions set forth thereunder;

WHEREAS, pursuant to the Project Contract, the Principal desires to engage the Service Provider to be its representative to perform the Services as detailed in this Agreement on Principal's behalf and the Service Provider agrees to represent the Principal and perform the Services;

NOW, therefore, in consideration of the promises and conditions contained herein, the Parties agree as follows:

1. **Interpretation.**

(a) In this Agreement, the capitalised terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the Project Contract.

SUBHADRA COAL MINING LTD. INDUSTRY HOUSE 10, CAMAC STREET

NOTARY GOVT. OF INDIA

22

0264

DUPLICATE

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DISTRICT TREASURY
ANGUL
12 MAY 2022
Treasury Officer/Asstt.

NOTARY
M.R. Mohapatra
Angul Odisha
Regd.No 1173218
GOVT. OF INDIA

16/5/22
Sri Akhandalamani Das
Stamp Vendor, Angul

Duplicate copy of the original
executed by
identified by
acquainted the
who admitted
today this

Mahapatra
NOTARY (Central Govt.) Angul
Regd.No- 1173218

NOTARY
SK. NAZRUL ISLAM
Regd. Kolkata
Regn. No. 42719
Expiry Date
15.6.2027
GOVT. OF WEST BENGAL

General Manager
Subhadra Area, MCL

NOTARY
KOLKATA
SUBHADRA COAL LIMITED

DUPLICATE 0265

(b) The rules of interpretation as set out under the Project Contract shall apply *mutatis mutandis* to this Agreement.

2. **Services.**

Pursuant to the Project Contract and this Agreement, the Service Provider agrees to perform the following specific services (the "**Services**") on behalf of the Principal:

a. procure issuance of the environmental clearance from the Ministry of Environment, Forests and Climate Change, Government of India;

b. procure issuance of the forest clearance and Applicable Permits from the Ministry of Environment, Forests and Climate Change, Government of India; and

c. undertake the Rehabilitation and Resettlement of the PAPs in accordance with Applicable Laws, R&R Policy and the Project Contract.

3. **Conditions for Authorisation.**

The Principal hereby appoints the Service Provider as its agent to perform the Services on Principal's behalf subject to the following conditions:

a. the Service Provider shall incur all legal and necessary expenditure or costs in the course of supply of the Services, which amounts shall be paid by the Principal in the manner provided under clauses 5 and 6 of this Agreement;

b. except as set out under clause 5 of this Agreement, the Services and all rights, interest, title, claims, benefits, properties, documents or information in connection with or as a result of the Services shall vest with the Principal and the Service Provider shall not have any right or claim whatsoever;

c. the Service Provider shall not use the Services and for its own purpose or interest;

d. the Service Provider shall not directly or indirectly use the Principal's authorisation or facilities in any manner or commit any act or omission in furtherance of any activity, which constitutes a violation of any Applicable Law or which may result in any investigation, prosecution or legal action; and

e. the Service Provider shall ensure that the Services are rendered and obligations are performed by the Service Provider pursuant to this Agreement with utmost care and diligence in accordance with the Project Contract, Applicable Laws and this Agreement.

4. **Scope of Authority.**

Subject to the terms and conditions of this Agreement and Project Contract, the Principal's authorisation to the Service Provider is strictly limited to the Services and accordingly, the Service Provider shall not have the authority to bind the Principal in any manner whatsoever beyond the Services and/or tenure of the Agreement stated herein.

NOTARY CENTRAL GOVT ANGUL

NOTARY SK. MAZRUL ISLAM Regn. No. 1617/15 Expiry Date 15.09.2019 GOVT. OF WEST BENGAL

General Manager

SHADRA COAL MINING LIMITED

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DUPLICATE

5. **Expenses.**

The Service Provider shall be entitled to reimbursement for the actual costs and expenses incurred by it during the course of performance of the Services in the following manner:

(a) The Service Provider shall submit with the Engineer in charge: (i) tax invoice(s) indicating the amounts claimed for reimbursement, in accordance with the GST Laws; (ii) complete details of all direct and documented R&R Costs and/or statutory cost and fees incurred by the Service Provider; (iii) along with underlying invoices in the name of the Principal evidencing such incurrence; and (iv) any other documentation in support of such costs and expenditure, as may be desired required by the Principal and/or the Engineer in charge;

(b) The Service Provider shall submit the documents mentioned at (a) above for certification/ acceptance for payment by the Engineer in charge, on: (i) in relation to the R&R Costs, on a monthly / quarterly basis; (ii) in relation to statutory cost and fees for procurement of environmental clearance and forest clearances, after completion of such Service.

6. **Payments.**

The Service Provider shall be paid by the Principal within 30 (thirty) days from the date of receipt of all details and documents, as specified under clause 5 of this Agreement, by the Engineer in charge's office or receipt of Engineer in charge's certification and approval for payment by the Principal, whichever is later.

7. **Representations and Warranties.**

The Parties represent that they are fully authorized to enter into this Agreement. The performance and obligations of either Party will not violate or infringe upon the rights of any third-party or violate any other agreement between the Parties, individually, and any other person, organization, or business or any law or governmental regulation.

In addition, the Parties acknowledge and agree that the Principal has entered into this Agreement on the basis of representations and warranties provided by the Service Provider under the Project Contract. Accordingly, the representations and warranties set out under Article 7 of the Project Contract are incorporated herein by reference.

8. **Confidentiality & Intellectual Property.**

During the course of this Agreement, it may be necessary for the Principal to share proprietary information, including trade secrets, industry knowledge, and other confidential information, to the Service Provider for performance of the Services. The Service Provider shall not:

17/8/22

General Manager
Subhadra Area, MCL

NOTARY CENTRAL GOVT. ANGUL

NOTARY GOVT. OF INDIA ASIS KR. SEN NOTARY Regd. No. 19 Exp. Date 31.12.23

NOTARY SK. NAZRUL ISLAM Regd. No. 40716 Exp. Date 5.09.2023 GOVT. OF WEST BENGAL

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DUPLICATE 0267

(a) share any of this proprietary information at any time and/or

(b) use any of this proprietary information for its personal benefit at any time.

The Service Provider acknowledges and agrees that all copyrights, trademarks and service marks and rights in the name of or licensed to the Principal shall be and remain the sole and complete property of the Principal and the Pure Agent shall not acquire or claim any right, title or interest of any nature in any such copyright, trademark, or service mark. The Parties agree that this provision shall survive a termination of this Agreement.

9. **Term and Termination.**

(d) **Term:** The Agreement shall be coterminous with the Project Contract, unless terminated earlier in accordance with sub-clause (b) below.

(e) **Termination:**

(i) The Principal may, at any time during the term of the Agreement, terminate this Agreement with a prior written notice of 30 days to the Service Provider.

(ii) Subject to the Principal's right to terminate the Agreement s set out in (i) above, the Parties agree that the provisions on termination as set out under Article 37 of the Project Contract shall *mutatis mutandis* apply to this Agreement.

10. **Indemnity.**

The Service Provider undertakes to indemnify and hold harmless the Authority and its affiliates, successors and assignees, and their respective officers, directors, and employees and agents, from and against any and all claims, losses, damages, liabilities, penalties, punitive damages, expenses, reasonable legal fees and costs of any kind or amount whatsoever, to the extent arising from or relating to: (a) the Service Provider's breach of this Agreement, representations and warranties, obligations or covenants provided herein; (b) the Service Provider's negligence, misconduct or fraud while fulfilling its obligations under this Agreement, including without limitation, the Services; and (iii) any claim brought by a third party (including but not limited to a Government Instrumentality) in relation to the Services or the Service Provider's actions and omissions under this Agreement. The Parties agree that this provision shall survive the termination of this Agreement.

17/06/2022

General Manager
Subhadra Area, MCL

17/06/2022

SUBHADRA COAL MINING LIMITED

0268

DUPLICATE

11. Limitation of Liability.

UNDER NO CIRCUMSTANCES SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY OR ANY THIRD PARTY FOR ANY DAMAGES RESULTING FROM ANY PART OF THIS AGREEMENT INCLUDING, BUT NOT LIMITED TO, LOSS OF REVENUE OR ANTICIPATED PROFIT OR LOST BUSINESS, COSTS OF DELAY OR FAILURE OF DELIVERY, WHICH ARE NOT RELATED TO OR THE DIRECT RESULT OF A PARTY'S NEGLIGENCE OR BREACH.

12. Parties' Relationship.

This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

13. Miscellaneous.

The provisions with respect to Articles 46.1 (*Governing law and jurisdiction*), 46.2 (*Waiver of immunity*), 46.12 (*Third parties*), 46.13 (*Successors and assigns*), 46.14 (*Notices*), 46.16 (*Counterparts*) of the Project Contract shall apply *mutatis mutandis* to this Agreement.

14. Severability.

If for any reason whatever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision.

15. Waiver.

Any failure by either Party to exercise any right, power or privilege under the terms of this Agreement will not be construed as a waiver of any subsequent or further exercise of that right, power or privilege or the exercise of any other right, power or privilege.

16. Legal Fees.

In the event of a dispute resulting in legal action, the successful party will be entitled to its legal fees, including, but not limited to its attorneys' fees.

General Manager
Subhadra Area, MCL

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0269

DUPLICATE

17. Entire Agreement.

The Parties acknowledge and agree that this Agreement represents the entire agreement between the Parties with respect to the subject matter hereof. In the event that the Parties desire to change, add, or otherwise modify any terms, they shall do so in writing to be executed by the Parties.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN:

On behalf of the PRINCIPAL

Signed:

By: E. U. Ranga

Date: 17/06/2022

On behalf of the SERVICE PROVIDER

Signed:

By:

Authorized Signatory

Date: 17th June 2022

NOTARY CENTRAL GOVT. ANGUL

General Manager
Subhadra Area, MCL

I/d certificate
Sanghamitra
17/06/22
Adv.
(BK Das) Angul
0120 | 89
9439260158

NOTARY
SK. NAZRUL ISLAM
Alipore, Kolkata
Regn. No. 1427/15
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

MCL COAL MINING LIMITED

NOTARY
Regn. No. 1427/15
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

ANNEXURE - 'D'

~~ANNEXURE - 'C'~~

File No. J-11015/72/2021- IA-II(M)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)
*****

Indira ParyavaranBhawan.
Jorbagh Road, N Delhi – 3
Email: lk.bokolia@nic.in Tel: 01124695363

Dated: 22nd November, 2021

To,

The Chief General Manager (CP&P)
M/s Mahanadi Coalfields Limited
PO - JagrutiVihar, Burla,
Sambalpur-768 020 (Odisha)

E-mail: cgmenvt2014@gmail.com

Sub: Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coal field Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) - For Terms of Reference- reg

Sir,

This has reference to your Online Proposal No. IA/OR/CMIN/232524/2021 dated 13th October, 2021, on the above-mentioned subject.

2. The Ministry of Environment, Forest and Climate Change has considered the proposal for grant of Terms of Reference to Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coal field Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha).

3. The proposal was considered by the sectoral Expert Appraisal Committee (EAC) in the Ministry in its 21th EAC meeting held on 27th October, 2021 through Video Conferencing. The details of the project, as per the documents submitted by the project proponent, and also as informed during the meeting, are reported to be as under: -

(i) The project area is covered under Survey of India Topo sheet No: F45Z13 & F45T1 on RF 1:50,000 and is bounded by the geographical coordinates ranging from latitude 20°55'56.225" to 20°58'47.344" N and longitudes 84° 58'42.383" to 85° 0'50.476" E.
(ii) Coal linkage of the project: Basket Linkage to consumer all over India
(iii) No Joint venture cartel has been formed.
(iv) Project does not fall in the Critically Polluted Area (CPA)where the MoEF&CC vide its OM dated 13th January 2010 has imposed moratorium on grant of environment clearance.

(v) Employment generation: 2108 manpower will be deployed which will provide direct employment and other near about 5,000 people will also be attracted to an economically resurgent area providing service/education etc.

(vi) The project is reported to be beneficial in terms of

- Improvement in physical Infrastructure and infrastructure like roads, school building, provision of drinking water, community hall, plantation etc.
- Increase in employment Potential.
- Contribution of Direct tax, sales tax, Royalty etc to the National Exchequer.
- Overall economic growth of the country.

(vii) Total mining lease area as per block allotment is 1111.85 Ha. Mining plan (including Progressive Mine closure plan) has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-235/Exct/2021/111767 dt- 07.06.2021.

(viii) The land usage pattern of the project is as follows:

Pre-mining land use details (Area in Ha)

S. No.	Land Use	Within ML Area	Outside ML Area	Total
1	Agricultural Land	800.50	--	800.50
2	Forest Land	125.24	--	125.24
3	Wasteland	92.64	--	92.64
4	Grazing Land	58.67	--	58.67
5	Surface Water Bodies	6.28	--	6.28
6	Settlement	0.00	--	0.00
7	Others(specify)	28.27	--	28.27
8	Old Excavation Area(East Quarry)	NA	--	NA
9	Old Excavation Area(West Quarry)	NA	--	NA
10	Old OB Dumps	NA	--	NA
11	Roads and Mine Infrastructure	0.25	--	0.25
12	R&R colony	NA	--	NA
13	Staff Colony	NA	--	NA
14	Green belt	NA	--	NA
15	Balance Area	0.00	--	0.00
	Total Project Area	**1111.85**		**1111.85**

Post Mining

Sl No	Land Use	Land use (Ha)				
		Plantation/ Agriculture	Water Body	Public Use	Undisturbed	Total
1	External OB Dump	24.17	--		--	24.17
2	Top Soil dump	8.97			--	8.97

3	Excavation	715.24	--	--	130.68	845.92
4	Roads	--	--	15.72	--	15.72
5	Built- up Area	117.26	--	37.35	--	154.61
6	Green Belt	6.89	--	--	--	6.89
7	Undisturbed Area	--	--	--	--	0.00
8	Safety Zone Rationalization Area	11.79	--	--	--	11.79
9	Diversion/Below River/Nala/Canal	--	--	8.42	--	8.42
10	Water Body	--	35.36	--	--	35.36
11	Staff Colony	--	--	--	--	0.00
	Total Area	884.32	35.36	61.49	130.68	1111.85

(ix) Total geological reserve reported in the mine lease area is 1108.39 Mt with 791.04 Mt as mineable reserves. Out of total mineable reserve of 791.04 Mt, 768.83 Mt are available for extraction. Percent of extraction is 97.19%.

(x) 9seams with thickness ranging from 0.13 to 35.26are workable. Grade of Coal is G-13, Stripping ratio is 0.93 while average gradient is 3.480

(xi) Method of mining operations envisages by Opencast Mining Method Coal winning by Surface Miner, pay loader& tipper and OB removed by Shovel-Dumper combination.

(xii) Life of mine is 36 years (as on 1.04.2022)

(xiii) The project has one temporary external OB dumps in an area of 24.17 ha with 30 m height and 103.72 Mm3 of OB which will be re-handled and simultaneously backfilled into the de-coaled area (internal OB dumping). An area of 715.24 ha is proposed for internal OB dump. Total 716.90 Mm3 of OB material is envisaged for backfilling in internal OB dump.

(xiv) Total quarry area is 881.28 ha out of which backfilling will be done in 715.24 ha while final mine void will be created in an area of 35.36 ha with a depth of 30m. Backfilled quarry area of 715.24Ha shall be reclaimed with plantation/grass/agriculture.

(xv) Transportation of coal has been proposed by tippers /pay loader in mine pit head, from surface to siding by close conveyor and at sidings by RLS with railway.

(xvi) Reclamation Plan in an area of 884.32ha, comprising of 24.17 ha of temporary external dump, 715.24 ha of internal dump, 6.89 Ha of Green Belt. In addition to this, an area of 138.02ha. included in the roads/infrastructure and built-up area, top soil dump has also been proposed for green belt development.

(xvii) 125.24 ha of forest land has been reported to be involved in the project.

(xviii) No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10km boundary of the project.

(xix) The range of ground water is varying between 3.42 mbgl to 10.12 mbgl during the pre-monsoon in core zone and between 2.25mbgl to 10.90mbgl in buffer zone. During the post monsoon period it is varying between 1.17mbgl to 5.00mbgl in core zone and between 2.15mbgl to 7.80mbgl in buffer zone. Total water requirement for the project is 5.525MLD

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(xx) The seasonal nallah, Ghurudia Nallah is flowing within the mine boundary and Singhada Jhor in extreme north boundary of the mine. It is planned for diversion of Guhuridia Nallah in the eastern boundary of the mine and Singhada Jhor will be straighten in north boundary.

(xxi) No court cases, violation cases are pending against the project of the PP.

(xxii) The project does not involve violation of the EIA Notification, 2006 and amendment issued there under.

(xxiii) The project involves 1425project affected families. R&R of the PAPs will be done as per Orissa Rehabilitation and Resettlement Policy 2006.

(xxiv) Total cost of the project is Rs. 3955.65 Cr. Cost of production is Rs.678.00 per tonne, CSR cost is Rs.2.00 per tonne or 2% of the average net profit of the Company of the three immediately preceding financial years whichever is higher. R&R cost is Rs.405.46 crores. Environment Management Cost is Rs 76.12crores.

4. The Expert Appraisal Committee in its 21st EAC meeting held on 27th October, 2021, through Video Conferencing has recommended the proposal for grant of Terms of References (ToR). Based on the recommendations of the EAC, the Ministry of Environment, Forest and Climate Change hereby grants approval to the Terms of References for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coal field Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha), for preparation of EIA/EMP reports with public consultations, under the provisions of the Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto, subject to the compliance of the following terms and conditions as specified/notified in the standard ToR applicable for opencast coal mines, along with the additional conditions as under:-

Specific Conditions

(i) Public Consultation, including public hearing, shall be conducted through concerned SPCB as per the provisions/procedure contained in the EIA Notification, 2006 for information of the stakeholders about the present coal mining operations inviting comments and their redressal. All the issues raised and PP reply should be incorporated in EIA.

(ii) Stage-I Forest Clearance for diversion for non-forestry activity shall be submitted at the time of submission of EIA.

(iii) PP should submit the real time aerial footage and video of the Mining lease area made through drone with a special focus on the area adjacent to the rivers.

(iv) PP shall not divert the Singhada Jhor stream and will not disturbed the forest area or green patch located towards North eastern boundary for next 20 years of the mine life. Adequate protection measures shall be proposed in EIA Report. Accordingly, a distance of about 60 mts along Singhada stream shall be left to avoid any pollution, thus the Mine plan shall be revisited/relooked.

(v) A detailed hydrological survey of the Ghurdia nallah/Stream, regarding its catchment area, flow volume and length of the stretch to be diverted to be provided with proper diversion plan in EIA/EMP report.

(vi) A water reservoir and forest area is located towards South West directions so the extra measure adopted for combating the pollution should be mentioned in EIA/ EMP report.

(vii) PP shall clarify the area of the project with allotment of block from MoC and Mine Plan. Further, PP shall reduce the area of project implementation by excluding the green patch towards the North eastern boundary.

(viii) PP shall submit alternate land for grazing purpose with water bodies of same area within 5 km of project area.

(ix) PP shall prepare the Mining Plan in such a manner that condition prescribed by EAC shall intact from environment point of view. EIA-EMP shall accordingly be prepared on the suggested stipulation with point-wise compliance & in accordance with recommendations of Mining Plan

(x) In addition to existing data already collected (if any), the Cumulative Impact Assessment Study, ecosystem services study and biodiversity study of the area shall be carried over by project proponent. PP shall collect one season baseline data of all environmental parameters and shall compare with the data of earlier data collected for cumulative assessment of area. Air pollution impact predication shall be conducted by considering the maximum values.

(xi) PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads, manufacture of artificial sand, aggregates, use for farmers etc.) and accordingly Plan shall be included in EIA/EMP Report.

(xii) PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs.

(xiii) Inpit conveyor belt with silo loading should be proposed and installed for transportation of coal till railway siding. No transportation of coal by trucks/dumpers shall be proposed in EIA/EMP.

(xiv) No trucks or vehicles used for transportation of Coal to be passed by village roads or roads located near to the villages

(xv) PP has to adopt the adequate route or dedicated route causing least hindrance to existing traffic and its budgetary provision should also be provided in EIA report.

(xvi) PP to engage the adequate capacity of dumper size/trucks in order to reduce the fleet size.

(xvii) PP shall submit detailed project report for implementation of railway siding for evacuation of coal with its target date of completion. Target date should be such that railway siding should be operational within 2 years of commissioning of mine operations. Forest Clearance shall be submitted if railway siding land comes under forest land.

(xviii) Wind rose pattern in the area should be reviewed and accordingly location of AAQMS shall be planned by the collection of air quality data. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area.

(xix) Project proponent to prepare Environmental Cost Benefit Analysis for the project in EIA/EMP Report.

(xx) PP shall provide the details of mining technology/methodology proposed to be adopted for coal mining operations and its associated environmental benefits of using from Climate Change perspective by i.e. the likely emissions of greenhouse gases from the mining operations to be estimated with the modelling for future prediction related to the climate of that study area.

(xxi) Detailed Social Impact Assessment shall be prepared in villages for Rehabilitation and Re-settlement. R &R Activity shall be proposed with timeline and allotted fund with the approval of District Commissioner/collector.

(xxii) Permission for ground water withdrawal shall be obtained from Central Ground Water Authority (CGWA) only for mining activity.

(xxiii) Heavy metals including other parameters in surface water quality shall be analyzed and provided in EIA Report. Further, detailed mineralogical and chemical composition of the mineral and percentage of free silica from a NABL/MoEF&CC accredited laboratory

(xxiv) PP shall be submitting R &R in respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programs prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government.

(xxv) PP should clearly bring out that what is the specific diesel consumption ~ (Liters/Tonne of total excavation & mineral) and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted.

(xxvi) PP shall provide provision of integrated mine plan and mine reclamation cum land form / land scape plan for both underground and open cast coal mining projects. The plan must show the predicted post mining reclaimed and reformed surface by regarding and reshaping to reduce its height as close to the original surface level and proper sloping benching and terracing of external dup should be clearly brought out in the post mine closure plan. This would also include water management strategies such as surface water catchment and drainage paths etc. of post mining land surface. The final mine void shall be reduced and brought as near as ground so that land can be restored and reclaimed

(xxvii) PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of coal.

(xxviii) PP shall submit letter from PCCF that mine does not fall under corridors of any National Park and Wildlife Sanctuary and does not involve any violation of forest area and wild sanctuary with certified map showing distance of nearest sanctuary

(xxix) Details of toe wall and garland drain to be constructed along the OB dump

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(xxx) Reclamation to be done using geo-texturing technique of the dumps close to habitation and a cause of visual intrusion.

(xxxi) Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted.

(xxxii) PP should bring out the awareness campaign to be carried out on various Environmental issues, practical training facility to be provided to the environmental engineer/diploma holders, mining engineer/diploma holders, geologists, and other trades related to mining operations. Target for the same needs to be submitted.

(xxxiii)Details of Fog mist sprayer (static water sprinklers) at coal stock yard and along the permanent haul road.

(xxxiv)Details of black topping of permanent haul roads.

(xxxv) The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.

(xxxvi)The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data of 2011-part B to be provided in EIA/ EMP report also economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data of 2011 part A to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.

(xxxvii) A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report

4.1. This grant of Terms of References(ToR) for the said project is further subject to the general conditions as under

(i) All documents should be properly indexed, page numbered.

(ii) Period/date of data collection should be clearly indicated.

(iii) Authenticated English translation of all material provided in Regional languages.

(iv) After the preparation of the draft EIA-EMP Report as per the aforesaid TOR, the proponent shall get the Public Hearing conducted as prescribed in the EIA Notification 2006 and take necessary action for obtaining environmental clearance under the provisions of the EIA Notification 2006.

(v) The letter/application for EC should quote the Ministry's file No. and also attach a copy of the letter prescribing the ToR.

(vi) The copy of the letter received from the Ministry on the ToR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.

(vii) General Instructions for the preparation and presentation before the EAC of ToR/EC projects

of Coal Sector should be incorporated/followed.

(viii) The aforesaid ToR has a validity of **Four** years only.

(ix) Grant of ToR does not necessarily mean grant of EC.

(x) Grant of ToR to the present project does not necessarily mean grant of TOR/EC to the captive/linked project.

(xi) Grant of ToR to the present project does not necessarily mean grant of approvals under the Forest (Conservation) Act, 1980 or the Wildlife (Protection) Act, 1972.

(xii) Grant of EC is also subject to circulars issued under the EIA Notification 2006, which are available on the Ministry's website: www.envfor.nic.in

5. **Standard ToR:** The EIA/EMP report should contain the information in accordance with provisions & stipulations as given in the standard ToR for Opencast coal mine projects (please visit the following link to download the Standard ToR:
http://environmentclearance.nic.in/writereaddata/standardtorreference.pdf

6. You are required to submit the final EIA/EMP prepared as per TORs to the Ministry within 4 years as per this Ministry's Notification vide S.O 751 (E) dated 17th February, 2020 for considering the proposal for environmental clearance.

7. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization(s)/laboratories including their status of approvals etc. vide Notification of the MoEF dated 19th July, 2013.

(Lalit Bokolia)
Director

Copy to:

1. The Additional Principal Chief Conservator of Forests, Regional office (EZ), Minisury of Environment & Forests, A-31, Chandershekharpur, Bhubaneswar- 751023 (Odisha).
2. The Secretary, Department of Environment & Forests, Government of Orissa, Secretariat, Bhubaneswar (Odisha).
3. The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118, Nilkanthanagar, Unit VIII, Bhubaneshwar - 751012 (Odisha).
4. District Collector, Angul, Government of Odisha.
5. Monitoring File /Record File 7. PARIVESH Portal

NOTARY SK. NAZRUL ISLAM Asst. Kolkata Regd. No. 44/19 Expire Date 19.03.2020 GOVT. OF WEST BENGAL

(Lalit Bokolia)
Director

NOTARY ASHIS KR. MONDAL Regd. No. 13[illegible]/2018 EXPIRY DATE 31.12.20[illegible] GOVT. OF INDIA

Annexure

A. Generic TOR for an opencast / UG coalmine project

(i) An EIA-EMP Report should be prepared for a peak capacity of …… **MTPA** over an area of …… ha addressing the impacts of the underground coalmine project including the aspects of mineral transportation and issues of impacts on hydrogeology, plan for conservation of flora/fauna and afforestation/plantation programme based on the generic structure specified in Appendix III of the EIA Notification 2006..Baseline data collection can be for any season except monsoon.

(ii) The EIA-EMP report should also cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality – air, water, land, biotic community, etc. through collection of baseline data and information, generation of baseline data on impacts for …… MTPA of coal production based on approval of project/Mining Plan.

(iii) A Study area map of the core zone and 10km area of the buffer zone (15 km of the buffer zone in case of ecologically sensitive areas) delineating the major topographical features such as the land use, drainage, locations of habitats, major construction including railways, roads, pipelines, major industries/mines and other polluting sources, which shall also indicate the migratory corridors of fauna, if any and the areas where endangered fauna and plants of medicinal and economic importance are found in the area.

(iv) Map showing the core zone along with 3-5 km of the buffer zone) delineating the agricultural land (irrigated and unirrigated, uncultivable land (as defined in the revenue records), forest areas (as per records) and grazing land and wasteland and water bodies.

(v) Contour map at 3m interval along with Site plan of the mine (lease/project area with about 3-5 km of the buffer zone) showing the various surface structures such as buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within/adjacent to the ML), green belt and undisturbed area and if any existing roads, drains/natural water bodies are to be left undisturbed along with details of natural drainage adjoining the lease/project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., highways, passing through the lease/project area.

(vi) Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area. Impacts of project, if any on the landuse, in particular agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations. Extent of area under surface rights and under mining rights.

S.N.	ML/Project Land use	Area under Surface Rights (ha)	Area Under Mining Rights (ha)	Area under Both (ha)
1.	Agricultural land			
2.	Forest Land			
3.	Grazing Land			
4.	Settlements			

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5.	Others (specify)						

Area Under Surface Rights

S.N.	Details	Area (ha)	Forest Land	Agr. land	Wasteland	Settlements	Others
1.	Buildings						
2.	Infrastructure						
3.	Roads						
4.	Others (specify)						
	TOTAL						

(vii) Study on the existing flora and fauna in the study area carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. The flora and fauna details should be furnished separately for the core zone and buffer zone. The report and the list should be authenticated by the concerned institution carrying out the study and the names of the species scientific and common names) along with the classification under the Wild Life Protection Act, 1972 should be furnished.

(viii) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working plan/scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps should also be included.

(ix) Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

(x) Collection of one-season (non-monsoon) primary baseline data on environmental quality – air (PM_{10}, $PM_{2.5}$, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, AS, etc), noise, water (surface and groundwater), soil along with one-season met data.

(xi) Map of the study area (core and buffer zone) clearly delineating the location of various monitoring stations (air/water/soil and noise – each shown separately) superimposed with location of habitats, wind roses, other industries/mines, polluting sources. The number and location of the stations should be selected on the basis of the proposed impacts in the downwind/downstream/groundwater regime. One station should be in the upwind/upstream/non-impact non-polluting area as a control station. Wind roses to determine air pollutant dispersion and impacts thereof shall be determined. Monitoring should be as per CPCB guidelines and standards for air, water, noise notified under Environment Protection Rules. Parameters for water testing for both ground and surface water should be as per ISI standards and CPCB classification of surface water wherever applicable.

(xii) Impact of mining and water abstraction and mine water discharge in mine on the hydrogeology and groundwater regime within the core zone and 10km buffer zone including long–term modelling studies on the impact of mining on the groundwater regime. Details of

rainwater harvesting and measures for recharge of groundwater should be reflected wherever the areas are declared dark/grey from groundwater development.

(xiii) Study on subsidence, measures for mitigation/prevention of subsidence, modelling subsidence prediction and its use during mine operation, safety issues.

(xiv) Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users should be provided.

(xv) Impact of choice of mining method, technology, selected use of machinery - and impact on air quality, mineral transportation, coal handling & storage/stockyard, etc, Impact of blasting, noise and vibrations.

(xvi) Impacts of mineral transportation – within and outside the lease/project. The entire sequence of mineral production, transportation, handling, transfer and storage of mineral and waste, and their impacts on air quality should be shown in a flow chart with the specific points where fugitive emissions can arise and the specific pollution control/mitigative measures proposed to be put in place. Examine the adequacy of roads existing in the area and if new roads are proposed, the impact of their construction and use particularly if forestland is used.

(xvii) Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities. Examine whether existing roads are adequate to take care of the additional load of mineral and their impacts.

(xviii) Examine the number and efficiency of mobile/static water sprinkling system along the main mineral transportation road within the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality.

(xix) Impacts of CHP, if any on air and water quality. A flow chart of water use and whether the unit can be made a zero-discharge unit.

(xx) Conceptual Final Mine Closure Plan along with the fund requirement for the detailed activities proposed there under. Impacts of change in land use for mining operations and whether the land can be restored for agricultural use post mining.

Table 1 Stage-wise Cumulative Plantation

S.N	YEAR*	Green Belt		External Dump		Backfilled Area		Others (Undisturbed Area / etc)		TOTAL	
		Area (ha)	No. of trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1.	1st year										
2.	3rd year										
3.	5th year										
4.	10th yr										
5.	15th yr										
6.	20th yr										
7.	25th yr										
8.	30th yr										
9.	34th year (end of										

	mine life)										
10	34-37th Year (Post-mining)										

*As a representative example

(xxi) Occupational health issues. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be furnished.

(xxii) Details of cost of EMP (capital and recurring) in the project cost and for final mine closure plan. The specific costs (capital and recurring) of each pollution control/mitigative measures proposed in the project until end of mine life and a statement that this is included in the project cost.

(xxiii)Integrating in the Env. Management Plan with measures for minimising use of natural resources – water, land, energy, raw materials/mineral, etc.

(xxiv)R&R: Detailed project specific R&R Plan with data on the existing socio-economic status (including tribals, SC/ST) of the population in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan.

(xxv) CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project.

(xxvi)**Public Hearing should cover the details as specified in the EIA Notification 2006**, and include notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments by the proponent made should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.

(xxvii) Status of any litigations/ court cases filed/pending in any Court/Tribunal on the project should be furnished.

(xxxvi)Submission of sample test analysis of: Characteristics of coal - this includes grade of coal and other characteristics – ash, S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xxxviii) Copy of clearances/approvals – such as Forestry clearances, Mining Plan Approval, NOC from Flood and Irrigation Dept. (if req.), etc.

(A) Forestry Clearance

Total ML / /Project Area (ha)	Total Forest Land (ha)	Date of FC	Extent of forest land	Balance area for which FC is yet to be obtained	Status of appl. for diversion of forestland
		If more than one, provide details of each FC			

(B) Mining Plan / Project Approval: Date of Approval of Mining Plan/Project Approval: Copy of Letter of Approval of Mining Plan/Project Approval

(xxxviii) Corporate Environment Responsibility:

a) The Company must have a well laid down Environment Policy approved by the Board of Directors.

b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.

c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.

d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

NOTARY
SK. NAZRUL ISLAM
Regn. No. 447/19
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

NOTARY KOLKATA
ABIR KR. SEN
Regd. No. 1R 7118
EXPIRY DATE
31.12.28
GOVT. OF INDIA

BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Appeal No. 7 of 2024

Under Section 16(h) read with Section 18(1) of the National Green Tribunal Act, 2010

IN THE MATTER OF:

Sanjaya Kumar Mishra

...APPELLANT

Versus

Ministry of Environment, Forest and Climate Change & Ors.

...RESPONDENTS

AFFIDAVIT IN OPPOSITION

VOLUME No.: - I

Page No:- 815 TO 1038

Advocate On Record

Sagnik Aditya.

Sagnik Aditya
Advocate
Argus Partners
Solicitors & Advocates
3rd Floor, Binoy Bhavan
27B, Camac Street
Kolkata – 700 016
Enrolment No : F/1757/2177/2024

BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Appeal No. 7 of 2024

Under Section 16(h) read with Section 18(1) of the National Green Tribunal Act, 2010

IN THE MATTER OF:

Sanjaya Kumar Mishra

...APPELLANT

Versus

Ministry of Environment, Forest and Climate Change & Ors.

...RESPONDENTS

AFFIDAVIT IN OPPOSITION

VOLUME No.: - II

Page No:- 1039 TO 1263

Sagnik Aditya.

Advocate On Record

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ANNEXURE – D-1

~~42 ANNEXURE – G~~

F No. IA-J-11015/72/2021- IA-II(M)
Government of India
Ministry of Environment Forest and Climate Change
(Impact Assessment Division)
****

Indira Paryavaran Bhavan,
JorBagh Road, New Delhi-110 003
Email: lk.bokolia@nic.in Tel: 01124695363

Dated: 28th February, 2022

To,

The Chief General Manager (CP&P)
M/s Mahanadi Coalfields Limited
PO - Jagruti Vihar, Burla,
Sambalpur-768 020 (Odisha)
E-mail: cgmenvt2014@gmail.com

Sub: Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coal field Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) - For Amendment in Terms of Reference – reg.

Sir,

This has reference to your online proposal No. IA/OR/CMIN/244489/2021 dated 11th December, 2021 and further MCL vide no. 2022/963 dated 10.01.2022 for amendment in recommended in MoM (Agenda 24.6) of 24th EAC meeting held on 30th December, 2021 to the above project.

2. The Ministry of Environment, Forest and Climate Change has considered the application. It is noted that the proposal is for grant of Amendment in Terms of Reference to Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coal field Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha).

3. Project proponent has requested for amendment in ToR for specific conditions. The EAC has deliberated and final recommendation in terms of amendment in those conditions are given in table below

Sr. No.	Conditions as per granted ToR	Final recommendation of EAC
(iv).	PP shall not divert the Singhada Jhor stream and will not disturbed the forest area or green patch located towards North eastern	PP shall protect the green patch and Singhada Jhor for initial 10 years and accordingly fencing will be laid down all along the boundary.

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	boundary for next 20 years of the mine life. Adequate protection measures shall be proposed in EIA Report. Accordingly, a distance of about 60 mts along Singhada stream shall be left to avoid any pollution, thus the Mine plan shall be revisited/relocked	
(vii)	PP shall clarify the area of the project with allotment of block from MoC and Mine Plan. Further, PP shall reduce the area of project implementation by excluding the green patch towards the North eastern boundary	
(xiii)	Inpit conveyor belt with silo loading should be proposed and installed for transportation of coal till railway siding. No transportation of coal by trucks/dumpers shall be proposed in EIA/EMP	PP may transport coal through haul road by trucks/dumper till the conveyor belt system from the in-pit point to CHP within mine lease area is established. Further from CHP to silo loading to railway siding to be proposed. PP will have to propose air pollution mitigation measures along the haul road in terms of plantation, fog cannon/ Mist spray etc in order to reduce the air pollution and the same is incorporated in EIA/EMP report
(xxvii)	PP shall propose to use LNG/CNG based mining machine and trucks for mining operation and transportation of coal	PP shall prepare feasibility report for implementation of LNG/CNG dumpers and explore to use it for its mining operations

4. The proposal was considered by the sectoral Expert Appraisal Committee (EAC) in its 24th held on 30th December, 2021 and 25th EAC meeting during 18 -20 January, 2022. The Expert Appraisal Committee (EAC) recommended the project. Based on recommendations of the EAC, Ministry of Environment, Forest and Climate Change hereby accords approval for amendment in Terms of Reference to Subhadra Open Cast Mine for production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coal field Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler and Chhendipada, District

Angul (Odisha) under the provisions of EIA Notifications, 2006 and its amendments therein with below points wise amendments on selective ToR conditions by replacing the respective conditions:

5. All the conditions stipulated in Terms of Reference dated 22nd November, 2021 shall remain unchanged.

This issues with the approval of the competent Authority.

(Lalit Bokolia)
Director

Copy to: -

1. The Additional Principal Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A-31, Chandershekharpur, Bhubaneswar- 751023 (Odisha).
2. The Secretary, Department of Environment & Forests, Government of Orissa, Secretariat, Bhubaneswar (Odisha).
3. The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118, Nilkanthanagar, Unit VIII, Bhubaneshwar - 751012 (Odisha).
4. District Collector, Angul, Government of Odisha.
5. Monitoring File /Record File 7. PARIVESH Portal

(Lalit Bokolia)
Director

NOTARY
SK. NAZRUL ISLAM
Area Howrah
Regn. No. 447/19
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

ANNEXURE - 'E'

~~45~~ ~~ANNEXURE - D~~

ADITYA BIRLA

WORK ORDER

WO/CPC/SCML/22-23/06

Date: 11 August 2022

M/s Vardan Environet
Plot No.82A,
Sector-5,Gurgaon-122051,
Haryana.

Kind Attention: Mr. Anshul Yadav (E-mail: anshul@vardan.co.in; +91 9953147268)

Subject: Work Order for Consultancy Services for obtaining Environment Clearance (EC) for Subhadra Open Cast Coal Project, under Mahanadi Coalfield Limited, Angul, Odisha

References:

a) SCML RFQ vide email dated 20th July 2022
b) Vardan Offer vide email dated 23rd July 2022
c) Discussion between Vardan and SCML held on 26th July 2022.
d) Vardan conformation on payment terms vide email dated 28th July 2022.
e) Vardan conformation on delivery schedule vide email dated 01st August2022
f) Vardan conformation on LD clause vide email dated 04th August.2022.
g) SCML confirmation on Vardan offer vide email dated 9th Aug 2022
h) Vardan acceptance on the offer vide email dated 10th Aug 2022

NOTARY SK. NAZRUL ISLAM Regd. No. 447/19 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

Dear Sir,

SCML is pleased to issue this Work Order No.: WO/CPC/SCML/22-23/06 (hereinafter referred to as "Work Order") to M/s Vardan Environet (hereinafter shall referred to "Vardan") towards **Consultancy Services for Environment Clearance (EC)** for Subhadra Open Cast Coal Project under MCL (hereinafter referred to SCML) in Angul district, Odisha (hereinafter referred to as "Site" as the context may require and as per defined terms & conditions, agreed Scope of work and instructions specified herein below:

1. **Service Provider's Scope of Work:**
The detailed scope of work (inclusive) to be carried out for obtaining Environmental Clearance as per the latest guidelines of Ministry of Environment and Forests (MoEF & CC) is furnished below. The scope of work will cover all the points mentioned in Approved Terms of Reference (ToR) by Expert Appraisal Committee, MOEF&CC, GOI:

a) Collection of primary/secondary data, Baseline Environmental Study at site and in the buffer zone, impact prediction using approved models and preparation of draft EIA/EMP report as per approved TOR.
b) Collection of Baseline data for One Season non-monsoonal of Air, Water, Soil, Noise & other environmental parameters etc. including one season meteorological data as per the requirement of MOEF&CC and approved TOR.
c) Any other data required for Preparation of EIA / EMP Report such as ecosystem services, biodiversity study and cumulative impact assessment study, socio economic survey etc. of the Subhadra OCP covering core and buffer zone.
d) Letter from PCCF that mine does not fall under corridors of any National Park and Wild Life Sanctuary and does not involve any violation of forest area & Wild Life Sanctuary with certified map showing

ASHOK SEN NOTARY Regd. No.-13603/18 EXPIRY DATE 31.12.23 GOVT. OF INDIA

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distance of the project with respect to the nearest National Parks , wildlife Sanctuaries , Elephant/Tiger Reserve & their corridors

e) Photographs of the baseline data collection for the air quality, water, soil, noise monitoring etc. and other studies with geotagging.

f) Preparation of draft EIA/EMP as per generic structure of S.O.1533, published by MoEF&CC and amendments thereof and submission to SPCB, Odisha for public hearing.

g) Assistance during public hearing and preparation of documents required for public hearing such as executive summary in Odia & English both.

h) Preparation of final EIA/EMP as per generic structure of S.O.1533, published by MoEF&CC & applicable amendments incorporating the proceedings & redressal mechanism and final submission to MoEF&CC.

i) Facilitate uploading of the EC application & other relevant documents in Parivesh Portal in co-ordination with SCML/MCL.

j) Preparation of power point slides & mock presentation for the internal review by SCML/MCL.

k) Presentation before "Expert Appraisal Committee"(EAC), MoEF&CC for environmental clearance.

l) Provide Clarifications to the points raised by EAC through EDS/ADS or any other report desired by the authority and obtain Environmental Clearance from Ministry of Environment, Forests and Climate Change.

m) Coordinate with Statutory / Government officials in expediting the approvals wherever and whenever required to obtain the EC

A. **Baseline Study**

The different environmental components to be studied including Soil, Meteorology, Air Quality, Water Quality, Noise Level, Land use, Flora & Fauna & Socio-economic etc for one full season comprising of 3 consecutive months(except monsoon). The Study area is within a radius of 10 Km from Subhadra OCP core zone.

1. **Ambient Air Quality:** Air quality should be monitored at appropriate stations around the project site including the core zone, 24 hourly samples should be collected for PM10, PM2.5, SOx, NOx, CO. Sampling protocol will be as per NAAQ standards and CPCB guidelines.
2. **Meteorology:** Meteorological data for the past decade to be collected from the nearest observatory of IMD. Meteorological data (wind velocity, wind direction, temperature, humidity & rainfall etc.) shall be generated continuously at one station throughout the monitoring period. An automated meteorological station will be set up during the study period and hourly meteorological data will be collected & record to be maintained.
3. **Water Quality:** Appropriate number of Surface water and ground water quality sampling stations have to be monitored on a monthly basis. Samples should be collected and analysed as per the IS:10500. All the parameters will be compared with relevant CPCB standards.
4. **Soil:** Soil characteristics including physical and chemical properties should be assessed through sampling and analysis. 05/06 locations shall be selected as per the MOEF&CC guidelines and samplings would be carried out once and analysed for all relevant parameters.
5. **Noise:** Noise levels should be monitored at appropriate locations in the study area on a 24 hour basis and equivalent noise levels should be submitted. The frequency of sampling is once in a season.
6. **Flora & Fauna:** The flora & fauna data should be collected and authenticated from a reputed institution. The flora & fauna in the study area should be characterised based on the literature survey and field investigation during the study period.
7. **Socio-economic Study:** Socioeconomic survey will be carried out based on the proportionate stratified and random sampling method. The primary data should be collected through questionnaire and the

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secondary data from census records, statistical hand books, top sheets, health records and relevant official records available with government agencies.

8. **Hydro-geological Study:** Study of hydrogeology of the site and the study area. Study of drainage pattern and existence of natural and artificial water bodies in the study area, Study of existing ground water potential of the area including the study of depth to water table.
9. **Traffic Study:** To assess the existing traffic through the study area, traffic density need to be calculated at 5/6 locations as per IRC: 64-1990. Monitoring should be carried out on hourly basis for 24 hours continuously, once during the study period.
10. Consultant will provide all study reports separately i.e. Baseline study, Traffic study, Cumulative impact assessment study, Eco-system service & Biodiversity study.

B. Cumulative Impact Assessment Study

Consultant shall carry out a study on physical, biological, socio-economic aspects as well as mining methodology adopted for coal blocks in the study area and assess the potential impacts and risks (direct as well as indirect/ induced) due to proposed/ongoing mining activities and shall suggest appropriate mitigating measures for managing the same. This study will describe the Cumulative Impact Assessment Study based on cumulative impacts considering mitigation measures proposed/ recommended additionally and shall justify opening of new coal mine vis-a-vis demand.

The scope includes

1. Scoping of impacts using the questionnaire checklist supported by GIS delineates some areas that are potentially vulnerable to cumulative impacts due to proposed/ ongoing projects.
2. Intensity and dispersion of particulate matter along the transportation routes were predicted through air quality modelling in all scenario.
3. Study included identification of pollution sources, mapping of the impact area, selection of the optimum transportation system and routes, cumulative air quality impact analysis using a dispersion model, and forecasting of future traffic congestion using a system dynamic model.
4. Description of details of proposed coal block/ongoing coal mine and its distance from project depicted through suitable map.
5. Suggest the Mitigation/Management plan as identified sources and impacts
6. Recommendations for mitigation measures for physical, biological, and socio-economic impacts as well as mining technology adoption.
7. Recommendation for carrying capacity of the area including operation of coal blocks adopting sustainable mining practices and number of coal blocks sustainable for area as per cumulative impacts on flora, fauna, air, water etc. after considering cumulative mitigation measures. Study shall also include justification for requirement of opening of new coal mine vis-à-vis demand.

C. Ecosystem Services & Bio-diversity Study

Consultant will submit the Ecosystem services study report and Biodiversity study report with recommendations and mitigation measures for study area comprising of ongoing and upcoming Coal blocks broadly covering following aspects.

Baseline status in terms of biological including mining management, allied activities as well as mining practices adopted for existing/proposed coal mines- Biological environment (flora & fauna with special reference to endemic/threatened species population reported from the study area along with details of existing forest cover in the study area), mine management & allied Activities (Operation, Dump management, technology adopted in operational mine, Transportation, Reclamation etc.) for existing/proposed mines.

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The Scope include

1. Rapid baseline assessment for floral & faunal diversity "Enlisting of floral & faunal diversity from ground survey and secondary documents "Categorizing species as per IUCN Red list & Wildlife protection Act.
2. Ecosystem Service shall be developed for the project to highlight the ecosystem available within project area and in the periphery and the ecosystem services used by the project.
3. Mapping of ecosystem services in Project Study Area
4. The level of dependencies, impacts and management measures initiated for management of ecosystem services.
5. Identify direct dependency on the Biodiversity and Ecosystem Services (B&ES) with no alternative available
6. Identify direct dependency on B & ES with short-term alternative.
7. Identify Low direct dependency with many alternatives
8. Identify not dependent on B & ES for any project operation
9. Prepare Ecosystem Services matrixes for project.
10. Status of mining practices in existing/proposed coal blocks including reclamation method proposed.
11. Recommendations for mitigation measures for physical and biological impacts as well as mining technology adoption.

D. **Environmental cost benefit analysis for the project**

2. Responsibilities of SCML

2.1 Provide necessary technical documents available with SCML/MCL for Preparation of Draft and Final EIA /EMP report as-and-when required during the process.
2.2 Provide approved Mining Plan
2.3 Provide ground water clearance(NOC) from Central Ground Water Authority
2.4 Provide Ghurudia Nala Diversion & Straightening of Singdajhor Study Report & its approval from the Dept. of Water Resources, Govt. of Odisha
2.5 Provide Drone Videography & Report of the Subhadra OCP.
2.6 Provide Stage-I Forest Clearance of the Subhadra OCP before filing final EIA report
2.7 Arrangements for Public Hearing.

3. Service Fee:

3.1 Service Fee for SoW mentioned under Clause 1 shall be Rs.30,00,000/- (INR Thirty Lacs only)
3.2 Service Fee is inclusive of Travel, Lodging, Boarding and All Incidental Expenses for carrying out above scope of work at Site.
3.3 GST shall be paid extra as applicable rates.

4. Payment Terms:

4.1 Payment of the Service Fee along with GST shall be paid on milestone basis as under:
4.1.1 10% of the Service Fee shall be paid upon site mobilization
4.1.2 20% of the Service Fee upon completion of Base line data study and submission of analysis report
4.1.3 10% of the Service Fee Submission of draft EIA/EMP report
4.1.4 10% of the Service Fee upon forwarding of the Public Hearing proceedings from Memb. Secy., OSPCB to MoEF&CC, New Delhi
4.1.5 20% of the Service Fee upon submission of final EIA report to MOEF&CC
4.1.6 20% of the Service Fee upon receipt of recommendation of Environment Clearance
4.1.7 10% of the Service Fee upon grant of Environment clearance.
4.2 Payment shall be made within 10(Ten) working days post submission of valid invoice

ADITYA BIRLA

4.3 All the payment shall be made subject to tax deducted at source (as applicable)

4.4 Mode of payment shall be RTGS/NEFT/Net-banking.

5. Completion Period:

5.1 Timely completion of respective milestones / activities covered under Scope of work is essence of this work order.

5.2 Service Provider shall be responsible to complete the scope of work on or before 10th June 2023. Detailed Activity wise time schedule is annexed as Annexure I.

6. Liquidated Damage

6.1 SCML reserves right to levy Liquidated Damage @0.5% (half percent) of Service fee (excluding GST) for every week of delay, or part thereof from schedule completion period as per Clause-5 subject to a maximum of 10% (ten percent) of Service fee (excluding GST).

7. Contact Details

Service Provider Details:

Contact Person	Mr. Anshul Yadav
Contact No.	+ 91-9953147268
Email ID	anshul@vardan.co.in
PAN:-	AAKFV1538L
GSTIN:-	06AAKFV1538L1ZT

SCML Details:

Billing Address	Subhadra Coal Mining Limited , HIG -51, Nandan Kanan Road, Jayadev Vihar. Opp. Pal Heights, Bhubaneswar, Khordha, Odisha, 751013
GSTIN No	21ABICS4555J1Z7
PAN Number	ABICS4555J
Contact Person	Mr. Bimal Baral
Project Head	Subhadra Coal Mining
Email ID	bimal.baral@adityabirla.com
Contact No.	+91 7440024704

NOTARY SK. NAZRUL ISLAM Area Kolkata Regd. No. 44719 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

8. Service Provider's Responsibilities:

8.1 All expenses of Service Provider's Team for travel, accommodation, boarding, and other necessities required for the completion of the assignment shall be borne by the Service Provider himself , unless otherwise mentioned in this order.

8.2 All documentation charges, stationary charges, computer charges incurred for the activities related to the assignment shall be borne by the Service Provider.

8.3 Service Provider shall deploy adequate resources to perform the activities in this Work Order satisfactorily in accordance with the various provisions/rules under the applicable laws

8.4 Service Provider shall discharge SCML from all obligations in relation to all personnel engaged by the Service Provider in connection with the execution of the Work Order awarded to him in accordance with all the applicable laws in force from time to time. In no case, SCML shall be liable for breach of any provisions of all the applicable laws with respect to non-payment of wages or compensation of any description due or payable to employees of the Service Provider or for any of Service Provider's failures in the discharge of his obligations to its employees.

NOTARY ANJU KAPOOR NOTARY Regd. No. 11K 2/15 EXPIRY DATE 31.12.23 GOVT. OF INDIA

ADITYA BIRLA

8.5 Service Provider shall arrange for the entire SHE (Safety, Health & Environment) for the execution of the Work Order. Besides that the Service Provider shall have to follow all the instructions and comprehensive SOP issued in respect of Safety Measures by SCML's Representative.

8.6 Service Provider shall take requisite precautions and used his best endeavour to prevent any riotous or unlawful behaviour by or amongst his workmen and other employed on the works and for the preservation of peace and protection of the inhabitants and Security of property in and around the plant.

8.7 Service Provider shall at its own cost observe, perform and comply with the provisions of all statutory enactments, rules, regulations and bye laws framed there under as are applicable, during the execution of work and shall maintain such registers, documents, records etc. as are required under various statutes, for production of the same before the Employer and or other statutory authorities prescribed in this behalf, as and when required. Non-compliance of the provisions/stipulations of these Acts/Rules shall render the Service Provider liable to payment of necessary compensation/penalty, as deemed fit by SCML. It shall be sole responsibility of the Service Provider to ensure all kinds of statutory payments to his workers and submission of returns etc., to various statutory authorities in time. In case of Service Provider's default in making statutory payment in time, SCML reserves the right to deduct necessary amount from the Service Provider's bills towards such payment.

8.8 Service Provider's employees / Agents are solely the employees / Agents of the Service Provider and must not be considered to be the employees / Agents of SCML.

9. All other terms shall be as per General Terms and Conditions annexed to this order.

10. **Order Acceptance:**
Please accept the Work Order within 7 (seven) calendar days from the date of issuance this Work Order by sending a copy of this Work Order duly stamped and signed by Service Provider (i.e. scan copy by email/ hard copy).

For SUBHADRA COAL MINING LIMITED

PARVESH GARG
Digitally signed by PARVESH GARG
Date: 2022.08.31 17:46:11 +05'30'

Parvesh Garg
AUTHORISED SIGNATORY

Accepted

FOR VARDAN ENVIRONET

ANSHUL YADAV
Digitally signed by ANSHUL YADAV
DN: c=IN, st=Haryana, 2.5.4.20=3e9de65afb72fe742fd6e9a4af8306f20ffadcd06b81adb958a75a7d7df81e23, postalCode=122050, street=PLOT NO 82A,MY MANESAR,GURGAON,Gurgaon,Haryana-122050, serialNumber=24ae6e36b2fd8e64f2f60c52e0e3b1d6b076x25d1b414a7a07b1b86f8849016, ou=Sales, o=VARDAN ENVIRONET, cn=ANSHUL YADAV
Date: 2022.08.12 13:54:25 +05'30'

ANSHUL YADAV
(Authorized Signatory)

NOTARY
GOVT. OF INDIA
ASHISH KUMAR
Regd. No. 12A/2018
EXPIRY DATE
21.12.2025

NOTARY
GOVT. OF WEST BENGAL
SK. NAZRUL ISLAM
Area Kalyani
Regn. No. 447/13
Expiry Date
15.03.2023

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GENERAL TERMS & CONDITIONS

General Terms and Conditions shall apply to this Work Order and in the event of any conflict with any specific terms and conditions of Work Order, the later shall prevail.

1. "In case the Suppliers are registered under #Micro, Small & Medium Enterprises Development Act#, they have to confirm the same along with copy of registration" while sending the invoice.
2. Prices shall remain firm and binding throughout the subsistence of the Work Order and shall not be subject to any variation and/ or escalation for whatsoever reasons, except mentioned otherwise in this Work Order. Statutory variation in Taxes & Duties, change in interpretation/application of any existing Taxes & Duties and/or imposition of any new tax/duty/levy in India after the Effective Date of Work Order shall be to "The Company" account.
3. <u>General Responsibilities of Service Provider:</u>

3.1. Service Provider shall at its own cost and risk obtain all license approval as may be required for the execution of the activities under the Work order and submit all necessary documents to "The Company"

3.2. Service Provider shall ensure, at their own cost and expenses, proper insurance policy for its workmen at all time during the Work Order period for the purpose of Workmen Compensation Act 1923 and submit a copy of the same to the company on demand.

3.3. All personnel engaged by the Service Provider in connection with the execution of the Work order shall be the employee of the Service Provider and no claim shall lie against "The Company" in respect of non-payment of wages or compensation of any description due to employees or for any of the Service Provider's failures in the discharge of obligations to its employees. The Service Provider shall discharge all obligations in relation to all personnel engaged by the Service Provider in connection with the execution of the Work order awarded in accordance with all the applicable laws in force from time to time.

3.4. Service Provider shall issue Employment Card / Letter, Identity Card, Salary Slip, P. F. Numbers etc. to all the personnel deployed as per this order. Service Provider shall submit a copy of P.F. & Gratuity Registration Certificate with list of employees before authorized person of "The Company"

3.5. All personnel engaged by the Service Provider in connection with the execution of the Work order shall have to follow all the instructions and Standard Operating Procedures (SOP) issued in respect of Safety Measures by "The Company"

3.6. Service Provider shall at his own cost observe, perform and comply with the provisions of all statutory enactments, rules, regulations and bye laws framed there under as are applicable, during the execution of work and shall maintain such registers, documents, records etc., as are required under various statutes, for production of the same before the "The Company" and/or other statutory authorities prescribed in this behalf, as and when required. Non-Compliance of the provisions/stipulations of these Acts/Rules will render the Service Provider liable to payment of necessary compensation/penalty, as deemed fit by "The Company". It will be the sole responsibility of the Service Provider to ensure all kinds of statutory payments to his manpower and submission of returns etc., to various statutory authorities in time. In case of Service Provider's default in making statutory payment in time, "The Company" reserves the right to deduct necessary amount, statutory dues, arrear of wages, damages etc. from the Service Provider's bill towards such payments.

3.7. Service Provider and his authorized representatives shall carry out all such duties and in such manner as specified under this Work Order or under any oral/written instruction issued by authorized person of "The Company" from time to time.

3.8. It shall be the duty of Service Provider to see that his Representative(s) are properly performing their obligation under this Work Order.

3.9. Service Provider's employees / Agents are solely the employees / Agents of the Service Provider and must not be considered to be the employees / Agents of "The Company".

3.10. Service Provider shall comply with all local labour and laws regarding employment of staff / employees.

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3.11. Service Provider shall comply with any changes to the statutory legislations including applicable labour laws regarding the minimum wages, allowances, statutory contributions or other amount payable by Service Provider to its employees.

3.12. Notwithstanding anything contained herein above, the Service Provider shall provide on monthly basis all the relevant documents / receipts/ challans /proofs to "The Company" on account of deposit of PF, ESI and all statutory payments that are required to be deposited by the Service Provider in connection with each and every person providing service to "The Company" through the Service Provider.

3.13. If it is found that any amount on account of statutory dues (PF, ESI, Gratuity, Bonus etc.) is due and payable by the Service Provider, such amount even if it is paid by "The Company", "The Company" shall be indemnified by the Service Provider and shall be adjusted from the amount due and payable by "The Company" to the Service Provider or from the Security Deposit of the Service Provider lying with "The Company".

3.14. Service Provider shall be responsible for payment or submission of all statutory payments as per Work Order in respect of the personnel deployed by the Service Provider at the Premises of "The Company", including but not limited to wages, overtime dues, Bonus, Provident Fund, Employees' State Insurance, Workman's compensation, Gratuity and terminal benefits and for compliance of all statutory laws, bye laws, rules and regulations relating to provision of the Services and deployment of requisite personnel on the Premises.

3.15. Service Provider has to produce the copy of the License of the Service Provider under Labour (Regulation & Abolition) Act, 1970 and other relevant Acts as applicable, towards deployment of his personnel at the site, at the time of execution of the Work Order. Non- submission of the same by the Service Provider shall be liable for breach of the terms of the Work Order, for which all payments shall be withheld by "The Company", till the same is regularized.

4. **Safety Measures:**

i. Service Provider shall provide, at their own cost and expenses, necessary safety appliance, personal protective equipment's to all workmen in order to prevent accident during carrying out the work.

ii. "The Company" shall not allow any body to do any act which may cause breach of statutory safety provision.

iii. In case, if Service Provider fail to provide safety devices and medical facility for the workmen at site, the "The Company" may make suitable arrangement and recover the cost of the same from Service Provider's bill.

iv. Service Provider shall ensure that all its employees duly maintain and strictly follow all COVID 19 related protocols as instructed by "The Company" and the Government.

5. Service Provider shall deploy only trained and adequately skilled work force (No child Labour) for the execution of this contract.

6. Any person (engaged by Service Provider) who is found undesirable / incompetent, shall be removed by Service Provider on his own or as per the instruction of "The Company", from the site without any financial implications of the same on the company.

7. Service Provider shall not engage any ex-employee of the company.

8. "The company" shall have the right at its sole discretion to discontinue the work fully/partly for any reason whatsoever and shall have no liabilities for any damages or compensation on account of loss/profit to the Service Provider.

9. Service Provider shall at all times be responsible for any damages or trespasses committed by its agent and employees in carrying out the work and shall further be responsible for the acts and omission of his employees, whether at work site or in the company's premises.

10. Service Provider shall do the house keeping of the work place wherever necessary at no extra cost on daily basis and handover the site in a manner as instructed by the authorized person of "The Company", at the end of the contract.

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11. Service Provider shall keep the separate record of all challan duly signed by "the company's" Security Department in respect of all items brought by it inside and get the same verified by the stores and concerned HOD, jointly, wherever required. At the time of full and final settlement, Service Provider would be relied upon Non-maintenance of the record shall be risk of the Service Provider.
12. Material provided to Service Provider for carrying out the work will be under its custody. Balance material after completion of job shall have to be returned by Service Provider to "The Company" without any extra cost.
13. Service Provider shall make necessary arrangement to safeguard company's property, material, tools and tackles/equipment to be consumed during the execution of the contract.
14. Service Provider shall be fully responsible for all the damages to "the company" caused by its workmen and "The Company" shall be entitled to recover from Service Provider's account.
15. **Compliance with Laws:**

Service Provider shall at his own cost, observe, perform and comply in its execution of this Agreement with all applicable labor and any other laws applicable to Scope of Work undertaken by Service Provider, including but not limited to the following:

i. Contract Labour (Abolition & Regulations) Act 1971.
ii. Employee Compensation Act, 1923 and Rules made thereunder.
iii. The Payment of Wages Act, 1936.
iv. The Employees Provident Fund Act, 1952 & Employees Provident Fund Scheme 1952.
v. Employees State Insurance Act 1948
vi. The Payment of Bonus Act 1965.
vii. The Payment of Gratuity Act as and when applicable.
viii. The Mines Act 1952 as applicable
ix. The Mineral Concession Rules 1960 as applicable.
x. The Mines Vocation Training Rules 1966.
xi. Industrial Disputes Act in relation to matters of settlement of various disputes of retrenchment / lay off, Service conditions of Employees and Maintenance of perfect industrial peace etc.
xii. Air and Water Pollution Acts.
xiii. Indian Electricity Act and Rules made thereunder (if applicable.
xiv. Information Technology Act, 2000.
xv. Industrial Safety Rules.
xvi. Labour and any other legislation that may be applicable or may become applicable during the validity period of Work Order

16. **Confidential Information:**

16.1. All Confidential Information acquired by Service Provider from the "The Company" under this Agreement shall be and remain the exclusive property of the "The Company". The Confidential Information shall be solely used for the Approved Purpose intended by the Parties, unless a different purpose is hereafter authorized in writing by the "The Company". The Confidential Information has commercial value and undertakes that it shall not use any Confidential Information in any other manner that is contrary to the terms of this Agreement.

16.2. Service Provider shall not disseminate, divulge or in any way disclose, and shall use its best efforts not to allow disclosure of any Confidential Information of the "The Company" to any third party except to its employees and directors ("Permitted Recipients") on a need-to-know basis for the Approved Purpose and who agree, in advance, to be bound by this Agreement. Recipient is responsible for the compliance by its Permitted Recipients of the terms and conditions of this Agreement or for any breach or threatened breach by any of its Permitted Recipients. The Confidential Information shall not otherwise be made available or disclosed or any access granted to any other person without the prior written consent of the "The Company".

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16.3. "The Company" reserves the right to exclude Service Provider or any third party if found to be in breach of clause 16.1 or 16.2 and to take any action in pursuit of remedy for such breach as may be deemed appropriate.

17. Intellectual Property - All materials provided by "The Company" for the purposes of this project/contract are copyright to and will remain the copyright and intellectual property of "The Company" and all rights therein are reserve.

18. Service Provider is required to advise "The Company" of the identity and role of any and all third parties necessarily having access to information provided in confidence by "The Company", prior to providing any access to such third parties.

19. **Right to Audit :** "The Company" reserves the right to get the documents/products/services (related to the contract/order) audited by "The Company" and / or third parties and at such frequency or phase of implementation or in the post - implementation phase as it may deem fit. Service Provider is required to assist in such audit and make available your resources and / or documentation for such audit. Service Provider would be informed of such audit in writing by "The Company" before the commencement of the audit.

20. **Documents:**
All activities performed pursuant to this Work Order shall be properly documented and "The Company" shall have all right to inspect any information and or document or retain copy or use the documents or information provided by the Service Provider in connection with the Work Order.

21. **Indemnification:**

i. Service Provider shall indemnify "The Company" against all third-party claims of infringement of Patent, Trademark, or industrial design rights arising from use of the Goods or any part thereof in the country of "The Company".

ii. Service Provider shall ensure compliance of all statutory obligations and make payments of all the levies. "The Company" shall not be responsible for any non-compliance and penalties and consequences arising out of the Service Provider's non-compliance/non-payment.

iii. Service Provider shall indemnify and hold the "The Company" harmless from any loss, liability, damage, cost and expense which may arise out of or result from (i) claims by third persons against "The Company"; or the acts or (ii) omissions of the Service Provider, its agents or employees in connection with this Work order; or (iii) any defects in any material or Service supplied by the Service Provider ; or

iv. any breach or default in the performance of the obligations of Service Provider hereunder including any breach of warranty. Service Provider 's indemnification obligations hereunder shall apply to the extent that any claim is caused by the negligence or misconduct of the Service Provider 's personnel or agent during the subsistence of this Work order.

v. Service Provider shall indemnify, save and hold harmless the "The Company" and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs and expenses of whatsoever nature, including fees and expenses, in respect of death or injury of any person or loss of or damage to any property, arising in connection with the execution of the supplies under this Work order and by reason of delay or negligence or failure on Service Provider's part or by any of Service Provider's sub-vendors or its employees, officers or agents. Service Provider shall also be responsible for taking all the required insurances connected with the Scope of the Supplies.

22. **Assignment & Sub-letting:**
No part of this Work Order nor any share of interest therein shall in any manner or degree be transferred, assigned or sublet by the Service Provider directly or indirectly to any person, firm or corporation whatsoever without the consent of "The Company" in writing.

23. **GST Compliances:**

SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 16.09.2020 GOVT. OF WEST BENGAL

ADITYA KATHERIA NOTARY Regd. No. 12/2019 EXPIRY DATE 31.12.20 GOVT. OF India

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i. Service Provider shall raise the Tax Invoice/Bill of Supply, as applicable considering the nature of supply, along with prescribed documents for movements of goods in the prescribed forms and manner as per applicable GST Laws. Service Provider shall be responsible for classification of supply to discharge appropriate GST on the supply and would confirm that the GST amount charged in tax invoice is declared in its returns and payment of taxes is also made.

ii. Where GST is required to be discharged under reverse charge mechanism by the recipient, then same shall be mentioned on Tax Invoice by the Service Provider. In case of any advance payment, Service Provider shall raise the necessary document and ensure the compliances as required under GST laws.

iii. Where ever applicable, "The Company" shall deduct Tax at Source under the GST Laws at the rates prescribed from time to time.

iv. Service Provider agrees to comply with all applicable GST laws, including GST acts, rules, regulations, procedures, circulars & instructions thereunder applicable in India from time to time and to ensure that such compliance is done within the time prescribed under such laws. Service Provider should ensure accurate transaction details, as required by GST laws, are timely uploaded in GSTN.

v. In case there is any mismatch between the details so uploaded in GSTN by Service Provider and details available with "The Company", then payments to Service Provider to the extent of GST relating to the invoices/s under mismatch will be retained from due payments till such time the accurate details are finally reflected in the GSTN in terms of GST laws and that the credit of GST so taken by "The Company" is not required to be reversed at a later date along with applicable interest.

vi. Any loss of input tax credit to "The Company" for the fault of Service Provider shall be recovered by "The Company" by way of adjustment in the consideration payable or otherwise.

vii. "The Company" has the right to take action to recover monetary/financial/economic loss including interest and/or penalty suffered by it due to any non-compliance of applicable GST laws e.g. incorrect declaration, charging of wrong GST rate, failure/delay in Deposit, failure/delay in upload of transaction, confiscation of goods by Govt. due to improper documents during movement etc. by the Service Provider.

viii. Supplementary invoices/debit note/credit note for price revisions or otherwise to enable "The Company" to claim tax benefit on the same shall be issued by the Service Provider for a particular year before September of the succeeding financial year.

ix. Any reduction in the agreed contract/purchase price resulting from introduction of any new law, towards change in applicable tax rate, including eligible credits, in respect of goods and services to be supplied under the Work Order/Contract, then the Service Providers agree to pass on the benefit to "The Company" by way of commensurate reduction to the contract/purchase price to reflect the financial impact of such "Change in law".

x. Work Order shall be void, if at any point of time you are found be to a black listed dealer as per GSTN rating system and further no payment shall be entertained.

24. Termination and Suspension:

A) Termination

(i) "The Company" may at any time on breach of this Work Order by the Service Provider, give the Service Provider a written notice of such breach. If the Service Provider does not take measures which are considered appropriate by the "The Company", within a period of 15 (Fifteen) days after issuance of such notice to remedy that breach, then the "The Company" may terminate this Work Order at any time thereafter stating therein the date of termination. In that case, "The Company" shall be entitled to recover payment if any made against this Work Order and exercising the option to claim damages for non-delivery of services and/or non – performance of the contractual terms .

(ii) "The Company" reserves the right to cancel the whole or part of the ordered quantity at its discretion without assigning any reason whatsoever at any time by giving a notice of not less than 15(Fifteen) days. Service Provider shall stop the performance of the Work Order from the date of termination and

hand over all the drawings, documents and equipment including all the rights of work to the "The Company". In such an event, "The Company" shall pay the mutually agreed cost incurred by the Service Provider till the date of termination as fina Payment against submission of necessary documents. No consequential damages shall be payable by the "The Company" to the Service Provider in the event of such termination.

B) **Suspension**

(i) "The Company" may suspend the work in whole or in part at any time by giving Service Provider notice in writing to such effect stating the nature, the date and the anticipated duration of such suspension. On receiving the notice of suspension, the Service Provider shall stop all such work, which the "The Company" has directed to be suspended with immediate effect. The Service Provider shall continue to perform other work in terms of the Work Order, which the "The Company" has not suspended. The Service Provider shall resume the suspended work as expeditiously as possible after receipt of such withdrawal of suspension notice.

(ii) During suspension, the Service Provider shall not be entitled for any claim whatsoever arising out of any loss or damage or idle labor caused by such suspension.

25. Representations and Warranties: Service Provider hereby represents, warrants and covenants that:

a) It has necessary power and authority to enter into this Work Order and to perform the obligations contemplated hereunder and to abide by the duties and obligations to be complied hereunder. and the Work Order is executed by a duly authorized representative.

b) It has the necessary and complete infrastructure to duly perform the obligations contemplated under this Work Order and abide by the duties and obligations hereunder to the reasonable satisfaction of "the Company"

c) It has obtained and remained as valid necessary registrations including registration, permissions all authorizations and/or licenses required in law for the purpose of providing the supplies contemplated hereunder and that it complies with the requirements of all relevant legislation during the subsistence of this Work Order. A copy of the relevant documents in support thereof should be produced as and when demanded by the "the Company".

d) It shall not perform its services in violation of any conditions and warranties prescribed by manufacturer under this Work Order.

e) It will perform the obligations contemplated in this Work Order in a prudent and professional manner with reasonable care and competence. It shall duly render the services and perform the obligations under this Work Order.

f) It will maintain all registers and records, as may be required by the various legislations applicable to the services to be provided pursuant to this Work Order.

g) It has the sufficient technical skill, expertise, infrastructure, systems and qualified personnel and resources to undertake and execute the supplies under this Work Order; and

h) It will provide the services in good faith with due care, skill and diligence, in a professional manner in accordance with accepted standard practice and with the terms of services agreed on between the parties as set out in this Work Order;

26. Risk Purchase

In case, Services are not rendered within the stipulated schedule or are not according to the specification required by the "The Company" or not found satisfactory owing to any reason, "The Company" notwithstanding Liquidated damage clause, reserve the right to invoke this clause and

a) is entitled to procure the same from the MARKET on its own and adjust the costs and expenses of such procurement from the deposit made by the Service Provider and/or the "The Company" is entitled to recover the balance from the Service Provider.

b) Engage any other agency, parallel to the Service Provider, to complete part of the balance work at the risk and cost of the Service Provider and recover the cost/expenditure that would be incurred extra by the "The Company" from the Service Provider; or

ADITYA BIRLA

c) Cancel the Work order and get the balance work done from any other agency at the risk and cost of Service Provider and recover the cost/expenditure that would be incurred extra by the "The Company" from Service Provider.

d) All above stated in (a), (b) and (c) options are available to the "The Company" without prejudice to the "The Company's" right to take action or/and proceed against the Service Provider, in accordance with General or/and specific laws applicable.

27. **Amendment-** No amendments or modifications of this Work order shall be valid or binding upon the parties hereto unless in writing.

28. **Independent Service provider:**
That this Work Order is on "Principal to Principal basis" and it shall not create any employer/ employee relationship nor shall this Work Order be deemed to create any partnership, joint venture between "The Company" and "Service Provider".
Further, that all employees/personnel, executives engaged by "Service Provider" shall be in sole employment of "Service Provider" and "Service Provider" shall be solely responsible for payment of their salaries/ wages statutory payments etc.
Under no circumstances shall "The Company" shall be liable for any payment or claim or compensation of any nature to the employees and personnel of "Service Provider"

29. **Force Majeure:**

29.1. If either party is prevented from the performance of its obligations in whole or in part for reasons of Force Majeure, viz. acts of God, acts of Government, acts of Public enemy, war, insurrection, embargo, blockade, explosion, earthquake, floods, epidemics/pandemic, provided however, such events are beyond the control of affected party.

29.2. Notice in writing, of happening of any such eventuality is given by the affected party to the other party within 7 days from the date of occurrence of Force Majeure. Both parties shall mutually decide the revised time frame for execution of the contract. Neither of the Parties to the Work order shall claim compensation for the loss thus incurred.

29.3. If Force Majeure event continue beyond the period of 6 months the parties shall hold consultation to chalk out the further course of action, either party reserving the right to terminate the Work order.

30. **Dispute Resolution**

a) The Parties hereto shall endeavor to settle all disputes and differences relating to and/or arising out of the Work Order amicably.

b) In the event, the Parties fail to resolve any dispute amicably, the same shall be referred to Arbitration provided the claim amount is more than 2 crores. The said proceeding shall be governed by the Arbitration and Conciliation Act 1996 or any amendment thereof.

c) The place of arbitration shall be Kolkata, West Bengal, India and the language of the arbitration shall be English.

d) The Parties hereto agree that the Service Provider shall be obliged to carry out its obligations under the Work Order even in the event of a dispute is referred to Arbitration. It is further clarified that the "The Company" shall be entitled to retain any sum or portion of basic Work Order Price, which has become due and payable, for any unfinished supplies/works or any subject matter under arbitration

31. The Parties hereto agree that the Service Provider shall be obliged to carry out its obligations under the Work order even in the event of a dispute. It is further clarified that the "The Company" shall be entitled to retain any sum or portion of Basic Work Order Price, which has become due and payable, for any unfinished supplies/works or any subject matter under dispute

32. **Governing Law and Jurisdiction:** This Work Order shall be construed in accordance with and governed by the laws of India and in the event of any litigation the Courts at Kolkata shall have exclusive jurisdiction to adjudicate any dispute arising between the parties of this Work Order.

33. **General Lien**

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Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, "The Company" shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid, "The Company" shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, "The Company" shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract pending finalization of adjudication of any such claim

34. **Severability:**
If any provision of this Work order is found to be unlawful and inconsistent with the applicable laws, then such provision shall be deemed to be severed from this Work order and replaced by the applicable legal provision and every other provision of this Work order shall remain in full force and effect.

35. **Entire Agreement:**
This instrument contains the entire agreement between the Parties and is merged herein with all prior and collateral representations, promises, and conditions in connection with the subject matter hereof. Any representation, promise, or condition not incorporated herein shall not be binding upon either party and this Work order supersedes and is in lieu of all prior or contemporaneous agreements or arrangements between the Parties with respect to the subject matter hereo

36. **Waiver and Failure to Assert Right** - The Parties may at any time waive any of the provisions of this Work Order, but any such waivers shall be reduced to writing and duly executed and delivered by authorized representatives of the Parties hereto. The failure of either Party to enforce at any time any of the provisions of this Work Order shall not constitute or be construed to be a waiver of such provisions or of the right of such Party thereafter to enforce any such provisions.

37. **Notice-** Any contractual notice, report, certificate or other communication to be given to Parties under this Work Order shall be in writing and shall be sent by registered post or courier with acknowledgement or mailed by first-class mail to the parties at their respective addresses mentioned herein or such other address as Parties shall nominate in writing for that purpose and shall be effective upon receipt.

38. **Language:** All documents, instructions, operation and maintenance manuals, communications shall be in English language.

NOTARY GOVT. OF WEST BENGAL SK. NAZRUL ISLAM

NOTARIAL KOLKATA GOVT. OF India

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Annexure I – Detailed Activity wise Completion Schedule

Sl No.	Activity	Target Completion date (On or Before)
1.	Preparation of the draft EIA EMP report by the EC Consultant and Application to Memb. Secy, OSPCB for conducting Public Hearing along with submission of Draft EIA EMP (10 Copies)	20-01-2023
2.	Baseline Data Collection along with additional study mentioned in the above scope	31-12-2022
3.	Follow-up with the Member Secretary, OSPCB & District Collector, Supintendent of Police, Sub-Collector, Tahsildar, Block Development Officer and concerned Inspector In Charge, Angul for finalisation of Public Hearing (PH) Date & Venue and facilitate Notification of PH by Member Secretary, Odisha State Pollution Control Board (OSPCB)	03-02-2023
4.	Conducting Public Hearing in schedule date & venue and onward intimation to the Memb. Secy, OSPCB, Bhubaneswar	06-03-2023
5.	Forwarding of PH Proceedings by the Regional Officer, OSPCB (Angul) to Member Secretary, OSPCB and Forwarding of PH Proceedings by the Member Secretary, OSPCB to Memb. Secy., MoEF&CC (with copy to Project Proponent)	15-03-2023
6.	Preparation of Final EIA/EMP Report incorporating the issues, demands & time bound action plan of PH for preparation of Final EIA/EMP report	20-03-2023
7.	Submission of Form-2 and Final EIA/EMP report to MoEF&CC through PARIVESH portal	25-03-2023
8.	Scrutiny of EC Application and Final EIA/EMP report, and compliance of EDS/ADS raised (if any) and Confirmation of the Acceptance of the EC Proposal by MoEF to Project Proponent through email	10-04-2023
9.	Submission of Hard copy of online generated Form-2 and Final EIA/EMP report to MoEF&CC, New Delhi	15-04-2023
10.	Preparation of Power point Presentation along with other data & information	20-04-2023
11.	Presentation before Expert Appraisal Committee (EAC), MoEF&CC	15-05-2023
12.	Compliance of EDS raised, if any and Re-Presentation to MoEF&CC, if required	31-05-2023
13.	EAC Recommendation for the Grant of Environmental Clearance (EC)	07-06-2023
14.	Grant of EC	10-06-2023

NOTARY ★ SK. NAZRUL ISLAM ★ GOVT. OF WEST BENGAL

NOTARY ★ GOVT. OF India ★

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~~ANNEXURE 'E'~~

QUALITY COUNCIL® OF INDIA
Creating an Ecosystem for Quality

National Accreditation Board for Education and Training

Certificate of Accreditation

Vardan Environet

Plot No. 82-A, Sector 5, IMT Manesar, Gurgaon-122051, Haryana

The organization is accredited as Category-A under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3' for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
2	Offshore & Onshore Oil and gas exploration, development & production	2	1 (b)	A
3	River Valley projects	3	1 (c)	A
4	Thermal power plants	4	1 (d)	B
5	Coal washeries	6	2 (a)	A
6	Mineral beneficiation	7	2 (b)	A
7	Metallurgical industries (ferrous & nonferrous) - both primary & secondary	8	3 (a)	A
8	Cement Plants	9	3(b)	A
9	Coke oven plants	11	4 (b)	A
10	Synthetic organic chemicals industry	21	5 (f)	A
11	Distilleries	22	5 (g)	A
12	Sugar Industry	25	5 (j)	B
13	Oil & gas transportation, passing through national parks/ sanctuaries/coral reefs /ecologically sensitive Areas including LNG terminal	27	6 (a)	A
14	Isolated storage & handling of hazardous chemicals	28	-	B
15	Airports	29	7 (a)	A
16	Bio-medical waste treatment facilities	32A	7 (d a)	B
17	Highways	34	7 (f)	A
18	Common effluent treatment plants (CETPs)	36	7 (h)	B
19	Common municipal solid waste management facility (CMSWMF)	37	7 (i)	B
20	Building and construction projects	38	8 (a)	B
21	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated Mar. 16, 2022 posted on QCI-NABET website

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/22/2311 dated Apr.13, 2022. The accreditation needs to be renewed before the expiry date by Vardan Environet, Gurgaon following due process of assessment.

Sr. Director, NABET
Dated: Apr. 13, 2022

Certificate No.
NABET/EIA/2023/SA 0158

Valid up to
May. 05, 2023

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

QUALITY COUNCIL® OF INDIA
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NABET

National Accreditation Board for Education and Training

Certificate of Accreditation

Vardan Environet LLP (*formerly Vardan Environet*), Gurugram

Plot No. 82-A, Sector 5, IMT Manesar, Gurugram, Haryana-122051

The organization is accredited as Category-A under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
2	Offshore & Onshore Oil and gas exploration, development & production	2	1 (b)	B
3	River Valley projects	3	1 (c)	A
4	Thermal power plants	4	1 (d)	B
5	Coal washeries	6	2 (a)	A
6	Mineral beneficiation	7	2 (b)	A
7	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
8	Cement Plants	9	3 (b)	A
9	Coke oven plants	11	4 (b)	A
10	Chemical fertilizers	16	5 (a)	A
11	Petro-chemical complexes	18	5 (c)	A
12	Synthetic organic chemicals industry	21	5 (f)	A
13	Distilleries	22	5 (g)	A
14	Sugar Industry	25	5 (j)	B
15	Oil & gas transportation pipeline, passing through national parks/ sanctuaries/coral reefs /ecologically sensitive Areas including LNG terminal	27	6 (a)	A
16	Isolated storage & handling of hazardous chemicals	28	-	B
17	Airports	29	7 (a)	A
18	Industrial estates/ parks/ complexes/ Areas, export processing zones (EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
19	Highways	34	7 (f)	A
20	Building and construction projects	38	8 (a)	B
21	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated April 21, 2023 and Supplementary Assessment minutes dated November 17, 2023 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2751 dated May 01, 2023. The accreditation needs to be renewed before the expiry date by Vardan Environet LLP (formerly Vardan Environet), Gurugram following due process of assessment.

Sr. Director, NABET
Dated: July 05, 2024

Certificate No.
NABET/EIA/2326/RA 0284_Rev.01

Valid up to
May 04, 2026

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website

Table 3.4: Ambient Air Quality Monitoring Stations

Station	Name	Latitude	Longitude	Dist (km)	Dir	Selection Criteria
A1	Project Site	20° 57' 36.707" N	84° 59' 28.969" E	-		-
A2	Village Tangarasahi	20° 57' 33.378" N	84° 57' 59.721" E	1.27	W	Cross wind direction
A3	Village Kosala	20° 58' 49.664" N	84° 58' 15.542" E	1.02	NW	Down wind to first predominant wind direction and up wind for second predominant wind direction
A4	Village Korada	20° 57' 29.610" N	84° 53' 53.934" E	8.4	W	Cross wind direction
A5	Village Kaliakata	20° 54' 11.191" N	84° 59' 6.014" E	3.34	S	Crosswind direction and located near to Highway
A6	Golabandha	20° 51' 27.956" N	85° 0' 1.713" E	8.45	S	Crosswind direction and located near to Highway
A7	Village Kumunda	20° 58' 53.749" N	85° 1' 31.201" E	1.40	NE	Cross wind direction and Forest area
A8	Malibrahmani	20° 55' 31.211" N	84° 59' 40.727" E	1.02	S	Crosswind direction and located near to Highway
A9	Brahmanbil	21° 3' 6.807" N	84° 56' 1.189" E	9.75	NW	Down wind to first predominant wind direction and up wind for second predominant wind direction

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ANNEXURE-'G' 1059

Station	Name	Latitude	Longitude	Dist (km)	Dir	Selection Criteria
A10	Kalamchhuin	20° 57' 44.854" N	85° 3' 23.808" E	4.8	SE	Upwind to first predominant direction
A11	Chhota Golagadia	21° 5' 25.346" N	84° 54' 32.736" E	14.72	NW	Down wind to first predominant wind direction and up wind for second predominant wind direction
A12	Dera	20° 56' 52.525" N	85° 9' 16.387" E	15.3	E	Cross wind direction

Source: Primary On-site Data Collected by Vardan Enviro Lab

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Table 3.5: Ambient Air Quality Monitoring Stations (October to December 2022)

Stations	Name	Latitude	Longitude	Distance (km)	Direction	Selection Criteria
A1	Project Site	20° 57' 36.707" N	84° 59' 28.969" E	-	-	Core zone
A2	Village Tangarasahi	20° 57' 33.378" N	84° 57' 59.721" E	1.27	W	Cross wind direction
A3	Village Kosala	20° 58' 49.664" N	84° 58' 15.542" E	1.02	NW	Down wind to first predominant wind direction and up wind for second predominant wind direction
A4	Village Korada	20° 57' 29.610" N	84° 53' 53.934" E	8.4	W	Cross wind direction
A5	Village Kaliakata	20° 54' 11.191" N	84° 59' 6.014" E	3.34	S	Crosswind direction and located near to Highway
A6	Golabandha	20° 51' 27.956" N	85° 0' 1.713" E	8.45	S	Crosswind direction and located near to Highway
A7	Village Kumunda	20° 58' 53.749" N	85° 1' 31.201" E	1.40	NE	Cross wind direction and Forest area
A8	Malibrahmani	20° 55' 31.211" N	84° 59' 40.727" E	1.02	S	Crosswind direction and located near to Highway

Source: Baseline Monitoring Report, Vardan Enviralab

1811

1961

ANNEXURE- 'H'

~~65~~ ~~ANNEXURE- 'G'~~

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No: VEL/SOCM/AA/01-026
Name & Address of the Project: M/s Subhadra Open Cast Mine, At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha
Sample Collected By: Vardan Envirolab Representative
Sample Description: Ambient Air Quality Monitoring
Location: Project Site (Pidhakhamana) (A1)

Report No: VEL/AA/001-026
Reporting Date: 09/01/2023
Ref. No: NIL
Monitoring Period: October 2022 to December 2022
Equipment Used: RDS & FPS with all accessories
Protocol Used: IS-5182& CPCB Guidelines
Parameter Required: As per TOR Letter

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(α) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
07.10.2022	67.5	42.6	36.8	41.3	0.89	24.3	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	66.9	45.1	37.2	40.9	0.92	23.1	32.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.10.2022	64.2	44.7	35.9	39.8	0.86	21.5	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	65.8	43.9	34.1	38.6	0.99	24.6	36.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	68.0	46.2	36.6	42.5	1.03	25.2	31.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	69.3	45.1	33.2	40.7	0.87	26.7	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	71.4	44.7	32.7	43.7	0.93	22.1	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	70.8	43.9	31.9	44.3	1.04	23.9	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	66.8	42.1	38.4	42.6	0.95	24.6	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	67.2	44.7	36.5	41.9	0.89	22.9	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	72.3	45.0	37.8	40.8	1.03	21.2	36.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	70.9	42.9	33.9	43.6	0.86	24.6	33.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	65.8	43.7	32.8	39.4	1.03	23.7	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	66.0	44.6	31.6	38.6	1.10	25.4	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	67.2	45.5	34.5	40.8	0.94	24.6	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	68.9	46.2	35.7	42.3	0.87	26.1	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	71.2	43.7	36.4	41.3	1.02	25.0	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	70.5	42.1	38.6	44.5	1.09	24.7	31.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.12.2022	72.6	45.9	37.0	40.9	0.90	25.8	32.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	69.3	44.6	33.9	39.5	0.86	21.9	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	68.4	46.7	32.8	38.6	1.05	24.6	34.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	67.2	43.8	31.6	41.2	0.93	22.7	35.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	66.6	44.0	34.6	44.6	0.87	26.1	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	65.1	42.9	35.8	43.7	1.06	25.0	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2022	64.6	45.1	36.7	42.5	0.86	24.3	35.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	68.7	46.8	38.0	41.0	0.94	22.5	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo Pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³)*BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)

SK. NAZRUL ISLAM
Kolkata
Regn. No. 417/19
Expiry Date
16.09.2023

(Approved By)

NOTARY
GOVT. OF INDIA
Regn. No. 1352/2019
EXPIRY DATE
01.12.2023

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/027-052	Report No:	VEL/AA/027-052
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chherapada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Tangarasahi (A2)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m³)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead ($\mu g/m^3$)	Mercury (ng/m³)
07.10.2022	62.3	38.4	31.6	35.9	0.83	19.6	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	61.8	41.2	30.8	36.2	0.91	21.5	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.10.2022	67.4	40.6	29.5	34.7	0.79	18.3	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	65.9	42.7	32.9	33.8	0.83	22.4	33.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	66.3	39.5	27.6	38.9	0.96	20.8	28.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	64.7	38.4	29.4	37.5	0.87	19.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	59.8	36.7	31.6	35.6	0.88	21.3	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	65.3	37.5	28.9	36.4	0.79	20.5	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	67.1	39.5	32.4	33.8	0.93	18.0	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	64.9	41.8	27.5	32.9	0.95	22.6	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	65.2	40.3	30.6	38.4	0.85	19.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	61.8	39.5	31.8	39.5	0.92	18.8	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	62.7	38.4	29.5	35.2	0.97	21.2	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	63.8	36.2	32.6	34.7	0.91	22.6	31.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	64.5	38.4	30.8	33.6	0.80	20.7	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	65.7	40.5	31.6	35.8	0.79	18.4	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	62.9	41.2	27.8	36.7	0.94	22.6	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	59.4	42.7	29.4	39.2	0.86	21.5	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.12.2022	61.9	38.9	28.5	37.4	0.93	20.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	60.8	36.7	32.7	36.5	0.97	19.3	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	62.7	38.7	31.2	33.8	0.92	22.7	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	66.3	39.0	29.7	35.6	0.88	21.5	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	65.8	41.6	31.6	34.7	0.95	18.9	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	64.2	40.7	30.8	32.8	0.85	21.2	28.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2022	62.9	42.2	32.9	37.6	0.96	19.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	61.5	39.1	27.3	39.4	0.79	20.1	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³)*BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)

(Approved By)

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/053-078	Report No:	VEL/AA/053-078
Name & Address of the Project:	M/s Subhadra Open Cast Mine, At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Rajharan, Nisha P.S Angul, Tehsil TachierSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Kosala (A3)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
03.10.2022	63.8	41.6	31.9	37.6	0.79	23.6	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	64.9	40.8	33.5	35.9	0.85	21.2	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	67.3	43.7	30.9	39.4	0.92	19.5	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	66.2	42.6	29.6	33.9	0.76	20.8	29.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	68.4	39.5	31.6	35.7	0.88	20.6	28.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	69.3	38.7	32.7	36.1	0.92	22.7	33.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	65.3	43.6	34.5	39.4	0.76	21.6	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	64.7	40.8	33.9	36.7	0.91	23.4	30.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	63.8	41.7	31.6	35.2	0.87	19.5	34.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	69.3	38.4	30.5	40.5	0.93	21.6	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	68.1	37.6	29.0	41.6	0.77	20.5	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	66.7	39.2	32.4	38.9	0.84	22.9	30.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	65.3	41.7	31.6	39.4	0.91	23.4	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	62.9	42.5	33.5	36.4	0.79	21.5	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	61.5	40.5	34.2	37.5	0.88	20.6	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	64.3	38.0	31.6	41.3	0.94	19.8	31.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	65.7	41.9	32.8	40.8	0.86	21.5	30.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	66.8	42.2	29.5	38.4	0.93	20.6	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	68.3	43.7	32.7	35.6	0.78	22.8	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	69.4	38.4	33.4	36.7	0.80	23.9	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	63.8	39.6	29.6	34.8	0.92	21.2	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	64.5	40.7	32.5	39.5	0.78	20.5	29.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	63.8	41.8	31.2	41.6	0.93	19.8	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	65.2	42.3	30.0	40.5	0.88	22.6	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	66.3	37.6	29.6	38.0	0.94	21.2	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	61.0	42.3	33.7	39.4	0.78	20.8	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³), *BLQ- Below Limit of Quantification, LOQ- Limit of Quantification

VARDAN ENVIROLAB * GURUGRAM * (Checked By)

SK. NAZRUL ISLAM, Area Kolkata, Regn. No. AA7/15, Expiry Date 15.05.2026

(Approved By)

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/079-104	Report No:	VEL/AA/079-104
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Korada (A4)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m³)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead ($\mu g/m^3$)	Mercury (mg/m³)
03.10.2022	53.6	28.1	23.9	26.4	0.63	16.2	28.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	51.2	29.6	21.2	23.8	0.59	15.1	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	55.7	30.5	20.8	21.2	0.61	18.4	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	54.9	32.4	24.6	30.6	0.57	17.6	25.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	56.1	31.6	23.5	28.4	0.60	16.1	26.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	52.7	29.4	25.1	27.6	0.58	17.5	29.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	53.4	32.8	22.9	26.9	0.62	18.9	25.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	56.8	31.5	24.2	22.6	0.50	15.7	27.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	55.2	30.9	23.6	21.8	0.61	16.8	26.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	54.2	29.1	21.5	24.5	0.54	18.4	25.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	51.9	28.4	20.8	23.9	0.63	16.6	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	52.7	32.6	25.9	25.7	0.59	15.9	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	53.8	31.7	24.6	26.8	0.62	17.2	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	54.6	30.8	23.7	27.2	0.57	18.0	25.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	55.6	28.9	22.5	28.4	0.62	17.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	53.8	29.4	21.2	29.3	0.59	16.5	29.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	52.9	32.5	23.6	21.6	0.63	15.9	26.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	56.1	30.6	24.7	30.5	0.52	17.1	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	54.3	31.1	25.1	25.6	0.60	18.6	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	52.8	29.4	20.6	27.2	0.55	15.9	26.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	51.6	32.5	22.8	29.4	0.63	17.7	25.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	53.0	31.0	24.6	30.0	0.50	16.2	28.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	52.9	30.9	23.0	22.6	0.63	18.0	27.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	55.4	29.4	22.9	23.7	0.55	16.6	29.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	51.6	28.6	20.5	24.9	0.61	15.9	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	56.4	32.5	21.8	25.1	0.59	18.4	25.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzène (LOQ- 0.5µg/m³), Benzo(a)pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³) BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)

(Approved By)

SK. NAZRUL ISLAM
Advt Kolkata
Regn. No. 44719
Expiry Date
19.09.2026

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)

ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/105-130	Report No:	VEL/AA/105-130
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5182& CPCB Guidelines
Sample Collected By:	Vardan Envirolab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Kalikatta (A5)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
03.10.2022	63.4	38.4	28.6	35.9	0.86	20.3	28.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	61.2	39.6	29.4	33.6	0.76	21.2	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	60.9	35.4	30.9	37.8	0.82	19.4	30.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	59.4	34.2	26.3	36.2	0.75	18.5	26.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	61.9	37.6	25.8	34.8	0.81	17.6	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	64.3	36.8	28.4	33.9	0.73	21.2	32.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	65.8	40.5	30.5	32.5	0.89	18.3	31.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	62.9	38.9	27.9	37.6	0.77	19.4	30.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	63.6	39.1	25.4	36.7	0.84	20.4	27.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	64.1	36.7	29.1	35.2	0.75	21.0	26.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	62.8	35.2	31.2	34.9	0.88	18.6	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	60.9	34.6	26.7	32.8	0.76	17.5	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	59.8	38.1	29.4	35.7	0.82	19.3	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	58.3	37.6	28.3	36.2	0.76	21.5	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	62.7	38.1	26.0	37.9	0.80	20.6	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	63.4	39.2	30.7	32.8	0.76	18.6	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	64.7	40.5	29.1	34.9	0.84	19.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	65.0	38.8	27.3	35.6	0.79	21.2	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	61.9	36.7	25.1	34.8	0.83	17.3	29.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	58.6	37.2	29.3	32.5	0.77	21.2	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	62.9	40.2	31.6	33.7	0.82	20.6	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	63.7	39.6	28.3	37.6	0.76	18.5	32.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	64.2	35.4	29.7	35.4	0.81	19.7	26.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	61.9	34.6	28.4	34.9	0.76	21.2	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	60.0	38.7	25.6	32.5	0.89	20.6	27.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	59.3	39.1	31.8	33.6	0.74	18.6	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³), *BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)

(Approved By)

NOTARY SAHIBGANJ

MD. NAZRUL ISLAM

Area Kolkata

Regn. No. 44/19

Expiry Date

15 05 2025

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/131-156	Report No:	VEL/AA/131-156
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Golabandha (A6)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene (ng/m^3)	B(α) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
07.10.2022	68.4	49.3	35.7	42.6	1.00	26.4	33.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	69.5	48.4	36.1	46.2	0.91	24.9	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.10.2022	71.3	46.5	39.4	44.1	1.04	27.8	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	70.9	45.7	38.7	43.6	1.12	28.1	37.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	72.4	50.2	41.2	42.9	0.96	29.6	36.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	73.4	51.9	40.6	44.7	1.09	27.1	35.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	68.0	49.3	38.4	45.1	1.07	24.5	39.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	71.2	48.7	39.1	46.7	1.13	25.3	37.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	70.9	46.6	36.2	45.6	0.91	26.8	36.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	66.7	47.9	35.7	43.5	1.12	27.8	35.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	69.4	48.2	41.2	42.8	1.08	29.1	38.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	72.5	51.6	40.8	45.9	1.00	26.0	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	73.4	50.4	39.9	46.2	0.90	25.8	33.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	70.9	48.5	38.5	42.5	1.08	24.6	37.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	71.2	46.5	36.4	44.6	1.14	27.3	36.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	68.4	49.7	35.1	45.7	0.99	27.4	35.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	69.5	51.3	34.5	46.7	1.02	28.6	34.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	72.5	50.5	38.4	46.9	1.10	29.4	37.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	68.7	46.3	39.6	45.0	1.03	28.8	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	69.3	45.0	41.2	43.7	1.14	25.6	38.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	67.4	49.8	40.0	42.5	0.90	24.7	39.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	71.0	47.5	38.4	46.0	1.06	28.5	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	70.5	51.2	37.6	44.9	1.11	29.4	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	68.4	50.8	36.2	43.3	0.90	26.8	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2022	69.5	49.6	35.4	44.1	1.12	27.2	33.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	72.3	48.4	39.4	45.9	0.98	26.6	37.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- Annex)*BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Approved By)

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/157-182	Report No:	VEL/AA/157-182
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada. District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Kumunda (A7)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m³)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead ($\mu g/m^3$)	Mercury (ng/m³)
05.10.2022	58.4	33.9	27.5	31.6	0.73	18.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.10.2022	59.1	32.7	26.3	30.8	0.69	20.4	29.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.10.2022	61.2	37.5	28.1	35.9	0.82	16.7	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.10.2022	60.7	36.4	29.3	33.4	0.76	17.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.10.2022	62.8	35.1	24.5	34.8	0.69	20.2	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.10.2022	63.4	36.9	26.8	30.8	0.70	18.8	25.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.10.2022	58.4	33.0	27.3	28.6	0.85	19.1	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.10.2022	57.6	37.4	26.9	34.6	0.79	16.2	29.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.11.2022	56.2	36.8	25.4	32.5	0.80	17.6	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.11.2022	59.1	38.4	30.5	30.0	0.69	20.5	30.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.11.2022	61.8	34.9	29.6	29.1	0.81	18.7	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.11.2022	62.4	33.7	24.2	28.6	0.77	19.6	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.11.2022	60.8	32.6	28.1	35.0	0.82	20.2	25.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.11.2022	63.0	35.7	26.9	33.7	0.69	18.0	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.11.2022	63.8	36.4	24.7	34.5	0.85	19.7	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.11.2022	57.2	37.2	25.3	36.9	0.79	16.5	29.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.11.2022	59.4	38.1	26.1	33.9	0.80	17.5	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.12.2022	61.5	32.9	27.2	28.7	0.79	18.4	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.12.2022	62.8	33.7	28.9	33.0	0.82	19.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.12.2022	60.8	34.6	30.7	31.9	0.75	20.0	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.12.2022	63.4	35.2	29.8	30.5	0.84	16.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.12.2022	56.8	37.4	24.7	34.6	0.69	17.5	28.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.12.2022	59.4	38.6	25.2	29.1	0.80	19.1	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.12.2022	61.5	34.9	26.8	32.6	0.77	20.0	27.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.12.2022	60.8	33.5	27.2	30.8	0.85	18.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.12.2022	62.5	32.1	28.1	35.7	0.76	16.7	28.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.5ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³) *BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)

ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SGCM/AA/183-208	Report No:	VEL/AA/183-208
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kunuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5182& CPCB Guidelines
Sample Collected By:	Vardan Envirolab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Malibrahmani (A8)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (mg/m^3)
03.10.2022	68.4	45.9	35.9	42.3	0.89	26.7	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	69.1	46.7	36.2	41.2	0.93	25.2	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	67.2	47.2	34.7	46.8	1.03	27.3	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	71.6	48.2	39.1	45.4	1.16	23.4	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	70.8	48.6	40.5	44.9	0.97	24.6	38.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	73.4	45.1	38.8	43.7	1.06	25.7	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	74.1	46.9	37.6	42.6	0.98	27.4	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	72.9	47.8	35.4	40.8	1.06	26.1	36.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	73.4	48.2	32.6	41.7	0.89	24.6	34.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	71.0	47.5	34.3	42.6	1.15	23.6	37.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	68.4	46.2	33.8	43.8	0.93	25.7	38.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	70.9	45.9	38.1	44.7	0.89	26.1	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	69.3	44.2	39.6	45.1	0.92	27.2	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	67.8	47.6	40.5	43.9	1.19	24.5	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	72.5	48.6	38.4	45.5	1.02	23.3	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	71.6	46.9	37.6	46.2	0.98	26.9	37.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	70.8	47.5	32.1	44.6	1.05	27.4	38.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	74.6	45.1	33.7	41.9	0.89	24.2	32.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	73.6	44.3	34.5	40.6	0.96	23.1	33.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	72.5	45.8	35.8	42.8	1.13	25.0	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	71.6	47.2	36.4	43.7	1.07	26.7	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	70.8	48.9	37.8	45.3	0.89	27.5	38.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	68.4	45.0	39.4	45.0	0.94	23.9	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	69.3	44.7	40.2	43.6	1.02	25.4	36.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	67.2	46.8	38.7	42.8	1.17	24.6	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	71.5	47.2	37.6	41.5	0.89	26.8	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 1.0ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³) *BLQ- Below Limit of Quantification, LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/209-234	Report No:	VEL/AA/209-234
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kunuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5182& CPCB Guidelines
Sample Collected By:	Vardan Envirolab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Brahmanbil (A9)		

RESULTS

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	Ozone (µg/m³)	NH_3 (µg/m³)	Benzene (µg/m³)	B(α) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead (µg/m³)	Mercury (ng/m³)
05.10.2022	56.9	33.9	26.1	29.6	0.77	17.1	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.10.2022	55.2	32.5	25.3	31.2	0.80	19.2	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.10.2022	57.8	34.6	29.4	30.8	0.68	18.8	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.10.2022	62.9	36.7	22.1	33.6	0.91	19.6	29.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.10.2022	60.7	31.2	24.6	32.4	0.63	15.4	30.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.10.2022	61.3	32.8	25.3	28.7	0.72	17.3	28.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.10.2022	58.6	37.2	27.2	29.1	0.89	18.1	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.10.2022	59.4	35.6	26.8	26.7	0.76	19.6	27.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.11.2022	57.3	34.9	24.1	27.5	0.67	17.2	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.11.2022	55.4	36.4	29.3	32.9	0.74	15.4	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.11.2022	62.0	32.8	22.7	33.5	0.69	16.7	28.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.11.2022	57.2	34.5	25.0	31.6	0.77	18.1	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.11.2022	58.9	36.2	29.6	30.8	0.90	19.2	28.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.11.2022	56.2	34.9	28.4	29.5	0.69	17.0	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.11.2022	58.3	37.6	27.3	27.4	0.74	16.3	26.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.11.2022	61.2	32.5	26.4	31.0	0.65	15.4	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.11.2022	60.9	31.6	22.8	33.7	0.72	18.0	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.12.2022	62.1	34.2	24.3	29.5	0.80	17.6	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.12.2022	55.8	33.6	23.8	28.4	0.69	19.4	26.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.12.2022	56.7	34.5	22.7	27.2	0.93	17.7	29.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.12.2022	54.3	37.0	25.1	31.5	0.66	18.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.12.2022	58.4	31.0	29.4	30.8	0.74	16.5	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.12.2022	62.6	32.8	27.2	32.6	0.65	18.4	29.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.12.2022	57.2	33.4	26.0	27.9	0.78	15.2	26.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.12.2022	59.1	35.4	25.8	26.4	0.92	19.7	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.12.2022	60.8	36.7	24.5	32.1	0.68	16.6	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	–

Note- Arsenic (LOQ- 1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³), *BLQ- Below Limit of Quantification, LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/235-260	Report No:	VEL/AA/235-260
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhendipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Kalamchhuin (A10)		

RESULTS

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	Ozone (µg/m³)	NH_3 (µg/m³)	Benzene (µg/m³)	B(a) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead (µg/m³)	Mercury (ng/m³)
05.10.2022	67.3	42.3	34.6	38.4	0.82	23.6	34.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.10.2022	65.9	40.5	33.9	37.2	0.79	21.2	32.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.10.2022	70.4	39.8	30.8	41.6	0.93	22.9	30.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.10.2022	71.2	42.1	32.7	40.6	0.83	24.6	35.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.10.2022	66.9	43.7	36.1	39.5	0.93	23.1	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.10.2022	65.4	44.6	32.8	36.1	0.86	24.0	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.10.2022	64.3	41.2	33.4	38.9	0.91	21.2	34.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.10.2022	63.8	40.9	35.7	42.1	0.79	20.3	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.11.2022	67.1	43.6	34.9	41.6	0.90	23.6	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.11.2022	66.9	42.7	30.6	40.7	0.79	24.5	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.11.2022	69.1	41.2	32.8	38.4	0.83	20.7	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.11.2022	70.5	40.9	34.5	39.1	0.91	22.9	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.11.2022	71.2	43.6	33.7	37.6	0.88	21.2	35.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.11.2022	67.8	39.8	32.6	36.4	0.97	23.6	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.11.2022	65.4	43.5	36.1	35.7	0.85	24.8	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.11.2022	64.9	44.2	35.8	42.1	0.99	20.7	30.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.11.2022	63.2	41.6	34.9	40.8	0.79	21.6	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.12.2022	68.4	40.7	32.8	39.5	0.84	23.5	31.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.12.2022	67.9	39.5	33.4	38.4	0.96	22.5	34.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.12.2022	66.2	41.8	30.0	36.7	0.83	24.3	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.12.2022	71.8	42.7	36.8	37.5	0.98	21.0	35.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.12.2022	70.4	43.7	35.9	41.8	0.81	20.8	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.12.2022	69.4	44.6	34.5	40.5	0.79	24.3	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.12.2022	67.3	39.8	32.6	42.3	0.90	23.6	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.12.2022	65.0	41.2	33.8	39.8	0.89	22.1	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.12.2022	64.2	42.6	34.7	36.4	0.97	20.5	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.6ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo (a) pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³) *BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)

(Approved By)

SK. NAZRUL ISLAM
Add Kolkata
Regn. No. 44719
Expiry Date
15.08.2025

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/261-286	Report No:	VEL/AA/261-286
Name & Address of the Project:	M/s Subhadra Open Cast Mine, At Village Gopal Prasad, Kumarda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
Sample Collected By:	Vardan Envirolab Representative	Equipment Used:	RDS & FPS with all accessories
Sample Description:	Ambient Air Quality Monitoring	Protocol Used:	IS-5182& CPCB Guidelines
Location:	ChhotaGolagadia (AH)	Parameter Required:	As per TOR Letter

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m³)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (mg/m^3)
07.10.2022	50.3	27.6	19.3	23.6	0.59	16.5	27.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	51.2	28.4	18.4	21.2	0.63	17.1	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.10.2022	49.6	26.9	21.3	22.7	0.71	15.3	25.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	48.5	28.4	20.7	24.9	0.69	17.7	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	51.6	26.3	22.5	25.7	0.72	16.2	27.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	50.7	27.1	18.6	26.3	0.58	15.9	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	48.3	25.0	21.6	24.2	0.60	16.6	25.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	49.1	26.9	19.5	25.3	0.70	15.4	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	51.6	25.8	20.7	24.6	0.59	17.0	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	52.7	27.2	22.3	23.1	0.62	16.7	26.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	50.0	27.3	21.5	22.8	0.71	15.8	25.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	49.5	28.1	19.5	25.9	0.66	16.9	27.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	48.6	26.9	18.7	20.6	0.72	17.4	26.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	51.2	28.4	21.6	24.9	0.63	16.6	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	50.6	26.9	20.5	26.7	0.59	15.4	25.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	51.6	27.5	22.6	22.8	0.71	17.9	27.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	52.0	25.6	19.4	23.5	0.68	16.8	26.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	48.6	27.2	18.6	21.2	0.57	15.7	25.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.12.2022	49.5	28.1	20.0	20.9	0.66	16.3	27.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	51.2	27.3	19.5	25.7	0.72	17.7	26.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	48.6	25.8	21.3	25.8	0.63	16.0	28.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	49.0	26.9	20.6	26.1	0.59	15.2	26.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	51.6	28.4	18.4	24.2	0.68	16.9	25.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	50.8	27.5	22.9	23.8	0.72	17.4	27.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2022	52.6	26.8	21.5	22.1	0.57	16.5	26.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	50.9	28.4	20.0	21.6	0.69	15.9	28.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 0.01µg/m³), BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)
Kushal Sharma

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/287-312	Report No:	VEL/AA/287-312
Name & Address of the Project:	M/s Subhadra Open Cast Mine, At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5182& CPCB Guidelines
Sample Collected By:	Vardan Envirolab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Dera (A12)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m³)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead (ng/m³)	Mercury (ng/m³)
05.10.2022	76.3	50.6	38.4	43.6	0.98	28.4	38.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.10.2022	77.1	49.3	39.1	42.8	1.03	29.1	39.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.10.2022	73.9	52.7	37.6	44.9	1.17	27.2	40.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.10.2022	74.5	51.6	40.5	47.6	1.24	26.3	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.10.2022	72.8	47.8	35.6	48.4	1.09	30.5	36.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.10.2022	76.3	48.3	37.5	46.5	0.99	28.4	35.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.10.2022	77.4	52.4	38.4	45.2	1.07	27.6	38.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.10.2022	78.9	50.6	36.2	44.1	1.17	29.4	39.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.11.2022	75.4	51.9	39.1	43.9	1.23	26.7	37.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.11.2022	76.0	52.4	40.8	42.7	0.97	30.8	40.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.11.2022	78.9	49.3	37.6	41.6	1.09	27.2	38.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.11.2022	77.2	48.5	38.4	44.8	1.27	28.4	39.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.11.2022	76.3	51.0	39.9	46.7	1.10	26.1	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.11.2022	75.4	49.6	40.5	45.9	0.96	28.4	37.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.11.2022	73.9	52.7	37.6	47.2	1.08	29.5	35.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.11.2022	72.5	48.3	36.5	48.6	1.19	30.8	40.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.11.2022	74.0	50.7	39.1	46.5	1.25	28.4	38.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.12.2022	78.6	49.6	38.7	45.0	0.98	29.6	39.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.12.2022	77.5	48.5	35.4	44.2	1.06	30.0	37.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.12.2022	76.9	51.2	38.9	42.9	1.18	28.7	36.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.12.2022	74.2	52.7	39.4	43.7	1.22	29.1	38.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.12.2022	73.8	50.8	37.5	41.6	1.04	28.6	39.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.12.2022	72.8	49.6	40.0	44.5	0.97	30.2	40.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.12.2022	75.8	48.5	38.6	46.8	1.16	27.6	37.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.12.2022	78.1	51.3	35.7	48.1	1.24	26.8	36.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.12.2022	73.9	52.4	36.2	47.2	1.15	28.1	35.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	–

Note- Arsenic (LOQ- 1.0ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1ng/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 10ng/m³), BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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ANNEXURE - I

~~ANNEXURE - II~~

~~FF~~

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION

New Delhi, the 18th November, 2009

No.B-29016/20/90/PCI-L—In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in super session of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)	
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), µg/m³	Annual*	50	20	• Improved West and Geake • Ultraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO_2), µg/m³	Annual*	40	30	• Modified Jacob & Hochheiser (Na-Arsenite) • Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 µm) or PM_{10}µg/m³	Annual*	60	60	• Gravimetric • TOEM • Beta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5 microns) or $PM_{2.5}$ µg/m³	Annual*	40	40	• Gravimetric • TOEM • Beta attenuation
		24 hours**	60	60	
5	Ozone (O_3) µg/m³	8 hours **	100	100	• UV photometric • Chemiluminescence • Chemical method
		1 hour **	180	180	
6	Lead (Pb) µg/m³	Annual*	0.5	0.5	• ASS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	

NOTARY GOVT. OF WEST BENGAL SK. NAZRUL ISLAM Area Kolkata Regn. No. 44719 Expiry Date 15.03.2023

NOTARY GOVT. OF INDIA

(1)	(2)	(3)	(4)	(5)	(6)
7	Carbon Monoxide (CO) mg/m^3	8 hours**	2	2	Non Dispersive Infra RED (NDIR) Spectroscopy
		1 hour**	4	4	
8	Ammonia (NH_3) µg/m^3	Annual*	100	100	• Chemiluminescence • Indophenol blue method
		24 hours**	400	400	
9	Benzene (C_6H_6) µg/m^3	Annual*	5	5	• Gas chromatography based continuous analyser • Adsorption and desorption followed by GC analysis
10	Benzo (a) Pyrene (BaP) – particulate phase only ng/m^3	Annual*	1	1	Solvent extraction followed by HPLC / GC analysis
11	Arsenic (As) ng/m^3	Annual*	6	6	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni) ng/m^3	Annual*	20	20	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

NOTARY ★ SK. NAZRUL ISLAM Regd. No. 44713 Expiry Date 19.03.2024 ★ GOVT. OF WEST BENGAL

NOTARY ★ ASIS KR. ROY Regd. No. 19 Expiry Date 31.12.2023 ★ GOVT. OF INDIA ★ WEST BENGAL

ANNEXURE - J

ANNEXURE - J

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड़ नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

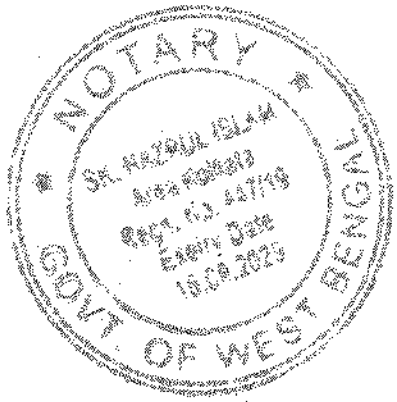
IS 5182-11 (2006): Methods for measurement of air pollution, Part 11: Benzene, Toluene and xylene (BTX) [CHD 32: Environmental Protection and Waste Management]

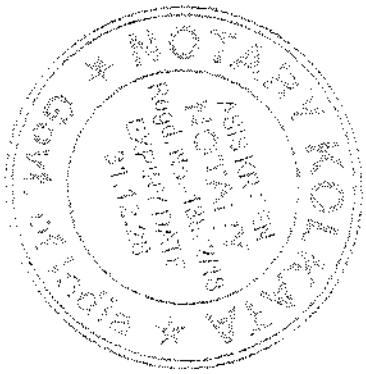
"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartrhari—Nitisatakam
"Knowledge is such a treasure which cannot be stolen"

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IS 5182 (Part 11) : 2006

भारतीय मानक

वायु प्रदूषण मापन की पद्धतियाँ

भाग 11 बैंजीन, टॉल्यून एवं जाइलीन (बीटीएक्स)

(दूसरा पुनरीक्षण)

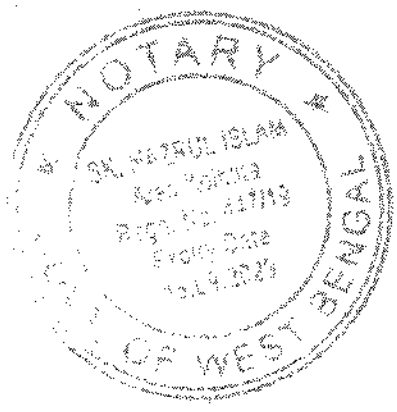
Indian Standard

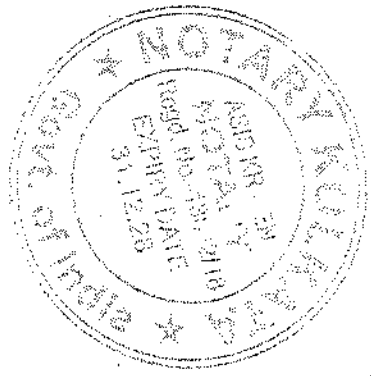
METHODS FOR MEASUREMENT OF AIR POLLUTION

PART 11 BENZENE, TOLUENE AND XYLENE (BTX)

(Second Revision)

ICS 13.040.30; 71.080.15





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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 2006

Price Group 8

Environment Protection and Waste Management Sectional Committee, CHD 32

FOREWORD

This Indian Standard (Part II) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Environment Protection and Waste Management Sectional Committee had been approved by the Chemical Division Council.

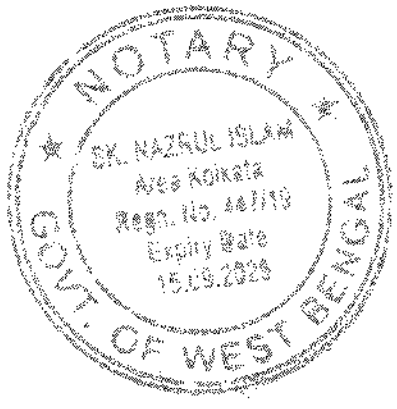
The aromatic hydrocarbons, namely, benzene, toluene and xylene have many industrial uses, most notably as a solvent for numerous materials and as a fuel additive. They are also used in the manufacture of various chemicals, rubber, insecticides, pharmaceuticals, explosives, etc. Though they are very useful chemicals, they are also extremely hazardous. They are highly flammable. While benzene is well known to be carcinogenic, there is recent evidence of carcinogenicity of toluene and xylene at high concentrations in experimental animals. It should also be noted that any future epidemiological observations of cancer risks associated with toluene or xylene would have to take account of the suspected effects of benzene impurities. Regular and systematic procedures for inspection are, therefore, necessary to ensure safety against the hazards involved.

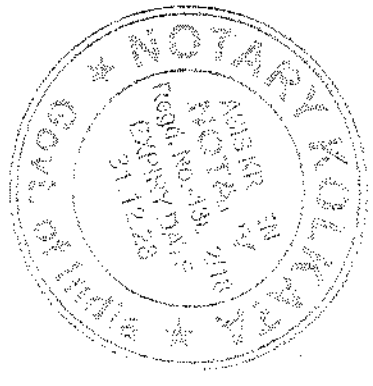
This standard was first published in 1982 and revised it in 1993 based on the development of the analytical procedures to introduce a newer method having a different type of collection, desorption media and use of N, N-Bis-cyanoethylformamide (BCEF) for determination of benzene only. The Committee responsible for the formulation of this standard further decided to revise it based on the experience gained during the last decade as well as technological development in the field. During the revision method for determination of toluene and xylene are incorporated. The revised methods include both active and passive sampling using low flow pump. Apart from the conventional CS_2 desorption, the modern techniques of automated thermal desorption without use of organic solvents is also incorporated in this revision.

There is no ISO Standard on the subject. The standard is prepared based on the measuring techniques available and use in India.

The Committee composition responsible for the formulation of this standard is given at Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.





IS 5182 (Part 11) : 2006

Indian Standard

METHODS FOR MEASUREMENT OF AIR POLLUTION

PART 11 BENZENE, TOLUENE AND XYLENE (BTX)

(Second Revision)

1 SCOPE

This standard (Part 11) prescribes active and passive sampling techniques with three gas chromatography based analytical methods for measurement of benzene, toluene and xylene in air.

2 REFERENCES

The following standard contains provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

IS No.	*Title*
4167 : 1980	Glossary of terms relating to air pollution (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, definitions given in IS 4167 shall apply.

4 METHOD 1 (ACTIVE SAMPLING USING ACTIVATED CHARCOAL TUBES, DESORBED BY CARBON DISULPHIDE)

4.1 Principle

The charcoal tubes are available in different sizes and contain varying amount of activated charcoal. The ambient air is sucked through the tube using a low-flow sampler used for collection of BTX sample in a way that results in an enrichment of the relevant substances in the activated charcoal. Desorption of the adsorbed benzene is done using carbon disulphide (CS_2). The substances desorbed in the CS_2 are analyzed by capillary gas chromatography. A flame ionization detector (FID) is used for analysis while quantification is performed using the internal/external standard.

4.2 Apparatus

4.2.1 *Low Volume Pump* — Portable, battery powered pump with a low flow controller with operating range between 5 to 500 ml/min (±0.2 ml/min) to suck the air sample.

NOTE — Wherever necessary intrinsically safe pumps may be used.

4.2.2 *Sampling Sorbent (Sample) Tubes* — Glass lined (or fused silica lined) stainless steel tube or stainless steel sorbent tubes of 6 mm O.D., 8.9 cm long tubes with a 6 cm of sorbent bed of 200 mg of activated charcoal (coconut shell) or other suitable adsorbent. A typical sorbent/sample tube is shown in Fig. 1 and Fig. 2.

Modular glass or stainless tube (OD 6-8 mm length 10-15 cm) packed with chromatography grade coconut shell activated charcoal, chromatography grade. Tube must have provision for fitting of backup section with provision to measure pressure drop across the tube during sampling. The minimum quantity of charcoal required in front section is 200 mg and in backup section 50 mg. Glass beads or any other porous inert material must be packed in inlet part of front section for uniform distribution of sucked air through tube at the time of sampling.

4.2.3 *Gas Chromatograph* — Any suitable gas chromatograph with flame ionization detector (FID) with fused silica capillary columns having a length of 25 m or more, an internal diameter of 320 µm or below and with a stationary phase film thickness less than 1.5 µm as follows or equivalent may be recommended:

Capillary 624 Column : Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm

Capillary Column : Coating : 5 percent phenyl, 95 percent dimethyl polysiloxane Length × ID : 25 m × 0.20 mm, Film thickness (d_f) = 0.33 µm

Wall Coated Column : Coating: Fused Silica PONA CB, Length × ID : 50 m × 0.21 mm, Film thickness (d_f) : 0.5 µm

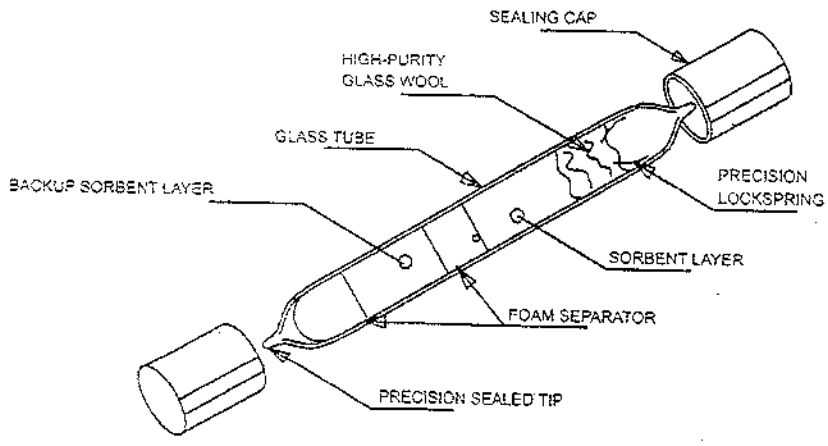


FIG. 1 SORBENT/SAMPLE TUBE FOR ACTIVE SAMPLING FILLED WITH ACTIVATED COCONUT SHELL CHARCOAL (CSC)

Capillary Column : Coating : Fused silica 100 percent dimethyl polysiloxane, Length × ID : 30 m × 0.32 ID, Film thickness (d_f) : 1.0 µm

4.3 Reagents

4.3.1 *Suitable Adsorbent* — Chromatographic grade activated charcoal (coconut shell) or other suitable adsorbent, that is, Chromosorb 106 or other suitable adsorbent having particle size in the range 60 to 80 mesh.

4.3.2 *Carbon Disulphide* (CS_2) — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 5 percent, Benzene 0.001 percent, H_2O < 0.02 percent.

4.3.3 *Benzene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

4.3.4 *Toluene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

4.3.5 *Xylene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

4.3.6 *Carrier Gas* — Helium or Nitrogen of purity > 99.9 percent, H_2O < 0.02 percent, Residues < 0.000 3 percent.

4.4 Sampling

4.4.1 *Selection of Sorbent Tube* — Samples are collected in glass sampling tube filled with a activated charcoal (coconut shell), Chromosorb 106 or other suitable adsorbent.

4.4.2 *Sample Tubes Labelling*

Sample tubes are labelled with a unique identification number and the direction of sampling flow. If empty sample tubes are obtained without labels, it is important to label and condition them before and after they are packed with adsorbent prior to use them for sampling.



FIG. 2 INLET AND OUTLET OF THE SORBENT/SAMPLE TUBE

4.4.3 *Sampling Procedure and Sampling Rate*

A sample is collected by opening a tube at two ends, connecting it to a sample pump, and pulling air through the tube with the pump. Airborne chemicals are trapped onto the surface of the sorbent:

a) Two tubes are used in series to take care of breakthrough (if any) compatible to the thermal desorber. The sampling is carried out using low flow sampler. The schematic diagram of sampling train is given in Fig. 3.

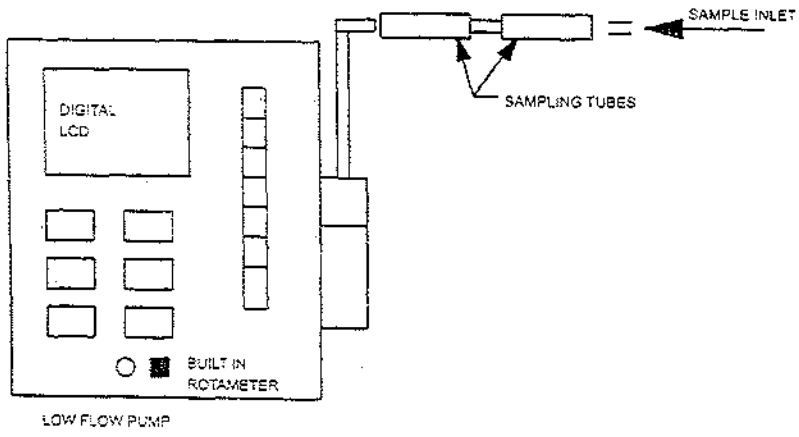


FIG. 3 LOW FLOW SAMPLING PUMP WITH SAMPLING TRAIN

b) Keep the tube in a vertical position during sampling to prevent the possibility of channelling that can lead to under sampling.

c) The arrow on the tube indicates air flow direction and should point to the tube holder and pump. If no arrow is present, the smallest section should be near the tube holder.

d) Sampling flow rate in the range of 20-100 ml/min is required (±2 percent) for ambient air.

e) A sample component may breakthrough from the back end of tube, if excessive flow rates are used. Sample is to be discarded, if the breakthrough is observed more than 10 percent. If analyzed concentration in backup section is more than 10 percent of front section, sample needs to be discarded.

The tube is then sealed with push-on caps, and sent to a laboratory for analysis.

4.4.4 *Storage of Blank and Sampled Tubes*

Seal clean, blank sorbent tubes and sampled tubes using inert fittings and PTFE ferrules. Wrap capped tubes individually in uncoated aluminum foil. Use clean, sealable metal cans containing a small packet of activated charcoal or activated charcoal/silica gel for storage and transportation of multiple tubes. Store the multi-tube storage container in a clean environment at 4 ± 1°C.

4.5 **Procedure**

4.5.1 *Calibration*

Prepare a mix stock standard solution of 50 µg/µl of benzene, toluene and xylene each gravimetrically using a micro syringe in the eluting solvent that is CS_2. Prepare further diluted solutions of concentration range of 10, 1.0, 0.10 µg/µl with CS_2 from stock standard in a clean vial. Make up to 1 ml solution. Introduce immediately 1 µl standard solution into the injector of GC directly and plot the curve between the concentration and response (peak area). Prepare fresh standard solutions with each batch of samples. A typical chromatogram of standard mixture is given in Fig. 4.

4.5.2 *Analytical Procedure*

Samples collected through active sampling (sorbent tubes) are extracted or desorbed by conventional solvent (generally 1-5 ml of carbon disulphide) using ultrasonication for 15 min to remove analyte from the sorbent material. Desorbed samples are analyzed using gas chromatograph (GC) fitted with capillary column and flame ionization detector (FID). A single tube may provide enough samples to permit several analyses.

The following set of conditions is generally used:

a) *Gas flow*:

Nitrogen : 30 ml/min (FID make up + Column), (Column flow 1 ml/min approximately)
Hydrogen : 30 ml/min
Air : 300 ml/min

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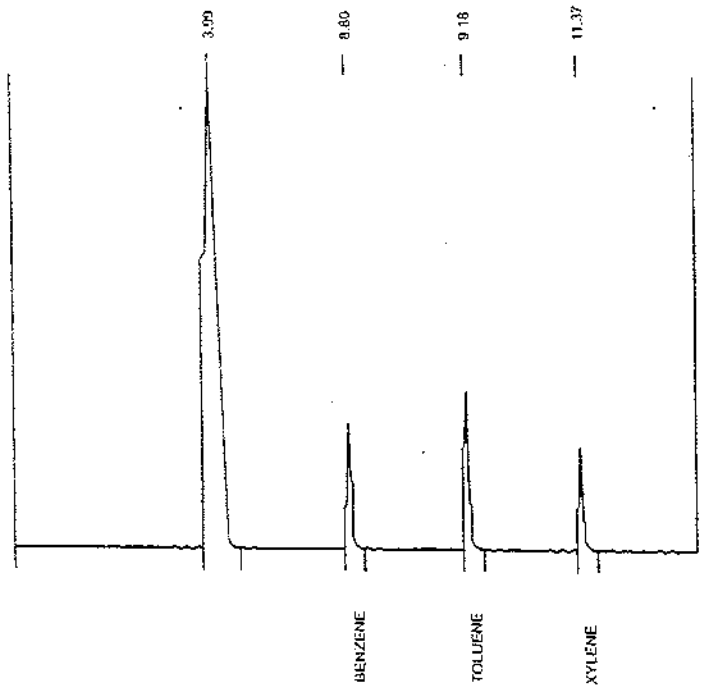


FIG. 4 TYPICAL CALIBRATION CHROMATOGRAM OF BENZENE, TOLUENE AND XYLENE
(Using column PE 624 at 0.017 4 µg/µl concentration of analytes)

NOTE — Instead of nitrogen, helium may also be used as carrier gas for flow setting and corresponding retention time of analytes may vary.

Capillary column 624, Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm

b) *Temperature programming*

Injection port : 250°C

FID : 300°C

Column/Oven : 50°C (hold for 3 min) , ramp1 @ 10°C/min to 140°C (1 min) ramp 2 @ 20°C/min to 240 (1 min)

Injection volume: 5 µl, Total run time: 19.5 min, Split : 10

- Benzene RT 6.80 min, Search window : 1.00 s, 3.00 percent
- Toluene RT 9.18 min, Search window: 1.00 s, 3.00 percent
- Xylene RT 11.37 min, Search window: 1.00 s, 3.00 percent

NOTE — Temperature programming and retention time (RT) of analyte may vary column to column to get appropriate resolution of analyte peaks. Injection volume and split may also vary according to nature and probable concentration of analyte present in the extract.

4.6 Calculation

Amount of analyte compound found on tube can be converted into mg/m³, by using the formula:

$$\text{Volume of air (m}^3\text{) (sucked through the adsorption tube)} = \frac{S \times t}{10^6}$$

where

S = sampling rate, in ml/min; and

t = sampling time, in min.

$$\text{Concentration (µg/m}^3\text{) (at ambient condition)} = \frac{C \times V_1 \times 10^3}{V_2 \times V_3}$$

where

C = amount of compound found injection sample volume from standard curve, in µg/µl;

V_1 = total volume of the sample extracted in ml;

V_2 = volume of sample extract injected into GC, in µl; and

V_3 = volume of air sucked through the tube, in m³.

Blank value is to be subtracted from the amount of compound found in the sample.

$$\text{Concentration (µg/m}^3\text{) at (STP)} = \frac{C \times 101.3\,(273 + T)}{273 \times P}$$

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where

C = concentration at ambient condition, in µg/m³;

T = temperature of the ambient air, in °C; and

P = atmospheric pressure, in kPa.

5 METHOD 2 (ACTIVE SAMPLING USING TENAX/CHROMOSORB 106 SORPTION TUBES, DESORBED THERMALLY)

5.1 Principle

Thermal desorption tubes filled with Tenax TA or other suitable adsorbent as Chromosorb-106, etc, are used for adsorption of benzene, toluene, and xylene in place of charcoal tube. The ambient air is sucked through the tube using a low flow personal sampler in a way that results in an enrichment of the relevant substances on the adsorbent. These tubes are directly connected to the automated thermal desorbers coupled with the gas chromatograph equipped with capillary column and flame ionization detector. The thermal desorption technique offer the advantage of a greatly improved analytical sensitivity, as solvent is not used in this process and the collected sample is not diluted. In most cases analytical recovery is close to 100 percent and desorption efficiency corrections are not required.

5.2 Apparatus

5.2.1 *Sampling Device : Low Volume Pump* — Intrinsically safe, portable, battery powered pump (SKC, PA, USA or equivalent make) (*see* Fig. 3) with a low flow capable of accurate and adjustable flow controller with operating range between 5 to 500 ml/min to suck the air sample with great accuracy in the range of 20-100 ml/min is required (±2 percent). The time programmable, built in flow indicator, rechargeable battery operated low flow pump with adjustable run time up to 8 h should be preferred for sampling of BTX.

5.2.2 *Sampling Sorbent (Sample) Tube* — Automated Thermal Desorption (ATD) tubes of stainless steel filled with absorbing material are required. Stainless steel or glass sorbent tubes (*see* Fig. 5) of 8.9 cm long, 6 mm O.D. with a 6 cm sorbent bed in the central portion packed with greater than 200 mg of solid adsorbent material (that is Tenax TA, Chromosorb106 or any other suitable adsorbent).

NOTE — To be suitable for thermal desorption, sorbent must meet exact specifications that include low contaminant background, high thermal stability and sufficient adsorptive strength to retain components of interest and should also release them quickly when heat is applied.

5.2.3 *Automated Thermal Desorption Apparatus (Two-Stage Thermal Desorption)*

Two-stage automated thermal desorption is recommended to use heat and a flow of inert (carrier) gas to extract volatiles from a solid adsorbent matrix directly into the carrier gas and transfer them to downstream system elements such as the analytical column of a GC.

Two-stage automated thermal desorption is used for the best high resolution capillary chromatography (that is, analytes desorbed from the sorbent tube must be refocused before being rapidly transferred to the GC analytical column).

Typical key components and operational stages of a two-stage desorption system are presented in Fig. 6 and Fig. 7.

5.2.4 *Focusing Tube*

The narrow (typically < 3 mm ID) tube containing a small bed of sorbent, which is maintained near or below ambient temperature and used to refocus analytes thermally desorbed from the sorbent tube. The focusing trap is typically packed with 20 mg of Carbopack™ B (60/80 mesh) and 50 mg of a Carboxen™ 1000-type sorbent (60/80 mesh).

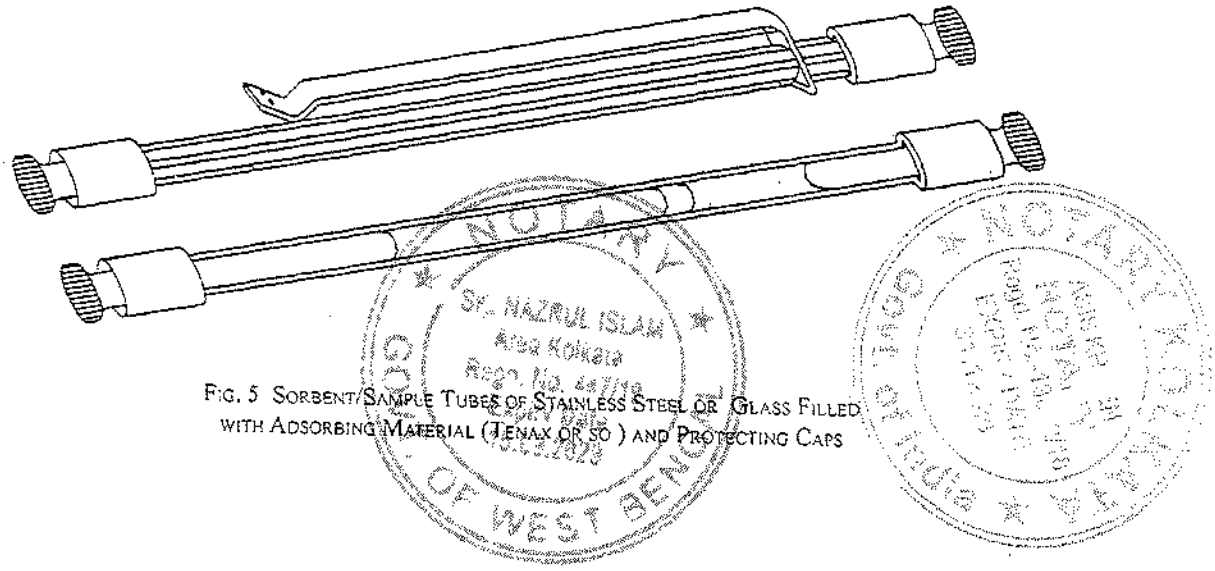


FIG. 5 SORBENT/SAMPLE TUBES OF STAINLESS STEEL OR GLASS FILLED WITH ADSORBING MATERIAL (TENAX OR SO) AND PROTECTING CAPS

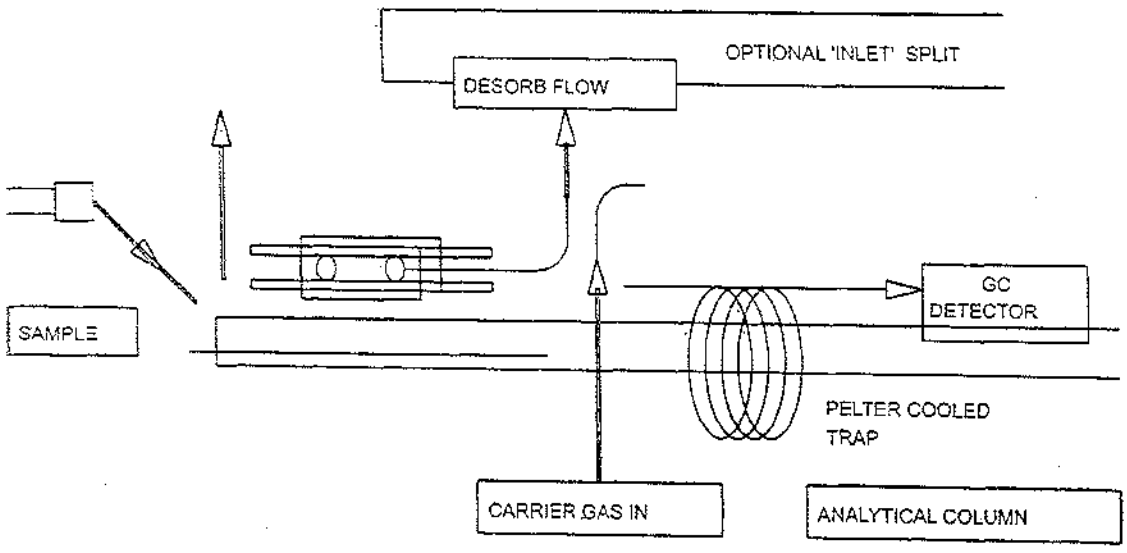


FIG. 6 STAGE 1 : SAMPLE TUBE DESORPTION OR AIR SAMPLE TRANSFER TO TRAP

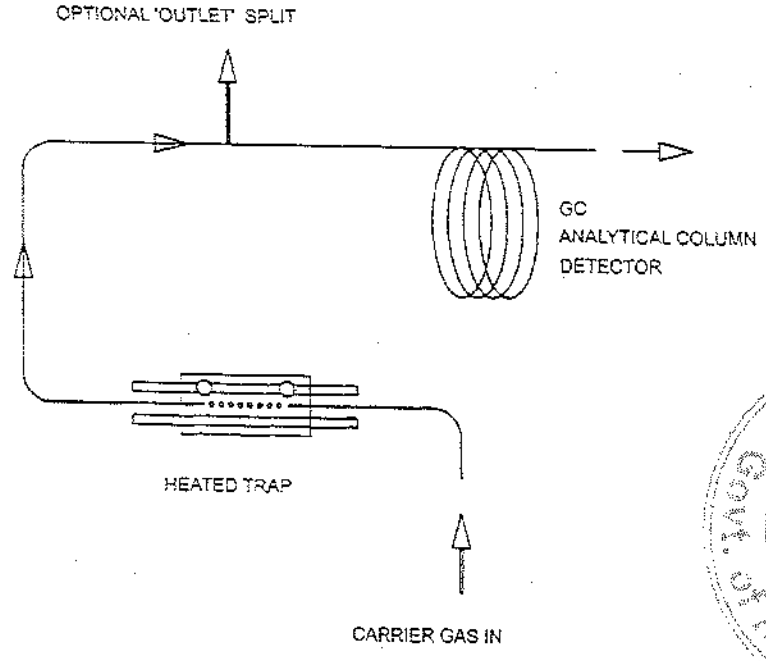


FIG. 7 STAGE 2 : TRAP DESORPTION
(Sample transfer to GC Column)

Once all the BTX have been transferred from the sorbent tube to the focusing tube, the focusing tube is heated rapidly to transfer the analytes into the capillary column of GC in the form of a band of vapor.

5.2.5 *Electronic Cryogen Systems*

Automated thermal desorber have electronic systems to cool the focusing tube or cold trap. Other non-automated desorber require typically cryogens, that is, liquid nitrogen, liquid argon, or liquid carbon dioxide to cool the focusing tube.

The cryogen-free trap cooling option with a multistage Peltier electrical closed cycle coolers is used. At its low temperature, the trap must provide quantitative analyte retention for target compounds as well as quantitative and rapid desorption of target analytes.

5.2.6 *Thermal Desorber — GC Interface*

The interface line is leak-tight and lined with an inert

material such as deactivated fused silica. Alternatively, thread the capillary column itself through the heated transfer line/interface and connected directly into the thermal desorber.

Place the sealed tubes on the thermal desorber (Perkin Elmer Model ATD 400 Automated System or equivalent). Heat the interface between the thermal desorber and the GC uniformly.

Other thermal desorbers may have different arrangements for automation. Alternatively, use equivalent manual desorption.

NOTE — Use of a metal syringe-type needle or unheated length of fused silica pushed through the septum of a conventional GC injector is not recommended as a means of interfacing the thermal desorber to the chromatograph. Such connections result in cold spots, cause band broadening and are prone to leaks.

5.2.7 *High Resolution Capillary Column Chromatography*

Any suitable gas chromatograph equipped with flame ionization detector (FID) with fused silica capillary columns having a length of 25 metres or more, an internal diameter of 320 µm or below and with a stationary phase film thickness less than 1.5 µm as follows or equivalent may be recommended:

Capillary 624 Column	: Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm
Capillary Column	: Coating: 5 percent phenyl 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, Film thickness (d_f) : 0.33 µm
Wall Coated Column	: Coating: Fused Silica PONA CB, Length × ID : 50 m × 0.21 mm, Film thickness (d_f) : 0.5 µm
Capillary Column	: Coating: Fused silica 100 percent dimethyl polysiloxane, Length × ID : 30 m × 0.32 mm, 1.0 µm film thickness

5.3 Reagent

5.3.1 *Carbon Disulphide* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 5 percent, Benzene < 0.000 1 percent, H_2O < 0.02 percent.

5.3.2 *Benzene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

5.3.3 *Toluene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

5.3.4 *Xylene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

5.3.5 *Carrier Gas* — Helium or Nitrogen of purity > 99.9 percent, H_2O < 0.02 percent, Residues < 0.000 3 percent.

5.4 Sampling

5.4.1 *Sampling Location* — Site should be free from any obstacle to free flow of the air in the vicinity.

5.4.2 *Selection of Sorbent Tube and Sorbent Mesh Size* — Samples are collected in SS or glass sampling tube filled with Tenex TA, Chromosorb 106 or other suitable adsorbent (two in series to take care of breakthrough, if any) and compatible to the thermal desorber. The sorbents of particle size in the range 60 to 80 mesh should be used for tube packing.

5.4.3 *Conditioning the Tube*

Condition newly packed tubes for at least 2 h (30 min for preconditioned, purchased tubes) at 320°C while passing at least 30 ml/min of pure Nitrogen or Helium carrier gas through them.

Tube conditioning before reuse of sample tube is also must.

Once conditioned, seal the tube with brass, 1/4 inch fittings and PTFE ferrules. Wrap the sealed tubes in uncoated aluminium foil and place the tubes in a clean, air-tight, opaque container.

A package of clean sorbent material, for example, activated charcoal or activated charcoal/silica gel mixture, may be added to the container to ensure clean storage conditions.

Store in a refrigerator (organic solvent-free) at 4±1°C, if not to be used within a day. On second and subsequent uses, the tubes will generally not require further conditioning as above. However, tubes with an immediate prior use indicating high levels of pollutant trace gases should be reconditioned prior to continued usage.

NOTE — Other sorbents may require different conditioning temperatures.

5.4.4 *Sample Tubes Labelling*

Sample tubes are labelled with a unique identification number and the direction of sampling flow. Stainless steel tubes are most conveniently labelled by engraving. Glass tubes are best labelled using a temperature resistant paint. If empty sample tubes are obtained without labels, it is important to label them before packing and condition them after packing with adsorbent prior to use them for sampling.

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5.4.5 *Sampling Procedure and Sampling Rate*

A sample is collected by opening a tube at two ends, connecting it to a sample pump, and pulling air through the tube with the pump. Airborne chemicals are trapped onto the surface of the sorbent:

a) Two tubes are used in series to take care of breakthrough (if any) compatible to the thermal desorber. The sampling is carried out using low flow sampler. The schematic diagram of sampling train is given in the Fig. 3.

b) Keep the tube in a vertical position during sampling to prevent the possibility of channelling that can lead to under-sampling.

c) The arrow on the tube indicates air flow direction and should point to the tube holder and pump. If no arrow is present, the smallest section should be near the tube holder.

d) Sampling flow rate in the range of 20 - 30ml/min is required (±0.2 ml/min) for ambient air.

e) A sample component may breakthrough from the back end of tube if excessive flow rates are used.

Sample is to be discarded if the breakthrough is observed more than 10 percent.

NOTE — A sample component may breakthrough from the back end of tube if excessive flow rates are used. The sample is to be discarded, if the breakthfough is observed more than 10 percent.

5.4.6 *Sampling Period*

The sorbent tubes are exposed in field for previously determined period (generally between 1 - 4 h or so). Before and after sampling the samples are stored and transported to field/laboratory in sealed containers.

NOTE — Exposure period may be shortened for highly polluted area that is near gasoline dispensing station, garage, refinery or other direct emission source.

5.4.7 *Blank and Sampled Tube Storage*

Seal clean, blank sorbent tubes and sampled tubes using inert, fittings and PTFE ferrules. Wrap capped tubes individually in uncoated aluminium foil. Use clean, sealable metal cans containing a small packet of activated charcoal or activated charcoal/silica gel for storage and transportation of multiple tubes. Store the multi-tube storage container in a clean environment at 4 ± 1°C.

5.5 Procedure

5.5.1 *Calibration*

A standard solution of the compounds of interest in the elution solvent is prepared gravimetrically, using a micro syringe, by adding pure compounds or pre-weighed blends to flasks partially filled with the elution solvent (CS_2). Prepare Benzene standard solution and a blank 0.043 5 µg/ml, 0.087 µg/µl, 0.174 µg/µl, 0.261 µg/µl and 0.348 µg/µl.

1 µl each of standard solution was injected into the sorption/sample tube, which is desorbed thermally, and analyte is transferred to capillary GC directly. Plot the curve between the concentration and response (peak area).

Multi-point external calibration is used on ATD-GC taking 5 levels of BTX standard solution using CS_2 as a diluting solvent or introduction of a fixed volume gas phase standard (optional).

Typical chromatogram for benzene, toluene and xylene is given in Fig. 8 and typical calibration graphs for benzene, toluene and xylene is given in Fig. 9.

5.5.2 *Analytical Procedure*

Remove the sorbent and extract the trapped chemical from sample tubes using heat. Samples collected through this technique (sorbent tubes) may be desorbed by Automated Thermal Desorber generally by 2-stage desorption technique on ATD-GC. The desorbed samples are transferred to gas chromatograph (GC) directly and analysed using capillary column and flame ionization detector (FID). No solvent is required in this process.

a) *Desorption of the sorbent tube onto a focusing trap* — Place the sealed tubes on the thermal desorber (Automated system or equivalent). Heat the interface between the thermal desorber and the GC uniformly.

Desorption of the sorbent tube (typically 200-300°C for 5-15 min with a carrier gas flow of 30-100 ml/min and refocusing of the target analytes on a focusing trap held at near-ambient or sub-ambient temperatures.

Reverse the flow direction of N_2 or He gas, set the flow rate to at least 30 ml/min, and heat the tube to 325°C (in this case) to achieve a transfer of BTX onto a focusing tube at a temperature of 27°C or so.

NOTE — Analytes should be desorbed from the tube in backflush mode, that is, with the gas flow in the reverse direction to that of the air flow during sampling.

b) *Rapid desorption of the focusing trap* — Rapid desorption of the focusing trap (typically 40°C/s to a top temperature of 250-350°C, with a hold time of 10-15 min at the top temperature and an inert/ carrier gas flow of 30-100 ml/min) take place to transfer the analytes into the analytical column.

Analytes are transferred to the column in the form of narrow band of vapor. Desorption in the focusing

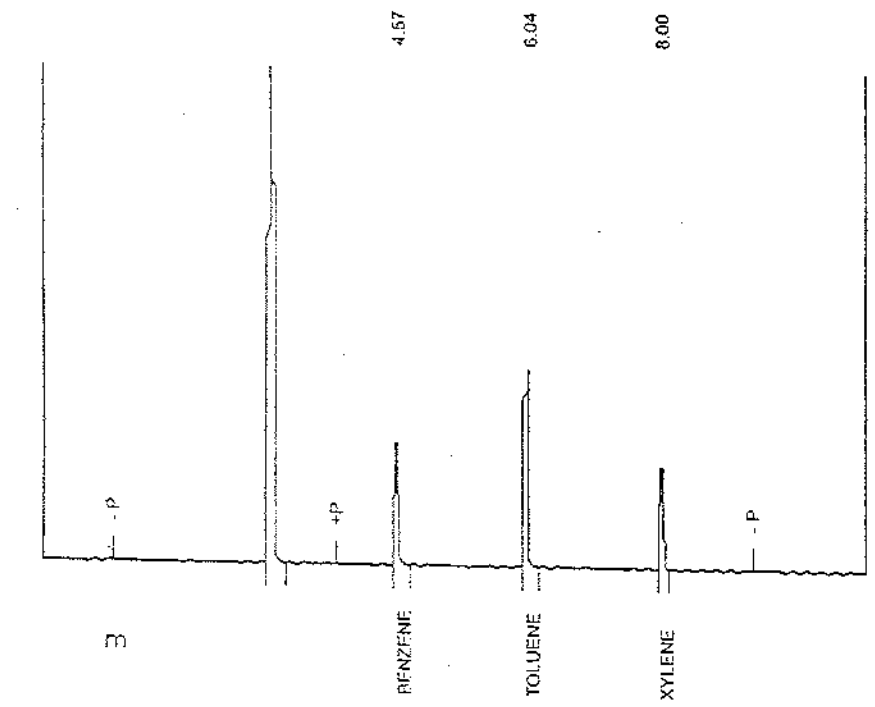
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trap initiates the analytes to run through GC column. Different thermal desorbers may have different arrangements for automation. Alternatively, use equivalent manual desorption

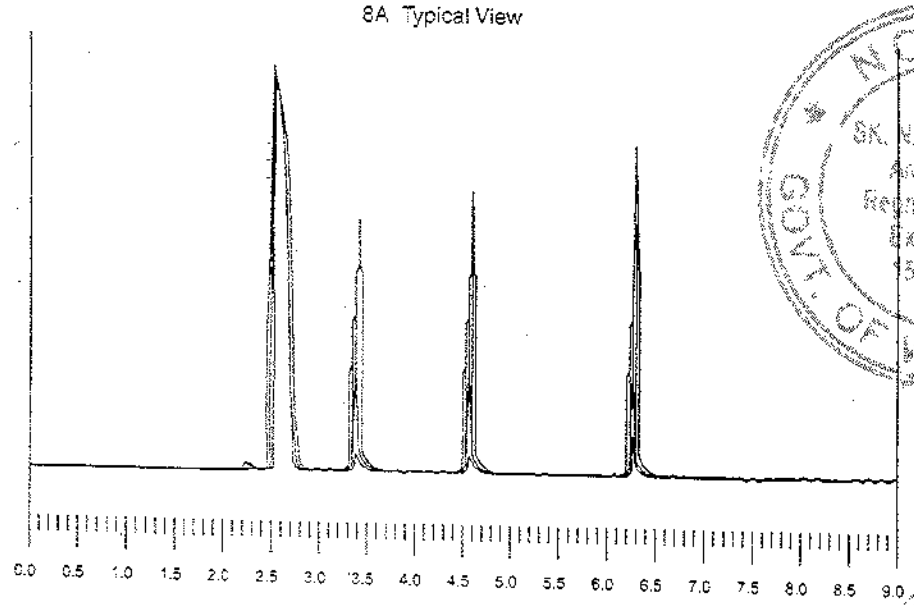
NOTE — Components should normally be desorbed from the focusing trap in backflush mode, that is, with the gas flow through the cold trap in the reverse direction to that used during analyte focusing.

c) *Sample splitting* — If the sample loading is high, it is usually possible to eliminate sufficient water to prevent analytical interference by using sample splitting.

Sample may be split either: (a) between the focusing trap and the capillary column (single splitting) during trap (secondary) desorption, or (b) between both the



8A Typical View

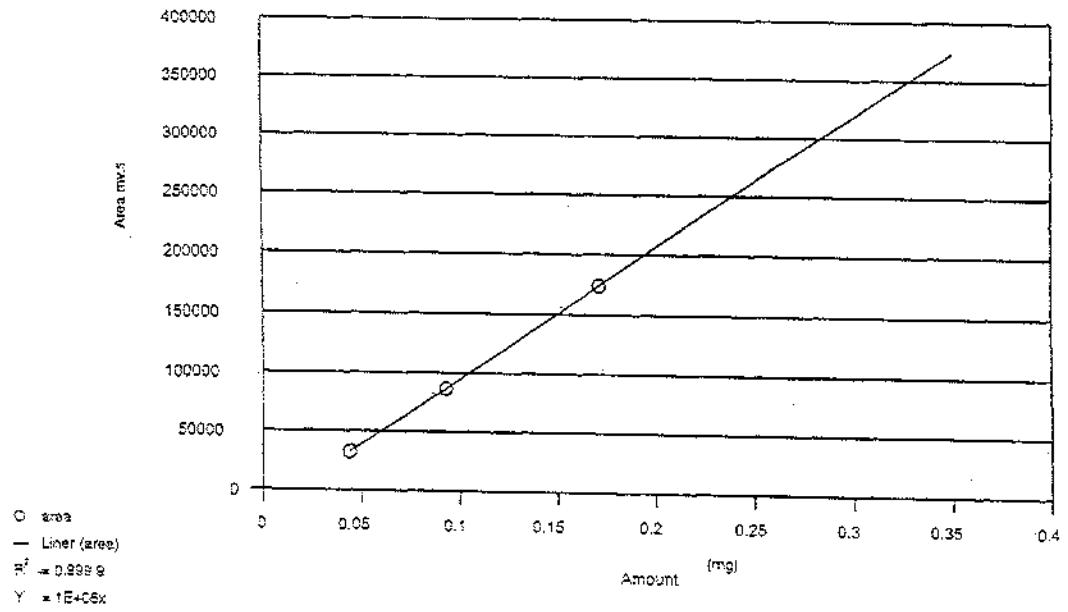


8B Overlay View on ATD-GC-FID System

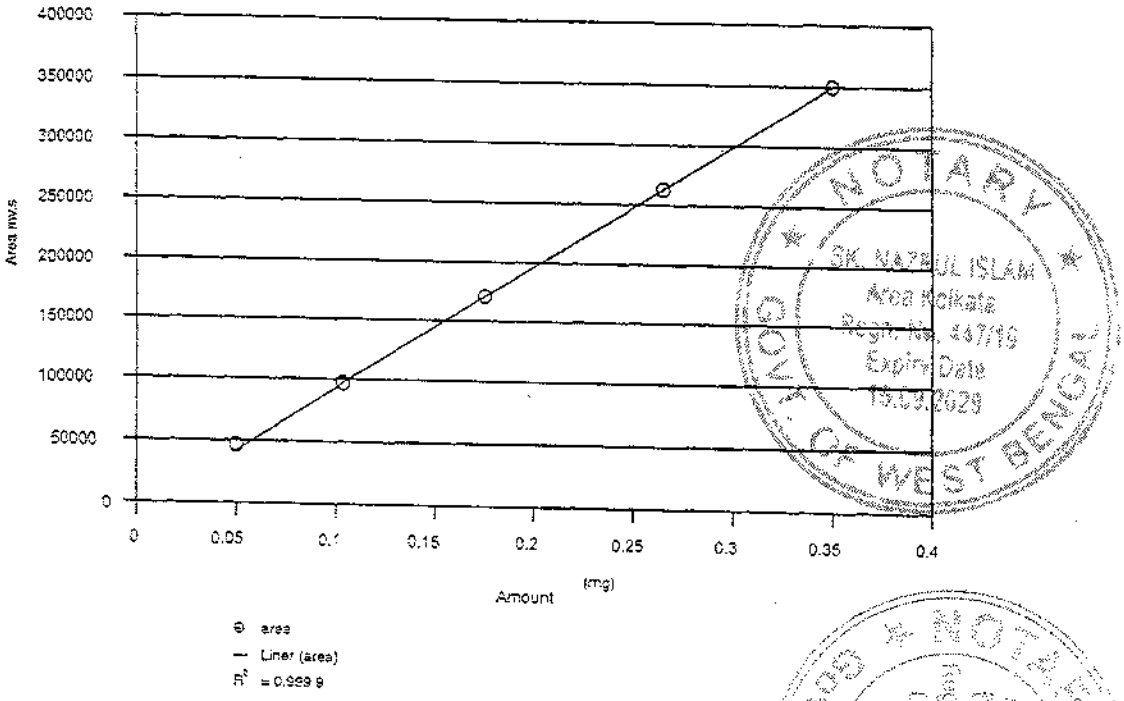
FIG. 8 CHROMATOGRAMS OF BENZENE, TOLUENE AND XYLENE (Using Column PE5, 25 m × 0.20 mm, d_f = 0.33 µm 5 percent phenyl 95 percent dimethyl polysiloxane, at concentration of analytes, 0.017 4 µg/µl)

tube and the focusing trap during primary (tube) desorption, that is, double splitting. It may, in fact, be necessary to split the sample in some cases to prevent overloading the analytical column or detector due to excess water accumulation or during the analysis of high concentration/large volume air samples.

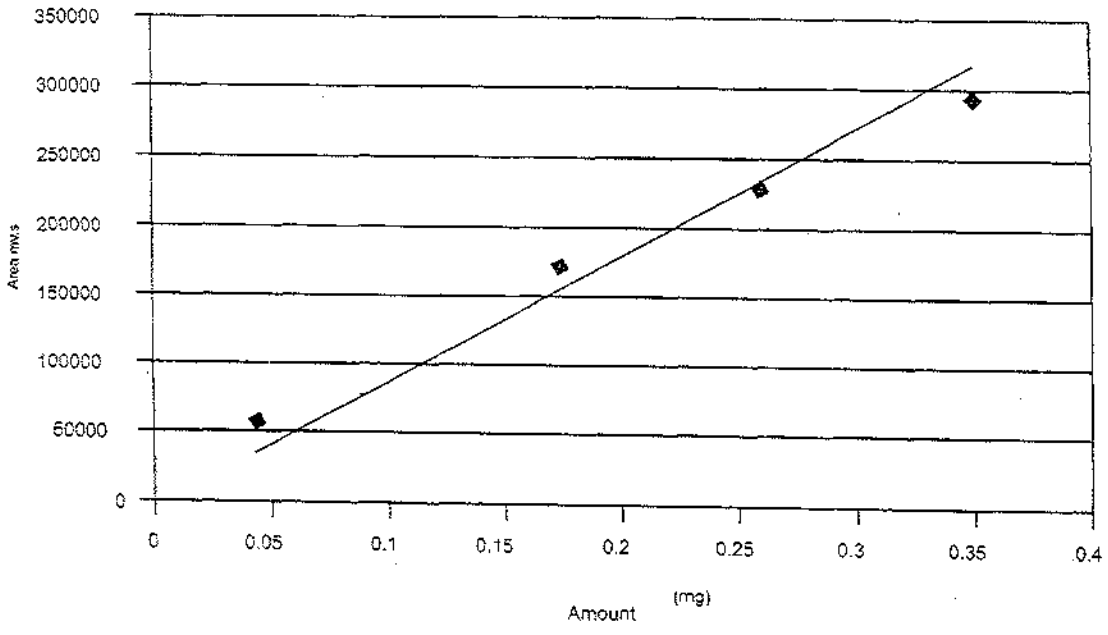
NOTE — Sample splitting is one of the key approaches to water management. Moisture management by sample splitting is applicable to relatively high concentrations (10 ppb) or large volume air samples.The mass of water retained by the sorbent tube during sample collection may be sufficiently reduced by the split alone to eliminate the need for further water management steps.



9A Benzene



9B Toluene



◆ Series 1, — Liner (Series 1), $R^2 = 0.963\,5$, and $y = 892\,229x$

9C Xylene

FIG. 9 CALIBRATION GRAPH

d) *Trap desorption and GC/MS analysis* — After each tube is desorbed, rapidly heat the focusing trap and apply pure Nitrogen or helium carrier gas. Sample splitting is necessary to accommodate the capillary column. Analytes are transferred to the column in a narrow band of vapor.

The GC run is initiated based on a time delay after the start of thermal desorption. The analytical cycle and ATD and GC conditions are described as follows:

1) *ATD Conditions*

i) Purge time: 1 min (After leak test air is purged to reduce analyte oxidation).

ii) Tube oven temperature : 300°C, Desorb time is 12 min.

iii) Cold trap low temperature : –30°C.

iv) Heat rate of cold trap: 40°C/s up to 225°C for 20 min.

v) Heated valve temperature: 6 Port rotary valve: 200°C.

vi) Transfer line temperature: 225°C.

vii) Inlet and Outlet split: 50 and 20 ml/min before and after cold trap respectively.

(These vary depending on nature and probable concentration of analyte in the sample).

2) *GC Conditions*

i) The ambient laboratory temperature should be between 10°C and 35°C with a relative humidity 20 percent to 75 percent with no condensation. The GC-ATD will operate safely between 15°C and 32°C.

ii) Capillary Column, coating: 5 percent phenyl 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, $d_f = 0.33$ µm.

iii) Detector: Flame ionization detector (FID) at 260°C.

iv) Air and H_2 Gas: 400 ml/min and 40 ml/min (10 : 1).

v) Carrier Gas: Nitrogen.

vi) Attenuation and Range: – 6 and 1.

vii) Injector: Off.

viii) Oven initial temperature: 50°C hold for 2 min.
Ramp 1 – 8.0°C/min to 140°C hold for 3 min.
Ramp 2 – 10.0°C/min to 250°C hold for 3 min.

ix) Run Time : 30.25 min.

x) Benzene RT 4.57 min, Search window : 1.00 s, 3.00 percent.

xi) Toluene RT 6.04 min, Search window : 1.00 s, 3.00 percent.

xii) Xylene RT 8.00 min, Search window : 1.00 s, 3.00 percent.

NOTE — Temperature programming and retention time (RT) of analyte may vary column to column to get appropriate resolution of analyte peaks. Injection volume and split may also vary according to nature and probable concentration of analyte present in the extract.

e) *Conditioning of sorbent tubes reuse* — All volatiles should be stripped from the sorbent tubes during the thermal desorption process leaving them clean and ready for reuse. The tubes should be resealed to ensure they are kept clean and ready for immediate reuse.

5.6 Calculation

Amount of analyte compound found on tube can be converted into mg/m³ by using the formula:

$$\text{Volume of air, in m}^3 \text{ (sucked through the adsorption tube)} = \frac{s \times t}{10^6}$$

where

s = sampling rate, in ml/min; and

t = sampling time, in min.

$$\text{Concentration, in } \mu\text{g/m}^3 \text{ (at ambient condition)} = \frac{C_2}{V_3}$$

where

C_2 = amount of anlyte compound found on sample tube in µg; and

V_3 = volume of air sucked through the tube, in m³.

Blank value is to be subtracted from the amount of compound found in the sample.

$$\text{Concentration, in mg/m}^3 \text{ at (STP)} = \frac{C \times 101.3\ (273 + T)}{273 \times P}$$

where

C_3 = concentration at ambient condition, in mg/m³;

T = temperature of the ambient air, in °C; and

P = atmospheric pressure, in kPa.

6 METHOD 3 (PASSIVE SAMPLING USING COCONUT SHELL ACTIVATED CHARCOAL PASSIVE DIFFUSION SAMPLER TUBES)

6.1 Principle

Controlled diffusion with an activated charcoal tube is used to enrich the substances targeted for analysis. A diffusion sampling system comprises a sampling layer and a diffusion path in front of this layer. The diffusion path is filled with porous cellulose acetate, to prevent convection currents. The sample is taken by exposing the tube to ambient air (protected from rain). During this exposure time, the analytes stream into the activated charcoal due to the concentration gradient between the air and the desorption layer hand are adsorbed by the charcoal. Once the sample has been collected, the tubes are taken to the laboratory where desorption is done and the substances dissolved in the CS_2 are analyzed using capillary gas chromatography (GC) equipped with flame ionization detector (FID).

6.2 Apparatus

6.2.1 *Sampling Device* — Passive diffusion sampler or Sorption diffusion tube (Fig. 10) of known dimensions (length, internal diameter etc), or standard make [*Orsa-5, Drager, Lubeck. Germany; Radiello diffusive sampler, Fondozione Salvatore Maugeri (FSM), Italy; SKC diffusive sampler series 5, PA, USA* or other equivalent make] filled with known amount (generally 400 mg or so but less than 600 mg) of coconut shell activated charcoal (crystalline form, mesh size between 30 and 80 mesh) and of known diffusion constant, uptake rate and desorption efficiency (for benzene toluene and xylene) provided with protecting hood and passive diffuser tube

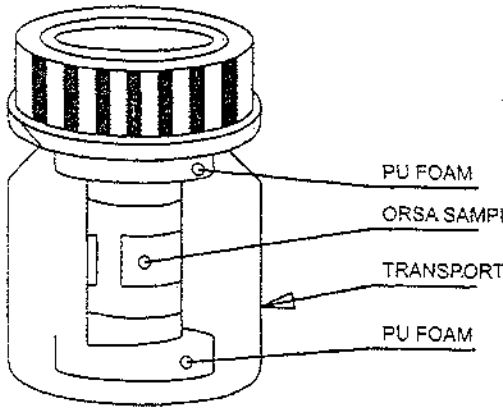


FIG. 10 PASSIVE DIFFUSION SAMPLER TUBE FOR BTX WITH TRANSPORTATION BOTTLE

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holder to protect the tube from rain and direct sunlight. Suitable diffusion barrier like acetate cellulose is provided at ends of diffusive sampler tubes. All the supporting parts that is diffusive tube body, tube holder, clip etc should be made of stainless steel or polycarbonate or polyethylene. The glass bottles (*see* Fig. 10) are used for storing and transporting the sample tubes before and after sampling to/from field and laboratory.

6.2.2 *Gas Chromatograph* — Any suitable gas chromatograph equipped with flame ionization detector (FID) with fused silica capillary columns having a length of 25 m or more, an internal diameter of 320 µm or below and with a stationary phase film thickness less than 1.5 µm as follows or equivalent may be recommended.

Capillary 624 Column : Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm

Capillary Column : Coating: 5 percent phenyl, 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, Film thickness (d_f) : 0.33 µm

Wall Coated Column : Coating: Fused Silica PONA CB, Length × ID : 50 m × 0.21 mm, Film thickness (d_f) : 0.5 µm

Capillary Column : Coating: Fused silica 100 percent dimethyl polysiloxane, Length × ID : 30 m × 0.32 ID, Film thickness (d_f) : 1.0 µm

6.3 Reagents

6.3.1 *Carbon Disulphide* (CS_2) — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 5 percent, Benzene 0.000 1 percent, H_2O < 0.02 percent.

6.3.2 *Benzene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

6.3.3 *Toluene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

6.3.4 *Xylene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

6.3.5 *Carrier Gas* — Helium or Nitrogen of purity > 99.9 percent, H_2O < 0.02 percent, Residues < 0.000 3 percent.

6.4 Sampling

6.4.1 *Sampling Location*

The sorption diffusion tube with tube hood is placed with the pillar at the height of 1.8-2.1 m at desired location. Site should be free from any obstacle to free flow of the air in the vicinity.

6.4.2 *Sampling Rate*

The sampling is performed through natural diffusion (sampling rate generally range between 5 and 10 ml/min). The analyte is adsorbed on to activated charcoal.

6.4.3 *Sampling Period*

The diffusive samplers are exposed in field for previously determined period [generally for a fortnight (15 days) or so].

NOTE — Exposure period may be shortened to a week or few days only for highly polluted area that is near gasoline emissions or dispensing station, garage or so.

6.4.4 *Sample Diffuser Tubes Labelling* — Sample tubes are labelled with a unique identification number.

6.4.5 *Blank and Sampled Tube Storage*

Before and after sampling the samples are stored and transported to field/laboratory in sealed glass bottle. Store these tubes in storage container having clean environment maintained at 4 - 5°C.

6.5 Procedure

6.5.1 *Calibration*

Prepare a mix stock standard solution of 50 µg/µl of benzene, toluene and xylene each gravimetrically, using a micro syringe in the elution solvent that is CS_2. Prepare further diluted solutions of concentration range of 10, 1.0, 0.10 µg/µl with CS_2 from stock standard in a clean vial. Make up to one millilitre solution. Introduce immediately 1 ml standard solution into the injector of GC directly and plot the curve between the concentration and response (peak area). A typical chromatogram of standard mixture is given in Fig. 11.

6.5.2 *Analytical Procedure*

Samples collected through passive technique (sorbent diffusion tubes) may be desorbed by conventional solvent (generally carbon disulphide). The samples extracted in carbon disulphide are analysed on Capillary GC equipped with flame ionization detector (FID). 1 µl of each standard solution is injected into the column. GC conditions are given as follows:

GC-FID conditions

Capillary column : Wall coated fused silica, PONA, d_f - 0.5 µm

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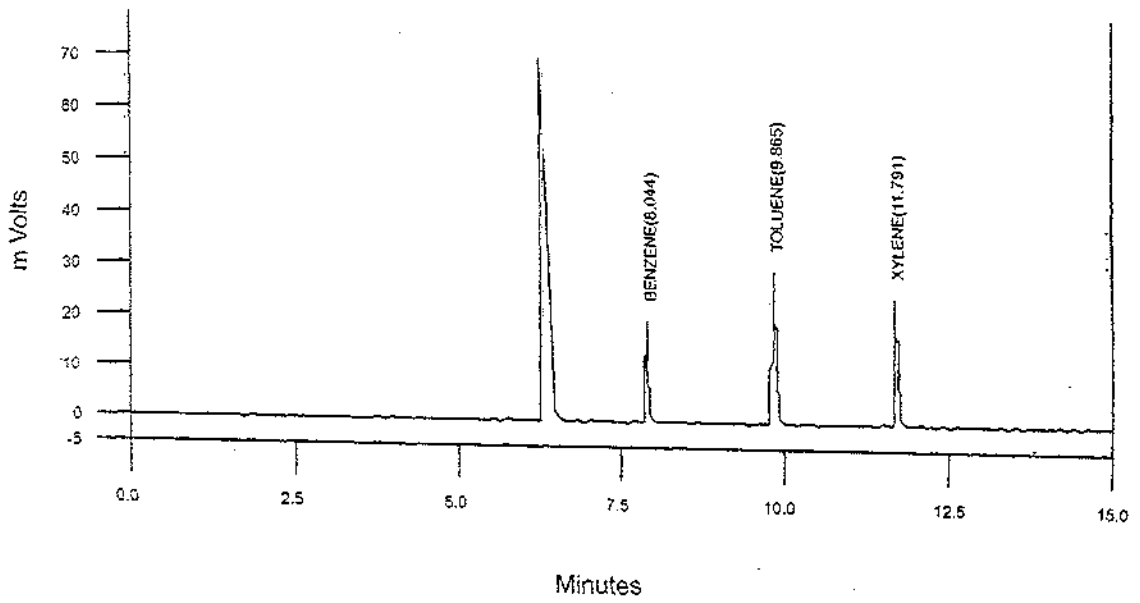


FIG. 11 STANDARD CHROMATOGRAM OF BENZENE, TOLUENE AND XYLENE
(Using CP_Silica PONA capillary column 50 m × 0.2 mm ID, film thickness d_f - 0.5 µm)

Length × ID : 50 m × 0.21 mm

Gas flow:

a) Nitrogen : 30 ml/min (Make up + column), (Column flow: 1 ml/min)

b) Hydrogen : 30 ml/min

c) Air : 300 ml/min

Temperature programming:

Injection port : 250°C FID : 300°C

Oven : 60° - 230°C @ 10°C/min

Typical Injection volume: 2 µl, total run time: 20 min.

- Benzene RT 8.06 min, Search window : 1.00 s, 3.00 percent
- Toluene RT 9.86 min, Search window : 1.00 s, 3.00 percent
- Xylene RT 11.78 min, Search window : 1.00 s, 3.00 percent

NOTE — Temperature programming and retention time (RT) of analyte may vary column to column to get appropriate resolution of analyte peaks. Injection Volume and split may also vary according to nature and probable concentration of analyte present in the extract.

6.6 Calculation

Calculations are given as follows:

$$C = (M - M_{blank}) \times K_{ORSA} \times 1\,000 / DE \times D \times t$$

where

C = concentration of the measured compound/ analyte, in mg/m³;

M = determined mass of the measured compound, in ng;

M_{blank} = weight of analyte organic vapour on blank tube, in ng;

K_{ORSA} = equipment constant of the diffusive sampler (that is 0.8 cm⁻¹ for Drager's ORSA 5 diffusive sampler);

1000 = conversion factor to get µg/m³ from, in mg/m³;

DE = desorption efficiency (that is 0.98 for Drager's ORSA 5 diffusive sampler);

D = diffusion coefficient in cm²/s at 25°C and 1 013 kPa (Benzene 0.085 9 cm²/s, Toluene 0.076 4 cm²/s, Xylene 0.072 7 cm²/s for Drager's ORSA 5 diffusive sampler); and

t = sampling duration, in seconds.

Alternatively following formulae may be applied for calculations:

$$C = (M - M_{blank})/DE \times U \times t$$

where

C = concentration of the measured compound, in µg/m³;

M = determined mass of the measured compound, in ng;

M_{blank} = weight of analyte organic vapour on blank tube, in ng;

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DE = desorption efficiency (0.98);

U = uptake rate in l/h at 25°C (benzene 0.387 l/h, toluene 0.343 l/h, xylene); and

t = sampling duration, in hours.

$$\text{Concentration (mg/m}^3\text{) at (STP)} = \frac{C_3 \times 101.3\ (273 \div T)}{298 \times P}$$

where

C_3 = concentration at ambient condition, in µg/m³;

T = temperature of the ambient air; in kelvin; and

P = atmospheric pressure, in kPa.

7 CONVERSION OF CONCENTRATION IN PPB

$$C\ [\text{ppb}] = C\ [\mu\text{g/m}^3] \times 24.1/M$$

where

24.1 = molar volume at 20°C in litres; and

M = molar mass.

8 INTERFERENCES AND LIMITATIONS

8.1 Interference from Sorbent Artifact and Minimizing Artifact Interference

Stringent tube conditioning and careful tube capping and storage procedures are essential for minimizing artifacts. System and sorbent tube conditioning must be carried out using more stringent conditions of temperature, gas flow and time than those required for sample analysis.

NOTE — A reasonable objective is to reduce artifacts to 10 percent or less of individual analyte masses retained during sampling.

8.2 Artifacts from Long-Term Storage of Blank Tubes

Literature reports of the levels of artifacts on (a) Carbotrap/pack™ C, Carbotrap/pack™ B; and Carbosieve™ SIII multi-bed tubes; and (b) Tenax® GR tubes by workers when sealing the tubes using metal Swagelok®-type caps and PTFE ferrules with multi-tube, glass storage jars are reported to be between 0.01 ng after 1-2 months and 0.1 ng after six months respectively. Artifact levels reported for other porous polymers are higher, for example, 5 ng for Chromosorb 106 after one week.

Some varieties of charcoal contain metals which will catalyze the degradation of some organic analytes during thermal desorption at elevated temperatures thus producing artifacts and resulting in low analyte recoveries.

8.3 Artifacts Generated During Sampling and Sample Storage

8.3.1 *Active Sampling*

Benzaldehyde, phenol and acetophenone artifacts are reported to be formed via oxidation of the polymer Tenax when sampling high concentration (100 - 500 ppb) ozone atmospheres.

Tenax should thus be used with an ozone scrubber when sampling low levels (< 10 ppb) of these analytes in areas with appreciable ozone concentrations.

Carbotrap pack type sorbents have not been reported to produce this level of artifact formation. Once retained on a sorbent tube, chemically stable VOCs, loaded in laboratory conditions, have been shown to give good recoveries, even under high ozone concentrations for storage of a year or more.

8.3.2 *Passive Sampling*

The uptake rate of diffusive samplers is not significantly affected by air movement, provided the air velocity exceeds a threshold value which depends on design. Generally, air velocities greater than 0.1 ms^{-1} and below 10 ms^{-1} are sufficient for the passive sampling.

8.3.3 Temperature correction for sampled air volume is to be made, if sampling is performed below 20°C or above 30°C .

9 DETECTION LIMITS AND MAXIMUM QUANTIFIABLE CONCENTRATIONS OF AIR POLLUTANTS

The method of detection limit is defined for each system by making seven replicate measurements of a concentration of the compound of interest near the expected detection limit (within a factor of five), computing the standard deviation for the seven replicate concentrations, and multiplying this value by 3.5 (the Student's t value for 99 percent confidence for seven values).

Detection limits for atmospheric monitoring vary depending on several key factors. They are:

a) Sample storage condition,

b) Injection volume,

c) Minimum artifact levels,

d) GC detector selection, and

e) Volume of air sampled. The volume of air sampled is in turn dependent upon a series of variables including SSVs, pump flow rate limitations and time-weighted-average monitoring time constraints.

Generally detection limits range about sub-ppb for BTX in one litre air samples using the GC-FID. Detection limits are greatly dependent upon the proper management of water for GC-capillary analysis of volatile organics in air using sorbent technology.

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9.1 Safe Sampling Volume (SSV)

Usually calculated by halving the retention volume (indirect method) or taking two-thirds of the breakthrough volume (direct method), although these two approaches do not necessarily give identical results. The latter definition is generally used.

9.2 Breakthrough Volume (BV)

The volume sampled when the amount of analyte collected in a backup sorbent tube reaches a certain percentage (typically 5 percent) of the total amount collected by both sorbent tubes.

10 QUALITY ASSURANCE (VALIDATING THE SAMPLE COLLECTION PROCEDURE)

10.1 Blanks

Artifact levels on laboratory and field blanks should be at the low or sub-nanogram level for carbonaceous sorbents and Tenax® and at the double digit ng level for Porapaks®, Chromosorb®. If artifact levels are considerably above this, careful attention must be paid to the tube conditioning and storage procedures.

Artifact peaks, which are 10 percent or more of the area of average component peaks, should be marked as artifacts in the final data reports.

10.2 Performance Criteria for the Monitoring Pump

Records of the pump flow rate delivered against the pump flow rate or pressure selected on a pump should be reviewed at least once per three months. If the performance of any pump has been found to have changed significantly over that time; for example if completely different pump settings are required to deliver the same pump flow rate, the pump should be serviced by the manufacturer or their approved agent.

10.3 Performance Criteria for the Solid Adsorbent Sampling of Ambient Air

There are four performance criteria, which must be met for a system. These criteria are:

a) A method detection limit of 0.5 ppb,

b) Duplicate (analytical) precision within 20 percent on synthetic samples of a given target analyte or vapor in a typical vapor mix in humidified zero air,

c) Agreement within 25 percent for distributed volume pairs of tubes taken in each sampling set, and

d) Audit accuracy within 30 percent for concentrations normally expected in contaminated ambient air (0.5 to 25 ppb).

10.4 Calibration of Response

The multi-level calibration procedures and calibration frequencies should be followed for this. It is also advisable to analyze a single level calibrant (i.e. tubes loaded with analyte masses in the mid-range of those expected to be collected during sampling) approximately every tenth sample during an analytical sequence, as a check on system performance.

10.5 Analytical Precision of Duplicate Pairs

The measure of analytical precision used for this method is the absolute value of the relative difference between two identical samples (same flow rate over the same time period from with a common inlet to the sample volume). The analytical precision is expressed as a percentage as follows:

$$\text{Analytical precision} = [(X_1 - X_2)/X \times 100]$$

where

X_1 = a measurement value taken from one of the two tubes used in sampling,

X_2 = a measurement value taken from the second of two tubes used in sampling, and

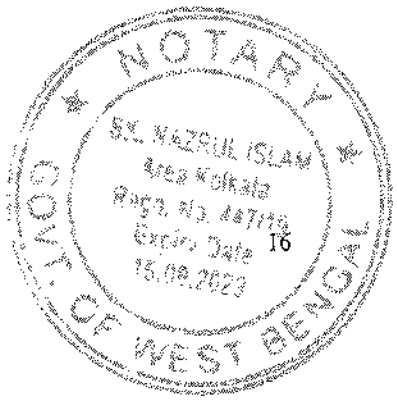
X = average of X_1 and X_2.

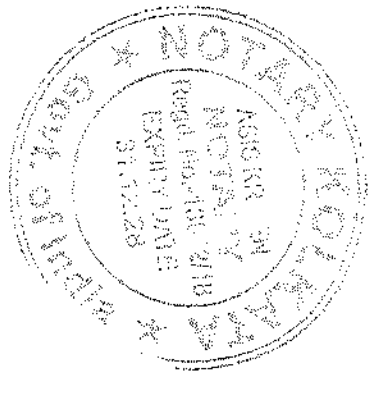
The analytical precision is a measure of the precision achievable for the entire sampling and analysis procedure including the sampling and thermal desorption process mentioned above and the analytical procedure.

10.6 Accuracy

A measure of accuracy is the degree of agreement with audit standards. Audit accuracy is defined as the relative difference between the measurement result and the nominal concentration of the compound:

$$\text{Audit accuracy, percent} = \frac{(\text{Spiked value} - \text{Observed value}) \times 100}{(\text{Spiked value})}$$





ANNEX A
(*Foreword*)

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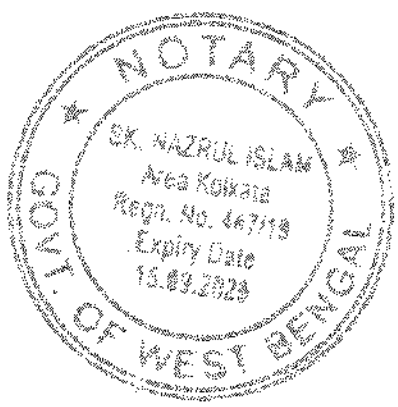
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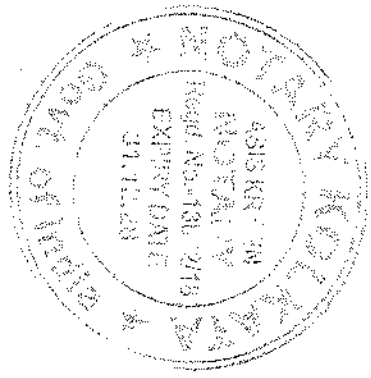
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Amendments Issued Since Publication

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ANNEXURE - K

~~ANNEXURE - J~~

~~103~~

National Ambient Air Quality Series:
NAAQMS/37/2012-13

Guidelines for the Measurement of Ambient Air Pollutants

VOLUME-II





CENTRAL POLLUTION CONTROL BOARD
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Parivesh Bhawan, East Arjun Nagar, Delhi- 110032
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केन्द्रीय प्रदूषण नियंत्रण बोर्ड
(भारत सरकार का संगठन)
पर्यावरण एवं वन मंत्रालय
Central Pollution Control Board
(A Govt. of India Organisation)
Ministry of Environment & Forests
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FOREWORD

Air quality plays a vital role for health, safety and security of mankind and ecology. With increase in urbanization and industrialization, the air quality shows a deteriorating trend that poses threat to survival of many species, service life and aesthetic beauty of materials. Under the provisions of the Air (Prevention & Control of Pollution) Act, 1981, CPCB has notified National Ambient Air Quality Standards (NAAQS) in 2009. The revision aims at implementation of uniform air quality standards across the country, irrespective of the land use pattern.

The measurement methods prescribed in the notification for these parameters include combination of gravimetric, wet-chemical and continuous/real-time instrument techniques. To achieve uniformity in monitoring, quality assurance and quality control, data reporting as prescribed in NAAQS 2009, the CPCB has documented the following guidelines:

- Volume –I: Guidelines for the Measurement of Ambient Air Pollutants (Manual sampling and analyses), and
- Volume-II: Guidelines for the Measurement of Ambient Air Pollutants (Real time sampling and analyses)

Efforts made by the Scientists of Air Laboratory in compiling, collating and documenting these guidelines under the supervision of Dr. D. Saha, Scientist-D & I/c Air Laboratory and guidance of Shri J.S. Kamyotra, Member Secretary, CPCB is duly acknowledged.

I believe that these guidelines would be useful for bringing uniformity in air quality monitoring and data collection and compilation.

(Mira Mehrishi)

May 18, 2012

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/15 Expiry Date 31.12.2016

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Contribution

Overall Guidance & Supervision	Sh. J. S. Kamyotra
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Laboratory experiments & Drafting of Guidelines	Sh. D. C. Jakhwal
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Background

Guidelines for Sampling and Measurement of notified Ambient Air Quality Parameters (NAAQS 2009)

Under the provisions of the Air (Prevention & Control of Pollution) Act, 1981, the CPCB has notified fourth version of National Ambient Air Quality Standards (NAAQS) in 2009. This revised national standard aims to provide uniform air quality for all, irrespective of land use pattern, across the country. There are 12 identified health based parameters, which are to measure at the national level and with a view to have data comparison, need for uniform guidelines for monitoring, sampling, analyses, sample flow chart, data sheet based on standard method has been felt.

The methods prescribed in the notification for respective parameters are the combination of physical method, wet-chemical method and continuous on-line method. Therefore, to meet the NAAQS requirement, a combination of both manual and continuous method is invariably required at each monitoring location, besides good laboratory set up and infrastructure.

In addition to the above, an in house exercise for applicability of all prescribed/ recommended analytical methods was also felt necessary. After review and demonstration in the Central Laboratory, Delhi, guidelines are being prepared and documented, as under:

1. Volume -I: Guidelines for manual sampling and analyses (along with sample flow chart and data sheets);

2. Volume-II: Guidelines for real time sampling and analyses

Note: Guidelines are laboratory and infrastructure specific thus may not be applicable uniformly and need to develop based on infrastructure and expertise

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NATIONAL AMBIENT AIR QUALITY STANDARDS (2009)

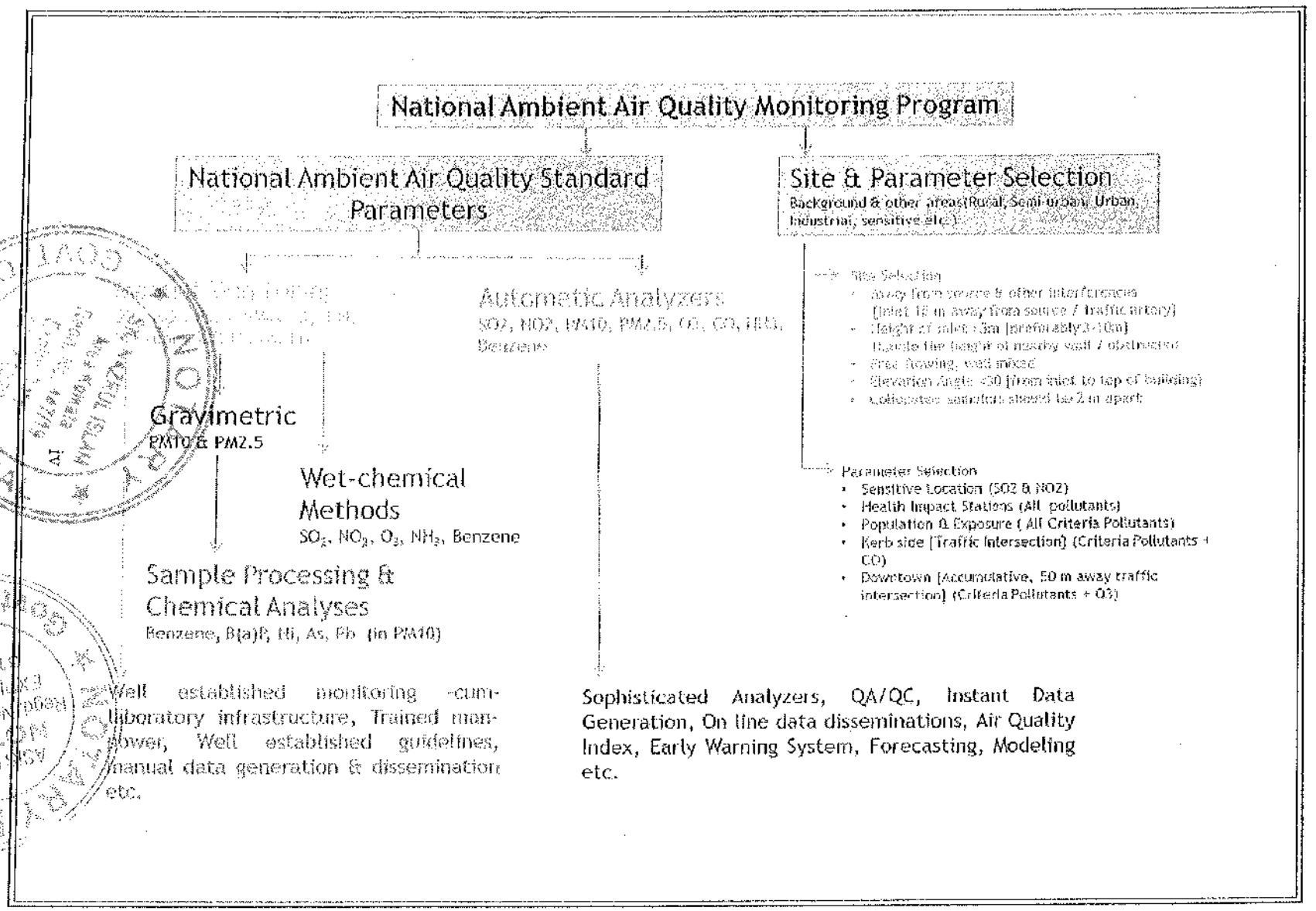
Pollutants	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual *	50	20	-Improved West and Gaeke Method
	24 Hours **	80	80	-Ultraviolet Fluorescence
Nitrogen Dioxide (NO_2), µg/m³	Annual *	40	30	-Jacob & Hochheiser modified ($NaOH$-$NaAsO_2$) Method
	24 Hours **	80	80	-Gas Phase Chemiluminescence
Particulate Matter (Size less than 10µm) or PM_{10}, µg/m³	Annual *	60	60	-Gravimetric
	24 Hours **	100	100	-TEOM
				-Beta attenuation
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m³	Annual *	40	40	-Gravimetric
	24 Hours **	60	60	-TEOM
				-Beta attenuation
Ozone (O_3) µg/m³	8 Hours *	100	100	-UV Photometric
	1 Hour **	180	180	-Chemiluminescence
				-Chemical Method
Lead (Pb) µg/m³	Annual *	0.50	0.50	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
	24 Hours **	1.0	1.0	-ED-XRF using Teflon filter
Carbon Monoxide (CO), mg/m³	8 Hours **	02	02	-Non dispersive Infrared (NDIR) Spectroscopy
	1 Hour **	04	04	
Ammonia (NH_3), µg/m³	Annual *	100	100	-Chemiluminescence
	24 Hours **	400	400	-Indophenol blue method
Benzene (C_6H_6), µg/m³	Annual *	05	05	-Gas Chromatography (GC) based continuous analyzer
				-Adsorption and desorption followed by GC analysis
Benzo(a)Pyrene (BaP) Particulate phase only, ng/m³	Annual *	01	01	-Solvent extraction followed by HPLC/GC analysis
Arsenic (As), ng/m³	Annual *	06	06	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m³	Annual *	20	20	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper

* Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigations.

NOTARY SK. NAZRUL ISLAM Regd No. 44/19 Regn. No. 44/19 Expiry Date 5/12/2029


National Ambient Air Quality Monitoring Program
National Ambient Air Quality Standard Parameters
Site & Parameter Selection
Background & other areas(Rural, Semi-urban, Urban, Industrial, sensitive etc.)
Automatic Analyzers
SO2, NO2, PM10, PM2.5, O3, CO, HCs, Benzene
Gravimetric
PM10 & PM2.5
Wet-chemical Methods
SO2, NO2, O3, NH3, Benzene
Sample Processing & Chemical Analyses
Benzene, B(a)P, Ni, As, Pb (in PM10)
Site Selection
Away from source & other interferences (inlet 1m away from source / traffic artery)
Height of inlet >3m (preferably 3-10m) Handle the height of nearby wall / obstruction
Free flowing, well mixed
Elevation Angle: <30 (from inlet to top of building)
Collocated samplers should be 2 m apart
Parameter Selection
Sensitive Location (SO2 & NO2)
Health Impact Stations (All pollutants)
Population & Exposure (All Criteria Pollutants)
Kerb side (Traffic Intersection) (Criteria Pollutants + CO)
Downtown (Accumulative, 50 m away traffic intersection) (Criteria Pollutants + O3)
Well established monitoring -cum-laboratory infrastructure, Trained man-power, Well established guidelines, manual data generation & dissemination etc.
Sophisticated Analyzers, QA/QC, Instant Data Generation, On line data dissemination, Air Quality Index, Early Warning System, Forecasting, Modeling etc.

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National Ambient Air Quality Monitoring Program

National Ambient Air Quality Standards (Parameters & Methods)

Manual Method	Parameters	Automatic Method
Improved West & Gaeke Method	SO_2	Ultra-violet Fluorescence
Modified Jacob & Hochheiser Method	NO_2	Chemiluminescence
Chemical (Buffered KI) Method	O_3	UV-Photometric , Chemiluminescence
Indo-phenol Blue Method	NH_3	Chemiluminescence
	CO	Non-dispersive Infrared Spectroscopy
Gravimetric Method	$PM_{2.5}$	TEOM, Beta Attenuation
Adsorption - desorption followed by GC	Benzene	GC Based Continuous Analyzer
Gravimetric Method	PM_{10}	TEOM, Beta Attenuation
AAS / ICP after sampling using EPM 2000 or ED-XRF using Teflon filter	Ni, Pb	
AAS / ICP after sampling using EPM 2000	As	
Solvent Extraction followed by HPLC / GC Analysis	BaP	

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3.	Guidelines for Automatic Measurement of Carbon Monoxide (CO) in ambient air (Non-Dispersive Infrared Method)	16-22
4.	Guidelines for Automatic Measurement of Oxides of Nitrogen (NO - NO_2 - NO_x) and Ammonia (NH_3) in ambient air (Chemiluminescence Method)	23-34
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Guidelines for Automatic Measurement of benzene (BTX) in ambient air (Gas Chromatography based Continuous Method)

1.0 Purpose

The purpose of this protocol is to provide guidelines for monitoring of Benzene (Benzene, toluene, Ethyl benzene M+P xylene and O-Xylene) in ambient air by online real time monitoring instruments.

2.0 Principle

The principal of operation of volatile organic compound is based on chromatographic separation in the gaseous phase of measured compound, coupled with a photo ionization detector for detection of these compounds. The sampling gas is drawn into a sampling tube at regulated flow. This is heated and ventilated by carrier gas, this way desorption is done. Transfer of adsorbed compound from sampling tube to pre concentration tube is carried out with a carrier gas. The sampled VOC are re adsorbed in very small volume of adsorbent, which is known as pre concentrator. A strong and fast increase in temperature of graphitized carbon at 350 c together with ventilation of carbon with carrier gas enables desorption of the compounds, which are injected into column. The nitrogen is introduced at inlet of pre concentration tube, which causes displacement of sample in the column. The separation of each compound takes place in this column. The output is measured by a PID detector and the concentrations are displayed on the instrument.

3.0 Instrument/Equipment

VOC Analyser - for measurement of Benzene in the ambient air is used for the measurement of this compound.The analyser should be complete with analyser section, sample pump, amplifier/control section, meter, and recording system. The analyser shall meet the performance specifications as prescribed.

4.0 Sampling

When sampling the outside ambient from an enclosure, utilize a sampling line or probe extending at least 1 metre from the enclosure, and protected against the entry of precipitation. Place the analyser in an enclosure with atmospheric control so the temperature remains constant at 25° C ± 3° C. Record the temperature and pressure of the atmosphere sample.

4.1 Operation of the Analyser

Connect the analyser with sampling line. Check if dust filter is required to be replaced.

Put on the power supply. Analyser is pre programmed or can be re-configured in configuration mode where range, date time, language, measuring cycle etc can be programmed. Return to main menu. Put the analyser in instantaneous mode and let the instrument to come out of warm up mode. Put the instrument on sample mode it will start the measurement of VOC present in the ambient air. The instrument will monitor Benzene, toluene, Ethyl benzene M+P xylene. Data will log in station computer.

5.0 Calibration

5.1 Requirements - Prior to Calibration or Zero/Span Check

a) The analyzer under calibration should be in operation for at least overnight so that it is fully warmed up and stabilized.
b) Allow the analyzer to sample test atmosphere with known concentration of pollutants.
c) During calibration, the analyzer should be operating in its normal sampling mode and it should sample the test atmosphere through all filters, scrubbers, conditioners, and other components used during normal ambient sampling and through as much of the ambient air inlet system as is practicable.
d) Complete all operational adjustments of the analyzer.

5.2 Standards and Equipment

The calibration of ambient air quality measuring BTX analyzer require a stable, homogeneous gas mixture having the concentration suitable for measuring range of the analyzer to be calibrated. All such test concentrations must be derived from local or working standards that are certified and traceable to primary standards. Built in bench or dilution system is used for calibration.

5.3 Pressure Regulators for the BTX Cylinders

A two-stage regulator with inlet and delivery pressure gauges will be required for the Benzene calibration standard cylinder. Procure regulators for each cylinder if individual cylinders are to be used for individual calibration points. Ensure the cylinders have a non-reactive diaphragm and suitable delivery pressure. Consult the supplier from whom the BTX cylinders are to be obtained for the correct cylinder fitting size required for the regulator.

5.4 Flow Controller/calibrator

The flow controller can be any device (valve) capable of adjusting and regulating the flow from the calibration standard. If the dilution method is to be used for calibration, a second device is required for the zero-air. For dilution, the controllers shall be capable

of regulating the flow ± 1%.All the modern dilution system/calibrators have the high precision and accuracy in maintaining the critical flows. The calibrator has the facility to calibrate the instrument with gas cylinder or permeation bench. Out put of the calibrator is connected with the span port of the analyzer.

5.5 Zero Gas

Zero gas is defined as gas, which does not contain the parameters to be monitored (any impurity). The concentration of zero gas must be zero in respect of pollutant being calibrated.

5.6 Span Gas (Calibration Gas)

The span gas must be capable of providing an accurate, stable and reliable concentration of measured gas. Span gas can be gas mixtures or permeation tubes. What so ever may the span source it must be certified and traceable to NIST. The working standard should also be verified with CRM.

5.7 Zero and Span Calibration Procedures

a) Zero Calibration

Switch the analyzer at ZERO mode and connect zero gas of (N_2 of 99.995% purity) from external source. After the reading has stabilized, check the display of zero value. In case of deviation, adjust the ZERO value.

b) Span Calibration

After the ZERO calibration has been done, connect the span gas cylinder or permeation bench, of known concentration of Benzene. Switch on the analyzer to SPAN mode. Open the regulator valve of the cylinder and the analyzer will start measuring the span gas concentration. Let the instrument run for three to four cycles for stabilization of results. Observe the chromatogram of the analyzer, and in case there is any variation in the measured value and SPAN gas concentration, adjust the reading of the analyzer to the SPAN gas concentration value. Let it be stabilized again for at least three cycles. On obtaining a desired stable SPAN concentration the instrument should be flushed out with zero air for one or two cycles. After ZERO and SPAN calibration, switch the analyzer to SAMPLE mode. Now, analyzer will measure the benzene and its compounds as per its configuration in the ambient air.

c) Multipoint Calibration

Multipoint calibration consists of three or more test concentrations including zero concentration. A concentration between 80% and 90% of the full-scale range of the

analyzer under calibration, and one or more intermediate concentrations spaced approximately equally over the scale range are required. Multipoint calibrations are used to establish or verify the linearity of analyzer on initial installation and after any major repair. The analyzers have zero and span adjustment controls, which should be adjusted based on the zero and highest test concentration to provide the desired scale range within the analyzer's specifications. Zero and span controls adjustment often affect the zero/span value, so the adjustments may have to be repeated several times to obtain consistent values i.e. zero or span concentrations.

6.0 Calculation

To convert ppb volume fraction to micrograms per cubic metre, use the following equation:

$$\rho_1 = \frac{\rho_2 \times m_r \times 298\rho}{24450 \times T \times 101.3}$$

Where:

ρ_1	=	is the Benzene mass concentration, in microgram /m^3
ρ_2	=	the Benzene mass concentration, ppb volume fraction
m_r	=	is the molar mass of Benzene, (78 g/mol)
298	=	is the standard absolute temperature, in Kelvin
ρ	=	is the measured gas pressure, in kilopascals
24. 450	=	is the molecular volume of 1 mole, in millilitres
T	=	is the measured absolute gas temperature, in Kelvin
101.3	=	is the standard gas pressure, in kilopascals

7.0 Precautions

- Operate the analyser in air- conditioned and dust proof room. The temperature should be between 20-25 degree Celsius
- Follow standard safety practices for the handling and storage of calibration gas cylinders & the installation and use of the analyser.
- Do not expose calibration cylinders to direct sunlight or excessive heat.
- Maintain the same sample cell flow rate during sampling and calibration. Use the same sample pump.

8.0 Quality control

There should be a quality control plan, which allows for modification of the frequency and number of points required for calibration. Such a quality control programme assures the accuracy and reliability of the air quality data collected. The calibration programme must include information of dates of calibration, atmospheric conditions,

control setting and other pertinent data.

The analyzer should be calibrated or re-calibrated:

(a) on its initial installation;
(b) following its relocation;
(c) after every repair or service;
(d) if an interruption in operation of more than a few days; and
(e) on detection of malfunction or changing of the analyzer in calibration.

In routine operation calibration of analyzer should be checked periodically defining period (once a week) to maintain close agreement between the calibration values used to convert analyzer responses to concentration measurements and the actual response of the analyzer. The frequency of routine periodic calibration is a matter of judgment and is a trade-off among several considerations, including:

(a) the inherent stability of the analyzer under the prevailing conditions of temperature, pressure, line voltage, etc. at the monitoring site;
(b) the quality of the ambient measurement needed;
(c) the risk of collecting invalid data because of a malfunction or invalid data or response problem with the analyzer that would not be discovered until the calibration is carried out.

When a new monitoring instrument is installed, zero and span calibration should be very frequent, may be daily. After obtaining enough data on the drift performance of the analyzer, the calibration frequency can be adjusted to provide a suitable compromise among the various considerations mentioned above. To facilitate the process of determining calibration frequency, it is strongly recommended that control charts should be used to monitor the zero and span drift performance of each analyzer. If the drift becomes excessive, then the corrective action has to be taken.

9.0 Record

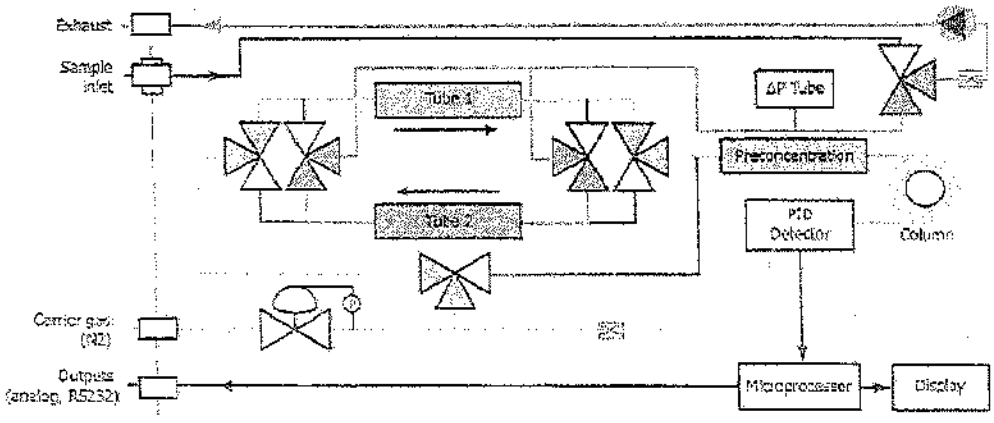
The calibration record of analyzer with details like calibration data, calibration equation, analyzer identification, analyzer location, calibration standards used and their traceability, identity of calibration equipment used shall be maintained by the concerned laboratory staff.

10.0 References

1. Quantitation by Portable Gas Chromatography: Mass Spectrometry of VOCs Associated with Vapor Intrusion by Justin D. Fair, WilliamF. Bailey, Robert A. Felty, Amy E. Gifford, Benjamin Shultes, and Leslie H. Volles

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FLOW DIAGRAM OF BTX ANALYSER



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DISCLAIMER

The guidelines for the measurement of Ambient Air Pollutants (NAAQS 2009) are based on the reference methods (Viz. International Standards Organization and Inter Society Committee) based on field and laboratory experiences.

Efforts have been made to make it user friendly and easily understandable, however comments and suggestions towards its improvement are solicited.

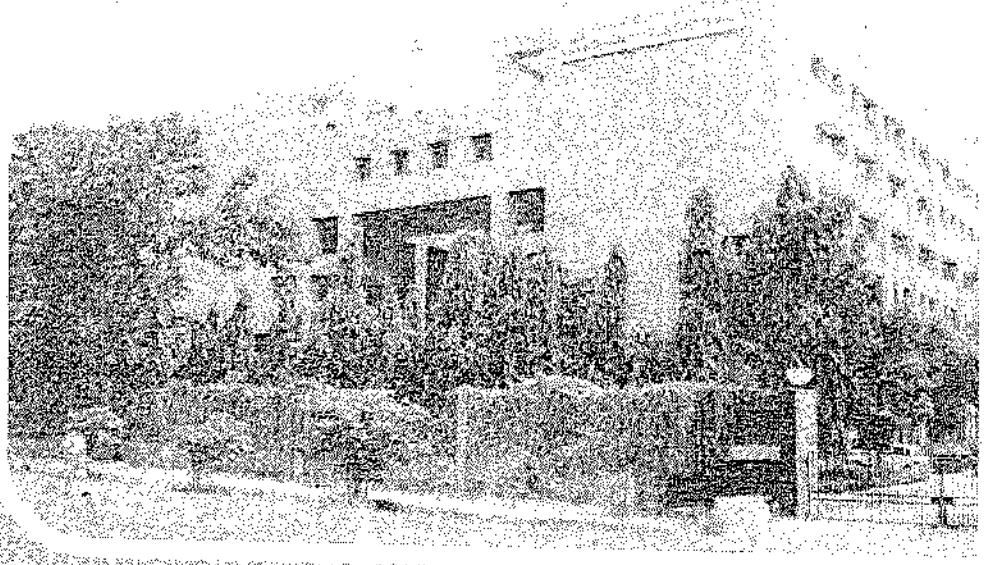
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NOTARY GOVT. OF WEST BENGAL
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Expiry Date
15.09.2023

ANNEXURE - 2

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A Clean PARIVESH for all is our goal

VARDAN ENVIROLAB LLP, MANESAR HARYANA

QUALITY PROCEDURE MANUAL (VEL/QPM/02)

Procedure No. VEL/QSP/7.4/01

Procedure for the "Transportation, Receipt, Handling, Protection, Storage, Retention and / or Disposal of Test Items"

7.4.1 Scope:

This procedure is applicable to all test item received for analysis from internal as well as external customers and also internal movement of the test item within the laboratory for analysis.

7.4.2 Responsibility & Authority:

Technical Manager, In-Charge Customer Support

7.4.3 Reference:

ISO/ IEC 17025:2017 Clause No.7.4
APHA 23rd Edition

7.4.4 Procedure:

7.4.4.1 The samples from the sampling team or customer or through courier or post are received at the sample receipt section by the authorized person in the Sample Booking Section.

7.4.4.2 Vardan EnviroLab (VEL) LLP has arrangement to store the sample at the desirable environmental conditions. Such type of samples are stored or conditioned before the start of the sample. The integrity of the sample is protected by marking it properly and by providing proper code number to it.

7.4.4.3 Laboratory has procedure to identify the sample or test items. The system remains the same throughout the life of the product or test item in the laboratory. Samples received by the sample booking section are coded; the code number for samples remains the same as long as the sample related queries are made. The coding of the sample or test items is done as follows.

Company Name / Sample Group Code / Year Month Date Sr. No.

For Example: VEL/W/221215001

Sample Group as per present testing activities is as mentioned below:

Product	Group/ Sub-group	Sample Group Code
Pollution & Environment	Bioassay, MSW, Soil/ Sediments, Used/Waste Oil, Wastes	EP
	Waste Water	WW
Water/ Residues in Water	Drinking Water, Packaged Drinking Water, Packaged Drinking Water, Industrial Water, Construction Water	W
	Surface Water	SW

Atmospheric Pollution	Ambient air, Fugitive emission, Work Environment and Indoor Air Quality	A
	Ambient Noise, Source Noise	N
	Meteorological Parameters, Stack emission, Others	AP
Ores & Minerals	Limestone & Dolomite	OM
Solid Fuels	Coal	SF
Nutraceuticals & Functional Foods	Nutraceuticals & Functional Foods	FA
Food & Agricultural Products	Food & Agricultural Products	
Residues in Food Products		
Drugs & Pharmaceuticals	Drugs & Pharmaceuticals	DR/DF
Cosmetics & Essential Oils	Cosmetics & Essential Oils	CE
AYUSH	AYUSH Products	AY
Animal Food & Feeds	Animal Food & Feeds	AF

Sample no. and report no. is different

The sample /material are identified by the group / category of the product.

7.4.4.4 Upon receipt of samples the authorized person verified, looks into any deviations or suitability of the item for test as relevant to the sample as below:

- Name of the customer/ party
- Postal address
- Te ephone No.
- Contact person
- Sample description
- Condition of the Sample
- Sample seal is intact
- Tests required

- The test method or test protocol provided / specified by the customer is checked
- Quantity of the sample
- The number of parameters to be carried out
- Testing facility is available for the received sample
- Sufficient quantity of sample received for testing
- Storage condition of sample
- Any deterioration due to transportation or handling is properly checked in the sample
- Any loss or damage observed to the sample due to the handling of sample
- Any abnormality in the shape of the sample if for physical analysis is properly checked
- Date of receipt
- Job No./Code No. assigned to the sample

If any of the above is found not satisfying the requirement, the sampling person/customer is immediately informed of the matter either telephonically, through e-mail or personally as possible to contact him. After getting clarification from the customer/sampling person, the sample is allowed for the processing of the coding.

When the customer requires the item to be tested acknowledging a deviation from specified conditions, the laboratory informs the customer that it shall include a disclaimer in the report indicating which results may be affected by the agreed deviation.

7.4.4.5 For unambiguous identification of the sample, the customer support cell gives a unique ID to sample. The sample undergoes booking process & coded as per the above system.

- Name of company (VEL) placed on 1st number, then category code of sample is placed in 2nd number, sample-booking year in two digits in 3rd Number, sample-booking month in two digits in 4th Number, sample-booking date in two digits in 5th Number and sample-booking serial number of the day for that particular group or category is placed at 6th number of the coding system in four digits.

1st	2nd	3rd	4th	5th	6th
Name of company	Group	Year	Month	Date	Number
VEL	W	22	12	15	1001

- The coding system once given to the particular sample is known by that number till the sample is remaining in the laboratory or for any query of the sample.
- The laboratory personnel in the laboratory know the sample by the sample code identification.
- The customer is not allowed to know the sample code number till the report is dispatched to the customer. In case of any query regarding his sample, he shall be connected to the authorized person (Customer care executive) the dealing person knows the sample by the description of the customer address and contact number. The address and contact number of the customer are kept at the sample booking counter.

- The sample inside analytical section is identified by its code number only. The confidentiality of the customer is maintained by this system.
- Neither the customer knows the sample code nor does the chemist know the customer details because of this coding system.
- Before taking the sample under coding process, the sample is properly checked for its requirements of fitness to accept.

Sample Booking Cell is also maintaining sample receipt checklist (7.4 F-01) to ensure the integrity of the samples. Sample Booking register (7.4 F-07) and Job Allotment Register (7.4 F-05) is maintained by Customer Care Executive. Technical Manager of all section allots samples to the analyst for Testing and maintains the sample receipt and allotment register (7.4 F 04). The coded and allotted samples are sent to the Analyst/microbiologist for testing. Analyst Work Sheet (AWS), 7.4 F-06 including parameters details to be tested. All care is taken during the transit to prevent the samples from any deterioration damage or loss. The samples forwarded to the lab, are kept in the in appropriate shelves in conditions as given in test methods or requirements given by customer or standards methods of preservation as applicable to samples. Adequate precautions and care is undertaken to safeguard the

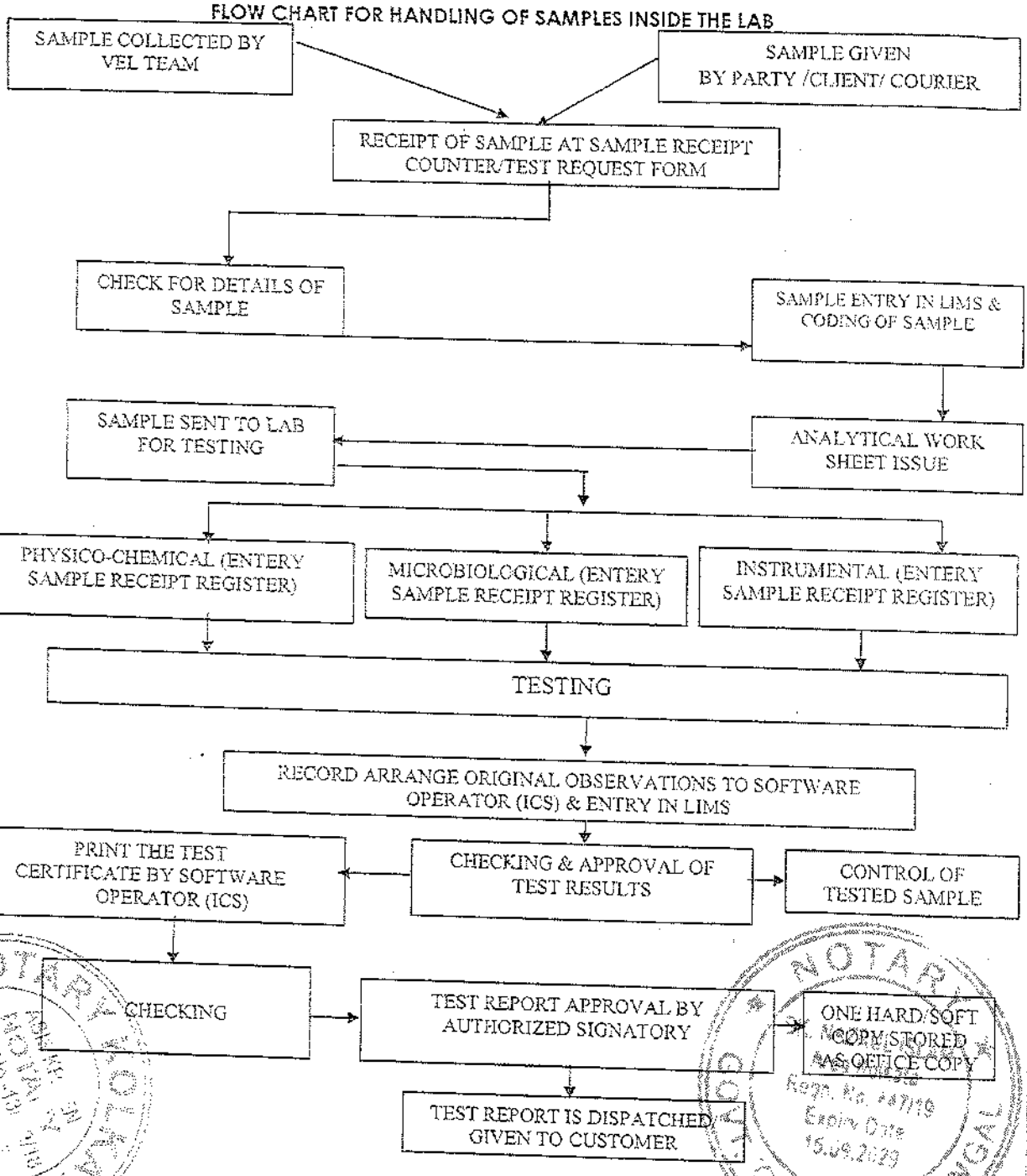
samples from any damage and deterioration, during storage and testing in the laboratory.

- Perishable samples are sent to the testing laboratory immediately and undertaken for testing.
- Sample requiring refrigeration is preserved in the refrigerator as and when received in the laboratory.
- Samples where microbiological testing other than chemical tests are also required to be carried out, it is desired to have it in separate containers to avoid any external contamination.
- It is advised to procure the samples for microbiological testing in separate sterilized glass bottles supplied by the organization.
- In case of Retesting of microbiological Sample, it is done only on fresh Sample by spiking the sample.
- The samples during the testing period remain in the custody of the concerned analyst. The analyst takes care of the sample during the analysis. After the samples have been tested, stored in the deep freezer till the disposal and building material samples are stored in controlled conditions with custody of Technical Manager.
- Perishable samples are destroyed immediately after issue of test report.
- Non-perishable samples are retained for a period of 30 days from the date of issue of the test report.
- The remaining sample is returned to the customer, if requested by the customer / party at the time of Reporting the sample.
- The samples are disposed-off under the supervision of the Technical Manager and maintains the records of sample disposal (7.4 F-08)

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FLOW CHART FOR HANDLING OF SAMPLES INSIDE THE LAB



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7.4.4.6 Disposal of Testing items and related accessories

Technical Manager is responsible for Disposal of sample. The testing personnel entrusted with the samples shall retain the remnants after testing for specified period of time period defined by the customer in appropriate environmental conditions as given below-

Type of sample	Retention Time
1. Water sample	one month
2. Waste Water	one month
3. Air & stack (Filter paper, thimbles & containers)	one month
4. Soil	one month
6. Food and Agriculture	one month
5. Animal Food and Feed	one month
6. Nutraceutical and Functional Food	one month
7. Solid Fuels	one month
8. Ores and Minerals	one month
9. Cosmetic and Essential Oils	as per IP/BP
10. AYUSH Products	as per IP/BP
11.Drugs and Pharmaceuticals	as per IP/BP

- After reporting, remnants have been passed on to Technical Manager for storage till the retention time.
- At the time of testing, special care is taken to refrigerate (< 4-degree centigrade temperature) the sample after completing days' work.
- After testing preserves all the critical samples in special cup-board in deep fridge (< 4-degree centigrade temperature) so that no change of sample property takes place.
- Food samples are disposed-off at designated sites of Municipal Solid Waste or authorized vendors.
- Microbiology samples are disposed-off or given to bio medical waste sites or authorized vendors.

- **Disposal of Waste Water and Reagents:**
  - Hazardous chemical reagent like KCN, CNBr, are firstly neutralized by sodium thiosulphate and adjusted to PH 7 by acid or alkali and then disposed.
  - In case of acid, alkali and waste water they are neutralized by trating and then adjusted to PH 7
  - Complex metric salt as EDTA, Ceric ammonium sulphate etc. are oxidized or reduced as required and then adjusted to PH 7 then drained off.
- **Disposal of Microbiological waste:**
  - All used media, culture etc. are sterilized auto clave at 121°C (15lb/m²) for 30 minutes.
  - After autoclaving, collect the media in a big vessel and allow cooling and mixing with water.
  - Adjust PH 7.0°C acid / alkali
  - Add any disinfectant solution to the culture tube & petridishes.
  - After autoclaves Bio hazard daily or synergy.

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- **Disposal of Samples**
  - Syrups, Oral suspension and capsule are made to slurry with H_2O & adjusted to PH 7 by acid / alkali.
  - Ophthalmic solution, Injections, Ophthalmic cream and IV fluid-Open the container and pour in big bucket then adjust PH 7 and then drained off.
  - Cosmetics like cream, dye, powder, lotion, shampoo, lipstick all pour in a bucket then adjust PH 7 then drained off.
  - Food Samples shall be collected in bags and given to the vendor who collects garbage for dumping.
  - Residual Pesticides, antibiotics etc & other hazardous liquid samples are being treated in ETP installed in the premises.

Disposal Procedure for Chemical testing items and accessories

a. **Disposal procedure of Water, Waste Water Sample and General Lab Effluents**
Water samples and general lab effluents (titrated solutions & solution remaining after colorimetric analysis, laboratory reagents after expiry and lab washing water) are firstly neutralize with the help of lime in case of acidic solutions and use alum in case of alkaline condition, in a container, check the pH of the treated water and then directly disposed with large quantity of water in lab drain. Record of same is maintained in formats.

b. **Disposal procedure of Heavy Metal solutions**
Metal Solution (Standard solution of Mercury, Arsenic, Selenium, Chromium, nickel, zinc, cadmium,) are stored in open container on roof top for evaporation, after complete evaporation, the metal solid sample is given to scrap purchaser.

c. **Disposal procedure of soil and Minerals**
Soil and Air filter paper, Thimbles are disposed-off at authorized municipal sites.

d. **Disposal procedure of Broken Glassware, Empty Containers of Chemicals**
They are collected in a separate container and kept in isolated place and sold to scrap purchaser

e. **Disposal Procedure for Biological testing items and accessories & Contaminated Glassware**
  - As safety measure, wear latex gloves and disposable face mask.
  - Collect all microbiologically contaminated materials including petri-plates, tubes, lyophilized cultures ampules culture slants / stabs, flasks.
  - Put all the material into Autoclavable poly bags, add some disinfectant and put the bags into vertical autoclave.
  - Run the vertical autoclave according to SOP for 30 minutes

- After completion of Autoclaving, the waste is given to an approved authorized vendor for proper disposal and record of same is maintain. The reusable glassware is washed as per procedure for washing of glassware.

f. **Disposal procedure for contaminated plastic ware**

- Take all the disposable material into autoclavable plastic bag and put all the disposable contaminated material into vertical portable autoclave according to SOP and send all the material to the approved authorized vendor.
- Disposal of contaminated mops and latex gloves
- The contaminated mops/tissue papers and latex gloves are used over the disinfected cultures on surfaces during any spillage are put in poly bags before putting in discard bins and sent all the Material to the approved authorized vendor for disposal.
- Disposal of Biological indicators
- The biological indicators run as positive controls or indicators showing growth after running in sterilization cycles (if any), is discarded after autoclaving along with other discard.

7.4.5 Records:

Sr. No.	Description	Form & Format No.
1.	Sample Receipt Checklist	7.4 F 01
2.	Sample Booking register	7.4 F 07
3.	Sample Allotment Register	7.4 F 05
4.	Sample Receipt Register	7.4 F 04
5.	Job Order Sheet	7.4 F 06
6.	Sample Disposal Record	7.4 F 08

*Technical Record Refer to VEL/QSF/01, 02, 03 & 04

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 46719 Expiry Date 18/04/2025 GOVT. OF WEST BENGAL

ANNEXURE- 'M'

~~ANNEXURE-1~~

~~114~~ **Annexure R1/3** ~~36~~

MINUTES OF 3rd MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR ENVIRONMENT APPRAISAL OF COAL MINING PROJECTS HELD ON 16th & 17th NOVEMBER 2023 THROUGH HYBRID MODE.

Confirmation of the Minutes of 2nd Meeting of the EAC (Coal): - The minutes of the 2nd Meeting of the EAC (Coal) held on 30th October 2023 has been confirmed by the Chairman.

Opening Remarks of the Chairman: - At the outset, the Chairman welcomed the Expert members & other participants and requested to start the proceeding as per the agenda adopted for this meeting.

Consideration of Proposals: The 3rd meeting of the Expert Appraisal Committee (EAC) for coal mining projects was held on 16th & 17th November 2023 through Video Conferencing/**Hybrid**. The EAC considered proposals as per agenda adopted for the meeting incorporated for discussion with chair. List of participant attended the meeting is annexed. The details of deliberations held & decisions taken in the meeting are as under.

Agenda No. 3.1

West Bokaro Coking Coal Washery of 10 MTPA production capacity in an area 11.40 ha of M/s Tata Steel Ltd. (West Bokaro Division) Located in village Duni, Sarubera, Atna, Bhadwa & Sondiha, Tehsil Mandu, District Ramgarh (Jharkhand) – For Environmental Clearances - reg.

[Online Proposal No. IA/JH/CMIN/442132/2023; File No. IA-J-11015/10/2022-IA-II (M)]

3.1.1 The proposal is for Environmental Clearance for West Bokaro Coking Coal Washery of 10 MTPA production capacity in an area 11.40 ha of M/s Tata Steel Ltd. (West Bokaro Division) Located in village Duni, Sarubera, Atna, Bhadwa & Sondiha, Tehsil Mandu, District Ramgarh (Jharkhand).

The project proponent did not attend the meeting and made the request for deferment vide email dated, 09.11.2023. Accordingly, EAC, accordingly, deferred the proposal for later consideration based on merits of submission with other proposals.

Agenda No. 3.2

Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) - For Environmental Clearance – reg.

[Online proposal No. IA/OR/CMIN/445297/2023; File No. IA-J-11015/72/2021- IA-II(M)]

3.2.1 The proposal is for Environmental Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha).

3.2.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

I. LOCATON OF PROJECT

(i) The project area is covered under Survey of India Topo sheetNo.F45S13 & F45T1 (RF 1:50000) and is bounded by the geographical coordinates ranging from 20°55'56.225" N and 20°58'47.344" N and longitudes 84°58'42.383" E and 85°0'50.476" E.
(ii) Coal linkage of the project is proposal for commercial Use for various end users.
(iii) Joint venture cartel has been formed- Not Applicable
(iv) Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13thJanuary, 2010 has imposed moratorium on grant of environment clearance
(v) Employment Generation-Proposed coal mine shall provide an opportunity of direct employment to 2108 persons and total indirect employment of approx. 5000 persons.
(vi) The project is reported to be beneficial in terms of energy security for the development of country.
(vii) Terms of References (ToR) granted vide letter J-11015/72/2021-IA-II(M)] dated: 22.11.2021, Amendment to Terms of References (ToR) granted vide letter IA-J-11015/72/2021-IA-II(M)] dated: 28.02.2022.
(viii) Total Mining Lease Area as per block allotment is 1111. 85 ha. Mining Plan for coal mine has been prepared by CMPDI for production of 25 MTPA coal. Mining Plan (including Progressive Mine Closure Plan) has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Excl/2023/13262 dt- 13.05.2023.

II. LAND USE DETAILS OF MINE

(ix) The land usage pattern of the project as follows:

Pre-mining land use details

S. No	Type of Land	Within ML Area (Ha.)	Outside ML Area (Ha)	Total (Ha)
1.	Agricultural	800.50	Nil	800.50
2.	Forest	125.24	Nil	125.24
3.	Wasteland	NA	NA	NA
4.	Grazing land	58.67	Nil	58.67
5.	Water bodies	6.28	Nil	6.28
6.	Settlements	NA	NA	NA
7.	Others (Specify)			
	Old Excavation Area (East Quarry)	NA	NA	NA
	Old Excavation Area (West Quarry)	NA	NA	NA
	Old OB Dumps	NA	NA	NA

	Roads	0.25	Nil	0.25
	R & R Colony	NA	NA	NA
	Staff Colony	NA	NA	NA
	Green Belt	NA	NA	NA
	Balance Area	NA	NA	NA
	Barren land**	92.64	Nil	92.64
	Township**	Nil	Nil	Nil
	Community/others use area**	28.27	Nil	28.27
	Total Project Area	**1111.85**	**Nil**	**1111.85**

**** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Barren land of 92.64, Community/others use area of 28.27 Ha.)**

Post Mining

S. No.	Land Use	Land Use (End of Life)	Land Use (ha)				
			Plantation	Water Body	Public use	Undisturbed	Total
1.	External OB Dump	24.17	0	0	0	0	24.17
2.	Top Soil Dump	8.97	0	0	0	0	8.97
3.	Excavation	881.28	0	0	0	0	
4.	Roads, buildings Infrastructure	Roads: 15.72	0	0	15.72	0	118.16
		Township: 27.12	1.26	0	25.86	0	
		Infra: 75.32	0	0	0	0	
5.	Green Belt	6.89	0	0	0	0	6.89
6.	Undisturbed Area	0	0	0	0	0	0
7.	Safety Zone	11.79	11.79	0	0	0	11.79
8.	Rationalization Area	25.34	25.34	0	0	0	25.34
9.	Diversion / Below River / Nala /Canal	8.42	0	0	8.42	0	8.42
10.	Water Harvesting	35.36	0	35.36	0	0	35.36
11.	Staff Colony		0	0	0	0	
12.	Backfilled Area**	715.24	182.52	0	0	0	715.24
13.	Excavated Void Without Plantation**	130.68	0	0	0	0	130.68
14.	Coal Stock Yard**	9.76	0	0	0	0	9.76
15.	Embankment**	11.49	0	0	11.49	0	11.49
16.	Explosive Magazine**	5.58	0	0	0	0	5.58

Total Area	1111.85	220.91	35.36	61.49	0	1111.85

** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Backfilled Area of 715.24 Ha., Excavated Void without Plantation of 130.68 Ha., Coal Stock Yard of 9.76 Ha., Embankment of 11.49 Ha., and Explosive Magazine of 5.58 Ha.)

(x) Total Geological Reserve reported in the mine lease area is1142.67MT with 790.95MT Mineable Reserves by opencast mining. Out of total mineable reserve of 790.95MT,768.83 MT are available for extraction. Percent of extraction is 67 %.

(xi) Thickness of seams to be worked on: Opencast mining method is proposed for extraction of coal seam XI to IID. The effective thickness of the seams XI to IID is varying from 0.06m to 75.90m.

(xii) Grade of coal: Wt. Avg. G-13 (GCV – 3690 Kcal/Kg), Stripping Ratio: Only In-situ: 0.80 With Re-handling: 0.93, Average gradient: - 3.48^0(1 in 16.44), Maximum thickness of seams: Seam XI to IID varies from 0.06m to 75.90 m

(xiii) Method of Mining operations envisages by opencast method.

(xiv) Life of mine is 36 years (including 2 year of construction)

(xv) The project has 1 external OB dumps (temporary) in an area of 24.17 ha with 88m height and 103.72Mm^3 of OB.1 internal OB dump in an area of 715.24ha with 613.18 Mm^3 (Insitu) 103.72 Mm^3 (Rehandling) of material is envisaged in the project.

(xvi) Total quarry area is 881.52 ha out of which backfilling will be done in 715.24 ha up to 30m while final mine void will be created in an area of 130.68 ha with a depth of 160 m RL and 35.36 ha water body. Backfilled quarry area 182.52 ha shall be reclaimed with plantation, 495.27 ha agriculture land and 37.45 ha will be returned as forest land.

III. TRANSPORTATION OF COAL

(xvii) Transportation of coal:

- In pit: Initially through Dumper and in Pit Conveyor after few years.
- Surface to siding: From surface hopper (20 No.) by belt conveyor (18 Nos.)
- Siding to loading: Through two Rapid Loading System (RLS) (02 Nos) Capacity: 5000 tonne each
- Quantity being transported by Road/Rail/Conveyor: As per approved mining plan
- Proposed change in transportation means if any, give details: No change proposed, transportation will be carried out as per Approved Mining Plan.

(xviii) Reclamation has been planned in an area of 965.45ha, comprising of 538.17 ha Agricultural use, 220.91 ha Plantation, 35.36 ha Water Body & 125.24 ha Forest Land return Area, Nala diversion, Township & Embankment. & 130.68 ha of final void area will be left unplanted.

(xix) 125.24ha (Reserve Forest Land: 0.75 ha, Govt. Revenue Forest area: 124.49 ha) of forest land have been reported to be involved in the project. Applications for Forest Clearance has been submitted vide Proposal No. FP/OR/MIN/150133/2021 dt. 25.01.2022. Stage I FC has been recommended in the FAC meeting held on 20.10.2023. Stage I FC letter is awaited.

(xx) There are no National Park, Wildlife Sanctuaries and eco-sensitive Zones, within 10 km radius.

(xxi) Wildlife conservation plan for schedule –I species has been submitted

(xxii) The ground water level has been reported to be : Pre Monsoon - Core zone: Ranges from 5.2mbgl

tc 7.1mbgl, Buffer Zone: Ranges from 4.5mbgl to 8.1mbgl. Post Monsoon - Core zone: Ranges from 3.1mbgl to 4.6mbgl Buffer Zone: Ranges from 2.5 mbgl to 4.9mbgl

(xxiii) ... Total Water requirement for the project is 5.11 MLD.

(xxiv)Application for Permission to Dewater Ground water for Mining has been submitted vide application no. 21-4/4746/OR/MIN/2023 dated 13.02.2023. Recommended by CGWA for NoC.

IV. DETAILS OF PUBLIC HEARING & RELATED ISSUES

(xxv) Public hearing for the project of 25 MTPA capacity in an area of 1111.85ha was conducted on25.08.2023 at Ground near Pirakhaman Primary school under Kankarei gram Panchayat of Chhendipada Tehsil of Angul District under the Chairmanship of Shree Pratap Pritimaya, O.A.S. (S) ADM, Angul. Major issues raised in the Public Hearing & appropriate action to address the issues raised in the Public Hearing have already been taken/proposed to be taken are given in the action plan prepared and mentioned in Chapter -7 in Final EIA/EMP report.

(xxvi)Commitment made by the Project Proponent to address the Public Hearing concerns in lieu of Corporate Environment Responsibility (CER) to be mentioned in the following table:

S. No.	Particulars	Location (Name of School / Village / Area)	Year -1 (In Lakhs)	Year -2 (In Lakhs)	Year -3 (In Lakhs)	Year -4 (In Lakhs)	Year -5 (In Lakhs)	Total (In Lakhs)
1.	Infrastructure creation for Drinking Water supply	Drinking Water Supply and Construction hand pumps and tube wells and de-silting of nearby villages ponds within the 5km radious	15	15	15	15	15	75
2.	Sanitation	Nearby villages within the 5km radious	15	15	15	15	15	75
3.	Education	Skill Development Training, Support to schools and other educational institutions	15	15	15	15	15	75
4.	Avenue plantation	Avenue plantation within 5 kms radius in villages namely	2.5	2.5	2.5	5	5	17.5

		Nisha, Balichandrapur						
5.	Plantation in community areas	Community plantation within 5 kms radius in villages namely Nisha, Balichandrapur, Ambapala.	2.5	2.5	2.5	5	5	17.5
6.	Infrastructure	Construction of Kendriya Vidyalaya, Police Station, Bank, Post Office, Market Complex, Solar Street lights within township for public use	50	50	50	50	50	250
7.	Health	Health Care and vaccination, awareness camp, mobile medical camp, Immunization, medicine etc. to villagers within 5 kms radius	25	25	25	25	25	125
8.	Air & Water Pollution Control measures**	Utilization of mobile water sprinklers at the transportation road, fixed sprinklers on the permanent roadways, fog canon at transfer points	60	60	60	60	60	300
9.	Livelihood		15	15	15	15	15	75
10.	Agricultural programme	-	-	-	-	-	-	-
Total			200	200	200	205	205	1010

(As per the above table, Total Public Hearing concerns in lieu of CER budget are 1010 Lakhs. Out of total budget, 300 Lakhs will be spent on Air & Water Pollution Control measures.)**

(xxvii) Consent to Operate for the proposed capacity to be submitted after environment clearance to State Pollution Control Board- Will be obtained after grant of EC

(xxviii) Diversion of Ghurudia Stream is proposed while Singhada Jhor stream will be straightened.

(xxix)No court cases, violation cases are pending against the project of the PP.

V. BENEFITS OF THE PROJECTS

(xxx) The project involves1853 PAF.R&R of the PAPs will be done as per prevailing laws.

(xxxi) Total cost of the project is Rs. 3955.65Crore. Cost of production is Rs 678per tonne. Fund for the CSR will be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.0 per tonne of coal production of previous year whichever is higher. Different peripheral development and community development works will be taken up.R&R cost – 405.46Crore. Environment Management Cost is: Capital Rs1205Lakh; & Recurring Rs. 178 Lakh

VI. CONTROL OF POLLUTION: (A) AIR & (B) WATER

(xxxii) Base line monitoring status:

a) Environmental sensitivity within 10 km buffer zone with distance & direction form the project site like Forest, water bodies, other mines, other washeries, power plants, industries, highways, railway stations, hospitals, schools, colleges etc (To be mentioned in PFR & EIA/EMP report also).

b) Mention the Period/ Season of baseline study carried out - Oct to Dec 2022 (Post-Monsoon).

c) Whether the Laboratory has been accredited by the NABL/ MoEF&CC certification involved in analysis of water, air, noise & soil quality data, also providing its respective lab reports – Yes

M/s Vardan EnviroNet, Gurgaon has prepared the EIA/EMP report after the award of the Terms of Reference. Yes, M/s Vardan EnviroNet, Gurgaon is accredited by QCI/NABET and NABL, Certificate No. QCI/NABET/EIA/2326/RA 0284, Valid up to 04.05.2026.

d) **Detail of Air quality and surface water quality**

i. Air quality: 8 Location for Post-monsoon and the detail mentioned below:

The result indicates that the maximum and minimum values of PM_{10} are in the range of 51.2 to 74.6 µg/m^3, whereas the $PM_{2.5}$ is in the range of 28.1 to 51.9 µg/m^3. The SO_2 concentrations within the study area are in the range of 21.2 to 46.9µg/m^3 and the NOx are in the range of 20.3 to 41.2 µg/m^3. The CO concentrations within the study area are in the range of 0.5 to 1.19 mg/m^3 and the O_3 are in the range of 15.1 to 29.6 µg/m^3. The NH_3 concentrations within the study area are in the range of 25.2 to 39.1 µg/m^3.

Air Pollution Impact Prediction - Post-Monsoon - The incremental increase in the values were projected to be 15.6168 µg/m^3 for PM_{10}, 8.9239 µg/m^3 for $PM_{2.5}$, 0.44623 µg/m^3 for SO_2, and 0.33468 µg/m^3 for NOx and for CO, 0.000223 mg/m^3. The value of Total GLC is 88.2168 µg/m^3

for PM_{10}, 55.7239 µg/m^3 for $PM_{2.5}$, 45.04623 µg/m^3 for SO_2, and 38.93468 µg/m^3 for NOx and 1.100223 mg/m^3 for CO are predicted during October to December 2022.

ii. **Surface water quality: 8 Location for Post-monsoon and detail mentioned below** - All the Parameters for post-monsoon like pH varies from 7.39 to 7.82, Total Hardness varies from 186.25 to 493 mg/L, Total Dissolved Solids varies from 240 to 899 mg/L, Dissolved Oxygen – 5.6 mg/l to 6.7 mg/l.

iii. **Ground water quality: 8 Location for Post-monsoon** - All the Parameters for post-monsoon Like pH varies from 7.54 to 7.93, Total Hardness varies from 215.26 to 329.43 mg/L, Total Dissolved Solids varies from 225 to 300 mg/L, Chloride varies from – 56.84 mg/l to 79.24 mg/l etc. are found within the permissible limits.

iv. **Soil quality: 8 Location for Post-monsoon** - All the Parameters for post-monsoon Like pH varies from 7.31 to 7.56, Organic matter varies from 0.76% to 0.88%, Available Nitrogen varies from 152.66 to 192.18 kg/ha etc. are found within the permissible limits.

v. **Noise Quality: 7 Location for Post-monsoon** - The Leq values for day time was observed to be 49.88 to 54.06 dB (A) in residential area, while during night time 40.34 to 43.96 dB (A). The Leq values for day time and night time at industrial area was 69.5 and 64.52 dB (A).

3.2.3 The Committee during detail deliberation noted following:

i. Terms of Reference for instant greenfield opencast coal mine was granted on 22.11.2021 and their subsequent amendment in ToR on 28.02.2022.

ii. Mining Plan (including Progressive Mine Closure Plan) has been approved on 13.05.2023 for 1144.90 ha.

iii. 125.24 ha of forest land has been involved in total ML area of 1111.85 ha. Applications for Forest Clearance has been submitted vide Proposal No. FP/OR/MIN/150133/2021 dated 25.01.2022.

iv. Life of mine is 36 years (including 2 year of construction).

v. Application for withdrawal of Ground water has been submitted vide application no. 21-4/4746/OR/MIN/2023 dated 13.02.2023.

vi. Public hearing was conducted on 25.08.2023 for the project of 25 MTPA capacity in an area of 1111.85 ha at Ground Near Pirakaman Primary School under Kankarei Gram Panchayat of Chhendipada Tehsil, Angul on 25.08.2023 at 11:00 AM, under Chairmanship of Sri Pratap Pritimaya, O.A.S. (S), Additional District Magistrate, Angul in the presence of Er. Ramesh Kumar Ekka, Regional Officer, State Pollution Control Board, Angul, Odisha.

vii. Public hearing issues such as employment to local people, loss of land and its adequate compensation, proper R&R, providing medical facilties, mitigation of dust pollution, plantation, pollution in Pirakhaman village due to Hingula mine, reclamation of mine by levelling to ground level, water and sound pollution management, opening of Talcher Medical College and Hospital at the earliest for benefit of the people staying in this area, facility for kidney dialysis, granting 01 year time to dismantle their respective house contrary to existing policy of provision of employment after demolition of house.

viii. Baseline data has been collected during the Period/ Season of October to December 2022 (Post-Monsoon).

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ix. Subhadra Open cast mine project is combination of Utkal A and west of Gopalprasad West Block.

x. The area does not fall under corridors of any National Parks, Sanctuaries, Biosphere Reserves, Wildlife Sanctuary, Tiger/Elephant reserves, nor do the same exist within 10 km of the Mining Lease Area. The Map stating absence of above areas and showing the distance of various protected areas has been approved from the PCCF, Odisha vide Letter No 6190/CWLWFDWC-FD- 0011-2023 dated 29.05.2023

xi. As per list of The Indian Wildlife (Protection) Act, 1972, there are two Mammals i.e Elephant, & Pangolin, two reptiles i.e Bengal Monitor Lizard, Python and two birds i.e Indian Peafowl, King Vulture, Schedule-I species present in the study area

3.2.4 *The Committee after detail deliberation observed that the instant proposal is a Greenfield opencast coal mine project. An application for Stage-I Forest Clearance has been submitted and yet to be granted by Ministry. As visible through Drone Video, most of land in the project area is agricultural land i.e. about 800 ha.*

From discussions it is noted that Ghurudia Nallah and Singhada Jhor flowing within the ML area, which are required to be diverted at different time interval based on mining plan. The committee observed that the length of 8.9 Km of Ghurudia Nallah has been proposed to be diverted from south at the beginning of mining, while Singhada Jhor Nallah will be straightened for 1080 mtr. It was desired that no stream diversion shall be done upto 15 years for south side whereon mining shall progress on that time. The committee emphasized that the hydrogeological study for diversion shall be made in proper manner by avoiding the formation of right-angle bend so as to have uninterrupted flow and considering the safety zone of 7.5m all along the mine boundary alongwith.

Public Hearing was conducted on 25.08.2023 under the chairmanship of Additional District Magistrate (Angul) as per provisions of EIA Notifications, 2006. The issues raised during public hearing has been addressed, however the Committee desired to have adequate budgetary allocation to meet public demand particularly on health establishment with regard to kidney treatment as raised by local people. The committee noted the discrepancy in the figures of land use pattern submitted for pre-mining and post-mining.

Subsequently committee highlighted that in order to minimise coal transportation through road PP shall submit the strict timeline for completion of Belt-conveyor system in commensurate with production level. Committee asked the project proponent to submit the status of all necessary approvals pending at different stages.

In view of the above, the Committee desired that the project proponent shall submit the following documents: -

i. *Project proponent to submit the status of all necessary approvals pending at different stages including status of FC involved in total ML area of 1111.85 ha.*

ii. *PP shall submit the R&R approval from the concerned District Administration along with their preparedness.*

iii. *PP shall submit the compliance of ToR condition no. xi, xii, xx, xxi, xxvi, xxx and Amended ToR no. (iv) & (vii) and (xxvii).*

iv. *PP shall provide details of the alternate land w.r.t grazing land and water bodies as per pre-mining activity land use (as per ToR condition viii).*

v. *PP shall provide adequate details w.r.t. mitigation measures by changing catchment area hydrology from stream diversion and submit the protection measures of south nala which is proposed for diversion in 15 years by leaving 100 mts distance.*

vi. *PP shall submit the adequate water conservation plan for water bodies lying inside and outside the ML area.*

vii. *Detailed Action Plan w.r.t. for completion of in-pit Belt-conveyor system and silo loading system till railway siding shall be submitted. Beside till construction of the same, PP to furnish adequate safety measures to be adopted for coal transportation through road (as per ToR condition xiii & xvii)*

viii. *PP shall social impact study for farmers being affected due to mining operation lying inside the ML area.*

ix. *PP shall submit the detail revised EMP budget (with capital and recurring cost) by increasing the mitigation measures in order to reduce the air pollution and water pollution.*

x. *PP shall submit the activity-wise public hearing budget (with capital and recurring cost) by complying all issues recorded in the Minutes of Public Hearing, particularly with respect to health issues.*

xi. *PP shall submit the Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local people as part of CERs. Further, air pollution mitigation plan shall be submitted till the villages are not displaced in the mine lease area.*

xii. *As raised in public hearing, PP shall submit the proof of documents from State Forest Department that there is no human-elephant issue in the buffer and mine lease area. If so what is mitigation plan.*

xiii. *PP shall submit details of Site-Specific Wildlife Conservation Plan and difference of schedule I species as in Wildlife Protection Act (WPA), 1972 and Amendment of WPA, 2022.*

xiv. *PP shall submit the correct figures of the land usage pattern of the project during pre-mining and post-mining purpose.*

In view of the above, the project was ***deferred*** *to submit the above observation.*

<u>Agenda No. 3.3</u>

Dhori Coking Coal Washery of 3 MTPA capacity in project area 12.06 Ha of M/s Central Coalfields Limited located at Village Tarmi & Turio Block Chandrapura, District Bokaro, Jharkhand - For Terms of Reference - reg.

[Online proposal No. IA/JH/CMIN/417074/2023; File No. J-11015/1/2023-IA-II (M)]

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(Coal Mining)
***

Minutes of AGENDA FOR 6th MEETING OF THE EXPERT APPRAISAL COMMITTEE (COAL MINING SECTOR) meeting Coal Mining held from 17/01/2024 to 18/01/2024

Date: 05/04/2024

MoM ID: EC/MOM/EAC/154473/1/2024

Agenda ID: EC/AGENDA/EAC/154473/1/2024

Meeting Venue: MoEF&CC

Meeting Mode: Hybrid

Date & Time:

17/01/2024	10:30 AM	05:30 PM
18/01/2024	10:30 AM	01:00 PM

1. Opening remarks

At the outset, the Chairman welcomed the Expert members & other participants and requested to start the proceeding as per the agenda adopted for this meeting. The list of Members participated in the meeting is at Annexure VIII. Note - [Due to Editor issue, Final Approved Minutes of the EAC is enclosed herewith in PDF as a ANNEXURE]. Please refer this document and Treat as approved Minutes of the EAC [Coal Sector].

2. Confirmation of the minutes of previous meeting

Confirmation of the Minutes of 5thMeeting of the EAC (Coal): The minutes of the 5th Meeting of the EAC (Coal) held during 21st& 22nd December 2023 has been confirmed by the Chairman with the following corrections. Agenda No. 5.13 (5th EAC Meeting held during 21-22 December, 2023) Para as per MoM "Further, the Committee recommended to extend the timeline till 31.07.2024 subject to the submission of Action taken report on progress of works before 31st July, 2023 and compliance to EC conditions. Subsequently, the EAC will review the proposal in entirety in month of June/July 2024 and now at this stage, the Committee proposed the condition of Environmental clearance condition no. 2A(ix), which shall be read as: The coal shall be transported through closed belt conveyor system of a length of 13 km to Banadag railway station till 31st July, 2024 to use Service road for transportation of coal to Banadag railway siding by adopting all mitigative measure to control dust pollution." subject to further directions of Hon'ble Supreme Court in the matter and Certified Compliance Report (CCR) from the IRO for the Amendment of Environmental Clearance (EC) and their respective Action taken report by June, 2024." Committee is of the view that timeline for submission of action taken report shall be read as 31st July 2024 in place of 31st July, 2023. Further, the above condition shall be read as "The coal shall be transported through closed belt conveyor system of a length of 13 km to Banadag railway station and till 31st July, 2024 Project Proponent is permitted to use Service road/State Highways for transportation of coal to Banadag railway siding by adopting all mitigative measures to control dust pollution subject to further directions of Hon'ble Supreme Court in the matter and Certified Compliance Report (CCR) from the IRO for the Amendment of Environmental Clearance (EC) and their respective Action taken report by June, 2024." Agenda Item 3.14 (3rd EAC Meeting held on 16-17 November, 2023) The Committee is of the view that specific condition no 1.i.e. PP should complete the work of in-pit Belt conveyor system with CHP and Silo loading system till December, 2024 and accordingly, SPCB shall grant CTO for road transportation after December, 2024." Shall be read as: "PP should complete the work of in-pit Belt conveyor system with CHP and Silo loading system till October, 2024 and accordingly, SPCB shall grant CTO for road transportation after October, 2024."

3. Details of proposals considered by the committee

Day 1 -17/01/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Tasra Coking Coal Washery Plant of M/s. Steel Authority of India Limited with 3.5 MTPA capacity of 21 Ha area, located at FCIL Campus, Town – Sindri, District-Dhanbad, Jharkhand. by STEEL AUTHORITY OF INDIA LTD located at DHANBAD,JHARKHAND

Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/JH/CMIN/455615/2023	J-11015/122/2007-IA.II(M)	15/12/2023	Coal washeries (2(a))

3.1.2. Project Salient Features

Agenda No. 6.3
Tasra Coking Coal Washery with capacity of 3.5 MTPA in the project area of 21 ha. of M/s. Steel Authority of India Limited located at FCIL Campus, Town – Sindri, District Dhanbad (Jharkhand) – For Terms of Reference - reg.
[Online Proposal No. IA/JH/CMIN/455615/2023; File No. J-11015/122/ 2007-IA. II(M)]
6.3.1 The proposal is for Terms of Reference for Tasra Coking Coal Washery with capacity of 3.5 MTPA in the project area of 21 ha. of M/S. Steel Authority of India Limited located at FCIL Campus, Town – Sindri, District Dhanbad (Jharkhand). PP applied online vide proposal No IA/JH/CMIN/455615/2023 for grant of TOR and the proposal was placed in 5th EAC meeting held during 17-18 January, 2024.
6.3.2 The Project Proponent made a detailed presentation on the salient features of the project and informed that

PROJECT LOCATION:

- The project area is covered under Survey of India Topo sheet No. 73 1/6 (F45C6) and is bounded by the geographical coordinates ranging from 23°39'37.22"N to 23°39'51.23"Nandlongitudes86°28'59.45" E to 86°29'15.52" E.
- The project/activity is proposed by the PP is a Green filed project and covered under category A of item 2(a) 'Coal Washeries' of the Schedule to the Environmental Impact Assessment Notification, 2006 as the throughput of Coal is > 2.5 MTPA therefore, it requires appraisal at Central level by the sectoral EAC in the Ministry.
- Tasra Coal Washery had been granted EC for 3.5 MTPA of M/s Steel Authority of India Ltd., Vide letter no. J-11015/ 365/2009-IA.II(M) pt. Dated 30.03.2017 by the MoEF&CC. However, the Coal Washery could not be installed as land for installation of the Washery could not be acquired.
- The Fertilizer Corporation of India Limited (FCIL) has obtained in principle approval for leasing of **61 Acres (24.69 Ha) of FCIL Land (Old SMP Plant Area)** for setting up of a Coal Washery for Tasra Opencast Coal Project Vide Letter no. FCIL/Sindri/Tasra/2023/1810 dated 20th November 2023.
- PP submitted that there is no Wildlife Sanctuaries, National Park, Biosphere Reserve, exists within 10 Km radius of the project site.
- The area is not Falling under Critically Polluted Area.
- One small unnamed Protected forest exists at a distance of 9.5 Km.
- No R&R involved
- No Archeological, Historical/ Ancient Monument within 10 KM of the project site
- No forest land is involved in the project.

LAND USE DETAILS OF PROJECT SITE:

The land usage pattern of the coal Washery project is as follows:

Sl. No.	Details	Area in Ha	% w.r.t. Total Area
1.	Main Plant Area	2.52	11.99
1.	Storage Area for Coal Stock	6.23	29.68
1.	Water Reservoir	0.62	2.94
1.	Green Belt	6.93	32.99
1.	Internal Roads	2.12	10.09
1.	Parking Area	1.48	7.05
1.	Misc Area	1.11	5.27
Total		21.00	100.00

TRANSPORTATION OF COAL:

- Transportation of raw coal from Mine Pit to the Coal Washery shall be through conveyor/private road and Clean/middling coal from the Washery to the Steel & power plants of SAIL will be through Rail.
- Quantity being transported by Road/Rail/Conveyor: Washed coal & middling will be transported through Rail.

OTHER DETAILS:

- Total water requirement for the project is 966 m3/day.
- Application for obtaining the approval of the Central Ground Water Authority for NOC for water withdrawal will be submitted after the approval of ToR.
- Damodar River is flowing at a distance of 2.3 Km from Southern Boundary of the lease area. No nala diversion is involved in the project.
- No court cases, violation cases are pending against the project of the PP.

- The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder.
- The project involves no project affected families. R&R of the PAPs is not required.
- Total cost of the project is Rs. 93,900 Lakhs.

BENEFITS OF THE PROJECT:

- The project is reported to be beneficial in terms of bigger exercise by Government of India to increase the washing capabilities of Indian coal in order to increase the supply of washed coking coal to steel plants thereby reduce the outgo of valuable foreign currency. This will also help in reducing the prices of steel product so vital for Indian economy.

3.1.3. Deliberations by the committee in previous meetings

Date of EAC 1 :28/02/2024

Deliberations of EAC 1 :

8.3.3: Committee after deliberations noted the following:

The proposal was initially considered in the EAC meeting held on 17-18 January 2024 wherein Committee after deliberation deferred the proposal for want of additional information. PP vide letter dated 09.02.2024 submitted the reply on the Parivesh portal. The reply submitted by PP is as follows.

Query-1: PP shall conduct a detailed alternate site selection study for at least 3 sites including the existing mining site.

Reply: PP Submitted that a detailed study for the selection of the site for installation has been done for four sites. It was mentioned that Site number 2 & Site number 3 exist inside the Tasra Mining Lease area. PP presented the analysis of alternative Sites and justification of selection. PP submitted that Site-I was selected for setting up the proposed washery. The reasons that Site – II, Site – III, and Site – IV have not been preferred for setting up the proposed washery are summarized below:

Site-II - Chasnalla Colliery Colony (49.4 Acre or 20.0 Hectare)

If this site is required, a total of 25+ Hectares shall be needed. Washery: 15 Ha, Railway Siding with Rapid Loading System: 5 Ha and Conveyor: 5 Hectares (which is not feasible; instead of that, road transportation is a better option.). Human habitations are present in the area proposed for washery. R&R will be required at a large scale, increasing the cost of the project. The area is coal-bearing; setting up a washery will cause blockage of coal resources. The underground mine infrastructure of the Chasnalla coal mine is present just adjacent to the boundary. The area is present in high flood level zone of Damodar River. The land falls inside the mine lease area of Tasra Coal Mine. 1260 trees will have to be felled at this location. The offtake route is a challenge and would involve passing through densely populated areas, which will be an issue from a safety point.

Site-III - Domgarh (96.7 Acre or 39.1 Hectare)

Approximately 1500 families are present in the area proposed for washery. The site would require R&R, impacting the cost of the project. The land falls inside the mine lease area of Tasra Coal Mine. Cutting of 3215 Trees is expected for setting up of a Washery at this location. If this site is required, a total of 23+ Hectares shall be needed (Washery: 15 Hectares; Railway Siding with Rapid Loading System: 5 hectares; Conveyor: 3 Hectares). In this site, offtake infrastructure i.e., RLS will require additional set-up at proposed Site I and hence not prescribed.

Site-IV – Rohrabandh (49.7 Acre or 20.1 Hectare)

The site has a rich green cover. A large no of trees to the tune of 2169 will have to be felled at this location. Additional Land will be required at other locations for R&R of the displaced family. Railway siding and Rapid Loading System. If this site is selected, a total of 27+ Hectares shall be needed (Washery: 18-20 Hectares; Railway Siding with Rapid Loading System: 5 hectares; Conveyor: 3 Hectares). In this site, offtake infrastructure i.e., RLS will require additional set-up at proposed Site I and hence not prescribed.

Query-2: PP shall confirm the minimum area required for setting up of the Washery.

Reply: PP submitted that they have engaged M/s Daniels GT India Private Limited, for setting up of washery infrastructure. The consultant has confirmed vide letter dated 09.02.2024 that about 15-18 Hectares of land is required for setting up of a washery. PP displayed a copy of the letter during the presentation and submitted the same.

Query-3: PP shall submit a transportation plan for each site selection (preferably through rail mode and belt conveyor combination).

Reply: Detailed study w.r.t to transportation for all four sites has been done taking into consideration transport through Belt conveyor for raw coal & Rail mode for washed coal and has been addressed at sl.no. 5 & 6 of the Site Analysis Report. PP also submitted the KML showing the transportation scenario.

Query-4: PP shall submit the habitation details around each of the alternate site considered for setting up of the plant.

Reply: All four sites have been studied for habitation around them and details of which have been given at sl.no. 4 & 17 of the Site Analysis Report. "Lions Public School" is present within a 100-meter radius of the land proposed for setting up of washery. PP further submitted that the school is running in an unauthorised manner, and it is planned to relocate the school at another premises situated approximately 3 Km away where another facility of "Lions Public School" is already running. FCIL has communicated to the School for unauthorised occupation vide letter no – FCIL/EST-Rev-8([72)/19364 dated – 11.09.2019. PP also showed the letter during the meeting.

The Committee deliberated on the reply submitted by the PP. The Committee also observed that the site PP has selected is located inside the FCIL Campus. Further, PP has proposed the transportation of Raw Coal from the conveyor belt and washed coal through the railway. The site has the least area requirement and R&R issues as ascertained by the PP. The Committee noted that there is a school just close to the proposed site. PP submitted that it is an unauthorized occupation. The Committee is of the view that PP shall submit an action plan for relocation of the school and students which is at a distance of 0.5 Km from the proposed site. The PP vide letter dated 29.02.2024 submitted its reply wherein it mentioned that *"in discussion with FCIL Estate department we have identified a location nearer to present premises and proposed the same to school authorities. The Principal of the Lions Public School, Sindri has agreed and written a letter to the GM, I/C (Tasra & Chasnalo), SAIL dated 29.02.2024, that they are ready to relocate from the existing premises to a new location which is at a distance of 200 - 300 m from the present location.*

Moreover, SAIL/KTMPL (MDO of SAIL) will bear the entire necessary infrastructure development expenses related to the construction of the new School and hence Lions Public School will have no financial expenditure for the same."

The PP vide communication dated 2/03/2024 also submitted that *"Further to our communication made to your office on 29.02.2024 for the relocation of Lions Public School within 300 meters from the current premises, duly accepted by school authority. In past 2 days, We have further identified 2-3 more potential sites, all are within a 1-2 kilometres radius of the existing premises.*

SAIL, through its MDO (KTMPL), is committed to facilitating the seamless relocation of the school to the new site, as directed by the Committee, ensuring the complete satisfaction of the school authorities prior to the commencement of the proposed Tasra Coal Washery.

We hereby assure that the first site is available additional 2-3 more sites are also available as alternative options.

The Committee noted that PP has identified the optional site to shift the school. PP has submitted an undertaking to construct the new school in lieu of the present school and Lion Public School will have no financial expenditure for the same. PP also submitted a letter dated 29/02/2024 from the Principal giving his consent to re-locate the school. Based on the submission PP was asked vide email dated 8/0/2024 that *"PP should give the plan and assurance till the new school is incepted at full capacity, the students should not be shifted anywhere without their consent."* The PP vide letter dated 11/03/2024 informed that *"We assure that school at new location will be functional well before Washery comes in Operation. Further, we assure that the shifting of school shall be done in due consent of the School administration and authorities".*

Based on the submission of PP, the Committee is of the view that the grant of ToR should not be taken as a direction from EAC/MoEF&CC for shifting the school. The school management and families whose children are studying in this school are free to make their independent decisions in this regard.

Based on the discussion held and the document submitted the Committee recommended the proposal for grant of ToR for the setting up of Tasra Coking Coal Washery Plant of capacity 3.5 MTPA in an area of 21 Ha, located at FCIL Campus, Town – Sindri, District- Dhanbad, Jharkhand, by Steel Authority of India Limited. The Committee in addition to standard ToR also prescribed the following Specific ToR.

3.1.4. Deliberations by the EAC in current meetings

8.3.3: Committee after deliberations noted the following:

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The site has a rich green cover. A large no of trees to the tune of 2169 will have to be felled at this location. Additional Land will be required at other locations for R&R of the displaced family, Railway siding and Rapid Loading System. If this site is selected, a total of 27+ Hectares shall be needed (Washery: 18-20 Hectares; Railway Siding with Rapid Loading System: 5 hectares; Conveyor: 3 Hectares). In this site, offtake infrastructure i.e., RLS will require additional set-up at proposed Site I and hence not prescribed.

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Query-3: PP shall submit a transportation plan for each site selection (preferably through rail mode and belt conveyor combination).

Reply: Detailed study w.r.t. to transportation for all four sites has been done taking into consideration transport through Belt conveyor for raw coal & Rail mode for washed coal and has been addressed at sl.no. 5 & 6 of the Site Analysis Report. PP also submitted the KML showing the transportation scenario.

Query-4: PP shall submit the habitation details around each of the alternate site considered for setting up of the plant.

Reply: All four sites have been studied for habitation around them and details of which have been given at sl.no. 4 & 17 of the Site Analysis Report. "Lions Public School" is present within a 100-meter radius of the land proposed for setting up of washery. PP further submitted that the school is running in an unauthorised manner, and it is planned to relocate the school at another premises situated approximately 3 Km away, where another facility of "Lions Public School" is already running. FCIL has communicated to the School for unauthorised occupation vide letter no – FCIL/EST-Rly-581753/19/364 dated – 11.09.2019. PP also showed the letter during the meeting.

The Committee deliberated on the reply submitted by the PP. The Committee also observed that the site PP has selected is located inside the FCIL Campus. Further, PP has proposed the transportation of Raw Coal from the conveyor belt and washed coal through the railway. The site has the least area requirement and R&R issues as ascertained by the PP. The Committee noted that there is a school just close to the proposed site. PP submitted that it is an unauthorized occupation. The Committee is of the view that PP shall submit an action plan for relocation of the school and students which is at a distance of 0.8 Km from the proposed site. The PP vide letter dated 29/02/2024 submitted its reply wherein it mentioned that *"In discussion with FCIL Estate department we have identified a location nearer to present premises and proposed the same to school authorities. The Principal of the Lions Public School, Sindri has agreed and written a letter to the GM, I/C (Tasra & Chasnala), SAIL dated 29/02/2024, that they are ready to relocate from the existing premises to a new location which is at a distance of 200 - 300 m from the present location.*

Moreover, SAIL/KTMPL (MDO of SAIL) will bear the entire necessary infrastructure development expenses related to the construction of the new school and hence Lions Public School will have no financial expenditure for the same."

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SAIL, through its MDO (KTMPL), is committed to facilitating the seamless relocation of the school to the new site, as directed by the committee, ensuring the complete satisfaction of the school authorities prior to the commencement of the proposed Tasra Coal Washery.

We hereby assure that the first site is available, additional 2-3 more sites are also available as alternative options."

The Committee noted that PP has identified the optional site to shift the school, PP has submitted an undertaking to construct the new school in lieu of the present school and Lion Public School will have no financial expenditure for the same. PP also submitted a letter dated 29/02/2024 from the Principal giving his consent to re-locate the school. Based on the submission PP was asked vide email dated 8/3/2024 that *"PP should give the plan and assurance all the new school is accepted at full capacity, the students should not be shifted anywhere without their consent."* The PP vide letter dated 11/03/2024 informed that *"We assure that school at new location will be functional well before Washery comes in Operation. Further, we assure that the shifting of school shall be done in our consent of the school administration and authorities"*

Based on the submission of PP, the Committee is of the view that the grant of ToR should not be taken as a direction from EAC/MoEF&CC for shifting the school. The school management and families whose children are studying in this school are free to make their independent decisions in this regard.

Based on the discussion held and the document submitted the Committee recommended the proposal for a grant of ToR for the setting up of Tasra Coking Coal Washery Plant of capacity 3.3 MTPA in an area of 21 Ha. located at FCIL Campus, Tower – Sindri, District- Dhanbad, Jharkhand, by Steel Authority of India Limited. The Committee in addition to standard ToR also prescribed the following Specific ToR.

3.1.5. Recommendation of EAC

Recommended

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Amalgamated Yekona I & II OC (Phase-I) by Western Coalfields Limited located at CHANDRAPUR,MAHARASHTRA			
Proposal For		Amendment in EC	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/MH/CMIN/438539/2023	J-11015/381/2015-IA.II(M)	30/07/2023	Mining of minerals (1(a))

3.2.2. Project Salient Features

Agenda No 6.2

6.2 **Amalgamated Yekona I & II OC (Phase-I) [Production capacity 2.75 MTPA/3.44 MTPA (Normative/Peak) ; Lease Area 1679.39 ha] of Western Coalfields Limited (WCL) located in Tehsil Warora, District Chandrapur (Maharashtra) – Reconsideration for Amendment of Environment Clearance dated 01.01.2021 – reg.**

[Online Proposal No. IA/MH/CMIN/438539/2023; File No. J-11015/381/2015-IA. II(M)]

6.2.1 The proposal is for amendment in Environmental Clearance granted vide letter dated 01.01.2021 for Amalgamated Yekona I & II OC (Phase-I) for increase in production capacity from 1.0 MTPA to 2.75 MTPA/3.44 MTPA (Normative/Peak) of M/s Western Coalfields Limited and increase in land area from 680.06 ha to 1679.39 ha located in Tehsil Warora, District Chandrapur (Maharashtra).

2. The project proponent vide proposal no IA/MH/CMIN/438539/2023 applied for amendment in EC dated 1.1.2021. PP vide letter no. 5-G/969-970 dated 28.07.2023 requested Ministry for amendment of following specific condition no. 4 (vi) & 4 (xviii) of EC letter dated 01.01.2021 as:

Specific Condition as per EC dated 1.01.2021	Amendment Sought
(vi) "Transportation of coal from Coal Handling Plant shall be through mechanized covered trucks for 3 years. No transportation by trucks after 3 years and proposed railway siding/pipe conveyor system."	Transportation of Coal from the mine shall be through tarpaulin covered trucks till the commissioning of proposed railway Siding i.e by December 2026. No transportation by trucks after Dec'2026 except for small scale industry consumers.

Justification

- The mechanized cover trucks are not feasible on techno economical basis. Thus, transportation of coal to be allowed from tarpaulin covered trucks.
- The work of construction of Railway Siding in under process. However due to delay in land acquisition and other works, the Railway Siding could not be commissioned within 3 years i.e. 31.12.2023. Thus, additional three-year period upto 31.12.2026 may be provided for commissioning of Railway Siding. However, all efforts will be made for early commissioning of Railway Siding and avoiding road transportation of coal.

Specific Condition as per EC dated 1.01.2021	Amendment Sought
(xviii) "Toe wall of atleast 15 mts to 20 mts height should be constructed along the OB dump to protect yekona village."	Construction of toe wall with adequate dimensions along the OB dump to protect the Yekona village and check runoff and siltation in regard to the rainfall data.

Justification

- The toe wall of 15-20 meters is not feasible to construct techno-economically in this mine.
- There is a gap of about 100 mtrs between the OB/ Top soil dump and Yekona Village & the gap is also planted with tree plantation (10,000 nos. in an area of 4 ha).
- Only Top Soil overburden dump is present against the habitation of Yekona Village. Height of Top Soil dump is only 36 mtrs & same is finalised, no further dumping or heightening will be done. Plantation and grass seeding of top soil dump is being done, which helps in stabilisation of the dump.
- Garland Drains have been provided in mine for the length of about 4650 m with width of 2 m and depth of 2 m. Catch drains of dimension 3300 length, 2 m width and 2 m depth are also provided against OB dump. Dumps are provided with siltation pond at the bottom to prevent siltation in nearby water body. This help in arresting any loose material of the dump.
- Dumping was done by removing the black cotton soil layer upto 3 mtr depth at the toe/ floor of the dump, this help in stabilisation and possibility of floor failure and upheaving is totally avoided.
- A scientific study has been carried out for OB dump stability in the respective mine by IIT Kharagpur. The safety measures proposed in the report does not include the construction of toe wall.
- In CMR, 2017 there is no mention of the dimensions for the construction of toe wall.

6.2.2 Earlier the proposal was considered in the 48th EAC meeting held on 25th August, 2023 wherein the committee has deferred the proposal for want of requisite information. The PP has submitted the reply on Parivesh portal vide letter dated 13.12.2023 and proposal was considered in 6th EAC meeting held during 17-18 January, 2024. The information submitted by the PP is as follows: as mentioned below:

S. No.	Observation of EAC	Reply by PP
I.	Current status and preparedness of proposed railway siding/pipe conveyor system as per specific condition no. 4 (vi) of EC letter dated 01.01.2021 with documentary proof (pipe conveyor plan comprising of layout, NIT and tendering details with date for the Railway siding alongwith Feasibility Study Report, Engineering Scale Plan, Detailed Project Report etc.)	The work order for construction of Railway Siding has been awarded to M/s Indian Port Rail & Ropeway Corporation Ltd (IPRCL), Mumbai vide letter Dt.07.05.2022 for a total value of Rs.80.74 Crore. However due to delay in land acquisition and other works, the Railway Siding could not be commissioned within 3 years i.e. 31.12.2023. Construction of the railway siding requires acquisition of 35.4 Ha land out of which 10.00 ha already belongs to WCL and the remaining land is to be acquired under 'Gati Shakti Multi Model Cargo Terminal Scheme" of Railways. Thus, additional period up to 10.12.2025 may be provided for commissioning of Railway Siding. Present progress: The construction work for railway siding has already commenced. The Centre line marking of Track has been completed by IPRCL. Civil work of the track laying is likely to be completed by Jan'2025. Subsequently, civil work of wharf wall siding platform will be commenced. Fixed sprinklers and wind barrier will be installed at the proposed railways siding by Dec'2025. Total award value for commissioning of Railway Siding is 80.74 crore to IPRCL. Till November, 2023, the bills of 24.63 crore has been processed by the project proponent. Remaining payment will be done after completion of civil work and commissioning of Railway Siding. The detailed timeline period for the construction of the railway siding is 10.12.2025 a

		nd enclosed.
2.	PP shall submit the plan for coal transportation upto 90% to its peak capacity i.e 3.44 MTPA to dedicated users only including M/s MAHAGENCO thermal power plant as proposed in EIAEMP report.	Prevailing EC has been granted for the production capacity of 2.75 MTPA (Normative). The coal production from the mine was 2.75 MTPA in FY 2022-23. The dispatch of coal in FY 2022- 23 from the mine was 3.50 MTPA due to liquidation of earlier coal stock in the mine. The coal transportation statistics to the dedicated users including M/S MAHAGENCO thermal power plant in FY 2022-23 has been enclosed. In FY 2022-23, Amalgamated Yekona-I&II OC has dispatched 3.50 MTPA of coal. GMR Warora and Sai Wardha Power Generation Ltd located near to the project purchases a total quantity of 2.0202 MT. Remaining 1.48 MTPA of coal was transported to other coal customers. The traffic study has been conducted considering the transportation of approx. 1.50 MTPA of coal to other coal customers.
3.	The Writ Petition No. 2470 of 2022 is sub-judice. However, the contentions alleged in the petition are authenticated by the site inspection report. Therefore, PP should plan to avoid the usage/construction of road for transportation of coal near the sensitive zone such as school, hospital, etc. and submit the alternative route till mechanised system is put in place. The proposed route should be supported by traffic study for one month (with baseline ambient air quality in alternate route) along with the mitigation measures to control the dust pollution till the period of completion of mechanised system.	In this project the coal is transported to either nearby thermal power plan (only 1.30 km away from project boundary) and other customers through Wani railway Siding (90 kms away from the project). Majri railway siding is located nearly 23 kms away from the project. However, due to lack of adequate road infrastructure for nearly 2.3 kms, the coal could not be transported to Majri Railway Siding. The route from the project site to Majri Railway Siding passes through the Warora Town. The Warora town does not have any peripheral road in west. Hence the coal could not be evacuated by the present route without entering Warora Township. Hence, it was proposed to construct a by-pass road of 2.3 km length for Warora town connecting Warora – Madheli Road to Warora-Wani Road. This will provide an alternate coal evacuation route. Approval for construction of this road is issued by Dy. Secretary, Revenue and Forest Department, Govt. of Maharashtra, Mumbai vide letter no. 5-), this road will serve the purpose of local transport and public use also and decongest the traffic in Warora town. As per the affidavit submitted from the Collector Chandrapur, the present proposal of coal transportation route is found to be feasible and could be helpful in decongestion of existing traffic of Warora town. The other route proposed for evacuation of coal to Majri railway Siding through the north of Warora town was not found to be feasible as per the affidavit based of the site visit. As other proposed route could not be widened due to 11 KV power line, low existing width and could create inconvenience to the farmers. As per affidavit, the proposed coal transportation route by constructing bypass road of 2.30 kms is most suitable. The one traffic study with ambient air quality baseline data has been conducted on this proposed route. The ambient air quality data has been generated at 12 locations in October, 2023. Out of 12 locations, 6 locations are near to the coal transportation route and others are located within buffer zone of the project. During the traffic study, the level of service of the proposed route was found to be in very good category. The v/c ratio (predicted volume/capacity) during peak period will be 0.23, 0.30 and 0.17 for Section A, Section B and Section C respectively and the level of service falls under very good category in Section A & B and Section C as excellent. Vehicles carrying coal are being covered with tarpaulin to prevent spillage. Vehicles hired to carry coal will be meeting all air pollution control norms and at regular interval checks for the implementation of pollution under control (PCU) certificates. Additional road safety precaution like traffic police outpost, traffic signals, illumination, traffic science will be provided at the intersection of roads. The detailed traffic study report along with 1-month baseline ambient air quality data is enclosed.
4.	PP shall submit the drone video of OB dump along with the construction of Toe-wall all around the OB dump.	The drone video of the OB dump has been made and it has been sent through e-mail. Besides the drone video a scientific study has been conducted through reputed National Institute of Technology, Nagpur on "Feasibility study regarding toe wall and providing remedial measures for black cotton soil dump towards Yekona Village in Amalgamated Yekona I & II OC Mine". Based on the technical study the remedial measures proposed will be taken up in time bound manner. The report is enclosed.
5.	PP to submit copies of MoU signed for coal transportation for various user including thermal power plant.	The MoU/FSA copies signed for coal transportation with Major consumers deliberate during point no. 2 are enclosed.

3.2.3. Deliberations by the committee in previous meetings

Date of EAC 1 :25.08.2023

NOTARY
SK. NAZRUL ISLAM
Regd. No. 44/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

Deliberations of EAC I :

48.6.2 *The Committee after deliberations noted that the instant proposal is primarily for extension of timeline for implementation of mechanised system and construction of Toe wall for adequate height along the OB dump. With regard to transportation of coal , the committee observed that PP could not produce the documentary proof, which indicates that PP has taken adequate steps to complete the woks of belt conveyor and silo loading. From the submission it is noted that Work order has been awarded to M/s Indian Port Rail & Ropeway Corporation Ltd (IPRCL), Mumbai vide letter dt 07.05.2022 for construction of railway siding and the target date of completion is 06.11.2023. However, as on date, the work of survey is completed. PP did not inform the committee about tentative timeline for revised work order which is ending in November 2023, which should have been on the basis of adequate planning. With regard to construction of toe wall, no work has been commenced.*

With regard to toe wall request, the committee agreed to maintain the height of 2.5 mt around the OB bump area with proper design. Further adequate wind barrier shall be installed near habitat area in order to arrest the movement of dust towards villages.

The Committee took a note of the court case titled Smt. Kamladevi Manaktchand Maloo Education Foundation & Anr Versus Union of India & Ors. (WRIT PETITION No. 2470 of 2022) pending before the Hon'ble Bombay High Court, Nagpur Bench, wherein the petitioner has filed the petition to prohibit the M/s Western Coalfields Limited (WCL) from using the disputed road (i.e. road acquired under the Dindora Barage Pipeline Project) because the said disputed road passes through the school and when heavy vehicles carrying the coal, affects the health of the students. It has also been contended that M/s Western Coalfields Limited (WCL) is currently transporting the coal over the disputed road and has started to construct the same. To authenticate the allegations of the petitioner the Ministry vide letter dated 07.06.2023 directed Integrated Regional Office, Nagpur to conduct the site inspection and prepare the report. Thereafter, the site inspection report was prepared by the Integrated Regional Office (WCZ), MoEF&CC.

Based upon the above-stated site inspection report, the Ministry has filed an affidavit on 09.08.2023 in the WRIT PETITION No. 2470 of 2022, before the Hon'ble Bombay High Court, Nagpur Bench. The Ministry in para no. 18 and 19 of the affidavit submitted that:

> *"...the Environment Clearance letter has been stipulated with the condition to implement the belt-conveyor system to transport the coal from silo to railway siding within 3 years (December 2023) and till that period PP to transport coal by road with safety measures. However, no specific route is defined in EC during the transit period. Also, based on the observation of IRO, it is now recognized that the coal transportation is passing through the contended zone.*
> *That, in the meanwhile, PP vide application dated 28.07.2023 has applied for amending the EC conditions of letter dated 01.01.2021 highlighting the reasons of delay in construction of belt conveyor & railway siding due to land acquisition, which will impede the time prescribed for said construction by the Ministry. However, if the said amendment in EC had not applied to by the PP, then this would have been a violation category case under EIA notification, 2006, as the conditions prescribed in EC with regard to the construction of rail transport mechanism is not complied within timeline."*

During meeting, the committee informed PP to submit the MoU signed for coal transportation to various user, however, PP failed to submit the same. The committee noted that coal transportation being done with miscellaneous coal consumer and power plant but quantities were not provided to the Committee. The committee was, therefore, opined that in order to avoid the road transportation to multiple users by different road, PP must submit the plan for 90% coal movement through rail and 10% by road with firmed timeline and documentary proof. Further, till the mechanized system put in place, the Committee asked PP to submit a dedicated transportation of coal through road, avoiding the sensitive areas, after conducting traffic study within one months.

In view of the above, the Committee asked the project proponent to submit compliance for the following details by November 2023:

1. *Current status and preparedness of proposed railway siding/pipe conveyor system as per specific condition no. 4 (vi) of EC letter dated 01.01.2021 with documentary proof (pipe conveyor plan comprising of layout, NIT and tendering details with date for the Railway siding alongwith Feasibility Study Report, Engineering Scale Plan, Detailed Project Report etc.)*
2. *PP shall submit the plan for coal transportation upto 90% of its peak capacity i.e 3.44 MTPA to dedicated users only including M/s MAHAGENCO thermal power plant as proposed in EIA-EMP report.*
3. *The Writ Petition No. 2470 of 2022 is sub-judice. However, the contentions alleged in the petition are authenticated by the site inspection report. Therefore, PP should plan to avoid the usage/construction of road for transportation of coal near the sensitive zone such as school, hospital, etc. and submit the alternative route till mechanised system is put in place. The proposed route should be supported by traffic study for one month (with baseline ambient air quality in alternate route) along with the mitigation measures to control the dust pollution till the period of completion of mechanised system.*
4. *PP shall submit the drone video of OB dump along with the construction of Toe-wall all around the OB dump.*
5. *PP to submit copies of MoU signed for coal transportation to various user including thermal power plant*

In view of above, project was deferred for submission of above observation.

3.2.4. Deliberations by the EAC in current meetings

6.2.2 The Committee deliberated on the various issues related to the proposal, i.e transportation of mineral outside the lease area, pollution due to transportation, stability of BC Dump, plantation, propose railway siding site and status of its construction, details of the court case on the issue of diversion of road near Warora town etc. and asked the PP to submit the details of proposed air pollution mitigative measures, expedite the plantation activities, expedite the installation of additional sprinklers, implementation of recommendation made by VNIT for the stability of the BC Dump.

During the meeting PP informed that supply of the coal (2.01 MT) is to the nearby thermal power plant (GMR and Sai Wardha TPPs) located at a distance of 5.5 KM and rest of the coal is supplied to other customers in open market. PP submitted that they are just supplying the coal at pit head and the tippers are engaged by the thermal power plants and other customers and WCL is not engaging tippers for the transportation of the coal. However, in future when the mine will expand WCL is planning to supply coal to other long distance customers and for which they are in the process of setting up of railway siding. PP , de letter dated 18.01.2024 submitted a copy of Fuel Supply Agreement (FSA) and referred to clause 7.2.2 of the FSA wherein it has stated that *"...The purchaser shall arrange to place the required number/type of trucks to lift the coal as per such loading programme/schedule ...."* and the same is the case with all consumers.

The Committee is of the view even though PP is not transporting the mineral but they are required to take steps to mitigate pollution if any, caused due to transportation of mineral outside the lease area. The PP in its reply submitted vide letter dated 18.01.2024 submitted the following existing and proposed air pollution control measures.

Sl No.	Mitigation Measures	Existing		Proposed		
		Nos.	Expenditure	Nos.	Expenditure	Timeline
1	Mobile Water Sprinklers	06	Through revenue budget	04	Through revenue budget	Feb,2024
2	Fog Canons	05	33.05 Lakh	05	40 Lakh	March.2024
3	Fixed Sprinklers	36	40.59 Lakh	30	30 Lakh	June, 2024
4	Wind Barrier railway siding	-	-	700 meter wind barrier with 8 mtr height 6 nos	200 Lakh	After commission of railway siding i.e. Dec 2025
5	Tree Plantation	1,20,000	170.48 Lakh (along with 5 year maintenance)	80,000	240 Lakh	During Monsoon of 2024
Total			224.32 Lakh		510 Lakh	

PP also provide the details of the court case wherein the core issue is requirement of EC for bypass road for transportation of mineral near Warora Town and its impact on the school. The matter is still pending and PP submitted an undertaking wherein it has mentioned that *"The Amalgamated Yekona I & II OC Mines, WCL does not envisage departmental coal transportation along the proposed by-pass road for which WP 2470/2023 has been filed before Hon'ble Bombay High Court, Nagpur Branch"*. Committee

observed that the case is not related to this EC rather it is related to construction of bypass road outside the lease area.

The Committee viewed the drone video submitted by the PP and deliberated on the requirement of toe wall around the OB dump. Committee observed that PP has reported that this dump is finalised and there would be no further dumping in the same. PP also submitted a feasibility study regarding toe wall and providing remedial measures for black cotton soil dump towards Yekona Village. The study was carried out by VNIT, Nagpur. The Committee is of the view that PP shall implement the recommendation made in the said report at the earliest. The PP vide his letter dated 18.01.2024 submitted that the recommendation will be implemented by June, 2024.

Based on the discussion held the Committee recommended the following amendment in the EC dated 01.01.2021

Specific Condition as per EC dated 1.01.2021	*Recommendation of EAC*
(vi) "Transportation of coal from Coal Handling Plant shall be through mechanized covered trucks for 3 years. No transportation by trucks after 3 years and proposed railway siding/pipe conveyer system."	*Transportation of Coal from the mine shall be through tarpaulin covered trucks till the commissioning of proposed railway Siding i.e. by December 2026. No transportation by trucks after Dec'2026 except for small scale industry/ consumers. PP shall implement the additional measures i.e i)Use upto 25% CNG/EV Tippers for the coal transportation, ii) ensure that transportation of mineral is in covered tippers, iii) regular water spraying on the road, iv) No overlooding of the tippers, v) cleaning of the roads at least for a 5 KM span on the transportation route to thermal power plant, vi) allowing the vehicle having valid fitness certificate and PUC, vii) wheel washing facility and viii) installation of CCTV camera at mine entrance etc. PP shall also implement the measures proposed in letter dated 18.01.2024 submitted to the Ministry for mitigating air pollution.*
(xviii) "Toe wall of atleast 15 mts to 20 mts height shall be constructed along the OB dump to protect yekona village."	*PP shall implement the recommendation made by VNIT by June 2024 for the stability of OB Dump and allied protection of Yekona village. There should not be any dumping toward the Yekona village side and additional measures be taken to ensure that the village is not endangered. With respect to other dump inside the mining lease area PP shall carry out the stability studies from the reputed institutes and implement the recommendations. PP shall submit the compliance of the same to RO, MoEF&CC along with documentary proof viz. photograph before and after implementation, ii) certificate from VNIT that the recommendation made by them has been implemented in letter and spirit and audited expenditure statement.* *Additional planting be done on the OB dump for densification of the vegetation and submit geo tagged proof on half yearly basis to IRO*

The Committee also prescribe an additional condition that: PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO

3.2.5. Recommendation of EAC

Recommended

3.2.6. Details of Environment Conditions

3.2.6.1. Specific

specific condition:	
1.	*PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO*

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

KOLGAON EXPANSION(DEEP) OC MINE by Western Coalfields Limited located at YAVATMAL,MAHARASHTRA			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/CMIN/451775/2023	J-11015/228/2009-IA.II(M)	29/12/2023	Mining of minerals (1(a))

3.3.2. Project Salient Features

Agenda No. 6.4

Kolgaon OC Project with increase in production capacity from 0.6 MPTA to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha by M/s Western Coalfields Ltd. located in Tehsil Wani, District Yeotmal (Maharashtra) - For Terms of Reference - reg.
[Online Proposal No. IA/MH/CMIN/451775/2023; File No. J-11015/228/2009-IA. II(M)]

6.4.1 The proposal is for Terms of Reference for Kolgaon OC Expansion Project for increase in production capacity from 0.6 MPTA to 0.8 MTPA with increase in the Mining lease project area from 397.25 ha to 545.41 ha. Located in Tehsil Wani, District Yavatma (Maharashtra).
The project/activity is proposed by the PP is an expansion project and covered under category A of item 1(a) 'Mining of Minerals Coal' of the Schedule to the Environmental Impact Assessment Notification, 2006 as the mining lease area is > 500 Ha. Therefore, it requires appraisal at Central level by the sectoral EAC in the Ministry. PP applied online vide proposal No IA/MH/CMIN/451775/2023 for grant of TOR and the proposal was placed in 5th EAC meeting held during 17-18 January, 2024.

6.4.2 The Project Proponent made a detailed presentation on the salient features of the project and informed that:

6.4.2.1: Location:

i. PP submitted that the Kolgaon Opencast Mine is located on the Wani Tahsil of Yeotmal District of Maharashtra. The block is adjacent to mugoli and nirguda blocks of WCL. It is bounded by North Latitude 190 5' 41" to 190 6' 20" and east Longitude 790 50' 49" to 790 52' 00" and is covered in the Survey of India Toposheet No. 56 M/1.

ii. PP submitted that the Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 11.04.2022 & 07.05.2022 has imposed

moratorium on grant of EC. There is no forest land involved in the project. The project does not require recommendation of NBWL. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones fall within 10 km boundary of the project.

6.4.2.2: Previous Approval & Past Production details:

1. PP submitted that the project has been granted Environmental Clearance for production capacity of 0.6 MTPA (Peak) with ML area of 397.25 ha (392.67 ha within mine lease area and 4.58 ha outside mine lease area) vide Ministry's letter no. J-11015/228/2009-IA. II(M) dated 16.02.2012.

1. PP submitted that the past production details as per which the production is well within the EC capacity.

Year	EC Sanctioned capacity(MTPA)	Actual production (MTPA)	Excess production beyond the EC sanctioned capacity
2005-06	0.40	NIL	Nil
2006-07	0.40	0.1	Nil
2007-08	0.40	0.32	Nil
2008-09	0.40	0.39	Nil
2009-10	0.40	0.31	Nil
2010-11	0.40	0.36	Nil
2011-12	0.60	0.60	Nil
2012-13	0.60	0.56	Nil
2013-14	0.60	0.05	Nil
2014-15	0.60	0.46	Nil
2015-16	0.60	0.12	Nil
2016-17	0.60	0.00	Nil
2017-18	0.60	0.26	Nil
2018-19	0.60	0.50	Nil
2019-20	0.60	0.0000040	Nil
2020-21	0.60	0.4524	Nil
2021-22	0.60	0.599	Nil
2022-23	0.60	0.60	Nil

Agenda No. 6.4

Kolgaon OC Project with increase in production capacity from 0.6 MPTA to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha by M/s Western Coalfields Ltd. located in Tehsil Wani, District Yeotmal (Maharashtra) - For Terms of Reference - reg.

[Online Proposal No. IA/MH/CMIN/451775/2023; File No. J-11015/228/2009-IA. II(M)]

6.4.1 The proposal is for Terms of Reference for Kolgaon OC Expansion Project for increase in production capacity from 0.6 MPTA to 0.8 MTPA with increase in the Mining lease project area from 397.25 ha to 545.41 ha. Located in Tehsil Wani, District Yavatma (Maharashtra).

The project/activity is proposed by the PP is an expansion project and covered under category A of item 1(a) 'Mining of Minerals Coal' of the Schedule to the Environmental Impact Assessment Notification, 2006 as the mining lease area is > 500 Ha. Therefore, it requires appraisal at Central level by the sectoral EAC in the Ministry. PP applied online vide proposal No IA/MH/CMIN/451775/2023 for grant of TOR and the proposal was placed in 5th EAC meeting held during 17-18 January, 2024.

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6.4.2.1: Location:

1. PP submitted that the Kolgaon Opencast Mine is located on the Wani Tahsil of Yeotmal District of Maharashtra. The block is adjacent to mugoli and nirguda blocks of WCL. It is bounded by North Latitude 190 5' 41" to 190 6' 20" and east Longitude 790 50' 49" to 790 52' 06" and is covered in the Survey of India Toposheet No. 56 M/1.

1. PP submitted that the Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC vide its OM dated 11.04.2022 & 07.05.2022 has imposed moratorium on grant of EC. There is no forest land involved in the project. The project does not require recommendation of NBWL. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones fall within 10 km boundary of the project.

6.4.2.2: Previous Approval & Past Production details:

1. PP submitted that the project has been granted Environmental Clearance for production capacity of 0.6 MTPA (Peak) with ML area of 397.25 ha (392.67 ha within mine lease area and 4.58 ha outside mine lease area) vide Ministry's letter no. J-11015/228/2009-IA. II(M) dated 16.02.2012.

1. PP submitted that the past production details as per which the production is well within the EC capacity.

Year	EC Sanctioned capacity(MTPA)	Actual production (MTPA)	Excess production beyond the EC sanctioned capacity
2005-06	0.40	NIL	Nil
2006-07	0.40	0.1	Nil
2007-08	0.40	0.32	Nil
2008-09	0.40	0.36	Nil
2009-10	0.40	0.31	Nil
2010-11	0.40	0.36	Nil
2011-12	0.60	0.60	Nil
2012-13	0.60	0.56	Nil
2013-14	0.60	0.03	Nil
2014-15	0.60	0.46	Nil
2015-16	0.60	0.12	Nil
2016-17	0.60	0.00	Nil
2017-18	0.60	0.26	Nil
2018-19	0.60	0.50	Nil
2019-20	0.60	0.0000040	Nil
2020-21	0.60	0.4524	Nil
2021-22	0.60	0.599	Nil
2022-23	0.60	0.60	Nil

6.4.2.3: Mining Details:

1. PP submitted that the total Mining lease area as per block allotment is 545.41 Ha. The revised Project Report (including Mining plan) and Mine closure plan for Kolgaon Expansion (Deep) Opencast Mine was approved by WCL Board in its 348th meeting held on 28th January, 2023 and circulated vide Board resolution no. WCL /office of CS/BM-348/2022-23/1012 dated 17.02.2023.

1. PP submitted the Method of mining operations envisages by opencast with shovel Dumper Combination. Total geological reserve reported in the mine lease area is 27.982MT, with mineable reserves are 16.29 MT. Total extractable reserves are 15.45 MT. Balance extractable reserve as on 01.04.2025 is 8.74Mt. Four composite seam with thickness ranging from 0.34 to 11.85. Grade of coal is G10 stripping ratio 1:10.87 m3/t while gradient is 1 in 2.4 to 1 in 5. The Life of mine is 12 years.

1. PP submitted that the total quarry area is 216.8 ha with a depth of 200m. Final mine void of 125.22 ha will be converted to water body. Post mining land use will be as follows:

1. PP submitted that the Transportation of coal is being done by dumpers in mine pit head, from surface to sidings by tippers and at sidings to loading by pay loaders. Transportation of coal has been proposed through belt conveyor.

Sl. No.	Land use post mining	Land use (ha)				
		Plantation	Water Body	Public use	Undisturbed	Total
1	External OB Dump	159.29	0.00	0.00	0.00	159.29
2	Excavation	91.58	125.22	0.00	0.00	216.80
3	Infrastructure like Sub-station, CHP Service Buildings etc.	3.00	0.00	5.00	0.00	8.00
4	Undisturbed area (brought under plantation)	65.00	0.00	0.00	45.30	110.300
5	Road	2.00	0.00	2.92	0.00	4.92

7	Green Belt Area	5.00	0.00	0.00	0.00	5.0
8	flood Protection Embankment	4.00	-	28.75	8.35	41.10
	Total	329.87	125.22	36.67	53.65	545.41

1. PP submitted that the ground water level has been reported to be varying between 4.5 m to 7.0 m during pre-monsoon and between 2.3 m to 3.5 m during post-monsoon in core zone. The ground water level has been reported to be varying between 4.3 m to 11.8 m during pre-monsoon and between 1.7 m to 5.4 m during post-monsoon in buffer zone. Total water requirement for the project is 408 KLD.

1. PP submitted that the NOC has been secured from CGWA for abstraction/ dewatering of mine discharge in respect of subject mine vide NOC no. CGWA/NOC/MIN/ORIG/2021/13912 valid upto 02/12/2023. Renewal application is in process vide application no. 21-4/761/MH/MIN/2017.

6.4.2.3: Project Cost & Benefit:

1. The project involves 187 project affected families. No village rehabilitation is involved in the project only land outside is involved for which a cost of Rs. 42.9635 cr has been kept in the approved project report.
2. Total capital cost of the project is ₹ 206.1941 crores. Cost of production is Rs. ₹ 2889.08/t(at 85%), CSR cost is Rs. 2 per tonne. Environment Management Cost in Rs crores; Capital 12.7773 cr. & Recurring cost is ₹8/tonne of coal production.

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

6.4.3 The Committee after deliberations noted the followings:

1. EC for Kolgaon OC for capacity 0.40 MTPA within ML area of 349.00 Ha has been granted vide letter no. J-11015/29/2001-IA. II(M) dated 12.04.2002.
2. EC for enhancement in capacity upto 0.6 MTPA within project area 397.25 ha has been granted vide letter no. J-11015/228/2009-IA. II(M) dated 16.02.2012.
3. Total Mining lease area as per block allotment is 545.41 Ha.
4. Mining plan and Mine closure plan for Kolgaon Expansion (Deep) Opencast Mine was approved by WCL Board in its 348th meeting held on 28th January, 2023 and circulated vide Board resolution no. WCL/office of CS/BM-348/2022-23/1012 dated 17.02.2023.
5. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones fall within 10 km boundary of the project.
6. Application for renewal of Groundwater NOC from CGWA has been submitted vide application no. 21- 4/761/MH/MIN/2017 dated 01.12.2023.
7. Production is well within the EC Capacity.

6.4.4 The Committee after deliberations noted that the instant proposal is for expansion in production capacity from 0.6 to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha. The Committee is of the view that as there is an increase mine lease area along with production capacity therefore, PP shall prepare fresh EIA/EMP based on the ToR prescribed and also conduct fresh public hearing.

Based on the above, EAC recommended the proposal for grant of Terms of reference for expansion of Kolgaon OC Project with increase in production capacity from 0.6 MPTA to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha by M/s Western Coalfields Ltd. located in Tehsil Wani, District Yeotmal (Maharashtra) under EIA Notification, 2006 and its amendments thereto with following additional specific conditions in addition to generic ToR.

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

specific for	
1.	*PP shall modify its Mine Plan wrt to mine lease area i.e. 545.41 ha for its peak production and get it approved from Ministry of Coal along with PMCP. No mining activity shall be conducted beyond this area.*
2.	*The total excavation (minerals, waste, top soil) to be excavated needs to bring out clearly in production and development plan. The mineable reserves, blocked reserves need to be mentioned along with life of mine. PP should add an annexure in the mining plan clearly showing the year-wise production and development plan (tabular format) till the end of life of mine. The location of mineral stacking, dumping sites, plantation and other infrastructures needs to bring out clearly in the mining plan. PP needs to bring out the waste to be generated during the entire life of mine and where it will be dumped/backfilled.*
3.	*PP has to prepare EIA-EMP report by taking fresh baseline data and thereafter conduct the Public Consultation, including public hearing, through concerned SPCB in the concerned districts as per the provisions/procedure contained in the EIA Notification, 2006 for information of the stakeholders about the present coal mining operations inviting comments and their redressal.*
4.	*PP should provide in the EIA Report details of all the statutory clearances, permissions, no objection certificates, consents etc required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC.*
5.	*PP shall submit the drone video & photographs of mined area, fresh lease area to be mined and existing and proposed transportation route.*
6.	*PP should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. The PP should submit the number of saplings to be planted, details of native species, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this PP should show on a surface plan (5-year interval for life of mine) of suitable scale the*

	area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. Plantation plan should be prepared in such a way that 80% of the plantation to be carried out in first 5 years and for the remaining years the proposal for gap filling. The seedling of height not less then 2 meters to be selected and accordingly cost of plantation needs to be decided. In addition to this, plantation in the safety zone at lease boundary the plantation should be planned in such a way that it should be completed within 2 years only.
7.	*PP should submit the quantity of surface or ground water to be used for this project. The complete water balance cycle need to be submitted. In addition to this PP should submit a detailed plan for rain water harvesting measures to be taken. The PP should submit the year wise target for reduction in consumption of the ground/surface water by developing alternative source of water through rain water harvesting measures. The capital and recurring expenditure to be incurred needs to be submitted*
8.	*PP should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this PP should mention the number and designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.*
9.	*PP should submit the year-wise, activity wise and time bound budget earmarked for EMP, occupational health surveillance, and activities proposed to address the issues raised during Public Hearing. The capital and recurring expenditure to be incurred needs to be submitted.*
10.	*PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads, manufacture of artificial sand, aggregates, use for farmers etc.) and accordingly Plan shall be included in EIA/EMP Report.*
11.	*PP shall provide the details of mining technology/methodology proposed to be adopted for coal mining operations and its associated environmental benefits of using from Climate Change perspective.*
12.	*In case of ground water abstraction/intersection. The PP shall comply with the Ministry's OM dated 23/03.2019. Compliance status needs to be presented before EAC at the time of appraisal.*
13.	*PP should clearly bring out that what is the specific diesel consumption – (Litre/Tonne of total excavation & mineral) and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted. PP shall also explore the possibility of using e-vehicles/LNG/CNG based mining machineries and trucks for mining operation and transportation of coal.*
14.	*PP shall submit detailed project report for implementation of in-pit conveyor belt with silo loading till railway siding for evacuation of coal with its target date of completion.*
15.	*All the certificates viz. Involvement of Forest land, distance from protected area, list of flora & fauna should be duly authenticated by Forest Department. The Certificate should bear the name, designation, official seal of the person signing the certificate and dispatch number.*
16.	*PP shall submit the measures to be taken for stability of dumps already existing and proposed to be developed during the mining operation. In case the height of the any dump is more than 60 meters then PP shall get the study done from reputed institute in this regard.*
17.	*The budget to be earmarked for the various activities shall be decided after perusal of the Standard EC Conditions published by the Ministry.*
18.	*PP should clearly show the transport route of the mineral and protection and mitigative measure to be adopted while transportation of the mineral. The impact from the center line of the road on either side should be clearly brought out supported with the line source modelling and isopleth. Further, frequency of testing of Poly Aclromantic Hydrocarbon needs to be submitted along with budget. Based on the above study, the compensation to be paid in the event of damage to the crop and land on the either side of the road needs to be mentioned. The PP should provide the source of equations used and complete calculations for computing the emission rate from the various sources. The Ground level concentration of various pollutants in worst case and control case scenario needs to be submitted. The cumulative impact of other activities needs to be considered in EIA/EMP Report.*
19.	*Details of grazing land if any involved in the mining lease to be provided. In case activity is to be proposed on grazing land then PP shall provide the relevant rule position applicable in this regard and compliance of the same.*
20.	*PP shall submit the action plan to adhere the Plastic Waste Management Rules 2016 and to adhere Ministry's OM dated 18.07.2022.*
21.	*PP shall submit the proposal of EC only after completion of about 75% conditions stipulated in earlier EC dated 16th February, 2012.*
22.	*PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs.*
23.	*The PP should ensure that only NABET accredited consultant shall be engaged for the preparation of EIA/EMP Reports. PP shall ensure that accreditation of consultant shall be valid during the collection of baseline data, preparation of EIA/EMP report and during the appraisal process. The PP and consultant should submit an undertaking the information and data provided in the EIA Report and submitted to the Ministry are factually correct and PP and consultant are fully accountable for the same.*
24.	*PP shall prepare a wildlife conservation plan in consultation with the local forest department.*
25.	*PP shall submit certified compliance report of EC conditions from Ministry's IRO. IRO shall certify that PP has complied 90% of conditions.*
26.	*The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples.*

3.3.6.2. Standard

1(a)	**Mining of minerals**
1.	An EIA-EMP Report shall be prepared for..... MTPA peak capacity in an ML project area of.....ha based on the generic structure specified in Appendix III of the EIA Notifi cation, 2006.

1.	An EIA-EMP Report would be prepared for..... MTPA peak capacity to cover the impacts and environment management plan for the project specific activities on the enviro ament of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on i mpacts including prediction modeling for MTPA of coal production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (thr ee months) except monsoon.
1.	If the washery is located within the mine lease or near to the mine lease its location should be cited seperately also, providing pillar cordinates and site layout plan. Insuch ca ses cumulative impact of mine operation with washery to be assessd and EMP measure to be drawn to the worst scenario
1.	Plan of mechanized transportation of coal to coal washery also for rejects and washed coal to be drawn
1.	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.	A toposheet specifying locations of the State, District and Project site should be provided.
1.	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land us e, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, washery and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area shoul d be given. The above details to be furnished in tabular form also.
1.	Land use map (1: 50,000 scale) based on a recent satellite imagery of the study area may also be provided with explanatory note on the land use.
1.	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), alon g with other physical features such as water bodies, etc should be furnished.
1.	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams out side the lease/project area) should also be clearly indicated in the separate map.
1.	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infru structure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural wat er bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bund s, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.
1.	In case of any proposed diversion of nallah/canal/river, the proposed route of diversion/modification of drainage and their realignment, construction of embankment etc. sho uld also be shown on the map as per the approval of Irrigation and flood control Department of the concerned state.
1.	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers, riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of lengthe, quantity and qua lity of water to be diverted
1.	Prior in principle approval from the respective state govt shall be required in cases where PP proposes diversion of river/ stream/ nallah/ drains. However, state approval shal l not be finally considered before the appraisal by EAC. PP shall have submitted detailed project report in case where diversion is required with emphasis on hydrological stu dy
1.	Similarly if the project involves diversion of any road/railway line passing through the ML/ project area, the proposed route of diversion and its realignment should be shown in the map along with the status of the approval of the competent authority.
1.	Break up of lease/project area as per different land uses and their stage of acquisition should be provided. LANDUSE DETAILS FOR OPENCAST PROJECT should be giv en as per the following table:

Sl. No.	Landuse	Within ML area/project area (ha)	Outside ML area/project area (ha)	Total
1	Agricultural land			
2	Forest land			
3	Wasteland			
4	Grazing land			
5	Surface water bodies			
6	Settlements			
7	Others (specify)			
	Total			

1.	Break-up of lease/project area as per mining plan should be provided.
1.	Impact of changes in the land use due to the project if the land is predominantly agricultural land/ forestland/ grazing land, should be provided.
1.	Study on the existing flora and fauna in the study area (10km) should be carried out by an Institution of relevant discipline. The list of flora and fauna duly authenticated sep arately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecol ogically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and sub mitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.
1.	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water

	(surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoE F&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.
1.	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per IS: standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.	Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.
1.	Forest diversion shall be only proposed for coal bearing areas. No non-essential infrastructure, office, workshop etc shall be propsed or developed in forest area. No forest area shall be used for OB dump, accordingly Mine plan to be prepared.
1.	Detail of OB recovery for reutilization of minerals from mining shall be explored.
1.	OB dump management from its extraction, transportation to reutilization, disposal / backfilling, to be carry on in a manner to minimize its impact. A detail to be furnished in EIA/EMP report
1.	Detailed water balance should be provided. The break-up of water requirement for the various mine operations should be given separately.
1.	Flow chart of water balance should be provided. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. should be provided. Details of STP in colony and ETP in mine should be given. Recycling of water to the max possible extent should be done.
1.	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.	PP shall propose and explore to use LNG/CNG based mining machineries and trucks for mining operation and transportation of coal. The measures adopted to conserve energy or use of renewable sources shall be submitted.
1.	PP to evaluate the green house emission gases from the mine operation/ washery plant and corresponding carbon absorption plan.
1.	Site specific impact assessment with its respective measure to be provided
1.	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark grey zone.
1.	Impact of blasting, noise and vibrations should be given.
1.	Impacts of mining on the AAQ and predictions based on modeling using the ISCST-3 (Revised) or latest model should be provided.
1.	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.	Effort be made to reduce/eliminate road transport of coal inside and outside mine and for mechanized loading of coal through CHP, Silo into wagons and trucks/tippers.
1.	Details of waste OB and topsoil generated as per the approved calendar programme, and their management shown in figures as well explanatory notes tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use should be given. OB dump heights and terracing based on slope stability studies with a max of 28o angle as an estimate, slope should be given. Sections of final dumps (both longitudinal and cross section) with relation to the adjacent area should be shown.
1.	Efforts be made for maximising progressive internal dumping of O.B., sequential mining, external dump on coal bearing area and later rehandling into the mine void.--to red

use land degradation.

1. Impact of change in land use due to mining operations and plan for restoration of the mined area to its original land use should be provided.

Progressive Green belt and ecological restoration /afforestation plan (both in text, figures and in theAdequate greenbelt nearby areas, coal stock yard and transportation area o f coal shall be provided with details of species selected and survival rate. Adequate greenbelt nearby areas, coal stock yard and transportation area of coal shall be provided w it.) details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route and CHP.

Table 2 : Stage Wise Cumulative Plantation

H341

S.N.	Land use Category	Present (1st Year)	5th Year	10th Year	20th Year	24th Year (end of mine life)*
1	Backfilled Area(Reclaimed with plantation)					
2	Excavated Area (not reclaimed) void					
3	External OB dump Reclaimed with plantation)					
4	Reclaimed Top soil dump					
5	Green Built Area					
6	Undisturbed area (brought under plantation)					
7	Roads (avenue plantation)					
8	Area around buildings and Infrastructure					
	Total					

6

S. No.	YEAR*	Green Belt	External Dump	Backfilled Area	Others(Undisturbed Area/etc))	TOTAL
1	1st year					
2	3rd year					
3	5th year					
4	10th year					
5	15th year					
20th year						
7	25th year					
8	30th year					
9	34th year(end of mine life)					
10	34- 37th Year (Post-mining)					

Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restorati on of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever a pplicable) and backfilling and progressive mine closure and reclamation should be furnished. Table 3: Post-Mining Landuse Pattern of ML Project Area (ha)

S.N.	Land use during Mining	Land Use (ha) Plantation	Water Body	Public use	Undisturbed	Total
1	External OB Dump					
2	Top soil Dump					
3	Excavation					
4	Roads					

1.

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5	Built up area			
6	Green Belt			
7	Undisturbed Area			
	Total			

1.	Occupational health issues. Baseline data on the health of the population in the im pact zone and measures for occupational health and safety of the personnel and m anpower in the mine should be given.
1.	Site specific Risk Assessment and Disaster Preparedness and Management Plan s hould be provided.
1.	(iIntegration of the Env. Management Plan with measures for minimizing use of n atural resources - wat r land, energy, etc. should be carried out.
1.	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.	Details of R&R. Detailed project specific R&R Plan with data on the existing soci o- economic status of the population (including tribals, SC/ST, BPL families) fou nd in the study area and broad plan for resettlement of the displaced population, si te for the resettlement colony, alternate livelihood concerns/employment for the d isplaced people, civic and housing amenities being offered, etc and costs along wi th the schedule of the implementation of the R&R Plan should be given.
1.	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.
1.	Corporate Environment Responsibility:
1.	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.	b) The Environment Policy must prescribe for standard operating process/procedu res to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
1.	c) The hierarchical system or Administrative Order of the company to deal with e nvironmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.	d) To have proper checks and balances, the company should have a well laid dow n system of reporting of non-compliances/violations of environmental norms to th e Board of Directors of the company and/or shareholders or stakeholders at large.
1.	f) In built mechanism of self-monitoring of compliance of environmental regulati ons should be indicated.
1.	Details on Public Hearing should cover the information relating to notices issued i n the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound actio n proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticate d English Translation of the same should be provided.
1.	Status of any litigations/ court cases filed/pending on the project should be provid ed.
1.	Submission of sample test analysis of Characteristics of coal: This should include details on grade of coal and other characteristics such as ash content, S and heavy metals including levels of Hg, As, Pb, Cr etc.
1.	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval, NOC from Flood and Irrigation Dept. (if req.), etc. wh erever applicable.
1.	FOREST CLEARANCE: Details on the Forest Clearance should be given as per t he format given:

TOTAL ML/PROJECT AREA (ha)	TOTAL FORESTL AND (ha)	Date of FC	Balance area for which FC is yet to be obtained	Status of appl. for. diversion of forest land

	If more than, provide details of each FC
1.	PP shall submit clarification from PCCF that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.
1.	Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users in the upstream and downstream of the project site. should be given.
1.	In case of expansion of the proposal, the status of the work done/activities as per mining plan and mine closure plan and progressive reclamation of OB dump shall be detailed in EIA/ EMP report
1.	A copy of application submitted for 5 star rating system to Ministry of coal for expansion cases may be provided. Certificate /rating given to project shall be provided with EIA-EMP report
1.	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.	Detailed Chronology of the project starting from the first lease deed alloted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL - MoEF & CC certification)
1.	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters section.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Expansion of Prakasham Khani Open Cast Coal Mine (PK OC) by THE SINGARENI COLLIERIES CO LTD located at BHADRADRI KOTHAGUDEM,TELANGANA			
Proposal For		Fresh EC	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/TG/CMIN/447190/2023	J-11015/78/2013-IA-II(M)	05/01/2024	Mining of minerals (1(a))

3.4.2. Project Salient Features

Agenda No. 6.5

Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha Forest Land and 187.56 ha non-forest land) of Singareni Collieries Company Limited (SCCL) located in Village & Mandal Manuguru, District Bhadradri Kothagudem (Telangana) - For Environmental Clearance under Ministry's OM dated 11.04.2022 (Stage I - 20% expansion) - reg.

[Online Proposal No. IA/TG/CMIN/447190/2023; File No. J-11015/78/2013-IA-II(M)]

6.5.1 The proposal is for Environmental Clearance for Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha is Forest Land and 187.56 ha is non-forestland) of Singareni Collieries Company Limited located in Village & Mandal Manuguru, District Bhadradri Kothagudem (Telangana) under provisions of 7(i) of EIA Notification, 2006 and under OM dated 11.04.2022 [Stage-I 20%].

The project falls under Schedule 1(a) of mining and is a Category 'A' project as per EIA notification 14th September 2006 as the mining lease area is more than 500 Ha. PP applied for expansion in pursuant to O.M dated 11.04.2022 [Stage-I 20%].

6.5.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.5.2.1: Location:

1. The project area is covered under Survey of India Toposheet No. 65C/9 & 65C/13 and is bounded by North Latitudes 17°55'36.81" N to 17°58'54.87" N and East Longitudes 80°44'16.41" E to 80°48'48.84" E.
2. The project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13th January, 2010 has imposed moratorium on grant of environment clearance.

6.5.2.2: Mining Lease: The PKOC Mine is amalgamation of two existing opencast mines namely, Manuguru OC II Expansion and Manuguru OC IV Extension opencast mine, with production capacity of 9.75 MTPA in the mine lease area of 2402.40 ha.

Sl No	Details	Area (Ha)

1	Manuguru ML granted vide G.O Ms. No 217 dated 12.08.2008	921.0
2	Manuguru Ext. granted vide G.O Ms. No 259 dated 23.09.2008	125.90
3	Manuguru OC-II granted vide G.O Ms. No 63 dated 6.03.1999	158.22
4	Manuguru OC-III granted vide G.O Ms. No 91 dated 24.03.2005	75.00
5	Manuguru OC-II granted vide G.O Ms. No 238 dated 27.08.2008	175.59
6	Manuguru OCP IV granted vide G.O Ms. No 13 dated 18.05.2016	384.31
7	Manuguru OC-II granted vide G.O Ms. No 5 dated 12.04.2019	288.74
Total:-1		2165.86
8	LoI for non-coal bearing area	233.54
Grand Total		2402.40

6.5.2.3: Forest Area: PP submitted that 2214.84 ha of forest land has been reported to be involved in the project. Approval under the Forest (Conservation) Act, 1980 for diversion of 2214.84 ha of forest land for non-forestry purposes has been obtained vide MoEF&CC.

Letter No	Area (in Ha)
F.No. 8-8/96-FC dated 10.10.1997 for an area 286.25 ha covered under PK OC mine.	286.25
F.No. 8-37/2001-FC dated 31.12.2003 for an area 75.00 ha covered under PK OC mine.	75
F.No. 8-73/2005-FC dated 10.07.2008 (Corrigendum Dated 06.11.2009) for an area of 1161 ha out of which 828.16 ha covered under PK OC mine.	828.16
F.No. 8-56/2004-FC dated 14.07.2008 for an area of 125.90 ha covered under PK OC Mine.	125.9
F.No. 8-7/2008-FC dated 30.12.2008 for an area of 175.69 ha covered under PK OC mine.	175.69
F.No. 8-71/2009-FC dated 06.01.2016 for an area of 10.50 ha of which 4.68 ha is covered under PK OC Mine.	4.68
F.No. 8-79/2013-FC dated 24.04.2017 for an area of 430.42 ha is covered under PK OC Mine.	430.42
F.No. 8-70/2014-FC dated 02.11.2018 for an area of 367.03 ha of which 288.74 ha is covered under PK OC Mine.	288.74
Total	2214.84

6.5.2.4: Protected Area: The Kinnerasani Wild life sanctuary and Eco-Sensitive zone are at a distance of 5.82 km and 1.92 km. Wildlife conservation plan for Schedule-I species (Indian peafowl, hour-horned antelope, monitored lizard & Gaur) of Manuguru area has been approved by PCCF&CWW, Telangana with a budgetary provision of Rs.2.41 Crores vide lr.No.906/2016/M2, Dated:14.06.2018.

6.5.2.5: Method of Mining & Mining Plan:

1. PP submitted that"Mining Plan (Including Mine Closure Plan) (3rd Revision) for Prakasham Khani OC Mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension)" was approved by MoC vide Lr.No.38018/6/2019-PCA dated 7th October, 2019 for an extent of 2402.40 ha (Coal Bearing area 2168.86 ha + Non Coal Bearing area 233.54). PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 2402.40 Ha.

1. Total geological reserve reported in the mine lease area is 402.01 MT with 309.35 MT mineable reserves. Out of total mineable reserves 290.55 Mt are extractable, out of which 223.78 MT were already extracted by FY 31-03-2023 and 61.77 MT (2023-24) are available for extraction. Percent of extraction is 72.27 %.
2. 15 seams with thickness ranging from 1.3 to 9.78 m are workable. Grade of coal is G-8. Stripping ratio 7.75, while gradient is varying from 1 in 5.5 to 6.5.
3. Method of mining operations is by Opencast method of working with Surface Miner & Shovel and Dumper combination
4. Life of mine is 7 years from 2023-24.
5. The project has 3 external OB dump in an area of 504.34 ha with 120 m height and 441.06 Mm3 of Total OB. 1 Internal OB dump in an area of 783.199 ha with 1066.44 Mm3 of Total OB is envisaged in the project.
6. Total quarry area is 1495.476 ha out of which backfilling will be done in 783.119 ha which shall be reclaimed with plantation while final mine void will be created in an area of 712.357 ha with a depth of 270 m. Final mine void will be converted into water body.
7. **Land Use Details of Mine:** The land usage pattern of the project is as follows:

Pre-mining land use details

Land ownership	Land use	Extent (ha)
Private land	Agricultural	25.498
Govt. land	Agricultural	126.743
	Township	35.317
Forest land	Reserve	2214.84
TOTAL		2402.400

Post Mining:

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.03.2023 GOVT. OF WEST BENGAL

Sl. No.	Type	Total	Plantation	Water Body	Public/ Company Use
1	Excavation / Quarry Area				
2	Backfilled Area	783.119	783.119		
3	Excavated Void	712.357		712.357	
4	External Dump	504.341	504.341		
5	Safety Zone /Rationalisation area	179.743	82.293	34.219	63.231
6	Diversion Nallah	22.085		22.085	
7	Road & Infrastructure area (Service Buildings and CHP)	137.976	84.996		52.98
8	Embankment	33.334	33.334		
9	Green Belt	28.116	28.116		
10	Water Reservoir near pit/Water body	1.329		1.329	
Grand Total		2402.400	1516.199	769.990	116.211

1. **Transportation of Coal:** Transportation of coal has been proposed by working face to in-pit crusher by dumpers, in-pit crusher to KCHP siding by conveyor and KCHP siding to customers by rail mode. This is existing transportation.
2. Reclamation Plan in an area 1516.199 ha, comprising of 504.341 ha of external dump, 756.136 ha of internal dump and 28.116 ha of green belt and 227.607 ha in others proposed for green belt development.
3. Coal linkage as per Fuel Supply Agreement of the Company.

6.5.2.5: Baseline Data: Environmental Baseline data was generated in the Summer season from March - 2023 to May - 2023 (Summer Season) at 10 locations.

Air Quality (Core Zone)	Ambient air quality data monitored in the core zone shows that PM10 concentrations varied from 149.0 to 196.0µg/m3. The PM2.5 concentrations were in the range of 37.3µg/m 3 to 52.4µg/m 3. The SO 2 and NO 2 concentration varies from 10.9µg/m 3 to 13.9µg/m 3 and 15.3µg/m 3 to 20.5µg/m 3 respectively. All the parameters were found to be within the Coal Mine Standards, GSR 742 (E), dt. 25.09.2000. Carbon monoxide concentration was found to be BDL.
Air Quality (Buffer Zone)	In buffer zone, the concentration of PM10 varied from 49.0µg/m 3 (BA-4, Shanthi Nagar village) to 80.0µg/m 3 (BA-2, Bandugirigudam village). The PM2.5 concentration varied from 21.9µg/m 3 (BA-1, Pagudem village) to 34.5µg/m 3 (BA-8, Samithi Singaram village). The SO 2 concentration varies from 9.2µg/m 3 (BA-8, Samithi Singaram village) to 12.4µg/m 3 (BA-2, Bandugirigudam village) andNO x concentration14.1µg/m 3 (BA-5, Kunavaram village) to 18.2µg/m 3 (BA-3,Bommuragupalli) respectively.
Noise Quality	In core zone, max, value of Day Leq is 65.2 dB (A) and max, value of Night Leq is 50.5 at MNG OC-IV Ext. Site Office.In buffer zone, min., Day Leq is 47.7 dB (A) at Bommuraiupalli (BN-3) & Shanthi nagar (BN-4) and max., Day Leq is 49.2dB (A) at Bandugirigudam (BN-2) village andmin., Night Leq is 35.8 dB (A) at Kunavaram Village (BN5) and max., value of Night Leq is 39.8 dB (A) at Samithi singaram (BN-8).
Surface Water Quality	The surface water quality is compared with CPCB water quality criteria. The analysis results of surface water samples from all the sampling locations shows that the water quality conforms to Class-B (Outdoor bathing (Organized) Criteria
Ground Water Quality	pH values were in the range between 7.3 to 7.7 in GW-1 to GW-5 groundwater samples collected within the study area. TDS concentrations are in the range of 254 - 1105 mg/L, are above the acceptable limit of 500mg/L but within the permissible limit of 2000mg/L at all locations except GW-1, 2 (254, 436 mg/L) are within the acceptable limits. Calcium concentrations are observed to be above the acceptable limit of 75mg/L but within the permissible limit of 200mg/L at Shivalingapuram GW-3 (90mg/L), Samithi Singaram GW-4 (99mg/L) and within the acceptable limits in other locations. Magnesium concentrations were observed to be above the acceptable limit of 30mg/L but within the permissible limit of 100mg/L in GW-3, 4, 5 (66, 69, 38mg/L) and within the acceptable limits at other GW-1, 2 locations. Chlorides concentration is observed to be above the acceptable limit of 250mg/L but within the permissible limit of 1000mg/L at location Samithi Singaram GW-4 (259mg/L) and within the acceptable limits at other locations. Sulphates, Fluorides Nitrates & Iron concentrations were observed to be within the acceptable limit at all the locations. The total alkalinity concentrations were in the range 180 – 575mg/L, were above the acceptable limit of 200mg/L but within the permissible limit of 600mg/L at all locations except Padageru GW-1 (180mg/L) is within the acceptable limit. Total hardness concentrations were in the range 87 – 524mg/L, were above the acceptable limit of 200mg/L but within the permissible limit of 600mg/L at all locations except Padageru GW-1 (87mg/L) is within the acceptable limit. The concentrations of heavy metals Cadmium (Cd), Copper (Cu), Lead (Pb), Zinc (as Zn), Arsenic (As), Chromium (Cr), were either below the detection limits or below the permissible limits. The water samples, for which few parameters exceed acceptable limits but within the permissible limits can be used for drinking purpose in the absence of alternate water resources.
Water Requirement	The ground water level has been reported to be varied between 2.05 m to 7.48 m during pre-monsoon and between 1.20 m to 4.18 m during post-monsoon. The total water requirement for the project is 9816 KLD. Ground Water Clearance was obtained vide Lr. No. Lr. No. 258/T/BGCL/2018-2 Dated 18.05.2021 valid up to 17.05.2026 for existing project.

6.5.2.6: Public Hearing: Public hearing was conducted for MNG OC II & MNG OC IV on 28.08.2007 & 25.07.2012 respectively. However, Public hearing is exempted for the present proposal i.e. Prakasham Khani OC Mine of 9.75 MTPA capacity. PP submitted the issues raised during PH of MNG OC II were employment, falling down of ground water level, R&R issues, requirement of basic amenities like roads, education, health and drinking water facilities. The issues raised during PH of MNG OC IV were control of water pollution, employment, establishment of Thermal Power Plant by SCCL and avenue plantation in village area.

6.5.2.7: EMP Budget: PP submitted that the Environment Management Plan (EMP) for the said project and reported that the cost of EMP will be Rs. 52.90 Crore (Capital) and Rs. 25.54 cost per tonne as recurring cost.

6.5.2.8: Other Details:

1. No River/Nallah diversion is proposed in this project.
2. No R&R was involved in this project.
3. Regular monitoring of ambient air quality is being carried out on fortnightly basis. The documented report is being submitted to State Pollution Control Board and also to MoEF&CC along with half yearly EC compliance report. In general, the results of ambient air quality monitoring data were found within prescribed limits except few aberrations which can be attributed to the specific local conditions during the day of sampling.
4. No court cases, violation cases are pending against the project of the PP. The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder. The amalgamated EC was granted on 12.02.2021. PP submitted that following past production detail:

Year	EC sanctioned capacity (MTPA)	Actual production (MTPA)	1. Excess production
2021-22	9.75	9.75	0
2022-23	9.75	9.75	0

3.4.3. Deliberations by the committee in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

6.5.3 Committee after deliberations noted the followings:

1. PP has submitted the para-wise reply of O.M. dated 11.04.2022 as follows:

SI No.	Para No.	Conditions as per OM	Compliance
1.	4(i)	The project should have gone through the public hearing process, at least once, for its existing EC capacity on which expansion is being sought, except those category of projects which have been exempted as per para 7 III (i) of EIA Notification 2006 and its amendments.	Present PK OC is amalgamation of 2 adjacent opencast mines viz., Manuguru OC II Expansion & Manuguru OC IV Extension for which public hearing were conducted individually. The details are given below: 1. MNG OC-II Exp.: • PH conducted on 28.08.2007 for a peak production capacity of 5.00 MTPA for which MoEF&CC granted EC on 31.07.2008. • Subsequently, EC was obtained for enhanced capacity of 6.25 MTPA on 21.02.2014 under 25% enhancement of existing EC capacity as per O.M. dated 19.12.2012. 2. MNG OC-IV Ext.: PH conducted on 25.07.2012 for a peak production capacity of 3.50 MTPA for which MoEF&CC granted EC on 10.12.2014. 3. PK OC: SCCL obtained EC for PK OC with a production of 9.75 MTPA (6.25+3.50) under 7(ii) on 12.02.2021.
2.	4(ii)	There should not be change in Category of the project from 'B2' to 'B1' or 'A' due to proposed modernization or expansion.	There is no change in the project area i.e., 2402.40 ha and hence there is no change in category i.e., 'A'.
3.	4(iii)	There is no additional land acquisition or forest land diversion involved for the proposed expansion or there is no increase in lease area with regard to mining vis-a-vis the area mentioned in the EC, based on which public hearing has been held earlier.	The expansion in terms of production is proposed in the same project area for which EC has been granted earlier. There is no additional land requirement in the proposed expansion project.
4.	4(v)	The proposed expansion shall not be more than 50% of production capacity as mentioned in the prior EC, issued on the basis of public hearing held and the same shall be allowed in minimum three phases.	The present proposal is for 30% increase in the previous EC sanctioned capacity i.e., from 9.75 MTPA to 12.75 MTPA within the same project area of 2402.40 ha.
5.	4(v)	Predicted environmental quality parameters arising out of proposed expansion/modernization shall be within the prescribed norms and the same shall be maintained as per prescribed norms.	Air quality impact prediction modelling has been done for the expansion capacity of 12.75 MTPA. All the predicted GLCs are within the prescribed norms. The details of predicted environmental quality parameters are furnished in Chapter-4 of EIA/EMP.
6.	4(vi)	The proposed expansion should not result in reduction in the greenbelt area as stipulated in the earlier EC, or if the existing ratio of greenbelt is more than 33% after expansion it should not reduce below 33%.	There is no reduction in the greenbelt area due to the proposed expansion. The green belt area as per the existing EC as well as proposed expansion is 1516.199 ha at post closure stage, which is 63.1% of the total project area.

7.	4(vii)	The project proponent should have satisfactorily complied the conditions stipulated in the existing EC(s) and satisfactorily fulfilled all the commitments made during the earlier public hearing / consultation proceedings and also the commitments given while granting previous expansion, as may be applicable. This shall be duly recorded in the certified compliance report issued by the IRO/CPCB/SPCB, which should not be more than one-year-old at the time of submission of application.	The conditions stipulated in the existing EC are being complied and all the commitments made during the earlier public hearing have been fulfilled. Director, MoEF&CC, Integrated Regional Office, Hyderabad inspected the project on 20th September, 2023 and issued latest Certified Compliance Report (CCR) on EC conditions.
8.	4(viii)	Public Consultation shall be undertaken if applicable by obtaining response in writing, as per para 7 III (ii) (b) of EIA Notification 2006, except those category of projects which have been exempted as per para 7 III (i) of EIA Notification 2006 and its amendments.	Revised EIA/EMP has been prepared for production enhancement up to 50% of existing EC as per O.M dated 30.05.2022. Public consultation will be undertaken by obtaining response in writing, as per para 7 III (ii) (b) of EIA Notification 2006 and the details will be furnished in the proposal while seeking EC for enhancing coal production from 40 to 50 percent.
9.	4(ix)	Effluent monitoring including air quality monitoring systems as specified in the existing EC, if stipulated, should have been installed.	Effluent monitoring and air quality monitoring is being carried out as specified in the EC. An online ambient air quality monitoring station was established at the core zone.
10.	5	Requirement of revised EIA/EMP report.	Prepared a revised EIA/EMP report for 50% enhancement in sanctioned EC capacity.
11.		Requirement of Certified Compliance Report.	Director, MoEF&CC, Sub-Office, Hyderabad inspected the project on 20th September, 2023 and issued latest Certified Compliance Report (CCR) of EC conditions.
12.		Requirement of fresh public consultation.	Not Applicable (The present proposal is seeking EC for 20% enhancement of coal production during Phase-I)

1. PP has submitted an application to increase production capacity from 9.75 MTPA to 10.45 MTPA (Stage-I expansion upto 20% under O.M. dated 11.04.2022 for expansion up to 50%).

1. PP has obtained EC for PK OC project on 3.02.2021 for production capacity of 9.75 MTPA in ML area of 2402.40 ha.

1. Prakasham Khani Opencast (PK OC) Project formed by amalgamating Manuguru OC-II Expansion & Manuguru OC-IV Extension projects located near Manuguru Village & Mandal, Bhadradri Kothagudem District of Telangana State.

1. PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 2402.40 Ha.

1. PP has obtained the permission for diversion of 2214.84 ha of forest land within the project boundary of PKOC Mine i.e. 2402.400 ha.

1. PP has obtained the Ground Water Clearance vide its Letter No. 238.7/SCCL-2018-2 dated 18.05.2021 valid up to 17.05.2026.

1. Baseline data has been collected during the period of March to May, 2022 in the Summer season for Air, Water, Soil, Noise and others.

1. PP has submitted the revised EIA-EMP for expansion of Prakasham Khani Opencast Coal Mine with production capacity 12.75 MTPA in ML area of 2402.40 ha.

1. PP has taken pollution control measures such as installation of mist sprayers and fixed water sprinkling system for dust suppression.

1. The project boundary is at a distance of 1.92 km from the ESZ of Kinnerasani Wildlife Sanctuary.

1. Schedule I species - Indian peafowl, four horned antelopes, Indian monitor lizard & Gaur are found in the study area.

1. Wildlife conservation plan is under implementation for conservation of bio-diversity in the PKOC project with the funds of Rs. 241.385 Lakhs deposited in the year 2018 by SCCL.

1. PP has submitted the route of coal transportation from face to in-pit crusher by dumpers, in-pit crusher to KCHP by Conveyor and KCHP to customers by rail.

1. PP also submitted an affidavit vide which inter-alia it has mentioned that there is no difference document submitted to the Ministry and presentation being made to EAC and there is no litigation on the project.

6.5.4 The EAC, after detailed deliberations observed that the instant proposal has been submitted under Ministry's OM dated 11th April, 2022 for expansion in capacity upto 50% with exemption in public hearing and without change in mine lease area under clause 7 (ii) of EIA, Notification, 2006. Earlier Ministry had issued EC on 12.02.2021 for capacity of 9.75 MTPA in the ML area of 2402.4 ha without PH as the EC was granted for amalgamation of two earlier granted ECs. Committee observed that as Ministry's OM dated 11.04.2022 *"The proposed expansion shall not be more than 50% of production capacity as mentioned in the prior EC, issued on the basis of public hearing held and the same shall be allowed in minimum three phases."* It is clear from the aforesaid OM that expansion is dependent of capacity for which PH was done. In the instant case the capacity which can be extended based on PH in pursuant to OM is as follows:

Mines & EC details	PH Done	Max capacity with Stage –I (20%)	Max Capacity with Stage-II(40%)	Max Capacity with Stage III(50%)
Manuguru II OC-EC dated 31/07/2003	5 MTPA	6 MTPA	7 MTPA	7.5 MTPA
Manuguru IV OC-EC dated 10/12/2014	3.5 MTPA	4.2 MTPA	4.9 MTPA	6.3 MTPA
Total	8.5 MTPA	10.2 MTPA	11.9 MTPA	13.8 MTPA

PP is already operating the mines at 9.75 MTPA capacity and requested for increase in production capacity up to 10.45 MTPA but it is evident form the above that the maximum expansion at stage-I (20%) that can be granted with exemption of PH in pursuant to OM dated 11/04/2022 comes out to be 10.2 MTPA. But for further expansion up to 40% there is no change in documentation as compared to 20% expansion except for submission of CCR with respect to previous expansion obtained. In the instant case PP has already obtained expansion of 25% for Manuguru II OC on 21.02.2014 in pursuant to OM dated 19/12/2012 and also submitted the CCR for the amalgamated EC. Further, as per OM dated 11/04/2022 max capacity that can be granted is 11.9 MTPA and the capacity sought by the PP is within the same. Therefore, the Committee agreed for expansion up to 10.45 MTPA as sought by PP but is of the view that further expansion if any PP sought then it should not be more than 11.9 MTPA.

The Committee reviewed the compliances of previous EC conditions as per the peripheral requirements/applicable conditions of OM. It was observed that partial conditions have been mentioned in IRO report for which PP has committed to comply fully within fixed timeline such as to provide training to persons of near villagers, grassing on the active OB dump, 1,50,000 nos. of trees to be planted and monitoring of effluent discharge.

Committee asked the PP to speed-up the process of the lease related work and submit the documents to IRO, MoEF&CC. Additional 1 nos. of CAAQMS to be installed within the ML area in consultation with concerned SPCB.

The EAC, after detailed deliberation on the submission/commitment of Project Proponent observed that PP has to strictly work as per timeline for compliance of EC conditions. Considering the commitment of PP and their seriousness to implement it, *EAC recommended the proposal for grant of Environment Clearance upto 20% (Stage I) to Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha Forest Land and 187.56 ha non Forest Land) of M/s Singareni Collieries Company Limited located in Village & Mandal: Manuguru, District: Bhadradri Kothagudem (Telangana), under OM dated 11.04.2022, under the provisions of Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the following specific conditions in addition to specific conditions already prescribed in EC dated 12.02.2021, and standard EC conditions for environmental safeguards:*

3.4.5. Recommendation of EAC

Recommended

3.4.6. Details of Environment Conditions

3.4.6.1. Specific

specific conditions:	
1.	*PP to obtain the CTO for Opencast coalmine capacity of 10.45 MTPA after grant of EC.*
2.	*PP shall get the mining lease amalgamated and submit the documents in this regard to IRO, MoEF&CC.*
3.	*PP should install additional 1 nos. of CAAQMS within the ML area in consultation with concerned SPCB.*
4.	*PP to address the issues of local public with sufficient budgetary provisions as a part of public hearing. The maintenance of all public hearing activities shall be covered through recurring cost, which will be part of CSR budget. Details shall be intimated to IRO*
5.	*PP to install continuous ambient air quality monitoring stations at suitable locations preferably village side with consultation of SPCB. The real time data so generated shall be uploaded on company website and linked it with website of CPCB &SPCB. Inaddition, data should also be displayed digitally at entry and exit gate of mine lease area for public display.*
6.	*PP to implement the activities proposed in EMP in a time bound manner. The budget earmarked for the same shall be kept in a separate account and audited annually. PP shall submit the implementation status with documentary proof and amount spent for the same to RO, MoEF&CC.*
7.	*PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.*
8.	*PP shall conduct third party audit of compliance of EC condition at an interval six months and its report shall be submitted to IRO, MoEF&CC.*
9.	*The green belt and plantation plan submitted in the EIA/EMP shall be implemented in a time bound manner. Survival rate of at least 80% shall be maintained by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as*

	the case may be for the activities carried out during previous year. Third party monitoring of the plantation done shall be carried out through an institution of MoEFCC (e.g ICFRE)
10.	*PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/03/2022, PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.*
11.	*Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.*
12.	*PP should collaborate with the recognized institute for facilitating the skill development program for the local villagers. PP shall keep the digital record of skill development programme wherein the details of the persons undergone skill development program needs to be provided. Further, details of benefit obtained viz. whether they are employed or not also needs to be monitored. Based on this data PP needs to modify its skill development programme so that maximum number of trainees get the employment. After skilling local persons, if possible PP shall engage them as per their qualifications*
13.	*PP shall complete the proposed belt conveyor installation as proposed during the meeting.*
14.	*PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO*

3.4.6.2. Standard

1(a)	**Mining of minerals**
air quality monitoring and mitigation measure	
1.	Adequate number of Fog canon (mist sprayer) shall be installed to reduce the impact of air pollution at dust generating sources with time bound action plan.
1.	Post environmental closure third party monitoring by reputed instituted in air quality, water, land & soil etc shall be carried out and analysed with EMP measures at regular interval. A suitable recommendation in this regard, shall be furnished to IRO, MoEF&CC for compliance. The data used for analysis shall be obtained from continuos AQMS, site specific water regime. Also third party shall analyses the implementation of river diversion, meeting to the requirement of project report.
1.	Comparison of average monthly temperature of pre and post mine operation after obtaining EC shall be elaborated for post three years and a record to be maintain at regular interval.
1.	PP to install solar lights along the road used for transportation of coal to avoid the accidents at night and also seek its maintenance.
1.	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.
1.	Coal stock pile/crusher feeder and breaker, material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gallery should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
1.	Coal handling plant shall be operated with effective control measures with various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.
1.	Adequate measures on EMP should be analyzed on annual basis to assess the trend of air pollution data from continuous monitoring station and quarterly report shall be generated and submitted with 6 monthly compliance reports to RO, MoEF&CC.
1.	Effective safeguard measures for prevention of dust generation and subsequent suppression like regular water sprinkling shall be carried out in areas prone to air pollution. The Fugitive dust emission from all sources shall be regularly controlled by installation of required equipment's. It should be ensured that air pollution level confirm to the standards prescribed by the MOEFCC/CPCB
1.	PP should Install Wind breaker/shield arrangement along the railway siding for reducing the dust propagation in upwind direction.
1.	Continuous ambient air quality monitoring stations as prescribed in the statue be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. The new CAAQMS should be installed with expansion.
1.	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
1.	Transportation of coal, to the extent, if permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun/ Fog cannon etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
1.	The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan/or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
corporate environment responsibility	

1.	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority
1.	Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
1.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environmental/forest wildlife norms/conditions and/or shareholders/stake holders.
1.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
1.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
green belt	
1.	Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads. And Plantation should also be carried out in nearby area with consent of forest department and gram panchayat within 10 km radius with its proper maintenance
1.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
land recalmation	
1.	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 25th August, 2009 and subsequent amendments.
1.	Hon'ble Supreme Court in its Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC
1.	All approach roads to mine and all other roads which are in regular use should be black topped. The maintenance of road shall be done by PP in collaboration with state government
1.	PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads/ manufacture of artificial sand, aggregates/ use for farmers etc.)
1.	Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoid air born of particles
1.	Progressive backfilling of mine and progressive reclamation of OB dump shall be done
1.	Top soil should be stored separately at marked area and necessary vegetation shall be maintained to avoid any entrainment of dust
1.	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.
1.	Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office.
1.	Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
1.	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining" post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA EMP submitted to the Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.
1.	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MoEFCC) from time to time shall be submitted to MOEFCC Regional Office (RO).
mining plan	
1.	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.

1.	Transportation of coal till Railway Siding shall be developed to avoid transportation through Road
1.	PP shall adopt mining method by preferably using surface miners for the project and silo loading through in-pit conveyor should be adopted
1.	Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.
1.	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.
1.	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
1.	5- Star Rating is mandatory to obtaine certification as per guidelines of Ministry of Coal
miscellaneous	
1.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
1.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
1.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
1.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
1.	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
1.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
1.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
1.	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
1.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
1.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
1.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.
1.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
1.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
1.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
1.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
noise and vibration monitoring and prevention	
1.	Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
1.	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS.
1.	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry, RO on six-monthly basis.
public hearing and human health issues	
1.	Compensation of the land acquired for the project shall be settled as per the R&R Policy within fixed timeline.
1.	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six-monthly basis.
1.	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.

1.	Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.
1.	Implementation of the time bound action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the time bound action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.
1.	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.
1.	PP to conduct need based assessment survey of the area to for in order to decide the activities to be carried under the CSR and to provide detail of the activity carried out with adequate budgetary provision and time bound action plan.
1.	PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
1.	Permanent Health care facilities of Hospital should be established within 5 km. of project boundary for the local people.
1.	PP must ensure an emergency action plan during pandemic in order to provide assistance to the nearby villages located within the 10 km radius buffer zone (If required)
1.	PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year
1.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours
1.	PP to take measure for installation of Renewable Energy sources in nearby area falling within 10 km radius
1.	Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.
1.	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.
statutory compliance	
1.	The maximum production or peak production at any given time shall not exceed the limit as prescribed in the EC.
1.	All the conditions stipulated in previous Environment Clearance conditions should be strictly complied within certain timeline
1.	Validity of Environment Clearance is as per life of the mine mentioned in EC letter or 30 years as per EIA Notification, 2006 and its amendments therein
1.	Permission of power supply to be taken from the concerned authority for meeting power demand of the project site.
1.	Solid/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.
1.	The project proponent shall obtain the necessary permission from the Central Ground Water Authority.
1.	The project proponent shall obtain Consent to Establish /Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee prior to start/commencement of mining operations/production
..	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. TThe implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
1.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
water quality monitoring and mitigation measures	
1.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
1.	The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.
1.	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012/1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
1.	No obsolete technologies for sewage treatment shall be implemented. Construction of Sewage Treatment Plant with latest technology should be completed within 2 years and treated water shall be reused for plantation. CTE and CTO of STP shall be obtained as per the norms.
1.	Domestic water shall be providing to the residents/villages which are coming under the zone of influence of the project due to ground water extraction and mining operation by installing adequate number of RO plants with proper supply line and Taps within 2 years

ii.	Quality of polluted water generated from the operations which include COD and acid mine drainage and metal contamination shall be monitored along with TDS, DO, TSS. The monitored data shall be uploaded on the website of the company as well as displayed at the site in public domain.
i.	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A rivarine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.
i.	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
i.	The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.
i	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP /STP needs to be provided.
i.	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).
i.	Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.
i.	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
i.	Monitoring of water quality upstream and downstream of river including pons, lakes, tanks shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Subhadra Open Cast Project by Mahanadi Coalfields Limited located at ANUGUL,ODISHA			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/OR/CMIN/445297/2023	IA-J-11015/72/2021-IA-II(M)	12/10/2023	Mining of minerals (1(a))

3.5.2. Project Salient Features

Agenda No 6.1

Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachher Sadar and Chhendipada, District Angul (Odisha) – Reconsideration for Environmental Clearance - reg.

Proposal No. IA/OR/CMIN/445297/2023; File No. IA-J-11015/72/2021-IA-II(M)]

6.1.1 The proposal is for Environmental Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachher Sadar and Chhendipada, District Angul (Odisha).

The mine area is a part of the Survey of India Topo Sheet No. F45S13 & F45T1 bounded by Latitude 20° 55' 56.225" N and 20° 58' 47.344" N and longitudes 84° 55' 42.383" E and 85° 0' 50.475" E. The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006.

The PP has obtained Terms of Reference (ToR) vide letter no. J-11015/72/2021-IA. II(M) dated 22.11.2021 and Amendment in ToR vide letter dated 28.02.2022. Mining Plan for coal mine has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Exct/2023/13262 dt- 13.05.2023. Environmental Baseline data was generated in the Post-Monsoon Season from Oct to Dec 2022. The advertisement for Public Hearing was published on 25/07/2023 in Times of India & The Sambad newspaper and PH was conducted on 25.08.2023 under the Chairmanship of Shree Pratap Patimaya, O.A.S. (S) ADM, Angul. PP after preparation of EIA/EMP report applied for EC and the proposal was placed in EAC meeting held on 16-17 November, 2023 wherein the Committee deferred the proposal for want of requisite information. The PP submitted the information and the proposal is now placed in 5th EAC meeting.

6.1.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under.

1. **Location of Project:**

1. The Subhadra Open Cast Coal Mine of MCL is located in Kankarei, Pirakhaman, Balichandrapur, Raijharan, Kaunsidhipa, Golagadia, Chhorabereni, Kumunda, Bhalugadia, Baghumbol villages and Jaipur RF Tehsil-Talcher and Chhendipada, District Angul (Odisha).

1. The project area is covered under Survey of India Topo sheet No. F45S13 & F45T1 (RF 1:50000) and is bounded by the geographical coordinates ranging from 20°55'56.225" N and 20°58'47.344" N and longitudes84°58'42.383" E and 85°0'50.476" E. The DGPS coordinates of the ML area are given in Table 2.1 of EIA Report.

1. Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13thJanuary, 2010 has imposed moratorium on grant of Environment Clearance.

1. There are no National Parks, eco-sensitive Zones, within 10 km radius.

6.1.2.2: Mining Lease: The Utkal A (Subhadra) Coal Mine has been allotted by Ministry of Coal vide order no NA-103/1/2021-NA dated 18.11.2021.

6.1.2.3: Forest Area: 125.24ha (Reserve Forest Land: 0.75 ha, Govt. Revenue Forest area: 124.49 ha) of forest land have been reported to be involved in the project. Applications for Forest Clearance was submitted vide Proposal No. FP/OR/MIN/150133/2021 dt. 25.01.2022. Stage I FC has been recommended in the FAC meeting held on 20.10.2023. Stage I FC has been granted vide letter no -8-06/2023-FC dated 05.12.2023.

6.1.2.4: Protected Area: There is no national park or wildlife sanctuary within the study area. However, due to presence of Schedule-I Fauna application submitted to DFO, Angul for approval of site specific wild life management plan.

6.1.2.5: Mining Plan: Mining plan (including Progressive Mine closure plan) has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Exct/2023/13262 dt- 15.05.2023.

6.1.2.6: Method of Mining: Method of mining will be Open Cast Mechanized Mining. With due consideration to geo-mining characteristics of the deposit, the mine is proposed to be worked by shovel-dumper combination for OB excavation and Surface Miner for coal winning and loading by Front End Loader.

1. LAND USE DETAILS OF MINE

Pre-mining land use details

S. No	Type of Land	Within ML Area (Area in Ha.)	Outside ML Area (Area in Ha)	Total (Area in Ha)
1.	Agricultural	800.50	Nil	800.50
1.	Forest	125.24	Nil	125.24
1.	Wasteland	NA	NA	NA
1.	Grazing land	58.67	Nil	58.67
1.	Water bodies	6.28	Nil	6.28
1.	Settlements	NA	NA	NA
1.	Others (Specify)			
1.	Old Excavation Area (East Quarry)	NA	NA	NA
1.	Old Excavation Area (West Quarry)	NA	NA	NA
1.	Old OB Dumps	NA	NA	NA
1.	Roads	0.25	Nil	0.25
1.	R & R Colony	NA	NA	NA

1.	Staff Colony	NA	Na	NA
1.	Green Belt	NA	NA	NA
1.	Balance Area	NA	Na	NA
1.	Barren land**	92.64	Nil	92.64
1.	Township**	Nil	Nil	Nil
1.	Community/others use area**	28.27	Nil	28.27
1.	Total Project Area	1111.85	Nil	1111.85

** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Barren land of 92.64, Community/others use area of 28.27 Ha.)

Post Mining

S. No.	Land Use	Land Use (End of Life)	Land Use (ha)				
			Plantation	Water Body	Public use	Undisturbed	Total
1.	External OB Dump	24.17	0	0	0	0	24.17
1.	Top Soil Dump	8.97	0	0	0	0	8.97
1.	Excavation	891.28	0	0	0	0	
1.	Roads, buildings Infrastructure	Roads: 15.72	0	0	15.72	0	118.16
		Township: 27.12	1.26	0	25.86	0	
		Infra: 75.32	0	0	0	0	
1.	Green Belt	6.89	0	0	0	0	6.89
1.	Undisturbed Area	0	0	0	0	0	0
1.	Safety Zone	11.79	11.79	0	0	0	11.79
1.	Rationalization Area	25.34	25.34	0	0	0	25.34
1.	Diversion / Below River / Nala /Canal	8.42	0	0	8.42	0	8.42
1.	Water Harvesting	35.36	0	35.36	0	0	35.36
1.	Staff Colony		0	0	0	0	
1.	Backfilled Area**	715.24	182.52	0	0	0	715.24

1.	Excavated Void Without Plantation**	130.68	0	0	0	0	130.68
1.	Coal Stock Yard**	9.76	0	0	0	0	9.76
1.	Embankment**	11.49	0	0	11.49	0	11.49
1.	Explosive Magazine**	5.58	0	0	0	0	5.58
Total Area		**1111.85**	**220.91**	**35.36**	**61.49**	**0**	**1111.85**

**** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Backfilled Area of 715.24Ha., Excavated Void without Plantation of 130.68 Ha., Coal Stock Yard of 9.76 Ha., Embankment of 11.49 Ha., and Explosive Magazine of 5.58 Ha.)**

1. Total Geological Reserve reported in the mine lease area is 1142.67MT with 790.95MT Mineable Reserves by opencast mining. Out of total mineable reserve of 790.95MT,768.83 MT are available for extraction. Percent of extraction is 67%.

1. Thickness of seams to be worked on: Opencast mining method is proposed for extraction of coal seam XI to IID. The effective thickness of the seams XI to IID is varying from 0.06m to 75.90m.

1. Grade of coal: Wt. Avg. G-13 (GCV – 3600 Kcal/Kg)

1. Stripping Ratio: Only In-situ: 0.80 With Re-handling: 0.93

1. Average gradient: - 3.480(1 in 16.44)

1. Maximum thickness of seams: Seam XI to IID varies from 0.06m to 75.90 m.

1. The project has 1 external OB dumps (temporary) in an area of 24.17 ha with 58m height and103.72Mm3 of OB.1 internal OB dump in an area of 715.24ha with 613.18 Mm3 (Insitu) 103.72 Mm3 OB handling) of material is envisaged in the project.

1. Total quarry area is 881.52 ha out of which backfilling will be done in 715.24 ha up to 30m while final mine void will be created in an area of 130.68 ha with a depth of 160 m RL and 35.36 ha water body. Backfilled quarry area 182.52 ha shall be reclaimed with plantation, 405.27 ha agriculture land and 37.45 ha will be returned as forest land.

1. **TRANSPORTATION OF COAL**

Transportation of coal:

- **In pit:** Initially through Dumper and in Pit Conveyor after few years.
- **Surface to siding:** From surface hopper (20 No.) by belt conveyor (18 Nos.)
- **Siding to loading:** Through two Rapid Loading System (RLS) (02 Nos)

Capacity 5000tonne each

- **Quantity being transported by Road/Rail/Conveyor:** As per approved mining plan
- Transportation will be carried out as per Approved Mining Plan.
  1. Reclamation has been planned in an area of 965.45ha, comprising of 538.17 ha Agricultural use, 220.91 ha Plantation, 35.36 ha Water Body & 125.24 ha Forest Land return Area, Nala diversion, Township &Embankment. &130.68 ha of final void area will be left unplanted.
  2. Life of mine is 36 Years (including 2 Year of construction)
  3. Coal linkage - The mine has been allotted to MCL by the Ministry of Coal vide order no NA-103/1/2021-NA dated 18.11.2021. There shall be no restriction to carry on mining operations for own consumption, sale or for any other purpose.

6.1.2.7: Baseline Data Generation:

The Primary baseline data for specific micro–meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Post Monsoon season i.e. October to December, 2017. The monitoring results of ambient air, surface water, soil, ambient noise and ground water for the month of October 2022-December 2022. Baseline interpretation is given below:

Period	October to December 2021
AAQ parameters at 8 locations	• PM10 = 51.2 to 74.6 µg/m3

(min. & Max)	• PM2.5 =28.1 to 51.9 µg/m3 • SO2 = 21.2 to 46.9µg/m3 • NOx = 20.5 to 41.2 µg/m3. • CO =0.5 to 1.19 mg/m3 • O3 = 15.1 to 29.6 µg/m3. • NH3 = 25.2 to 39.1 µg/m3.
Incremental GLC Level	• PM10 = Max. GLC -15.6168 µg/m3 • PM2.5 = Max GLC- 8.9239 µg/m3 • SO2 = Max GLC- 0.44623 µg/m3 • NOx = Max GLC- 0.33468 µg/m3 • CO = Max GLC- 0.000223 mg/m3
Ground Water quality at 8 locations	pH: 7.54 to 7.93; Total Hardness: 215.26 to 329.43 mg/L; TDS: 225 to 300 mg/L; Chloride:56.84 mg/l to 79.24 mg/l etc. are found within the permissible limits. Heavy metals such as Lead, Arsenic etc. are BDL at all the locations.
Surface water quality at 8 locations	pH:7.39 to 7.82; Total Hardness: 186.25 to 493 mg/L; TDS 240 to 899 mg/L; DO: – 5.6 mg/l to 6.7 mg/L; COD: 21-73 mg/l ; BOD: 2.4-24 mg/l
Noise levels Leq (Day & Nigh t) at 8 Locations	The Leq values for day time was observed to be 49.88 to 54.06 dB (A) in residential area, while during night time 40.34 to 43.96 dB (A). The Leq values for day time and night time in industrial area was 69.5 and 64.52 dB (A).
Soil Quality at 8 Locations	pH: 7.31 to 7.56; Organic matter: 0.76% to 0.88%; Available Nitrogen: 152.66 to 192.18 kg/ha etc. are found within the permissible limits.
Flora & Fauna	12 No. of Schedule –I species (as per WLPA amendment 2022) and 27 No. of Schedule –I species (as per WLPA amendment 2022) have been reported. Some of the sensitive Schedule–I fauna include Elephas maximus indicus, Manis crassicaudata, Melursus ursinus, Panthera pardus, Bos gaurus and Python molurus. Site-specific wildlife conservation plan has been submitted to the DFO-Angul Forest Division on 23.09.2023 by MCL. A budget of Rs. 43.60 Crore s has been allocated for WLCP.
Water Requirement	Domestic Water Requirement: 0.83 MLD; Industrial Requirement: 4.28MLD Total Water Requirment (Peak):5.11 MLD Source: Bore Well and Mine Water & Singhada Jhor stream. However, initially till the mine is fully developed, water requirement will be as follow. s: Domestic Requirement: 10 KLD Greenbelt requirement: 50 KLD Dust Suppression: 100 KLD. During initial period source of water are bore wells, dug wells, ponds and Singhada Jhor stream along north boundary. Later on, industrial water demand will also be met from mine sump water. **NOC from CGWA for Ground water withdrawal obtained vide NOC No-CGWA/NOC/MIN/ORIG/2023/19706 dated – 27.12.2023.**

6.1.2.8: Public Hearing & Related Issues

Public hearing for the project of 25 MTPA capacity in an area of 1111.85ha was conducted on 25.08.2023 at Ground near Pirakhaman Primary school under Kankarei gram Panchayat of Chhendipada Tehsil of Angul District under the Chairmanship of Shree Pratap Pritimaya, OAS (S) ADM, Angul. Major issues raised in the Public Hearing & appropriate action to address the issues raised in the Public Hearing have already been taken/ proposed to be taken are given in the action plan prepared and mentioned in Chapter -7 in Final EIA/EMP report. The PP initially proposed a budget of Rs 1010 Lakh to address the issues raised during PH. *The proposal was considered in EAC meeting held on EAC meeting held on 16-17 November, 2023 wherein EAC deferred the proposal and advised the PP to submit the activity-wise public hearing budget (with capital and recurring cost) by complying all issues recorded in the Minutes of Public Hearing, particularly with respect to health issues in reply of which the Budget for Public Hearing has been revised to Rs 1235 Lakhs as per the EAC observation, particularly providing more emphasis on Health camp (vaccination, health awareness camp, mobile health camp, Immunization, providing medicine etc.).*

Revised Public Hearing Budget

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year-2	Year-3	Year-4	Year-5	Total
Air & Water Pollution control measures	Different measures to control Air pollution/Water Pollution like utilization of water sprinklers, fixed sprinklers, fog canon etc.	Kosala village (NW), Sandhapal (NW) Natada (E), Ambapal (E)	80	80	80	80	80	400
Infrastructure development	Construction of Road, School, Solar Street lights supply, Cremation ground etc.	Villages - Kusumpal, Mallibandh, Ambapal,	50	50	50	50	50	250
Plantation	Plantation -Avenue & Community etc.	Kankarei, Pirakhamana, Raijharan, Balichandrapur	5	5	5	10	10	35

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year-2	Year-3	Year-4	Year-5	Total
Healthcare	Health Care and vaccination, awareness camp, mobile medical camp, Immunization, medicine etc.	Health centres -Angul DHH, Kosala CHC, Chhendipada CHC, Mandapada PHC Villages - Nisha, Kosala, Raijharan, Balichandrapur, Sandhapal	50	50	50	50	50	250
Water & Sanitation	Drinking Water Supply and Construction of wells, ponds, hand pumps and tube wells	Village - Kumunda, Ambapal, Natada,	30	30	30	30	30	150
Education & Livelihood Generation	Skill Development Training, Support to schools and other educational institutions	Kankarei High School, Kosala High School, Raijharan High School	30	30	30	30	30	150
Total			245	245	245	250	250	1235

6.1.2.9: Other Details:

1. Court Cases: No court cases, violation cases are pending against the project of the PP.
2. Violation: The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder since it is a Greenfield project.
3. R&R: Out of the total area of 1111.85 hectares of land to be acquired for the project 696.95 hectares are private land and the remaining areas are Government and Forest lands. While the acquisition of private land has a direct bearing on the personal, social and economic status of the land owners. About 1653 families have been identified for displacement due to Subhadra OCP. The R & R benefits will be provided as per norms under R& R policy-2006 of Government of Odisha.

6.1.2.10: Benefit of the Project:

1. Employment Generation-Proposed coal mine shall provide an opportunity of direct employment to 2408 persons and total indirect employment of approx. 5000 persons.

1. The project is reported to be beneficial in terms of energy security for the development of country.

1. Total cost of the project is Rs. 3955.65 Crore. Cost of production is Rs.678per tonne., Fund for the CSR will be allocated based on 2% of the average net profit of the Company for the three immediately preceding financial years or Rs. 200 per tonne of coal production of previous year whichever is higher. Different peripheral development and community development works will be taken up. R&R cost – 405.46Crore. Environment Management Cost was: Capital Rs1205Lakh; &Recurring Rs. 178 Lakh. Now the cost has been revised and increased Environment Management Cost - Capital Rs 1605 Lakh; & Recurring Rs. 182 Lakh, Total – Rs. 8157 Lakhs.

6.1.3 Earlier the proposal was considered in the 3rd EAC meeting held during 16-17 November, 2023 wherein the committee has deferred the proposal and asked to submit the observation. The PP has submitted the reply on Parivesh portal vide letter dated 30.12.2023 and as mentioned below:

S. No.	Observation of EAC	Reply by PP
1.	Project proponent to submit the status of all necessary approvals pending at different stages including status of FC involved in total ML area of 1111.85 ha.	The status of different approvals obtained or are in process of approval are given below: Mining Plan & Mine Closure Plan: Mining Plan & Mine Closure Plan approved by MCL Board on its 235th Meeting dated 29.05.2021 communicated vide letter dated 07.06.2021. Mining Plan & Mine Closure Plan (Modification-1) approved by MCL Board on its 242nd meeting dated 24.12.2021 communicated vide letter dated 13.01.2022. Mining Plan & Mine Closure Plan (Minor Modification) approved by MCL Board on its 257th Meeting dated 24.04.2023 communicated vide letter dated 13.05.2023. Forest Clearance: Forest Diversion proposal has been applied vide Proposal No. FP/OR/MIN/160163/2021 dated 25th January 2022. The proposal has been recommended by the FAC on dated 20.10.2022 for Stage – I Clearance. Stage –I Clearance has been issued vide letter no. 8-06/2023-FC dated 05.12.2023. Land Acquisition: Total area involved in Subhadra OCP is 1111.85 Ha. The land is being acquired under the Coal Bearing Areas (Acquisition & Development) Act, 1957. The Central Govt. has vested rights of the land with Mahanadi Coalfields Limited through different Gazette notifications under Sec 11(1) of the same Act. The dates of publication of Notifications u/s 11(1) of CBA Act 1957 for entire 1111.85 Ha. of land along with copies of such notifications have been submitted to the Members in reply to the ADS. Explosive Magazine: The design and drawings of Explosive Magazine has been approved by the Petroleum & Explosives Safety Organisation, Ministry of Commerce & Industries, Govt. of India on 08.11.2023. NoC for Ground water from CGWA: The Central Ground Water Authority (CGWA), Ministry of Jal Shakti, Govt of India has issued the No Objection Certificate (NOC) for drawl of ground water for Subhadra OCP, vide dated-27.12.2023 which is valid till 26.12.2025. Nala Diversion: Ghurudia Nala, Masania Nala and Singhada Jhor Nala flows within the Mine boundary of Subhadra OCP. These seasonal nalas are required to be diverted to commence carry out mining operations. Specific ToR Conditions (v) stipulated for a detailed hydrological survey of these nalas /Stream, regarding its catchment area, flow volume and length of the stretch to be diverted. Accordingly, the hydrological survey was carried out. Nala Diversion Channel Report with design and drawing was submitted to Dept. of Water Resources, Govt of Odisha on 24.03.2023 for grant of approval. Joint field inspection involving Technical Experts of various branches of Water Resources Dept. like Irrigation, Mega-lift Irrigation, Minor Irrigation, Lift Irrigation of Angul was completed on 06.06.2023 and report has been sub

		mitted to Engineer-In-Chief, DoWR, Govt of Odisha for consideration of diversion proposal. Approval from DoWR, Govt of Odisha is awaited.
2.	PP shall submit the R&R approval from the concerned District Administration along with their preparedness.	The R&R Plan of MCL is prepared and implemented for all the operating mines and projects of MCL & not for a specific/single project. All the provisions / components and equivalent monetary benefits of R&R Plan of MCL is in compliance to provisions laid down in Odisha Resettlement and Rehabilitation Policy 2006. As per provision laid down under Para 16 of the said Policy, the Government of Odisha constitutes the Rehabilitation- cum- Periphery Development Advisory Committee (RPDAC) for one project/ group of projects for approval, implementation and monitoring of R&R Plan. Para 7 of the Policy envisages that the Resettlement and Rehabilitation Plan shall be placed before the RPDAC for approval. Pursuant to Govt. of Odisha Notification No. 25092/R dated 06.07.2006, Revenue Divisional Commissioner (Northern Division, Sambalpur, Odisha) constituted the RPDAC for all projects of MCL in Angul district vide his letter no.2321 dated 02.11.2006. The 1st RPDAC meeting of MCL was held on 07.11.2006 decided that the provisions of ORRP 2006 in toto would be considered as the approved R&R Plan for all the new projects of MCL in Angul district for which 4(1) of LA Act 1894 and /or 9 (1) of CBA Act 1957 would be published after 14.05.2006 i.e. the date when Odisha Resettlement and Rehabilitation Policy 2006 came into force. The MCL approved R&R Plan for Subhadra OCP dated 19.01.2023 is in compliance with the 8th biennial revision of ORRP 2006 dated 17.10.2022 in conformity to decisions taken in the 1st RPDAC meeting of MCL held on 07.11.2006. The Rehabilitation grants in monetary terms as per R&R Plan of Subhadra OCP vis-à-vis ORRP 2006 is given below:

Component	ORRP 2006 up to 8th Biennial Revision dated 17.10.2022	MCL vetted R&R plan dated 19.01.2023
Provision of Employment or One-time Cash Compensation in lieu of employment or Annuity in lieu of employment/Financial Assistance	Yes	01 member of Displaced Family of 02 categories (Category i&ii as per ORRP 2006)
	Rs.10,41,550/- per Family for Category i & goes diminishing to Rs.1,82,000/- for Category vi (Applicable to all Affected Families)	Rs.16,00,000 to Category i & ii
	No	Rs.21,000/- per month per PDF (Category I & ii) with Biennial Increment of Rs.1000
Home-stead Land or Cash in lieu of land	Ac.0.10 or Rs.1,04,155 per PDF	Rs.6,00,000 per PDF
House Building Assistance	Rs. 3,12,465 per PDF	Rs. 3,12,465 per PDF
Assistance for Temporary Shed	Rs.20,831 per PDF	Rs.20,831 per PDF
Maintenance Allowance or Subsistence grant for displaced families for a period of one year	Rs.4166 per month per PDF for 1 year	Rs.49,992/(@Rs.4166/- month/PDF upto period of 1 yr)
Transportation cost for PDFs	Rs.4166 per PDF	Rs.4166 per PDF

It is evident that the approved R&R Plan of MCL is providing higher benefits in terms of monetary grants w.r.t. cash compensation in lieu of employment/ in lieu of homestead plot compared to ORRP 2006.
Moreover, MCL provides Special Incentive amounting Rs. 10.00 Lakhs per PDF if the entire village gets shifted at once and go for self -relocation, which is beyond the stipulated provisions of ORRP 2006.
As stated above, the above provisions of the R&R Plan which is applicable for all projects of MCL in Angul district has been approved in different RPDAC meetings chaired by RDC (ND), Sambalpur and Collector, Angul as Convenor.

3.	PP shall submit the compliance of ToR condition no. xi, xii, xx, xxi, xxvi, xxx and Amended ToR no. (iv) & (vii) and (xxvii).	PP has submitted the point wise compliance to the ToR conditions and enclosed the same.
4.	PP shall provide details of the alternate land w.r.t grazing land and water bodies as per premining activity land use (as per ToR condition viii).	Subhadra OCP is surrounded by Hingula, Balanga Opencast Coal Project and Nisha RF at the eastern side, Balabhadra, Balabhdra Extension and Ramachandi Coal Block at northern side, Utkal B1, Utkal B2 & Utkal C at western side, JSPL Power Plant and Durgapur RF at southern side. Besides, there are a number of coal blocks existing surrounding Subhadra OCP. A vicinity map is presented in the next slide. Except southern and far-eastern side of Subhadra OCP, the entire area in the vicinity is coal bearing area. Almost all the villages in the surrounding areas of Subhadra OCP are going to displaced eventually. There is no land available for grazing within 5 km of Subhadra OCP, both in Chendipada and Talcher Tehsil. A letter from Angul Dist. Administration, intimating the above facts has been obtained certifying the above fact. Apart from Rs. 6 Lakhs' PDF cash compensation in lieu of homestead plot in R&R Colony, MCL is providing additional incentive of Rs. 10 Lakhs/ PDF once the entire village gets self-relocated. As a result, the villagers within the mine boundary of Subhadra OCP are eager for self-relocation elsewhere because of the lucrative R&R benefits provided by MCL. Therefore, there is no planning to establish R&R Colony.

		In view of the above, there exists less probability of requirement of grazing land and water body for the community to be displaced for the Project. Besides, MCL shall provide alternate grazing land as per pre-mining land use in the backfilled areas of its existing mines of MCL by improving the soil condition and re-grassing the backfilled area.
5.	PP shall provide adequate details w.r.t. mitigation measures by changing catch ment area hydrology from stream diver sion and submit the protection measure s of south nala which is proposed for di version in 15 years by leaving 100 mts distance.	There are 03 nallahs that are passing through the proposed lease area, which are given below: Ghurudia Nallah and its tributaries are passing over the proposed excavation area for mining from south-west to no rth-east direction to finally discharge to Singhada Jhor Nallah at north-eastern side of the mine boundary. Similarly, Masania Jhor Nallah enters at east side of mine boundary passing over the proposed excavation area for mining and flows in south-west and north-easterly direction to merge with Singhada Jhor Nallah at north-eastern si de of the mine boundary. Whereas, Singhada Jhor Nallah flows along the northern side of the mine boundary. Ghurudia Nallah is bisecting the lease area and necessitates diversion to have sustainable mining operations. Ghurudia Nallah and its tributary at south which may be termed as south nallah as well as Masania Jhor Nallah fro m its entry point to the mining lease area of Subhadra OCP is required to be diverted before commencement of min ing operation as a necessary pre-requisite to commence mining activities as per the approved Mine and Mine Closu re Plan. Hence, it is proposed to divert Ghurudia Nallah & Masania Jhor Nallah from the entry point to the mine lease area by considering suitable hydrological change aspects has been enclosed.
6.	PP shall submit the adequate water conse rvation plan for water bodies lying insi de and outside the ML area.	As per pre-mining land use, 6.28 ha of Water bodies are present within Mine Lease area. To augment ground water recharge MCL has identified 06 no. of ponds in different villages within 5 km area. The identified water bodies have a total area of 6.1 Ha and their combined annual recharge potential is ~ 71802 m 3/year. These water bodies will be adopted by MCL and maintained for ground water recharge. A Budget of Rs. 28 lakhs has been kept for conservation of pond by implementing different activities. A detail action plan for water conservation along with budgetary provision is attached in the next slide. Waste water recycling after due treatment will be undertaken to enable conservation of water. Storage of conserved water in mine pits will be given due emphasis to provide water round the year and quality of water will be maintain ed before and after storage. The rainwater collection and the seepage quantity will be pumped for usage. The rainwater collection in the mine p its would recharge in and around the mine pits. In order to harvest the rainwater for ground water recharge, watersh ed-based runoff has been attempted covering the mine lease area. According to the availability of surface water, re charge structures have been recommended. Moreover, as part of monsoon preparation every year there will be garland drains around the mine excavation area to avoid entry of surface run-offs into the mine pit. Finally, these surface run-offs will be part of natural drainage.

SL No.	Name of Ponds	Latitude	Longitude	Area (m2)	Avg. Depth (m)	Volume (m3)	Catchment Area (m2)
1	Kumunda 1	20.977 102	85.025 407	3778	2.5	9445	155153
2	Kumunda 2	20.976 208	85.022 746	18234	2.5	45585	292358
3	Kumunda 3	20.976 304	85.021 545	5968	2.5	14920	195593
4	Kumunda 4	20.976 35	85.021 548	12689	2.5	31722.5	172818
5	Maliband h	20.950 179	85.018 19	16320	2.5	40800	378829
6	Ampal	20.940 402	85.047 824	4026	2.5	10065	71147
Total				61015		152537.5	1265898

Table: Activities with Budget for Pond Conservation Measures

Sl. No.	Physical Targets	Total Expenditure (Rs.)
1.	Implementation of Brick lining with a Wharf platform at pond	6,00,000
2.	Levelling and smoothing of bank of pond	2,00,000
3.	Stabilization of earthen embankments with vegetative or rock riprap to av oid soil erosion and the inflow drainage channels with line stone revetment so as to avoid rapid seepage	3,00,000
4.	Pond boundary will be provided with fence (temporary fencing)	4,00,000
5.	Greenbelt development around the pond of 5 m width to preserve the pon d	4,00,000

6.	All the inflow drainage channel leading to pond will be provided with suitable silt barriers or sediment traps at suitable intervals for control of silt/waste	5,00,000
7.	Construction of walkways, Temple and benches for visitors	4,00,000
	Total in Rs.	28,00,000

7.	Detailed Action Plan w.r.t. for completion of in-pit Belt-conveyor system and silo loading system till railway siding shall be submitted. Beside till construction of the same, PP to furnish adequate safety measures to be adopted for coal transportation through road (as per ToR condition xiii & xvii)	Detailed Plan for implementation in form of CPM (Critical Path Method)/PERT (Program Evaluation Review Technique) chart for implementation of in-pit Belt-conveyor system and silo loading system till railway siding will be completed by FY 2027-28 has been enclosed. Transportation of coal to Balaram railway siding (15 Km distance) will be done by road till the commissioning of CHP/ RLS of Subhadra OCP. The stretch of road is a part of coal corridor developed by MCL for coal transportation from adjoining Mines. No trucks or vehicles will be used for transportation of Coal by village roads or roads located near to the villages. The proposed Subhadra Railway Siding will eventually be connected to the MCRL Phase I which is a joint venture of MCL, IRCON International Ltd & Odisha Industrial Infrastructure Development Ltd. MCRL Phase I is completed & MCRL Phase II is presently under progress. Following mitigation measures are proposed for minimization of environmental impacts due to transportation of coal through roads: Developing a thick greenbelt along both sides of the road. Regular sprinkling of water on road. Tarpaulin covered trucks will be used to reduce air pollution. Wheel washing will be carried out at dedicated points. Implementation of speed locking mechanism to control the speed of the coal transportation trucks to minimize the generation of dust. Shoulders along the roads will be greened with grassing.
8.	PP shall social impact study for farmers being affected due to mining operation lying inside the ML area.	A Social Impact Assessment study was conducted to assess the socio-economic impacts on the project affected farmers of 10 villages from which land has been acquired for the Subhadra OCP for Mahanadi Coalfields Limited (MCL), Angul, in the State of Odisha. Out of the total population of the 10 project affected villages, the number of affected families whose agricultural land is going to be acquired is about 1746, of which 636 i.e 36.42 % families of farmers will be affected from Chhotaberi village, 479 (27.43%) from Kaunsidhipa village, 271 (15.52%) from Kankarei and 154 (8.82%) families from Pirakhaman village. Village-wise distribution of affected household including families of Project Affected Farmers is describe in the table below. Table - Village-wise distribution of Project Affected Farmers

Village name	No of Affected Household including Families	Percentage of Affected Household including extended Families (%)
Kankarei	271	15.52
Pirakhaman	154	8.82
Balichandrapur	8	0.45
Chhotaberi	636	36.42
Raighariea	117	6.70
Golagadia	25	1.43
Kaunsidhipa	479	27.43
Baghuaboi	26	1.48
Kumunda	30	1.72
Total	1746	100.00

Details of the Agriculture Land Acquired for the Project
Out of the total area of 1111.85 hectares of land to be acquired for the project 696.95 hectares are private land and the remaining areas are Government land and Forest land.
Out of the total acquired land for the proposed project 58% land acquired under the project is private agriculture land.
Out of it 6.77 hectares are irrigated and 690.18 hectares including homestead lands are un-irrigated.
The Kharif crops grown in the area include paddy, maize, ground nut, Til, and vegetables like brinjal, pointed gourd (garval), lady finder, pumpkin and early cauliflower. On the other hand, rabi crops include millet, maize, field pea, sunflower, safflower, ginger, potato, tomato, onion, garlic, coriander, etc. However, the major food grain of the area is considered as rice.
Average Annual Income of Famers in the Project Affected Villages
During the survey it was obtained that the maximum population of the farmers in the project affected villages have the average annual between 20,000-30,000 per month. While some population has the average income between 30,

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		000-40,000 per month. Other information's has been enclosed.
9.	PP shall submit the detail revised EMP budget (with capital and recurring cost) by increasing the mitigation measures i n order to reduce the air pollution and water pollution.	Originally expenditure for Environment Management Plan was planned for Rs 7613 Lakhs for the life of mine for Subhadra Coal Mine. As per observations and directions of the EAC the EMP has been revised and now has been increased from Rs 761 3 Lakhs to Rs 8157 Lakhs (with capital and recurring cost). This represents a increase of 544 Lakh or 7.14% increase from the previous budget. Total Cost of the Project: Rs 3955.65 Crores Fund Provision for EMP: Capital Cost – Rs 1605 Lakhs, Recurring Cost – Rs 282 Lakhs Total – Rs 8.157 Lakhs (During the Life of Mine i.e. 36 Years) Annual Budget for Environmental Management Plan for Operation – Revised as per EAC Observation and enclose d.
10.	PP shall submit the activity-wise public hearing budget (with capital and recurri ng cost) by complying all issues record ed in the Minutes of Public Hearing, pa rticularly with respect to health issues.	The previous Public Hearing budget was fixed at Rs 1010 Lakhs. Now, the Budget for Public Hearing has been rev ised to Rs 1235 Lakhs, particularly providing more emphasis on Health care (vaccination, health awareness camp, mobile health camp, Immunization, providing medicine etc.) and Skill Development Programs. Air pollution contr ol measures have been proposed in the EMP as well as CER, total budget being Rs. 6.95 crores. It is estimated that approximately 550 persons will be provided Skill Development Training in a phased manner in the following skills as per National Skill Development Center (NSDC) course list: Bee Keeping Dairy Farming Goat Farming Floriculturist Forest Nursery Raising Mushroom growing Auto Rickshaw Driving Beauty and Wellness Tailoring Installation Technician-Computer & peripherals Budget for Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local p eople as part of CERs has been enclosed.
11.	PP shall submit the Skill development p rograms (SDP) aligned with National S kill Development Center (NSDC) for lo cal people as part of CERs. Further, air pollution mitigation plan shall be submi tted till the villages are not displaced in the mine lease area.	The previous Public Hearing budget was fixed at Rs 1010 Lakhs. Now, the Budget for Public Hearing has been rev ised to Rs 1235 Lakhs, particularly providing more emphasis on Health care (vaccination, health awareness camp, mobile health camp, Immunization, providing medicine etc.) and Skill Development Programs. Air pollution contr ol measures have been proposed in the EMP as well as CER, total budget being Rs. 6.95 crores. It is estimated that approximately 550 persons will be provided Skill Development Training in a phased manner in the following skills as per National Skill Development Center (NSDC) course list: Bee Keeping Dairy Farming Goat Farming Floriculturist Forest Nursery Raising Mushroom growing Auto Rickshaw Driving Beauty and Wellness Tailoring Installation Technician-Computer & peripherals Budget for Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local p eople as part of CERs has been enclosed.
12.	As raised in public hearing, PP shall su bmit the proof of documents from State Forest Department that there is no hum an-elephant issue in the buffer and mine lease area. If so what is mitigation plan.	There is no elephant corridor present within 10 km radius of our project site. Certificate of PCCF is attached. The nearest elephant corridor is 15 km away from project site and the nearest elephant reserve is 24 km away. A wildlife conservation plan has been prepared and submitted to DFO Angul. A budget of Rs. 43.11 crores has been proposed for WLC, out of which 5.30 crores Rupees have been allocated to mitigate man – elephant conflict.
13.	PP shall submit details of Site-Specific Wildlife Conservation Plan and differen ce of schedule I species as in Wildlife P rotection Act (WPA), 1972 and Amend ment of WPA, 2022.	Site-specific wildlife conservation plan has been submitted to the DFO-Angul Forest Division on 23.09.2023 by M CL. Following are the salient features of the WLCP: No national park/ wildlife sanctuary biosphere reserve, or eco-sensitive zone has been reported in the 10-km radius of the mine area. 12 No. of Schedule –I species (as per WLPA amendment 2022) have been reported, out of which 05 are mammals, 05 are reptiles and 02 are Aves in the core area. 25 No. of Schedule –I species (as per WLPA amendment 2022) have been reported, out of which 12 are mammals, 11 are reptiles and 02 are Aves in the buffer area. Some of the sensitive Schedule–I fauna include Elephas maximus indicus, Manis crassicaudata, Melursus ursinus, Panthera pardus, Bos gaurus and Python molurus. A budget of Rs. 43.60 Crores has been allocated for WLCP. MCL undertakes to bear the cost of the approved Site-Specific Wildlife Management Plan to be implemented by th e State Forest Dept. by depositing the approved amount in CAMPA. Further, the flora and fauna list for the study a rea (Core zone with a 10 km radius buffer zone) has been duly prepared and authenticated by DFO, Angul. As per WLPA 1972, 11 No. of Schedule-I species are present however as per Amendment of WLPA 2022, 25 No. of species are present. The difference between Schedule-I Species as per WPA 1972 & Amendment of WPA 2022 has already been addressed while preparing the Wildlife Conservation Plan.
14.	PP shall submit the correct figures of th e land usage pattern of the project durin	The figures of the land usage pattern of the project during pre-mining and post-mining purpose has been depicted i n the approved Mine and Mine Closure Plan.

	g pre-mining and post-mining purpose.	MCL affirms that the figures stated in the Mine and Mine Closure Plan is correct and true. The table has been enclosed.

3.5.3. Deliberations by the committee in previous meetings

Date of EAC 1 :16/11/2023

Deliberations of EAC 1 :

3.2.4 *The Committee after detail deliberation observed that the instant proposal is a Greenfield opencast coal mine project. An application for Stage-I Forest Clearance has been submitted and yet to be granted by Ministry. As visible through Drone Video, most of land in the project area is agricultural land i.e. about 800 ha. From discussions it is noted that Ghorudia Nallah and Singhada Jhor flowing within the ML area, which are required to be diverted at different time interval based on mining plan. The committee observed that the length of 8.9 Km of Ghorudia Nallah has been proposed to be diverted from south at the beginning of mining, while Singhada Jhor Nallah will be straightened for 1050 mtr. It was desired that no stream diversion shall be done upto 15 years for south side wherein mining shall progress on that time. The committee emphasized that the hydrogeological study for diversion shall be made in proper manner by avoiding the formation of right-angle bend so as to have uninterrupted flow and considering the safety zone of 7.5m all along the mine boundary alongwith.*
Public Hearing was conducted on 25.08.2023 under the chairmanship of Additional District Magistrate (Angul) as per provisions of EIA Notifications, 2006. The issues raised during public hearing has been addressed, however the Committee desired to have adequate budgetary allocation to meet public demand particularly on health establishment with regard to kidney treatment as raised by local people. The committee noted the discrepancy in the figures of land use pattern submitted for pre-mining and post-mining.
Subsequently committee highlighted that in order to minimise coal transportation through road PP shall submit the strict timeline for completion of Belt-conveyor system in commensurate with production level. Committee asked the project proponent to submit the status of all necessary approvals pending at different stages.
In view of the above, the Committee desired that the project proponent shall submit the following documents: -

1. *Project proponent to submit the status of all necessary approvals pending at different stages including status of FC involved in total ML area of 1111.85 ha.*
2. *PP shall submit the R&R approval from the concerned District Administration along with their preparedness.*
3. *PP shall submit the compliance of ToR condition no. xi, xii, xx, xxi, xxvi, xxx and Amended ToR no. (iv) & (vii) and (xxvii).*
4. *PP shall provide details of the alternate land w.r.t. grazing land and water bodies as per pre-mining activity land use (as per ToR condition viii).*
5. *PP shall provide adequate details w.r.t. mitigation measures by changing catchment area hydrology from stream diversion and submit the protection measures of south nala which is proposed for diversion in 15 years by leaving 100 mts distance.*
6. *PP shall submit the adequate water conservation plan for water bodies lying inside and outside the ML area.*
7. *Detailed Action Plan w.r.t. for completion of in-pit Belt-conveyor system and silo loading system till railway siding shall be submitted. Beside till construction of the same, PP to furnish adequate safety measures to be adopted for coal transportation through road (as per ToR condition xiii & xvii)*
8. *PP shall social impact study for farmers being affected due to mining operation lying inside the ML area.*
9. *PP shall submit the detail revised ESP budget (with capital and recurring cost) by increasing the mitigation measures in order to reduce the air pollution and water pollution.*
10. *PP shall submit the activity-wise public hearing budget (with capital and recurring cost) by complying all issues recorded in the Minutes of Public Hearing, particularly with respect to health issues.*
11. *PP shall submit the Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local people as part of CERs. Further, air pollution mitigation plan shall be submitted till the villages are not displaced in the mine lease area.*
12. *As raised in public hearing, PP shall submit the proof of documents from State Forest Department that there is no human-elephant issue in the buffer and mine lease area. If so what is mitigation plan.*
13. *PP shall submit details of Site-Specific Wildlife Conservation Plan and difference of schedule I species as in Wildlife Protection Act (WPA), 1972 and Amendment of WPA, 2022.*
14. *PP shall submit the correct figures of the land usage pattern of the project during pre-mining and post-mining purpose.*

In view of the above, the project was deferred to submit the above observation.

3.5.4. Deliberations by the EAC in current meetings

6.1.4 Committee after deliberations noted the following:

1. Terms of Reference for instant greenfield opencast coal mine was granted on 22.11.2021 and their subsequent amendment in ToR on 28.02.2022.
2. Mining plan (including Progressive Mine closure plan) has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Excl/2023/13262 dated 10.05.2023.
3. 125.24 Ha of Forest land involved in the ML area of 1111.85 ha. Stage-I Forest Clearance has been obtained vide letter no. 8-06/2022-FC dated 05.12.2023.
4. Life of mine is 36 years (including 2 year of construction).
5. The Central Ground Water Authority (CGWA) has issued No Objection Certificate (NOC) for withdrawal of ground water for Subhadra OCP dated 27.12.2023 which is valid till 26.12.2025.
6. Public hearing was conducted on 25.08.2023 for the project of 25 MTPA capacity in ML area of 1111.85 ha. The issue raised during the PH involves R&R issues, plantation, air pollution control measures, construction of STP & ETP, CSR activities, medical facilities, land reclamation, health facilities, training & skill development, etc.
7. Baseline data has been collected during the Period/ Season of October to December 2022 (Post-Monsoon).
8. There is no protected area within the 10 km radius of the project.
9. Proposal does not fall under violation category.

During the meeting the Committee deliberated on various issues related to project including issues raised during PH, EMP, Grazing land, plantation, transportation of mineral, water requirement, diversion of nallha, Mining lease area etc. Based on the deliberations committee asked the PP to submit the communication made during the discussion. PP submitted the same vide letter dated 17.01.2024 and email dated 18.01.2024 wherein it has inter-alia mentioned that:

1. PP shall deploy electric vehicles and /or LNG/CNG vehicles to the extent of 50% of transportation fleet for evacuation of coal through road up to Balaram Siding (Approx. 11 KM) till commencement of rail evacuation system with CHP of Subhadra OCP which is likely to commence from the fourth year of mining operations. PP shall monitor the EV/LNG/CNG usage through installation of adequate number of CCTV cameras.

1. PP submitted a revised water conservation plan with an increased budget of Rs. 1.00 crores (previously Rs. 28.00 lakhs). PP informed that revised plan is integrated with EMP and extend beyond the lease area. PP proposed to adopt 6 ponds in different villages and the details of the same with budgetary provision is as follows:

1. PP committed to develop greenbelt on approximately 38% of the lease area, i.e. 426.15 ha. This includes i) Progressive greenbelt development (Safety zone: 11.79 ha. will be developed as greenbelt within 01 year of commencement of mining operation & Backfilled and undisturbed areas: 209.12 ha in backfilled areas and undisturbed areas during the mining operation), ii) Forest restoration: Plantation will be carried out over 125.24 ha land and returned to forest department at the end of mining, iii) Greenbelt Development along Nallahs: A strip of 50 meters on both sides along diverted route of Gurudiah Nallah and Masania Nallah, and 50 meter in the southern side of Singhada Jhor Nallah, totalling around 80.00 ha will be developed as greenbelt within three years of nallah diversion. PP submitted that Native species like Siris, Neem, Palasa, Amaltas, Shisham, Amla, Jamun, Mango, Arjun, Karanja, Bija, etc. will be planted along with other species in consultation with the forest department. PP will ensure at least 70% survival rate carrying out gap plantation in case of mortality.

1. PP submitted the updated EMP by including i) Fog cannon installation: to mitigate dust emissions, ii) Increased greenbelt development budget: aligned with the expanded plan and iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. The budget as per revised EMP is Rs 2995 Lakh (Capital) and Rs 201 Lakh (Recurring).

1. With respect to grazing land PP submitted that as per Govt. of Odisha, Revenue and Disaster Management Department circular no. 23629 dated 28.05.2008 issued by Commissioner cum Secretary to Government "...When the entire habitation of the village is going to be displaced due to land acquisition for establishment of industries, there seems to be no need for Gochar land in that village. In that case the Gochar land can be alienated in favour of IDCO or any agency.". PP also submitted that the entire habitation of concerned villages within the lease hold area of Subhadra OCP will be displaced. However, we will progressively develop grazing land within the mine site as per pre-mining land use.
2. PP submitted that 35.36 ha water body will be left at the closure of mine as per the approved mine plan & mine closure plan of Subhadra OCP. The total depth of water body will be restricted to 30 meters. Safety measures like fencing, safety signage, etc. will be implemented to prevent any accidental situations.
3. PP submitted that a minimal plastic waste (less than 1 ton per year) is anticipated from equipment packaging. This will be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. The Committee is of the view that in pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.
4. PP submitted the revised budget to address the issues of PH by including the budget for construction of toilets. The revised budget is Rs 1235 Lakh.
5. PP submitted that Wild life Conservation Plan has been submitted to DFO, Angul for approval with a budget of Rs. 43.60 Crores. PP undertake that they will bear any additional cost as approved by Chief Wildlife Warden, Odisha.
6. PP submitted that Ground water NOC has been granted by CGWA for 149 KLD domestic use through borewells and 1984 KLD from mine seepage/dewatering. In next few years, once the mine is fully operationalized, borewells for domestic use will be discontinued and all the water from mine seepage and mine pit with rainwater accumulation will be utilised. Water audit will be conducted on yearly basis by CGWA accredited water auditor and water requirement will be reduced as per the targets given to obtain water neutrality.
7. PP submitted that Ministry of Coal vide allotment order no. NA-103/1/2021-NA dated 18.11.2021 has allocated this coal mine in favour of MCL. Annexure I part-A and part-B of the allotment order describe the details of Utkal-A and West of Gopalprasad West respectively. MCL has named Utkal-A and Western Part of Gopalprasad West as Subhadra Opencast Project vide their letter no. 539-H dated 26.9.2019. Total notified area U/s 11(1) of CBA (A&D) Act 1957 is 1558.4604 Ha. involving Utkal A and whole of Gopal Prasad Western of which 1111.85 ha is acquired for Subhadra OCP. PP informed that in para 2.1.8 of the approved mining plan the mining lease area is mentioned as 1111.85 Ha. PP finally affirms to the fact that the total mining lease area of Subhadra OCP is 1111.85 Ha. PP also provided the justification for not executing a separate lease deed in pursuant to Section 10 &11 of CB(A&D) Act 1957.

In addition to above, the Committee noted that total 03 nos. of nallahs pass through the ML area i.e. Ghurudia Nallah, Singhada Jhor Nallah and Masania Jhor Nallah. Committee asked the PP to protect the Singhada Jhor Nallah and Masania Jhor Nallah for the next five years from the commencement of mining operations. For the Diversion of Ghurudia Nallah, PP shall obtain permission from the concerned state department. The diverted Nallah should be supported by width of atleast 50m thick plantation.

The Committee after deliberations observed that the instant proposal is a Greenfield Opencast coal mine project. PP had obtained ToR and amendment of ToR vide letter dated 22.11.2021 & 28.02.2022 respectively, followed by Public Hearing conducted on 25.08.2023. The baseline data has been collected during the Period/Season of October to December 2022. Committee has obtained satisfactory reply w.r.t. the query raised in the previous EAC meeting and information submitted by PP vide letter dated 17.01.2024 and email dated 18.01.2024, with respect to issues raised during the meeting.

Based on the above discussions held in the EAC meeting, the EAC recommended the Environmental Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kunuda, Nisha, Kanharen, Raitharan, Nisha P.S Angul, Tehsil Tacsider Sadar and Chhendipada, District Angul (Odisha) with the following specific conditions and standard conditions under the provisions of EIA Notification, 2006 and its amendments:

3.5.5. Recommendation of EAC

Recommended

3.5.6. Details of Environment Conditions

3.5.6.1. Specific

specific conditions:	
1.	*Any activity of the forest land shall only be carried out after obtaining necessary forest clearance.*
2.	*PP to obtain the CTO for 25 MTPA (peak) capacity after grant of EC.*
3.	*PP shall deploy electric vehicles to the extent of 50% of transportation fleet for evacuation of coal through road up to Balaram Siding (Approx. 11 KM) till commencement of rail evacuation system with CHP of Subhadra OCP which is likely to commence from the fourth year of mining operations. PP shall monitor the EV usage through installation of adequate number of CCTV cameras. Till such time transportation from a dedicated road and village road shall not be used for the same.*
4.	*PP shall adopt 6 ponds outside the lease area in different village and carry out the various activities for their protection and maintenance as proposed in the plan submitted for the same to Ministry. The budget earmarked for water conservation plan for these ponds is Rs. 1.00 crores shall be kept in a spate account and audited annually. PP while submitting the compliance report to Regional Office and on Parivesh Portal as the case may be also submit evidence of implementation of the plan including geo tagged photographs.*
5.	*PP shall develop greenbelt on approximately 38% of the lease area, i.e. on 426.15 ha of land as proposed in the plantation plan submitted to the Ministry and*

	maintain a survival rate of at least 70% (after 10 years of the plantation) by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year. Third party monitoring of the plantation shall be done preferably by an institution of MoEFCC (eg ICFRE).
6.	*PP shall maintain atleast10 mtrs width tree plantation of broad leaved species and wind break/greenshield of about 10 mts height along the boundary of coal storage yard.*
7.	*PP shall implement the activities-wise proposed to address the issues raised during Public Hearing. The budget earmarked for the same is Rs 1235 lakhs and the same shall be kept in a separate account and audited annually. The details of activities undertaken, amount spent along with documentary proof shall be a part of report to be submitted to IRO, MoEF&CC. The maintenance of all activities shall be covered through recurring cost of Public Hearing, and continued as a part of CSR budget.*
8.	*PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.*
9.	*All the mitigation measures committed / envisaged in the EIA/EMP report and subsequent submission (ANNEXURE 2) shall be implemented which also includes i) Fog cannon Installation: to mitigate dust emissions, ii) Increased greenbelt development budget: aligned with the expanded plan and iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. The budget as per revised EMP is Rs 2995 Lakh (Capital) and Rs 201 Lakh (Recurring) shall be kept in a separate account. PP should annually submit the audited statement along with proof of activities carried to the Regional Office of MoEF&CC and PARIVESH Portal as the case may be for the activities carried out during previous year.*
10.	*PP to install 2 continuous ambient air quality monitoring stations at suitable locations preferably on village side with consultation of SPCB. The real time data so generated shall be uploaded on company website and linked with website of CPCB &SPCB. In addition, data should also be displayed digitally at entry and exit gate of mine lease area for public display.*
11.	*PP shall implement Effluent Treatment Plant for wastewater generated from workshop and Sewage Treatment Plant for its colony. No untreated water shall be discharged from mine boundaries to ponds and/driver.*
12.	*PP to install solar lights along the road used for transportation of minerals also take up installation of solar lights in rural areas with its maintenance within the study area of 10 km radius buffer zone within one year.*
13.	*Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health checkups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented. The preventive measure for hiims, malaria and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.*
14.	*PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.*
15.	*Hon'ble Supreme Court in its Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent. The implementation report of the above said condition along with geo tagged photographs shall be sent to the Regional Office of the MoEF&CC.*
16.	*PP shall strengthen the existing Environment Management division of the mine under intimation to the IRO.*

3.5.6.2. Standard

1(a)	**Mining of minerals**
air quality monitoring and mitigation measure	
1.	Adequate number of Fog canon (mist sprayer) shall be installed to reduce the impact of air pollution at dust generating sources with time bound action plan.
1.	Post environmental closure third party monitoring by reputed instituted on air quality, water, land & soil etc shall be carried out and analysed with EMP measures at regular interval. A suitable recommendation in this regard, shall be furnished to IRO, MoEF&CC for compliance. The data used for analysis shall be obtained from continuos AQMS, site specific water regime. Also third party shall analyses the implementation of river diversion, meeting to the requirement of project report.
1.	Comparison of average monthly temperature of pre and post mine operation after obtaining EC shall be elaborated for post three years and a record to be maintain at regular interval.
1.	PP to install solar lights along the road used for transportation of coal to avoid the accidents at night and also seek its maintenance.
1.	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.
1.	Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
1.	Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology

	should be implemented for mitigating such parameters.
1.	Adequate measures on EMP should be analyzed on annual basis to assess the trend of air pollution data from continuous monitoring station and quarterly report shall be generated and submitted with 6 monthly compliance reports to RO, MoEF&CC.
1.	Effective safeguard measures for prevention of dust generation and subsequent suppression like regular water sprinkling shall be carried out in areas prone to air pollution. The Fugitive dust emission from all sources shall be regularly controlled by installation of required equipment's. It should be ensured that air pollution level confirm to the standards prescribed by the MOEFCC/CPCB
1.	PP should Install Wind breaker/shield arrangement along the railway siding for reducing the dust propagation in upwind direction.
1.	Continuous ambient air quality monitoring stations as prescribed in the statue be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM 10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. The new CAAQMS should be installed with expansion.
1.	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
1.	Transportation of coal, to the extent, if permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun/ Fog cannon etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
1.	The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
corporate environment responsibility	
1.	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of a.r. water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority
1.	Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
1.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environmental/forest/wildlife norms/conditions and/or shareholders/stake holders.
1.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
1.	A seperate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
green belt	
1.	Greenbelt consisting of 3-tier plantation of which not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads. And Plantation should also be carried out in nearby area with consent of forest department and gram panchayat within 10 km radius with its proper maintenance.
1.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
land recalmation	
1.	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.
1.	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC
1.	All approach roads to mine and all other roads which are in regular use should be black topped. The maintenance of road shall be done by PP in collaboration with state government
1.	PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads/ manufacture of artificial sand, aggregates/ use for farmers etc.)
1.	Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoid air born of particles

1.	Progressive backfilling of mine and progressive reclamation of OB dump shall be done
1.	Top soil should be stored separately at marked area and necessary vegetation shall be maintained to avoid any entrainment of dust
1.	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.
1.	Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change Regional Office.
1.	Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
1.	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining"/"post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.
1.	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shall be submitted to MOEFCC/Regional Office (RO).
mining plan	
1.	Mining shall be carried out under strict adherence to provisions of the Mines Act,1952 and subordinate legislations made there-under as applicable.
1.	Transportation of coal till Railway Siding shall be developed to avoid transportation through Road
1.	PP shall adopt mining method by preferably using surface miners for the project and silo loading through in-pit conveyor should be adopted
1.	Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.
1.	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.
1.	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
1.	5- Star Rating is mandatory to obtain certification as per guidelines of Ministry of Coal
miscellaneous	
1.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
1.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
1.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
1.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
1.	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
1.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
1.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
1.	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
1.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
1.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
1.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.
1.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of

	Environment (Protection) Act, 1986.
i.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
i.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
i.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
noise and vibration monitoring and prevention	
i.	Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
i.	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS.
i.	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.
public hearing and human health issues	
i.	Compensation of the land acquired for the project shall be settled as per the R&R Policy within fixed timeline
i.	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six-monthly basis.
i.	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.
i.	Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.
i.	Implementation of the time bound action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the time bound action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.
i.	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/57/2014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.
i.	PP to conduct need based assessment survey of the area to for in order to decide the activities to be carried under the CSR and to provide detail of the activity carried out with adequate budgetary provision and time bound action plan.
i.	PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
i.	Permanent Health care facilities of Hospital should be established within 5 km of project boundary for the local people.
i.	PP must ensure an emergency action plan during pandemic in order to provide assistance to the nearby villages located within the 10 km radius buffer zone (If required)
i.	PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year
i.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours
i.	PP to take measure for installation of Renewable Energy sources in nearby area falling within 10 km radius
i.	Adequate facility of drinking water, plantation and other social amenities shall be provided to established R&R villages.
i.	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.
statutory compliance	
i.	The maximum production or peak production at any given time shall not exceed the limit as prescribed in the EC.
i.	All the conditions stipulated in previous Environment Clearance conditions should be strictly complied within/remain timeline
i.	Validity of Environment Clearance is as per life of the mine mentioned in EC letter or 30 years as per EIA Notification, 2006 and its amendments therein
i.	Permission of power supply to be taken from the concerned authority for meeting power demand of the project site.
i.	Solid/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.

1.	The project proponent shall obtain the necessary permission from the Central Ground Water Authority
1.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee prior to start/commencement of mining operations/production
1.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. TThe implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
1.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
water quality monitoring and mitigation measures	
1.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
1.	The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.
1.	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012-1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
1.	No obsolete technologies for sewage treatment shall be implemented. Construction of Sewage Treatment Plant with latest technology should be completed within 2 years and treated water shall be reused for plantation. CTE and CTO of STP shall be obtained as per the norms.
1.	Domestic water shall be providing to the residents/villages which are coming under the zone of influence of the project due to ground water extraction and mining operation by installing adequate number of RO plants with proper supply line and Taps within 2 years
1.	Quality of polluted water generated from the operations which include COD and acid mine drainage and metal contamination shall be monitored along with TDS, DO, TSS. The monitored data shall be uploaded on the website of the company as well as displayed at the site in public domain.
1.	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A rivarine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.
1.	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
1.	The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.
1.	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP /STP needs to be provided.
1.	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).
1.	Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated, compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.
1	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
1.	Monitoring of water quality upstream and downstream of river including pons, lakes, tanks shall be carried out once in six-months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.

Day 2 -18/01/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Barsingsar Opencast Lignite mine of capacity 2.1 MTPA in mine lease area of 971 ha by M/s Neyveli Lignite Corporation Limited by NLCIL located at BIKANER,RAJASTHAN	
Proposal For	Fresh EC

Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/RJ/CMIN/456905/2023	IA-J-11015/28/2020-IA-II(M)	28/12/2023	Mining of minerals (1(a))

3.1.2. Project Salient Features

Agenda No. 6.6

Barsingsar Opencast Lignite mine of capacity 2.1 MTPA in mine lease area of 971 ha by Neyveli Lignite Corporation Limited located at village Barsingsar, District Bikaner (Rajasthan) - For Environmental Clearance as per SoF dated 07.07.2021 (read with OM dated 28th January, 2022) for violation category – reg.

[Online Proposal No. IA/RJ/CMIN/456905/2023; File No. IA-J-11015/28/2020-IA-II(M)]

6.6.1 The proposal is for Environmental Clearance for Barsingsar Opencast Lignite mine of capacity 2.1 MTPA in mine lease area of 971 ha by M/s Neyveli Lignite Corporation Limited located at village Barsingsar, District Bikaner (Rajasthan).

6.6.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting are given as under:

6.6.2.1: Location of Project:

1. The project area is covered under Survey of India Topo Sheet No 45 E/1,45 E/2, 45 E/5,45 E/6 and is bounded by the geographical coordinates ranging from **Latitude:** 27048'23" N - 27050'40" N and **Longitude:** 73011'34" E - 73013'54" E.
2. Coal linkage of Barsingsar Mine project is for 2 X 125 MW Thermal power plant of NLCIL at Barsingsar, District Bikaner, Rajasthan.
3. Barsingsar Opencast Mine project does not fall in the Critically Polluted Area (CPA).

6.6.2.2: Category of Project:

The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006 as the mining lease area is more than 500 Ha i.e 971 Ha. PP applied for EC in pursuant to MoEF&CC SOP to deal with violation cases vide OM. F.No.22-21/2020-IA.III dated 07.07.2021 as the PP did not applied for revalidated of EC granted under EIA 1994, in pursuant to Ministry's Notification dated 6.04.2018.

6.6.2.3: Previous Approvals:

The Environment Clearance (EC) for the Barsingsar project was issued to M/s Hindustan Vidyut Corporation Limited (HVCL) on 03.06.1998 and later it was transferred to M/s NLC India Limited (NLCIL) vide Lr.No. J-15012/23/97-IA. II(M) dated 20.12.2002.

TOR under Violation has been issued by MoEF&CC vide letter reference No: IA-J-11015/23/97-IA-II(M) dated 9th June 2022. Again, the amendment to the above TOR was issued vide letter No. IA-J-11015/28/2020-IA-II(M) dated 15th November2022 for exemption of public hearing and to invite suggestions/objections as part of public consultation for the project.

6.6.2.4: Change in Consultant:

NLC India Limited (NLCIL) had taken the services of NABET accredited EIA Consultant M/s Vimta Labs Limited (WLL), Hyderabad to prepare EIA/EMP report. However, due to some unavoidable circumstances, NLCIL has changed the consultant and entrusted the assignment to M/s GRC-India (P) Ltd to complete the EIA-EMP report vide letter dated 27.04.2023.

6.6.2.4: Mining Lease:

The mining lease for an area of 971 ha was granted by Govt. of Rajasthan vide order No.Pa.17(55)/Khan/Group-1/2004 dated 2nd March 2006. Mining activity in Barsingsar Lignite Mine Project (BLMP) commenced on 7th August, 2006 and commercial production of lignite commenced on 23rd November 2009.

6.6.2.5: Forest land & Protected Area: PP submitted that no forest land involved in the project and no Wildlife sanctuaries & National Park within 10km radius of the project. However, wildlife conservation plan for Schedule-I species for Chinkara is submitted to DCF, Bikaner on 21.09.2023 for approval.

6.6.2.5: Mining Plan:

Mining plan and progressive mine closure plan of Barsingsar lignite mine had already been approved by MoC vide letter dated 08.09.2004 and 31.03.2011, respectively. The latest Mining plan and Mine Closure Plan has been approved by MoC vide letter dated 21.04.2023.

6.6.2.6: Method of Mining:

(i) Gross geological reserves within the mining lease area are 77.94 MT. Net geological reserves are 72.10 MT out of which 17.63 MT reserves are blocked in NE and West pits. The existing mine is planned for the Barsingsar main pit only. West and NE blocks are not considered at present. However, option is kept open to mine these blocks in future. The mine is operated through an open-cast method using conventional mining equipment (CMPD) technology. Total extractable lignite reserves are 53 million tonnes and total overburden is 256.18 million cum. The rated capacity of the mine is 2.1 MTPA. As on 31.03.2023, 17.26 MT reserves are exhausted and balance reserves are 35.74 MT. Balance mine life is 26 years.

Presently, the project has 1 no's of external OB dump over an area of about 215 ha and the average height of the dump is about 45 m. So far, around 81.97 Mm3 of OB stored in the external dump.

Total quarry area 411 Ha out of which backfilling will be done in 288 while final mine void will be created in an area of 123 ha with a depth of 50 m. Backfilled quarry area of 288 ha shall be reclaimed with plantation.

Reclamation Plan in an area of 971 ha, comprising of 411 ha of excavation area and 56 ha of green belt. In addition to this, an area of 133 ha included in the safety zone area has also been proposed for green belt development.

(ii) **Land Use Details:**

Pre-mining land use details: (Area in Ha)

S. No.	Land Use	Within ML Area	Outside ML Area	Total
1.	Agricultural Land (Non-irrigated land)	896.24	--	896.24
1.	Forest Land	--	--	--
1.	Wasteland	--	--	--
1.	Grazing Land	--	--	--
1.	Surface Water Bodies	--	--	--
1.	Settlements	--	--	--

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 16.04.2025 GOVT. OF WEST BENGAL

GOVT. OF WEST BENGAL NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 16.04.2025

1.	Others (Specify) Government land	74.76	--	74.76
1.	Old Excavation Area (EastQuarry)	--	--	--
1.	Old Excavation Area (WestQuarry)	--	--	--
1.	Old OB Dumps	--	--	--
1.	Roads & Mine Infrastructure	--	--	--
1.	R & R Colony	--	--	--
1.	Staff Colony	--	--	--
1.	Green Belt	--	--	--
1.	Balance Area	--	--	--
	Total Project Area	971.00		971.00

Post Mining

S.No.	Land use	Land use (ha)				
		Plantation	Water Body	Public Use	Undisturbed	Total
1	External OB Dump	215	-	-		215
2	Topsoil Dump	10	-	-	-	10
3	Excavation	288	123			411
4	Roads	5	-	-	-	5
5	Built-up Area	-	-	-	-	-
6	Green Belt	56	-	-	-	56
7	Undisturbed Area	138	-	-	-	138
8	Safety Zone/ Rationalization Area	133	-	-	-	133
9	Diversion/ Below River/ Nala/Canal	-	-	-		
10	Water Body	-	-	-	-	
11	Staff Colony	-				
12	Garland drain/ Embankment	3		-		3
	Total Area	848	123			971

(ii) **Transportation of Mineral:**
Currently, transportation of lignite is carried out through covered belt conveyor system to the pit head thermal power plant.
6.5.2.7: Baseline Data: Baseline data generated from 1st March 2021 to 31st May 2021 and one-month additional data from 27th April to 27th May 2023.

Period	1st March 2021 to 31st May 2021
AAQ parameters at 9 locations (min. & Max.)	• PM10 = 31.5-94.5 µg/m3 • PM2.5 = 17.1-46.2 µg/m3 • SO2 = 10.1-21.3 µg/m3 • NOx = 12.4-30.7 µg/m3. • CO =246-547 µg/m3. • O3 = 2.3-7.2 µg/m3. • NH3 < 20 µg/m3.
Incremental GLCLevel	This is not an expansion proposal the baseline is for existingcapacity.
Ground Water quality	No ground water source is present within 10km study area, illages are using supply water for domestic purpose.
Surface water	No sources of surface water observed within the study area during the study period.
Noise levels Leq(Day & Night) at 8Locations	The Leq values for day time was observed to be 41.9 to 68.8 dB (A). The Leq values for day time and night time was 39.4 to 57.3 dB (A).
Soil Quality	The soil sampling was carried out at 9 locations. Data computations for 9 sampling locations were carried out and summarized as under: Based on particle sizes distribution and texture, the soils are mostly sandy loam and sandy clay loam category. The pH value of the soil suspension varied from 7.48 to 7.92. In terms of soil pH, the characteristic of the soil is moderately alkaline pH in nature. The Electrical conductivity varied from 208 to 312 µS/cm. The sodium absorption ratio of soil varied from 0.55 to 0.64. The Cation exchange capacity varied from 12 to 13 meq/100 gm. The loss on ignition in terms of organic matter varied from 0.45 to 0.64%. The major nutrient such as Nitrogen, Phosphorus and Potassium level were varied from 152 kg/ha to 169 kg/ha., 18.6 to 20.5 kg/ha and 219 to 323 kg/ha respectively. The micronutrients such as copper, zinc, boron and iron are minimum and sufficient for plantation. Based on soil analysis data it is concluded that soils are moderately alkaline in nature at all sampling locations. The organic carbon status is medium (between 0.48 to 0.64%. The soils are also sufficient in Nitrogen (between 38 mg/kg to 43 mg/kg., and medium in phosphorus (between 6.3 to 6.9 mg/kg). However, for successful plantation and green belt development, sufficient quantity of organic manure and the recommended doses of fertilizers should be added in appropriate quantity.
Water Requirement	Domestic Water Requirement: 7 KLD; Green Belt: 500 KLD. Dust Suppression: 1200 KLD Total Water Requirement (Peak): 1707 KLD. Source: Met from IGNP canal & Thermal Effluent

Baseline data was also validated with one-month additional data. PP submitted that ambient air quality parameters have been found within the standard prescribed limits as per NAAQS standard, 2009. Though the maximum values of PM10 and PM2.5 are approaching NAAQS, it has not crossed it. The high maximum value is due to the operations taking place within the lease area. Sources of pollution are the existing power plant as well as other industries and activities taking place in the study area and nearby. The emission sources during the initial phase of the project would be the emissions from various sources. Values of SO2, NO2 and CO are well within the NAAQS indicating that these are not emitted in high concentration. Other pollutants like Benzene, B(a)P, NH3, O3 and other Heavy Metals in dust are not very relevant to the project activities and are well within the NAAQS.

6.6.2.8: Public Hearing:
Amendment to the above TOR was issued vide letter No. IA-J-11015/2/2020-IA-II(M) dated 15th November 2022 for exemption of public hearing and to invite suggestions/objections as part of public consultation for the project. The Draft EIA Report was submitted to Regional Office, RSPCB, Bikaner (Rajasthan) vide letter dated 16.06.2023 with request to initiate proceedings for public consultation. Accordingly, public notice for public written comments as per ToR amendment dated 15.11.2022 was published in two newspapers namely "The Times of India" and "Dainik Bhaskar" on 25.06.2023 in Regional language for information to the stakeholders to offer their Views/ Comments/ suggestions/ objections relevant to the project, addressing to the Regional Officer, RSPCB, Bikaner, within 30 days of the publication of the notice. During the notice period, total 5 No. of representations were received from the stakeholders in Regional Office, RSPCB, Bikaner which were forwarded to M/s NLC India Ltd. vide letter dated 26.07.2023. Further, NLC India Limited vide its letter dated 14.08.2023 submitted point-wise comments on the received suggestions/objections to Regional Office, Rajasthan State Pollution Control Board, Bikaner.
PP has submitted the concerns of Public consultation and their action plan during the EAC meeting. The concern raised by public includes i) Air pollution control measures, ii) CSR done by NLC India towards construction of road, drainage, road light, electricity in Barsingsar Village, iii) Employment for villagers, iv) Upgradation of education for local villagers, v) Greenbelt development and arrangement of water for animal and birds, and vi) Preventive measure for ground water Quality.

6.6.2.9: EMP Cost: NLCIL, Barsingsar has proposed to spend a total of Rs. 537.30 Lakhs as capital towards environmental protection measures during balance mine life. The details of capital and recurring cost of EMP are as follows:

Sr No.	Summary of EMP	Cost of EMP (Rs. in Lakhs)	
		Total CapitalCost	Recurring CostPer Annum
A	Air environment	11.00	31.0
B	Water environment	18.30	2.62
C	Noise and ground vibration	0.00	0.88
D	Soil and waste dump management	96.0	0.50

E	Plantation & Green belt	412.00	407.00
Total		537.30	442.00

6.6.2.10: Damage assessment: PP has prepared & submitted the damage assessment, remediation plan, natural and community resource augmentation plan and a detailed assessment has been carried out along with EMP budget as follows:

S. No.	Damage Description	Monetary Cost
..	As per CTO condition 53% of total land use for mining should be covered with plantation, which is 320.43 Ha. Considering the total initial mine life period of 30 years (till 2036 as per ML grant order dated 02.03.2006), on pro-rata of 1 0.68 Ha per annum plantation, till March 2022 there must have developed plantation in 170 ha. Till 31.03.2022 the PP has developed 138 Ha area of plantation, the difference in plantation, which is 32 Ha, will be taken fo r damage which includes Greenbelt plantation at Rs.150 per plant at 2000 trees per hectare density as per EC. The balance trees as per conceptual plan will be planted in upcoming years.	Total damage cost = 150*3 2*2000= Rs.0.96 Crores

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

6.6.3 Committee after deliberations noted the followings:

1. PP has obtained TOR under Violation category vide letter No. IA-J-11015/23/97-IA-II(M) dated 09.06.2022. Amendment of TOR was issued vide letter No. IA-J-11015/28/2020-IA-II(M) dated 15.11.2022 to invite suggestions/ objections as a part of public consultation instead of public hearing.
2. PP has collected the Baseline data for period from March 2021 to May 2021 by M/s. Vimta Labs Limited (VLL), Hyderabad and additional one-month data was generated during 27.04.2023 to 27.05.2023 by GRC India Training and Analytical Laboratory (A Unit of GRC).
3. PP has published in two newspapers namely "The Times of India" and "Dainik Bhaskar" on 25.06.2023 in Regional language for information to the stakeholders to offer their Views/ Comments/ suggestions/ objections relevant to the project. Proceeding from RSPCB was provide vide letter No. RPCB/RO/BKN/Tech/BM-731/782 dated 29.08.2023
4. Final EIA-EMP has been prepared for capacity of 2.1 MTPA in ML area of 971 ha for Barsingsar Opencast Lignite Mine.
5. The proposal falls under violation category and committee considered the application as per SoP dated 07.07.2021 (read with OM dated 28th January, 2022) for violation category.
6. The Hon'ble Supreme Court vide judgment dated the 7th February, 2018 in Special Leave to Appeal (Civil) No. 32138 of 2015 in the matter of Goa Foundation versus M/s Sesa Sterlite Ltd., & Ors. has reiterated that the validity of the Environmental Clearance for mining projects granted under the EIA Notification, 1994 shall be five years.
7. Ministry's issued a Notification dated 6th April, 2018 applicable for mining project which were granted environmental clearance under the EIA Notification, 1994, but not obtained environmental clearance for expansion / modernisation / amendment are required to obtain environmental clearance under the EIA Notification, 2006. Ministry vide its notification gave a 6 months' window for revalidating such proposals however PP did not apply in that period thereby continuing mining operation without valid EC.
8. Meanwhile SOP for handling violation cases was issued by Ministry on 7th July, 2021 and subsequently stayed by Madras High Court. Further, Ministry issued OM regarding 28th January, 2022 regarding Observation of Hon'ble Supreme Court with reference to the SOP. Further, as per the Ministry's OM dated 08.01.2024 *"The Hon'ble Supreme Court in W.P. (C) No. 1394/2023 titled Vanashakti vs. Union of India, has stayed the operation of both the Office Memoranda dated 7th July 2021 and dated 28th January, 2022 issued by this Ministry".*

6.6.4 The Committee after deliberations, is of the view that the proposal is in pursuant to SoP dated 07.07.2021 for violation category and the same has already been stayed by Hon'ble Supreme Court in W.P. (C) No. 1394/2023 titled Vanashakti vs. Union of India, has stayed the operation of both the Office Memoranda dated 7th July 2021 and dated 28th January 2022 issued by this Ministry. *Therefore, Committee decided to defer the proposal and is of the view that proposal may only be considered once the Ministry issues any further direction to deal with the violation proposals. Further, the Committee is of the view that in case, proposals to be considered in future then PP should also provide the following information:*

1. *PP should submit a year-wise production and development plan (tabular format) till the end of life of mine. Year wise backfilling plan in a tabular format needs to be submitted.*
2. *PP should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. PP should submit the number of saplings to be planted, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this PP should show on a surface plan (5-year interval for life of mine) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. As the area is difficult for plantation the PP may take the assistance of any expert agency for plantation programme.*
3. *PP should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this PP should mention the number and designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.*
4. *PP shall provide the budget already spent for addressing the issues raised during PH and also submit the budget earmarked for the issues raised by public through written comments in a tabular format along with timeline for implementation.*
5. *PP shall also explore the possibility of using EV/CNG based vehicle in place of diesel operated vehicle to reduce the specific diesel consumption.*

3.1.5. Recommendation of EAC

Deferred for ADS

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Jalagam Vengala Rao Opencast Mine (I&II Expansion) by THE SINGARENI COLLIERIES CO LTD located at KHAMMAM,TELANGANA			
Proposal For		Fresh EC	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/TG/CMIN/447089/2023	J-11015/268/2007-IA-II(M)	21/10/2023	Mining of minerals (1(a))

3.2.2. Project Salient Features

Agenda No. 6.7

Expansion of Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in ML Area 1953.46 ha by M/s Singareni Collieries Company Limited at village Kommepalli near Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) – Reconsideration for Environmental Clearance under Ministry's OM dated 11.04.2022 (Stage I - 20% expansion) – reg.

[Online Proposal No. IA/TG/CMIN/447089/2023; File No. J-11015/268/2007-IA-II(M)]

6.7.1 The proposal is for Environmental Clearance for Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in ML Area 1953.46 ha by M/s Singareni Collieries Company Limited at village Kommepalli near Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) under provisions of 7(ii) of EIA Notification, 2006 under OM dated 11.04.2022. The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006 as the mining lease area is more than 500 Ha.

6.7.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.7.2.1: Location:

1. The project area is covered under Survey of India Topo Sheet No. 65C/16 and is bounded by the geographical coordinates ranging from Latitudes 17°09'54.59"N to 17°13'01.70"N and longitudes 80o45'43.28" E to 80°49'20.86"E.
2. Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13th January, 2010 has imposed moratorium on grant of environment clearance.

6.7.2.2: Mining Lease:

Sl No	Details	Area (Ha)
1	JVR OCP-II granted vide G.O Ms. No 29 dated 3.11.2016	1300.69
2	JVR OCP-I granted vide G.O Ms. No 5 dated 21.02.2005	283.05
3	JVR OCP-I granted vide G.O Ms. No 115 dated 13.05.2008	136.50
Total-I		1920.24
4	LoI for non-coal bearing area	89.85
Grand Total		1910.09

1. Forest Area:
2. PP reported that 1156.72 ha of forest land has been reported to be involved in the project. Approval under the Forest (Conservation) Act, 1980 for diversion of 1156.72 ha of forest land for non-forestry purposes has been obtained as per following details:

Sl No	Details	Area (Ha)
1	F.No. 8-129/2003-FC, dated 02nd February, 2005, (JVR OCP-I 244.02 ha)	244.02
2	F.No. 8- 56/2008-FC, dated 03rd July, 2012, (JVR OCP-I Expansion 136.50 ha)	136.50
3	F.No. 8-56/2014-FC, dated 30th May, 2017 , (JVR OC-II 776.20 ha)	776.20
Total		1156.72

1. Protected Area:
2. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10 km boundary of the project.
3. Wildlife conservation plan for Schedule-I species has been already obtained with an amount of Rs. 2.52 Crores from the Principal Chief Conservator of Forest (HoFF) and Chief Wild life Warden (FAC), TS and the funds were deposited with State Forest Dept. on 09-12-2021.

6.7.2.3: Previous Approvals:

Sl No	Details	Area (Ha)	Capacity (MTPA)
1	JVR-I (expansion project 2.5 MTPA to 5.0 MTPA) granted under violation category vide letter dated 7.02.2021.	544.81	5
2	JVR-II vide letter dated 28.03.2010	1409.81	5
Total		1954.62	10

3	JVR (I & II) amalgamation and expansion EC dated 11.10.2021 and 4 MTPA coal washery within ML.	1953.46	10

1. **Method of Mining & Mining Plan:**
2. Total project area is 1953.46 ha (1910.09 ha ML area and 43.37 ha colony). Mining Plan (Including Mine Closure Plan) has been approved by MoC Vide F.No PCA-38011/12/2017-PCA dated 29th March, 2019. PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 1910.09 Ha.
3. **Land use details of mine:** The land usage pattern of the project is as follows:

Pre-mining Land use details (Area in ha)

Sl. No.	Land use	Within ML Area(ha)	Outside ML Area (ha)	Total (ha)
1.	Non-Forest Land			
	Agriculture	691.74	22.57	714.31
	Grazing	3.75	-	3.75
	Water Body	37.29	-	37.29
	Roads	12.24	-	12.24
	Villages	8.35	-	8.35
	Waste Land	-	20.80	20.8
	Sub-Total	753.37	43.37	796.74
2.	Forest Land	1156.72	-	1156.72
Total		1910.09	43.37	1953.46

Post Mining:

Post Closure Land use status is furnished hereunder: (Area in ha)

Sl. No.	Type	Total Area	Plantation	Water Body	Public / Company Use
1	Excavation/ Quarry Area:	1030.9	-	-	-
	(a) Backfilled Area	531.75	531.75	-	-
	(b) Excavated Void	499.12		95.56	-
2	External Dump	507.05	507.05	-	-
3	Safety Zone /Rationalization area	177.69	162.69	-	15
4	Road& Infra-structure area	152.74	58.89	-	93.85
	(a) CHP & Coal Yard	22.33	22.33		
	(b) Coal Washary	13.05	1.15	-	11.9
	(c) Road Diversion	18.97	13.88	-	5.09
	(d) Magazine	6.94	1.45	-	5.49
	(e) Railway Siding	43.15	1.74	-	41.41
	(f) Mine Service Facilities	48.32	18.36	-	29.96
5	Garland Drains, Settling Ponds	26.78	13.52	13.26	
6	Embankment	14.96	14.96	-	-
7	Water Reservoir near pit/ Water Body	-	-	403.56	
Outside ML area					
8	Colony/township	43.37	-	-	43.37
	GRAND TOTAL	1953.46	1288.86	512.4	152.22

1. Total geological reserves reported in the mine lease area are 309.55 MT with 291.97 MT extractable reserves. Percent of extraction is 94.32%. Balance extractable reserves are 206.79 MT as on 31th March, 2023.
2. 6 seams with thickness ranging from 0.05 m – 15.20 m are workable, grade of the coal is G-9 to G-12, stripping ratio 4.12 Cum of OB per 1 tonne of coal, while gradient is 1 in 1.25 to 1 in 11.

3. Method of mining operations envisages by opencast method.
4. Life of mine is 23 years from 2023-24.
5. The project has one external OB dumps in an area of 507.05 ha with 120 m height above ground level and 374.61 Mm3 of OB. Internal OB dump in an area of 531.75 ha with 827.72 Mm3 of OB is envisaged in the project.
6. Total quarry area is 1030.87 ha out of which backfilling will be done in 531.75 ha while final mine void will be created in 499.12 ha (121.24 ha in East Side and 377.88 ha in South Side) with a max. depth of 362.45 m (146 m in East Side & 363.45 m in South Side) will be converted in to water body. Backfilled quarry area of 531.75 ha shall be reclaimed with plantation. Final mine voids will be converted into water body.
7. Reclamation Plan in an area of 1288.86 ha, comprising of 507.05 ha of external dump, 531.75 ha of internal dump and 162.29 ha of green belt. In addition to this, an area of 87.77 ha, included in the Infrastructure area etc has also been proposed for green belt development.
8. **Transportation of Coal:** Transportation of coal has been proposed from quarry to pit head by Trucks/Dumpers, from surface to siding (Railway siding, Sathupalli) by belt conveyor) and from siding (Railway siding, Sathupalli) to customers by rail.
9. **Baseline Data:**

Environmental Baseline data was generated in the summer season from March to May, 2023 (Summer Season).

Air Quality	Ambient air quality data monitored in the core zone shows that PM10 concentrations varied from 94µg/m3 to 151µg/m3, the minimum concentration was observed at JVR OC Mine (I&II Expansion) PO Office (CA-1) and maximum concentration was observed at JVR OC Mine (I&II Expansion) BWS (CA-2). The PM2.5 concentrations were in the range of 31.8µg/m3 to 52.1µg/m3. The minimum concentration was observed at JVR OC Mine (I&II Expansion), PO Office (CA-1) and maximum concentration was observed at JVR OC (I&II Expansion), BWS (CA-2). The SO 2 and NO 2 concentration varies from 14.1µg/m3 to 17.7µg/m3 and 21.3µg/m3 to 27.4 µg/m3 respectively. All the parameters were found to be within the coal mines standards. In buffer zone, the concentration of PM10 values varied from 45µg/m3 (Jagannthapuram village) to 69µg/m3 (Rejarla). The PM2.5 concentration varied fro m 19.0µg/m3 (Jagannthapuram) to 28.7µg/m3 (Rejarla Village). The SO2 and NOx concentration had varied from 12µg/m3 (Pallewada) to 14.9µg/m3 (Ve ngalarao Nagar Village) and 17.4µg/m3 (Cherukupalli Village) to 22.5µg/m3 (Vengalarao Nagar) respectively. All the values were found to be within the prescribed limits as per National Ambient Air Quality Standards prescribed by MoEF&CC. The incremental increase in the values was projected to be in the range of 1.25mg/m3 to 5.58 mg/m3 for PM10 and 0.47 mg/m3 to 2.35mg/m3 for PM2.5 respectively. Whereas, for SO2 it is in the range of 0.09mg/m3 to 0.58mg/m3and that of forNOx is 0.14mg/m3 to 0.93mg/m3. The value of Total GLC is for PM10 in the range of61.03 mg/m3 to 129.58mg/m3 and that of for PM2.5 is 53.06 mg/m3 to 23.92mg/m3, whereas for SO2 it is in the range of 13.76mg/m3 to 17.87mg/m3 and 20.29mg/m3 to 27.68mg/m3 for NOx respectively. PP submitted that predicted total GLCs at all locations in respect of PM10& PM2.5, SOx & NOx are within the prescribed limits after expansion of mining operations in the project.
Surface Water	Surface water Monitering was done at 5 locations. The result indicates that the pH value in the range of 7.2 to 7.9 and its turbidity value is 0.07 to 10.9 NT U, dissolved oxygen in the range of 5.6 to 6.5 mg/L dissolved solids ranged 242 to 956 mg/L Surface water samples have Coliforms ranges between 94 to 240 MPN/100ml and contaminated due to surface runoff entering these sources. The analysis results of surface water samples from all the sampling locatio ns shows that the water quality conforms to Class-B (Outdoor bathing (Organized) Criteria.
Ground Water	pH values are in the range between 6.7 to 7.3 in the groundwater samples collected within the study area. TDS concentrations are in the range of 510 - 126 2 mg/L, are above the acceptable limit of 500mg/L but within the permissible limit of 2000mg/L at all locations. Calcium concentration is observed to be within the acceptable limit of 75mg/L at all the locations except at Pallewada GW-4 where the value (158mg/L) is above the acceptable limit but within the permissible limit of 200mg/L. Magnesium concentrations are observed to be above the acceptable limit of 30mg/ L but within the permissible limit of 100mg/L at all locations (40, 37, 78, 95, 57mg/L). Chloride concentration is observed to be within the acceptable limi t at all the locations except at Pallewada GW-4 where the value (366mg/L) is above the acceptable limit of 250mg/L but within the permissible limit of 10 00mg/L. Fluorides concentrations are observed 0.24 to 0.81 mg/L which is well within the acceptable limit (1.0 mg/L) at all the locations. Sulphates, Nitrates & Iro n concentrations were observed to be within the acceptable limit at all locations. The total alkalinity concentration (175mg/L) at Vengal Rao Nagar GW-1 is within the acceptable limit of 200mg/L and that of remaining samples are abov e the acceptable limit but within the permissible limit of 600mg/L. Total hardness concentration is observed to be above the acceptable limit but well withi n the permissible limit of 600 mg/L. The concentrations of heavy metals Cadmium (Cd), Copper (Cu), Lead (Pb), Arsenic (as As), Chromium (Cr), were either below the detection limits or bel ow the permissible limits. The ground water quality in the study area of the project indicates that the water can be used for drinking purposes in the absence of any alternate sources of supply.
Noise Quality	In core zone maximum value of Leq Day is 60.7 dB(A) at JVR OC Mine (I&II Expansion), BWS (CN-2), and minimum is 55.4 dB(A) at JVR OC Mine (I&II Expansion), PO Office (CN-1), and maximum value of Leq Night is 42.4 dB(A) at JVR OC Mine (I&II Expansion), BWS (CN-2), and minimum is 3 8.3 dB(A) at JVR OC Mine (I&II Expansion), PO Office (CN-1). In buffer zone maximum value of Leq Day is 53.9 dB(A) at Kistaram Village (BN-3), and minimum is 49.2 dB(A) at Pallewada village (BN-5) and maxim um value of Leq Night is 40.1 dB(A) at Sathupalli Town (BN-2), and minimum is 36.7 dB(A) at Vengalarao nagar (BN-4). It is observed that the noise lev els in terms of Day Leq and Night Leq are well within the stipulated standards at all the locations in core and buffer zone. The traffic and commercial activ ities are causing the increased noise levels.
Water Requirement	Total water requirement for the project is 2410 KLD. • Dust suppression: 2200 KLD • Domestic use: 90 KLD • Plantation & Others: 40 KLD • HEMM Washing: 80 KLD PP submitted that Ground Water Clearance was obtained vide Lr. No. 2282/Hyd/2008, dated 05th May, 2021and is valid for five years.

1. **Public Hearing:**

Public hearing for the existing project of 10 MTPA capacity in an area of 1953.46 ha was conducted on 14th February, 2020 at JVR Government college, Sathupalli, Major issues raised in the public hearing include development of surrounding areas, infrastructure facilities employment of local, compensations for land, education and health, effects of air, noise, water, and road repairs etc. PP also submitted the summary of issues raised during Public Hearing existing JVR OC Mine (I&II Expansion) project of 10 MTPA and action taken for the same.

1. **Past production details:**

PP reported that the project does not involve violation of the EIA Notification, 2006 and amendment issued there under. The last EC was granted on 11.10.2021 and PP submitted the coal production from the mine from 2021-22 onwards, is as under.

Year	EC Sanction	Actual Production (MTPA)	Excess Production beyond the EC

	capacity (MTPA)		
2021-22	10.00	07.35	0
2022-23	10.00	10.00	0

1. EMP Cost:

Environment Management Cost is Rs. 13.36 crore and recurring cost is 8.86 /tone

1. Others:
2. The project does not involve project affected families. No R&R involved.
3. Joint venture cartel has been formed - Not Applicable.
4. Consent to Operate for the existing capacity was obtained from the State PCB on 13th April, 2022 and is valid till 31st October, 2026.
5. No River nalla is flowing within the boundary of lease.
6. Total cost of the project is Rs. 47322 lakhs. Cost of production is Rs. 1225.97/- per ton, CSR cost is 2% of average net profits of the company made during last three years at company level. R&R cost is Nil.

3.2.3. Deliberations by the committee in previous meetings

Date of EAC 1 :17/11/2023

Deliberations of EAC 1 :

The EAC, after deliberations observed that the instant proposal is for 20 % expansion under Ministry's OM dated 11.04.2022 (i.e. without public hearing) and proposed expansion within same mine lease area. Earlier, there were two separate ECs (JVR I and JVR II) for the project and both the mines were amalgamated with expansion upto 10 MTPA. EC of JVR I OCP was granted under violation category and Ministry had stipulated various mitigation measures and Remediation plan, Natural Resource Augmentation plan and Community Resource Augmentation plan with budgetary. It was observed that major actions/ measures have not been completed yet. Also, the Committee observed that the instant project is having court cases pending before the Supreme Court for further proceedings after paying 50% of amount imposed by Tribunal. M/s SECL made Ministry as one of the respondents in this matter.

During the discussions, Committee noted that compliance of the Environmental Clearance granted under violation category have not fully complied wherein PP violated the EC conditions by excess production, Environmental conditions w.r.t. dedicated medical facilities, implementing Sal trees and deployment of Surface Miner for extraction of coal instead of shovel dumper method has not been followed. It was submitted that there are technical difficulties in compliance of these conditions, on which EAC desired to take amendment in EC instead of non-complying it. PP shall have to submit in detailed reasons. Further, there are other EC conditions w.r.t. medical facilities under the project, which are required to be complied and accordingly, PP shall submit the action taken report on those conditions.

The Committee finally asked the PP to complete compliance of the previous EC conditions as one of the important criteria of OM dated 11.04.2022. Further, committee asked the PP to re-review the improvement of all conditions.

In view of the above, Committee asked the PP to submit the compliance for the following details:

1. *PP should submit the certified compliance report after completing 90% of the EC conditions along with compliance of Remediation plan, Natural Resource Augmentation plan and Community Resource Augmentation plan. Also, status of construction of school and hospital and its operational shall be submitted.*
2. *PP shall submit the status of pending court cases as well as disposed of cases from any court (Civil court, High court and Supreme Court)/NGT.*
3. *PP shall submit the technical justification for not implementing the conditions of surface miner and plantation of sal trees with its nursery. Further, difference of emission and impact due to shovel dumper and surface miners should be provided.*
4. *PP shall submit the status of mine closure activity wrt to area of already reclaimed (biologically) and proposed area to be completed in 2-3 years*
5. *PP to submit the details related to the existing mechanized transportation route and preparedness for transporting 12 MTPA of coal.*
6. *PP shall submit the Approved Mine Plan document for its proposed capacity after its approval from its Board, considering the justification of OM issued by Ministry of Coal.*
7. *PP should install CAAQMS on urgent basis in consultation with state pollution control Board and share their online data with the CPCB/SPCB*
8. *PP should submit existing status of plantation along with the plantation proposed in the upcoming year considering native species only.*
9. *PP should submit plan to strengthen the Environmental cell with qualification having environment engineer/science degree and by developing dedicated environment laboratory at with certain timeline.*
10. *PP should submit the status upon the implementation of M-sand plant with the ML area.*
11. *PP should conduct survey to assess the number of house damaged due to blasting within & in the radius of 1km from periphery of ML boundary and its remediation plan*
12. *PP should submit the CCO certified past production details before amalgamating mine and after amalgamation.*
13. *PP shall submit the compliance of issues raised during earlier Public Hearings for violation EC and amalgamated EC and expenditures incurred.*
14. *PP shall submit the plan of filling the mine void upto the level of ground (if technically feasible) and accordingly Mine plan shall be submitted.*
15. *PP shall submit plan for third party monitoring of planting preferably through an institution of MoEF/CC (ICFRE etc).*

In view of the above the project was deferred for the submission of above observation.

3.2.4. Deliberations by the EAC in current meetings

1. Committee after deliberation noted the followings:
2. Earlier the proposal was considered in the 3rd EAC meeting held during 16-17 November, 2023 wherein the committee deferred the proposal for want of requisite information. PP submitted the reply on Parivesh portal vide letter dated 30.12.2023 and the proposal is now placed in EAC meeting held during 17-18 January, 2024. The information provided by PP is as follows:

Sl. No.	Observation of EAC	Reply by PP
1.	PP should submit the certified compliance report after completing 90% of the EC conditions along with compliance of Remediation plan, Natural Resource Augmentation plan and Community Resource Augmentation plan. Also, status of construction of school and hospital and its operational shall be submitted.	• Director, Sub-Office, MoEF&CC, Hyderabad inspected the mine on 20.09.2023 and issued Certified Compliance Report on 20.10.2023. • 90% of Remediation plan, Natural Resource Augmentation Plan and Community Resource Augmentation Plan activities have been completed.

SK. NAZRUL ISLAM
Area Kolkata
Expiry Date
15.09.2029

		• Director, Sub-Office, MoEF&CC, Hyderabad issued CCR certifying that all RP&NCR AP works are in progress as per schedule.
2.	PP shall submit the status of pending court cases as well as disposed of cases from any court (Civil court, High court and Supreme Court)/NGT.	• Two cases were admitted by NGT, Southern Bench, Chennai. 1. Case No. O.A. 174 of 2020 (SZ), dt: 08.09.2020 - Sri Banothu Nandu Nayak, R/o Sathupalli filed a case in NGT alleging environmental violations and damage caused to houses by SCCL in operation of JVR Opencast mines. 2. Case No. O.A.No.20 of 2021(SZ), dt: 27.01.2021 - Sri Oggu Srinivasa Reddy, R/o Sathupalli and another filed a case in NGT in regard to violation of environmental conditions by SCCL in operation of JVR OCP-II. Common judgment: • Hon'ble NGT through a common judgment dated 06.05.2022 directed SCCL to pay a compensation of Rs.41.21Crores [i.e. Rs.58.86 Crores (10% of the profit) - Rs.17.65 Crores (3% of the profit) which was directed to be adjusted towards the remediation plan] within a period of 3 months with the Telangana State Pollution Control Board along with other directions to comply by SCCL. • SCCL approached Hon'ble Supreme Court regarding the common judgment and the apex court while granting stay order directed SCCL to deposit 50% of amount as imposed by Hon'ble NGT. SCCL deposited 50% of the amount with the Tribunal. The case is presently pending with the Hon'ble Supreme Court.
3.	PP shall submit the technical justification for not implementing the conditions of surface miner and plantation of saplings with its nursery. Further, difference of emission and impact due to shovel dumper and surface miners should be provided.	(a) Justification for not implementing surface miner: • The geological structure of JVR OC Block is in the form of a syncline which facilitates quarry opening from all the 3 sides along the syncline where the seams in crop. The gradient of coal seams varies from 1 in 1.25 to 1 in 11. At the in crop area of the block it is very steep and gradually flattens as the depth of workings increase. • Till date, the quarry is being operated in the steep gradient areas (1 in 3 to 1 in 4) which are not amenable for deploying Surface Miner. • As the land acquisition including diversion of state highway along south-east direction was completed recently, the coal bearing area which is flatter (up to 1 in 5) is now exposed and hence, is favourable for deploying surface miner. As such, it is now proposed to deploy the Surface Miners in this area.
4.	PP shall submit the status of mine closure activity w.r.t. area of already reclaimed (biologically) and proposed area to be completed in 2-3 years.	• All the Mine closure activities are being carried out as per the approved Mining Plan and Mine Closure Plan. Till date area reclaimed is about 223.70 ha against the 164.54 ha as per approved EMP. • In addition to 223.70 ha of plantation within the project area about 132.00 ha plantation was done in outside project area beyond mandate. • It is proposed to reclaim about 527.30 ha (90.00 ha over back filled area, 200.60 ha over external dump, 69.00 ha in safety zone and 11.00 ha avenue plantation) in the next 3 years.
5.	PP to submit the details related to the existing mechanized transportation route and preparedness for transporting 12 MTPA of coal.	• A Railway line from Bhadrachalam Road to Sathupalli town up to JVR OCP railway siding, for a length of 54.10 km is completed by 28.05.2022 in collaboration with South Central Railway with a cost of Rs.927.94 Crores (SCCL share: Rs.618.55 Cr and Railway share: Rs.309.39 Cr) for transportation of coal by rail mode from the project. • A modern CHP with two nos. of Rapid Loading System (5500-6000 tph) and high-capacity conveyors (up to 3000 tph) from pithead up to Silos (2 Silos of each 4000t capacity) along with over ground bunkerage of 24,000 tonnes storage capacity is also established and commissioned on 28.05.2022 which can handle up to 15 MTPA. • The existing JVROC CHP with two nos. of Rapid Loading System (Silos) and high-capacity conveyors can handle up to 15 MTPA of coal comfortably.
6.	PP shall submit the Approved Mine Plan document for its proposed capacity after its approval from its Board, considering the justification of OM issued by Ministry of Coal.	The Mining plan for the proposed peak capacity of 15.00 MTPA has been approved by the Board of Directors in the meeting held on 04.11.2023 vide minute No. 568:5:4.
7.	PP should install CAAQMS on urgent basis in consultation with state pollution control Board and share their online data with the CPCB/SPCB.	• One Continuous Ambient Air Quality Monitoring Station (CAAQMS) is installed in the core zone of the project in consultation with State Pollution Control Board and connected to TSPCB portal online. • 10 No.s of ambient air quality stations were established in core zone (2 No.s) and buffer zone (8 No.s) of the project as part of post project environment monitoring. • As per EAC advise, order for procurement and installation of another CAAQMS in the buffer zone is placed and will be installed shortly in consultation with State Pollution Control Board.
8.	PP should submit existing status of plantation along with the plantation proposed in the upcoming year considering native species only.	• Till date plantation was carried out in about 223.70 ha against the 164.54 ha as per app

		roved EMP. In addition to 223.70 ha of plantation within the project area about 132.00 ha plantation was done in outside project area beyond mandate. • The stage wise plantation details are furnished below: Plantation is being carried out with the following native species: *Hardwikia binata, Dendrocalamus strictus, Ficus religiosa, Pterocarpus santalinus, Azadirachta indica, Limonia acidissima, Ficus bengalensis, Aegle marmelos, Miragyna parvifolia, Dalbergyia latifolia, Pterocarpus marsupium, Syzygium cumini, Albizzia procera, Terminalia bellarica, Pongamia pinnata, Madhuka indica, Tamarindus indica, Pithecelobium dulce, Sterculia urens, Dalbergia sissoo, Bombax ceiba, Albizzia lebbek.*
9.	PP should submit plan to strengthen the Environmental cell with qualification having environment engineer's science degree and by developing dedicated environment laboratory at with certain timeline.	• SCCL has a full-fledged Environment Cell, led by General Manager (Environment) w he directly reports to the Director of the company. • Corporate Environment Department functioning under the GM (Environment) is having officers with environmental degrees. • Further there are 11 administrative Areas under the control of Area General Managers who will be guided by GM (Environment) related to environmental protection and other compliance conditions. In each Area, environment cell is functioning with an environment officer having environmental degrees. • In addition, qualified environmental officers in each Project are also working for fulfilling the necessary statutory compliance. In each operational area, an Environment Management Committee (EMC) has been constituted with multi-disciplinary team. This committee is chaired by Senior officer of the area (SO to GM) to protect and guide in implementation of the environmental safeguards.
10.	PP should submit the status upon the implementation of M-sand plant with the ML area.	• In compliance to the EC condition of JVR Coal Mine (I&II Exp.) project, an M-sand plant has been established on a pilot scale in Medapalli open cast project (MOCP) of SCCL. • Plant Details: Capacity: 3,000 cu.m per day. • After commercial success of the existing M-sand plant, SCCL will revise the existing Mining Plan of JVR Coal Mine (I&II Exp.) and establish M-sand plant within the project area.
11.	PP should survey to assess the number of house damaged due to blasting within & in the radius of 1km from periphery of ML boundary and its remediation plan	• The criteria for vibration standards, peak particle velocity (PPV) has been globally used in practice for assessment of blast induced damage to structures. DGMS technical circular 7 of 1997 is considered as vibration standard for the safety of surface structures in mining areas. • Blast induced ground vibration are monitored regularly and found less than 5 PPV well within the stipulated standards of 10 PPV. Blasting operations within 500 m up to 125 m from habitation were carried out as per the blasting permissions obtained from DGMS. • Controlled blasting techniques are also being followed to reduce the blast induced ground vibrations while blasting near to habitation. • There was no damage observed to the houses within 1 km from the periphery of the mine boundary. However, on humanity grounds, SCCL renovated the old houses (249) in the periphery of the project in NTR colony, Vengalrao Nagar, Kothagudem village (BC colony, Kistaram (SC & BC colony) with an expenditure of Rs. 2.04 Crores.
12.	PP should submit the CCO certified past production detail before amalgamating mine and after amalgamation.	Certification has been obtained from the CCO for the past production details before and after amalgamation of the mine. A copy of the same is furnished.
13.	PP shall submit the compliance of issues raised during earlier Public Hearings for violation EC and amalgamated EC and expenditures incurred.	PP has enclosed the information with the issues raised along with their corrective measures.
14.	PP shall submit the plan of filling the mine void up to the level of ground (if technically feasible) and accordingly Mine plan shall be submitted.	• As per the approved Mining Plan and Mine Closure Plan by MoC, CoL, - Total quarry area of the project is 1080.87 ha out of which backfilling will be done in 531.75 ha. - Final mine void with water body will be created in 499.12 ha with a max. depth of 363.45 m. - Backfilled quarry area of 531.75 ha shall be reclaimed with plantation. • Filling the mine void up to the groundlevel requires the following: • Back filling of 499.12 ha of final void up to ground level requires about 885.23 Mm3 of over burden which needs to be re-handled from already reclaimed OB dumps

		• About 995.75 ha of plantation over the dump area (488.70 ha - Internal dump above G. L & 507.05 ha - External Dump) is to be disturbed for back filling 885.23 Mm3 in the final void. • Apart from disturbing the fully reclaimed area, the emissions liberated due to re-handli ng of OB for back filling will further pollute. • Filling of 885.23 Mm3 of void requires about Rs. 13,604.21 Cr (@ Rs.153.68 per m3) which is economically not feasible. • Due to the above mentioned reasons, it is not environmentally and economically feasib le for filling of void up to ground level. • However, as per the standard condition being stipulated in the ECs, engineering interv entions will be implemented for sustenance of aquatic life in the final mine void.
15.	PP shall submit plan for third party monitoring of planting p referably through an institution of MoEF&CC (ICFRE etc).	• CSIR-NEERI, Nagpur has conducted the third party audit of EC compliance including plantation during June-July' 2023. However, as advised, third party monitoring of plan ting will be again carried out by ICFRE within 2 years.

1. PP had obtained the EC vide Ministry's letter No. J-11015/268/2007-IA. II (M) dated 11.10.2021 for 10.00 MTPA in ML area of 1953.46 ha (1910.09 ha of lease area and 43.37 ha of colony).
2. PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 1910.09 Ha.
3. Life of mine is 23 years from 2023-24.
4. Diversion of 1156.72 ha of forest land has been obtained vide MoEF&CC letter Nos. F. No. 8-129/2003-FC, dated 02.02.2005 (JVR OCP-I 244.02 ha), F. No. 8-56/2008-FC, dated 03.07.2012 (JVR OCP-I Expansion 136.50 ha) & F. No. 8-56/2014-FC, dated 30.05.2017 (JVR OC-II 776.20 ha).
5. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported within 10 km boundary of the project.
6. Wildlife conservation plan for schedule I species has been obtained from the Principal Chief Conservator of Forest (HoFF) and Chief Wild life Warden (FAC), TS and the funds deposited with State Forest Dept. on 09-11-2021.
7. PP has obtained the Ground Water Clearance vide letter no. 2182/Hgl/2008, dated 05.05.2021 and is valid for five years.
8. Public hearing was conducted on 14.02.2020 for capacity of 10 MTPA for the project area of 1953.46 ha including ML area of 1910.09 Ha.
9. Consent to Operate for the existing capacity was obtained from the State PCB on 13.04.2022 and is valid till 331.10.2026.
10. One court case pending before the Hon'ble Supreme Court in which while granting stay directed to pay 50% of amount imposed by the National Green Tribunal, Southern Bench, Chennai in following court case:

1. Case No. O.A. 174 of 2020 (SZ), dated 08.09.2020 - Basing on a complaint received from Sri Banothu Nandu Nayak, R/o Sathupalli in regard to environmental violations and damage caused to houses by SCCL in operation of JVR Opencast mines.
2. Case No. O.A.No.20 of 2021(SZ), dated 27.01.2021 - Basing on a complaint received from Sri Oggu Srinivasa Reddy, R/o Sathupalli and another in regard to violation of environmental conditions by SCCL in operation of JVR OCP-II.

1. PP has submitted the compliance as per OM dated 11.04.2022 w.r.t expansion under 7 (ii) (a) Stage I (20%) for Jalagam Vengala Rao Opencast Mine Project within the same mine lease area of M/s Singareni Collieries Company Limited.

Sl. No.	Criteria as Per OM dated 11.04.2022	Reply
1.	The project have gone through the public hearing process, at least once, for its existing EC capacity o n which expansion is being sought, except those categories of projects which have been exempted as per para 7 ii (i) of EIA Notification 2006 and its amendments.	Public Hearing was held on 14th February, 2020. MoEF&CC granted EC for a capacity of 10.00 MTPA in ML area of 1953.46 ha on 11th October, 2021.
2.	There should not change in Category of the project from "B2" to "B1" or 'A' due to proposed modern ization or expansion.	No change in category. Category 'A'
3.	There is no additional land acquisition or forestland diversion involved for the proposed expansion or there is no increase in lease area with regard to mining vis-a-vis the area mentioned in the EC, based on which public hearing has been held earlier.	There is no additional land requirement for the propo sed expansion as there is no increase in project area.
4.	The proposed expansion shall not be more than 50% of production capacity as mentioned in the prior EC, issued on the basis of public hearing held and the same shall be allowed in minimum three phase s.	Proposal is for 20% production enhancement (1st Pha se) over the production capacity mentioned in the pri or EC, issued on the basis of public hearing held
5.	Predicted Environmental quality parameters arising out of proposed expansion / modernization shall be within the prescribed norms and the same shall be maintained as per Prescribed norms.	Air quality impact prediction modelling is done for 5 0% expansion i.e., from 10.00 MTPA to 15.00 MTP A. All the predicted values are within the prescribed norms.
6.	The proposed expansion should not result in reduction in the greenbelt area as stipulated in the earlie r EC, or if the existing ratio of greenbelt is more than 33%, after expansion it should not reduce belo	There is no reduction in the greenbelt area due to the proposed expansion. The green belt area as per the ex

	w 32%.	isting EC as well as proposed expansion is 1288.86 h a at post closure stage, which is about 67.5% of the to tal project area.
7.	The project proponent should have satisfactorily complied the conditions stipulated in the existing E C(s) and satisfactorily fulfilled all the commitments made during the earlier public hearing/ consultat ion proceedings and also the commitments given while granting previous expansion, as may be appli cable. This shall be duly recorded in the certified compliance report issued by the IRO/CPCB/SPCB, which should not be more than one year old at the time of submission of application	Director, MoEF&CC, I.R.O., Hyderabad inspected th e project on 20th September, 2023 and issued latest c ertified EC compliance report. The conditions of exis ting EC are being complied and the commitments of earlier public hearing are being fulfilled.
8.	Public Consultation shall be undertaken [if applicable as per table below] by obtaining response in w riting, as per para 7 III (ii) (b) of EIA Notification 2006, except those categories of projects which ha ve been exempted as per para 7 III (i) of EIA Notification 2006 and its amendments.	The proposal is for 20% increase of production capac ity only. Public consultation will be undertaken at the time of expansion proposal from 40% to 50%
9.	Effluent & ambient monitoring including air quality monitoring systems as specified in the existing EC, if stipulated, should have been installed.	Effluent monitoring and air quality monitoring is bei ng carried out as specified in the EC. An online ambi ent air quality monitoring station was established at t he core zone.

6.7.4 The EAC after detailed deliberations observed that the instant proposal has been applied under Ministry's OM dated 11th April, 2022 for expansion in capacity upto 20% with exemption in public hearing under clause 7 (iii)(a) of EIA, Notification, 2006. Earlier Ministry had issued EC on 11.10.2021and public hearing for the same was conducted on 14.02.2020.
The Committee observed that PP has proposed the project area as 1953.46 (1910.09 Ha within ML area and 43.37 Ha outside lease area for Colony/township). The Committee is of the view that EC may be considered for an area for which lease including LOI and mining plan is there i.e. 1910.09 Ha.
The Committee discussed certified compliance report submitted by sub-office Hyderabad of RO, Chennai vide letter dated 20.10.2023 and observed the conditions which are non-complied are mainly due to non-commissioning of the Coal Washery. PP submitted that once the Washery will be commissioned the conditions will be complied. The Committee observed that sub-office Hyderabad mentioned that i) PP should not plant Conocarpus spp, in green belt which is an exotic species, ii) PP may seek amendment in special condition (vi) as growing of SAL tree is not having favourable conditions at the project area, iii) A wildlife expert may be hired to monitor wildlife movement in the areas and also support SCCL in effective implementation of Wildlife Action Plan, iv) PP shall continuing to submit the six-month compliance through PARIVESH Portal only. In addition to this some partial compliance include i) PP has yet to complete construction of STP at Rudrampur Colony of Kothagudem, ii) PP has not created another water tank near Chilla vagu before removing Jeenugupalli tank in the project area, iii) PP has not provided the information related to on ground implementation of works and financial utilization, which may be sought from the Forest Department in the implementation of Wildlife Conservation plan, iv) PP has yet to construct 200 KLD STP at Sathupalli town. Therefore, the Committee emphasised on the compliance of these conditions.
The final mine void area recommended by PP seems to be large. Committee asked the PP to prepare the scientific reclamation plan in order to reduce the void area post mining. Another, CAAQMS is to be installed in the buffer zone before July, 2024. Company environment management committee should conduct the monthly review meeting. Committee also asked the PP to expedite the process of getting mining lease amalgamated. PP shall explore the possibility of utilising the mine waste by setting up of M-sand plant and necessary permission required for the same.
Based on the above discussions held in the sub/EAC meeting held during 17-18 January, 20224 , the EAC recommended the Environmental Clearance under Ministry's OM dated 11.04.2022 for expansion of Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in an area of 1910.09 Ha by M/s Singareni Collieries Company Limited at village Kommepalli near Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) with the following specific conditions in addition to specific conditions already prescribed in EC dated 11.10.2021 and Standard EC conditions under the provisions of EIA Notification, 2006 and its amendments.

3.2.5. Recommendation of EAC

Recommended

3.2.6. Details of Environment Conditions

3.2.6.1. Specific

specific condition:	
1	*PP to obtain the CTO for Opencast coalmine capacity of 12 MTPA after grant of EC and for existing Coal washery of 4 MTPA capacity.*
2.	*PP shall complete construction of STP at Rudrampur Colony of Kothagudem and 200 KLD STP at Sathupalli town within a period of one year from the date of grant of expansion EC.*
3.	*PP should create another water tank near Chilla vagu within in a period of one year from the date of grant of expansion EC.*
4.	*PP to provide free of cost treatment in the Hospital to the locals living there within the periphery of 5km radius of the ML area. A log book shall be maintained with the detail of doctors and patient's.*
5.	*PP shall get the mining lease amalgamated and submit then documents in this regard to IRO, MoEF&CC.*
6.	*PP should provide the school facility to below poverty students and same shall be kept in the company record.*
7.	*PP should strengthen the Plantation within/outside the premise of Mine lease area and avoid to use species like Conocarpus spp, in green belt. Further, special condition (vi) of growing of SAL tree is amended to the extent that PP shall plant native species like Siris, Neem, Palasa, Amaltas, Shisham, Amla, Jamun, Mango, Arjun, Karanja, Bija, etc. will be planted along with other species in consultation with the forest department. As ensured by PP a survival rate of at least 80% shall be maintained by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. Further, PP shall maintain atleast10 mtrs width tree plantation of broad leaves and wind break/greenshield of about 10 mts height along the boundary of coal storage yard. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year. Third party monitoring of the plantation done shall be carried out through an institution of MoEFCC (e.g ICFRE)*
8.	*PP shall prepare the scientific reclamation plan in order to reduce the void area post mining.*
9.	*PP should conduct the monthly review meeting with the environment management committee of the company.*

10.	*PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.*
11.	*All the mitigation measures committed / envisaged in the EIA/EMP report and subsequent submission shall be implemented (Annexure 2)). PP shall install one CAQMS in the buffer zone before July, 2024. PP should annually submit the audited statement along with proof of activities carried to the Regional Office of MoEF&CC and PARIVESH Portal as the case may be for the activities carried out during previous year.*
12.	*PP shall implement Effluent Treatment Plant for wastewater generated from workshop and Sewage Treatment Plan for its colony. No untreated water shall be discharged from mine boundaries to ponds/nallah/river.*
13.	*PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.*
14.	*Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.*

3.2.5.2. Standard

1(a)	**Mining of minerals**
air quality monitoring and mitigation measure	
1.	Adequate number of Fog canon (mist sprayer) shall be installed to reduce the impact of air pollution at dust generating sources with time bound action plan
1.	Post environmental closure third party monitoring by reputed/accredited in air quality, water, land & soil etc shall be carried out and analysed with EMP measures at regular interval. A suitable recommendation in this regard, shall be furnished to IRO, MoEF&CC for compliance. The data used for analysis shall be obtained from continuous AQMS, site specific water regime. Also third party shall analyses the implementation of river diversion, meeting to the requirement of project report.
1.	Comparison of average monthly temperature of pre and post mine operation after obtaining EC shall be elaborated for post three years and a record to be maintain at regular interval.
1.	PP to install solar lights along the road used for transportation of coal to avoid the accidents at night and also seek its maintenance.
1.	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.
1.	Coal stock pile/crusher/feeder and broken material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor/gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
1.	Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.
1.	Adequate measures on EMP should be analyzed on annual basis to assess the trend of air pollution data from continuous monitoring station and quarterly report shall be generated and submitted with 6 monthly compliance reports to RO, MoEF&CC.
1.	Effective safeguard measures for prevention of dust generation and subsequent suppression like regular water sprinkling shall be carried out in areas prone to air pollution. The Fugitive dust emission from all sources shall be regularly controlled by installation of required equipment's. It should be ensured that air pollution level confirm to the standards prescribed by the MOEF/CPCB/SPCB.
1.	PP should install Wind breaker/shield arrangement along the railway siding for reducing the dust propagation in upwind direction.
1.	Continuous ambient air quality monitoring stations as prescribed in the statute be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. The new CAAQMS should be installed with expansion.
1.	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
1.	Transportation of coal, to the extent, if permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water mist sprinkling/rain guns/ Fog cannon etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
1.	The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a bypass road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
corporate environment responsibility	
1.	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and

	staff for monitoring of air, water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority
1.	Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
1.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environmental/forest/wildlife norms/conditions and/or shareholders/stake holders.
1.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
1.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
green belt	
1.	Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads. And Plantation should also be carried out in nearby area with consent of forest department and gram panchayat within 10 km radius with its proper maintenance
1.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
land reclamation	
1.	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agriculture, forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.
.	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC
1.	All approach roads to mine and all other roads which are in regular use should be black topped. The maintenance of road shall be done by PP in collaboration with state government
1.	PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads, manufacture of artificial sand, aggregates, use for farmers etc.)
1.	Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoid air born of particles
1.	Progressive backfilling of mine and progressive reclamation of OB dump shall be done
1.	Top soil should be stored separately at marked area and necessary vegetation shall be maintained to avoid any entrainment of dust
1.	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.
1.	Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native/flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change, Regional Office.
1.	Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of sub-paragraph (b) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
1.	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining", "post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.
1.	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change (MOEFCC) from time to time shall be submitted to MOEFCC/Regional Office (RO).
mining plan	
1.	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.
1.	Tranportation of coal till Railway Siding shall be developed to avoid transportation through Road

1.	PP shall adopt mining method by preferably using surface miners for the project and silo loading through in-pit conveyor should be adopted
1.	Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.
1.	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.
1.	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
1.	5- Star Rating is mandatory to obtaine certification as per guidelines of Mininstry of Coal
miscellaneous	
1.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
1.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
1.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
1.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
1.	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
1.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
1.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
1.	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
1.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
1.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
1.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.
1.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
1.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
1.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
1.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
noise and vibration monitoring and prevention	
1.	Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
1.	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS
1.	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.
public hearing and human health issues	
1.	Compensation of the land acquired for the project shall be settled as per the R&R Policy within fixed timeline
1.	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six-monthly basis.
1.	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the if any, as amended time to time. personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment,
1.	Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and

	information on safety and health aspects.
1.	Implementation of the time bound action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the time bound action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.
1.	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/57/2014-IA.11 (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.
1.	PP to conduct need based assessment survey of the area so for in order to decide the activities to be carried under the CSR and to provide detail of the activity carried out with adequate budgetary provision and time bound action plan.
1.	PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
1.	Permanent Health care facilities of Hospital should be established within 5 km of project boundary for the local people.
1.	PP must ensure an emergency action plan during pandemic in order to provide assistance to the nearby villages located within the 10 km radius buffer zone (if required)
1.	PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year
1.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed, by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours
1.	PP to take measure for installation of Renewable Energy sources in nearby area falling within 10 km radius
1.	Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.
1.	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.
statutory compliance	
1.	The maximum production or peak production at any given time shall not exceed the limit as prescribed in the EC.
1.	All the conditions stipulated in previous Environment Clearance conditions should be strictly complied within certain timeline
1.	Validity of Environment Clearance is as per life of the mine mentioned in EC letter or 30 years as per EIA Notification, 2006 and its amendments therein
1.	Permission of power supply to be taken from the concerned authority for meeting power demand of the project site.
1.	Solid/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.
1.	The project proponent shall obtain the necessary permission from the Central Ground Water Authority
1.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee prior to start/commencement of mining operations/production
1.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. TThe implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
1.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
water quality monitoring and mitigation measures	
1.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
1.	The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.
1.	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No J-20012/1/2006-IA.II (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
1.	No obselete technologies for sewage treatment shall be implemented. Construction of Sewage Treatment Plant with latest technology should be completed within 2 years and treated water shall be reused for plantation. CTE and CTO of STP shall be obtained as per the norms.
1.	Domestic water shall be providing to the residents/villages which are coming under the zone of influence of the project due to ground water extraction and mining operation by installing adequate number of RO plants with proper supply line and Taps within 2 years

1.	Quality of polluted water generated from the operations which include COD and acid mine drainage and metal contamination shall be monitored along with TDS, DO, TSS. The monitored data shall be uploaded on the website of the company as well as displayed at the site in public domain.
1.	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A riverine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.
1.	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc. shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
1.	The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.
1.	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP /STP needs to be provided.
1.	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).
1.	Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the remaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.
1.	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
1.	Monitoring of water quality upstream and downstream of river including pons, lakes, tanks shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Gevra Opencast Expansion Coal Mines by SOUTH EASTERN COALFIELDS LTD located at KORBA,CHHATTISGARH.			
Proposal For		Fresh EC	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/CG/CMIN/443111/2023	J-11015/85/2010-IA-II(M)	16/01/2024	Mining of minerals (1(a))

3.3.2. Project Salient Features

Agenda No. 6.10

Expansion of Gevra Opencast Coal Mine from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha of M/s South Eastern Coalfields Limited located in Tehsil- Katghora, District- Korba (Chhattisgarh) - For Environmental Clearance-reg.
[Online Proposal No. IA/CG/CMIN/443111/2023; F. No. J-11015/85/2010-IA. II (M);
6.10.1 The proposal is for Environmental Clearance for Expansion of Gevra Opencast Coal Mine from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha of M/s South Eastern Coalfields Limited located in Tehsil Katghora, District Korba (Chhattisgarh).

The project activity is covered under category "A" of item 1(a) 'Mining of Minerals' the schedule of the EIA Notification 2006 as the mining lease area is more than 500 Ha.

6.10.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.10.2.1: Location:

1. The project area is covered under Survey of India Toposheet No. 64 J/ 9 & Scale- 1:50000 and is bounded by the geographical coordinates ranging from 22015'00" to 22021'42" N and 82032'00" to 82039' 30" E.

1. Project does not fall in the Critically Polluted Area (CPA) as per MoEFCC OM no. J-11013/5/2010-IA. II(I) dated 17.09.2013 regarding lifting of Moratorium in respect of industrial clusters/areas including Korba Chhattisgarh.

6.10.2.2: Terms of Reference (ToR) & Environmental Clearances (EC):

1. The project proponent applied for ToR for 49 to 70 MTPA for mining of coal in leasehold area of 4781.798 Ha. (increase in leasehold area from 4184.486 Ha to 4781.798 Ha) in Gevra of Tehsil Katghora, District Korba in the state of Chhattisgarh, on dt: 16.08.2021 vide proposal no. IA/CG/CMIN/221371/2021. Terms of reference granted on: 07.03.2022 and amended ToR for 52.5 to 70 MTPA granted on dated 09.01.2023.
2.

1. Earlier, the Environmental Clearance of Gevra opencast was accorded as follows:

Sl No.	EC details	EC Capacity
1	F. No. J- 11015/88/2003 -IA.II (M), Dated 04-10-2004	25.00 MTPA
2	F. No. J- 11015/484/2007 - IA.II (M), Dated 03-06-2009	35.00 MTPA
3.	F. No. J- 11015/85/2010 - IA.II (M), Dated 31-01-2014	40.00 MTPA
4.	F. No. J- 11015/85/2010 - IA.II (M), Dated 06-02-2015	41.00 MTPA
5.	F.No.- J-11015/85/2010 – IA.II (M)P: Dated 21-02-2018 (Validity extension for one year)	45.00 MTPA
6.	F.No.- J-11015/85/2010 – IA.II (M) Dated 28-03-2019 (Validity extension for one year)	45.00 MTPA
7.	F.No.- J-11015/85/2010 – IA. II (M) Dated 04.06.2020 (Validity for 30 years or life of Mine whichever is earlier.)	45.00 MTPA
8.	F. No.- J-11015/85/2010 – IA.II (M) Dated 10.05.2021	49.00 MTPA
9.	F.No.- J-11015/85/2010 – IA.II (M) Dated 05.09.2022 and regularized on Dated 23.08.2023	52.5 MTPA

6.10.2.3: Forest Area:

Final FC issued vide letter no. and date	Area (in ha)
F No.8-33/2005-FC dated 05.05.2008	100.898
F No.8-81/2006-FC dated 20-04-2015.	46.198
F No.8–77/2006 – FC dated 20-04-2015	192.046
F No.8–79/2006 – FC dated 20-04-2015	564.885
F.No. 8-41/2017-FC dated 21.06.2022.	112.385
Total Stage-II FC	1016.412
Applied for Stage-I FC, the proposal was considered in FAC meeting held on 17.07.2024	94.293
Total Forest	1110.705

6.10.2.4: Protected Area:

1. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10 km boundary of the project. Schedule I species do not exist in the study area. However, Wildlife conservation plan has been made through State Forest Research & Training Institute Raipur. The Wildlife conservation plan will be implemented through State Forest Department. An amount of Rs. 10.00 Cr has been deposited in CAMPA on dated 31.05.2022 for its implementation.

6.10.2.5: Method of Mining & Mining Plan:

1. Total Mine lease areas per block allotment is 4781.798 Ha. Project Report along with Mine closure plan for 35 to 70.00 MTPA got approved by CIL Board on 05th March 2016 in its 325th meeting. Revised Mine Plan 52.5 to 70 MTPA along with Mine Closure Plan has been approved in the 197th meeting of the Committee of Functional Directors of South Eastern Coalfields Limited held on 25.10.2023. PP also submitted M/o Coal O.M dated 31/05/2012 wherein it has mentioned the Mine Plan and Mine Closure Plan of Coal India Subsidiaries are not required to be approved by Standing Committee of M/o Coal.

1. **The land use details of the Mine:**

Pre-mining Land Usage:

Sr. No.	Land Use	Total (Ha.)
1	Agricultural land	2967.651
2	Forest land	1110.705
3	Waste Land	0
4	Grazing Land	32.879
5	Surface Water Bodies	16.58
6	Settlements	0
7	Others (Specify) Govt. Land	653.983
	TOTAL	4781.798

Post Mining:

Sr. No.	Land Use	Land Use (Ha.)				
		Plantation	Water Body	Public Use	Undisturbed	Total

GOVT. OF WEST BENGAL NOTARY SK. NAZRUL ISLAM Dist. Kolkata Regn. No. 447/19 Expiry Date 15.09.2023

1	External OB Dump	480				480
2	Excavation	1282.85	1347.5			2630.35
3	Top soil Storage (05ha included in excavation)	5				5
4	Roads			6		6
5	Built-up area (Colony/office/R&R siteInfrastructure.)			1243.062		1243.062
6	Green Belt	417.386				417.386
7	Undisturbed area					
Total	Total Area	2185.236	1347.5	1249.062	0	4781.798

Post-Mining Land Use:

Sr. No.	Pattern of utilization	Area (ha)
1	Reclaimed External and Internal dumps	1762.18
2	Green belt	5.67
3	Final void /Water body	1347.5
4	Built up area (Infrastructure, colony, roads, R & R site)	1249.062
5	Safety zone: Undisturbed area	417.386
	Total	4781.798

1. Presently Gevra opencast Expansion (25-35 MTPA) is being worked with shovel Dumper combination for OB Removal and Surface Miner alongwith Front End loader and Dumper/Tippers for coal. Shovel-dumper combination is proposed to be continued for removal of OB and deployment of surface Miner with front end loader & dumper for mining out coal. The configuration of equipment proposed in OB would be, Electric Rope Shovels of 42 cum / 10 cum and 15 cum hydraulic shovels & 240t / 100t /150t dumpers respectively as per load of different horizon, and for mining out coal Surface Miner having 5.0 to 8.0 MTPA capacity would be used in conjunction with 60t coal body dumpers for transport and 10m3 F.E.L for loading.

1. Excavation and transport of OB will be done departmentally by deploying existing equipment with additional 42 cum capacity rope shovels + 240 T rear dumpers, 10cum rope shovels+ 100T rear dumpers and 15 cum capacity Hyd. Backhoe +150 T rear dumpers. Coal loading and transport operations upto unloading station will be done contractually. Coal cutting will be done with outsourced surface miner.

1. PP submitted Mining is mostly carried out by surface miners. Around 89% (46.85 MT out of 52.499 MT) coal is produced by surface miners and only 11% coal is produced by conventional drilling and blasting where operation of Surface miners in coal benches are impossible.

1. Transportation of Coal:

1. Transportation from face to In-pit conveyor belt: By Trucks (inside mine only)
2. In pit conveyor belt to Silo: By belt conveyor.
3. Silos to consumers: By Rail
4. Action plan with timeline for coal evacuation through rail-mine connectivity (silo loading through railway siding) is provided below:

SL.No	Description	Capacity	Commissioning Schedule
1	Load Out system with RLS at Eastern side of the mine along with Siding	20 MTY	Commissioned on 24.06.23
2	02 nos. Silo (5&6) of 5000 Te with RLS along with In-pit belt conveyor system along with Siding	30 MTY	Mar-24
Total		50MTY	

1. Additional land required for expansion- 597.312 ha (Agricultural land- 447.08 ha, Govt. land-55.939 ha and Forest land-94.293 ha). 75% of additional land required is agricultural land. Post mining land use will envisaged to bring the land back to its original land use to the maximum extent possible.

1. Reserves:

S.No	Particulars	Quantity in Million Tons

NOTARY ... Area Kolkata ... Expiry Date 15.02.2025 ... GOVT. OF WEST BENGAL

i.	Total Geological reserve as per approved PR 70MTPA (As on 01.04.2014)	1940.98 MT
ii.	Total Minable/Extractable reserve as per approved PR 70MTPA (as on 01.04.2014)	1337.68 MT
iii.	Total mineable reserve within 4781.798 Ha (as on 01.04.2023)	951.481 MT

1. Details of Seams:

i. No of seams : 18
ii. Thickness of seams to be worked on : 0.70 m to 70.34 m
iii. Grade of coal : G10 grade
iv. Stripping ratio (mineral in tonnes to overburden in cum) :
0.617 tonne per cum (1:1.62)
v. Average gradient : 1 in 6 to 1 in 12
vi. Maximum thickness of seams : 70.34 m
vii. Ultimate working depth : 340 m

1. Life of mine will be 16 years starting from FY 2022-23.

6.10.2.6: Baseline Data:

Period	March to May 2022
Air Quality	The result indicates that the maximum and minimum values of PM10 are in the range of 42.0 µg/m3 to 123.1 µg/m3, whereas the PM2.5 are in the range of 21.8 to 69.8µg/m3. The SO2 concentrations within the study area are in the range of 10.0 to 31.1 µg/m3 and the NOx are in the range of 18.4 to 46.4 µg/m3. Ozone varies from 16.6 to 29.1 µg/m3. Ammonia varies from 14.6 to 24.8 µg/Nm3. Carbon monoxide varies between 0.3 to 0.44 mg/m3. Rest of the parameters like benzene, benzo(alpha) pyrene, arsenic, cadmium, chromium, lead, mercury and nickel were found to below detection limits.
Incremental GLC Level	The incremental GLC ascertained is PM10 = Max GLC -18.54 µg/m3; PM2.5 = Max GLC- 5.32 µg/m3;SO2 = Max GLC- 0.01 µg/m3 and NOx = Max GLC- 10.06 µg/m3 . The values are for highest incremental value obtained through modelling in buffer zone in downwind direction.
Ground Water quality	The result indicates that the maximum and minimum values of pH ranges between 7.18 to 7.97, TSS <5 mg/L; TDS between 216 mg/L to 352 mg/L; Total hardness between 136 mg/l to 198 mg/L; Chlorides between 31.99 to 62.98 mg/l; Fluoride between 0.05 to 0.97 mg/l and iron (<0.05 mg/l) to 0.052 mg/l. All the results within the prescribed environmental standard - IS 10500:2012
Surface water quality	The result indicates that the minimum and maximum values of pH ranges between 7.1 to 8.5, DO between 5.8 to 8.5 mg/L; BOD between (<2 mg/l) to 2.6 mg/l and COD between (<5 mg/l) to 10 mg/l. All the results within the prescribed environmental standard –IS 2296:1992 (Tolerance Limit for Inland Surface Waters, Class – C)
Noise levels (Day & Night)	Leq (Day) range between 45.5 to 73.5 dB(A)and Leq (Night) between 35.6 to 57.3 dB(A). All values at all stations are within the prescribed standards
Soil Quality	Soil sample has been collected at different depths (0-30, 30-60 and 60-90 cm. The results indicate that pH range from 5.82 to 6.9; Available nitrogen between 111.59 to 388.78 kg/ha; Available phosphorus between 2.87 to 12.52 kg/ha; Available potash between 122.68 to 268.35 kg/ha and electrical conductivity between 256.70 to 531.70 uS/cm. The soil fertility as per values of NPK ranges in medium fertile category. The texture of soil has been found to be loam (0-30 cm) and sandy loam at (30- 60 cm) & (60-90 cm) depth for forest land while for others it is sandy loam at all depth.
Flora & Fauna	Flora and Fauna baseline study has been carried by CMPDI. Sitesurvey was conducted between 4th to 8th May 2022. The list of flora and fauna of core and buffer zone has been provided in Chapter-3.No endangered and endemic taxa reported from the core and bufferzone. No schedule I Fauna species is observed from the core andbuffer zone.
Water Requirement	Source of Water:

Sl No.	Source	Quantity (m3/day)	Approval
1	Mine Seepage Water	13087	CGWA
2	Surface/River Water (Hasdeo River)	3601	Irrigation Dept.
Total		16688	

Water Requirement:

	Purpose	Peak demand (m3/day)

A	Industrial water demand	13087
1	Surface miner	288
2	Land reclamation	-
3	Dust suppression	8388
4	Green belt	26
5	Beneficiation (CHP)	1575
6	Washeries	-
7	Fire service	315
8	Others (specify) Washing in workshop	1305
9	Add for losses (10%)	1190
B	Domestic/Potable Water Demand	3601
1	Housing	2938
2	Non-residential population	238
3	Other (specify) For service buildings	298
4.	Process and other losses (10%)	327
	Total	16688

Rain Water Harvesting:
Artificial Rainwater Harvesting Structures or Recharge Ponds have been constructed at 5 locations close to Gevra OC Project. Total recharge capacity-5 8.852 m3/year. Roof top rain water harvesting system are augmenting the groundwater recharge to the tune of 33,050 m3/year at 12 locations in in the st udy area of Gevra OCP.
CGWA Permission:

Date of Ground water clearance Obtained NOC from CGWB for withdrawal of 16487 m3/day vide NOC no. GWA/NOC/MIN/ORIG/2018/4474 Dt: 2 2.01.2019.

Application for renewal of NOC has been made online Application no. 21-4/630/CT/MIN/2017 Dt: 02.12.2020). Proposal has been approved by Chairm an CGWB New Delhi on dt: 19.07.2022. Renewal of NOC yet to be issued.

Cumulative Impact Assessment	For carrying out cumulative impact assessment, one season baseline air quality data for Summer Season (March 2022 to May 2022) has been collected fo r the parameters PM10, PM2.5, Sulphur dioxide (SO2) and Nitrogen dioxide (NO2). This has been done by collecting air quality data from Baseline repo rts of Gevra CC and Kusmunda OC carried out for March 2022-May 2022 period. Total 18 number of air quality monitoring location data has been recor ded covering 15 km of area from Gevra OC. The Cumulative Impact Assessment has been carried out by considering impact of all four coal mine for proposed expansion as per their respective mini ng plan considering the OB/Coal extraction and hauling, belt conveyor system, surface miner coal cutting (Except Manikpur OC – Proposed conven tion drilling and blasting in Coal), CHP/SILO Railway siding for coal despatch to distant consumer. Cumulative impact assessment study reveals that the predicted ground level concentrations (GLC) of air quality parameters such as PM10, PM2.5, SO2 a nd NO2 in study area (15km from Gevra boundary) are within the stipulated norms. The proposed additional control measures are Fog cannon dust suppr ession systems at haul road, coal pit, Coal Stock and OB dumps (about 90% control efficiency) and road sweeping machines for coal transportation road, wind breaker and vertical greenery system.

6.5.2.7: Public Hearing:

Public hearing for the project of 70 MTPA capacity in an area of 4781.798 ha was conducted on 06/06/2023 in the premises of SECL Gevra OCP, Urja Nagar. The PH was presided by Addition District Magistrate, Korba & Regional Officer, Chhattisgarh Environment Conservation Board, Korba. The advertisement for PH was published on 4/05/2023 in *'The Times of India' & 'Dainik Bhaskar'*. Major issues raised in the public hearing include compensation, Rehabilitation & resettlement, Facilities at R&R sites, pollution control etc. Appropriate action to address the issues raised in the Public Hearing has already been taken/are being taken & a budgetary provision of Rs 15.15 Crore has been made. Commitment made by the Project Proponent to address the Public Hearing concerns in lieu of Corporate Environment Responsibility (CER) is as below:

S. N.	Particular	Location (Name of School/Village/Area)	Year -1(In Lakhs	Year -2 (In Lakhs	Total (in Lakhs)
1	Infrastructure for creation for Drinking Water Supply	Dhurena, Batari, Madwadhori, Chhindpur	15.00	15.00	30.00
2	Sanitation	Vijay Nagar, Ganga Nagar, Nehru Nagar, Birda	12.00	15.00	27.00
3	Education	Dhurena, Ranjna, Tiwarta, Chhindpur, Kusmunda.	30.00	30.00	60.00

4	Skill Development	Korba District	25.00	25.00	50.00
5	Roads	Vijay Nagar, Ganga Nagar, Nehru Naga r, Kuchena, Birda.	300.00	300.00	600.00
6	Cross drains	Vijay Nagar, Ganga Nagar, Nehru Naga r, Kuchena.	30.00	40.00	70.00
7	Electrification including solar power	Dhurena, Batari, Dewari, Chhindpur, Ti warta	10.00	10.00	20.00
8	Solid waste management facilities	Dhurena, Batari, Dewari, Chhindpur, Ti warta	15.00	15.00	30.00
9	Scientific support and awareness to local farmers to increas e yield of crop and fodder	Gevra Basti, Khodri, Safora, Pandripani, Barbhata	10.00	10.00	20.00
10	Rain water Harvesting	Gevra Basti, Khodri, Safora, Pandripani, Barbhata	50.00	50.00	100.00
11	Soil moisture conservation works	Karaipali, Dewari , Kolihamuda, Korai, Dewgaon	50.00	50.00	100.00
12	Avenue plantation	Ganga Nagar, Dhurena	100.00	100.00	200.00
13	Plantation in community areas	Kasaipali, Dihupara	108.00		108.00
14	Infrastructure	Dhurena, Batari, Dewari, Korai	20.00	20.00	40.00
15	Health Camps	Ralia, Bhilai Bazar, Naraibodh	10.00	10.00	20.00
16	Art, Culture & Sports	Vijay Nagar,Bhilai Bazar, Dhurena, Nar aibodh	10.00	10.00	20.00
17	Livelihood	Vijay Nagar,Bhilai Bazar, Dhurena, Nar aibodh	05.00	05.00	10.00
18	Agriculture Programme	Chhindpur, Tiwarta, Dewari, Korai	05.00	05.00	10.00
Total			885	50	1515

PP submitted that the total cost of the project is Rs. 11816.40 Crores. Cost of production is Rs. 366.02 /- per tonne, CSR cost: According to new CSR policy the fund for the CSR should be allocated, based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of coal production of previous year, whichever is higher, R&R cost is Rs. 564.44 crores.

6.5.2.8: EMP Budget:

Environment Management Cost is Rs. 205 crores (Capital) and Rs 55.51 Cr (Revenue Cost). The details are as follows:

1. **Capital Cost:**

1	**Air pollution control measures**	**Amount (in cr)**
a	Dust suppression arrangements	4.42
b	Water sprinkling arrangement along approach road	4.00
c	Green belt in & around the mine	1.00
d	Arboriculture/plantation in industrial area	0.10
e	CAAQMS and Piezometers Cost	5.10
f	Horticulture and land development	0.83
	Sub-Total	15.45
2	**Water Pollution Control Measures**	**Amount (in cr)**
a	Effluent treatment plant (ETP)	10.00
b	Sewerage treatment Plant (STP)	5.00
c	Settling tank for mine water disposal	2.00
d	Garland drains	1.00
e	Other development measures in industrial site viz. drains, tree	7.59

f	Other development measures in colony viz. drains, tree	0.51
g	Water drains in township	0.21
h	Sewage disposal arrangement in colony	1.07
i	Water Treatment Plant	7.40
j	Rain Water Harvesting	0.24
	Sub-Total (2)	35.02
3.	**Other Environmental Control Measures**	**Amount (in cr)**
a	Barbed fencing for the project	1.50
b	HEMM for Reclamation	133.39
c	Housing personnel	3.82
d	Flora and fauna study	0.30
e	Cost of EMP preparation	0.50
	Sub-Total (3)	139.51
	GRAND TOTAL	189.93
-	Additional Capital Expenditure (proposed in EMP of 52.5 to 70 MTPA)	**Amount (in cr)**
a	Green belt between residential area and mine (2 km)	7.0
b	Tyre washing arrangement (additional 2 no.)	1.0
c	Sprinkler system with mist spray in CHP,Transfer points and enclosure system for coal unloading facility	1.0
d	Additional Rainwater harvesting measures	0.5
e	Noise protection personal equipment like ear muff/plug and other measures like Acoustic Panel Technology Noise barrier, etc	1.0
f	Integrated Continuous effluent monitoring system with real time tracking and server linkage	2.02
g	Miscellaneous Environmental Control measures as per EC conditions/Issues raised during Public hearing	2.5
	Sub-Total(4)	15.02
	Total Capital Cost	**205.00 crores**

1. **Revenue Cost:**

1	**Revenue Expenditure Related To Environment (As Per Approved Pr-70 MTPA)**	**Amount (in Cr)**
a	Environment Audit @ 0.60 lakhs/annum	0.006
b	Environment monitoring @10.00 lakhs/annum	0.10
c	Mine closure cost* (*Revised first year mine closure cost- 22.12 crores)	18.65
d	Monitoring of CSR and RR Plan	0.02
e	Monitoring of land use through satellite surveillance	0.02
	Sub-Total(1)	**18.97**
2	**Additional Revenue Expenditure (Proposed In EMP of 45 to 49 MTPA)**	
a	Mist Blower (Fog Cannon) cum road Fogger	0.60
b	Mechanized Sweeping machine	0.50
c	Mobile Water Sprinkler	0.45
d	Periodic Health Checkup	0.50

	Sub-Total(2)	2.05
3	Additional Revenue Expenditure (proposed in EMP of 52.5 to 70 MTPA)	Amount (in Cr)
a	Fog Cannon (Additional -8 no.) @0.6 cr/unit	4.8
b	Mechanized Sweeping Machine (Additional 2 no.) @0.5 cr/unit	1.0
c	Green belt around the mine boundary (14 km) @8 lakh/ha	1.12
d	Grass bedding over slope with support measures per year (60 ha @10 lakh/ha)	6.0
e	Soil and Moisture Conservation of top soil @Rs 3500/ha	1.0
f	Grassland creation over reclaimed OB dumps per year (6 ha @8 lakh/ha)	0.48
g	Wildlife Conservation Plan implementation	10.09
h	Groundwater recharge and monitoring per year (lump sum)	1.0
i	Environment Monitoring per year	3.0
j	Third party audit of compliance of various clearances at suitable interval	1.0
k	Specialized studies like slope stability, fly ash related studies, topsoil management, Just transition, development of eco park, floating solar park, ecological restoration, OB to sand or similar from scientific institution of repute per year	5.0
	Sub-Total(3)	34.49
	Total Revenue cost	55.51 crores

6.5.2.9: Court Case:

1. There are court cases pending with the project proponent as per the following details: -Details of Court Case

Case no.	Court	Case Details	Status
1217/2007	Presently the case no. is 886/2015 and the case is at Chief Judicial Magistrate Korba.	Regional Office, Chhattisgarh Environment Conservation Board, Korba Vs CGM Dipka Extension Project Gevra Area SECL for coal production in excess of 10 MTPA consented capacity. The Criminal complaint was filed under Sec.15 &17 of EP Act and the year of violation was 2001-02 to 2004-05.	The next hearing is on 23.01.2024.
834/2021	The Supreme Court of India	The Civil Appeal has been filed under section 22 of the National Green Tribunal Act, 2010 against the final order dt. 25.08.2020 of the Ld. National Green Tribunal, Principal Bench at New Delhi in appeal no. 70 of 2018 titled Laxmi Chauhan vs UOI & others.	Hearing date given was 15.05.2023. Next date not yet displayed.

1. In line with the judgment of Hon'ble Supreme Court dated the 2nd August 2017 in writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. the collector had issued notice on 04.01.2019 and subsequently reply was submitted by SECL Gevra OCP on 14.03.2019. Accordingly, Dept of Geology & Mines (Mineral Resource Dept. CG Raipur had called meeting on 25.09.2019 for discussion regarding Collectors notice issued for excess production cases wherein the Joint Director, Dept of Geology and Mines discussed on the point about the agreeable violation years, and the amount, & also considering the PP's view on Non applicability of Section 21(5) of MMDR Act 1957. Further meeting was called on 14.10.2019, discussing the points deliberated in the 25.09.2019 meeting, after which no further communication has been received to SECL Gevra OCP from Collector Office or Dept of Geology Mines, Raipur. However, SECL agrees to abide by any future decisions/guidelines issued in this regard.

6.5.2.10: Other Details:

1. Employment to 4391 persons will be provided from the project.
2. The project is reported to be beneficial in terms of: Project will considerably improve the socio-economic status of the adjoining areas. This will result in benefits such as improvements in physical infrastructure; improvements in social infrastructure, increase in employment potential, contribution to the exchequer, meet energy requirement and post-mining enhancement of green cover.
3. Coal linkage of the project is proposed for NTPC and Various thermal power plants.
4. No Joint venture cartel has been formed.
5. Consent to Establish cum Operate for capacity (52.5 MTPA) was obtained from the Chhattisgarh Environment Conservation Board, Raipur on 15.03.2023 and valid for one year.
6. Hasdeo river is the main drainage of the area flowing 08 kms from mine boundary. The study area includes a number of seasonal nallah and tributaries of Hasdeo river like Ahiran, Kholar nallah, Lilagar river also flows through the study area of project. No nalla diversion is proposed.
7. Regular monitoring of ambient air quality is being carried out with frequency of twice a week. The documented report is submitted to APCCF, MoEFCC, Regional Office, Nagpur, Member Secretary, Paryavas Bhavan, Raipur and RO CECB, Korba along with half yearly EC compliance report. In general, the results of ambient air quality monitoring data were found within prescribed limits except few aberrations which can be attributed to the specific local conditions during the day of sampling.
8. The ground water clearance: Renewal of NOC has been obtained vide no. CGWA/NOC/MIN/REN/1/2024/8879 Dt. 09.01.2024 for abstraction of 8334cum/day valid upto 03.12.2024.

3.3.3. Deliberations by the committee in previous meetings

NOTARY Regn. No. 447/19 Expiry Date 15.03.2028 STATE OF WEST BENGAL

N/A

5.3.4. Deliberations by the EAC in current meetings

6.10.3 Committee after detail deliberations noted the followings:

1. PP has obtained ToR dated 07.03.2022 and amended on 09.01.2023 for capacity of 52.5 to 70 MTPA.
2. PP has collected the Baseline data for the period of March to May 2022.
3. Mine closure plan for 35 to 70.00 MTPA approved by CIL Board on 05.03.2016 and Revised Mine Plan for 52.5 to 70 MTPA along with Mine Closure Plan has been approved on 25.10.2023.
4. Public hearing for the project of 70 MTPA capacity in an area of 4781.798 ha was conducted on 06.06.2023.
5. PP submitted the Action Taken Report dated 13.01.2024 with respect to CCR dated 8.01.2024.
6. PP has submitted the application for Stage I FC for forest area of 94.293 ha vide FP/CG /MIN/ 41389/2019 dated 05.11.2019 involved in the ML area of 4781.798 ha.
7. EMP (capital- Rs 205 crores and recurring- Rs 55.51 crores) including additional proposed.
8. Revised mine closure cost- Rs 523.40 cr
9. Wildlife Conservation plan- Rs 10.09 cr.
10. Catchment Area Treatment Plan- Rs 84.47 lakhs
11. Total no. of PAF-3466 (Total employment provided as on 31.07.23- 2941; Balance employment to be provided- 763; Total families resettled-844; Total balance families to be resettled-1155).
12. CER Budget- 22.852 cr.

6.10.4 Committee after deliberations noted that the instant project is for expansion of production capacity from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha. PP conducted Public Hearing after obtaining ToR & its amendment. The Committee deliberated on the compliance of ToR conditions, cumulative impact assessment study, R&R, issues raised during PH, coal transportation, water requirement and other impacts of the project on environment.

Committee observed that PP has submitted that Gevra OCP has implemented all the recommendations by BHU regarding ecosystem carrying capacity and Comprehensive catchment area treatment plan prepared by Chhattisgarh council of Science and Technology, Govt. of Chhattisgarh. The action taken with timeline is provided below:

Tyre Washing System	Operational since March 2022.Amount spent- Rs. 47.12 Lakhs.
5 nos. Fog cannon	9 nos. of fogging machines under operation
1 nos. Sweeping machine	1 sweeping machine was in operation since Sept 2019. The addl. machine delivered in Jan 2022 & operational since Feb 2022
Catchment area treatment Plan	The work will be implemented through State Forest Dept. An amount of Rs 8447900/- has been deposited in CAMPA vide UTR no. UCBAH 21312039819 on Dt- 08.11.2021 towards implementation of proposed measures in the study.

PP submitted Mining is mostly carried out by surface miners. Around 89% (46.52 MT out of 52.499 MT) coal is produced by surface miners and only 11% coal is produced by convention drilling and blasting where operation of Surface miners in coal benches are impossible.
PP submitted that 240 nos. of rooftop connected solar power plant 2000 KW for Gevra Area. Work order has been issued and work is in progress.

As desired by EAC the PP vide letter dated 19.01.2024 inter-alia submitted the i) action plan with timeline for the balance families to be settled, ii) land acquisition details, iii) impact assessment w.r.t to Gevra OCP, iv) commitment made during PH, v) details of water supply plan & water treatment plant, vi) detailed report on CSR, vii) post mining land use , viii) water utilization plan i.e void/water body utilization after mine closure, ix) education facility, x) details of health care facilities, xi) details of Korba Action Plan of SPCB and action taken by PP, xi) updated status of court cases and undertaking in this regard.

Committee observed that with respect to R&R Plan PP submitted that balance families to be settled is 1149 and as per action plan it is estimated that out of 1149 PAFs it is most likely approx. 690 PFAs will opt for plots (option 1B) and remaining approx. 459 PFAs opt for lump sum cash grant of Rs 3.0 Lakh in lieu of alternate house site. The timeline is mentioned as March 2025. In addition to cumulative impact PP also submitted the impact due to operation of Gevra OCP and as per study report the Air Quality impact assessment study reveals that the predicted ground level concentrations (GLC) of air quality parameters such as PM10, PM2.5, SO2 and NO2 in study area (15km from Gevra boundary) are within the stipulated norms. *Committee is of the view that EMP and recommendations made out of cumulative impact assessment study shall be implement.*

The Committee is of the view that PP shall address the issues raised in PH in a time bound manner and budget earmarked for the same should not be diverted for the other use. Additionally, the Committee emphasized that PP shall provide mobile medical units and ambulance facility for locals. Committee also advised to provide the modern science lab to near schools and sports facility too. The Committee is of the view that skill development programme should be linked with the employment potential and a record of the same shall be maintained regarding to ascertain whether the skill development plan is effective enough or not to enable the local persons to get employment after the training, in case if it is required that skill program needs to be changed as per present & future requirement than PP shall do so.

Committee observed that PP submitted the details of water supply plan & water treatment plant and also water utilization plan i.e void/water body utilization after mine closure. PP submitted that for this particular case of Gevra OC Mine, stored water (seepage ground water as well as collected rain water) will be utilised in consultation with Central/State Agencies in the manner viz. i) Water Supply for Irrigation purposes to local villages: Accumulated water will be supplied to local villages as per their needs. ii) Water Supply for domestic needs of local populace: Water quality will be monitored regularly and accordingly, after proper treatment water will be supplied to local villages. iii) Development of Eco-Park and Recreation lakes: It's to worth mentioning that SECL already in process to develop an ECO Park at Gevra Area and it will ultimately help to diversification of economics of that region and iv) Installation of Floating Solar Panel: Floating solar panel will be installed on the mine lakes. PP further submitted that the mine voids filled with water will act as a ground water recharge structure which will increase the ground water level in the mining affected area and eventually the crop yield of the surrounding area. Based on the submission of the PP, the *Committee is of the view that PP shall employ to increase the water supply including availability of drinking water in the nearby area. Further water ATM can be started at public places. PP shall prepare a plan in a period of one year that how the existing water requirement for the project can be reduced further and how the excess water collected by various means including rainwater harvesting measure can be treated and supplied for the public use. Further, the work of development of ECO Park at Gevra Area shall be completed within a period of five years.*
Committee observed that PP submitted the proposal of ongoing and completed CSR activities with amount proposed and disbursed. The Committee observed that total 1941 Lakh has been proposed and 587.01 Lakh has already been disbursed i.e 30%. *The Committee observed that many activities has already been completed but still PP shall expedite the implementation part for the ongoing and proposed activities. Establishment of smart classes shall be completed within a period of one year after grant of EC.*

Committee observed that with respect to educational facilities PP submitted the economic study report which reveals that there are several educational institutions of various standards managed by both public and private sectors/bodies in the area by SECL and NTPC etc. Educational facilities provided are by Central School in Kusmunda by SECL and NTPC, Korba, Delhi Public School (Upto Class XIth) by NTPC and DAV School in Kusmunda & Gevra Area by SECL. In the study area

(core zone + buffer zone), there are a total of 12 pre-primary schools, 102 primary school, 60 middle schools, 14 secondary schools, 8 senior secondary schools, 2 art and science college, 1 ITI and 3 Govt. non formal training centers within villages. Education facility provided to i) Primary & Secondary School at Urja Nagar, ii) Upgradation work with providing of smart education facility such as Computer set, furniture, Green Board, Books , Games material etc of 5 nos. of new Swami Atmanand Govt. Utkrist Hindi Medium school. The budget proposed for the same is Rs. 891.75/- Lakh. *Committee is of the view that establishment of smart classes shall be completed within a period of one year after grant of EC.*

Committee observed that with respect to health care facilities PP submitted that there is a well equipped 100 beded Hospital at Gevra Project : Nehru Centenary Hospital

PP submitted that medical camps are organized time to time by different
medical teams of SECT on different items for the benefit of local people residing in core & buffer zone. The mining activities expose workers to some injuries and health hazards. Incidence of occupational disease and injuries and health hazards as recorded in the hospital for employees in Gevra area is almost negligible. Every worker is periodically checked up once in every five years and proper record of their health profile including X-ray and laboratory tests is kept. The importance of such periodical medical examination be is to detect and prevent occupational diseases like Pneumoconiosis and Tuberculosis. PP submitted that the SECL authorities have adopted following measures to prevent occupational diseases and health hazards viz. i) Pre-employment, pre-placement and periodic medical examination of employees, ii) Regular monitoring of working environment and implementation of safety and control measures, to prevent hazards, iii) Use of protective equipment, clothing, helmets, Gas mask, shoes, etc, iv) Periodical medical examination of every worker is done once in five years to detect preventable and curable diseases at an early stage v) A Special Board constituted by the Chief Medical Officer examines cases suspected to have Pneumoconiosis. Established cases are suitably compensated and their job is changed if required, vi) Apart from the above NCH Gevra provides free of cost medical facilities to not only displaced families but also to each & every person with BPL card under the CSR head, vii) The manpower details of Doctors in NCH Gevra as on 31.12.2023 is a) General duties Medical Officer (GDMO): 09 nos., b) Dentist: 01 no., c) Specialist: 06 nos. (Orthopedician, Pathologist, Opthalmologist, Psychiatrist, General Surgeon & Pediatrician). *The Committee appreciated the efforts taken by the PP but is of the view that PP shall continue to provide proper medical facilities to local peoples residing in the close vicinity of the project area and also to the project affected peoples. PP shall provide provision for financial assistance for the critical illness such as cancer, kidney/liver failure etc. on cases to case basis, PP shall ensure to provide ambulance facilities for the general public particularly in the remote areas and a helpline in this regard may also be created.*

The Committee also deliberated on the compliance of previous EC conditions. PP presented the Action Taken Report dated 13.01.2024 submitted to RO, Raipur w.r.t CCR dated 8.01.2023. Committee noted that RO in its CCR mentioned that the EC letter dated 21.08.2018 supersedes the earlier granted EC 31.01.2014 for expansion from 35 to 40 MTPA, followed by amendment in EC dated 6.02.2015 for further expansion up to 41 MTPA. However, in the EC letter dated 6/9/2022 & 23/8/2023 it has been stipulated that all other terms and conditions stipulated in previous ECs granted vide letter dated 3.06.2009, 31.01.2014, 6.02.2015, 21.02.2018, 28.03.2019, 4.06.2020, 10.05.2021, 5.09.2022 shall be adhere to and remain unchanged, so there is an inconsistency in EC conditons. PA neither took any corrective action from Ministry on the observed inconsistency nor submitted six monthly compliances. ***The committee deliberated on this issue and is of the view that EAC may prescribe all the required conditions while considering this expansion so that it would be convenient for RO to monitor the project and also for PP to submit the six monthly compliance by referring to only one document.***

The Committee observed that PP in its ATR dated 13.01.2024 with respect to observation made by RO, for most of the conditions informed that it is being complied and also complied nine conditions. Further, agreed for the compliance of some of the conditions. After deliberation on CCR and ATR *the Committee is of the view that*

1. *PP has obtained CGWA permission for 9334 m3 and is valid till 3.12.2024 but PP in future PP shall take proactive steps for its renewal. Further, the water requirement for the project was mentioned as 15686 m3/day including 13067 m3/day for which CGWA approval is required. Therefore, the PP shall obtain the permission for the same or restrict the water utilization to 9334 m3/day. PP also submitted on agreement dated 17/02/2011 made between Irrigation Department and Gevra Mines for 10500 m3/month of water can be used in housing colony. The Committee is of the view that PP shall not use the water for other purpose before obtaining permission from Irrigation Department.*

1. *Work of establishment of the Sal Nursery of 10 Ha area shall be completed by March 2024.*

1. *Digital display board shall be installed before April 2024.*

1. *For implementation of WLC & CAT, PP has already deposited the amount and implementation is to be done by concerned authorities but still PP shall follow up for the same.*

1. *With respect to compliance of Court Order, PP has already submitted an undertaking to comply with the direction of DMG.*

1. *PP reported that existing coal evacuation capacity is 65 MTPA (45 MTPA mechanized SILO & RLS, 15 MTPA railway siding, 5 MTPA by road to local consumers) and proposed for additional 30 MTPA mechanized system i.e. 2 Silos (5&6) of 4000 Te with RLS along with belt conveyor system of 30 MTPA) shall be commissioned by Oct. 2024.*

1. *PP also submitted the compliance made towards the recommendation of sub-committee visited the site on 5/10/2021. Committee observed that PP has reported to complied with most of the recommendation and some are being complied. PP reported that Solar Roof top work will be completed by May, 2024.*

1. *The Committee is of the view that out of the total 70 MTPA sought 65 MTPA should be transported only through mechanized system and remaining 5 MTPA should be through road and PP should reduce it further to fully transport through mechanized system by October 2024. The major concern is of transportation of 5 MTPA road transportation which could lead to fugitive emission and other issues. This was also reported by RO. In this regard, PP has submitted the corrective measures which are already taken. Therefore, the Committee is of the view that PP shall install CCTV camera in all entry and exist points of the mines from where tippers are moved, around coal handling plant, silos, railway siding. The Committee is of the view that PP shall ensure to have transportation route away from the habitation.*

1. *PP reported that public liability insurance conditions are not applicable to them in pursuant to MoEF&CC notification S.O (E) 227 dated 24.03.1992. The Committee is of the view that PP shall ensure that in case of any injury/accident, the workers should be provided with proper compensation and should be insured.*

1. *PP submitted that the peripheral fencing is continuous work as factory is in progression. PP shall continue to do so.*

1. *It has reported in the CCR the PA has commissioned ETP having the capacity of 210KLD and is in operation. The sewage treatment plant having the capacity of 3 MLD has already commissioned and is in operation. Treated water from the STP is being used for greenbelt development. Committee is of the view that in*

addition to this PP shall implement the mitigation measures proposed in the EMP for this expansion project.

1. *During the visit only one CAAQMS was installed and in operation. Additional CAAQMS station has not been installed as stipulated by September 2023. PA informed that purchase order has been issued vide letter dated 24/08/2023 for additional 1 no. of CAAQMS. The Committee is of the view that PP shall install 2 CAAQMS out of which one should be in downwind direction as discussed during the meeting. The final location for the same shall be finalized in consultation with CPCB/SPCB.*

Committee observed that PP informed that now the project does not come under Critically Polluted Area (CPA) and as per the action plan prepared by SBCB, the Gevra OC has implemented fugitive dust control measures i.e. 2 no. mechanized sweeping machine and long range fogging machine (4 no.) are already in operation.

Committee observed that PP provided the details of the court cases and also submitted an undertaking to the effect that *" In line with the judgment of Hon'ble Supreme Court dated the 2nd August 2017 in writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors, the collector had issued notice on 04.01.2019 and subsequently reply was submitted by SECL Gevra OCP on 14.05.2019. Accordingly, Dept of Geology & Mines (Mineral Resource Dept, CG Raipur had called meeting on 25.09.2019 for discussion regarding Collectors notice issued for excess production cases wherein the Joint Director, Dept of Geology and Mines discussed on the point about the agreeable violation years and the amount, & also considering the PP's view on Non-applicability of Section 21(5) of MMDR Act 1957. Further meeting was called on 14.10.2015, discussing the points deliberated in the 25.09.2019 meeting, after which no further communication has been received to SECL Gevra OCP from Collector Office or Dept of Geology Mines, Raipur. However, SECL agrees to abide by any future decisions/guidelines issued in this regard." The Committee is of the view that PP shall comply with the direction of Hon'ble Courts and decision of Collector Office or Dept. of Geology Mines, Raipur in this regard.*

Based on the above discussions & documents submitted in the EAC meeting, the EAC recommended the Environmental Clearance for expansion of Gevra Opencast Coal Mine from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha (subject to FC approval) of M/s South Eastern Coalfields Limited located in Tehsil- Katghora, District- Korba (Chhattisgarh) with the following specific conditions and standard EC conditions under the provisions of EIA Notification, 2006 and its amendments:

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Environment Conditions

3.3.6.1. Specific

specific conditions:	
1.	*PP to comply the outcome of the court case number 834/2021 pending before Hon'ble Supreme Court and case number 1217/2007 pending before Judicial Magistrate Katghora and any other court cases.*
2.	*PP shall submit the proposal for next expansion only after the compliance of all its Existing EC conditions.*
3.	*PP shall implement the protective measure proposed in EMP in a time bound manner. The budget earmarked for the same is Rs 205 crores (Capital) and Rs 55.51 crores(recurring) and should be kept in separate account and audited annually. The implantation status along with amount spent with documentary proof shall be submitted to concerned Regional Office for the activities carried out during the previous year.*
4.	*Mining shall be carried out only by Surface Miners for the project. Presently Banos, Silos (1&2, 3&4 Capacity -52MTPA) with rapid load out System (20 MTPA) for transportation of Coal through rail are in operation. As proposed PP shall complete mechanized system for additional 30 MTPA (Silo 5 & 6) capacity of coal handling before Oct 2024 and status report be submitted to RO MoEF&CC.*
5.	*PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling Ash and OB mixing activities during operations as well as post closure of mines in line with fly utilization notification 2021. The study being conducted by NIT Rourkela for 7 mines of SECL including Gevra shall be completed and report shall be submitted to RO MoEF&CC. The percentage of voids should be reduced to not more than 30% of the total area.*
6.	*Digital processing of the entire lease shall be through remote sensing techniques should be done regularly once in 5 years for monitoring land use pattern and report submitted to MOEF and its Regional Office at Raipur.*
7.	*The project proponent shall obtain the necessary permission from the Central Ground Water Authority for ground water abstraction. No groundwater shall be used for mining operations without valid CGWA NOC. Also the project proponent shall obtain the necessary permission from the state/irrigation department for the use of surface water from rivers/nallha. Further, the water consumption should be restricted to the level for which permission has been obtained from CGWA/ Irrigation department as the case may be.*
8.	*Environmental laboratory should be established with adequate numbers and type of pollution monitoring and analysis equipment in consultation with the state Pollution Control Board. Internal Environment Management division shall be strengthened and details submitted to IRO.*
9.	*No mining operations shall be undertaken in Forest land, until forestry clearance has been obtained under the provisions of FC Act, 1990.*
10.	*OB shall be stacked at the earmarked external OB dumpsite of 480 ha within ML area for the opencast operations of a maximum height of 90m consisting of 3 benches of 30m each. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of existing reclaimed dumpsites including slope stability shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional office located at Raipur on a yearly basis.*
11.	*An afforestation plan covering an area not less than 2189.286 ha shall be implemented, which includes backfilled area (1287.85 ha) and ext. OB dump (480 ha), along ML boundary, green belt, along roads, infrastructure (1249.062 ha), safety zone (41.386 ha) undisturbed/vacant land by planting native species in consultation with the local DFO. The density of the trees shall be around 2500 plants per ha. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation, date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year.*

12.	*Backfilling shall start by the 1st year of expansion operations. Of the total 2655.35 ha of the quarry area, an area of 1287.85 ha of excavated area shall be reclaimed with plantation/afforestation by planting native plant species in consultation with the local DFO. The density of the trees shall be around 2500 plants per ha. The balance 1347.50 ha of de coaled the void left for further expansion in the dipside shall be converted into a water reservoir, shall be gently sloped and the upper benches of the reservoir shall be stabilised with plantation and the periphery of the reservoir fenced.*
13.	*ETP shall also be provided for treatment of effluents from workshop (1305 m3/d) and an STP shall be provided for treating wastewater (2881 m3/d) from the township with all dwelling units and the treated effluents shall be used for green belt development. An estimated 13087 m3/d (97.85 %) of the total 13375 m3/d of wastewater (mine pumped out water) generated from the mine would be treated and recycled for mine operations and the balance 3168 m3/d of wastewater (Excess mine water+ waste water from DETP) shall be treated to prescribed standards before discharge into the surface waters/agricultural use.*
14.	*Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any. Further, PP shall engage an agency such as NIOH, Ahmedabad to review the status of implementation of occupational health plan and suggest corrective measures.*
15.	*PP shall implement the action plan submitted for addressing the issues raised during Public Hearing. The budget earmarked for the same is Rs. 13.15 Cr (Annexure 2). The budget earmarked for the same shall be kept in a separate account and audited annually. In addition to this PP shall provide mobile medical units and ambulance facility for locals, provide the modern science lab to near schools and sports facility too. The Committee is of the view that skill development programme should be linked with the employment potential and a record of the same shall be maintained regarding to ascertain whether the skill development plan is effective enough or not to enable the local persons to get employment after the training, in case if it is required that skill program needs to be changed as per present & future requirement than PP shall do so. PP shall submit the activities carried out and amount spent along with documentary proof to concerned Regional Office for the activities carried out during the previous year.*
16.	*Establishment of smart classes shall be completed within a period of one year after grant of EC.*
17.	*PP shall prepare and implement a plan in a period of one year that how the existing water requirement for the project can be reduced further and how the excess water collected by various means including rainwater harvesting measure can be treated and supplied for the public use. The work of development of ECO Park at Gevra Area shall be completed within a period of one year. PP shall ensure to increase the water supply including availability of drinking water in the nearby area and water ATM can be setup at public places.*
18.	*PP shall continue to provide proper medical facilities as proposed during the meeting, to the local people residing in the close vicinity of the project area and also to the project affected peoples. PP shall keep the provision for providing financial assistance for the critical illness such as cancer, kidney/liver failure etc. on cases to case basis. PP shall ensure to provide ambulance facilities for the general public particularly in the remote areas and a helpline in this regard may also be created.*
19.	*A detailed Plan for CSR with specific budgetary allocation (capital and revenue) for various skill development and alternate livelihood programmes and schemes and implemented through establishment of cooperatives and SHGs shall be implemented. CSR activities shall not overlap for the villages falling in the study area of the coal mine projects located in the study area. The fund for CSR shall be provided as per companies act & CSR policy of the company, "the fund for the CSR should be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of coal production of previous year whichever is higher". PP shall expedite the implementation part for the ongoing and proposed activities. Establishment of smart classes shall be completed within a period of one year after grant of EC.*
20.	*Tribal Development Plan for the tribals shall be prepared as part of CSR. A detailed pre-project survey shall be carried on the socio-economic status of the local communities living in the villages near the project area before start of the mining operation based on a scientific methodology based on UND Human Development Index and monitoring the impact of project on the socio-economic and human development of the local communities, which shall be used as a base-line data for monitoring the progress of the status of human and socio-economic development in the area during and after the project life which is reflected in their Annual Report of the company and is also furnished as part of the Monitoring Report submitted to MOEF.*
21.	*R&R shall be not less than the norms prescribed in National R&R Policy 2007/State R&R Policy/CIL Policy whichever is higher. R&R for a cost of not less than Rs. 554.44 crores for the PAFs shall be completed within an agreed time schedule.*
22.	*The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.*
23.	*PP shall submit action plan for using and developing Renewable Energy for its consumption in its utilities/machinery/equipment's instead of using electricity from Grid generated from Thermal Power Plants.*
24.	*PP shall conduct physical and strength analysis within a period of two years and accordingly propose to install Sand Segregation Plant.*
25.	*PP shall obtain 3-star rating in terms of Environment Compliance from Ministry of Coal as per rating system implemented by Ministry of Coal.*
26.	*In addition to the existing CAAQMS, PP shall install the two additional CAAQMS out of which one should be in downwind direction. Further, the location of all the CAAQMS existing as well as proposed shall be in consultation with CPCB/SPCB.*
27.	*PP shall display data of CAAQMS by online information/Display system at gate of Gevra OCP and link with company website and with Chhattisgarh Environment Conservation Board.*
28.	*Haul road from mine operation site till conveyor system shall be provided with fog cannons and water sprinklers to reduce fugitive dust.*
29.	*PP shall submit carrying capacity of the area from reputed institutes for its proposed production of 70 MTPA from Gevra on a regular interval of 3 years & submit status report to IRO MoEF&CC.*
30.	*The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.*
31.	*There shall be no overflow of OB into the river Hasdeo and Ahiran river and Kholar nalla and other first order stream-lets and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.*
32.	*An estimated 2606.92 Mm3 of OB will be generated during the entire life of the mine. Out of which 319.56 Mm3 of OB will be dumped in seven external OB Dump in an earmarked area covering 480 ha of land. 2287.36 Mm3 of OB will be dumped eight internal OB dump in embankment covering an area of 1287.85 ha. The maximum height of external OB dump for hard OB will not exceed 90 m with 3 tiers and that for soft OB shall not exceed 60 m. The maximum slope of the dump shall not exceed 28 degrees. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self-sustaining and*

	compliance status shall be submitted to MOEF and its Regional Office on yearly basis. Further, PP shall carry out slop stability analysis of the dumps from a recognized institute (IITs/NITs etc.) and implement its recommendations.
33.	Thick green belt of 50 m width at the final boundary in the down wind direction of the project site shall be developed to mitigate/check the dust pollution.
34.	The predominent Sal species in the forest area shall be protected, and in case of coal mining operations inevitable therein, compensatory forestation of these species shall be carried out in consultation with State Forest Department.
35.	The project proponent shall obtain Consent to Establish/Operate from the State Pollution Control Boards for the proposed capacity of 70 MTPA prior to commencement.
36.	PP shall ensure to submit the compliance report to Regional Office in a timely manner and in case of any non-compliance identified so far/in future in the CCR then the same shall be complied on priority and action taken report in this regard shall be submitted to concerned RO.
37.	PP shall complete all the mitigation measures for reduction of air pollution proposed during EAC meeting within one year.
38.	Third party monitoring by reputed instituted for air quality shall be carried out at identified locations, both ambient and the process area, to arrive at impact of the proposed expansion at regular interval of 3 years.
39.	Project proponent shall plant 200000 nos. of native trees with broad leaves along the transportation route in three years to prevent the effect of air pollution. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Officer.
40.	PP shall carry out monthly water monitoring quality of Hasdeo and Ahiran River and conduct Bio-assay test half yearly and further monitoring Ground water level
41.	PP should conduct epidemiology study ie. (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
42.	PP shall plant additional 200 ha of Sal trees (only) and create a nursery of 10 ha to distribute the species freely in the region for redevelopment of Sal forest in the region.
43.	Permanent Health care facilities of Hospital should be established within 5 km of project boundary for the local people.
44.	PP shall pay to farmers of agricultural land if there is any loss due to pollution found by concerned District Commissioner as per extent rules or norms.
45.	Domestic water shall be provided to the residents villages which are coming under the zone of influence of the project due to ground water extraction.
46.	10 nos of Water Harvesting Pond with adequate area and depth shall be developed within 5 km of project area
47.	Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.
48.	Recommendation made in the carrying capacity study shall be implemented for the protection of environment.
49.	Recommendation made for social impact assessment study shall be implemented.
50.	PP shall comply with the direction of Hon'ble Courts and decision of Collector Office or Dept of Geology, Mines, Raipur with respect to pending court cases and other issues.
51.	The project proponent shall take all precautionary measures to ensure riverine / riparian ecosystem in and around the coal mine up to a distance of 5 km. A riverine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the Irrigation/ water resource department in the State Government.
52.	PP shall implement the recommendation made during the site visit of sub-committee on 5/10/2021
53.	Work of establishment of the Sal Nursery of 10 Ha area shall be completed by March 2024.
54.	Digital display board shall be installed before April 2024.
55.	The recommendation made by sub-committee during the site visit on 5/10/2021 shall be implemented. Further, Solar Roof top work shall be completed by May 2024.
56.	PP shall install CCTV camera in all entry and exist points of the mines from where tippers are moved, around coal handling plant, silos, railway siding. The Committee is of the view that PP shall ensure to have transportation route away from the habitation.
57.	PP shall ensure that in case of any injury/accident the workers should be provided proper compensation and treatment and they should be insured as per existing laws as applicable to the project.
58	The peripheral fencing work shall be continued as per mine progression.
59.	PP shall ensure that plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding areas on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.
60.	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.

61.	*Third party audit of plantations carried out should be got done through a reputed forestry institution of MoEFCC (eg. ICFRE) and report submitted to IRO*

3.3.6.2. Standard

1(a)	**Mining of minerals**
air quality monitoring and mitigation measure	
1.	Adequate number of Fog canon (mist sprayer) shall be installed to reduce the impact of air pollution at dust generating sources with time bound action plan.
1.	Post environmental closure third party monitoring by reputed instituted in air quality, water, land & soil etc shall be carried out and analysed with EMP measures at regular interval. A suitable recommendation in this regard, shall be furnished to IRO, MoEF&CC for compliance. The data used for analysis shall be obtained from continuos AQMS, site specific water regime. Also third party shall analyses the implementation of river diversion, meeting to the requirement of project report.
1.	Comparison of average monthly temperature of pre and post mine operation after obtaining EC shall be elaborated for post three years and a record to be maintain at regular interval.
1.	PP to install solar lights along the road used for transportation of coal to avoid the accidents at night and also seek its maintenance.
1.	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.
1.	Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
1.	Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.
1.	Adequate measures on EMP should be analyzed on annual basis to assess the trend of air pollution data from continuous monitoring station and quarterly report shall be generated and submitted with 6 monthly compliance reports to RO, MoEF&CC.
1.	Effective safeguard measures for prevention of dust generation and subsequent suppression like regular water sprinkling shall be carried out in areas prone to air pollution. The Fugitive dust emission from all sources shall be regularly controlled by installation of required equipment's. It should be ensured that air pollution level confirm to the standards prescribed by the MOEFCC/CPCB
1.	PP should install Wind breaker/shield arrangement along the railway siding for reducing the dust propagation in upwind direction.
1.	Continuous ambient air quality monitoring stations as prescribed in the statue be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. The new CAAQMS should be installed with expansion.
1.	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
1.	Transportation of coal, to the extent, if permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun/ Fog cannon etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
1.	The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
corporate environment responsibility	
1.	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority
1.	Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
1.	The company shall have a well laid down environmental policy duly approved by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environmental/forest/wildlife norms/conditions and/or shareholders/stake holders.
1.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
1.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
green belt	

1.	Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads. And Plantation should also be carried out in nearby area with consent of forest department and gram panchayat within 10 km radius with its proper maintanance
1.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
land recalmation	
1.	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.
1.	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC
1.	All approach roads to mine and all other roads which are in regular use should be black topped. The maintenance of road shall be done by PP in collaboration with state government
1.	PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads/ manufacture of artificial sand, aggregates/ use for farmers etc.)
1.	Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoid air born of particles
1.	Progressive backfilling of mine and progressive reclamation of OB dump shall be done.
1.	Top soil should be stored separately at marked area and necessary vegetation shall be maintained to avoid any entrainment of dust
1.	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.
1.	Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change, Regional Office.
1.	Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
1.	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining"/"post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.
1.	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shall be submitted to MOEFCC/Regional Office (RO).
mining plan	
1.	Mining shall be carried out under strict adherance to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.
1.	Transportation of coal till Railway Siding shall be developed to avoid transportation through Road
1.	PP shall adopt mining method by preferably using surface miners for the project and silo loading through in-pit conveyor should be adopted
1.	Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.
1.	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.
1.	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
1.	5- Star Rating is mandatory to obtaine certification as per guidelines of Ministry of Coal
miscellaneous	
1.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India, High Courts and any other Court of Law relating to the subject matter.

i.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
i.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
i.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
i.	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
i.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
i.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
i.	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
i.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
i.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
i.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.
i.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
i.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
i.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
i.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
noise and vibration monitoring and prevention	
i.	Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
i.	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS.
i.	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen in vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.
public hearing and human health issues	
i.	Compensation of the land acquired for the project shall be settled as per the R&R Policy within fixed timeline
i.	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six-monthly basis.
i.	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.
i.	Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.
i.	Implementation of the time bound action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the time bound action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.
i.	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/57/2014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.
i.	PP to conduct need based assessment survey of the area to for in order to decide the activities to be carried under the CSR and to provide detail of the activity carried out with adequate budgetary provision and time bound action plan.
i.	PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
i.	Permanent Health care facilities of Hospital should be established within 5 km of project boundary for the local people.
i.	PP must ensure an emergency action plan during pandemic in order to provide assistance to the nearby villages located within the 10 km radius buffer zone (If

	required)
1.	PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year
1.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours
1.	PP to take measure for installation of Renewable Energy sources in nearby area falling within 10 km radius
1.	Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.
1.	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.
statutory compliance	
1.	The maximum production or peak production at any given time shall not exceed the limit as prescribed in the EC.
1.	All the conditions stipulated in previous Environment Clearance conditions should be strictly complied within certain timeline
1.	Validity of Environment Clearance is as per life of the mine mentioned in EC letter or 30 years as per EIA Notification, 2006 and its amendments therein
1.	Permission of power supply to be taken from the concerned authority for meeting power demand of the project site.
1.	Solid hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.
1.	The project proponent shall obtain the necessary permission from the Central Ground Water Authority
1.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee prior to start-commencement of mining operations/production
1.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. TThe implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
1.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1980, in case of the diversion of forest land for non-forest purpose involved in the project.
water quality monitoring and mitigation measures	
1.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
1.	The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.
1.	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012/1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
1.	No obselete technologies for sewage treatment shall be implemented. Construction of Sewage Treatment Plant with latest technology should be completed within 2 years and treated water shall be reused for plantation. CTE and CTO of STP shall be obtained as per the norms.
1.	Domestic water shall be providing to the residents villages which are coming under the zone of influence of the project due to ground water extraction and mining operation by installing adequate number of RO plants with proper supply line and Taps within 2 years
1.	Quality of polluted water generated from the operations which include COD and acid mine drainage and metal contamination shall be monitored along with TDS, DO, TSS. The monitored data shall be uploaded on the website of the company as well as displayed at the site in public domain.
1.	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A riverine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.
1.	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
1.	The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.
1.	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to

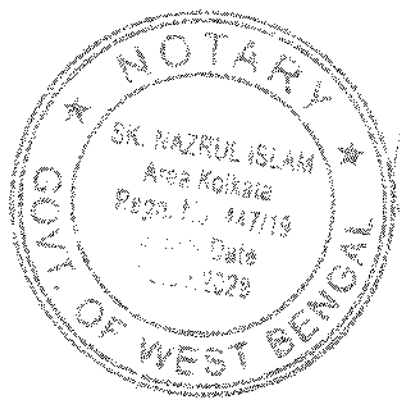
	time. Adequate ETP /STP needs to be provided.
1.	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).
1.	Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.
1.	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
1.	Monitoring of water quality upstream and downstream of river including pons, lakes, tanks shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.

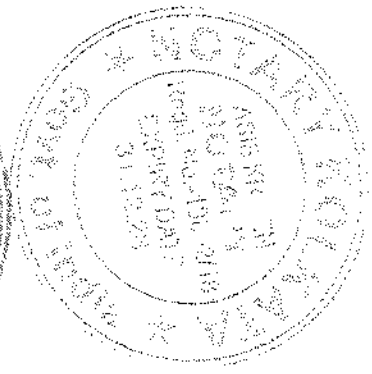
4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Dr Sharad Singh Negi	Chairman, EAC	sha**********@gmail.com	Present
2	Sh Inder Pal Singh Matharu IFS	Member (EAC)	mat*******@gmail.com	Absent
3	Sh Lalit Kapur	Member (EAC)	lka*********@yahoo.com	Present
4	Dr Umesh Jagannathrao Kahalekar	Member (EAC)	uka*******@rediffmail.com	Present
5	Dr Santoshkumar Hampannavar	Member (EAC)	san**********@yahoo.com	Present (through VC)
6	Sh Savalge Chandrasekhar	Member (EAC)	sav*****@gmail.com	Present (through VC)
7	Shri K B Biswas	Member (EAC)	bis*********@gmail.com	Present (through VC)
8	Prof Shyam Shanker Singh	Member (EAC)	sin********@gmail.com	Absent
9	Dr Vinod Agrawal	Member (EAC)	vin*****@yahoo.com	Present
10	Dr Nazimuddin	Member (EAC)	naz*******@nic.in	Present (through VC)
11	Shri Mahi Pal Singh	Member (EAC)	mps********@nic.in	Present (through VC)
12	Shri Harmeet Sahaney	Member (EAC)	hs**********@imd.gov.in	Absent
13	Prof R M Bhattacharjee	Member (EAC)	rmb**********@iitism.ac.in	Present (through VC)
14	Amit Vashishtha	Scientist E	amit**********@nic.in	Present





MINUTES OF 6th MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR ENVIRONMENT APPRAISAL OF COAL MINING PROJECTS HELD DURING 17th& 18th JANUARY, 2024 THROUGH HYBRID MODE.

Confirmation of the Minutes of 5thMeeting of the EAC (Coal): The minutes of the 5th Meeting of the EAC (Coal) held during 21st& 22nd December 2023 has been confirmed by the Chairman with the following corrections.

Agenda No: 5.13 (5th EAC Meeting held during 21-22 December, 2023)

Para as per MoM *"Further, the Committee recommended to extend the timeline till 31.07.2024 subject to the submission of Action taken report on progress of works before 31st July, 2023 and compliance to EC conditions. Subsequently, the EAC will review the proposal in entirety in month of June/July 2024 and now at this stage, the Committee proposed the condition of Environmental clearance condition no. 2A(ix), which shall be read as:*

The coal shall be transported through closed belt conveyor system of a length of 13 km to Banadag railway station till 31st July, 2024 to use Service road for transportation of coal to Banadag railway siding by adopting all mitigative measure to control dust pollution." subject to further directions of Hon'ble Supreme Court in the matter and Certified Compliance Report (CCR) from the IRO for the Amendment of Environmental Clearance (EC) and their respective Action taken report by June, 2024."

Committee is of the view that timeline for submission of action taken report shall be read as 31st July 2024 in place of 31st July, 2023. Further, the above condition shall be read as "The coal shall be transported through closed belt conveyor system of a length of 13 km to Banadag railway station and till 31st July, 2024 Project Proponent is permitted to use Service road/State Highways for transportation of coal to Banadag railway siding by adopting all mitigative measures to control dust pollution *subject to further directions of Hon'ble Supreme Court in the matter and Certified Compliance Report (CCR) from the IRO for the Amendment of Environmental Clearance (EC) and their respective Action taken report by June, 2024."*

Agenda Item 3.14 (3rd EAC Meeting held on 16-17 November, 2023)

The Committee is of the view that specific condition no 1 i.e "PP should complete the work of in-pit Belt conveyor system with CHP and Silo loading system till December, 2024 and accordingly, SPCB shall grant CTO for road transportation after December, 2024." Shall be read as:

"PP should complete the work of in-pit Belt conveyor system with CHP and Silo loading system till October, 2024 and accordingly, SPCB shall grant CTO for road transportation after October, 2024."

Opening Remarks of the Chairman: At the outset, the Chairman welcomed the Expert members & other participants and requested to start the proceeding as per the agenda adopted for this meeting.

Consideration of Proposals: The 6th meeting of the Expert Appraisal Committee (EAC) for coal mining projects was held on 17th& 18th January, 2024 through Hybrid mode. The EAC considered proposals as per agenda adopted for the meeting incorporated for discussion with chair. List of

participant attended the meeting is annexed. The details of deliberations held & decisions taken in the meeting are as under.

Agenda No 6.1

Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) – Reconsideration for Environmental Clearance – reg.

[Proposal No. IA/OR/CMIN/445297/2023; File No. IA-J-11015/72/2021- IA-II(M)]

6.1.1 The proposal is for Environmental Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha).

The mine area is a part of the Survey of India Topo Sheet No. F45S13 & F45T1 bounded by Latitude 20° 55' 56.225" N and 20° 58' 47.344" N and longitudes 84° 58' 42.383" E and 85° 0' 50.476" E. The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006.

The PP has obtained Terms of Reference (ToR) vide letter no. J-11015/70/2021-IA. II(M) dated 22.11.2021 and Amendment in ToR vide letter dated **28.02.2022**. Mining Plan for coal mine has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Excl/2023/13262 dt- **13.05.2023**. Environmental Baseline data was generated in the Post-Monsoon Season from **Oct to Dec 2022**. The advertisement for Public Hearing was published on 25/07/2023 in Times of India & The Sambad newspaper and PH was conducted on 25.08.2023 under the Chairmanship of Shree Pratap Pritimaya, O.A.S. (S) ADM, Angul. PP after preparation of EIA/EMP report applied for EC and the proposal was placed in EAC meeting held on 16-17 November, 2023 wherein the Committee deferred the proposal for want of requisite information. The PP submitted the information and the proposal is now placed in 5th EAC meeting.

6.1.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.1.2.1 **Location of Project:**

(i) The Subhadra Open Cast Coal Mine of MCL is located in Kankarei, Pirakhaman, Balichandrapur, Raijharan, Kaunsidhipa, Golagadia, Chhotabereni, Kumunda, Bhalugadia, Baghuabol villages and Jaipur RF Tehsil Talcher and Chhendipada, District Angul (Odisha).

(ii) The project area is covered under Survey of India Topo sheet No. F45S13 & F45T1 (RF

1:50000) and is bounded by the geographical coordinates ranging from 20°55'56.225" N and 20°58'47.344" N and longitudes84°58'42.383" E and 85°0'50.476" E. The DGPS coordinates of the ML area are given in Table 2.1 of EIA Report.

(iii) Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13thJanuary, 2010 has imposed moratorium on grant of Environment Clearance.

(iv) There are no National Parks, eco-sensitive Zones, within 10 km radius.

6.1.2.2: Mining Lease: The Utkal A (Subhadra) Coal Mine has been allotted by Ministry of Coal vide order no NA-103/1/2021-NA dated 18.11.2021.

6.1.2.3: Forest Area: 125.24ha (Reserve Forest Land: 0.75 ha, Govt. Revenue Forest area: 124.49 ha) of forest land have been reported to be involved in the project. Applications for Forest Clearance was submitted vide Proposal No. FP/OR/MIN/150133/2021 dt. 25.01.2022. Stage I FC has been recommended in the FAC meeting held on 20.10.2023. Stage I FC has been granted vide letter no -8-06/2023-FC dated 05.12.2023.

6.1.2.4: Protected Area: There is no national park or wildlife sanctuary within the study area. However, due to presence of Schedule-I Fauna application submitted to DFO, Angul for approval of site specific wild life management plan.

6.1.2.5: Mining Plan: Mining plan (including Progressive Mine closure plan) has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Excl/2023/13262 dt- 13.05.2023.

6.1.2.6: Method of Mining: Method of mining will be Open Cast Mechanized Mining. With due consideration to geo-mining characteristics of the deposit, the mine is proposed to be worked by shovel-dumper combination for OB excavation and Surface Miner for coal winning and loading by Front End Loader.

(i) **LAND USE DETAILS OF MINE**

Pre-mining land use details

S. No	Type of Land	Within ML Area (Area in Ha.)	Outsice ML Area (Area in Ha)	Total (Area in Ha)
1.	Agricultural	800.50	Nil	800.50
2.	Forest	125.24	Nil	125.24
3.	Wasteland	NA	NA	NA
4.	Grazing land	58.67	Nil	58.67
5.	Water bodies	6.28	Nil	6.28

6.	Settlements	NA	NA	NA
7.	Others (Specify)			
8.	Old Excavation Area (East Quarry)	NA	NA	NA
9.	Old Excavation Area (West Quarry)	NA	NA	NA
10.	Old OB Dumps	NA	NA	NA
11.	Roads	0.25	Nil	0.25
12.	R & R Colony	NA	NA	NA
13.	Staff Colony	NA	NA	NA
14.	Green Belt	NA	NA	NA
15.	Balance Area	NA	NA	NA
16.	Barren land**	92.64	Nil	92.64
17.	Township**	Nil	Nil	Nil
18.	Community/others use area**	28.27	Nil	28.27
19.	Total Project Area	1111.85	Nil	1111.85

** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Barren land of 92.64, Community/others use area of 28.27 Ha.)

Post Mining

S. No.	Land Use	Land Use (End of Life)	Land Use (ha)				
			Plantation	Water Body	Public use	Undisturbed	Total
1.	External OB Dump	24.17	0	0	0	0	24.17
2.	Top Soil Dump	8.97	0	0	0	0	8.97
3.	Excavation	881.28	0	0	0	0	

4.	Roads, buildings Infrastructure	Roads: 15.72	0	0	15.72	0	118.16
		Township: 27.12	1.26	0	25.86	0	
		Infra: 75.32	0	0	0	0	
5.	Green Belt	6.89	0	0	0	0	6.89
6.	Undisturbed Area	0	0	0	0	0	0
7.	Safety Zone	11.79	11.79	0	0	0	11.79
8.	Rationalization Area	25.34	25.34	0	0	0	25.34
9.	Diversion / Below River / Nala /Canal	8.42	0	0	8.42	0	8.42
10.	Water Harvesting	35.36	0	35.36	0	0	35.36
11.	Staff Colony		0	0	0	0	
12.	Backfilled Area**	715.24	182.52	0	0	0	715.24
13.	Excavated Void Without Plantation**	130.68	0	0	0	0	130.68
14.	Coal Stock Yard**	9.76	0	0	0	0	9.76
15.	Embankment**	11.49	0	0	11.49	0	11.49
16.	Explosive Magazine**	5.58	0	0	0	0	5.58
	Total Area	**1111.85**	**220.91**	**35.36**	**61.49**	**0**	**1111.85**

**** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Backfilled Area of 715.24Ha., Excavated Void without Plantation of 130.68 Ha., Coal Stock Yard of 9.76 Ha., Embankment of 11.49 Ha., and Explosive Magazine of 5.58 Ha.)**

(ii) Total Geological Reserve reported in the mine lease area is 1142.67MT with 790.95MT Mineable Reserves by opencast mining. Out of total mineable reserve of 790.95MT,768.83 MT are available for extraction. Percent of extraction is 67%.

(iii) Thickness of seams to be worked on: Opencast mining method is proposed for extraction of coal seam XI to IID. The effective thickness of the seams XI to IID is varying from 0.06m to 75.90m.

(iv) Grade of coal: Wt. Avg. G-13 (GCV – 3690 Kcal/Kg)

(v) Stripping Ratio: Only In-situ: 0.80 With Re-handling: 0.93.

(vi) Average gradient: - 3.48°(1 in 16.44)

(vii) Maximum thickness of seams: Seam XI to IID varies from 0.06m to 75.90 m

(viii) The project has 1 external OB dumps (temporary) in an area of 24.17 ha with 88m height and103.72Mm^3 of OB.1 internal OB dump in an area of 715.24ha with 613.18 Mm^3 (Insitu) 103.72 Mm^3 (Re handling) of material is envisaged in the project.

(ix) Total quarry area is 881.52 ha out of which backfilling will be done in 715.24 ha up to 30m while final mine void will be created in an area of 130.68 ha with a depth of 160 m RL and 35.36 ha water body. Backfilled quarry area 182.52 ha shall be reclaimed with plantation, 495.27 ha agriculture land and 37.45 ha will be returned as forest land.

(x) **TRANSPORTATION OF COAL**

Transportation of coal:

- **In pit:** Initially through Dumper and in Pit Conveyor after few years.
- **Surface to siding:** From surface hopper (20 No.) by belt conveyor (18 Nos.)
- **Siding to loading:** Through two Rapid Loading System (RLS) (02 Nos)

  Capacity 5000tonne each
- **Quantity being transported by Road/Rail/Conveyor:** As per approved mining plan
- Transportation will be carried out as per Approved Mining Plan.

(xi) Reclamation has been planned in an area of 965.45ha, comprising of 538.17 ha Agricultural use, 220.91 ha Plantation, 35.36 ha Water Body& 125.24 ha Forest Land return Area, Nala diversion, Township &Embankment. &130.68 ha of final void area will be left unplanted.

(xii) Life of mine is 36 Years (including 2 Year of construction)

(xiii) Coal linkage - The mine has been allotted to MCL by the Ministry of Coal vide order no NA-103/1/2021-NA dated 18.11.2021. There shall be no restriction to carry on mining operations for own consumption, sale or for any other purpose.

6.1.2.7: Baseline Data Generation:

The Primary baseline data for specific micro–meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Post Monsoon season i.e. October to December, 2017. The monitoring results of ambient air, surface water, soil, ambient noise and ground water for the month of October 2022-December 2022. Baseline interpretation is given below:

Period	October to December 2021
AAQ parameters at 8 locations (min.	• PM_{10} = 51.2 to 74.6 µg/m^3 • $PM_{2.5}$ = 28.1 to 51.9 µg/m^3

& Max.)	• SO_2 = 21.2 to 46.9µg/m^3 • NOx = 20.5 to 41.2 µg/m^3. • CO =0.5 to 1.19 mg/m^3 • O_3 = 15.1 to 29.6 µg/m^3. • NH_3 = 25.2 to 39.1 µg/m^3.
Incremental GLC Level	• PM_{10} = Max. GLC -15.6168 µg/m^3 • $PM_{2.5}$ = Max GLC- 8.9239 µg/m^3 • SO_2 = Max GLC- 0.44623 µg/m^3 • NOx = Max GLC- 0.33468 µg/m^3 • CO = Max GLC- 0.000223 mg/m^3
Ground Water quality at 8 locations	pH: 7.54 to 7.93; Total Hardness: 215.26 to 329.43 mg/L; TDS: 225 to 300 mg/L; Chloride:56.84 mg/l to 79.24 mg/l etc. are found within the permissible limits. Heavy metals such as Lead, Arsenic etc. are BDL at all the locations.
Surface water quality at 8 locations	pH:7.39 to 7.82; Total Hardness: 186.25 to 493 mg/L; TDS 240 to 899 mg/L; DO: – 5.6 mg/l to 6.7 mg/l.; COD: 21-73 mg/l ; BOD: 2.4-24 mg/l
Noise levels Leq (Day & Night) at 8 Locations	The Leq values for day time was observed to be 49.88 to 54.06 dB (A) in residential area, while during night time 40.34 to 43.96 dB (A). The Leq values for day time and night time at industrial area was 69.5 and 64.52 dB (A).
Soil Quality at 8 Locations	pH: 7.31 to 7.56; Organic matter: 0.76% to 0.88%; Available Nitrogen: 152.66 to 192.18 kg/ha etc. are found within the permissible limits.
Flora & Fauna	12 No. of Schedule –I species (as per WLPA amendment 2022) and 27 No. of Schedule –I species (as per WLPA amendment 2022) have been reported. Some of the sensitive Schedule-1 fauna include Elephas maximus indicus, Manis crassicaudata, Melursus ursinus, Panthera pardus, Bos gaurus and Python molurus. Site-specific wildlife conservation plan has been submitted to the DFO-Angul Forest Division on 23.09.2023 by MCL. A budget of Rs. 43.60 Crores has been allocated for WLCP.
Water Requirement	Domestic Water Requirement: 0.83 MLD; Industrial Requirement: 4.28MLD Total Water Requirement (Peak): 5.11 MLD Source: Bore Well and Mine Water & Singhada Jhor stream. However, initially till the mine is fully developed water requirement will be as follows: Domestic Requirement: 10 KLD

	Greenbelt requirement: 50 KLD Dust Suppression: 100 KLD. During initial period source of water are bore wells, dug wells, ponds and Singhada Jhor stream along north boundary. Later on, industrial water demand will also be met from mine sump water. **NOC from CGWA for Ground water withdrawal obtained vide NOC no-CGWA/NOC/MIN/ORIG/2023/19706 dated – 27.12.2023.**

6.1.2.8: Public Hearing & Related Issues

Public hearing for the project of 25 MTPA capacity in an area of 1111.85ha was conducted on 25.08.2023 at Ground near Pirakhaman Primary school under Kankarei gram Panchayat of Chhendipada Tehsil of Angul District under the Chairmanship of Shree Pratap Pritimaya, O.A.S. (S) ADM, Angul. Major issues raised in the Public Hearing & appropriate action to address the issues raised in the Public Hearing have already been taken/ proposed to be taken are given in the action plan prepared and mentioned in Chapter -7 in Final EIA/EMP report. The PP initially proposed a budget of Rs 1010 Lakh to address the issues raised during PH. *The proposal was considered in EAC meeting held on EAC meeting held on 16-17 November, 2023 wherein EAC deferred the proposal and asked the PP to submit the activity-wise public hearing budget (with capital and recurring cost) by complying all issues recorded in the Minutes of Public Hearing, particularly with respect to health issues. In reply of which the Budget for Public Hearing has been revised to Rs 1235 Lakhs as per the EAC observation, particularly providing more emphasis on Health care (vaccination, health awareness camp, mobile health camp, Immunization, providing medicine etc.).*

Revised Public Hearing Budget

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year-2	Year-3	Year-4	Year-5	Total
Air & Water Pollution control measures	Different measures to control Air pollution/Water Pollution like utilization of water sprinklers,	Kosala village (NW), Sandhapal (NW) Natada (E), Ambapal (E)	80	80	80	80	80	400

NOTARY SK. NAZRUL ISLAM Area Kosala Regn. No. 64719 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

NOTARY ASIS KR. SEN Regd. No. 194 Expiry Date 31.12.25 GOVT. OF INDIA

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year-2	Year-3	Year-4	Year-5	Total
	fixed sprinklers, fog canon etc.							
Infrastructure development	Construction of Road, School, Solar Street lights supply, Cremation ground etc.	Villages - Kusumpal, Mallibandh, Ambapal,	50	50	50	50	50	250
Plantation	Plantation - Avenue & Community etc.	Kankarei, Pirakhamana, Raijharan, Balichandrapur	5	5	5	10	10	35
Healthcare	Health Care and vaccination, awareness camp, mobile medical camp, Immunization, medicine etc.	Health centres -Angul DHH, Kosala CHC, Chhendipada CHC, Mandapada PHC Villages - Nisha, Kosala, Raijharan, Balichandrapur, Sandhapal	50	50	50	50	50	250
Water & Sanitation	Drinking Water Supply and Construction of wells, ponds, hand	Village - Kumunda, Ambapal, Natada,	30	30	30	30	30	150

NOTARY SK. NAZRUL ISLAM Alipore Kolkata Regd. No. 647/18 Expiry Date 16.03.2023 GOVT. OF WEST BENGAL

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year-2	Year-3	Year-4	Year-5	Total
	pumps and tube wells							
Education & Livelihood Generation	Skill Development Training, Support to schools and other educational institutions	Kankarei High School, Kosala High School, Raijharan High School	30	30	30	30	30	150
Total			245	245	245	250	250	1235

6.1.2.9: Other Details:

(i) **Court Cases:** No court cases, violation cases are pending against the project of the PP.

(ii) **Violation:** The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder **since it is a Greenfield project.**

(iii) **R&R:** Out of the total area of 1111.85 hectares of land to be acquired for the project 696.95 hectares are private land and the remaining areas are Government and Forest lands. While the acquisition of private land has a direct bearing on the personal social and economic status of the land owners. About 1853 families have been identified for displacement due to Subhadra OCP. The R & R benefits will be provided as per norms under R& R policy-2006 of Government of Odisha.

6.1.2.10: Benefit of the Project:

(i) Employment Generation-Proposed coal mine shall provide an opportunity of direct employment to 2108 persons and total indirect employment of approx. 5000 persons.

(ii) The project is reported to be beneficial in terms of energy security for the development of country.

(iii) Total cost of the project is Rs. 3955.65 Crore. Cost of production is Rs 678per tonne. Fund for the CSR will be allocated based on 2% of the average net profit of the Company for the three immediately preceding financial years or Rs. 2.0 per tonne of coal production of previous year whichever is higher. Different peripheral development and community development works will be taken up. R&R cost – 405.46Crore. Environment Management Cost was: Capital Rs1205Lakh;

&Recurring Rs. 178 Lakh. Now the cost has been revised and increased Environment Management Cost - Capital Rs 1605 Lakh; & Recurring Rs. 182 Lakh, Total – Rs. 8157 Lakhs.

6.1.3 Earlier the proposal was considered in the 3rd EAC meeting held during 16-17 November, 2023 wherein the committee has deferred the proposal and asked to submit the observation. The PP has submitted the reply on Parivesh portal vide letter dated 30.12.2023 and as mentioned below:

S.No.	Observation of EAC	Reply by PP
1.	Project proponent to submit the status of all necessary approvals pending at different stages including status of FC involved in total ML area of 1111.85 ha.	The status of different approvals obtained or are in process of approval are given below: Mining Plan & Mine Closure Plan: Mining Plan & Mine Closure Plan approved by MCL Board on its 235th Meeting dated 29.05.2021 communicated vide letter dated 07.06.2021. Mining Plan & Mine Closure Plan (Modification-1) approved by MCL Board on its 242nd meeting dated 24.12.2021 communicated vide letter dated 13.01.2022. Mining Plan & Mine Closure Plan (Minor Modification) approved by MCL Board on its 257th Meeting dated 24.04.2023 communicated vide letter dated 13.05.2023. Forest Clearance: Forest Diversion proposal has been applied vide Proposal No. FP/OR/MIN/150133/2021 dated 25th January 2022. The proposal has been recommended by the FAC on dated 20.10.2023 for Stage –I Clearance. Stage –I Clearance has been issued vide letter no. 8-06/2023-FC dated 05.12.2023. Land Acquisition: Total area involved in Subhadra OCP is 1111.85 Ha. The land is being acquired under the Coal Bearing Areas (Acquisition & Development) Act, 1957. The Central Govt. has vested rights of the land with Mahanadi Coalfields Limited through different Gazette notifications under Sec 11(1) of the same Act.

		The dates of publication of Notifications u/s 11 (1) of CBA Act 1957 for entire 1111.85 Ha. of land along with copies of such notifications have been submitted to the Members in reply to the ADS. Explosive Magazine: The design and drawings of Explosive Magazine has been approved by the Petroleum & Explosives Safety Organisation, Ministry of Commerce & Industries, Govt. of India on 08.11.2023. NoC for Ground water from CGWA: The Central Ground Water Authority (CGWA), Ministry of Jal Shakti, Govt of India has issued the No Objection Certificate (NOC) for drawl of ground water for Subhadra OCP on dated 27.12.2023 which is valid till 26.12.2025. Nala Diversion: Ghurudia Nala, Masania Nala and Singhada Jhor Nala flows within the Mine boundary of Subhadra OCP. These seasonal nalas are required to be diverted to commence/carry out mining operations. Specific ToR Conditions (v) stipulated for a detailed hydrological survey of these nalas /Stream, regarding its catchment area, flow volume and length of the stretch to be diverted. Accordingly, the hydrological survey was carried out. Nala Diversion Channel Report with design and drawing was submitted to Dept. of Water Resources, Govt of Odisha on 24.03.2023 for grant of approval. Joint field inspection involving Technical Experts of various branches of Water Resources Dept. like Irrigation, Mega-lift Irrigation, Minor Irrigation, Lift Irrigation of Angul was completed on 06.06.2023 and report has been submitted to Engineer-In-Chief, DoWR, Govt of Odisha for consideration of diversion proposal. Approval from DoWR, Govt. of Odisha is awaited.

2.	PP shall submit the R&R approval from the concerned District Administration along with their preparedness.	The R&R Plan of MCL is prepared and implemented for all the operating mines and projects of MCL & not for a specific/single project. All the provisions / components and equivalent monetary benefits of R&R Plan of MCL is in compliance to provisions laid down in Odisha Resettlement and Rehabilitation Policy 2006. As per provision laid down under Para 16 of the said Policy, the Government of Odisha constitutes the Rehabilitation- cum-Periphery Development Advisory Committee (RPDAC) for one project/ group of projects for approval, implementation and monitoring of R&R Plan. Para 7 of the Policy envisages that the Resettlement and Rehabilitation Plan shall be placed before the RPDAC for approval. Pursuant to Govt. of Odisha Notification No. 25092/R dated 06.07.2006. Revenue Divisional Commissioner (Northern Division, Sambalpur, Odisha) constituted the RPDAC for all projects of MCL in Angul district vide his letter no.2321 dated 02.11.2006. The 1st RPDAC meeting of MCL was held on 07.11.2006 decided that the provisions of ORRP 2006 in toto would be considered as the approved R&R Plan for all the new projects of MCL in Angul district for which 4(1) of LA Act 1894 and /or 9 (1) of CBA Act 1957 would be published after 14.05.2006 i.e. the date when Odisha Resettlement and Rehabilitation Policy 2006 came into force. The MCL approved R&R Plan for Subhadra OCP dated 19.01.2023 is in compliance with the 8th biennial revision of ORRP 2006 dated 17.10.2022 in conformity to decisions taken in the 1st RPDAC meeting of MCL held on 07.11.2006. The Rehabilitation grants in monetary terms as per R&R Plan of Subhadra OCP vis-à-vis ORRP 2006 is given below:

Component	ORRP 2006 up to 8th Biennial Revision	MCL vetted R&R plan dated 19.01.2023

			dated 17.10.2022	
		Provision of Employment or One-time Cash Compensation in lieu of employment or Annuity in lieu of employment/Financial Assistance	Yes	01 member of Displaced Family of 02 categories (Category i&ii as per ORRP 2006)
			Rs.10,41,550/- per Family for Category i & goes diminishing to Rs.1,82,000/- for Category vi (Applicable to all Affected Families)	Rs.16,00,000 to Category i &ii
			No	Rs.21,000/- per month per PDF (Category I & II) with Biennial Increment of Rs.1000
		Home-stead Land or Cash in lieu of land	Ac.0.10 or Rs.1,04,155 per PDF	Rs.6,00,000 per PDF
		House Building Assistance	Rs. 3,12,465 per PDF	Rs. 3,12,465 per PDF
		Assistance for Temporary Shed	Rs.20,831 per PDF	Rs.20,831 per PDF
		Maintenance Allowance or Subsistence grant for	Rs.4166 per month per	Rs.49,992/(@Rs.4166/ month/PDF upto period of 1 yr)

displaced families for a period of one year	PDF for 1 year	
Transportation cost for PDFs	Rs.4166 per PDF	Rs.4166 per PDF

It is evident that the approved R&R Plan of MCL is providing higher benefits in terms of monetary grants wrt to cash compensation in lieu of employment/ in lieu of homestead plot compared to ORRP 2006.

Moreover, MCL provides Special Incentive amounting Rs. 10.00 Lakhs per PDF if the entire village gets shifted at once and go for self -relocation, which is beyond the stipulated provisions of ORRP 2006.

As stated above, the above provisions of the R&R Plan which is applicable for all projects of MCL in Angul district has been approved in different RPDAC meetings chaired by RDC (ND), Sambalpur and Collector, Angul as Convenor.

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3.	PP shall submit the compliance of ToR condition no. xi, xii, xx, xxi, xxvi, xxx and Amended ToR no. (iv) & (vii) and (xxvii).	PP has submitted the point wise compliance to the ToR conditions and enclosed the same.
4.	PP shall provide details of the alternate land w.r.t grazing land and water bodies as per premining activity land use (as per ToR condition viii).	Subhadra OCP is surrounded by Hingula, Balaram Opencast Coal Project and Nisha RF at the eastern side, Balabhdra, Balabhdra Extension and Ramachandi Coal Block at northern side, Utkal B1, Utkal B2 & Utkal C at western side, JSPL Power Plant and Durgapur RF at southern side. Besides, there are a number of coal blocks existing surrounding Subhadra OCP. A vicinity map is presented in the next slide. Except southern and far-eastern side of Subhadra OCP the entire area in the vicinity is coal bearing area. Almost all the villages in the surrounding areas of Subhadra OCP are going to displaced eventually. There is no land available for grazing within 5 km of Subhadra OCP, both in Chhendipada and Talcher Tehsil. A letter from Angul Dist. Administration, intimating the above facts has been obtained certifying the above fact. Apart from Rs. 6 Lakhs/ PDF cash compensation in lieu of homestead plot in R&R Colony, MCL is providing additional incentive of Rs. 10 Lakhs/PDF once the entire village gets self-relocated. As a result, the villagers within the mine boundary of Subhadra OCP are eager for self-relocation elsewhere because of the lucrative R&R benefits provided by MCL. Therefore, there is no planning to establish R&R Colony. In view of the above, there exists less probability of requirement of grazing land and water body for the community to be displaced for the Project. Besides, MCL shall provide alternate grazing land as per pre-mining land use in the backfilled areas of its existing mines of MCL by improving the soil condition and re-grassing the backfilled area.
5.	PP shall provide adequate details w.r.t. mitigation measures by changing	There are 03 nallahs that are passing through the proposed lease area, which are given below:

	catchment area hydrology from stream diversion and submit the protection measures of south nala which is proposed for diversion in 15 years by leaving 100 mts distance.	Ghurudia Nallah and its tributaries are passing over the proposed excavation area for mining from south-west to north-east direction to finally discharge to Singhada Jhor Nallah at north-eastern side of the mine boundary. Similarly, Masania Jhor Nallah enters at east side of mine boundary passing over the proposed excavation area for mining and flows in south-west and north-easterly direction to merge with Singhada Jhor Nallah at north-eastern side of the mine boundary. Whereas, Singhada Jhor Nallah flows along the northern side of the mine boundary. Ghurudia Nallah is bisecting the lease area and necessitates diversion to have sustainable mining operations. Ghurudia Nallah and its tributary at south which may be termed as south nallah as well as Masania Jhor Nallah from its entry point to the mining lease area of Subhadra OCP is required to be diverted before commencement of mining operation as a necessary pre-requisite to commence mining activities as per the approved Mine and Mine Closure Plan. Hence, it is proposed to divert Ghurudia Nallah & Masania Jhor Nallah from the entry point to the mine lease area by considering suitable hydrological change aspects has been enclosed.
6.	PP shall submit the adequate water conservation plan for water bodies lying inside and outside the ML area.	As per pre-mining land use, 6.28 ha of Water bodies are present within Mine Lease area. To augment ground water recharge MCL has identified 06 no. of ponds in different villages within 5 km area. The identified water bodies have a total area of 6.1 Ha and their combined annual recharge potential is ~ 71802 m3/year. These water bodies will be adopted by MCL and maintained for ground water recharge. A Budget of Rs. 28 lakhs has been kept for conservation of pond by implementing different activities. A detail action plan for water conservation along with budgetary provision is attached in the next slide.

Waste water recycling after due treatment will be undertaken to enable conservation of water. Storage of conserved water in mine pits will be given due emphasis to provide water round the year and quality of water will be maintained before and after storage.

The rainwater collection and the seepage quantity will be pumped for usage. The rainwater collection in the mine pits would recharge in and around the mine pits. In order to harvest the rainwater for ground water recharge, watershed-based runoff has been attempted covering the mine lease area. According to the availability of surface water, recharge structures have been recommended.

Moreover, as part of monsoon preparation every year there will be garland drains around the mine excavation area to avoid entry of surface run-offs into the mine pit. Finally, these surface run-offs will be part of natural drainage.

SL. No.	Name of Ponds	Latitude	Longitude	Area (m2)	Avg. Depth (m)	Volume (m3)	Catchment Area (m2)
1	Kumunda 1	20.977108	85.025407	3778	2.5	9445	155153
2	Kumunda 2	20.976208	85.022746	18234	2.5	45585	292358
3	Kumunda 3	20.976304	85.021545	5968	2.5	14920	195593
4	Kumunda 4	20.97635	85.021548	12689	2.5	31722.5	172818
5	Malibandh	20.950179	85.01819	16320	2.5	40800	378829
6	Ampal	20.940402	85.047824	4026	2.5	10065	71147
Total				61015		152537.5	1265898

		Table: Activities with Budget for Pond Conservation Measures	
		Sl. No.	Physical Targets	Total Expenditure (Rs.)
		1.	Implementation of Brick lining with a Wharf platform at pond	6,00,000
		2.	Levelling and smoothing of bank of pond	2,00,000
		3.	Stabilization of earthen embankments with vegetative or rock riprap to avoid soil erosion and the inflow drainage channels with the stone revetment so as to avoid rapid seepage	3,00,000
		4.	Pond boundary will be provided with fence (temporary fencing)	4,00,000
		5.	Greenbelt development around the pond of 5 m width to preserve the pond	4,00,000
		6.	All the inflow drainage channel leading to pond will be provided with suitable silt barriers or sediment traps at suitable intervals for control of silt/waste	5,00,000
		7.	Construction of walkways, Temple and benches for visitors	4,00,000
			Total in Rs.	28,00,000
7.	Detailed Action Plan w.r.t. for completion of in-pit Belt-conveyor system and silo loading system till railway siding shall be submitted. Beside till construction of the same, PP to furnish adequate safety measures to be adopted for coal transportation through	Detailed Plan for implementation in form of CPM (Critical Path Method)/PERT (Program Evaluation Review Technique) chart for implementation of in-pit Belt-conveyor system and silo loading system till railway siding will be completed by FY 2027-28 has been enclosed. Transportation of coal to Balaram railway siding (15 Km distance) will be done by road till the commissioning of CHP/ RLS of Subhadra OCP.	

	road (as per ToR condition xiii & xvii)	The stretch of road is a part of coal corridor developed by MCL for coal transportation from adjoining Mines. No trucks or vehicles will be used for transportation of Coal by village roads or roads located near to the villages. The proposed Subhadra Railway Siding will eventually be connected to the MCRL Phase I which is a joint venture of MCL, IRCON International Ltd & Odisha Industrial Infrastructure Development Ltd. MCRL Phase I is completed & MCRL Phase II is presently under progress. Following mitigation measures are proposed for minimization of environmental impacts due to transportation of coal through roads: Developing a thick greenbelt along both sides of the road. Regular sprinkling of water on road. Tarpaulin covered trucks will be used to reduce air pollution. Wheel washing will be carried out at dedicated points. Implementation of speed locking mechanism to control the speed of the coal transportation trucks to minimize the generation of dust. Shoulders along the roads will be greened with grassing.
8.	PP shall social impact study for farmers being affected due to mining operation lying inside the ML area.	A Social Impact Assessment study was conducted to assess the socio-economic impacts on the project affected famers of 10 villages from which land has been acquired for the Subhadra OCP for Mahanadi Coalfields Limited (MCL), Angul, in the State of Odisha. Out of the total population of the 10 project affected villages, the number of affected families whose agricultural land is going to be acquired is about 1746, of which 636 i.e 36.42 % families of farmers will be affected from Chhotabereni village, 479 (27.43%) from Kaunsidhipa village, 271 (15.52%) from Kankarei and 154 (8.82%) families from Pirakhaman village. Village wise distribution of affected household including

families of Project Affected Farmers is describe in the table below:

Table - Village-wise distribution of Project Affected Farmers

Village name	No of Affected Household including Families	Percentage of Affected Household including extended Families (%)
Kankarei	271	15.52
Pirakhaman	154	8.82
Balichandrapur	8	0.45
Chhotabereni	636	36.42
Raijharan	117	6.70
Golagadia	25	1.43
Kaunsidhipa	479	27.43
Baghuabol	26	1.48
Kumunda	30	1.72
Total	1746	100.00

Details of the Agriculture Land Acquired for the Project

Out of the total area of 1111.85 hectares of land to be acquired for the project 696.95 hectares are private land and the remaining areas are Government land and Forest land.

Out of the total acquired land for the proposed project 58% land acquired under the project is private agriculture land.

Out of it 6.77 hectares are irrigated and 690.18 hectares including homestead lands are un-irrigated.

The Kharif crops grown in the area include paddy, maize, ground nut, Til, and vegetables like, brinjal, pointed gourd

		(parval), lady finder, pumpkin and early cauliflower. On the other hand, rabi crops include millet, maize, field pea, sunflower, safflower, ginger, potato, tomato, onion, garlic, coriander, etc. However, the major food grain of the area is considered as rice. Average Annual Income of Famers in the Project Affected Villages During the survey it was obtained that the maximum population of the farmers in the project affected villages have the average annual between 20,000-30,000 per month. While some population has the average income between 30,000-40,000 per month. Other information's has been enclosed.
9.	PP shall submit the detail revised EMP budget (with capital and recurring cost) by increasing the mitigation measures in order to reduce the air pollution and water pollution.	Originally expenditure for Environment Management Plan was planned for Rs 7613 Lakhs for the life of mine for Subhadra Coal Mine. As per observations and directions of the EAC the EMP has been revised and now has been increased from Rs 7613 Lakhs to Rs 8157 Lakhs (with capital and recurring cost). This represents a increase of 544 Lakh or 7.14% increase from the previous budget. Total Cost of the Project: Rs 3955.65 Crores Fund Provision for EMP: Capital Cost – Rs 1605 Lakhs, Recurring Cost – Rs 182 Lakhs Total – Rs 8,157 Lakhs (During the Life of Mine i.e. 36 Years) Annual Budget for Environmental Management Plan for Operation – Revised as per EAC Observation and enclosed.
10.	PP shall submit the activity-wise public hearing budget (with	The previous Public Hearing budget was fixed at Rs 1010 Lakhs. Now, the Budget for Public Hearing has been revised to Rs 1235 Lakhs, particularly providing more emphasis on

	capital and recurring cost) by complying all issues recorded in the Minutes of Public Hearing, particularly with respect to health issues.	Health care (vaccination, health awareness camp, mobile health camp, Immunization, providing medicine etc.) and Skill Development Programs. Air pollution control measures have been proposed in the EMP as well as CER, total budget being Rs. 6.95 crores. It is estimated that approximately 550 persons will be provided Skill Development Training in a phased manner in the following skills as per National Skill Development Center (NSDC) course list: Bee Keeping Dairy Farming Goat Farming Floriculturist Forest Nursery Raising Mushroom growing Auto Rickshaw Driving Beauty and Wellness Tailoring Installation Technician-Computer & peripherals Budget for Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local people as part of CERs has been enclosed.
11.	PP shall submit the Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local people as part of CERs. Further, air pollution mitigation plan shall be submitted till the villages are not	The previous Public Hearing budget was fixed at Rs 1010 Lakhs. Now, the Budget for Public Hearing has been revised to Rs 1235 Lakhs, particularly providing more emphasis on Health care (vaccination, health awareness camp, mobile health camp, Immunization, providing medicine etc.) and Skill Development Programs. Air pollution control measures have been proposed in the EMP as well as CER, total budget being Rs. 6.95 crores.

	displaced in the mine lease area.	It is estimated that approximately 550 persons will be provided Skill Development Training in a phased manner in the following skills as per National Skill Development Center (NSDC) course list: Bee Keeping Dairy Farming Goat Farming Floriculturist Forest Nursery Raising Mushroom growing Auto Rickshaw Driving Beauty and Wellness Tailoring Installation Technician-Computer & peripherals Budget for Skill development programs (SDP) aligned with National Skill Development Center (NSDC) for local people as part of CERs has been enclosed.
12.	As raised in public hearing, PP shall submit the proof of documents from State Forest Department that there is no human-elephant issue in the buffer and mine lease area. If so what is mitigation plan.	There is no elephant corridor present within 10 km radius of our project site. Certificate of PCCF is attached. The nearest elephant corridor is 18 km away from project site and the nearest elephant reserve is 24 km away. A wildlife conservation plan has been prepared and submitted to DFO Angul. A budget of Rs. 43.11 crores has been proposed for WLC, out of which 5.30 crores Rupees have been allocated to mitigate man – elephant conflict.
13.	PP shall submit details of Site-Specific Wildlife Conservation Plan and difference of schedule I	Site-specific wildlife conservation plan has been submitted to the DFO-Angul Forest Division on 23.09.2023 by MCL. Following are the salient features of the WLCP:

	species as in Wildlife Protection Act (WPA), 1972 and Amendment of WPA, 2022.	No national park/ wildlife sanctuary biosphere reserve, or eco-sensitive zone has been reported in the 10 km radius of the mine area. 12 No. of Schedule –I species (as per WLPA amendment 2022) have been reported, out of which 05 are mammals, 05 are reptiles and 02 are Aves in the core area. 25 No. of Schedule –I species (as per WLPA amendment 2022) have been reported, out of which 12 are mammals, 11 are reptiles and 02 are Aves in the buffer area. Some of the sensitive Schedule–I fauna include Elephas maximus indicus, Manis crassicaudata, Melursus ursinus, Panthera pardus, Bos gaurus and Python molurus. A budget of Rs. 43.60 Crores has been allocated for WLCP. MCL undertakes to bear the cost of the approved Site-Specific Wildlife Management Plan to be implemented by the State Forest Dept. by depositing the approved amount in CAMPA. Further, the flora and fauna list for the study area (Core zone with a 10 km radius buffer zone) has been duly prepared and authenticated by DFO, Angul. As per WLPA 1972, 11 No. of Schedule-I species are present however as per Amendment of WLPA 2022, 27 No. of species are present. The difference between Schedule-I Species as per WPA 1972 & Amendment of WPA 2022 has already been addressed while preparing the Wildlife Conservation Plan.
14.	PP shall submit the correct figures of the land usage pattern of the project during pre-mining and post-mining purpose.	The figures of the land usage pattern of the project during pre-mining and post-mining purpose has been depicted in the approved Mine and Mine Closure Plan. MCL affirms that the figures stated in the Mine and Mine Closure Plan is correct and true. The table has been enclosed.

6.1.4 Committee after deliberations noted the following:

i. Terms of Reference for instant greenfield opencast coal mine was granted on 22.11.2021 and their subsequent amendment in ToR on 28.02.2022.

ii. Mining plan (including Progressive Mine closure plan) has been approved by the MCL Board

vide letter no. MCL/SBP/CS/BD-257/Exct/2023/13262 dated 13.05.2023.

iii. 125.24 Ha of Forest land involved in the ML area of 1111.85 ha. Stage –I Forest Clearance has been obtained vide letter no. 8-06/2023-FC dated 05.12.2023.

iv. Life of mine is 36 years (including 2 year of construction).

v. The Central Ground Water Authority (CGWA) has issued No Objection Certificate (NOC) for withdrawal of ground water for Subhadra OCP dated 27.12.2023 which is valid till 26.12.2025.

vi. Public hearing was conducted on 25.08.2023 for the project of 25 MTPA capacity in ML area of 1111.85 ha. The issue raised during the PH involves R&R issues, plantation, air pollution control measures, construction of STP & ETP, CSR activities, medical facilities, land reclamation, health facilities, training & skill development, etc.

vii. Baseline data has been collected during the Period/ Season of October to December 2022 (Post-Monsoon).

viii. There is no protected area within the 10 km radius of the project.

ix. Proposal does not fall under violation category.

During the meeting the Committee deliberated on various issues related to project including issues raised during PH, EMP, Grazing land, plantation, transportation of mineral, water requirement, diversion of nallha. Mining lease area etc. Based on the deliberations committee asked the PP to submit the commitments made during the discussion. PP submitted the same vide letter dated 17.01.2024 and email dated 18.01.2024 wherein it has inter-alia mentioned that:

i. PP shall deploy electric vehicles and /or LNG/CNG vehicles to the extent of 50% of transportation fleet for evacuation of coal through road up to Balaram Siding (Approx. 11 KM) till commencement of rail evacuation system with CHP of Subhadra OCP which is likely to commence from the fourth year of mining operations. PP shall monitor the EV/LNG/CNG usage through installation of adequate number of CCTV cameras.

ii. PP submitted a revised water conservation plan with an increased budget of Rs. 1.00 crores (previously Rs. 28.00 lakhs). PP informed that revised plan is integrated with EMP and extend beyond the lease area. PP proposed to adopt 6 ponds in different villages and the details of the same with budgetary provision is as follows:

Table 2: Details of the Adopted Ponds

Sl. No.	Name of Ponds	Latitude	Longitude	Area (m2)	Depth (m)	Volume (m3)	Catchment Area (m2)
1	Kumunda 1	20.977168	85.022407	5795	2.5	9341	353161
2	Kumunda 2	20.976208	85.022746	18256	4.0	72930	392958
3	Kumunda 3	20.981886	85.020681	3965	5.7	23062	193593
4	Kumunda 4	20.976035	85.021548	12689	2.7	34260	172815
5	Mahisamuh	20.950379	85.031879	14820	4.0	58860	378826
6	Ampal	20.950402	85.047204	4026	3.1	12481	71147
	Total			61018		200193.5	1242668

Activities with Budget for Pond Conservation Measures

S. No	Activities	Physical Targets	Total Expenditure (Rs. Lakhs)
1	Conservation of Ponds	De-silitation of six ponds before monsoon	40.00
		Stabilization of earthen embankments with vegetative cover	20.00
		Silt barriers or sediment traps at suitable intervals for control of silt/waste	40.00
Total in Rs. Lakhs			100.00

iii. PP committed to develop greenbelt on approximately 38% of the lease area, i.e. 426.15 ha. This includes i) Progressive greenbelt development (Safety zone: 11.79 ha. will be developed as greenbelt within 01 year of commencement of mining operation & Backfilled and undisturbed areas: 209.12 ha in backfilled areas and undisturbed areas during the mining operation), ii) Forest restoration: Plantation will be carried out over 125.24 ha land and returned to forest department at the end of mining, iii) Greenbelt Development along Nallahs: A strip of 50 meters on both sides along diverted route of Gurudiah Nallah and Masania Nallah, and 50 meter in the southern side of Singhada Jhor Nallah, totalling around 80.00 ha will be developed as greenbelt within three years of nallah diversion. PP submitted that Native species like Siris, Neem, Palasa, Amaltas, Shisham, Amla, Jamun, Mango, Arjun, Karanja, Bija, etc. will be planted along with other species in consultation with the forest department. PP will ensure at least 70% survival rate carrying out gap plantation in case of mortality.

iv. PP submitted the updated EMP by including i) Fog cannon installation: to mitigate dust emissions, ii) Increased greenbelt development budget: aligned with the expanded plan and iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. The budget as per revised EMP is Rs 2995 Lakh (Capital) and Rs 201 Lakh (Recurring).

v. With respect to grazing land PP submitted that as per Govt. of Odisha, Revenue and Disaster Management Department circular no. 23629 dated 28.05.2008 issued by Commissioner cum Secretary to Government "...When the entire habitation of the village is going to be displaced due to land acquisition for establishment of industries, there seems to be no need for Gochar land in that village. In that case the Gochar land can be alienated in favour of IDCO or any agency.". PP also submitted that the entire habitation of concerned villages within the lease hold area of Subhadra OCP will be displaced. However, we will progressively develop grazing land within the mine site as per pre-mining land use.

vi. PP submitted that 35.36 ha water body will be left at the closure of mine as per the approved mine plan & mine closure plan of Subhadra OCP. The total depth of water body will be restricted to 30 meters. Safety measures like fencing, safety signage, etc. will be implemented to prevent any accidental situations.

vii. PP submitted that a minimal plastic waste (less than 1 ton per year) is anticipated from equipment packaging. This will be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. The Committee is of the view that in pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.

viii. PP submitted the revised budget to address the issues of PH by including the budget for construction of toilets. The revised budget is Rs 1235 Lakh.

ix. PP submitted that Wild life Conservation Plan has been submitted to DFO, Angul for approval with a budget of Rs. 43.60 Crores. PP undertake that they will bear any additional cost as approved by Chief Wildlife Warden, Odisha.

x. PP submitted that Ground water NOC has been granted by CGWA for 160 KLD domestic use through borewells and 1984 KLD from mine seepage/dewatering. In next few years, once the mine is fully operationalized, borewells for domestic use will be discontinued and all the water from mine seepage and mine pit with rainwater accumulation will be utilised. Water audit will be conducted on yearly basis by CGWA accredited water auditor and water requirement will be reduced as per the targets given to obtain water neutrality.

xi. PP submitted that Ministry of Coal vide allotment order no. NA-103/1/2021-NA dated 18.11.2021 has allocated this coal mine in favour of MCL. Annexure 1 part-A and part-B of the allotment order describe the details of Utkal-A and West of Gopalprasad West respectively. MCL has named Utkal-A and Western Part of Gopalprasad West as Subhadra Opencast Project vide their letter no. 539-H dated 26.9.2019. Total notified area U/s 11(1) of CBA (A&D) Act 1957 is 1558.4604 Ha. involving Utkal A and whole of Gopal Prasad Westout of which 1111.85 ha is acquired for Subhadra OCP. PP informed that in para 2.1.8 of the approved mining plan the mining lease area is mentioned as 1111.85 Ha. PP finally affirms to the fact that the total mining lease area of Subhadra OCP is 1111.85 Ha. PP also provided the justification for not executing a separate lease deed in pursuant to Section 10 &11 of CB(A&D),Act 1957.

In addition to above, the Committee noted that total 03 nos. of nallahs pass through the ML area i.e. Ghurudia Nallah, Singhada Jhor Nallah and Masania Jhor Nallah. Committee asked the PP to protect the Singhada Jhor Nallah and Masania Jhor Nallah for the next five years from the commencement of mining operations. For the Diversion of Ghurudia Nallah, PP shall obtain permission from the concerned state department. The diverted Nallah should be supported by width of atleast 50m thick plantation.

The Committee after deliberations observed that the instant proposal is a Greenfield Opencast coal mine project. PP had obtained ToR and amendment of ToR vide letter dated 22.11.2021 & 28.02.2022 respectively, followed by Public Hearing conducted on 25.08.2023. The baseline data has been collected during the Period/Season of October to December 2022. Committee has obtained satisfactory reply w.r.t. the query raised in the previous EAC meeting and information submitted by PP vide letter dated 17.01.2024 and email dated 18.01.2024, with respect to issues raised during the meeting.

Based on the above discussions held in the EAC meeting, the EAC recommended the Environmental

Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) with the following specific conditions and standard conditions under the provisions of EIA Notification, 2006 and its amendments:

1) *Any activity of the forest land shall only be carried out after obtaining necessary forest clearance.*

2) *PP to obtain the CTO for 25 MTPA (peak) capacity after grant of EC.*

3) *PP shall deploy electric vehicles to the extent of 50% of transportation fleet for evacuation of coal through road up to Balaram Siding (Approx. 11 KM) till commencement of rail evacuation system with CHP of Subhadra OCP which is likely to commence from the fourth year of mining operations. PP shall monitor the EV usage through installation of adequate number of CCTV cameras. Till such time transportation from a dedicated road and village road shall not be used for the same.*

4) *PP shall adopt 6 ponds outside the lease area in different village and carry out the various activities for their protection and maintenance as proposed in the plan submitted for the same to Ministry The budget earmarked for water conservation plan for these ponds is Rs. 1.00 crores shall be kept in a spate account and audited annually. PP while submitting the compliance report to Regional Office and on Parivesh Portal as the case may be also submit evidence of implementation of the plan including geo tagged photographs.*

5) *PP shall develop greenbelt on approximately 38% of the lease area, i.e. on 426.15 ha of land as proposed in the plantation plan submitted to the Ministry and maintain a survival rate of at least 70% (after 10 years of the plantation) by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year. Third party monitoring of the plantation shall be done preferably by an institution of MoEFCC (eg ICFRE).*

6) *PP shall maintain atleast10 mtrs width tree plantation of broad leaved species and wind break/greenshield of about 10 mts height along the boundary of coal storage yard.*

7) *PP shall implement the activities-wise proposed to address the issues raised during Public Hearing. The budget earmarked for the same is Rs 1235 lakhs and the same shall be kept in a separate account and audited annually. The details of activities undertaken, amount spent along with documentary proof shall be a part of report to be submitted to IRO, MoEF&CC. The maintenance of all activities shall be covered through recurring cost of Public Hearing, and continued as a part of CSR budget.*

8) *PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016.*

In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.

9) *All the mitigation measures committed / envisaged in the EIA/EMP report and subsequent submission shall be implemented which also includes i) Fog cannon installation: to mitigate dust emissions, ii) Increased greenbelt development budget: aligned with the expanded plan and iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. The budget as per revised EMP is Rs 2995 Lakh (Capital) and Rs 201 Lakh (Recurring) shall be kept in a separate account. PP should annually submit the audited statement along with proof of activities carried to the Regional Office of MoEF&CC and PARIVESH Portal as the case may be for the activities carried out during previous year.*

10) *PP to install 2 continuous ambient air quality monitoring stations at suitable locations preferably on village side with consultation of SPCB. The real time data so generated shall be uploaded on company website and linked with website of CPCB &SPCB. In addition, data should also be displayed digitally at entry and exit gate of mine lease area for public display.*

11) *PP shall implement Effluent Treatment Plant for wastewater generated from workshop and Sewage Treatment Plant for its colony. No untreated water shall be discharged from mine boundaries to ponds/nallah/river.*

12) *PP to install solar lights along the road used for transportation of minerals also take up installation of solar lights in rural areas with its maintenance within the study area of 10 km radius buffer zone within one year.*

13) *Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented. The prevention measure for burns, malaria and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.*

14) *PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.*

15) *Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the*

mining lease holders/Project Proponent". The implementation report of the above said condition along with geo tagged photographs shall be sent to the Regional Office of the MoEF&CC.

16) PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO

Agenda No 6.2

6.2 Amalgamated Yekona I & II OC (Phase-I) [Production capacity 2.75 MTPA/3.44 MTPA (Normative/Peak) ; Lease Area 1679.39 ha] of Western Coalfields Limited (WCL) located in Tehsil Warora, District Chandrapur (Maharashtra) – Reconsideration for Amendment of Environment Clearance dated 01.01.2021 – reg.

[Online Proposal No. IA/MH/CMIN/438539/2023; File No. J-11015/381/2015-IA. II(M)]

6.2.1 The proposal is for amendment in Environmental Clearance granted vide letter dated 01.01.2021 for Amalgamated Yekona I & II OC (Phase-I) for increase in production capacity from 1.0 MTPA to 2.75 MTPA/3.44 MTPA (Normative/Peak) of M/s Western Coalfields Limited and increase in land area from 680.06 ha to 1679.39 ha located in Tehsil Warora, District Chandrapur (Maharashtra).

2. The project proponent vide proposal no IA/MH/CMIN/438539/2023 applied for amendment in EC dated 1.1.2021. PP vide letter no. 5-G/969-970 dated 28.07.2023 requested Ministry for amendment of following specific condition no. 4 (vi) & 4 (xviii) of EC letter dated 01.01.2021 as:

Specific Condition as per EC dated 1.01.2021	Amendment Sought
(vi) "Transportation of coal from Coal Handling Plant shall be through mechanized covered trucks for 3 years. No transportation by trucks after 3 years and proposed railway siding/pipe conveyor system."	Transportation of Coal from the mine shall be through tarpaulin covered trucks till the commissioning of proposed railway Siding i.e by December 2026. No transportation by trucks after Dec'2026 except for small scale industry/ consumers.
Justification	
• The mechanized cover trucks are not feasible on techno economical basis. Thus, transportation of coal to be allowed from tarpaulin covered trucks.	

• The work of construction of Railway Siding in under process. However due to delay in land acquisition and other works, the Railway Siding could not be commissioned within 3 years i.e. 31.12.2023. Thus, additional three-year period upto 31.12.2026 may be provided for commissioning of Railway Siding. However, all efforts will be made for early commissioning of Railway Siding and avoiding road transportation of coal.

Specific Condition as per EC dated 1.01.2021	Amendment Sought
(xviii) "Toe wall of atleast 15 mts to 20 mts height should be constructed along the OB dump to protect yekona village."	Construction of toe wall with adequate dimensions along the OB dump to protect the Yekona village and check runoff and siltation in regard to the rainfall data.
Justification	
• The toe wall of 15-20 meters is not feasible to construct techno-economically in this mine. • There is a gap of about 100 mtrs between the OB/ Top soil dump and Yekona Village & the gap is also planted with tree plantation (10,000 nos. in an area of 4 ha). • Only Top Soil overburden dump is present against the habitation of Yekona Village. Height of Top Soil dump is only 36 mtrs & same is finalised, no further dumping or heightening will be done. Plantation and grass seeding of top soil dump is being done, which helps in stabilisation of the dump. • Garland Drains have been provided in mine for the length of about 4650 m with width of 2 m and depth of 2 m. Catch drains of dimension 3300 length, 2 m width and 2 m depth are also provided against OB dump. Dumps are provided with siltation pond at the bottom to prevent siltation in nearby water body. This help in arresting any loose material of the dump. • Dumping was done by removing the black cotton soil layer upto 3 mtr depth at the toe/ floor of the dump, this help in stabilisation and possibility of floor failure and upheaving is totally avoided. • A scientific study has been carried out for OB dump stability in the respective mine by IIT-Kharagpur. The safety measures proposed in the report does not include the construction of toe wall. • In CMR, 2017 there is no mention of the dimensions for the construction of toe wall.	

6.2.2 Earlier the proposal was considered in the 48th EAC meeting held on 25th August, 2023 wherein the committee has deferred the proposal for want of requisite information. The PP has submitted the reply on Parivesh portal vide letter dated 18.12.2023 and proposal was considered in 6th EAC meeting

held during 17-18 January,2024. The information submitted by the PP is as follows: as mentioned below:

S.No.	Observation of EAC	Reply by PP
1.	Current status and preparedness of proposed railway siding/pipe conveyor system as per specific condition no. 4 (vi) of EC letter dated 01.01.2021 with documentary proof (pipe conveyor plan comprising of layout, NIT and tendering details with date for the Railway siding alongwith Feasibility Study Report, Engineering Scale Plan, Detailed Project Report etc.)	The work order for construction of Railway Siding has been awarded to M/s Indian Port Rail & Ropeway Corporation Ltd (IPRCL), Mumbai vide letter Dt.07.05.2022 for a total value of Rs.80.74 Crore. However due to delay in land acquisition and other works, the Railway Siding could not be commissioned within 3 years i.e. 31.12.2023. Construction of the railway siding requires acquisition of 35.4 Ha land out of which 10.00 ha already belongs to WCL and the remaining land is to be acquired under 'Gati Shakti Multi Model Cargo Terminal Scheme" of Railways. Thus, additional period up to 10.12.2025 may be provided for commissioning of Railway Siding. <u>Present progress:</u> The construction work for railway siding has already commenced. The Centre line marking of Track has been completed by IPRCL. Civil work of the track laying is likely to be completed by Jan'2025. Subsequently, civil work of wharf wall siding platform will be commenced. Fixed sprinklers and wind barrier will be installed at the proposed railways siding by Dec'2025. Total award value for commissioning of Railway Siding is 80.74 crore to IPRCL. Till November, 2023, the bills of 24.63 crore has been processed by the project proponent. Remaining payment will be done after completion of civil work and commissioning of Railway Siding.

		The detailed timeline period for the construction of the railway siding is 10.12.2025 and enclosed.
2.	PP shall submit the plan for coal transportation upto 90% to its peak capacity i.e .3.44 MTPA to dedicated users only including M/s MAHAGENCO thermal power plant as proposed in EIAEMP report.	Prevailing EC has been granted for the production capacity of 2.75 MTPA (Normative). The coal production from the mine was 2.75 MTPA in FY 2022-23. The dispatch of coal in FY 2022- 23 from the mine was 3.50 MTPA due to liquidation of earlier coal stock in the mine. The coal transportation statistics to the dedicated users including M/S MAHAGENCO thermal power plant in FY 2022-23 has been enclosed. In FY 2022-23, Amalgamated Yekona-I&II OC has dispatched 3.50 MTPA of coal. GMR Warora and Sai Wardha Power Generation Ltd located near to the project purchases a total quantity of 2.0202 MT. Remaining 1.48 MTPA of coal was transported to other coal customers. The traffic study has been conducted considering the transportation of approx. 1.50 MTPA of coal to other coal customers.
3.	The Writ Petition No. 2470 of 2022 is sub-judice. However, the contentions alleged in the petition are authenticated by the site inspection report. Therefore, PP should plan to avoid the usage/construction of road for transportation of coal near the sensitive zone such as school, hospital, etc. and submit the alternative route till mechanised system is put in place. The proposed route should be supported by traffic study for one month (with baseline ambient air quality in alternate route) along with the mitigation measures to control the dust pollution till the period of completion of mechanised system.	In this project the coal is transported to either nearby thermal power plan (only 1.30 km away from project boundary) and other customers through Wani railway Siding (90 kms away from the project). Majri railway siding is located nearly 23 kms away from the project. However, due to lack of adequate road infrastructure for nearly 2.3 kms, the coal could not be transported to Majri Railway Siding. The route from the project site to Majri Railway Siding passes through the Warora Town. The Warora town does not have any peripheral road in west. Hence the coal could not be evacuated by the present route without entering Warora Township.

		Hence, it was proposed to construct a by-pass road of 2.3 km length for Warora town connecting Warora – Madheli Road to Warora-Wani Road. This will provide an alternate coal evacuation route. Approval for construction of this road is issued by Dy. Secretary, Revenue and Forest Department, Govt. of Maharashtra, Mumbai vide letter no. संकिण-२०२२/), this road will serve the purpose of local transport and public use also and decongest the traffic in Warora town. As per the affidavit submitted from the Collector Chandrapur, the present proposal of coal transportation route is found to be feasible and could be helpful in decongestion of existing traffic of Warora town. The other route proposed for evacuation of coal to Majri railway Siding through the north of Waroa town was not found to be feasible as per the affidavit based of the site visit. As other proposed route could not be widened due to 11 KV power line, low existing width and could create inconvenience to the farmers. As per affidavit, the proposed coal transportation route by constructing bypass road of 2.30 kms is most suitable. The one traffic study with ambient air quality baseline data has been conducted on this proposed route. The ambient air quality data has been generated at 12 locations in October, 2023. Out of 12 locations, 6 locations are near to the coal transportation route and others are located within buffer zone of the project. During the traffic study, the level of service of the proposed route was found to be in very good category. The v/c ratio (predicted volume/capacity) during peak period will be 0.23, 0.30 and 0.17 for Section A, Section B and Section C

		respectively and the level of service falls under very good category in Section A & B and Section C as excellent. Vehicles carrying coal are being covered with tarpaulin to prevent spillage. Vehicles hired to carry coal will be meeting all air pollution control norms and at regular interval checks for the implementation of pollution under control (PCU) certificates. Additional road safety precaution like traffic police outpost, traffic signals, illumination, traffic science will be provided at the intersection of roads. The detailed traffic study report along with 1-month baseline ambient air quality data is enclosed.
4.	PP shall submit the drone video of OB dump along with the construction of Toe-wall all around the OB dump.	The drone video of the OB dump has been made and it has been sent through e-mail. Besides the drone video a scientific study has been conducted through reputed National Institute of Technology, Nagpur on "Feasibility study regarding toe wall and providing remedial measures for black cotton soil dump towards Yekona Village in Amalgamated Yekona I & II OC Mine". Based on the technical study the remedial measures proposed will be taken up in time bound manner. The report is enclosed.
5.	PP to submit copies of MoU signed for coal transportation to various user including thermal power plant.	The MoU/FSA copies signed for coal transportation with Major consumers deliberated under point no. 2 are enclosed.

6.2.2 The Committee deliberated on the various issues related to the proposal, i.e transportation of mineral outside the lease area, pollution due to transportation, stability of BC Dump, plantation, propose railway siding site and status of its construction, details of the court case on the issue of diversion of road near Warora town etc. and asked the PP to submit the details of proposed air pollution mitigative measures, expedite the plantation activities, expedite the installation of additional sprinklers, implementation of recommendation made by VNIT for the stability of the BC Dump.

During the meeting PP informed that supply of the coal (2.01 MT) is to the nearby thermal power plant (GMR and Sai Wardha TPPs) located at a distance of 5.5 KM and rest of the coal is supplied to other

customers in open market. PP submitted that they are just supplying the coal at pit head and the tippers are engaged by the thermal power plants and other customers and WCL is not engaging tippers for the transportation of the coal. However, in future when the mine will expand WCL is planning to supply coal to other long distance customers and for which they are in the process of setting up of railway siding. PP vide letter dated 18.01.2023 submitted a copy of Fuel Supply Agreement (FSA) and referred to clause 7.2.2 of the FSA wherein it has stated that *"..The purchaser shall arrange to place the required number/type of trucks to lift the coal as per such loading programme/schedule ...."* and the same is the case with all consumers.

The Committee is of the view even though PP is not transporting the mineral but they are required to take steps to mitigate pollution if any, caused due to transportation of mineral outside the lease area. The PP in its reply submitted vide letter dated 18.01.2024 submitted the following existing and proposed air pollution control measures.

Sl No.	Mitigation Measures	Existing		Proposed		
		Nos.	Expenditure	Nos.	Expenditure	Timeline
1	Mobile Water Sprinklers	06	Through revenue budget	04	Through revenue budget	Feb,2024
2	Fog Canons	05	33.05 Lakh	05	40 Lakh	March,2024
3	Fixed Sprinklers	36	40.59 Lakh	30	30 Lakh	June, 2024
4	Wind Barrier railway siding	-	-	700 meter wind barrier with height 6 mts	200 Lakh	After commission of railway siding i.e. Dec 2025
5	Tree Plantation	1,20,000	170.48 Lakh (along with 5 year maintenance)	80,000	240 Lakh	During Monsoon of 2024
Total			224.12 Lakh		510 Lakh	

PP also provide the details of the court case wherein the core issue is requirement of EC for bypass road for transportation of mineral near Warora Town and its impact on the school. The matter is still pending

and PP submitted an undertaking wherein it has mentioned that *"The Amalgamated Yekona I & II OC Mines, WCL does not envisage departmental coal transportation along the proposed by-pass road for which WP 2470/2022 has been filed before Hon'ble Bombay High Court, Nagpur Branch"*. Committee observed that the case is not related to this EC rather it is related to construction of bypass road outside the lease area.

The Committee viewed the drone video submitted by the PP and deliberated on the requirement of toe wall around the OB dump. Committee observed that PP has reported that this dump is finalised and there would be no further dumping in the same. PP also submitted a feasibility study regarding toe wall and providing remedial measures for black cotton soil dump towards Yekona Village. The study was carried out by VNIT, Nagpur. The Committee is of the view that PP shall implement the recommendation made in the said report at the earliest. The PP vide his letter dated 18.01.2024 submitted that the recommendation will be implemented by June, 2024.

Based on the discussion held the Committee ***recommended*** *the following amendment in the EC dated 01.01.2021*

Specific Condition as per EC dated 1.01.2021	*Recommendation of EAC*
(vi) "Transportation of coal from Coal Handling Plant shall be through mechanized covered trucks for 3 years. No transportation by trucks after 3 years and proposed railway siding/pipe conveyor system."	*Transportation of Coal from the mine shall be through tarpaulin covered trucks till the commissioning of proposed railway Siding i.e. by December 2026. No transportation by trucks after Dec'2026 except for small scale industry/ consumers. PP shall implement the additional measures i.e i)Use upto 25% CNG/EV Tippers for the coal transportation, ii) ensure that transportation of mineral is in covered tippers, iii) regular water spraying on the road, iv) No overloading of the tippers, v) cleaning of the roads at least for a 5 KM span on the transportation route to thermal power plant, vi) allowing the vehicle having valid fitness certificate and PUC, vii) wheel washing facility and viii) installation of CCTV camera at mine entrance etc. PP shall also implement the measures proposed in letter dated 18.01.2024 submitted to the Ministry for mitigating air pollution.*

(xviii) "Toe wall of atleast 15 mts to 20 mts height should be constructed along the OB dump to protect yekona village."	*PP shall implement the recommendation made by VNIT by June 2024 for the stability of OB Dump and allied protection of Yekona village. There should not be any dumping toward the Yekona village side and additional measures be taken to ensure that the village is not endangered. With respect to other dump inside the mining lease area PP shall carry out the stability studies from the reputed institutes and implement the recomendations. PP shall submit the compliance of the same to RO, MoEF&CC along with documentary proof viz. photograph before and after implementation, ii) certificate from VNIT that the recommendation made by them has been implemented in letter and spirit and audited expenditure statement.* *Additional planting be done on the OB dump for densification of the vegetation and submit geo tagged proof on half yearly basis to IRO*

The Committee also prescribe an additional condition that: PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO

Agenda No. 6.3

Tasra Coking Coal Washery with capacity of 3.5 MTPA in the project area of 21 ha. of M/s. Steel Authority of India Limited located at FCIL Campus, Town – Sindri, District Dhanbad (Jharkhand) - For Terms of Reference - reg.

[Online Proposal No. IA/JH/CMIN/455615/2023; File No. J-11015/122/ 2007-IA. II(M)]

6.3.1 The proposal is for Terms of Reference for Tasra Coking Coal Washery with capacity of 3.5 MTPA in the project area of 21 ha. of M/s. Steel Authority of India Limited located at FCIL Campus, Town – Sindri, District Dhanbad (Jharkhand). PP applied online vide proposal No IA/JH/CMIN/455615/2023 for grant of TOR and the proposal was placed in 5th EAC meeting held during 17-18 January, 2024.

6.3.2 The Project Proponent made a detailed presentation on the salient features of the project and informed that:

PROJECT LOCATION:

- The project area is covered under Survey of India Topo sheet No. 73 I/6 (F45C6) and is bounded by the geographical coordinates ranging from 23°39'37.22"N to 23°39'51.23"Nandlongitudes86°28'59.45" E to 86°29'15.52" E.
- The project/activity is proposed by the PP is a Green filed project and covered under category A of item 2(a) 'Coal Washeries' of the Schedule to the Environmental Impact Assessment Notification, 2006 as the throughput of Coal is > 2.5 MTPA therefore, it requires appraisal at Central level by the sectoral EAC in the Ministry.
- Tasra Coal Washery had been granted EC for 3.5 MTPA of M/s Steel Authority of India Ltd., Vide letter no. J-11015/ 365/2009-IA.II(M) pt. Dated 30.03.2017 by the MoEF&CC. However, the Coal Washery could not be installed as land for installation of the Washery could not be acquired.
- The Fertilizer Corporation of India Limited (FCIL) has obtained in principle approval for leasing of **61 Acres (24.69 Ha) of FCIL Land (Old SMP Plant Area)** for setting up of a Coal Washery for Tasra Opencast Coal Project Vide Letter no. FCIL/Sindri/Tasra/2023/1810 dated 20th November 2023.
- PP submitted that there is no Wildlife Sanctuaries, National Park, Biosphere Reserve, exists within 10 Km radius of the project site.
- The area is not Falling under Critically Polluted Area.
- One small unnamed Protected forest exists at a distance of 9.5 Km.
- No R&R involved
- No Archeological/ Historical/ Ancient Monument within 10 KM of the project site
- No forest land is involved in the project.

LAND USE DETAILS OF PROJECT SITE:

The land usage pattern of the coal Washery project is as follows:

Sl. No.	Details	Area in Ha	% w.r.t. Total Area
1.	Main Plant Area	2.52	11.99
2.	Storage Area for Coal Stock	6.23	29.68
3.	Water Reservoir	0.62	2.94
4.	Green Belt	6.93	32.99
5.	Internal Roads	2.12	10.09
6.	Parking Area	1.48	7.05
7.	Misc Area	1.11	5.29
Total		**21.00**	**100.00**

TRANSPORTATION OF COAL:
• Transportation of raw coal from Mine Pit to the Coal Washery shall be through conveyor/private road and Clean/middling coal from the Washery to the Steel & power plants of SAIL will be through Rail. • **Quantity being transported by Road/Rail/Conveyor:** Washed coal & middling will be transported through Rail.
OTHER DETAILS:
• Total water requirement for the project is 966 m^3/day. • Application for obtaining the approval of the Central Ground Water Authority for NOC for water withdrawal will be submitted after the approval of ToR. • Damodar River is flowing at a distance of 2.3 Km from Southern Boundary of the lease area. No nala diversion is involved in the project. • No court cases, violation cases are pending against the project of the PP. • The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder. • The project involves no project affected families. R&R of the PAPs is not required. • Total cost of the project is Rs. 93,900 Lakhs.
BENEFITS OF THE PROJECT:
• The project is reported to be beneficial in terms of bigger exercise by Government of India to increase the washing capabilities of Indian coal in order to increase the supply of washed coking coal to steel plants thereby reduce the outgo of valuable foreign currency. This will also help in reducing the prices of steel product so vital for Indian economy.

6.3.3 *The proposal was considered in EAC meeting held during 17-18 January, 2024 wherein the Committee deliberated on the various issues related to site selection, habitation around the project site, transportation route for the coal etc. The Committee also noted that coal for the Washery will come from the Tasra Coal Block for which EC was granted on 13.10.2009. During the meeting Committee deliberated on the feasibility of setting up of the project within the mining lease area and observed that*

this aspect is not considered while site selection. The Committee therefore ***deferred*** *the proposal and is of the view the proposal can considered only after the PP submits the following information:*

1) *PP shall conduct detailed alternate site selection study for at least 3 sites including the existing mining site.*

2) *PP shall confirm the minimum area required for setting up of the Washery.*

3) *PP shall submit transportation plan for each site selection (preferably through rail mode and belt conveyor combination).*

4) *PP shall submit the habitation details around each of the alternate site considered for setting up of the plant.*

Agenda No. 6.4

Kolgaon OC Project with increase in production capacity from 0.6 MPTA to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha by M/s Western Coalfields Ltd. located in Tehsil Wani, District Yeotmal (Maharashtra) - For Terms of Reference – reg.

[Online Proposal No. IA/MH/CMIN/451775/2023; File No. J-11015/228/ 2009-IA. II(M)]

6.4.1 The proposal is for Terms of Reference for Kolgaon OC Expansion Project for increase in production capacity from 0.6 MPTA to 0.8 MTPA with increase in the Mining lease project area from 397.25 ha to **545.41 ha**. Located in Tehsil Wani, District Yavatma (Maharashtra).

The project/activity is proposed by the PP is an expansion project and covered under category A of item 1(a) 'Mining of Minerals Coal' of the Schedule to the Environmental Impact Assessment Notification, 2006 as the mining lease area is > 500 Ha. Therefore, it requires appraisal at Central level by the sectoral EAC in the Ministry. PP applied online vide proposal No IA/MH/CMIN/451775/2023 for grant of TOR and the proposal was placed in 5th EAC meeting held during 17-18 January, 2024.

6.4.2 The Project Proponent made a detailed presentation on the salient features of the project and informed that:

6.4.2.1: **Location:**

i) PP submitted that the Kolgaon Opencast Mine is located on the Wani Tahsil of Yeotmal District of Maharashtra. The block is adjacent to mugoli and nirguda blocks of WCL. It is bounded by North Latitude 190 5' 41" to 190 6' 20" and east Longitude 790 50' 49" to 790 52' 00" and is covered in the Survey of India Toposheet No. 56 M/1.

ii) PP submitted that the Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 11.04.2022 & 07.05.2022 has imposed moratorium on grant of EC. There is no forest land involved in the project. The project does not require recommendation of NBWL. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones fall within 10 km boundary of the project.

6.4.2.2: Previous Approval & Past Production details:

iii) PP submitted that the project has been granted Environmental Clearance for production capacity of 0.6 MTPA (Peak) with ML area of 397.25 ha (392.67 ha within mine lease area and 4.58 ha outside mine lease area) vide Ministry's letter no. J-11015/228/2009-IA. II(M) dated 16.02.2012.

iv) PP submitted that the past production details as per which the production is well within the EC capacity.

Year	EC Sanctioned capacity(MTPA)	Actual production (MTPA)	Excess production beyond the EC sanctioned capacity
2005-06	0.40	NIL	Nil
2006-07	0.40	0.1	Nil
2007-08	0.40	0.32	Nil
2008-09	0.40	0.36	Nil
2009-10	0.40	0.31	Nil
2010-11	0.40	0.36	Nil
2011-12	0.60	0.60	Nil
2012-13	0.60	0.56	Nil
2013-14	0.60	0.03	Nil
2014-15	0.60	0.46	Nil
2015-16	0.60	0.12	Nil
2016-17	0.60	0.00	Nil
2017-18	0.60	0.26	Nil
2018-19	0.60	0.50	Nil
2019-20	0.60	0.0000040	Nil
2020-21	0.60	0.4524	Nil
2021-22	0.60	0.599	Nil
2022-23	0.60	0.60	Nil

6.4.2.3: Mining Details:

v) PP submitted that the total Mining lease area as per block allotment is 545.41 Ha. The revised Project Report (Including Mining plan) and Mine closure plan for Kolgaon Expansion (Deep) Opencast Mine was approved by WCL Board in its 348th meeting held on 28th January, 2023 and circulated vide Board resolution no. WCL/office of CS/BM-348/2022-23/1012 dated 17.02.2023.

vi) PP submitted the Method of mining operations envisages by opencast with shovel Dumper Combination. Total geological reserve reported in the mine lease area is 27.982MT, with mineable reserves are 16.29 MT. Total extractable reserves are 15.48 MT. Balance extractable reserve as on 01.04.2025 is 8.74Mt. Four composite seam with thickness ranging from 0.34 to

Sl. No.	Land use post mining	Land use (ha)				
		Plantation	Water Body	Public use	Undisturbed	Total
1	External OB Dump	159.29	0.00	0.00	0.00	159.29
2	Excavation	91.58	125.22	0.00	0.00	216.80
3	Infrastructure like Sub-station, CHP Service Buildings etc.	3.00	0.00	5.00	0.00	8.00
4	Undisturbed area (brought under plantation)	65.00	0.00	0.00	45.30	110.300
6	Road	2.00	0.00	2.92	0.00	4.92
7	Green Belt Area	5.00	0.00	0.00	0.00	5.0
8	flood Protection Embankment	4.00	-	28.75	8.35	41.10
	Total	329.87	125.22	36.67	53.65	545.41

11.85. Grade of coal is G-10 stripping ratio 1: 10.87 m^3/t, while gradient is 1 in 2.4 to 1 in 5. The Life of mine is 12 years.

vii) PP submitted that the total quarry area is 216.8 ha with a depth of 200m. Final mine void of 125.22 ha will be converted to water body. Post mining land use will be as follows:

viii) PP submitted that the Transportation of coal is being done by dumpers in mine pit head, from surface to sidings by tippers and at sidings to loading by pay loaders. Transportation of coal has been proposed through belt conveyor.

ix) PP submitted that the ground water level has been reported to be varying between 4.5 m to 7.0 m during pre-monsoon and between 2.3 m to 3.5 m during post-monsoon in core zone. The ground water level has been reported to be varying between 4.3 m to 11.8 m during pre-monsoon and between 1.7 m to 5.4 m during post-monsoon in buffer zone. Total water requirement for the project is 408 KLD.

x) PP submitted that the NOC has been secured from CGWA for abstraction/ dewatering of mine discharge in respect of subject mine vide NOC no. CGWA/NOC/MIN/ORIG/2021/13912 valid upto 02/12/2023. Renewal application is in process vide application no. 21-4/761/MH/MIN/2017.

6.4.2.3: Project Cost & Benefit:

xi) The project involves 187 project affected families. No village rehabilitation is involved in the project only land outside is involved for which a cost of Rs. 42.9635 cr has been kept in the approved project report.

xii) Total capital cost of the project is ₹ 206.1941 crores. Cost of production is Rs. ₹ **2889.08/t**(at 85%), CSR cost is Rs. 2 per tonne. Environment Management Cost in Rs crores; Capital 12.7773 cr. & Recurring cost is ₹6/tonne of coal production.

6.4.3 The Committee after deliberations noted the followings:

i. EC for Kolgaon OC for capacity 0.40 MTPA within ML area of 349.00 Ha has been granted vide letter no. J-11015/29/2001-IA. II(M) dated 12.04.2002.
ii. EC for enhancement in capacity upto 0.6 MTPA within project area 397.25 ha has been granted vide letter no. J-11015/228/2009-IA. II(M) dated 16.02.2012.
iii. Total Mining lease area as per block allotment is 545.41 Ha.
iv. Mining plan and Mine closure plan for Kolgaon Expansion (Deep) Opencast Mine was approved by WCL Board in its 348th meeting held on 28th January, 2023 and circulated vide Board resolution no. WCL /office of CS/BM-348/2022-23/1012 dated 17.02.2023.
v. No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones fall within 10 km boundary of the project.
vi. Application for renewal of Groundwater NOC from CGWA has been submitted vide application no. 21- 4/761/MH/MIN/2017 dated 01.12.2023.
vii. Production is well within the EC Capacity.

6.4.4 The Committee after deliberations noted that the instant proposal is for expansion in production capacity from 0.6 to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha. The Committee is of the view that as there is an increase mine lease area along with production capacity, therefore, PP shall prepare fresh EIA/EMP based on the ToR prescribed and also conduct fresh public hearing.

*Based on the above, EAC **recommended** the proposal for grant of Terms of reference for expansion of Kolgaon OC Project with increase in production capacity from 0.6 MPTA to 0.8 MTPA and increase in ML area from 397.25 ha to 545.41 ha by M/s Western Coalfields Ltd. located in Tehsil Wani, District Yeotmal (Maharashtra) under EIA Notification, 2006 and its amendments therein with following additional specific conditions in addition to generic ToR:*

1) *PP shall modify its Mine Plan w.r.t to mine lease area i.e. 545.41 ha for its peak production and get it approved from Ministry of Coal along with PMCP. No mining activity shall be conducted beyond this area.*

2) *The total excavation (minerals, waste, top soil) to be excavated needs to bring out clearly in production and development plan. The mineable reserves, blocked reserves need to be mentioned along with life of mine. PP should add an annexure in the mining plan clearly showing the year-wise production and development plan (tabular format) till the end of life of mine. The location of mineral stacking, dumping sites, plantation and other infrastructures needs to bring out clearly in the mining plan. PP needs to bring out the waste to be generated during the entire life of mine and where it will be dumped/backfilled.*

3) *PP has to prepare EIA-EMP report by taking fresh baseline data and thereafter conduct the Public Consultation, including public hearing, through concerned SPCB in the concerned districts as per the provisions/procedure contained in the EIA Notification, 2006 for information of the stakeholders about the present coal mining operations inviting comments and their redressal.*

4) *PP should provide in the EIA Report details of all the statutory clearances, permissions, no objection certificates, consents etc. required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC.*

5) *PP shall submit the drone video & photographs of mined area, fresh lease area to be mined and existing and proposed transportation route.*

6) *PP should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. The PP should submit the number of saplings to be planted, details of native species, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this PP should show on a surface plan (5-year interval for life of mine) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. Plantation plan should be prepared in such a way that 80% of the plantation to be carried out in first 5 years and for the remaining years the proposal for gap filling. The seedling of height not less than 2 meters to be selected and accordingly cost of plantation needs to be decided. In addition to this, plantation in the safety zone at lease boundary the plantation should be planned in such a way that it should be completed within 2 years only.*

7) *PP should submit the quantity of surface or ground water to be used for this project. The complete water balance cycle need to be submitted. In addition to this PP should submit a detailed plan for rain water harvesting measures to be taken. The PP should submit the year wise target for reduction in consumption of the ground/surface water by developing alternative source of water through rain water harvesting measures. The capital and recurring expenditure to be incurred needs to be submitted.*

8) *PP should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this PP should mention the number and designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.*

9) *PP should submit the year-wise, activity wise and time bound budget earmarked for EMP, occupational health surveillance, and activities proposed to address the issues raised during Public Hearing. The capital and recurring expenditure to be incurred needs to be submitted.*

10) *PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads, manufacture of artificial sand, aggregates, use for farmers etc.) and accordingly Plan shall be included in EIA/EMP Report.*

11) *PP shall provide the details of mining technology/methodology proposed to be adopted for coal mining operations and its associated environmental benefits of using from Climate Change perspective.*

12) *In case of ground water abstraction/intersection. The PP shall comply with the Ministry's OM dated 23/05/2019. Compliance status needs to be presented before EAC at the time of appraisal.*

13) *PP should clearly bring out that what is the specific diesel consumption ~ (Liters/Tonne of total excavation & mineral) and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted. PP shall also explore the possibility of using e-vehicles/LNG/CNG based mining machineries and trucks for mining operation and transportation of coal.*

14) *PP shall submit detailed project report for implementation of in-pit conveyor belt with silo loading till railway siding for evacuation of coal with its target date of completion.*

15) *All the certificates viz. Involvement of Forest land, distance from protected area, list of flora & fauna should be duly authenticated by Forest Department. The Certificate should bear the name, designation, official seal of the person signing the certificate and dispatch number.*

16) *PP shall submit the measures to be taken for stability of dumps already existing and proposed to be developed during the mining operation. In case the height of the any dump is more than 60 meters than PP shall get the study done from reputed institute in this regard.*

17) *The budget to be earmarked for the various activities shall be decided after perusal of the*

Standard EC Conditions published by the Ministry.

18) *PP should clearly show the transport route of the mineral and protection and mitigative measure to be adopted while transportation of the mineral. The impact from the center line of the road on either side should be clearly brought out supported with the line source modelling and isopleth. Further, frequency of testing of Poly Achromatic Hydrocarbon needs to be submitted along with budget. Based on the above study the compensation to be paid in the event of damage to the crop and land on the either side of the road needs to be mentioned. The PP should provide the source of equations used and complete calculations for computing the emission rate from the various sources. The Ground level concentration of various pollutants in worst case and control case scenario needs to be submitted. The cumulative impact of other activities needs to be considered in EIA/EMP Report.*

19) *Details of grazing land if any involved in the mining lease to be provided. In case activity is to be proposed on grazing land than PP shall provide the relevant rule position applicable in this regard and compliance of the same.*

20) *PP shall submit the action plan to adhere the Plastic Waste Management Rules 2016 and to adhere Ministry's OM dated 18/07/2022.*

21) *PP shall submit the proposal of EC only after completion of about 75% conditions stipulated in earlier EC dated 16th February, 2012.*

22) *PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs.*

23) *The PP should ensure that only NABET accredited consultant shall be engaged for the preparation of EIA/EMP Reports. PP shall ensure that accreditation of consultant shall be valid during the collection of baseline date, preparation of EIA/EMP report and during the appraisal process. The PP and consultant should submit an undertaking the information and data provided in the EIA Report and submitted to the Ministry are factually correct and PP and consultant are fully accountable for the same.*

24) *PP shall prepare a wildlife conservation plan in consultation with the local forest department.*

25) *PP shall submit certified compliance report of EC conditions from Ministry's IRO. IRO shall certify that PP has complied 90% of conditions.*

26) *The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.*

Agenda No. 6.5

Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha Forest Land and 187.56 ha non-forest land) of Singareni Collieries Company Limited (SCCL) located in Village & Mandal Manuguru, District Bhadradri Kothagudem (Telangana) - For Environmental Clearance under Ministry's OM dated 11.04.2022 (Stage I - 20% expansion) – reg.

[Online Proposal No. IA/TG/CMIN/447190/2023; File No. J-11015/78/2013-IA-II(M)]

6.5.1 The proposal is for Environmental Clearance for Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha is Forest Land and 187.56 ha is non-forestland) of Singareni Collieries Company Limited located in Village & Mandal Manuguru, District Bhadradri Kothagudem (Telangana) under provisions of 7(ii) of EIA Notification, 2006 and under OM dated 11.04.2022 [Stage-1 20%].

The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006 as the mining lease area is more than 500 Ha. PP applied for expansion in pursuant to O.M dated 11.04.2022 [Stage-1 20%].

6.5.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.5.2.1: Location:

(i) The project area is covered under Survey of India Topo Sheet No. 65C/9 & 65 C/13 and is bounded by North Latitudes 17°55'36.81" N to 17°58'54.87" N and East Longitudes 80°44'16.41" E to 80°48'48.34" E.

(ii) The project does not fall in the **Critically Polluted Area (CPA)**, where the MoEF&CC's vide its OM dated 13th January, 2010 has imposed moratorium on grant of environment clearance.

6.5.2.2: Mining Lease: The PKOC Mine is amalgamation of two existing opencast mines namely, Manuguru OC II Expansion and Manuguru OC IV Extension opencast mine, with production capacity of 9.75 MTPA in the mine lease area of 2402.40 ha.

Sl No	Details	Area (Ha)
1	Manuguru ML granted vide G.O Ms. No 217 dated 12.08.2008	921.0
2	Manuguru Ext. granted vide G.O Ms. No 259 dated 23.09.2008	125.90
3	Manuguru OC-II granted vide G.O Ms. No 63 dated 6.03.1999	198.22

4	Manuguru OC-III granted vide G.O Ms. No 91 dated 24.03.2005	75.00
5	Manuguru OC-II granted vide G.O Ms. No 238 dated 27.08.2008	175.69
6	Manuguru OCP IV granted vide G.O Ms. No 13 dated 18.05.2016	384.31
7	Manuguru OC-II granted vide G.O Ms. No 5 dated 12.04.2019	288.74
	Total-1	2168.86
8	LoI for non-coal bearing area	233.54
Grand Total		2402.40

6.5.2.3: Forest Area: PP submitted that 2214.84 ha of forest land has been reported to be involved in the project. Approval under the Forest (Conservation) Act, 1980 for diversion of 2214.84 ha of forest land for non-forestry purposes has been obtained vide MoEF&CC.

Letter No	Area (in Ha)
F.No. 8-8/96-FC dated 10.10.1997 for an area 286.25 ha covered under PK OC mine .	286.25
F.No. 8-37/2001-FC dated 31.12.2003 for an area 75.00 ha covered under PK OC mine.	75
F.No. 8-73/2005-FC dated 10.07.2008 (Corrigendum Dated 06.11.2009) for an area of 1161 ha out of which 828.16 ha covered under PK OC mine.	828.16
F.No. 8-56/2004-FC dated 14.07.2008 for an area of 125.90 ha covered under PK OC Mine.	125.9
F.No. 8-7/2008-FC dated 30.12.2008 for an area of 175.69 ha covered under PK OC mine.	175.69
F.No. 8-71/2009-FC dated 06.01.2016 for an area of 10.50 ha of which 4.68 ha is covered under PK OC Mine.	4.68
F.No. 8-79/2013-FC dated 24.04.2017 for an area of 430.42 ha is covered under PK OC Mine.	430.42
F.No. 8-70/2014-FC dated 02.11.2018 for an area of 367.03 ha of which 288.74 ha is covered under PK OC Mine.	288.74
Total	2214.84

6.5.2.4: Protected Area: The kinnerasani Wild life sanctuary and Eco-Sensitive zone are at a distance of 5.82 km and 1.92 km. Wildlife conservation plan for Schedule-I species (Indian peafowl, hour horned antelope, monitored lizard & Gaur) of Manuguru area has been approved by PCCF&CWW, Telangana with a budgetary provision of Rs.2.41 Crores vide lr No.906/2010/M4. Dated 14.06.2018.

6.5.2.5: Method of Mining & Mining Plan:

(i) PP submitted thatMining Plan (Including Mine Closure Plan) (3rd Revision) for Prakasham Khani OC Mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension)" was approved by MoC vide Lr.No.38011/6/2019-PCA dated 7th October, 2019 for an extent of 2402.40 ha (Coal Bearing area 2168.86 ha + Non Coal Bearing area 233.54). PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 2402.40 Ha.

(ii) Total geological reserve reported in the mine lease area is 402.01 MT with 309.35 MT mineable reserves. Out of total mineable reserves 290.55 Mt are extractable, out of which 228.78 MT were already extracted by Fy 31-03-2023 and 61.77 MT (2023-24) are available for extraction. Percent of extraction is 72.27 %.

(iii) 15 seams with thickness ranging from 1.2 to 9.78 m are workable. Grade of coal is G-8. Stripping ratio 7.75, while gradient is varying from 1 in 5.5 to 6.5.

(iv) Method of mining operations is by Opencast method of working with Surface Miner & Shovel and Dumper combination

(v) Life of mine is 7 years from 2023-24.

(vi) The project has 3 external OB dump in an area of 504.34 ha with 120 m height and 441.06 Mm^3 of Total OB. 1 Internal OB dump in an area of 783.199 ha with 1066.44 Mm^3 of Total OB is envisaged in the project.

(vii) Total quarry area is 1495.476 ha out of which backfilling will be done in 783.119 ha which shall be reclaimed with plantation while final mine void will be created in an area of 712.357 ha with a depth of 270 m. Final mine void will be converted into water body.

(viii) **Land Use Details of Mine:** The land usage pattern of the project is as follows:

Pre-mining land use details

Land ownership	Land use	Extent (ha)
Private land	Agricultural	25.498
Govt. land	Agricultural	126.745
	Township	35.317
Forest land	Reserve	2214.84
TOTAL		2402.400

Post Mining:

Sl. No.	Type	Total	Plantation	Water Body	Public/ Company Use
1	Excavation / Quarry Area				

2	Backfilled Area	783.119	783.119		
3	Excavated Void	712.357		712.357	
4	External Dump	504.341	504.341		
5	Safety Zone /Rationalisation area	179.743	82.293	34.219	63.231
6	Diversion Nallah	22.085		22.085	
7	Road & Infrastructure area (Service Buildings and CHP)	137.976	84.996		52.98
8	Embankment	33.334	33.334		
9	Green Belt	28.116	28.116		
10	Water Reservoir near pit/Water body	1.329		1.329	
Grand Total		**2402.400**	**1516.199**	**769.990**	**116.211**

(ix) **Transportation of Coal:** Transportation of coal has been proposed by working face to in-pit crusher by dumpers, in-pit crusher to KCHP siding by conveyor and KCHP siding to customers by rail mode. This is existing transportation.

(x) Reclamation Plan in an area 1516.199 ha, comprising of 504.341 ha of external dump, 756.136 ha of internal dump and 28.116 ha of green belt and 227.607 ha in others proposed for green belt development.

(xi) Coal linkage as per fuel Supply Agreement of the Company.

6.5.2.5: Baseline Data: Environmental Baseline data was generated in the Summer season from March - 2023 to May - 2023 (Summer Season) at 10 locations.

Air Quality (Core Zone)	Ambient air quality data monitored in the core zone shows that PM10 concentrations varied from 149.0 to 196.0µg/m3. The PM2.5 concentrations were in the range of 37.3µg/m 3 to 52.4µg/m 3. The SO 2 and NO 2 concentration varies from 10.9µg/m 3 to 13.9µg/m 3 and 15.3µg/m 3 to 20.5µg/m 3 respectively. All the parameters were found to be within the Coal Mine Standards, GSR 742 (E), dt. 25.09.2000. Carbon monoxide concentration was found to be BDL.
Air Quality (Buffer Zone)	In buffer zone, the concentration of PM10 varied from 49.0µg/m 3 (BA-4, Shanthi Nagar village) to 80.0µg/m 3 (BA-2, Bandagirigudam village). The PM2.5 concentration varied from 21.9µg/m 3 (BA-1, Pagedefu village) to 34.5µg/m 3 (BA-8, Samithi Singaram village). The SO 2 concentration varies from 9.2µg/m 3 (BA-8, Samithi Singaram village) to 12.4µg/m 3 (BA-2, Bandagirigudam village) andNO x concentration14.1µg/m 3 (BA-5, Kunavaram village) to 18.2µg/m 3 (BA-3,Bommarajupalli) respectively.

BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Appeal No. 7 of 2024

Under Section 16(h) read with Section 18(1) of the National Green Tribunal Act, 2010

IN THE MATTER OF:

Sanjaya Kumar Mishra

...APPELLANT

Versus

Ministry of Environment, Forest and Climate Change & Ors.

...RESPONDENTS

AFFIDAVIT IN OPPOSITION

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AFFIDAVIT IN OPPOSITION

VOLUME No.: - III

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Noise Quality	In core zone, max, value of Day Leq is 65.2 dB (A) and max. value of Night Leq is 50.5 at MNG OC-IV Ext. Site Office.In buffer zone, min., Day Leq is 47.7 dB (A) at Bommarajupalli (BN-3) & Shanthi nagar (BN-4) and max., Day Leq is 49.2dB (A) at Bandagirigudam (BN-2) village andmin., Night Leq is 35.8 dB (A) at Kunavaram Village (BN5) and max., value of Night Leq is 39.8 dB (A) at Samithi singaram (BN-8).
Surface Water Quality	The surface water quality is compared with CPCB water quality criteria. The analysis results of surface water samples from all the sampling locations shows that the water quality conforms to Class–B (Outdoor bathing (Organized) Criteria.
Ground Water Quality	pH values were in the range between 7.3 to 7.7 in GW-1 to GW-5 groundwater samples collected within the study area. TDS concentrations are in the range of 254 - 1105 mg/L, are above the acceptable limit of 500mg/L but within the permissible limit of 2000mg/L at all locations except GW-1, 2 (254, 430mg/L) are within the acceptable limits. Calcium concentrations are observed to be above the acceptable limit of 75mg/L but within the permissible limit of 200mg/L at Shivalingapuram GW-3 (90mg/L), Samithi Singaram GW-4 (99mg/L) and within the acceptable limits in other locations. Magnesium concentrations were observed to be above the acceptable limit of 30mg/L but within the permissible limit of 100mg/L in GW-3, 4, 5 (66, 69, 33mg/L) and within the acceptable limits at other GW-1, 2 locations. Chlorides concentration is observed to be above the acceptable limit of 250mg/L but within the permissible limit of 1000mg/L at location Samithi Singaram GW-4 (259mg/L) and within the acceptable limits at other locations. Sulphates, Fluorides Nitrates & Iron concentrations were observed to be within the acceptable limit at all the locations. The total alkalinity concentrations were in the range 180 – 575mg/L, were above the acceptable limit of 200mg/L but within the permissible limit of 600mg/L at all locations except Padageru GW-1 (180mg/L) is within the acceptable limit. Total hardness concentrations were in the range 87 – 524mg/L, were above the acceptable limit of 200mg/L but within the permissible limit of 600mg/L at all locations except Padageru GW-1 (87mg/L) is within the acceptable limit. The concentrations of heavy metals Cadmium (Cd), Copper (Cu), Lead (Pb), Zinc (as Zn), Arsenic (As), Chromium (Cr), were either below the detection limits or below the permissible limits.

	The water samples, for which few parameters exceed acceptable limits but within the permissible limits can be used for drinking purpose in the absence of alternate water resources.
Water Requirement	The ground water level has been reported to be varied between 2.05 m to 7.48 m during pre-monsoon and between 1.20 m to 4.18 m during post-monsoon. The total water requirement for the project is 9816 KLD. Ground Water Clearance was obtained vide Lr. No. Lr.No. 258/T/SCCL/2018-2, Dated 18.05.2021 valid up to 17.05.2026 for existing project.

6.5.2.6: Public Hearing: Public hearing was conducted for MNG OC II & MNG OC IV on 28.08.2007 & 25.07.2012 respectively. However, Public hearing is exempted for the present proposal i.e. Prakasham Khani OC Mine of 9.75 MTPA capacity. PP submitted the issues raised during PH of MNG OC II were employment, falling down of ground water level, R&R issues, requirement of basic amenities like roads, education, health and drinking water facilities. The issues raised during PH of MNG OC IV were control of water pollution, employment, establishment of Thermal Power Plant by SCCL and avenue plantation in village area.

6.5.2.7: EMP Budget: PP submitted that the Environment Management Plan (EMP) for the said project and reported that the cost of EMP will be Rs. 52.90 Crore (Capital) and Rs. 25.54 cost per tonne as recurring cost.

6.5.2.8: Other Details:

(i) No River/Nallah diversion is proposed in this project.

(ii) No R&R was involved in this project.

(iii) Regular monitoring of ambient air quality is being carried out on fortnightly basis. The documented report is being submitted to State Pollution Control Board and also to MoEF&CC along with half yearly EC compliance report. In general, the results of ambient air quality monitoring data were found within prescribed limits except few aberrations which can be attributed to the specific local conditions during the day of sampling.

(iv) No court cases, violation cases are pending against the project of the PP. The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder. The amalgamated EC was granted on 12.02.2021. PP submitted that following past production detail:

Year	EC sanctioned capacity (MTPA)	Actual production (MTPA)	(v) Excess production

2021-22	9.75	9.75	0
2022-23	9.75	9.75	0

6.5.3 **Committee after deliberations noted the followings:**

i. PP has submitted the para-wise reply of O.M. dated 11.04.2022 as follows:

Sl. No.	Para No.	Conditions as per OM	Compliance
1.	4(i)	The project should have gone through the public hearing process, at least once, for its existing EC capacity on which expansion is being sought, except those category of projects which have been exempted as per para 7 III (i) of EIA Notification 2006 and its amendments.	Present PK OC is amalgamation of 2 adjacent opencast mines viz., Manuguru OC II Expansion & Manuguru OC IV Extension for which public hearing were conducted individually. The details are given below: 1. MNG OC-II Exp.: • PH conducted on 28.08.2007 for a peak production capacity of 5.00 MTPA for which MoEF&CC granted EC on 31.07.2008. • Subsequently, EC was obtained for enhanced capacity of 6.25 MTPA on 21.02.2014 under 25% enhancement of existing EC capacity as per O.M. dated 19.12.2012. 2. MNG OC-IV Ext.: PH conducted on 25.07.2012 for a peak production capacity of 3.50 MTPA for which MoEF&CC granted EC on 10.12.2014. 3. PK OC: SCCL obtained EC for PK OC with a production of 9.75 MTPA (6.25+3.50) under 7(ii) on 12.02.2021.

2.	4(ii)	There should not be change in Category of the project from 'B2' to 'B1' or 'A' due to proposed modernization or expansion.	There is no change in the project area i.e., 2402.40 ha and hence there is no change in category i.e., 'A'.
3.	4(iii)	There is no additional land acquisition or forest land diversion involved for the proposed expansion or there is no increase in lease area with regard to mining vis-a-vis the area mentioned in the EC, based on which public hearing has been held earlier.	The expansion in terms of production is proposed in the same project area for which EC has been granted earlier. There is no additional land requirement in the proposed expansion project.
4.	4(iv)	The proposed expansion shall not be more than 50% of production capacity as mentioned in the prior EC, issued on the basis of public hearing held and the same shall be allowed in minimum three phases.	The present proposal is for 50% increase in the previous EC sanctioned capacity i.e., from 9.75 MTPA to 12.75 MTPA within the same project area of 2402.40 ha.
5.	4(v)	Predicted environmental quality parameters arising out of proposed expansion/modernization shall be within the prescribed norms and the same shall be maintained as per prescribed norms.	Air quality impact prediction modelling has been done for the expansion capacity of 12.75 MTPA. All the predicted GLCs are within the prescribed norms. The details of predicted environmental quality parameters are furnished in Chapter-4 of EIA/EMP.
6.	4(vi)	The proposed expansion should not result in reduction in the greenbelt area as stipulated in the earlier EC, or if the existing ratio of greenbelt is more than 33%, after expansion it should not reduce below 33%.	There is no reduction in the greenbelt area due to the proposed expansion. The green belt area as per the existing EC as well as proposed expansion is 1516.199 ha at post closure stage, which is 63.1% of the total project area.
7.	4(vii)	The project proponent should have satisfactorily complied the conditions stipulated in the existing EC(s) and satisfactorily fulfilled all the commitments made during the earlier public hearing /	The conditions stipulated in the existing EC are being complied and all the commitments made

		consultation proceedings and also the commitments given while granting previous expansion, as may be applicable. This shall be duly recorded in the certified compliance report issued by the IRO/CPCB/SPCB, which should not be more than one-year-old at the time of submission of application.	during the earlier public hearing have been fulfilled. Director, MoEF&CC, Integrated Regional Office, Hyderabad inspected the project on 20th September, 2023 and issued latest Certified Compliance Report (CCR) on EC conditions.
8.	4(viii)	Public Consultation shall be undertaken if applicable by obtaining response in writing, as per para 7 III (ii) (b) of EIA Notification 2006, except those category of projects which have been exempted as per para 7 III (i) of EIA Notification 2006 and its amendments.	Revised EIA/EMP has been prepared for production enhancement up to 50% of existing EC as per O.M dated 30.05.2022. Public consultation will be undertaken by obtaining response in writing, as per para 7 III (ii) (b) of EIA Notification 2006 and the details will be furnished in the proposal while seeking EC for enhancing coal production from 40 to 50 percent.
9.	4(ix)	Effluent monitoring including air quality monitoring systems as specified in the existing EC, if stipulated, should have been installed.	Effluent monitoring and air quality monitoring is being carried out as specified in the EC. An online ambient air quality monitoring station was established at the core zone.
10.	5	Requirement of revised EIA/EMP report.	Prepared a revised EIA/EMP report for 50% enhancement in sanctioned EC capacity.
11.		Requirement of Certified Compliance Report.	Director, MoEF&CC, Sub-Office, Hyderabad inspected the project on 20th September, 2023 and issued latest Certified Compliance Report (CCR) of EC conditions.
12.		Requirement of fresh public consultation.	Not Applicable (The present proposal is seeking EC for 20% enhancement of coal production during Phase-1)

ii. PP has submitted an application to increase production capacity from 9.75 MTPA to 10.45 MTPA (Stage-I expansion upto 20% under O.M. dated 11.04.2022 for expansion up to 50%).

iii. PP has obtained EC for PK OC project on 12.02.2021 for production capacity of 9.75 MTPA in ML area of 2402.40 ha.

iv. Prakasham Khani Opencast (PK OC) Project formed by amalgamating Manuguru OC-II Expansion & Manuguru OC-IV Extension projects located near Manuguru Village & Mandal, Bhadradri Kothagudem District of Telangana State.

v. PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 2402.40 Ha.

vi. PP has obtained the permission for diversion of 2214.84 ha of forest land within the project boundary of PKOC Mine i.e. 2402.400 ha.

vii. PP has obtained the Ground Water Clearance vide its Letter No. 258/T/SCCL/2018-2 dated 18.05.2021 valid up to 17.05.2026.

viii. Baseline data has been collected during the period of March to May, 2023 in the Summer season for Air, Water, Soil, Noise and others.

ix. PP has submitted the revised EIA-EMP for expansion of Prakasham Khani Opencast Coal Mine with production capacity 12.75 MTPA in ML area of 2402.40 ha.

x. PP has taken pollution control measures such as installation of mist sprayers and fixed water sprinkling system for dust suppression.

xi. The project boundary is at a distance of 1.92 km from the ESZ of Kinnerasani Wildlife Sanctuary.

xii. Schedule I species - Indian peafowl, four horned antelopes, Indian monitor lizard & Gaur are found in the study area.

xiii. Wildlife conservation plan is under implementation for conservation of bio-diversity in the PKOC project with the funds of Rs. 241.885 Lakhs deposited in the year 2018 by SCCL.

xiv. PP has submitted the route of coal transportation from face to in-pit crusher by dumpers, in-pit crusher to KCHP by Conveyor and KCHP to customers by rail.

xv. PP also submitted an affidavit vide which inter-alia it has mentioned that there is no difference document submitted to the Ministry and presentation being made to EAC and there is no litigation on the project.

6.5.4 The EAC, after detailed deliberations observed that the instant proposal has been submitted under Ministry's OM dated 11th April, 2022 for expansion in capacity upto 20% with exemption in public hearing and without change in mine lease area under clause 7 (ii) of EIA, Notification, 2006. Earlier Ministry had issued EC on 12.02.2021 for capacity of 9.75 MTPA in the ML area of 2402.4 ha without PH as the EC was granted for amalgamation of two earlier granted ECs.

Committee observed that as Ministry's OM dated 11.04.2022 *"The proposed expansion shall not be more than 50% of production capacity as mentioned in the prior EC, issued on the basis of public hearing held and the same shall be allowed in minimum three phases."* It is clear from the aforesaid OM that expansion is dependent of capacity for which PH was done. In the instant case the capacity which can be extended based on PH in pursuant to OM is as follows:

Mines & EC details	PH Done	Max capacity with Stage –I (20%)	Max Capacity with Stage-II(40%)	Max Capacity with Stage III(50%)
Manuguru II OC-EC dated 31/07/2008	5 MTPA	6 MTPA	7 MTPA	7.5 MTPA
Manuguru IV OC-EC dated 10/12/2014	3.5 MTPA	4.2 MTPA	4.9 MTPA	6.3 MTPA
Total	8.5 MTPA	10.2 MTPA	11.9 MTPA	13.8 MTPA

PP is already operating the mines at 9.75 MTPA capacity and requested for increase in production capacity up to 10.45 MTPA but it is evident form the above that the maximum expansion at stage-1 (20%) that can be granted with exemption of PH in pursuant to OM dated 11/04/2022 comes out to be 10.2 MTPA. But for further expansion up to 40% there is no change in documentation as compared to 20% expansion except for submission of CCR with respect to previous expansion obtained. In the instant case PP has already obtained expansion of 25% for Manuguru II OC on 21.02.2014 in pursuant to OM dated 19/12/2012 and also submitted the CCR for the amalgamated EC. Further, as per OM dated 11/04/2022 max capacity that can be granted is 11.9 MTPA and the capacity sought by the PP is within the same. Therefore, the Committee agreed for expansion up to 10.45 MTPA as sought by PP but is of the view that further expansion if any PP sought then it should not be more than 11.9 MTPA.

The Committee reviewed the compliances of previous EC conditions as per the perquisite requirements/applicable conditions of OM. It was observed that partial conditions have been mentioned in IRO report for which PP has committed to comply fully within fixed timeline such as to provide training to persons of near villagers, grassing on the active OB dump, 1,50,000 nos. of trees to be planted and monitoring of effluent discharge.

Committee asked the PP to speed-up the process of the lease related work and submit the documents to IRO, MoEF&CC. Additional 1 nos. of CAAQMS to be installed within the ML area in consultation with concerned SPCB.

The EAC, after detailed deliberation on the submission/commitment of Project Proponent observed that PP has to strictly work as per timeline for compliance of EC conditions. Considering the commitment of PP and their seriousness to implement it, *EAC **recommended** the proposal for grant of Environment Clearance upto 20% (Stage I) to Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha Forest Land and 187.56 ha non Forest Land) of M/s Singareni Collieries Company Limited located in Village & Mandal Manuguru, District Bhadradri Kothagudem (Telangana), under OM dated 11.04.2022, under the provisions of Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the following specific conditions in addition to specific conditions already prescribed in EC dated 12.02.2021, and standard EC conditions for environmental safeguards:*

Specific condition: -

1) *PP to obtain the CTO for Opencast coalmine capacity of 10.45 MTPA after grant of EC.*

2) *PP shall get the mining lease amalgamated and submit then documents in this regard to IRO, MoEF&CC.*

3) *PP should install additional 1 nos. of CAAQMS within the ML area in consultation with concerned SPCB.*

4) *PP to address the issues of local public with sufficient budgetary provisions as a part of public hearing. The maintenance of all public hearing activities shall be covered through recurring cost, which will be part of CSR budget. Details shall be intimated to IRO.*

5) *PP to install continuous ambient air quality monitoring stations at suitable locations preferably village side with consultation of SPCB. The real time data so generated shall be uploaded on company website and linked it with website of CPCB &SPCB. In addition, data should also be displayed digitally at entry and exit gate of mine lease area for public display.*

6) *PP to implement the activities proposed in EMP in a time bound manner. The budget earmarked for the same shall be kept in a separate account and audited annually. PP shall submit the implementation status with documentary proof and amount spent for the same to RO, MoEF&CC.*

7) *PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.*

8) *PP shall conduct third party audit of compliance of EC condition at an interval six months and its report shall be submitted to IRO, MoEF&CC.*

9) *The green belt and plantation plan submitted in the EIA/EMP shall be implemented in a time bound manner. A survival rate of at least 80% shall be maintained by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year. Third party monitoring of the plantation done shall be carried out through an institution of MoEFCC (e.g ICFRE)*

10) *PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022. PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.*

11) *Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.*

12) *PP should collaborate with the recognized institute for facilitating the skill development program for the local villagers. PP shall keep the digital record of skill development programme wherein the details of the persons undergone skill development program needs to be provided. Further, details of benefit obtained viz. whether they are employed or not also needs to be monitored. Based on this data PP needs to modify its skill development programme so that maximum number of trainees get the employment. After skilling local persons, if possible PP shall engage them as per their qualifications.*

13) *PP shall complete the proposed belt conveyor installation as proposed during the meeting.*

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Area Kolkata

14) PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO

Agenda No. 6.6

Barsingsar Opencast Lignite mine of capacity 2.1 MTPA in mine lease area of 971 ha by Neyveli Lignite Corporation Limited located at village Barsingsar, District Bikaner (Rajasthan) - For Environmental Clearance as per SoP dated 07.07.2021 (read with OM dated 28th January, 2022) for violation category – reg.

[Online Proposal No. IA/RJ/CMIN/456905/2023; File No. IA-J-11015/28/2020-IA-II(M)]

6.6.1 The proposal is for Environmental Clearance for Barsingsar Opencast Lignite mine of capacity 2.1 MTPA in mine lease area of 971 ha by M/s Neyveli Lignite Corporation Limited located at village Barsingsar, District Bikaner (Rajasthan).

6.6.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting are given as under:

6.6.2.1: Location of Project:

(i) The project area is covered under Survey of India Topo Sheet No 45 E/1,45 E/2, 45 E/5,45 E/6 and is bounded by the geographical coordinates ranging from **Latitude:** $27^0$48'23" N - $27^0$50'40" N and **Longitude:** $73^0$11'34" E - $73^0$13'54" E.

(ii) Coal linkage of Barsingsar Mine project is for 2 X 125 MW Thermal power plant of NLCIL at Barsingsar, District Bikaner, Rajasthan.

(iii) Barsingsar Opencast Mine project does not fall in the Critically Polluted Area (CPA).

6.6.2.2: Category of Project:

The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006 as the mining lease area is more than 500 Ha i.e 971 Ha. PP applied for EC in pursuant to MoEF&CC SOP to deal with violation cases vide OM. F.No.22-21/2020-IA.III dated 07.07.2021 as the PP did not applied for revalidated of EC granted under EIA 1994, in pursuant to Ministry's Notification dated 6.04.2018.

6.6.2.3: Previous Approvals:

The Environment Clearance (EC) for the Barsingsar project was issued to M/s Hindustan Vidyut Corporation Limited (HVCL) on 03.06.1998 and later it was transferred to M/s NLC India Limited (NLCIL) vide Lr.No. J-15012/23/97- IA. II(M) dated 20.12.2002.

TOR under Violation has been issued by MoEF&CC vide letter reference No. IA-J-11015/23/97-IA-II(M) dated 9th June 2022. Again, the amendment to the above TOR was issued vide letter No. IA-J-

11015/28/2020-IA-II(M) dated 15th November2022 for exemption of public hearing and to invite suggestions/objections as part of public consultation for the project.

6.6.2.4: Change in Consultant:

NLC India Limited (NLCIL) had taken the services of NABET accredited EIA Consultant M/s Vimta Labs Limited (VLL), Hyderabad to prepare EIA/EMP report. However, due to some unavoidable circumstances, NLCIL has changed the consultant and entrusted the assignment to M/s GRC-India (P) Ltd to complete the EIA-EMP report vide letter dated 27.04.2023.

6.6.2.4: Mining Lease:

The mining lease for an area of 971 ha was granted by Govt. of Rajasthan vide order No.Pa.17(55)/Khan/Group-1/2004 dated 2nd March 2006. Mining activity in Barsingsar Lignite Mine Project (BLMP) commenced on 7th August, 2006 and commercial production of lignite commenced on 23rd November 2009.

6.6.2.5: Forest land & Protected Area: PP submitted that no forest land involved in the project and no Wildlife sanctuaries & National Park within 10km radius of the project. However, wildlife conservation plan for Schedule-I species for Chinkara is submitted to DCF, Bikaner on 21.09.2023 for approval.

6.6.2.5: Mining Plan:

Mining plan and progressive mine closure plan of Barsingsar lignite mine had already been approved by MoC vide letter dated 08.09.2004 and 31.03.2011, respectively. The latest Mining plan and Mine Closure Plan has been approved by MoC vide letter dated 21.04.2023.

6.6.2.6: Method of Mining:

(i) Gross geological reserves within the mining lease area are 77.94 MT. Net geological reserves are 72.10 MT out of which 17.63 MT reserves are blocked in NE and West pits. The existing mine is planned for the Barsingsar main pit only. West and NE blocks are not considered at present. However, option is kept open to mine these blocks in future. The mine is operated through an open-cast method using conventional mining equipment (CME) technology. Total extractable lignite reserves are 53 million tonnes and total overburden is 255.18 million cum. The rated capacity of the mine is 2.1 MTPA. As on 31.03.2023, 17.26 MT reserves are exhausted and balance reserves are 35.74 MT. Balance mine life is 26 years.

Presently, the project has 1 no's of external OB dump over an area of about 215 ha and the average height of the dump is about 45 m. So far, around 81.97 Mm^3 of OB stored in the external dump.

Total quarry area 411 Ha out of which backfilling will be done in 288 while final mine void will be created in an area of 123 ha with a depth of 50 m. Backfilled quarry area of 288 ha shall be reclaimed with plantation.

Reclamation Plan in an area of 971 ha, comprising of 411 ha of excavation area and 56 ha of green belt. In addition to this, an area of 133 ha included in the safety zone area has also been proposed for green belt development.

(ii) **Land Use Details:**

Pre-mining land use details: (Area in Ha)

S. No.	Land Use	Within ML Area	Outside ML Area	Total
1.	Agricultural Land (Non-irrigated land)	896.24	--	896.24
2.	Forest Land	--	--	--
3.	Wasteland	--	--	--
4.	Grazing Land	--	--	--
5.	Surface Water Bodies	--	--	--
6.	Settlements	--	--	--
7.	Others (Specify) Government land	74.76	--	74.76
8.	Old Excavation Area (EastQuarry)	--	--	--
9.	Old Excavation Area (WestQuarry)	--	--	--
10.	Old OB Dumps	--	--	--
11.	Roads & Mine Infrastructure	--	--	--
12.	R & R Colony	--	--	--
13.	Staff Colony	--	--	--
14.	Green Belt	--	--	--
15.	Balance Area	--	--	--
	Total Project Area	971.00		971.00

Post Mining

S.N.	Land use	Land use (ha)				
		Plantation	Water Body	Public Use	Undisturbed	Total
1	External OB Dump	215	-	-	-	215
2	Topsoil Dump	10	-	-	-	10
3	Excavation	288	123			411
4	Roads	5	-	-	-	5
5	Built-up Area	-	-	-	-	
6	Green Belt	56	-	-	-	56
7	Undisturbed Area	138	-	-	-	138
8	Safety Zone/ Rationalization Area	133	-	-	-	133
9	Diversion/ Below River/ Nala/Canal	-	-	-	-	
10	Water Body	-	-	-	-	
11	Staff Colony	-	-	-	-	
1	Garland drain/ Embankment	3	-	-		3
	Total Area	**848**	**123**			**971**

(iii) **Transportation of Mineral:**

Currently, transportation of lignite is carried out through covered belt conveyor system to the pit head thermal power plant.

6.6.2.7: Baseline Data: Baseline data generated from 1st March 2021 to 31st May 2021 and one-month additional data from 27th April to 27th May 2023.

Period	1st March 2021 to 31st May 2021
AAQ parameters at 9 locations (min. & Max.)	• PM_{10} = 31.5-94.5 µg/m³ • $PM_{2.5}$ = 17.1-46.2 µg/m³ • SO_2 = 10.1-21.3 µg/m³ • NOx = 12.4-30.7 µg/m³. • CO =246-547 µg/m³.

	• O_3 = 2.3-7.2 µg/m^3. • NH_3 < 20 µg/m^3.
Incremental GLCLevel	This is not an expansion proposal the baseline is for existingcapacity.
Ground Waterquality	No ground water source is present within 10km study area. illages are using supply water for domestic purpose.
Surface water	No sources of surface water observed within the study area during the study period.
Noise levels Leq(Day & Night) at 8Locations	The Leq values for day time was observed to be 41.9 to 68.8 dB (A). The Leq values for day time and night time was 39.4 to 57.3 dB (A).
Soil Quality	The soil sampling was carried out at 9 locations. Data computations for 9 sampling locations were carried out and summarized as under: Based on particle sizes distribution and texture, the soils are mostly sandy loam and sandy clay loam category. The pH value of the soil suspension varied from 7.48 to 7.92. In terms of soil pH, the characteristic of the soil is moderately alkaline pH in nature. The Electrical conductivity varied from 268 to 312 µS/cm. The sodium absorption ratio of soil varied from 0.55 to 0.64. The Cation exchange capacity varied from 12 to 13 meq/100 gm. The loss on ignition in terms of organic matter varied from 0.45 to 0.64%, The major nutrient such as Nitrogen, Phosphorus and Potassium level were varied from 152 kg/ha to 169 kg/ha., 18.6 to 20.5 kg/ha and 219 to 323 kg/ha respectively. The micronutrients such as copper, zinc, boron and iron are minimum and sufficient for plantation. Based on soil analysis data it is concluded that soils are moderately alkaline in nature at all sampling locations. The organic carbon status is medium (between 0.48 to 0.64%. The soils are also sufficient in Nitrogen (between 38 mg/kg to 43 mg/kg., and medium in phosphorus (between 6.3 to 6.9 mg/kg). However, for successful plantation and green belt development, sufficient quantity of organic

	manure and the recommended doses of fertilizers should be added in appropriate quantity.
Water Requirement	Domestic Water Requirement: 7 KLD; Green Belt: 500 KLD Dust Suppression: 1200 KLD Total Water Requirement (Peak): 1707 KLD Source: Met from IGNP canal & Thermal Effluent

Baseline data was also validated with one-month additional data. PP submitted that ambient air quality parameters have been found within the standard prescribed limits as per NAAQS standard, 2009. Though the maximum values of PM10 and PM2.5 are approaching NAAQS, it has not crossed it. The high maximum value is due to the operations taking place within the lease area. Sources of pollution are the existing power plant as well as other industries and activities taking place in the study area and nearby. The emission sources during the initial phase of the project would be the emissions from various sources. Values of SO2, NO2 and CO are well within the NAAQS indicating that these are not emitted in high concentration. Other pollutants like Benzene, B(a)P, NH3, O3 and other Heavy Metals in dust are not very relevant to the project activities and are well within the NAAQS.

6.6.2.8: Public Hearing:

Amendment to the above TOR was issued vide letter No. IA-J-11015/28/2020-IA-II(M) dated 15th November2022 for exemption of public hearing and to invite suggestions/objections as part of public consultation for the project. The Draft EIA Report was submitted to Regional Office, RSPCB, Bikaner (Rajasthan) vide letter dated 16.06.2023 with request to initiate proceedings for public consultation. Accordingly, public notice for public written comments as per ToR amendment dated 15.11.2022 was published in two newspapers namely "The Times of India" and "Dainik Bhaskar" on 25.06.2023 in Regional language for information to the stakeholders to offer their Views/ Comments/ suggestions/ objections relevant to the project, addressing to the Regional Officer, RSPCB, Bikaner within 30 days of the publication of the notice. During the notice period, total 5 No. of representations were received from the stakeholders in Regional Office, RSPCB, Bikaner which were forwarded to M/s NLC India Ltd. vide letter dated 26.07.2023. Further, NLC India Limited vide its letter dated 14.08.2023 submitted point-wise comments on the received suggestions/objections to Regional Office, Rajasthan State Pollution Control Board, Bikaner.

PP has submitted the concerns of Public consultation and their action plan during the EAC meeting. The concern raised by public includes i) Air pollution control measures, ii) CSR done by NLC India towards construction of road, drainage, road light, electricity in Barsingsar Village, iii) Employment for Villagers, iv) Upgradation of education for local villagers, v) Greenbelt development and arrangement of water for animal and birds, and vi) Preventive measure for ground water Quality.

6.6.2.9: EMP Cost: NLCIL, Barsingsar has proposed to spend a total of Rs. 537.30 Lakhs as capital towards environmental protection measures during balance mine life. The details of capital and recurring cost of EMP are as follows:

Sr No.	Summary of EMP	Cost of EMP (Rs. In Lakhs)	
		Total CapitalCost	**Recurring CostPer Annum**
A	Air environment	11.00	31.0
B	Water environment	18.30	2.62
C	Noise and ground vibration	0.00	0.88
D	Soil and waste dump management	96.0	0.50
E	Plantation & Green belt	412.00	407.00
	Total	537.30	442.00

6.6.2.10: Damage assessment: PP has prepared & submitted the damage assessment, remediation plan, natural and community resource augmentation plan and a detailed assessment has been carried out along with EMP budget as follows:

S. No.	Damage Description	Monetary Cost

NOTARY SK. NAZRUL ISLAM Regn. No. 447/13 Expiry Date 15.08.2023 GOVT. OF WEST BENGAL

1.	As per CTO condition 33% of total land use for mining should be covered with plantation, which is 320.43 Ha. Considering the total initial mine life period of 30 years (till 2036 as per ML grant order dated 02.03.2006), on pro-rata of 10.68 Ha per annum plantation, till March 2022 there must have developed plantation in 170 ha. Till 31.03.2022 the PP has developed 138 Ha area of plantation, the difference in plantation, which is 32 Ha, will be taken for damage which includes Greenbelt plantation at Rs.150 per plant at 2000 trees per hectare density as per EC. The balance trees as per conceptual plan will be planted in upcoming years.	Total damage cost = 150*32*2000= Rs.0.96 Crores

6.6.3 Committee after deliberations noted the followings:

i. PP has obtained TOR under Violation category vide letter No. IA-J-11015/23/97-IA-II(M) dated 09.06.2022. Amendment of TOR was issued vide letter No. IA-J-11015/28/2020-IA-II(M) dated 15.11.2022 to invite suggestions/ objections as a part of public consultation instead of public hearing.

ii. PP has collected the Baseline data for period from March 2021 to May 2021 by M/s. Vimta Labs Limited (VLL), Hyderabad and additional one-month data was generated during 27.04.2023 to 27.05.2023 by GRC India Training and Analytical Laboratory (A Unit of GRC).

iii. PP has published in two newspapers namely "The Times of India" and "Dainik Bhaskar" on 25.06.2023 in Regional language for information to the stakeholders to offer their Views/ Comments/ suggestions/ objections relevant to the project. Proceeding from RSPCB was provide vide letter No. RPCB/RO/BKN/Tech/BM-731/782 dated 29.08.2023

iv. Final EIA-EMP has been prepared for capacity of 2.1 MTPA in ML area of 971 ha for Barsingsar Opencast Lignite Mine.

v. The proposal falls under violation category and committee considered the application as per SoP dated 07.07.2021 (read with OM dated 28th January, 2022) for violation category.

vi. The Hon'ble Supreme Court vide judgment dated the 7th February, 2018 in Special Leave to

Appeal (Civil) No. 32138 of 2015 in the matter of Goa Foundation versus M/s Sesa Sterlite Ltd., & Ors. has reiterated that the validity of the Environmental Clearance for mining projects granted under the EIA Notification, 1994 shall be five years.

vii. Ministry's issued a Notification dated 6th April, 2018 applicable for mining project which were granted environmental clearance under the EIA Notification, 1994, but not obtained environmental clearance for expansion / modernisation / amendment are required to obtain environmental clearance under the EIA Notification, 2006. Ministry vide its notification gave a 6 months' window for revalidating such proposals however PP did not apply in that period thereby continuing mining operation without valid EC.

viii. Meanwhile SOP for handling violation cases was issued by Ministry on 7th July, 2021 and subsequently stayed by Madras High Court. Further, Ministry issued OM regarding 28th January, 2022 regarding Observation of Hon'ble Supreme Court with reference to the SOP. Further, as per the Ministry's OM dated 08.01.2024 *"The Hon'ble Supreme Court in W.P. (C) No. 1394/2023 titled Vanashakti vs. Union of India, has stayed the operation of both the Office Memoranda dated 7th July 2021 and dated 28th January 2022 issued by this Ministry".*

6.6.4 The Committee after deliberations, is of the view that the proposal is in pursuant to SoP dated 07.07.2021 for violation category and the same has already been stayed by Hon'ble Supreme Court in W.P. (C) No. 1394/2023 titled Vanashakti vs. Union of India, has **stayed** the operation of both the Office Memoranda dated 7th July 2021 and dated 28th January 2022 issued by this Ministry. *Therefore, Committee decided to defer the proposal and is of the view that proposal may only be considereded once the Ministry issues any further direction to deal with the violation proposals. Further, the Committee is of the view that in case, proposal is to be considered in future then PP should also provide the following information:*

1) PP should submit a year-wise production and development plan (tabular format) till the end of life of mine. Year wise backfilling plan in a tabular format needs to be submitted.

2) PP should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. PP should submit the number of saplings to be planted, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this PP should show on a surface plan (5-year interval for life of mine) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. As the area is difficult for plantation the PP may take the assistance of any expert agency for plantation programme.

3) PP should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this PP should mention the number and

designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.

4) *PP shall provide the budget already spent for addressing the issues raised during PH and also submit the budget earmarked for the issues raised by public through written comments in a tabular format along with timeline for implementation.*

5) *PP shall also explore the possibility of using EV/CNG based vehicle in place of diesel operated vehicle to reduce the specific diesel consumption.*

Agenda No. 6.7

Expansion of Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in ML Area 1953.46 ha by M/s Singareni Collieries Company Limited at village Kommepalli near Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) – Reconsideration for Environmental Clearance under Ministry's OM dated 11.04.2022 (Stage I - 20% expansion) – reg.

[Online Proposal No. IA/TG/CMIN/447089/2023; File No. J-11015/268/2007-IA-II(M)]

6.7.1 The proposal is for Environmental Clearance for Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in ML Area 1953.46 ha by M/s Singareni Collieries Company Limited at village Kommepalli near Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) under provisions of 7(ii) of EIA Notification, 2006 under OM dated 11.04.2022.

The project falls under Schedule 1(a) of mining and is a Category - "A" project as per EIA notification 14th September 2006 as the mining lease area is more than 500 Ha.

6.7.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.7.2.1: Location:

(i) The project area is covered under Survey of India Topo Sheet No. 65C/16 and is bounded by the geographical coordinates ranging from Latitudes 17°09'54.59"N to 17°13'01.70"N and longitudes 80°45'43.38" E to 80°49'20.86"E.

(ii) Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13th January, 2010 has imposed moratorium on grant of environment clearance.

6.7.2.2: Mining Lease:

Sl No	Details	Area (Ha)

1	JVR OCP-II granted vide G.O Ms. No 29 dated 3.11.2016	1300.69
2	JVR OCP-I granted vide G.O Ms. No 5 dated 21.02.2005	383.05
3	JVR OCP-I granted vide G.O Ms. No 115 dated 13.05.2008	136.50
Total-1		1820.24
4	LoI for non-coal bearing area	89.85
Grand Total		1910.09

6.7.2.3 Forest Area:

(i) PP reported that 1156.72 ha of forest land has been reported to be involved in the project. Approval under the Forest (Conservation) Act, 1980 for diversion of 1156.72 ha of forest land for non-forestry purposes has been obtained as per following details:

Sl No	Details	Area (Ha)
1	F.No. 8-129/2003-FC, dated 02nd February, 2005, (JVR OCP-I 244.02 ha)	244.02
2	F.No. 8- 56/2008-FC, dated 03rd July, 2012, (JVR OCP-I Expansion 136.50 ha)	136.50
3	F.No. 8-56/2014-FC, dated 30th May, 2017 , (JVR OC-II 776.20 ha)	776.20
Total		1156.72

6.7.2.4 Protected Area:

(i) No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10 km boundary of the project.

(i) Wildlife conservation plan for Schedule-I species has been already obtained with an amount of Rs. 2.57 Crores from the Principal Chief Conservator of Forest (HoFF) and Chief Wild life Warden (FAC), TS and the funds were deposited with State Forest Dept. on 09-11-2021.

6.7.2.5: Previous Approvals:

Sl No	Details	Area (Ha)	Capacity (MTPA)

1	JVR-I (expansion project 2.5 MTPA to 5.0 MTPA) granted under violation category vide letter dated 1.02.2021.	544.81	5
2	JVR-II vide letter dated 28.03.2010	1409.81	5
Total		1954.62	10
3	JVR (I & II) amalgamation and expansion EC dated 11.10.2021 and 4 MTPA coal washery within ML.	1953.46	10

6.7.2.5 Method of Mining & Mining Plan:

(i) Total project area is 1953.46 ha (1910.09 ha ML area and 43.37 ha colony). Mining Plan (Including Mine Closure Plan) has been approved by MoC Vide F.No PCA-38011/12/2017-PCA dated 29th March, 2019. PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 1910.09 Ha.

(ii) **Land use details of mine:** Theland usage pattern of the project is as follows:

Pre-mining Land use details (Area in ha)

Sl. No.	Land use	Within ML Area(ha)	Outside ML Area (ha)	Total (ha)
1.	Non-Forest Land			
	Agriculture	691.74	22.57	714.31
	Grazing	3.75	-	3.75
	Water Body	37.29	-	37.29
	Roads	12.24	-	12.24
	Villages	8.35	-	8.35
	Waste Land	-	20.80	20.8
	Sub-Total	753.37	43.37	796.74
2.	Forest Land	1156.72	-	1156.72
	Total	1910.09	43.37	1953.46

Post Mining:

Post Closure Land use status is furnished hereunder: (Area in ha)

Sl. No.	Type	Total Area	Plantation	Water Body	Public / Company Use
1	Excavation/Quarry Area:	1030.9	-	-	-

	(a) Backfilled Area	531.75	531.75	-	-
	(b) Excavated Void	499.12		95.56	-
2	External Dump	507.05	507.05	-	-
3	Safety Zone /Rationalization area	177.69	162.69	-	15
4	Road& Infra-structure area	152.74	58.89	-	93.85
	(a) CHP & Coal Yard	22.33	22.33	-	-
	(b) Coal Washery	*13.03*	*1.13*	-	*11.9*
	(c) Road Diversion	*18.97*	*13.88*	-	*5.09*
	(d) Magazine	*6.94*	*1.45*	-	*5.49*
	(e) Railway Siding	*43.15*	*1.74*	-	*41.41*
	(f) Mine Service Facilities	*48.32*	*18.36*	-	*29.96*
5	Garland Drains, Settling Ponds	26.78	13.52	13.26	-
6	Embankment	14.96	14.96	-	-
7	Water Reservoir near pit/ Water Body	-	-	403.56	-
Outside ML area					
8	Colony/township	43.37	-	-	43.37
	GRAND TOTAL	**1953.46**	**1288.86**	**512.4**	**152.22**

(iii) Total geological reserves reported in the mine lease area are 309.56 MT with 291.97 MT extractable reserves. Percent of extraction is 94.32%. Balance extractable reserves are 206.79 MT as on 31th March, 2023.

(iv) 6 seams with thickness ranging from 0.05 m – 15.20 m are workable. grade of the coal is G-9 to G-12, stripping ratio 4.12 Cum of OB per 1 tonne of coal, while gradient is 1 in 4.25 to 1 in 11.

(v) Method of mining operations envisages by opencast method.

(vi) Life of mine is 23 years from 2023-24.

(vii) The project has one external OB dumps in an area of 507.05 ha with 120 m height above ground level and 374.61 Mm3 of OB. Internal OB dump in an area of 531.75 ha with 827.72 Mm3 of OB is envisaged in the project.

(viii) Total quarry area is 1030.87 ha out of which backfilling will be done in 531.75 ha while final mine void will be created in 499.12 ha (121.24 ha in East Side and 377.88 ha in South Side) with a max. depth of 363.45 m (146 m in East Side & 363.45 m in South Side) will be converted in to water body. Backfilled quarry area of 531.75 ha shall be reclaimed with plantation. Final mine voids will be converted into water body.

(ix) Reclamation Plan in an area of 1288.86 ha, comprising of 507.05 ha of external dump, 531.75 ha of internal dump and 162.29 ha of green belt. In addition to this, an area of 87.77 ha, included in the Infrastructure area etc has also been proposed for green belt development.

(x) **Transportation of Coal:** Transportation of coal has been proposed from quarry to pit head by Trucks/Dumpers, from surface to siding (Railway siding, Sathupalli) by belt conveyor) and from siding (Railway siding, Sathupalli) to customers by rail.

6.7.2.6 Baseline Data:

Environmental Baseline data was generated in the summer season from March to May, 2023 (Summer Season).

Air Quality	Ambient air quality data monitored in the core zone shows that PM10 concentrations varied from 94µg/m3 to 151µg/m3, the minimum concentration was observed at JVR OC Mine (I&II Expansion) PO Office (CA-1) and maximum concentration was observed at JVR OC Mine (I&II Expansion) BWS (CA-2). The PM2.5 concentrations were in the range of 31.8µg/m3 to 52.1µg/m3. The minimum concentration was observed at JVR OC Mine (I&II Expansion), PO Office (CA-1) and maximum concentration was observed at JVR OC (I&II Expansion), BWS (CA-2). The SO 2 and NO 2 concentration varies from 14.1µg/m3 to 17.7µg/m3 and 21.3µg/m3 to 27.4µg/m3 respectively. All the parameters were found to be within the coal mines standards. In buffer zone, the concentration of PM_{10} values varied from 45µg/m3 (Jaganthapuram village) to 69µg/m3 (Rejarla). The $PM_{2.5}$ concentration varied from 19.0µg/m3 (Jaganthapuram) to 28.7µg/m3 (Rejarla Village). The SO2 and NOx concentration had varied from 12µg/m3 (Pallewada) to 14.9µg/m3 (Vengalarao Nagar Village) and 17.4µg/m3 (Cherukupalli Village) to 22.5µg/m3 (Vengalarao Nagar) respectively. All the values were found to be within the prescribed limits as per National Ambient Air Quality Standards prescribed by MoEF&CC.

	The incremental increase in the values was projected to be in the range of 1.25µg/m^3 to 5.58 µg/m^3 for PM_{10} and 0.47 µg/m^3 to 2.35µg/m^3 for $PM_{2.5}$ respectively. Whereas, for SO_2 it is in the range of 0.09µg/m^3 to 0.58µg/m^{3}and that of forNOx is 0.14µg/m^3 to 0.93µg/m^3. The value of Total GLC is for PM_{10} in the range of61.03 µg/m^3 to 129.58µg/m^3 and that of for $PM_{2.5}$ is 53.06 µg/m^3 to 23.92µg/m^3, whereas for SO_2 it is in the range of 13.76µg/m^3 to 17.87µg/m^3 and 20.29µg/m^3 to 27.68µg/m^3 for NOx respectively. PP submitted that predicted total GLCs at all locations in respect of PM_{10}& $PM_{2.5}$, SOx & NOx are within the prescribed limits after expansion of mining operations in the project.
Surface Water	Surface water Monitoring was done at 5 locations. The result indicates that the pH value in the range of 7.2 to 7.9 and its turbidity value is 0.07 to 10.9 NTU, dissolved oxygen in the range of 5.6 to 6.5 mg/l, dissolved solids ranged 242 to 956 mg/l, Surface water samples have Coliforms ranges between 94 to 240 MPN/100ml and contaminated due to surface runoff entering these sources. The analysis results of surface water samples from all the sampling locations shows that the water quality conforms to Class–B (Outdoor bathing (Organized) Criteria.
Ground Water	pH values are in the range between 6.7 to 7.3 in the groundwater samples collected within the study area. TDS concentrations are in the range of 510 - 1262 mg/L, are above the acceptable limit of 500mg/L but within the permissible limit of 2000mg/L at all locations. Calcium concentration is observed to be within the acceptable limit of 75mg/L at all the locations except at Pallewada GW-4 where the value (158mg/L) is above the acceptable limit but within the permissible limit of 200mg/L. Magnesium concentrations are observed to be above the acceptable limit of 30mg/L but within the permissible limit of 100mg/L at all locations (40, 37, 78, 95, 57mg/L). Chloride concentration is observed to be within the acceptable limit at all the locations except at Pallewada GW-4 where the value (366mg/L) is above the acceptable limit of 250mg/L but within the permissible limit of 1000mg/L. Fluorides concentrations are observed 0.34 to 0.81 mg/L which is well within the acceptable limit (1.0 mg/L) at all the locations. Sulphates,

	Nitrates & Iron concentrations were observed to be within the acceptable limit at all locations. The total alkalinity concentration(175mg/L) at Vengal Rao Nagar GW-1 is within the acceptable limit of 200mg/L and that of remaining samples are above the acceptable limit but within the permissible limit of 600mg/L. Total hardness concentration is observed to be above the acceptable limit but well within the permissible limit of 600mg/L. The concentrations of heavy metals Cadmium (Cd), Copper (Cu), Lead (Pb), Arsenic (as As), Chromium (Cr), were either below the detection limits or below the permissible limits. The ground water quality in the study area of the project indicates that the water can be used for drinking purposes in the absence of any alternate sources of supply.
Noise Quality	In core zone maximum value of Leq Day is 60.7 dB(A) at JVR OC Mine (I&II Expansion), BWS (CN-2), and minimum is 55.4 dB(A) at JVR OC Mine (I&II Expansion), PO Office (CN-1) and maximum value of Leq Night is 42.4 dB(A) at JVR OC Mine (I&II Expansion), BWS (CN-2), and minimum is 38.3 dB(A) at JVR OC Mine (I&II Expansion), PO Office (CN-1). In buffer zone maximum value of Leq Day is 51.9 dB(A) at Kistaram Village (BN-3), and minimum is 49.2 dB(A) at Pallewada village (BN-8) and maximum value of Leq Night is 40.1 dB(A) at Sathupalli Town (BN-2), and minimum is 36.7 dB(A) at Vengalarao nagar (BN-1). It is observed that the noise levels in terms of Day Leq and Night Leq are well within the stipulated standards at all the locations in core and buffer zone. The traffic and commercial activities are causing the increased noise levels.
Water Requirement	Total water requirement for the project is 2410 KLD, • Dust suppression: 2200 KLD • Domestic use: 90 KLD • Plantation & Others: 40 KLD • HEMM Washing: 80 KLD

	PP submitted that Ground Water Clearance was obtained vide Lr. No. 2182/HgI/2008, dated 05th May, 2021and is valid for five years.

6.7.2.7 Public Hearing:

Public hearing for the existing project of 10 MTPA capacity in an area of 1953.46 ha was conducted on 14th February, 2020 at JVR Government college, Sathupalli, Major issues raised in the public hearing include development of surrounding areas, infrastructure facilities employment of local, compensations for land, education and health, effects of air, noise, water, and road repairs etc. PP also submitted the summary of issues raised during Public Hearing existing JVR OC Mine (I&II Expansion) project of 10 MTPA and action taken for the same.

6.7.2.8 Past production details:

PP reported that the project does not involve violation of the EIA Notification, 2006 and amendment issued there under. The last EC was granted on 11.10.2021 and PP submitted the coal production from the mine from 2021-22 onwards, is as under:

Year	EC Sanction capacity (MTPA)	Actual Production (MTPA)	Excess Production beyond the EC
2021-22	10.00	07.35	0
2022-23	10.00	10.00	0

6.7.2.9 EMP Cost:

Environment Management Cost is Rs. 13.36 crore and recurring cost is 8.86 /tone.

6.7.2.10 Others:

(i) The project does not involve project affected families. No R&R involved.

(ii) Joint venture cartel has been formed - Not Applicable.

(iii) Consent to Operate for the existing capacity was obtained from the State PCB on 13th April, 2022 and is valid till 31st October, 2026.

(iv) No River/nalla is flowing within the boundary of lease.

(v) Total cost of the project is Rs. 47322 lakhs. Cost of production is Rs. 1225.97/- per ton, CSR cost is 2% of average net profits of the company made during last three years at company level, R&R cost is Nil.

6.7.3 Committee after deliberation noted the followings:

(i) Earlier the proposal was considered in the 3rd EAC meeting held during 16-17 November, 2023 wherein the committee deferred the proposal for want of requisite information. PP submitted the reply on Parivesh portal vide letter dated 30.12.2023 and the proposal is now placed in EAC meeting held during 17-18 January, 2024. The information provided by PP is as follows:

Sl.No.	Observation of EAC	Reply by PP
1.	PP should submit the certified compliance report after completing 90% of the EC conditions along with compliance of Remediation plan, Natural Resource Augmentation plan and Community Resource Augmentation plan. Also, status of construction of school and hospital and its operational shall be submitted.	• Director, Sub-Office, MoEF&CC, Hyderabad inspected the mine on 20.09.2023 and issued Certified Compliance Report on 20.10.2023. • 90% of Remediation plan, Natural Resource Augmentation Plan and Community Resource Augmentation Plan activities have been completed. • Director, Sub-Office, MoEF&CC, Hyderabad issued CCR certifying that all RP&NCRAP works are in progress as per schedule.
2.	PP shall submit the status of pending court cases as well as disposed of cases from any court (Civil court, High court and Supreme Court)/NGT.	• Two cases were admitted by NGT, Southern Bench, Chennai. 1. Case No. O.A. 174 of 2020 (SZ), dt: 08.09.2020 - Sri Banothu Nandu Nayak, R/o Sathupalli filed a case in NGT alleging environmental violations and damage caused to houses by SCCL in operation of JVR Opencast mines. 2. Case No. O.A.No.20 of 2021(SZ), dt: 27.01.2021 - Sri Oggu Srinivasa Reddy, R/o Sathupalli and another filed a case in NGT in regard to violation of environmental conditions by SCCL in operation of JVR OCP-II. Common judgment: • Hon'ble NGT through a common judgment dated 06.05.2022 directed SCCL to pay a compensation of Rs.41.21Crores [i.e. Rs.58.86 Crores (10% of the profit) - Rs.17.65 Crores (3% of the profit) which was directed to be adjusted towards the remediation plan] within a period of 3 months with the Telangana State

		Pollution Control Board along with other directions to comply by SCCL. • SCCL approached Hon'ble Supreme Court regarding the common judgment and the apex court while granting stay order directed SCCL to deposit 50% of amount as imposed by Hon'ble NGT. SCCL deposited 50% of the amount with the Tribunal. The case is presently pending with the Hon'ble Supreme Court.
3.	PP shall submit the technical justification for not implementing the conditions of surface miner and plantation of sal trees with its nursery. Further, difference of emission and impact due to shovel dumper and surface miners should be provided.	(a) Justification for not implementing surface miner: • The geological structure of JVR OC Block is in the form of a syncline which facilitatesquarry opening from all the 3 sides along the syncline where the seams in crop. The gradient of coal seams varies from 1 in 1.25 to 1 in 11. At the in crop area of the block it is very steep and gradually flattens as the depth of workings increase. • Till date, the quarry is being operated in the steep gradient areas (1 in 3 to 1 in 4) which are not amenable for deploying Surface Miner. • As the land acquisition including diversion of state highway along south-east direction was completed recently, the coal bearing area which is flatter (up to 1 in 5) is now exposed and hence, is favourable for deploying surface miner. As such, it is now proposed to deploy the Surface Miners in this area.
4.	PP shall submit the status of mine closure activity w.r.t. area of already reclaimed (biologically) and proposed area to be completed in 2-3 years.	• All the Mine closure activities are being carried out as per the approved Mining Plan and Mine Closure Plan. Till date area reclaimed is about 223.70 ha against the 164.54 ha as per approved EMP. • In addition to 223.70 ha of plantation within the project area about 132.00 ha plantation was done in outside project area beyond mandate. • It is proposed to reclaim about 377.30 ha (90.00 ha over back filled area, 200.60 ha over

		external dump, 69.00 ha in safety zone and 11.00 ha avenue plantation) in the next 3 years.
5.	PP to submit the details related to the existing mechanized transportation route and preparedness for transporting 12 MTPA of coal.	• A Railway line from Bhadrachalam Road to Sathupalli town up to JVR OCP railway siding for a length of 54.10 km is completed by 28.05.2022 in collaboration with South Central Railway with a cost of Rs.927.94 Crores (SCCL share: Rs.618.55 Cr and Railway share:Rs.309.39 Cr) for transportation of coal by rail mode from the project. • A modern CHP with two nos. of Rapid Loading System (5500-6000 tph) and high-capacity conveyors (up to 3000 tph) from pit head up to Silos (2 Silos of each 1000t capacity) along with over ground bunkerage of 24,000 tonnes storage capacity is also established and commissioned on 28.05.2022 which can handle up to 15 MTPA. • The existing JVROC CHP with two nos. of Rapid Loading System (Silos) and high-capacity conveyors can handle up to 15 MTPA of coal comfortably.
6.	PP shall submit the Approved Mine Plan document for its proposed capacity after its approval from its Board, considering the justification of OM issued by Ministry of Coal.	The Mining plan for the proposed peak capacity of 15.00 MTPA has been approved by the Board of Directors in the meeting held on 04.11.2023 vide minute No. 568:5:14.
7.	PP should install CAAQMS on urgent basis in consultation with state pollution control Board and share their online data with the CPCB/SPCB.	• One Continuous Ambient Air Quality Monitoring Station (CAAQMS) is installed in the core zone of the project in consultation with State Pollution Control Board and connected to TSPCB portal online. • 10 No.s of ambient air quality stations were established in core zone (2 No.s) and buffer zone (8 No.s) of the project as part of post project environment monitoring. • As per EAC advise, order for procurement and installation of another CAAQMS in the buffer zone is placed and will be installed shortly in

		consultation with State Pollution Control Board.
8.	PP should submit existing status of plantation along with the plantation proposed in the upcoming year considering native species only.	• Till date plantation was carried out in about 223.70 ha against the 164.54 ha as per approved EMP. In addition to 223.70 ha of plantation within the project area about 132.00 ha plantation was done in outside project area beyond mandate. • The stage wise plantation details are furnished below: Plantation is being carried out with the following native species: *Hardwikia binata, Dendrocalamus strictus, Ficus religiosa, Pterocarpus santalinus, Azadirachta indica, Limonia acidissima, Ficus bengalensis, Aegle marmelos, Mitragyna parvifolia, Dalbergia latifolia, Pterocarpus marsupium, Syzygium cumini, Albizzia procera, Terminalia bellarica, Pongamia pinnata, Madhuka indica, Tamarindus indica, Pithecelobium dulci, Sterculia urens, Dalbergia sissoo, Bombax ceiba, Albizzia lebbek.*
9.	PP should submit plan to strengthen the Environmental cell with qualification having environment engineer's/science degree and by developing dedicated environment laboratory at with certain timeline.	• SCCL has a full-fledged Environment Cell, led by General Manager (Environment) who directly reports to the Director of the company. • Corporate Environment Department functioning under the GM (Environment) is having officers with environmental degrees. • Further there are 11 administrative Areas under the control of Area General Managers who will be guided by GM (Environment) related to environmental protection and other compliance conditions. In each Area, environment cell is functioning with an environment officer having environmental degrees. • In addition, qualified environmental officers in each Project are also working for fulfilling the necessary statutory compliance. In each operational area, an Environment Management Committee (EMC) has been constituted with multi-disciplinary team. This committee is chaired by Senior officer of the area

		(SO to GM) to protect and guide in implementation of the environmental safeguards.
10.	PP should submit the status upon the implementation of M-sand plant with the ML area.	• In compliance to the EC condition of JVR Coal Mine (I&II Exp.) project, an M-sand plant has been established on a pilot scale in Medapalli open cast project (MOCP) of SCCL. • Plant Details: Capacity: 3,000 cu.m per day. • After commercial success of the existing M-sand plant, SCCL will revise the existing Mining Plan of JVR Coal Mine (I&II Exp.) and establish M-sand plant within the project area.
11.	PP should survey to assess the number of house damaged due to blasting within & in the radius of 1km from periphery of ML boundary and its remediation plan.	• The criteria for vibration standards, peak particle velocity (PPV) has been globally used in practice for assessment of blast induced damage to structures. DGMS technical circular 7 of 1997 is considered as vibration standard for the safety of surface structures in mining areas. • Blast induced ground vibration are monitored regularly and found less than 5 PPV well within the stipulated standards of 10 PPV. Blasting operations within 500 m up to 125 m from habitation were carried out as per the blasting permissions obtained from DGMS. • Controlled blasting techniques are also being followed to reduce the blast induced ground vibrations while blasting near to habitation. • There was no damage observed to the houses within 1 km from the periphery of the mine boundary. However, on humanity grounds, SCCL renovated the old houses (249) in the periphery of the project in NTR colony, Vengalrao Nagar, Rejarla village (BC colony), Kistaram (SC & BC colony) with an expenditure of Rs.2.04 Crores.
12.	PP should submit the CCO certified past production detail before	Certification has been obtained from the CCO for the past production details before and after

	amalgamating mine and after amalgamation.	amalgamation of the mine. A copy of the same is furnished.
13.	PP shall submit the compliance of issues raised during earlier Public Hearings for violation EC and amalgamated EC and expenditures incurred.	PP has enclosed the information with the issues raised along with their corrective measures.
14.	PP shall submit the plan of filling the mine void up to the level of ground (if technically feasible) and accordingly Mine plan shall be submitted.	• As per the approved Mining Plan and Mine Closure Plan by MoC, GoI, ○ Total quarry area of the project is 1030.87 ha out of which backfilling will be done in 531.75 ha. ○ Final mine void with water body will be created in 499.12 ha with a max. depth of 363.45 m. ○ Backfilled quarry area of 531.75 ha shall be reclaimed with plantation. • Filling the mine void up to the ground level requires the following: ○ Back filling of 499.12 ha of final void up to ground level requires about 885.23 Mm3 of over burden which needs to be re-handled from already reclaimed OB dumps. ○ About 995.75 ha of plantation over the dump area (488.70 ha - Internal dump above GL & 507.05 ha - External Dump) is to be disturbed for back filling 885.23 Mm3 in the final void. ○ Apart from disturbing the fully reclaimed area, the emissions liberated due to re-handling of OB for back filling will further pollute.

		○ Filling of 885.23 Mm3 of void requires about Rs. 13,604.21 Cr (@ Rs.153.68 per m^3) which is economically not feasible. ○ Due to the above mentioned reasons, it is not environmentally and economically feasible for filling of void up to ground level. ○ However, as per the standard condition being stipulated in the ECs, engineering interventions will be implemented for sustenance of aquatic life in the final mine void.
15.	PP shall submit plan for third party monitoring of planting preferably through an institution of MoEF&CC (ICFRE etc).	• CSIR-NEERI, Nagpur has conducted the third party audit of EC compliance including plantation during June-July' 2023. However, as advised, third party monitoring of planting will be again carried out by ICFRE within 2 years.

(ii) PP had obtained the EC vide Ministry's letter No. J-11015/268/2007-IA. II (M) dated 11.10.2021 for 10.00 MTPA in ML area of 1953.46 ha (1910.09 ha of lease area and 43.37 ha of colony).

(iii) PP submitted the mining plan approved by company's board under clause 1.3(b) of guidelines dated 29.05.2020 for a capacity of 15 MTPA over an area of 1910.09 Ha.

(iv) Life of mine is 23 years from 2023-24.

(v) Diversion of 1156.72 ha of forest land has been obtained vide MoEF&CC letter Nos. F. No. 8-129/2003-FC, dated 02.02.2005 (JVR OCP-I 244.02 ha), F. No. 8-56/2008-FC, dated 03.07.2012 (JVR OCP-I Expansion 136.50 ha) & F. No. 8-56/2014-FC, dated 30.05.2017 (JVR OC-II 776.20 ha).

(vi) No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported within 10 km boundary of the project.

(vii) Wildlife conservation plan for schedule I species has been obtained from the Principal Chief Conservator of Forest (HoFF) and Chief Wild life Warden (FAC), TS and the funds deposited with State Forest Dept. on 09-11-2021.

(viii) PP has obtained the Ground Water Clearance vide letter no. 2182/HgI/2008, dated 05.05.2021 and is valid for five years.

(ix) Public hearing was conducted on 14.02.2020 for capacity of 10 MTPA for the project area of 1953.46 ha including ML area of 1910.09 Ha.

(x) Consent to Operate for the existing capacity was obtained from the State PCB on 13.04.2022 and is valid till 331.10.2026.

(xi) One court case pending before the Hon'ble Supreme Court in which while granting stay directed to pay 50% of amount imposed by the National Green Tribunal, Southern Bench, Chennai in following court case:

1. Case No. O.A. 174 of 2020 (SZ), dated 08.09.2020 - Basing on a complaint received from Sri Banothu Nandu Nayak, R/o Sathupalli in regard to environmental violations and damage caused to houses by SCCL in operation of JVR Opencast mines.
2. Case No. O.A.No.20 of 2021(SZ), dated 27.01.2021 - Basing on a complaint received from Sri Oggu Srinivasa Reddy, R/o Sathupalli and another in regard to violation of environmental conditions by SCCL in operation of JVR OCP-II.

(xii) PP has submitted the compliance as per OM dated 11.04.2022 w.r.t expansion under 7 (ii) (a) Stage I (20%) for Jalagam Vengala Rao Opencast Mine Project within the same mine lease area of M/s Singareni Collieries Company Limited:

Sl.No.	Criteria as Per OM dated 11.04.2022	Reply
1.	The project have gone through the public hearing process, at least once, for its existing EC capacity on which expansion is being sought, except those categories of projects which have been exempted as per para 7 II (i) of EIA Notification 2006 and its amendments.	Public Hearing was held on 14th February, 2020. MoEF&CC granted EC for a capacity of 10.00 MTPA in ML area of 1953.46 ha on 11th October, 2021.
2.	There should not change in Category of the project from "B2" to "B1" or 'A' due to proposed modernization or expansion.	No change in category. Category 'A'.
3.	There is no additional land acquisition or forestland diversion involved for the proposed expansion or there is no increase in lease area with regard to mining vis-a.-vis the area mentioned in the EC, based on which public hearing has been held earlier.	There is no additional land requirement for the proposed expansion as there is no increase in project area.

4.	The proposed expansion shall not be more than 50% of production capacity as mentioned in the prior EC, issued on the basis of public hearing held and the same shall be allowed in minimum three phases.	Proposal is for 20% production enhancement (1st Phase) over the production capacity mentioned in the prior EC, issued on the basis of public hearing held.
5.	Predicted Environmental quality parameters arising out of proposed expansion / modernization shall be within the prescribed norms and the same shall be maintained as per Prescribed norms.	Air quality impact prediction modelling is done for 50% expansion i.e., from 10.00 MTPA to 15.00 MTPA. All the predicted values are within the prescribed norms.
6.	The proposed expansion should not result in reduction in the greenbelt area as stipulated in the earlier EC, or if the existing ratio of greenbelt is more than 33%, after expansion it should not reduce below 33%.	There is no reduction in the greenbelt area due to the proposed expansion. The green belt area as per the existing EC as well as proposed expansion is 1288.86 ha at post closure stage, which is about 67.5% of the total project area.
7.	The project proponent should have satisfactorily complied the conditions stipulated in the existing EC(s) and satisfactorily fulfilled all the commitments made during the earlier public hearing/ consultation proceedings and also the commitments given while granting previous expansion, as may be applicable. This shall be duly recorded in the certified compliance report issued by the IRO/CPCB/SPCB, which should not be more than one year old at the time of submission of application	Director, MoEF&CC, I.R.O., Hyderabad inspected the project on 20th September, 2023 and issued latest certified EC compliance report. The conditions of existing EC are being complied and the commitments of earlier public hearing are being fulfilled.
8.	Public Consultation shall be undertaken [if applicable as per table below] by obtaining response in writing, as per para 7 III (ii) (b) of EIA Notification 2006, except those categories of projects which have been exempted as per para 7 III (i) of EIA Notification 2006 and its amendments.	The proposal is for 20% increase of production capacity only. Public consultation will be undertaken at the time of expansion proposal from 40% to 50%
9.	Effluent & ambient monitoring including air quality monitoring systems as specified in the existing EC, if stipulated, should have been installed.	Effluent monitoring and air quality monitoring is being carried out as specified in the EC. An online ambient

		air quality monitoring station was established at the core zone.

6.7.4 The EAC after detailed deliberations observed that the instant proposal has been applied under Ministry's OM dated 11th April, 2022 for expansion in capacity upto 20% with exemption in public hearing under clause 7 (ii)(a) of EIA, Notification, 2006. Earlier Ministry had issued EC on 11.10.2021and public hearing for the same was conducted on 14.02.2020.

The Committee observed that PP has proposed the project area as 1953.46 (1910.09 Ha within ML area and 43.37 Ha outside lease area for Colony/township). The Committee is of the view that EC may be considered for an area for which lease including LOI and mining plan is there i.e. 1910.09 Ha.

The Committee discussed certified compliance report submitted by sub-office Hyderabad of RO, Chennai vide letter dated 20.10.2023 and observed the conditions which are non-complied are mainly due to non-commissioning of the Coal Washery. PP submitted that once the Washery will be commissioned the conditions will be complied. The Committee observed that sub-office Hyderabad mentioned that i) PP should not plant Conocarpus spp, in green belt which is an exotic species, ii) PP may seek amendment in special condition (vi) as growing of SAL tree is not having favourable conditions at the project area, iii) A wildlife expert may be hired to monitor wildlife movement in the areas and also support SCCL in effective implementation of Wildlife Action Plan, iv) PP shall continuing to submit the six-month compliance through PARIVESH Portal only. In addition to this some partial compliance include i) PP has yet to complete construction of STP at Rudrampur Colony of Kothagudem, ii) PP has not created another water tank near Chilla vagu before removing Jeenugupalli tank in the project area, iii) PP has not provided the information related to on ground implementation of works and financial utilization, which may be sought from the Forest Department in the implementation of Wildlife Conservation plan, iv) PP has yet to construct 200 KLD STP at Sathupalli town. Therefore, the Committee emphasised on the compliance of these conditions.

The final mine void area recommended by PP seems to be large. Committee asked the PP to prepare the scientific reclamation plan in order to reduce the void area post mining. Another, CAAQMS to be installed in the buffer zone before July, 2024. Company environment management committee should conduct the monthly review meeting. Committee also asked the PP to expedite the process of getting mining lease amalgamated. PP shall explore the possibility of utilising the mine waste by setting up of M-sand plantand necessary permission required for the same.

Based on the above discussions held in the 6th EAC meeting held during 17-18 January,20224 , the EAC ***recommended*** *the Environmental Clearance under Ministry's OM dated 11.04.2022 for expansion of Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in an area of 1910.09 Ha by M/s Singareni Collieries Company Limited at village Kommepalli near Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) with the following specific conditions in addition to specific conditions already prescribed in EC dated 11.10.2021 and Standard EC conditions under the provisions of EIA Notification, 2006 and its amendments:*

Specific condition: *-*

1) *PP to obtain the CTO for Opencast coalmine capacity of 12 MTPA after grant of EC and for existing Coal washery of 4 MTPA capacity.*

2) *PP shall complete construction of STP at Rudrampur Colony of Kothagudem, and 200 KLD STP at Sathupalli town within a period of one year from the date of grant of expansion EC.*

3) *PP should create another water tank near Chilla vagu within in a period of one year from the date of grant of expansion EC.*

4) *PP to provide free of cost treatment in the Hospital to the locals living there within the periphery of 5km radius of the ML area. A log-book shall be maintained with the detail of doctors and patient's.*

5) *PP shall get the mining lease amalgamated and submit then documents in this regard to IRO, MoEF&CC.*

6) *PP should provide the school facility to below poverty students and same shall be kept in the company record.*

7) *PP should strengthen the Plantation within/outside the premise of Mine lease area and avoid to use species like Conocarpus spp. in green belt. Further, special condition (vi) of growing of SAL tree is amended to the extent that PP shall plant native species like Siris, Neem, Palasa, Amaltas, Shisham, Amla, Jamun, Mango, Arjun, Karanja, Bija, etc. will be planted along with other species in consultation with the forest department. As ensured by PP a survival rate of at least 80% shall be maintained by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. Further, PP shall maintain atleast10 mtrs width tree plantation of broad leaves and wind break/greenshield of about 10 mts height along the boundary of coal storage yard. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year. Third party monitoring of the plantation done shall be carried out through an institution of MoEFCC (e.g ICFRE)*

8) *PP shall prepare the scientific reclamation plan in order to reduce the void area post mining.*

9) *PP should conduct the monthly review meeting with the environment management committee of the company.*

10) PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.

11) All the mitigation measures committed / envisaged in the EIA/EMP report and subsequent submission shall be implemented. PP shall install one CAQMS in the buffer zone before July, 2024. PP should annually submit the audited statement along with proof of activities carried to the Regional Office of MoEF&CC and PARIVESH Portal as the case may be for the activities carried out during previous year.

12) PP shall implement Effluent Treatment Plant for wastewater generated from workshop and Sewage Treatment Plan for its colony. No untreated water shall be discharged from mine boundaries to ponds/nallah/river.

13) PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.

14) Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.

<u>Agenda no. 6.8</u>

Himgir Coal Washery project for (5 MTPA) in an area of 13.52 ha. of M/s ACB (India) Limited located in Tehsil Hemgir, District Sundargarh, (Odisha) – Reconsideration for Amendment in Environmental Clearance dated 22.06.2009 – reg.

[Online proposal No. IA/OR/CMIN/298151/2023; File No. J-11015/925/2007-IA. II (M)]

6.8.1 The proposal is for amendment in EC dated 22.06.2009 for Himgir Coal Washery project for (5 MTPA) in an area of 13.52 ha. Of M/s ACB (India) Limited located in Tehsil Hemgir, District Sundargarh, (Odisha).

PP vide proposal No IA/OR/CMIN/298151/2023 dated 2.03.2023 applied for amendment in specific condition of EC granted on 22.06.2009 and additional specific conditions prescribed vide letter dated 22.02.2022. The details of the same are as follows:

Sl. No.	Reference of Approved EC	Description as per Approved EC	Amendment Sought
1	Additional Specific Condition No. i	SPCB shall grant Consent to Operate of 2.5 MTPA for the aforesaid project	SPCB shall grant Consent to Operate of 5.0 MTPA for the aforesaid project
2	Additional Specific Condition No. iii	As committed, project proponent to install belt conveyor system to transport coal within 2 years from date of issue of this letter.	Project Proponent can transport washed coal from Washery to Kanika Railway Siding by road with covered trucks instead of belt conveyor system

The above proposal was considered in EAC meeting 42nd EAC meeting held on 5th April 2023 wherein Committee deferred the proposal for want of requisite information. PP submitted the information and the proposal was again considered in 46th EAC meeting held on 26-27 June,2023 wherein the Committee recommended the following amendments:

Sl. No.	Reference of Approved EC	Description as per Approved EC	Amendment Sought
1	Additional Specific Condition No. i	SPCB shall grant Consent to Operate of 2.5 MTPA for the aforesaid project	SPCB shall grant Consent to Operate of 4.0 MTPA for the aforesaid project for 3 years accordingly the SPCB shall issue CTO
2	Additional Specific Condition No. iii	As committed, project proponent to install belt conveyor system to transport coal within 2 years from date of issue of this letter.	Project Proponent can transport washed coal from Washery to Kanika Railway Siding by road with covered trucks for 3 years along with mechanisation of

			transportation system shall be completed.

The above recommendation of EAC was examined in the Ministry and Ministry vide letter dated 8.11.2023 asked the PP to apply once the production reaches 2.5 MTPA. The PP on 12/12/2023 uploaded letter dated 11/12/2023 on Parivesh Portal and requested for enhancement in EC capacity from 2.5 MTPA to 5.0 MTPA. The grounds for amendment submitted by the PP is as follows:

(a) ACB (India) Limited, Hemgir washery has presently two work orders i.e. (i) 2.14 MTPA a/c Maharashtra State Mining Corporation Ltd (MSMC) and (ii) 1.50 MTPA a/c Kalkilspat Pvt. Ltd. ACBIL. Hemgir washery is already washing coal for MSMC against order of 2.14 MTPA and we are unable to commence work against Kalkilspat Pvt Limited since out of total permitted capacity of 2.50 MTPA, capacity of 2.14 MTPA is already booked a/c MSMC and balance capacity is not sufficient to take up the 1.50 MTPA order of Kalkilspat. (PP also submitted copies of said work orders.)

(b) In addition to above mentioned orders, some other customers such as Adani, Vedanta, Hindalco are also routing their coal through Hemgir siding/washery to the tune of —1.50 MTPA. They have shown their intent to wash entire coal, but due to unavailability of EC we are unable to take their order for washing of coal. It is worthwhile to bring your kind notice that 1.347 MT of coal has been dispatched from Hemgir washery/siding during current fiscal (up to Nov'23) averaging 1.68 lack per month. (PP also provided the details of monthly coal quantity handled by this Washery.)

(c) The quality of raw coal available in IB valley coal fields of MCL is generally of inferior quality, i.e. G-13/G-14 grade and is therefore unfit for consumption in Sponge Iron / cement / other units without washing. After enhancement of capacity as requested above, many plants may source their requirement of washed coal which will also reduce dependence on imported coal and result in savings in precious foreign exchange.

6.8.2 The above request of PP is now placed in 6th EAC Meeting held on 17-18 January, 2024 wherein the additionally requested the following:

AmendmentNo.01:SpecificConditionNo.(ii)

Specific Condition as per EC	Amendment Sought
SpecificConditionNo. (ii) "The Proponent shall establish a Closed Conveyor System within3 (three) years for transportation of Washed Coal between the Washery and the Railway Siding at Himgir and prior Forestry Clearance Shall be	"The companyshall transportWashedCoal betweenthe Washeryand RailwaySiding by Tarpaulin Covered Trucks through a shortest non interfering straight route of 1.860 Kms long Compacted Black Top Road straight from Washery Site to its own Rly Siding at Kanika, in

Obtained under the Provisions of the FC Act, 1980".	Himgir Tehsil without any Turning and with provision of fixed water sprinklers at both the sides at 100 mtrs apart in a Zig Zag Pattern".

ReasonforAmendment:

1. On dated 27.01.2018 Tehsildar, Himgir, Sundergarh handed over the physical possession ofthe said forest land of 2.699 Ha to ACB (India) Limited after grant of Stage - 2 FC from the office of Conservator of Forest (Central), GOI, MOEFCC, Eastern Regional Office, Bhubaneswar.

2. Thereafter ACBIL has immediately started and completed compaction of Service Road of total length of 1.86 Kms straight from Washery to its own Rly Siding in Kanika having width of 16 Mtrs.

3. While working for preparing the said service road we have studied the field situations at present regarding transport of washed coal from Washery to Railway Siding in the contextof maximum protection of the surrounding environment from the dust pollution / fugitive emission by Closed Conveyor System *vis-a-vis* Road Transport and concluded that;

   i. At the time of grant of Environmental Clearance in the year 2009 the route proposed for washedcoal transport from Washery to Rly siding was through the existing Belpahar – Sundergarh PWD road which is passing adjacent to the Washery presently the dedicated Coal Corridor of M/s MCL.

   ii. As the said road was the main commuting road for public, the Esteemed EAC Committee had given decision for establishment of Closed Conveyor system for the purpose of Washed Coal transport from Washery to Rly siding. The best option in view of protection of Environment as well as the safety of the villagers.

   iii. After receiving the Environmental Clearance ACBIL had identified the best possible route to establish Closed Conveyor system for the washed coal transportation directly from its Washery to its own Rly siding, this is a straight route of 1.860 Kms length intersecting a patch of forest land covering 2.699 Ha of Forest Land instead along the main commuting road as demarcated in the Map.

   iv. After receiving the said 2.699 Ha of diverted forest land ACBIL has completed compaction of Service Road of total length of 1.86 Kms straight from Washery to its own Rly Siding in Kanika having width of 16 Mtrs.

v. As the said route is straight from washery to Rly siding under control of ACBIL, and it is not a public road, there will not be any need for speed breaker. Thus there will not be any possibilities of spillage of coal en-route.

vi. In addition, all the vehicles will be completely covered with tarpaulin.

vii. Where as in Closed Conveyor System there will be some spillage over the service road from the coal carrying belt. The situation will be worse during any breakdown of the belt. That in turns will create again ground fugitive dust emission.

viii. Where as in Closed Conveyor System it is not completely covered. There is some possibilities of fine coal dust get emitted out in the atmosphereat a height of 5 to 10 mtrs thus will affect thetrees around.

ix. Our aim is to operate Washery while taking all precautionary measures to protect the environment from all possible pollution generation specifically fine coal dust.

x. If we transfer washed coal from our Washery to Himgir Railway Siding by Compacted Black Topped Road straight from Washery to Siding without any Turning and with provision of fixed water sprinklers both the sides at 100 mtrs apart in a Zig Zag pattern instead of Closed Conveyor System at a height of 5 to 10 mtrs above the ground level then webelieve and ensure that therewill beNO coal dust fugitive emissions orspillage that can have any adverse impact on the immediate or surrounding vicinity due to coal dustpollution.

AmendmentNo.02: Specific ConditionNo.(iii)

Specific Condition as per EC	Amendment Sought
Specific ConditionNo.(iii) "TheentirecoalrejectsshallbeusedinanFBCbasedTPP. ThelinkedFBCbasedThermalPower Plant shall be commissioned within two years of Operation of the Washery".	"TheentirecoalrejectsshallbeusedinanyFBC basedTPP insteadofonlythelinkedFBC based Thermal Power Plant"

Reason forAmendment:

i. The linked FBC based Thermal Power Plant 45 MW (WHRB 21 MW + FBB 24 MW)was of Aryan Ispat and Power Private Limited (AIPPL) located at Bomaloi.

Sambalpur, Odisha. The Power Plant of AIPPL has been commissioned with 18MW (WHRB 12 MW + FBB 6 MW) in the year 2009 with valid **Consent to Operate Order** from State Pollution Control Board vide CTO letter no. **6219/IND-I-5334** dtd. **18.04.2009.** and **letter** no. **20177 /IND-I-5334** dtd. **10.12.2009.**

ii. Due to various reasons the said linked power plant was established with much less than 50 %of EC granted limit of 45MW. Thus requirement of rejects by the linked FBB based Thermal Power plant has been drastically reduced.

iii. Therefore, ACBIL have to dispose the rejects generated to other FBB based Thermal Power Plants.

iv. Further with reference to the amendment in Environmental Protection Rule, 1986 vide Notification No. G.S.R. 443 (E) dtd. 25th June, 2021 of MoEF&CC, Govt. Of India middling and rejects to be utilised in any Thermal Power Plants, subject to the said Thermal Power Plant complying with the stipulated emission and fly ash norms as specified time to time by MoEFCC, GOI.

v. Thus our appeal is for amendment of the said specific condition No.iii accordingly as mentioned above.

6.8.3 Committee during the deliberations noted the followings:

i. PP had obtained the EC vide Ministry's letter No. J-11015/925/2007-IA. II (M) dated 22.06.2009 for 5.0 MTPA in ML area of 13.57 ha to M/s Aryan Coal Beneficiation Pvt. Ltd.
ii. EC transferred to M/s ACB India Limited vide letter no. J-11015/925/2007-IA. II (M) dated 23/04/2019.
iii. Forest clearance for 2.699 ha has been obtained for non-forestry activity vide MoEF&CC letter No. 5-ORB171/2013-BHU dated 28.06.2016.
iv. Ministry granted amendment in EC vide letter dated 22.02.2022
v. PP vide proposal No IA/OR/CMN/298151/2023 again applied for amendment in EC dated 22.02.2022 and the earlier, Committee in the 46th EAC meeting held on 5th April, 2023 recommended the proposal for production of 4 MTPA and recommended for providing 3 years' time for transportation of mineral by road. But Ministry did not accept the recommendation of EAC and asked the PP to apply once the production reaches to 2.5 MTPA.
vi. PP vide letter dated 11.12.2023 again requested for amendment in EC from 2.5 MTPA to 5.0 MTPA.

6.8.4 The EAC noted that the proposal submitted in the PARIVESH Portal is for amendment in only two additional specific conditions but PP now requesting for amendment in three conditions the details of the same are as follows:

Sl. No.	Reference of Approved EC	Description as per Approved EC	Amendment Sought	Observation of EAC
1	Additional Specific Condition No. i	SPCB shall grant Consent to Operate of 2.5 MTPA for the aforesaid project	SPCB shall grant Consent to Operate of 5.0 MTPA for the aforesaid project	As per PARIVESH Portal
2	Additional Specific Condition No. iii	As committed, project proponent to install belt conveyor system to transport coal within 2 years from date of issue of this letter.	Project Proponent can transport washed coal from Washery to Kanika Railway Siding by road with covered trucks instead of belt conveyor system	As per PARIVESH Portal

Specific Condition as per EC	Amendment Sought	Observation of EAC
<u>SpecificConditionNo. (ii)</u> "The Proponent shall establish a Closed Conveyor System within3 (three) years for transportation of Washed Coal between the Washery and the Railway Siding at Himgir and prior Forestry Clearance Shall be	"The companyshall transportWashedCoal betweenthe Washeryand RailwaySiding by Tarpaulin Covered Trucks through a shortest non interfering straight route of 1.860 Kms long Compacted Black Top Road straight from Washery Site to its own Rly Siding at Kanika, in Himgir Tehsil without any Turning and with provision of fixed water sprinklers at both the sides at 100 mtrs apart in a Zig Zag Pattern".	Additional amendmen t sought during the meeting.

Obtained under the Provisions of the FC Act, 1980".		
SpecificConditionNo.(iii) "The entire coal rejects shall be used in an FBC based TPP. The linked FBC based Thermal Power Plant shall be commissioned within two years of Operation of the Washery".	"TheentirecoalrejectsshallbeusedinanyFBC basedTPP insteadofonlythelinkedFBC based Thermal Power Plant"	Additional amendment sought during the meeting

The Committee observed that PP is required to apply when the production capacity reach 2.5 MTPA, the unit is already achieved 1.6 MTPA of Coal Processing and dispatch of 1.3 MTPA till November 2023. The Committee asked the PP whether they are able to reach 2.5 MTPA by March 2024. In this regard, PP submitted that they are already executing an order of 2.14 MTPA and to achieve 2.5 MTPA the balance quantity comes out be 0.36 MTPA but it is difficult to get the small order of exact 0.36 MTPA. PP submitted that they are getting orders of higher capacity but it is difficult to accept the same as the EC capacity is restricted to 2.5 MTPA. Committee agreed with the submission of PP and is of the view that PP has submitted sufficient supporting documents to establish the fact that they are getting the orders for more than 2.5 MTPA but not able to execute the same as the EC is restricted at 2.5 MTPA.

Committee also deliberated on the mode of transportation and also viewed the drone video shown by the PP. PP submitted that they have dedicated road under their control for the coal transportation from washery to railway siding. PP also shown the self-certified EC compliance report and informed that they have already requested RO, Bhubaneshwar for submission of CCR but the same is awaited.

Based on the document submitted and discussion held the Committee is of the view that w.r.t requested of expansion capacity from 2.5 MTPA to 5 MTPA and for additional amendment sought by PP i.e. SpecificConditionNo. (iii) as mentioned above, the same may be considered after submission of the following:

a) Proposal for amendment in EC conditions shall be submitted a fresh in PARIVESH 2.0 Portal.

b) Submission of fresh traffic study and one month baseline data.

c) Cost analysis of deployment of electric tippers vis a vis. installation of belt conveyor system for transportation of mineral from washery to railway siding.

d) Certified Compliance Report from concerned RO for compliance of 90% of the conditions.

The Committee also recommended that additional specific condition iii shall be read as "As committed, by PP, project proponent shall install belt conveyor system to transport the coal by 22/02/2025."

Agenda no. 6.9

Tawa-II UG Coal mine for increase in production capacity from 0.60 MTPA to 0.86 MTPA with increase in ML area from 520.0 ha to 523.75 ha of Western Coalfields Limited located at Village Hirapalla, Panchayat Bhogaikhapa, Tehsil Ghoradongri, District Betul (Madhya Pradesh) – For Environmental Clearance under expansion – reg.

[Online Proposal No. IA/MP/CMIN/417657/2023; File No. J-11015/53/2006-IA. II(M)]

6.9.1 The proposal is for expansion in Environmental Clearance for Tawa-II UG Coal mine for increase in production capacity from 0.60 MTPA to 0.86 MTPA with increase in ML area from 520.0 ha to 523.75 ha of M/s Western Coalfields Limited located at Village Hirapalla, Panchayat Bhogaikhapa, Tehsil Ghoradongri, District Betul (Madhya Pradesh).

6.9.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.9.2.1: Location:

i. Tawa-II UG is located in the Hirapalla village, Ghoradhongri Tehsil, Betul District, Madhya Pradesh. The mine is adjacent to Tawa UG of WCL. It is bounded by North Latitude 22^0 08' 44'' N and 22^0 10' 18'' N and east Longitude 78^0 9' 33'' E to 78^0 11' 48'' E and is covered in the Survey of India Toposheet No. 54 J/4.

ii. Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 11.04.2022 & 07.05.2022 has imposed moratorium on grant of environment clearance.

6.9.2.3: Forest Area: 400.029 Ha of forest land is involved in the project. Forestry clearance for entire 400.029 ha has been obtained. The details are tabulated below:

S. No.	Forest Area (ha)	Remarks
1	195.200	FC Obtained No F-5/29/97/10/3 dated 9/8/1999
2	201.079	FC of Stage-II Obtained No. 8-52/2017-FC dated 02.11.2023
3	3.75	FC (surface only) of 3.75 ha for power line obtained vide 6-MPB-109/2006-BHO-8241 dated 16-8-2007.

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Total	**400.029 ha**	

6.9.2.4: Protected Area:

i. Tiger corridor is 6 km in NE direction and 6.5 Km SE direction from Mine boundary. Pachmari Bio-sphere Reserve is approximately 7 km from the north side of Tawa-II Mine boundary. Satpura Nation Park is at 17 kms distance from the mine.

6.9.2.5: Method of Mining & Mining Plan:

i. Total Mining lease area as per block allotment is 520.0 Ha (additional 3.75 ha land is for power line). The mining plan including mine closure plan was approved by WCL Board vide Ref: WCL/BD/SECTT/BM-282/2016/738 Dated 05.11.2016.

ii. **Land use details of Mine:** The land usage pattern of the project is as follows:

Pre-mining:

S. No.	Type of Land	Land in ha
1	Forest	400.029 Ha
2	Agriculture	69.265 Ha
3	Other (waste land etc)	54.456 Ha
	Total	**523.750**

During Mining:

S. No.	Particular	Land in ha
1	Surface Rights for infrastructure including road	14.858
2	Mining Rights (land below which only mining activities are conducted)	508.892
	Total	523.750

Post-Mining:

SL. No.	Particular	Land in ha
1	Land are to be restored with plantation i.e. under Surface Rights for infrastructure including road	14.858
2	Undisturbed Land area i.e. under Mining Rights (land below which only mining activities are conducted)	508.892
	Total	523.750

iii. Total geological reserve reported in the mine lease area is 26.507MT, with mineable reserves are 19.727 MT. Balance extractable reserve as on 01.04.2023 is 4.806 Mt.

iv. Total 5 coal seams, only 2 seams are workable with thickness ranging from 0.92 to 3.34. Grade of coal is G-8.

v. Method of mining operations envisages by Underground Bord & pillar with Continuous Miner and LHDs Combination.

vi. Life of mine is 8 years as on 01-04-2023.

vii. Since it is an underground mine, there is no external OB dump and quarry / excavation area.

viii. **Transportation of Coal:** Coal is transportation through conveyor from face to surface and then by tippers from surface to Sarni Thermal Power Plant. Black topped road is provided for coal transportation road from surface to power plant.

6.9.2.6: Baseline Data:

i. Environmental Baseline data was generated in the summer season from 16th March, 2023 to 15th June, 2023 (summer Season) at 6 locations. The result indicates that the maximum and minimum values are 51 to 85 µg/m3 for PM10, 20 to 40 µg/m3 for PM2.5 in buffer zone. In core zone the maximum and minimum values are 131 to 180 µg/m3 for PM10, 44 to 59 µg/m3 for PM2.5. The SO2 concentrations are in the range of <10 to 15 µg/m3 and NOx in the range of 7 to 24 µg/m3. The incremental increase is projected to be 5.42 µg/m3 for PM101.31 µg/m3 for PM2.5, 0.06 µg/m3 for SO2, and 0.22 µg/m3 for NOx within buffer zone. The value of total GLC is estimated to be 87.19 µg/m3 for PM10, 40.31 µg/m3 for PM2.5,12.06 µg/m3 for SO2, and 21.22 µg/m3 for NOx. The observed pollutant levels are compared with CPCB National Ambient Air Quality Standards.

ii. Surface water Monitoring was done at 3 locations. The result indicates that the pH value in the range of 7.72 and 8.22, dissolved oxygen in the range of 4.44 to 5.8 mg/l, dissolved solids ranged 158 to 788 mg/l.

6.9.2.7: Public Hearing:

i. Public hearing for the project of 0.86 MTPA capacity in an area of 523.75 ha was conducted on 25.08.2022 at project location under the Chairmanship of ADM, Betul. Major issues raised in the public hearing include CSR activities, health, education, roads, dust generation, employment opportunities, Toilets, Water Environment, Medical facilities, air environment, Noise Pollution, safety etc. Appropriate action to address the issues raised in the Public has been proposed.

ii. Commitment made by the Project Proponent to address the Public Hearing concerns in lieu of Corporate Environment Responsibility (CER) to be mentioned in the following table:

Sl. No.	Particulars	Year-1 (In Lakhs) (2023-24)	Year-2 (In Lakhs) (2024-25)	Year-3 (In Lakhs) (2025-26)	Year-4 & onwards (In Lakhs) (2026-27)	Total (In Lakhs)

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1	Infrastructurecreationfor Drinking Water supply	6.00	3.00	3.00	3.00	**15**
2	SkillDevelopment & Education	40.00	10.00	10.00	10.00	**70**
3	Roads	46.34	10.00	10.00	10.00	**76.34**
4	Rainwater Harvesting	-	10.00	10.00	10.00	**30**
5	Medical Camp	2.00	2.00	2.00	2.00	**8**
6	Art,Culture& Sports	0.50	0.50	0.50	1.00	**2.5**
7	Others	-	5.00	5.00	5.00	**15**
	Total	**94.84**	**40.5**	**40.5**	**41**	**216.84**

iii. Hearing have already been taken under the Chairmanship of ADM, Betul on 25.08.2022.

6.9.2.7: EMP Budget:

i. Total capital cost of the project is Rs. 68.74 crores. Cost of production is Rs. 2443.70/t(at 85%), CSR cost is Rs. 2 per tonne. Environment Management Cost; Capital 57.22 lakhs. & Recurring cost is Rs. 6/tonne of coal production.

6.9.2.8: Others:

i. Employment generation: Permanent Manpower in the project is 732 Nos. Approximately 100 contractual workers will get employment through outsourcing agencies. In addition, approximately 50 Nos. of indirect employment will be generated.

ii. Coal linkage of the project is proposed for thermal use for MPGENCO & Various consumers.

iii. There is no Joint venture.

iv. The project is reported to be beneficial in terms of Environmental: Conservation of Coal. As it is an underground mine, there will not be any significant impact on the environment. Social: Project will continue to lead to development of roads, infrastructure, improvement in social and living standards and provide employment directly & indirectly. Financial: the project will contribute government through various taxes.

v. The project has been granted Environmental Clearance for production capacity of 0.6 MTPA with ML area of 520 ha vide Ministry's letter no. J-11015/ 53/2006/-IA. II(M) Dated 02.08.2006 and revalidation of existing EC granted vide No J-11015/ 53/2006/-IA. II(M) Dated 15.01.2021.

vi. Project has been granted ToR for expansion of production capacity from 0.6 MPTA to 0.86 MTPA and increase in project area from 520 ha to 523.75 ha. vide letter no. J-11015/53/2006-IA. II(M) dated 8th January, 2021.

vii. The ground water level has been reported to be varying between 3.8 m to 14.00 m during pre-monsoon and between 1.3 m to 6.9 m during post-monsoon in the study aera of 10km radius.

viii. Total water requirement for the project is 490.32 KLD.

ix. NOC has been secured from CGWA for abstraction/ dewatering of mine discharge in respect of subject mine vide NOC no. CGWA/NOC/MIN/ORIG/2021/14068 valid upto 16/12/2023. Renewal application is in process vide application no. 21-4/563/MP/MIN/2017.

x. Consent to Operate for the existing capacity was obtained from the State PCB on 19.08.2022 and is valid till 31.08.2025.

xi. Tawa River is flowing along the boundary of lease. The river will not be diverted.

xii. Regular monitoring of ambient air quality is being carried out on fortnightly basis. The documented report is submitted to MPPCB and also to MoEF&CC along with half yearly EC compliance report. In general, the results of ambient air quality monitoring data were found within prescribed limits.

xiii. No court cases, violation cases are pending against the project of the PP.

xiv. The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder. The coal production, realized from the project, from 1993-94 onwards, is as under:

Year	EC capacity (MTPA)	Actual Production (MT)	Excess Production Beyond the EC Sanctioned Capacity
2006-07	0.60	Nil	Nil
2007-08	0.60	0.188	Nil
2008-09	0.60	0.234	Nil
2009-10	0.60	0.330	Nil
2010-11	0.60	0.361	Nil
2011-12	0.60	0.412	Nil
2012-13	0.60	0.435	Nil
2013-14	0.60	0.532	Nil
2014-15	0.60	0.522	Nil

2015-16	0.60	0.500	Nil
2016-17	0.60	0.480	Nil
2017-18	0.60	0.401	Nil
2018-19	0.60	0.374	Nil
2019-20	0.60	0.319	Nil
2020-21	0.60	0.308	Nil
2021-22	0.60	0.352	Nil
2022-23	0.60	0.464	Nil

xv. No R&R is proposed in this project.

xvi. Consent to operate for production capacity of 0.6 MTPA has been obtained vide letter no. 116226 dated 19.08.22 and valid up to 31.08.25.

6.9.3 Committee after deliberations noted the followings:

i. Environmental Clearance for production capacity of 0.6 MTPA with ML area of 520 vide Ministry's letter no. J-11015/53/2006/-IA.II(M) Dated 02.08.2006 and revalidation of existing EC granted vide No J-11015/ 53/2006/-IA. II(M) Dated 15.01.2021.

ii. ToR for expansion of production capacity from 0.6 MPTA to 0.86 MTPA and increase in project area from 520 ha to 523.75 ha. vide letter no. J-11015/53/2006-IA. II(M) dated 8th January, 2021.

iii. Total Mining lease area as per block allotment is 520.0 Ha (additional 3.75 ha land is for power line). The mining plan including mine closure plan was approved by WCL Board vide Ref: WCL/BD/SECTT/BM-282/2016/738 Dated 05.11.2016.

iv. Life of mine is 8 years as on 01-04-2023.

v. 400.029 Ha of forest land is involved in the project. Forestry clearance for entire 400.029 ha has been obtained.

vi. Tiger corridor is 6 km in NE direction and 6.5 Km SE direction from Mine boundary. Pachmari Bio-sphere Reserve is approximately 7 km from the north side of Tawa-II Mine boundary. Satpura Nation Park is at 17 kms distance from the mine.

vii. NOC has been secured from CGWA for abstraction/ dewatering of mine discharge in respect of subject mine vide NOC no. CGWA/NOC/MIN/ORIG/2021/14068 valid upto 16/12/2023. Renewal application is in process vide application no. 21-4/563/MP/MIN/2017.

viii. Public hearing for the project of 0.86 MTPA capacity in an area of 523.75 ha was conducted on 25.08.2022.

ix. Consent to Operate for the existing capacity was obtained from the State PCB on 19.08.2022 and is valid till 31.08.2025.

x. Tawa River is flowing along the boundary of lease. The river will not be diverted.

6.9.4 The Committee after deliberations noted that the instant proposal is for expansion of Environmental Clearance after obtaining ToR vide dated 08.01.2021 and Public Hearing conducted on 25.08.2022.

Committee during the deliberations noted that the additional area of 3.75 ha lies outside the ML area of 520.0 ha. As per the provision of EIA notification, 2006 and MMDR Act, 1957 PP is not allowed to perform any mining activity outside the ML area. Therefore, committee asked the PP to review the proposed application for expansion of ML area upto 523.75 ha.

Further, Committee expressed the concerns upon the intersection of ground water for static & dynamic range of ground water. Therefore, PP should conduct a scientific study for knowing the exact status upon the same. In continuation, PP should propose the efficient water recharge system within/outside the ML area.

Committee also reviewed the CCR vide dated 01.11.2023 and asked the PP to complete the non-complied EC conditions and action plan needs to be submitted to the Committee.

Committee observed that as per KML file there is a Satpura reservoir and Satpura dam just adjacent to mining lease area. The Committee is of the view that PP shall submit a study from the reputed institute that presence of the same will not affect the mine working and mine is safe for inundation point of view. Further, mine working will not cause any damage to the reservoir.

Coal is transported through conveyor from face to surface and ***then by tippers from surface to Sarni Thermal Power Plant.*** *Black topped road is provided for coal transportation road from surface to power plant.*

In view of the above, the committee desirs the following information from the project proponent:

i. *PP should review the instant application submitted for the addition of 3.75 ha of additional area lying outside the ML area of 520.0 ha.*
ii. *PP shall submit the action plan for the non-complied EC conditions of issued EC dated 02.08.2006 and 15.01.2021.*
iii. *PP shall submit the details of settling pond and sedimentation pond lying within the ML area with their storage capacity.*
iv. *PP shall submit the health check-up plan for mine plan workers and project affected people living within the 5km radius of ML area.*
v. *PP shall revise the budget associated with the EMP and Public Hearing.*
vi. *PP shall also evaluate the impact of the mining upon the existing corridor of Tiger and their mitigation plan with the appropriate budget.*
vii. *PP should conduct a scientific study for knowing the exact status of ground water including static & dynamic range of ground water.*
viii. *Committee observed that as per KML file there is a Satpura reservoir and dam just adjacent to mining lease area. The Committee is of the view that PP shall submit a study from the reputed institute that presence of the same will not affect the mine working and mine is safe for inundation point of view.*

ix. *PP should submit efficient water recharge system to be planned within/outside the ML area.*

x. *Traffic density study and road plan for coal transportation to be submitted with proposed mitigation measures.*

xi. *PP shall conduct a drone video survey for 10 minutes for clear view of the project.*

xii. *Issues raised during public hearing shall be addressed with reply based on fund allocated for issue & timeline for completing the issue.*

xiii. *PP shall bring out the transportation route to be followed and why belt conveyor cannot be installed. Further, possibility of using EV vehicle may also be explored. The PP shall also submit a cost analysis of setting up of belt conveyor vis-a vis EV/CNG based tippers.*

In view of the above, the project was ***deferred*** *to submit the above observation.*

Agenda No. 6.10

Expansion of Gevra Opencast Coal Mine from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha of M/s South Eastern Coalfields Limited located in Tehsil- Katghora, District- Korba (Chhattisgarh) - For Environmental Clearance-reg.

[Online Proposal No. IA/CG/CMIN/443111/2023; F. No. J-11015/85/2010-IA. II (M);

6.10.1 The proposal is for Environmental Clearance for Expansion of Gevra Opencast Coal Mine from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha of M/s South Eastern Coalfields Limited located in Tehsil Katghora, District Korba (Chhattisgarh).

The project/ activity is covered under category "A" of item 1(a) 'Mining of Minerals' the schedule of the EIA Notification 2006 as the mining lease area is more than 500 Ha.

6.10.2 Details of the proposal, as ascertained from the proposal documents and as revealed from the discussions held during the meeting, are given as under:

6.10.2.1: Location:

(i) The project area is covered under Survey of India Topo Sheet No. 64 J /11, Scale- 1:50000 and is bounded by the geographical coordinates ranging from $22^0 18'00"$ to $22^0 21'42"$ N and $82^0 32'00"$ to $82^0 36' 30"$ E.

(ii) Project does not fall in the Critically Polluted Area (CPA) as per MoEFCC OM no. J-11013/5/2010/IA. II(I) dated 17.09.2013 regarding lifting of Moratorium in respect of industrial

clusters/areas including Korba Chhattisgarh.

6.10.2.2: Terms of Reference (ToR) & Environmental Clearances (EC):

(i) The project proponent applied for ToR for 49 to 70 MTPA for mining of coal in leasehold area of 4781.798 Ha. (increase in leasehold area from 4184.486 Ha to 4781.798 Ha) in Gevra of Tehsil Katghora, District Korba in the state of Chhattisgarh. on dt: 16.08.2021 vide proposal no. IA/CG/CMIN/221371/2021. Terms of reference granted on: 07.03.2022 and amended ToR for 52.5 to 70 MTPA granted on dated 09.01.2023.

(ii) Earlier, the Environmental Clearance of Gevra opencast was accorded as follows:

Sl No.	EC details	EC Capacity
1.	F. No. J- 11015/88/2003 -IA.II (M), Dated 04-10-2004	25.00 MTPA
2.	F. No. J- 11015/484/2007 - IA.II (M), Dated 03-06-2009	35.00 MTPA
3.	F. No. J- 11015/85/2010 - IA.II (M), Dated 31-01-2014	40.00 MTPA
4.	F. No. J- 11015/85/2010 - IA.II (M), Dated 06-02-2015	41.00 MTPA
5.	F.No.- J-11015 /85/2010 – IA.II (M)Pt Dated 21-02-2018 (Validity extension for one year)	45.00 MTPA
6.	F.No.- J-11015 /85/2010 – IA.II (M) Dated 28-03-2019 (Validity extension for one year)	45.00 MTPA
7.	F.No.- J-11015 /85/2010 – IA. II (M) Dated 04.06.2020 (Validity for 30 years or life of Mine whichever is earlier.)	45.00 MTPA
8.	F. No.- J-11015 /85/2010 – IA.II (M) Dated 10.05.2021	49.00 MTPA
9.	F.No.- J-11015 /85/2010 – IA.II (M) Dated 05.09.2022 and regularized on Dated 23.08.2023	52.5 MTPA

6.10.2.3: Forest Area:

Final FC issued vide letter no. and date	Area (in ha)
F No.8-33/2005-FC dated 05.05.2008	100.898
F No.8-81/ 2006-FC dated 20-04-2015	46.198
F No.8–77/2006 – FC dated 20-04-2015	192.046
F No.8–79/2006 – FC dated 20-04-2015	564.885
F.No. 8-41/2017-FC dated 21.06.2022.	112.385
Total Stage-II FC	1016.412
Applied for Stage-1 FC, the proposal was considered in	94.293

FAC meeting held on 17.01.2024.	
Total Forest	1110.705

6.10.2.4: Protected Area:

(i) No National Parks, Wildlife Sanctuaries and Eco-Sensitive Zones have been reported with 10 km boundary of the project. Schedule I species do not exist in the study area. However, Wildlife conservation plan has been made through State Forest Research & Training Institute Raipur. The Wildlife conservation plan will be implemented through State Forest Department. An amount of Rs. 10.09 Cr has been deposited in CAMPA on dated 31.05.2022 for its implementation.

6.10.2.5: Method of Mining & Mining Plan:

(i) Total Mine lease areas per block allotment is 4781.798 Ha. Project Report along with Mine closure plan for 35 to 70.00 MTPA got approved by CIL Board on 05th March 2016 in its 325th meeting. Revised Mine Plan 52.5 to 70 MTPA along with Mine Closure Plan has been approved in the 197th meeting of the Committee of Functional Directors of South Eastern Coalfields Limited held on 25.10.2023. PP also submitted M/o Coal O.M dated 31/05/2012 wherein it has mentioned the Mine Plan and Mine Closure Plan of Coal India Subsidiaries are not required to be approved by Standing Committee of M/o Coal.

(ii) **The land use details of the Mine:**

Pre-mining Land Usage:

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2023 GOVT. OF WEST BENGAL

NOTARY KOLKATA

Sr. No.	Land Use	Total (Ha.)
1	Agricultural land	2967.651
2	Forest land	1110.705
3	Waste Land	0
4	Grazing Land	32.879
5	Surface Water Bodies	16.58
6	Settlements	0
7	Others (Specify) Govt. Land	653.983
	TOTAL	4781.798

Post Mining:

Sr. No.	Land Use	Land Use (Ha.)				
		Plantation	Water Body	Public Use	Undisturbed	Total
1	External OB Dump	480				480
2	Excavation	1282.85	1347.5			2630.35
3	Top soil Storage (05ha included in excavation)	5				5
4	Roads			6		6
5	Built-up area (Colony/office/R&R siteInfrastructure,)			1243.062		1243.062
6	Green Belt	417.386				417.386
7	Undisturbed area					
Total	Total Area	2185.236	1347.5	1249.062	0	4781.798

Post-Mining Land Use:

NOTARY
SK. NAZRUL ISLAM
Govt. of West Bengal

Sr. No.	Pattern of utilization	Area (ha)
1	Reclaimed External and Internal dumps	1762.18
2	Green belt	5.67
3	Final void /Water body	1347.5
4	Built up area (Infrastructure, colony, roads, R & R site)	1249.062
5	Safety zone: Undisturbed area	417.386
	Total	4781.798

(iii) Presently Gevra opencast Expansion (25-35 MTPA) is being worked with shovel Dumper combination for OB Removal and Surface Miner alongwith Front End loader and Dumper/Tippers for coal. Shovel-dumper combination is proposed to be continued for removal of OB and deployment of surface Miner with front end loader & dumper for mining out coal. The configuration of equipment proposed in OB would be, Electric Rope Shovels of 42 cum / 10 cum and 15 cum hydraulic shovels & 240t / 100t /150t dumpers respectively as per load of different horizon, and for mining out coal Surface Miner having 5.0 to 8.0 MTPA capacity would be used in conjunction with 60t coal body dumpers for transport and 10m3 F.E.L for loading.

(iv) Excavation and transport of OB will be done departmentally by deploying existing equipment with additional 42 cum capacity rope shovels + 240 T rear dumpers, 10cum rope shovels+ 100T rear dumpers and 15 cum capacity Hyd. Backhoe +150 T rear dumpers. Coal loading and transport operations upto unloading station will be done contractually. Coal cutting will be done with outsourced surface miner.

(v) PP submitted Mining is mostly carried out by surface miners. Around 89% (46.85 MT out of 52.499 MT) coal is produced by surface miners and only 11% coal is produced by convention drilling and blasting where operation of Surface miners in coal benches are impossible.

(vi) Transportation of Coal:

a) Transportation from face to In-pit conveyor belt: By Trucks (inside mine only)
b) In pit conveyor belt to Silo: By belt conveyor.
c) Silos to consumers: By Rail
d) Action plan with timeline for coal evacuation through first mile connectivity (silo loading through railway siding) is provided below:

SL.No	Description	Capacity	Commissioning Schedule

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

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1	Load Out system with RLS at Eastern side of the mine along with Siding	20 MTY	Commissioned on 24.06.23
2	02 nos. Silo (5&6) of 4000 Te with RLS along with In-pit belt conveyor system along with Siding	30 MTY	Mar-24
Total		50MTY	

(vii) Additional land required for expansion- 597.312 ha (Agricultural land- 447.08 ha, Govt. land-55.939 ha and Forest land-94.293 ha). 75% of additional land required is agricultural land. Post mining land use will envisage to bring the land back to its original land use to the maximum extent possible.

(viii) Reserves:

S.No	**Particulars**	**Quantity in Million Tons**
i.	Total Geological reserve as per approved PR 70MTPA (As on 01.04.2014)	1940.98 MT
ii.	Total Minable/Extractable reserve as per approved PR 70MTPA (as on 01.04.2014)	1337.68 MT
iii.	Total mineable reserve within 4781.798 Ha (as on 01.04.2023)	951.481 MT

(ix) Details of Seams:

i. No of seams : 18
ii. Thickness of seams to be worked on : 0.70 m to 70.34 m
iii. Grade of coal : G10 grade
iv. Stripping ratio (mineral in tonnes to overburden in cum) : 0.617 tonne per cum (1:1.62)
v. Average gradient : 1 in 6 to 1 in 12
vi. Maximum thickness of seams : 70.34 m
vii. Ultimate working depth 340 m

(x) Life of mine will be 16 years starting from FY 2022-23.

6.10.2.6: Baseline Data:

Period	March to May 2022
Air Quality	The result indicates that the maximum and minimum values of PM10 are in the range of 42.0 µg/m3 to 123.1 µg/m3, whereas the PM2.5 are in the range of 21.8 to 69.8µg/m3. The SO2 concentrations within the study area are in the range of 10.0 to 31.1 µg/m3 and the NOx are in the range of 18.4 to 44.4 µg/m3. Ozone varies from 16.6 to 29.1 µg/m3. Ammonia varies from 14.6 to 24.8 µg/Nm3. Carbon monoxide varies between 0.3 to 0.44 mg/m3. Rest of the parameters like benzene, benzo(alpha) pyrene, arsenic, cadmium, chromium, lead, mercury and nickel were found to below detection limits.
Incremental GLC Level	The incremental GLC ascertained is PM_{10} = Max. GLC -18.54 $\mu g/m^3$; $PM_{2.5}$ = Max GLC- 5.32 $\mu g/m^3$; SO_2 = Max GLC- 0.01 $\mu g/m^3$ and NOx = Max GLC- 10.06 $\mu g/m^3$. The values are for highest incremental value obtained through modelling in buffer zone in downwind direction.
Ground Water quality	The result indicates that the maximum and minimum values of pH ranges between 7.18 to 7.97, TSS <5 mg/L; TDS between 216 mg/l to 352 mg/l; Total hardness between 136 mg/l to 198 mg/l.; Chlorides between 31.99 to 62.98 mg/l; Fluoride between 0.08 to 0.97 mg/l and iron (<0.05 mg/l) to 0.052 mg/l. All the results within the prescribed environmental standard - IS 10500:2012
Surface water quality	The result indicates that the minimum and maximum values of pH ranges between 7.1 to 8.3, DO between 5.8 to 8.5 mg/L; BOD between (<2 mg/l) to 2.6 mg/l and COD between (<5 mg/l) to 10 mg/l. All the results within the prescribed environmental standard – IS 2296:1992 (Tolerance Limit for Inland Surface Waters, Class – C)
Noise levels (Day & Night)	Leq (Day) range between 45.5 to 71.5 dB(A)and Leq (Night) between 33.6 to 57.3 dB(A). All values at all stations are within the prescribed standards
Soil Quality	Soil sample has been collected at different depths (0-30, 30-60 and 60-90 cm. The results indicate that pH range from 5.83 to 6.9; Available nitrogen between 141.59 to 388.78 kg/ha; Available phosphorus between 2.87 to 12.52 kg/ha; Available potash between 122.68 to 268.35 kg/ha and electrical conductivity between 256.70 to 531.70 uS/cm. The soil fertility as per values of NPK ranges in medium fertile category. The texture of soil has been found to be

	loam (0-30 cm) and sandy loam at (30- 60 cm) & (60-90 cm) depth for forest land while for others it is sandy loam at all depth.
Flora & Fauna	Flora and Fauna baseline study has been carried by CMPDI. Sitesurvey was conducted between 4th to 8th May 2022. The list of flora and fauna of core and buffer zone has been provided in Chapter-3.No endangered and endemic taxa reported from the core and bufferzone. No schedule I Fauna species is observed from the core andbuffer zone.
Water Requirement	Source of Water:

Sl No.	Source	Quantity (m3/day)	Approval
1	Mine Seepage Water	13087	CGWA
2	Surface/River Water (Hasdeo River)	3601	Irrigation Dept.
	Total	16688	

Water Requirement:

	Purpose	Peak demand (m3/day)
A	Industrial water demand	13087
1	Surface miner	288
2	Land reclamation	-
3	Dust suppression	8388
4	Green belt	26
5	Beneficiation (CHP)	1575
6	Washeries	-
7	Fire service	315
8	Others (specify) Washing in workshop	1305
9	Add for losses (10%)	1190

	B	Domestic/Potable Water Demand	3601
	1	Housing	2738
	2	Non-residential population	238
	3	Other (specify) For service buildings	298
	4.	Process and other losses (10%)	327
		Total	16688

Rain Water Harvesting:

Artificial Rainwater Harvesting Structures or Recharge Ponds have been constructed at 5 locations close to Gevra OC Project. Total recharge capacity-58,852 m3/year. Roof top rain water harvesting system are augmenting the groundwater recharge to the tune of 33,050 m3/year at 12 locations in in the study area of Gevra OCP.

CGWA Permission:

Date of Ground water clearance Obtained NOC from CGWB for withdrawal of 11487 m3/day vide NOC no. GWA/NOC/MIN/ORIG/2018/4474 Dt: 22.01.2019.

Application for renewal of NOC has been made online Application no. 21-4/630/CT/MIN/2017 Dt: 02.12.2020). Proposal has been approved by Chairman CGWB New Delhi on dt: 19.07.2022. Renewal of NOC yet to be issued.

Cumulative Impact Assessment	For carrying out cumulative impact assessment, one season baseline air quality data for Summer Season (March 2022 to May 2022) has been collected for the parameters PM10, PM2.5, Sulphur dioxide (SO2) and Nitrogen dioxide (NO2). This has been done by collecting air quality data from Baseline reports of Gevra OC and Kusmunda OC carried out for March 2022-May 2022 period. Total 18 number of air quality monitoring location data has been recorded covering 15 km of area from Gevra OC. The Cumulative Impact Assessment has been carried out by considering impact of all four coal mine for proposed expansion as per their respective mining plan considering the OB/Coal extraction and hauling, inpit belt conveyor system, surface miner coal cutting (Except Manikpur OC – Proposed convention drilling and blasting

	in Coal), CHP/SILO Railway siding for coal despatch to distant consumer. Cumulative impact assessment study reveals that the predicted ground level concentrations (GLC) of air quality parameters such as PM10, PM2.5, SO2 and NO2 in study area (15km from Gevra boundary) are within the stipulated norms. The proposed additional control measures are Fog cannon dust suppression systems at haul road, coal pit, Coal Stock and OB dumps (about 90% control efficiency) and road sweeping machines for coal transportation road, wind breaker and vertical greenery system.

6.5.2.7: Public Hearing:

Public hearing for the project of 70 MTPA capacity in an area of 4781.798 ha was conducted on 06/06/2023 in the premises of SECL Gevra OCP, Urja Nagar. The PH was presided by Addition District Magistrate, Korba & Regional Officer, Chhattisgarh Environment Conservation Board, Korba. The advertisement for PH was published on 4/05/2023 in *'The Times of India' & 'Dainik Bhaskar'*. Major issues raised in the public hearing include compensation, Rehabilitation & resettlement, Facilities at R&R sites, pollution control etc. Appropriate action to address the issues raised in the Public Hearing has already been taken/are being taken & a budgetary provision of Rs 15.15 Crore has been made. Commitment made by the Project Proponent to address the Public Hearing concerns in lieu of Corporate Environment Responsibility (CER) is as below:

S. N.	Particular	Location (Name of School/Village/Area)	Year -1(In Lakhs	Year -2 (In Lakhs	Total (in Lakhs)
1	Infrastructure for creation for Drinking Water Supply	Dhurena, Batari, Madwadhora, Chhindpur.	15.00	15.00	30.00
2	Sanitation	Vijay Nagar, Ganga Nagar, Nehru Nagar, Birda.	12.00	15.00	27.00
3	Education	Dhurena, Ranjna, Tiwarta, Chhindpur, Kusmunda.	30.00	30.00	60.00
4	Skill Development	Korba District	25.00	25.00	50.00
5	Roads	Vijay Nagar, Ganga Nagar, Nehru Nagar, Kuchena, Birda.	300.00	300.00	600.00
6	Cross drains	Vijay Nagar, Ganga Nagar, Nehru Nagar, Kuchena.	30.00	40.00	70.00
7	Electrification including solar power	Dhurena, Batari, Dewari, Chhindpur, Tiwarta	10.00	10.00	20.00

8	Solid waste management facilities	Dhurena, Batari, Dewari, Chhindpur, Tiwarta	15.00	15.00	30.00
9	Scientific support and awareness to local farmers to increase yield of crop and fodder	Gevra Basti, Khodri, Salora, Pandripani, Barbhata	10.00	10.00	20.00
10	Rain water Harvesting	Gevra Basti, Khodri, Salora, Pandripani, Barbhata	50.00	50.00	100.00
11	Soil moisture conservation works	Kasaipali, Dewari , Kolihamuda, Korai, Dewgaon	50.00	50.00	100.00
12	Avenue plantation	Ganga Nagar, Dhurena	100.00	100.00	200.00
13	Plantation in community areas	Kasaipali, Dihupara	108.00		108.00
14	Infrastructure	Dhurena, Batari, Dewari, Korai	20.00	20.00	40.00
15	Health Camps	Ralia, Bhilai Bazar, Naraibodh	10.00	10.00	20.00
16	Art, Culture & Sports	Vijay Nagar,Bhilai Bazar, Dhurena, Naraibodh	10.00	10.00	20.00
17	Livelihood	Vijay Nagar,Bhilai Bazar, Dhurena, Naraibodh	05.00	05.00	10.00
18	Agriculture Programme	Chhindpur, Tiwarta, Dewari, Korai	05.00	05.00	10.00
		Total	805	50	1515

PP submitted that the total cost of the project is Rs. 11816.40 Crores. Cost of production is Rs. 566.02 /- per tonne, CSR cost: According to new CSR policy the fund for the CSR should be allocated, based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of coal production of previous year, whichever is higher, R&R cost is Rs. 564.44 crores.

6.5.2.8: EMP Budget:

Environment Management Cost is Rs. 205 crores (Capital) and Rs 55.51 Cr (Revenue Cost). The details are as follows:

(i) Capital Cost:

1	**Air pollution control measures**	**Amount (in cr)**
a	Dust suppression arrangements	4.42
b	Water sprinkling arrangement along approach road	4.00

c	Green belt in & around the mine	1.00
d	Arboriculture/plantation in industrial area	0.10
e	CAAQMS and Piezometers Cost	5.10
f	Horticulture and land development	0.83
	Sub-Total	15.45
2	**Water Pollution Control Measures**	**Amount (in cr)**
a	Effluent treatment plant (ETP)	10.00
b	Sewerage treatment Plant (STP)	5.00
c	Settling tank for mine water disposal	2.00
d	Garland drains	1.00
e	Other development measures in industrial site viz. drains, tree	7.59
f	Other development measures in colony viz. drains, tree	0.51
g	Water drains in township	0.21
h	Sewage disposal arrangement in colony	1.07
I	Water Treatment Plant	7.40
j	Rain Water Harvesting	0.24
	Sub-Total (2)	35.02
3.	**Other Environmental Control Measures**	**Amount (in cr)**
a	Barbed fencing for the project	1.50
b	HEMM for Reclamation	133.39
c	Housing personnel	3.82
d	Flora and fauna study	0.30
e	Cost of EMP preparation	0.50
	Sub-Total (3)	139.51
	GRAND TOTAL	189.98

4	Additional Capital Expenditure (proposed in EMP of 52.5 to 70 MTPA)	**Amount (in cr)**
a	Green belt between residential area and mine (2 km)	7.0
b	Tyre washing arrangement (additional 2 no.)	1.0
c	Sprinkler system with mist spray in CHP/Transfer points and enclosure system for coal unloading facility	1.0
d	Additional Rainwater harvesting measures	0.5
e	Noise protection personal equipment like ear muff/plug and other measures like Acoustic Panel Technology Noise barrier, etc	1.0
f	Integrated Continuous effluent monitoring system with real time tracking and server linkage	2.02
g	Miscellaneous Environmental Control measures as per EC conditions/Issues raised during Public hearing	2.5
	Sub-Total(4)	15.02
	Total Capital Cost	**205.00 crores**

(ii) Revenue Cost:

1	**Revenue Expenditure Related To Environment (As Per Approved Pr-70 MTPA)**	**Amount (in Cr)**
a	Environment Audit @ 0.60 lakhs/annum	0.006
b	Environment monitoring @10.00 lakhs/annum	0.10
c	Mine closure cost* (*Revised first year mine closure cost- 22.12 crores)	18.65
d	Monitoring of CSR and RR Plan	0.02
e	Monitoring of land use through satellite surveillance	0.02
	Sub-Total(1)	**18.97**
2	**Additional Revenue Expenditure (Proposed In EMP of 45 To 49 MTPA)**	
a	Mist Blower (Fog Cannon) cum road Fogger	0.60

b	Mechanized Sweeping machine	0.50
c	Mobile Water Sprinkler	0.45
d	Periodic Health Checkup	0.50
	Sub-Total(2)	**2.05**
3	**Additional Revenue Expenditure** **(proposed in EMP of 52.5 to 70 MTPA)**	**Amount (in Cr)**
a	Fog Cannon (Additional -8 no.) @0.6 cr/unit	**4.8**
b	Mechanized Sweeping Machine (Additional 2 no.) @0.5 cr/unit	**1.0**
c	Green belt around the mine boundary (14 km) @8 lakh/ha	**1.12**
d	Grass bedding over slope with support measures per year (60 ha @10 lakh/ha)	**6.0**
e	Soil and Moisture Conservation of top soil @Rs 3500/ha	**1.0**
f	Grassland creation over reclaimed OB dumps per year (6 ha @8 lakh/ha)	**0.48**
g	Wildlife Conservation Plan implementation	**10.09**
h	Groundwater recharge and monitoring per year (lump sum)	**1.0**
i	Environment Monitoring per year	**3.0**
j	Third party audit of compliance of various clearances at suitable interval	**1.0**
k	Specialized studies like slope stability, fly ash related studies, topsoil management, Just transition, development of eco park, floating solar park, ecological restoration, OB to sand or similar from scientific institution of repute per year	**5.0**
	Sub-Total(3)	**34.49**
	Total Revenue cost	**55.51 crores**

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6.5.2.9: Court Case:

(i) There are court cases pending with the project proponent as per the following details: -Details of Court Case

	Court	Case Details	Status
	case no. is 886/2015 and the case is at Chief Judicial Magistrate Korba.	ce, Chhattisgarh Environment Conservation Board, Korba Vs CGM Dipka Extension Project Gevra Area SECL for coal production in excess of 10 MTPA consented capacity. The Criminal complaint was filed under Sec.15 &17 of EP Act and the year of violation was 2001-02 to 2004-05	ng is on 23.01.2024.
	Court of India	The Civil Appeal has been filed under section 22 of the National Green Tribunal Act, 2010 against the final order dt: 25.08.2020 of the Ld. National Green Tribunal, Principal Bench at New Delhi in appeal no. 79 of 2018 titled Laxmi Chauhan vs UOI & others	iven was 15.05.2023. Next date not yet displayed.

(ii) In line with the judgment of Hon'ble Supreme Court dated the 2nd August 2017 in writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors, the collector had issued notice on 04.01.2019 and subsequently reply was submitted by SECL Gevra OCP on 14.05.2019. Accordingly, Dept of Geology & Mines (Mineral Resource Dept, CG Raipur had called meeting on 25.09.2019 for discussion regarding Collectors notice issued for excess production cases wherein the Joint Director, Dept of Geology and Mines discussed on the point about the agreeable violation years and the amount & also considering the PP's view on Non applicability of Section 21(5) of MMDR Act 1957. Further meeting was called on 14.10.2019, discussing the points deliberated in the 25.09.2019 meeting, after which no further communication has been received to SECL Gevra OCP from Collector Office or Dept of Geology Mines, Raipur. However, SECL agrees to abide by any future decisions/guidelines issued in this regard.

6.5.2.10: Other Details:

(i) Employment to 4391 persons will be provided from the project.

(ii) The project is reported to be beneficial in terms of: Project will considerably improve the socio-economic status of the adjoining areas. This will result in benefits such as improvements in physical infrastructure; improvements in social infrastructure, increase in employment potential, contribution to the exchequer, meet energy requirement and post-mining enhancement of green cover.

(iii) Coal linkage of the project is proposed for NTPC and Various thermal power plants.

(iv) No Joint venture cartel has been formed.

(v) Consent to Establish cum Operate for capacity (52.5 MTPA) was obtained from the Chhattisgarh Environment Conservation Board, Raipur on 15.03.2023 and valid for one year.

(vi) Hasdeo river is the main drainage of the area flowing 08 kms from mine boundary. The study area includes a number of seasonal nallah and tributaries of Hasdeo river like Ahiran, Kholar nallah. Lilagar river also flows through the study area of project. No nalla diversion is proposed.

(vii) Regular monitoring of ambient air quality is being carried out with frequency of twice a week. The documented report is submitted to APCCF, MoEFCC, Regional Office, Nagpur, Member Secretary, Paryavas Bhavan, Raipur and RO CECB, Korba along with half yearly EC compliance report. In general, the results of ambient air quality monitoring data were found within prescribed limits except few aberrations which can be attributed to the specific local conditions during the day of sampling.

(viii) The ground water clearance: Renewal of NOC has been obtained vide no. CGWA/NOC/MIN/REN/1/2024/8879 Dt: 09.01.2024 for abstraction of 8334cum/day valid upto 03.12.2024.

6.10.3 Committee after detail deliberations noted the followings:

(i) PP has obtained ToR dated 07.03.2022 and amended on 09.01.2023 for capacity of 52.5 to 70 MTPA.

(ii) PP has collected the Baseline data for the period of March to May 2022.

(iii) Mine closure plan for 35 to 70.00 MTPA approved by CIL Board on 05.03.2016 and Revised Mine Plan for 52.5 to 70 MTPA along with Mine Closure Plan has been approved on 25.10.2023.

(iv) Public hearing for the project of 70 MTPA capacity in an area of 4781.798 ha was conducted on 06.06.2023.

(v) PP submitted the Action Taken Report dated 13.01.2024 with respect to CCR dated 8.01.2024.

(vi) PP has submitted the application for Stage I FC for forest area of 94.293 ha vide FP/CG /MIN/ 41389/2019 dated 05.11.2019 involved in the ML area of 4781.798 ha.

(vii) EMP (capital- Rs 205 crores and recurring- Rs 55.51 crores) including additional proposed.

(viii) Revised mine closure cost- Rs 523.40 cr

(ix) Wildlife Conservation plan- Rs 10.09 cr.

(x) Catchment Area Treatment Plan- Rs 84.47 lakhs

(xi) Total no. of PAF-3466 (Total employment provided as on 31.07.23- 2941; Balance employment to be provided- 763; Total families resettled-844; Total balance families to be resettled-1155).

(xii) CER Budget- 22.852 cr.

6.10.4 Committee after deliberations noted that the instant project is for expansion of production capacity from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha. PP conducted Public Hearing after obtaining ToR & its amendment. The Committee deliberated on the compliance of ToR conditions, cumulative impact assessment study, R&R, issues raised during PH, coal transportation, water requirement and other impacts of the project on environment.

Committee observed that PP has submitted that Gevra OCP has implemented all the recommendations by BHU regarding ecosystem carrying capacity and Comprehensive catchment area treatment plan prepared by Chhattisgarh council of Science and Technology, Govt. of Chhattisgarh. The action taken with timeline is provided below:

Tyre Washing System	Operational since March 2023.Amount spent- Rs. 47.12 Lakhs.
3 nos. Fog cannon	9 nos. of fogging machines under operation
1 nos. Sweeping machine	1 sweeping machine was in operation since Sept 2019. The addl. machine delivered in Jan 2022 & operational since Feb 2022
Catchment area treatment Plan	The work will be implemented through State Forest Dept. An amount of Rs 8447900/- has been deposited in CAMPA vide UTR no. UCBAH21312039819 on Dt: 08.11.2021 towards implementation of proposed measures in the study.

PP submitted Mining is mostly carried out by surface miners. Around 89% (46.85 MT out of 52.499 MT) coal is produced by surface miners and only 11% coal is produced by convention drilling and blasting where operation of Surface miners in coal benches are impossible.

PP submitted that 240 nos. of roof top connected solar power plant 2000 KW for Gevra Area. Work order has been issued and work is in progress.

As desired by EAC the PP vide letter dated 19.01.2024 inter-alia submitted the i) action plan with timeline for the balance families to be settled, ii) land acquisition details, iii) impact assessment w.r.t. to Gevra OCP, vi) commitment made during PH, v) details of water supply plan & water treatment plant, vi) detailed report on CSR, vii) post mining land use , viii) water utilization plan i.e void water body utilization after mine closure, ix) education facility, x) details of health care facilities, xi) details of Korba Action Plan of SPCB and action taken by PP, xi) updated status of court cases and undertaking in this regard.

Committee observed that with respect to R&R Plan PP submitted that balance families to be settled is 1149 and as per action plan it is estimated that out of 1149 PAFs it is most likely approx. 690 PFAs will opt for plots (option 1B) and remaining approx. 459 PFAs opt for lump sum cash grant of Rs 3.0

Lakh in leiu of alternate house site. The timeline is mentioned as March 2025. In addition to cumulative impact PP also submitted the impact due to operation of Gevra OCP and as per study report the Air Quality impact assessment study reveals that the predicted ground level concentrations (GLC) of air quality parameters such as PM_{10}, $PM_{2.5}$, SO_2 and NO_2 in study area (15km from Gevra boundary) are within the stipulated norms. *Committee is of the view than EMP and recommendations made out of cumulative impact assessment study shall be implement.*

The Committee is of the view that PP shall address the issues raised in PH in a time bound manner and budget earmarked for the same should not be diverted for the other use. Additionally, the Committee emphasized that PP shall provide mobile medical units and ambulance facility for locals. Committee also advised to provide the modern science lab to near schools and sports facility too. The Committee is of the view that skill development programme should be linked with the employment potential and a record of the same shall be maintained regarding to ascertain whether the skill development plan is effective enough or not to enable the local persons to get employment after the training, in case if it is required that skill program needs to be changed as per present & future requirement then PP shall do so.

Committee observed that PP submitted the details of water supply plan & water treatment plant and also water utilization plan i.e void/water body utilization after mine closure. PP submitted that for this particular case of Gevra OC Mine, stored water (seepage ground water as well as collected rain water) will be utilised in consultation with Central/State Agencies in the manner viz. i) Water Supply for Irrigation purposes to local villages: Accumulated water will be supplied to local villages as per their needs, ii) Water Supply for domestic needs of local populace: Water quality will be monitored regularly and accordingly, after proper treatment water will be supplied to local villages, iii) Development of Eco-Park and Recreation lakes: It's to worth mentioning that SECT, already in process to develop an ECO Park at Gevra Area and it will ultimately help to diversification of economics of that region and iv) Installation of Floating Solar Panel: Floating solar panel will be installed on the mine lakes. PP further submitted that the mine voids filled with water will act as a ground water recharge structure which will increase the ground water level in the mining affected area and eventually the crop yield of the surrounding area. Based on the submission of the PP the *Committee is of the view that PP shall ensure to increase the water supply including availability of drinking water in the nearby area. Further, water ATM can be setup at public places. PP shall prepare a plan in a period of one year that how the existing water requirement for the project can be reduced further and how the excess water collected by various means including rainwater harvesting measure can be treated and supplied for the public use. Further, the work of development of ECO Park at Gevra Area shall be completed within a period of two years.*

Committee observed that PP submitted the proposal of ongoing and completed CSR activities with amount proposed and disbursed. The Committee observed that total 1941 Lakh has been proposed and 587.01 Lakh has already been disbursed i.e 30%. *The Committee observed that many activities has already been completed but still PP shall expedite the implementation part for the ongoing and proposed activities. Establishment of smart classes shall be completed within a period of one year after grant of EC.*

Committee observed that with respect to educational facilities PP submitted the economic study report which reveals that there are several educational institutions of various standards managed by both public and private sectors/bodies in the area by SECL and NTPC etc. Educational facilities provided are by Central School in Kusmunda by SECL and NTPC, Korba, Delhi Public School (Upto Class XIIth) by NTPC and DAY School in Kusmunda & Gevra Area by SECL. In the study area (core zone + buffer zone), there are a total of 13 pre-primary schools, 102 primary school, 60 middle schools, 14 secondary schools, 8 senior secondary schools. 2 art and science college, 1 ITI and 3 Govt. non formal training centers within villages. Education facility provided to i) Primary & Secondary School at Urja Nagar, ii) Upgradation work with providing of smart education facility such as Computer set, furniture, Green Board, Books , Games material etc of 5 nos. of new Swami Atmanand Govt. Utkrist Hindi Medium school. The budget proposed for the same is Rs. 891.751- Lakh. *Committee is of the view that establishment of smart classes shall be completed within a period of one year after grant of EC.*

Committee observed that with respect to health care facilities PP submitted that there is a well equipped 100 beded Hospital at Gevra Project : Nehru Centenary Hospital (NCH). In addition, there are 4 dispensaries, 4 primary health center, 30 primary heath sub center, 2 maternity and child welfare center, 2 allopathic hospitals, 2 hospital of alternative medicine and 3 veterinary hospital within 5 Km radius from Mine lease boundary of Gevra project. NCH have facilities like Surgery, Medicines, Gyne. and Obst., Eye, ENT, Anaesthesia, Pathology with corresponding specialists heading the units. The hospitals have got well equipped laboratories and operation theatres to take routine surgery and emergencies. There are medical officers, specialists, paramedical staff and ambulances to meet any eventuality. Immunization facilities are available at every colliery hospital and dispensary.

PP submitted that medical camps are organized time to time by different medical teams of SECT on different items for the benefit of local people residing in core & buffer zone. The mining activities expose workers to some injuries and health hazards. Incidence of occupational disease and injuries and health hazards as recorded in the hospital for employees in Gevra area is almost negligible. Every worker is periodically' checked up once in every' five years and proper record of their health profile including X-ray and laboratory tests is kept. The importance of such periodical medical examination be is to detect and prevent occupational diseases like Pneumoconiosis and Tuberculosis. PP submitted that the SECL authorities have adopted following measures to prevent occupational diseases and health hazards viz. i) Pre-employment, pre-placement and periodic medical examination of employees, ii) Regular monitoring of working environment and implementation of safety and control measures, to prevent hazards, iii) Use of protective equipment, clothing, helmets, Gas mask, shoes, etc., iv) Periodical medical examination of every worker is done once in five years to detect preventable and curable diseases at an early stage v) A Special Board constituted by the Chief Medical Officer examines cases suspected to have Pneumoconiosis. Established cases are suitably compensated and their job is changed if required, vi) Apart from the above NCH Gevra provides free of cost medical facilities to not only displaced families but also to each & every person with BPL card under the CSR head. vii) The manpower details of Doctors in NCH Gevra as on 31.12.2023 is a) General duties Medical Officer (GDMO): 09 nos., b) Dentist: 01 no., c) Specialist: 06 nos. (Orthopedician, Pathologist, Opthalmologist, Psychiatrist, General Surgeon & Pediatrician). *The Committee appreciated the efforts taken by the PP but is of the view that PP shall continue to provide proper medical facilities to local peoples residing*

in the close vicinity of the project area and also to the project affected peoples. PP shall provide provision for financial assistance for the critical illness such as cancer, kidney/liver failure etc. on cases to case basis. PP shall ensure to provide ambulance facilities for the general public particularly in the remote areas and a helpline in this regard may also be created.

The Committee also deliberated on the compliance of previous EC conditions. PP presented the Action Taken Report dated 13.01.2024 submitted to RO, Raipur w.r.t CCR dated 8.01.2023. Committee noted that RO in its CCR mentiond that the EC letter dated 21.08.2018 supersedes the earlier granted EC 31.01.2014 for expansion from 35 to 40 MTPA, followed by amendment in EC dated 6.02.2015 for further expansion up to 41 MTPA. However, in the EC letter dated 6/9/2022 & 23/8/2023 it has been stipulated that all other terms and conditions stipulated in previous ECs granted vide letter dated 3.06.2009, 31.01.2014, 6.02.2015, 21.02.2018, 28.03.2019, 4.06.2020, 10.05.2021, 5.09.2022 shall be adhere to and remain unchanged, so there is an inconsistency in EC conditons. PA neither took any corrective action from Ministry on the observed inconsistency nor submitted six monthly compliances. ***The committee deliberated on this issue and is of the view that EAC may prescribe all the required conditions while considering this expansion so that it would be convenient for RO to monitor the project and also for PP to submit the six monthly compliance by referring to only one document.***

The Committee observed that PP in its ATR dated 13.01.2024 with respect to observation made by RO, for most of the conditions informed that it is being complied and also complied nine conditions. Further, agreed for the compliance of some of the conditions. After deliberation on CCR and ATR *the Committee is of the view that*

a) *PP has obtained CGWA permission for 8334 m3 and is valid till 3.12.2024 but PP in future PP shall take proactive steps for its renewal. Further, the water requirement for the project was mentioned as 16688 m3/day including 13087 m3/day for which CGWA approval is required. Therefore, the PP shall obtain the permission for the same or restrict the water utilization to 8334 m3/day. PP also submitted an agreement dated 17/02/2011 made between Irrigation Department and Gevra Mines for 10500 m3/month of water to be used in housing colony. The Committee is of the view that PP shall not use the water for other purpose before obtaining permission from Irrigation Department.*

b) *Work of establishment of the Sal Nursery of 10 Ha area shall be completed by March 2024.*

c) *Digital display board shall be installed before April 2024.*

d) *For implementation of WLC & CAT, PP has already deposited the amount and implementation is to be done by concerned authorities but still PP shall follow up for the same.*

e) *With respect to compliance of Court Order, PP has already submitted an undertaking to comply with the direction of DMG.*

f) *PP reported that existing coal evacuation capacity is 65 MTPA (45 MTPA mechanized SILO & RLS, 15 MTPA railway siding, 5 MTPA by road to local consumers) and proposed for additional 30 MTPA mechanized system i.e [2 silos (5&6) of 4000 Te with RLS along with belt conveyor*

system of 30 MTPA] shall be commissioned by Oct, 2024.

g) *PP also submitted the compliance made towards the recommendation of sub-committee visited the site on 5/10/2021. Committee observed that PP has reported to complied with most of the recommendation and some are being complied. PP reported that Solar Roof top work will be completed by May, 2024.*

h) *The Committee is of the view that out of the total 70 MTPA sought 65 MTPA should be transported only through mechanized system and remaining 5 MTPA should be through road and PP should reduce it further to fully transport through mechanized system by October 2024. The major concern is of transportation of 5 MTPA road transportation which could lead to fugitive emission and other issues. This was also reported by RO. In this regard, PP has submitted the corrective measures which are already taken. Therefore, the Committee is of the view that PP shall install CCTV camera in all entry and exist points of the mines from where tippers are moved, around coal handling plant, silos, railway siding. The Committee is of the view that PP shall ensure to have transportation route away from the habitation.*

i) *PP reported that public liability insurance conditions are not applicable to them in pursuant to MoEF&CC notification S.O (E) 227 dated 24.03.1992. The Committee is of the view that PP shall ensure that in case of any injury/accident the workers should be provided with proper compensation and should be insured.*

j) *PP submitted that the peripheral fencing is continuous work as quarry is in progression. PP shall continue to do so.*

k) *It has reported in the CCR the PA has commissioned ETP having the capacity of 210KLD and is in operation. The sewage treatment plant having the capacity of 3 MLD has already commissioned and is in operation. Treated water from the STP is being used for greenbelt development. Committee is of the view that in addition to this PP shall implement the mitigation measures proposed in the EMP for this expansion project.*

l) *During the visit only one CAAQMS was installed and in operation. Additional CAAQMS station has not been installed as stipulated by September 2023. PA informed that purchase order has been issued vide letter dated 24/08/2023 for additional 1 no. of CAAQMS. The Committee is of the view that PP shall install 2 CAAQMS out of which one should be in downwind direction as discussed during the meeting. The final location for the same shall be finalized in consultation with CPCB/SPCB.*

Committee observed that PP informed that now the project does not come under Critically Polluted Area (CPA) and as per the action plan prepared by SBCB, the Gevra OC has implemented fugitive dust control measures i.e. 2 no. mechanized sweeping machine and long range fogging machine (4 no.) are already in operation.

Committee observed that PP provided the details of the court cases and also submitted an undertaking to the effect that *" In line with the judgment of Hon'ble Supreme Court dated the 2ndAugust 2017 in writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors, the collector had issued notice on 04.01.2019 and subsequently reply was submitted by SECL Gevra*

OCP on 14.05.2019. Accordingly, Dept of Geology & Mines (Mineral Resource Dept, CG Raipur had called meeting on 25.09.2019 for discussion regarding Collectors notice issued for excess production cases wherein the Joint Director, Dept of Geology and Mines discussed on the point about the agreeable violation years and the amount, & also considering the PP's view on Non-applicability of Section 21(5) of MMDR Act 1957. Further meeting was called on 14.10.2019, discussing the points deliberated in the 25,09.2019 meeting, after which no further communication has been received to SECL Gevra OCP from Collector Office or Dept of Geology Mines, Raipur. However, SECL agrees to abide by any future decisions/guidelines issued in this regard." The Committee is of the view that PP shall comply with the direction of Hon'ble Courts and decision of Collector Office or Dept of Geology Mines, Raipur in this regard.

Based on the above discussions & documents submitted in the EAC meeting, the EAC recommended the Environmental Clearance for expansion of Gevra Opencast Coal Mine from 52.5 to 70 MTPA with increase in ML area from 4184.486 to 4781.798 ha (subject to FC approval) of M/s South Eastern Coalfields Limited located in Tehsil- Katghora, District- Korba (Chhattisgarh) with the following specific conditions and standard EC conditions under the provisions of EIA Notification, 2006 and its amendments:

Specific Conditions:

1) *PP should submit the Stage I FC for forest area of 94.293 ha involved in the ML area of 4781.798 ha.*

2) *PP to comply the outcome of the court case number 834/2021 pending before Hon'ble Supreme Court and case number 1217/2007 pending before Judicial Magistrate Katghora and any other court cases.*

3) *PP shall submit the proposal for next expansion only after the compliance of all its Existing EC conditions.*

4) *PP shall implement the protective measure proposed in EMP in a time bound manner. The budget earmarked for the same is Rs 205 crores (Capital) and Rs 55.51 crores(recurring) and should be kept in separate account and audited annually. The implantation status along with amount spent with documentary proof shall be submitted to concerned Regional Office for the activities carried out during the previous year.*

5) *Mining shall be carried out only by Surface Miners for the project. Presently 04nos. Silos (1&2, 3&4-Capacity-25MTPA) with rapid load out System (20 MTPA) for transportation of Coal through rail are in operation. As proposed PP shall complete mechanized system for additional 30 MTPA (Silo 5 & 6) capacity of coal handling before Oct 2024 and status report be intimated to RO MoEF&CC.*

6) *PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling Ash and OB mixing activities during operations as well as post closure of mines in line with fly utilization notification 2021.The study being*

conducted by NIT Rourkela for 7 mines of SECL including Gevra shall be completed and report shall be submitted to RO MoEF&CC. The percentage of voids should be reduced to not more than 30% of the total area.

7) *Digital processing of the entire lease shall be through remote sensing techniques should be done regularly once in 3 years for monitoring land use pattern and report submitted to MOEF and its Regional Office at Raipur.*

8) *The project proponent shall obtain the necessary permission from the Central Ground Water Authority for ground water abstraction. No groundwater shall be used for mining operations without valid CGWA NOC. Also the project proponent shall obtain the necessary permission from the state/irrigation department for the use of surface water from river/nallha. Further, the water consumption should be restricted to the level for which permission has been obtained from CGWA/ Irrigation department as the case may be.*

9) *Environmental laboratory should be established with adequate numbers and type of pollution monitoring and analysis equipment in consultation with the state Pollution Control Board. Internal Environment Management division shall be strengthened and details submitted to IRO.*

10) *No mining operations shall be undertaken in Forest land, until forestry clearance has been obtained under the provisions of FC Act, 1980.*

11) *OB shall be stacked at the earmarked external OB dumpsite of 480 ha within ML area for the opencast operations of a maximum height of 90m consisting of 3 benches of 30m each. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of existing reclaimed dumpsites including slope stability shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional office located at Raipur on a yearly basis.*

12) *An afforestation plan covering an area not less than 2185.236 ha shall be implemented, which includes backfilled area (1287.85 ha) and ext. OB dump (480 ha), along ML boundary, green belt, along roads, infrastructure (1249.062 ha), safety zone (417.386 ha), undisturbed/vacant land by planting native species in consultation with the local DFO. The density of the trees shall be around 2500 plants per ha. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation, date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year.*

13) *Backfilling shall start by the 1st year of expansion operations. Of the total 2635.35 ha of the quarry area, an area of 1287.85 ha of excavated area shall be reclaimed with*

plantation/afforestation by planting native plant species in consultation with the local DFO. The density of the trees shall be around 2500 plants per ha. The balance 1347.50 ha of de coaled the void left for further expansion in the dipside shall be converted into a water reservoir, shall be gently sloped and the upper benches of the reservoir shall be stabilised with plantation and the periphery of the reservoir fenced.

14) *ETP shall also be provided for treatment of effluents from workshop (1305 m3/d) and an STP shall be provided for treating wastewater (2881 m3/d) from the township with all dwelling units and the treated effluents shall be used for green belt development. An estimated 13087 m3/d (97.85 %) of the total 13375 m3/d of wastewater (mine pumped out water) generated from the mine would be treated and recycled for mine operations and the balance 3168 m3/d of wastewater (Excess mine water+ waste water from DETP) shall be treated to prescribed standards before discharge into the surface waters/agricultural use.*

15) *Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any. Further, PP shall engage an agency such as NIOH, Ahmedabad to review the status of implementation of occupational health plan and suggest corrective measures.*

16) *PP shall implement the action plan submitted for addressing the issues raised during Public Hearing. The budget earmarked for the same is Rs. 15.15 Cr. The budget earmarked for the same shall be kept in a separate account and audited annually. In addition to this PP shall provide mobile medical units and ambulance facility for locals, provide the modern science lab to near schools and sports facility too. The Committee is of the view that skill development programme should be linked with the employment potential and a record of the same shall be maintained regarding to ascertain whether the skill development plan is effective enough or not to enable the local persons to get employment after the training, in case if it is required that skill program needs to be changed as per present & future requirement than PP shall do so. PP shall submit the activities carried out and amount spent along with documentary proof to concerned Regional Office for the activities carried out during the previous year.*

17) *Establishment of smart classes shall be completed within a period of one year after grant of EC.*

18) *PP shall prepare and implement a plan in a period of one year that how the existing water requirement for the project can be reduced further and how the excess water collected by various means including rainwater harvesting measure can be treated and supplied for the public use. The work of development of ECO Park at Gevra Area shall be completed within a period of one year. PP shall ensure to increase the water supply including availability of drinking water in the nearby area and water ATM can be setup at public places.*

19) *PP shall continue to provide proper medical facilities as proposed during the meeting, to the local people residing in the close vicinity of the project area and also to the project affected peoples. PP shall keep the provision for providing financial assistance for the critical illness such as cancer, kidney/liver failure etc. on cases to case basis. PP shall ensure to provide ambulance facilities for the general public particularly in the remote areas and a helpline in this regard may also be created.*

20) *A detailed Plan for CSR with specific budgetary allocation (capital and revenue) for various skill development and alternate livelihood programmes and schemes and implemented through establishment of cooperatives and SHGs shall be implemented. CSR activities shall not overlap for the villages falling in the study area of the coal mine projects located in the study area. The fund for CSR shall be provided as per companies act & CSR policy of the company. "the fund for the CSR should be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of coal production of previous year whichever is higher". PP shall expedite the implementation part for the ongoing and proposed activities. Establishment of smart classes shall be completed within a period of one year after grant of EC.*

21) *Tribal Development Plan for the tribals shall be prepared as part of CSR. A detailed pre-project survey shall be carried on the socio-economic status of the local communities living in the villages near the project area before start of the mining operation based on a scientific methodology based on UND Human Development Index and monitoring the impact of project on the socio-economic and human development of the local communities, which shall be used as a base-line data for monitoring the progress of the status of human and socio-economic development in the area during and after the project life which is reflected in their Annual Report of the company and is also furnished as part of the Monitoring Report submitted to MOEF.*

22) *R&R shall be not less than the norms prescribed in National R&R Policy, 2007/State R&R Policy/CIL Policy whichever is higher. R&R for a cost of not less than Rs. 564.44 crores for the PAFs shall be completed within an agreed time schedule.*

23) *The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.*

24) *PP shall submit action plan for using and developing Renewable Energy for its consumption in its utilities/machinery/equipment's instead of using electricity from Grid/generated from Thermal Power Plants.*

25) *PP shall conduct physical and strength analysis within a period of two years and accordingly*

propose to install Sand Segregation Plant.

26) *PP shall obtain 5-star rating in terms of Environment Compliance from Ministry of Coal as per rating system implemented by Ministry of Coal.*

27) *In addition to the existing CAAQMS, PP shall install the two additional CAAQMS out of which one should be in downwind direction. Further, the location of all the CAAQMS existing as well as proposed shall be in consultation with CPCB/SPCB.*

28) *PP shall display data of CAAQMS by online information/Display system at gate of Gevra OCP and link with company website and with Chhattisgarh Environment Conservation Board.*

29) *Haul road from mine operation site till conveyor system shall be provided with fog canons and water sprinklers to reduce fugitive dust.*

30) *PP shall submit carrying capacity of the area from reputed institutes for its proposed production of 70 MTPA from Gevra on a regular interval of 3 years & submit status report to IRO MoEF&CC.*

31) *The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.*

32) *There shall be no overflow of OB into the river Hasdeo and Ahiran river and Kholar nalla and other first order stream-lets and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.*

33) *An estimated 2606.92 Mm3 of OB will be generated during the entire life of the mine. Out of which 219.56 Mm3 of OB will be dumped in seven external OB Dump in an earmarked area covering 480 ha of land 2387.36 Mm3 of OB will be dumped eight internal OB dump in embankment covering an area of 1287.85 ha. The maximum height of external OB dump for hard OB will not exceed 90 m with 3 tier and that for soft OB shall not exceed 60 m. The maximum slope of the dump shall not exceed 28 degrees. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self- sustaining and compliance status shall be submitted to MOEF and its Regional Office on yearly basis. Further, PP shall carry out slop stability analysis of the dumps from a recognized institute (IITs/NITs etc.) and implement its recommendations.*

34) *Thick green belt of 50 m width at the final boundary in the down wind direction of the project site shall be developed to mitigate/check the dust pollution.*

35) *The predominant Sal species in the forest area shall be protected, and in case of coal mining operations inevitable therein, compensatory forestation of these species shall be carried out in consultation with State Forest Department.*

36) *The project proponent shall obtain Consent to Establish/Operate from the State Pollution Control Boards for the proposed capacity of 70 MTPA prior to commencement.*

37) *PP shall ensure to submit the compliance report to Regional Office in a timely manner and in case of any non-compliance identified so far/in future in the CCR then the same shall be complied on priority and action taken report in this regard shall be submitted to concerned RO.*

38) *PP shall complete all the mitigation measures for reduction of air pollution proposed during EAC meeting within one year.*

39) *Third party monitoring by reputed instituted for air quality shall be carried out at identified locations, both ambient and the process area, to arrive at impact of the proposed expansion at regular interval of 3 years.*

40) *Project proponent shall plant 200000 nos. of native trees with broad leaves along the transportation route in three years to prevent the effect of air pollution. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Officer.*

41) *PP shall carry out monthly water monitoring quality of Hasdeo and Ahiran River and conduct Bio-assay test half yearly and further monitoring Ground water level.*

42) *PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).*

43) *PP shall plant additional 200 ha of Sal trees (only) and create a nursery of 10 ha to distribute the species freely in the region for redevelopment of Sal forest in the region.*

44) *Permanent Health care facilities of Hospital should be established within 5 km of project boundary for the local people.*

45) *PP shall pay to farmers of agricultural land if there is any loss due to pollution found by concerned District Commissioner as per extent rules or norms.*

46) *Domestic water shall be provided to the residents/villages which are coming under the zone*

of influence of the project due to ground water extraction.

47) *10 nos of Water Harvesting Pond with adequate area and depth shall be development within 5 km of project area.*

48) *Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.*

49) *Recommendation made in the carrying capacity study shall be implemented for the protection of environment.*

50) *Recommendation made for social impact assessment study shall be implemented.*

51) *PP shall comply with the direction of Hon'ble Courts and decision of Collector Office or Dept of Geology Mines, Raipur with respect to pending court cases and other issues.*

52) *The project proponent shall take all precautionary measures to ensure riverine / riparian ecosystem in and around the coal mine up to a distance of 5 km. A rivarine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation/ water resource department in the State Government.*

53) *PP shall implement the recommendation made during the site visit of sub-committee on 5/10/2021.*

54) *Work of establishment of the Sal Nursery of 10 Ha area shall be completed by March 2024.*

55) *Digital display board shall be installed before April 2024.*

56) *The recommendation made by sub-committee during the site visit on 5/10/2021 shall be implemented. Further, Solar Roof top work shall be completed by May, 2024.*

57) *PP shall install CCTV camera in all entry and exist points of the mines from where tippers are moved, around coal handling plant, silos, railway siding. The Committee is of the view that PP shall ensure to have transportation route away from the habitation.*

58) *PP shall ensure that in case of any injury/accident the workers should be provided proper compensation and treatment and they should be insured as per existing laws as applicable to the project.*

59) *The peripheral fencing work shall be continued as per mine progression.*

60) *PP shall ensure that plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021.*

A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.

61) *Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.*

62) *Third party audit of plantations carried out should be got done through a reputed forestry institution of MoEFCC (eg. ICFRE) and report submitted to IRO.*

Additional Agenda No. 6.11

6.11 Expansion of Vakilpalli Mine (VKP) Underground Coal Mining Project (0.35 MTPA) in ML area 205.34 Ha of Singareni Collieries Company Ltd., located Village Vakilpalli, Mandal Kamanpur, District Peddapalli (Telangana) -For Environmental Clearance (Under violation Notification dated 14th March, 2017) – Reg

[Online proposal IA/TG/CMIN/258008/2018, File No. 23-253/2018-IA.III(V)]

6.11.1 The proposal is for grant of Environment Clearance to expansion of Vakilpalli Mine (VKP) Underground Coal Mining Project (0.35 MTPA) in ML area 205.34 Ha of M/s Singareni Collieries Company Ltd., located Village Vakilpalli, Mandal Kamanpur, District Peddapalli (Telangana).

6.11.2 Committee during the EAC meeting noted the followings:

i. The instant proposal for EC was recommended in the 27th EAC meeting (Coal Mining Sector) held during 3rd to 4th March, 2022 wherein the Committee recommended the project for grant of EC.

ii. Additional Details Sought (ADS) on 13/04/2022 and 16/01/2024 for submission of Stage-1 FC and Bank Guarantee valid for 2 years.

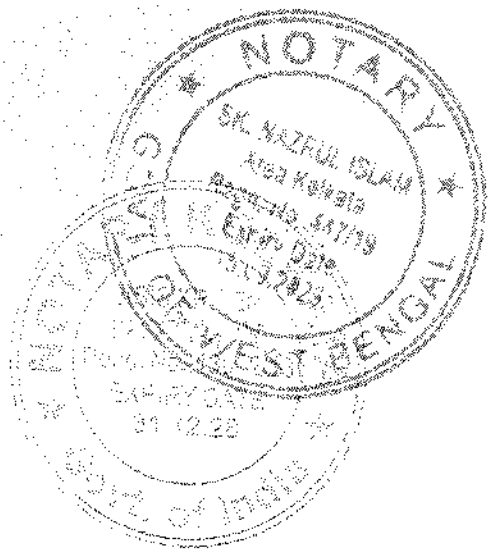
iii. PP has submitted the Bank Guarantee valid for 2 years (i.e. tll 27/04/2026) vide letter dated 17.01.2024.

6.11.3 Committee during the deliberations noted that the instant proposal was earlier considered in 27th EAC meeting held during 3-4 March 2022 under violation category in pursuant to Notification S.O 804 (E) dated 14.03.2017 and the proposal was recommended by the EAC subject to specific conditions which inter-alia include submission of bank guarantee of Rs 127 Lakh and submission of Stage-I FC. Ministry also requested to submit the same vide letter dated 13/04/2022. The PP submitted the same vide letter dated 25/11/2023 i.e. after lapse of 19 months.

Further, as per OM dated 19.06.2014 for consideration of proposals involving forest land, wherein it has mentioned that " *In the eventually that the Stage I FC is not submitted by the project proponent within the prescribed time limit (18 months), as and when the stage I FC is submitted thereafter, such project would be referred to EAC for having a re-look, in case the primary data used in preparation of EIA report is more than three years old. In such a situation, the EAC may get the fresh data collected and on that basis and after due diligence, either reiterate its earlier recommendations, or decide for reappraising the project proposal on account of valid reasons, as the case may be. In case it is decided to reappraise the project, the committee may also decide on the requirement of documents/information for reappraisal as also the need for a fresh public hearing*"

During the meeting PP presented the environment monitoring data for period Oct-Dec 2023. Considering the above facts, the Committee is of the view that there is no requirement of fresh baseline data or additional information from the PP. The Committee ***recommended*** *the proposal for grant of EC as per the earlier recommendation made during* 27th EAC meeting held during 3-4 March 2022, for grant of Environment Clearance to expansion of Vakilpalli Mine (VKP) Underground Coal Mining Project (0.35 MTPA) in ML area 205.34 Ha of M/s Singareni Collieries Company Ltd., located Village Vakilpalli, Mandal Kamanpur, District Peddapalli (Telangana) with specific conditions already prescribed by the EAC and standard EC conditions as per provision of EIA Notification 2006 (as amended).

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Annexure-I

Standard EC Conditions for Coal Mining Project (Opencast mining):

All the projects recommended for grant of environmental clearance by the EAC shallalso comply with the following Standard EC conditions as per Ministry's circular issued from time to time:

(a) Statutory compliance

(i) The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.

(ii) The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.

(iii) The project proponent shall prepare a Site-Specific Conservation Plan / Wildlife Management Plan and approved by the Chief Wildlife Warden. Therecommendations of the approved Site-Specific Conservation Plan/Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of Schedule-I species in the study area).

(iv) The project proponent shall obtain Consent to Establish/Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.

(v) The project proponent shall obtain the necessary permission from the CentralGround Water Authority.

(vi) Solid/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & OtherWaste Management Rules, 2016.

(b) Air quality monitoring and preservation

(i) Continuous ambient air quality monitoring stations as prescribed in the statuebe established in the core zone as well as in the buffer zone for monitoring ofpollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on themeteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stationsmay also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.

(ii) The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central PollutionControl Board. Data on ambient air quality and heavy metals such as Hg, As,Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.

(iii) Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun

etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from allsources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/StatePollution Control Board.

(iv) The transportation of coal shall be carried out as per the provisions and routeenvisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, itshould be so constructed so that the impact of sound, dust and accidents couldbe appropriately mitigated.

(v) Vehicular emissions shall be kept under control and regularly monitored. Allthe vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.

(vi) Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall befully covered to avoid airborne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated orfitted with dust extractors.

(vii) Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.

(c) Water quality monitoring and preservation

(i) The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 CoalIndustry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.

(ii) The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J- 20012/1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regardfor its compliance.

(iii) Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoringof ground water levels shall be carried out four times a year i.e. pre-monsoon,monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.

(iv) Monitoring of water quality upstream and downstream of water bodies shallbe carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and ClimateChange/Regional Office.

(v) Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.

(vi) Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps &OB dumps to prevent run off of water and flow of sediments directly into theriver and water bodies. Further, dump material shall be properly consolidated/compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoonand maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at thetoe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made betweentoe of the dump and adjacent field/habitation/water bodies.

(vii) Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement(standards).

(viii) Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and asamended from time to time. Adequate ETP /STP needs to be provided.

(ix) The water pumped out from the mine, after siltation, shall be utilized for industrial purposive. watering the mine area, roads, green belt developmentetc. The drains shall be regularly desilted particularly after monsoon and maintained properly.

(x) The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented bythe project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surfacewater into the mine should be as per the approved Mining Plan and as per thepermission of DGMS or any other authority as prescribed by the law.

(xi) The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5km. A riverine/riparian ecosystem conservation and management plan shouldbe prepared and implemented in consultation with the irrigation / water resource department in the state government.

(d) Noise and Vibration monitoring and prevention

(i) Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules,2016 in the work environment. Workers engaged in blastingand drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such

accessoriesto be monitored.

(ii) Controlled blasting techniques shall be practiced in order to mitigate groundvibrations, fly rocks, noise and air blast etc., as per the guidelines prescribedby the DGMS.

(i) The noise level survey shall be carried out as per the prescribed guidelines toassess noise exposure of the workmen at vulnerable points in the minepremises, and report in this regard shall be submitted to the Ministry/RO onsix-monthly basis.

(e) Mining Plan

(i) Mining shall be carried out under strict adherence to provisions of the MinesAct 1952 and subordinate legislations made there-under as applicable.

(ii) Mining shall be carried out as per the approved mining plan(including Mine Closure Plan)abiding by mining laws related to coal mining and the relevantcirculars issued by Directorate General Mines Safety (DGMS).

(iii) No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.

(ii) Efforts should be made to reduce energy and fuel consumption by conservation,efficiency improvements and use of renewable energy.

(f) Land reclamation

(i) Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoringland use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shallbe submitted to MOEFCC/Regional Office (RO).

(ii) The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventionsshall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining landbe rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.

(iii) The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining"/"post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.

(iv) Fly ash shall be used for external dump of overburden, backfilling or stowingof mine as per provisions contained in clause (i) and (ii) of subparagraph (8)of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 asamended from time to time. Efforts shall be made to utilize gypsum generatedfrom Flue Gas Desulfurization (FGD), if any, along with fly ash for externaldump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.

(v) Further, it may be ensured that as per the time schedule specified in mine closure plan it

should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled andafforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministryof Environment, Forest and Climate Change/ Regional Office.

(vi) The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.

(g) Green Belt

(i) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna,if any, spotted/reported in the study area. The Action plan in this regard, if any,shall be prepared and implemented in consultation with the State Forest and Wildlife Department.

(ii) Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall bedeveloped allalong the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority)shall be developed all along the major approach/ coal transportation roads.

(h) Public hearing and Human health issues

(i) Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submittedto this ministry & it's RO on six-monthly basis.

(ii) The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% ofthe personnel identified from workforce engaged in active mining operationsshall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.

(iii) Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.

(iv) Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.

(v) The project proponent shall follow the mitigation measures provided in this Ministry's OMNo.Z-11013/5712014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining

activities on habitations-issues related to the miningprojects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.

(i) Corporate Environment Responsibility

(i) The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No.22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.

(ii) The company shall have a well laid down environmental policy duly approveby the Board of Directors. The environmental policy should prescribe for standard operating proceduresto have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall havedefined system of reporting infringements/deviation/violation of the environmental/forest/wildlife norms/conditions and/or shareholder's/stake holders.

(iii) A separate Environmental Cell both at the project and company head quarterlevel, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.

(iv) Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation ofaction plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.

(v) Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.

(j) Miscellaneous

(i) The project proponent shall make public the environmental clearance grantedfor their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of theDistrict or State, of which one shall be in the vernacular language within sevendays and in addition this shall also be displayed in the project proponent's website permanently.

(ii) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies inaddition to the relevant offices of the Government who in turn has to displaythe same for 30 days from the date of receipt.

(iii) The project proponent shall upload the status of compliance of the stipulatedenvironment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.

(iv) The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.

(v) The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.

(vi) The project proponent shall follow the mitigation measures provided in this Ministry's OM No. Z-11013/5712014-IA. II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining
projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.

(vii) The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.

(viii) The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.

(ix) The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.

(x) The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert AppraisalCommittee.

(xi) No further expansion or modifications in the plant shall be carried out withoutprior approval of the Ministry of Environment, Forests and Climate Change.

(xii) Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.

(xiii) The Ministry may revoke or suspend the clearance, if implementation of anyof the above conditions is not satisfactory.

(xiv) The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

(xv) The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

(xvi) The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble SupremeCourt of India / High Courts and any other Court of Law relating to the subjectmatter.

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Annexure-II

Standard EC Conditions for Coal Mining Project (Underground mining):

All the projects recommended for grant of environmental clearance by the EAC shallalso complywith the following Standard EC conditions as per Ministry's circular issued from time to time:

I. Statutory compliance:

(i) The Environmental clearance shall be subject to orders of Hon'ble Supreme Court of India, Hon'ble High Courts, NGT and any other Court of Law, fromtime to time, and as applicable to the project

(ii) The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.

(iii) The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.

(iv) The project proponent shall prepare a Site-Specific Conservation Plan / Wildlife Management Plan and approved by the Chief Wildlife Warden. Therecommendations of the approved Site-Specific Conservation Plan / WildlifeManagement Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in the study area)

(v) The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water(Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.

(vi) The project proponent shall obtain the necessary permission from the CentralGround Water Authority.

(vii) Solid waste/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016 / Hazardous & Other Waste Management Rules,2016

II. Air quality monitoring and preservation

i. Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely particulates, SO2 and NOx.Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive receptors in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc.tobe carried out at least once in six months. Online ambient air quality monitoring station/stations may also be installed in addition to the regular airmonitoring stations as per the requirement and/or in consultation with the SPCB

ii. The Ambient Air Quality monitoring in the core zone shall be carried out toensure the Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution ControlBoard. Data on ambient air quality and heavy metals

such as Hg, As, Ni, Cd,Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.

iii. Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water sprinkling/rain gun/ mist sprinkling etc., shall be carried out in criticalareas prone to air pollution with higher level of particulate matter all throughthe coal transport roads, loading/unloading and transfer points. Fugitive dustemissions from all sources shall be controlled regularly. It shall be ensured that the ambient air quality parameters conform to the norms prescribed bythe Central/State Pollution Control Board.

iv. Major approach roads shall be black topped and properly maintained.

v. The transportation of coal shall be carried out as per the provisions and routeproposed in the approved mining plan. Transportation of the coal through theexisting road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed that the impact of sound, dust and accidents could be appropriately mitigated.

vi. Vehicular emissions shall be kept under control and regularly monitored. Allthe vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.

vii. Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid airborne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated orfitted with dust extractors.

viii. Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.

III. Water quality monitoring and preservation

i. The effluent discharge (mine waste water, workshop effluent) shall bemonitored in terms of the parameters notified under the Water Act, 1974 CoalIndustry Standards vide GSR 742 (E) dated 25.9.2000 and as amended fromtime to time by the Central Pollution Control Board.

ii. The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-IA.11 (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regardfor its compliance.

iii. Regular monitoring of ground water level and quality shall be carried out in andaround the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoringof ground water levels shall be carried out four times a year i.e. pre-monsoon,monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.

iv. Monitoring of water quality upstream and downstream of water bodies shallbe carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and ClimateChange/Regional Office.

v. Ground water, excluding mine water, shall not be used for mining operations. Rainwater

harvesting shall be implemented for conservation and augmentation of ground water resources.

vi. The project proponent shall not alter major water channels around the site. Appropriate embankment shall be provided along the side of the river/nallah flowing near or adjacent to the mine. The embankment constructed along theriver/nallah boundary shall be of suitable dimensions and critical patches shallbe strengthened by stone pitching on the river front side, stabilized with plantation so as to withstand the peak water pressure preventing any chance of mine inundation.

vii. Garland drains (of suitable size, gradient and length) around the critical areas i.e. mine shaft and low lying areas, shall be designed keeping at least 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine sites. The sump capacity shall also provide adequate retention period to allow proper settling of silt material of the surface runoff

viii. The water pumped out from the mine, after siltation, shall be utilized for industrial purposive. watering the mine area, roads, green belt developmentetc. The drains shall be regularly desilted particularly after monsoon and maintained properly.

ix. Industrial waste water from coal handling plant and mine water shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made thereunder, and as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluent. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste water.

x. Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

xi. The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations shall be prepared, considering the presence of any river/rivulet/pond/lake etc., with impact of mining activities on it, and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be asper the provisions of the approved Mining Plan/ EIA-EMP submitted to this Ministry and the same should be done with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved mining plan and as per the permission of DGMS.

xii. The project proponent shall take all precautionary measures to ensure reverian/ riparian ecosystem in and around the coal mine upto a distance of 5 km. A revarian /riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.

IV. Noise and Vibration monitoring and prevention

i. Adequate measures shall be taken for control of noise levels below 85 dB(A)in the work environment. Workers engaged in undergreund mining operations, operation of HEMM, etc. shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms/guidelines in this regard. Progress in usage of such

accessories to be monitored. Adequate awareness programme for users to beconducted.

ii. The noise level survey shall be carried out as per the prescribed guidelines toassess noise exposure of the workmen at vulnerable points in the minepremises, and report in this regard shall be submitted to the Ministry/RO onsix-monthly basis.

V. Mining Plan

i. Mining shall be carried out under strict adherence to provisions of the MinesAct 1952 and subordinate legislations made there-under as applicable.

ii. No change in mining method i.e. UG to OC, calendar programme and scopeof work shall be made without obtaining prior approval of the Ministry of Environment, Forests and Climate Change (MoEFCC).

iii. Mining shall be carried out as per the approved mining plan (including mineclosure plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).

iv. Underground work place environmental conditions shall be rendered ergonomic and air breathable with adequate illumination in conformance withDGMS standards.

v. No mining activity shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980 and also adheringto The Scheduled Tribes and Other Traditional Forest Dwellers (Recognitionof Forest Rights) Act, 2006 read with provisions of Indian Forest Act, 1927.

vi. Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.

VI. Land reclamation

i. Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoringland use pattern and report in1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shallbe submitted to MOEFCC/Regional Office (RO).

ii. Post-mining land be rendered usable for agricultural/forestry purposes and shall be handed over to the respective State Government, as specified in the Guidelines for Preparation of Mine Closure Plan, issued by the Ministry of Coaldated 27th August, 2009 and subsequent amendments.

iii. Regular monitoring of subsidence movement on the surface over and aroundthe working areas and its impact on natural drainage pattern, water bodies, vegetation, structure, roads and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence beyond the limit prescribed, appropriate effective mitigation measures shall be taken to avoid loss of life and materials. Cracks should beeffectively plugged in with ballast and clay soil/suitable material.

iv. Fly ash shall be used for external dump of overburden, backfilling or stowingof mine as per provisions contained in clause (i) and (ii) of subparagraph (8)of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 asamended from time to time. Efforts shall be made to utilize gypsum generatedfrom Flue Gas Desulfurization (FGD), if any, along with fly ash for externaldump of overburden, backfilling or stowing of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.

v. A separate team for subsidence monitoring and surface mitigation measures shall be constituted and continuous monitoring & implementation of mitigation measures be carried out.

vi. Thorough inspection of the mine lease area for any cracks developed at the surface due to mining activities below ground shall be carried out to prevent inrush of water in the mine.

vii. Native tree species shall be selected and planted over areas affected by subsidence.

viii. The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.

VII. Green Belt

i. The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered flora/fauna, if any, spotted/reported in the study area. Action plan, in this regard, if any, shall beprepared and implemented in consultation with the State Forest and Wildlife Department.

ii. Greenbelt, consisting of three-tier plantation, of width not less than 7.5 m, shall be developed all along the mine lease area in a phased manner. The greenbelt comprising of a mix of native species shall be developed all along the major approach roads/ coal transportation roads.

VIII. Public hearing and Human health issues

i. Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored.

ii. The Project Proponent shall undertake Occupational Health survey for initialand Periodical medical examination of the workers engaged in the Project andmaintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS Circulars. Besides carrying out regular periodic health check-up of their workers, 20% of the workers engaged in active mining operations shallbe subjected to health check-up for occupational diseases and hearing impairment, if any.

iii. Personnel (including outsourcing employees) working in dusty areas shall wear protective respiratory devices and shall also be provided with adequatetraining and information on safety and health aspects.

iv. Skill training as per safety norms specified by DGMS shall be provided to all workmen including the outsourcing employees to ensure high safety standards in mines.

v. Effective arrangement shall be made to provide and maintain at suitable points conveniently situated, a sufficient supply of drinking water for all the persons employed.

vi. Implementation of Action Plan on the issues raised during the Public Hearingshall be ensured. The Project Proponent shall undertake all the tasks as per the Action Plan submitted with budgetary provisions during the PublicHearing. Land oustees shall be compensated as per the norms laid out R&R Policy of the Company/ or the National R&RPolicy/ R&R Policy of the StateGovernment, as applicable

vii. The project proponent shall follow the mitigation measures provided in this Ministry's OMNo.Z-11013/5712014-IA. II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the miningprojects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease

area'.

IX. Corporate Environment Responsibility

i. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.

ii. The company shall have a well laid down environmental policy duly approveby the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation/ violation of the environmental / forest / wildlife norms / conditions and / or shareholder's / stake holders. The copy ofthe board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.

iii. A separate Environmental Cell both at the project and company head quarterlevel, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.

iv. Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation ofaction plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.

v. Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.

X. Miscellaneous

i. The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within sevendays and in addition this shall also be displayed in the project proponent's website permanently.

ii. The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display thesame for 30 days from the date of receipt.

iii. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on theirwebsite and update the same on half-yearly basis.

iv. The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearanceportal.

v. The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the

Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.

vi. The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.

vii. The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.

viii. The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert AppraisalCommittee.

ix. No further expansion or modifications in the plant shall be carried out withoutprior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).

x. Concealing factual data or submission of false/fabricated data may result inrevocation of this environmental clearance and attract action under the provisions of Environment (Protection)Act, 1986.

xi. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

xii. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

xiii. The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

xiv. The above conditions shall be enforced, inter-alia under the provisions of the Water(Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986,Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subjectmatter.

xv. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

***

NOTARY
SK. NAZRUL ISLAM
Regd. No. 447/19
Expiry Date
15.3.2023
GOVT. OF WEST BENGAL

Annexure-III

Standard EC Conditions for Coal Washery Project

I. Statutory compliance:

(i) The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.

(ii) The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.

(iii) The project proponent shall prepare a Site-Specific Conservation Plan / Wildlife Management Plan and approved by the Chief Wildlife Warden. Therecommendations of the approved Site-Specific Conservation Plan / WildlifeManagement Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in thestudy area)

(iv) The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water(Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.

(v) The project proponent shall obtain the necessary permission from the CentralGround Water Authority.

(vi) Solid waste/hazardous waste generated in the washery needs to addressed inaccordance to the Solid Waste Management Rules, 2016 / Hazardous & Other Waste Management Rules,2016.

(vii) Coal beneficiation practices shall be carried out under strict adherence to provisions of the Factories Act, 1957 and subordinate legislations made there under.

II. Air quality monitoring and preservation

i. Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely particulates, SO2 and NOx. Location of the stations shall be decided based onthe meteorological data, topographical features and environmentally and ecologically sensitive receptors in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc. carried out at least once in six months.

ii. Continuous ambient air quality monitoring stations as prescribed in the statuebe established in the core zone as well as in the buffer zone for monitoring ofpollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on themeteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.

ii. Transportation of coal by road shall be carried out by covered trucks/conveyors. The transportation of clean coal and rejects shall be by railwith wagon loading through silo. Effective measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulates such as roads, belt conveyors, loading/unloading and transfer points. Fugitive dust emissions from allsources shall be controlled at source. It shall be ensured that the ambient air quality parameters conform to the norms prescribed by the Central/State Pollution Control Board

iv. All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned. Coal transportation shall be carried out by covered trucks.

v. Covered trucks shall be engaged for mineral transportation outside thewashery up to the railway siding, shall be optimally loaded to avoid spillage en-route. Trucks shall be adequately maintained and emissions shall be belownotified limits.

vi. Facilities for parking of trucks carrying raw material from linked mine shallbe created within the unit.

vii. Vehicular emissions shall be kept under control and regularly monitored. Thevehicles having 'PUC' certificate from authorized pollution testing centres shall be deployed for washery operations.

viii. Hoppers of the coal crushing unit and other washery units shall be fitted withhigh efficiency bag filters/mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.

ix. The raw coal, washed coal and coal wastes (rejects) shall be stacked properlyat earmarked site (s) within stockyards fitted with wind breakers/shields. Adequate measures shall be taken to ensure that the stored mineral does not catch fire.

x. The temporary reject sites should appropriate planned and designed to avoidair and water pollution from such sites.

III. Water quality monitoring and preservation

i. The effluent discharge (mine waste water, workshop effluent) shall bemonitored in terms of the parameters notified under the Water Act, 1974 CoalIndustry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.

ii. The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regardfor compliance.

iii. Industrial waste water shall be properly collected and treated so as to conformto the standards prescribed under the Environment (Protection) Act, 1986 andthe Rules made there under, and as amended from time to time.

iv. The project proponent shall not alter major water channels around the site. Appropriate embankment shall be provided along the side of the river/nallahflowing near or adjacent to the washery. The embankment constructed along the river/nallah boundary shall be of

suitable dimensions and critical patches shall be strengthened by stone pitching on the riverfront side stabilised with plantation so as to withstand the peak water pressure preventing any chance of inundation.

v. Heavy metal content in raw coal and washed coal shall be analysed once ina year and records maintained thereof.

vi. The rejects should preferably be utilized in FBC power plant or disposed offthrough sale for its gainful utilization. If the coal washery rejects are to be disposed off, it should be done in a safe and sustainable manner with adequate compaction and post closure arrangement to avoid water pollutiondue to leachate from rejects and surface run of from reject dumping sites.

vii. An Integrated Surface Water Management Plan for the washery area up to itsbuffer zone considering the presence of any river/rivulet/pond/lake etc. with impact of coal washing activities on it, shall be prepared, submitted to MoEFCC and implemented.

viii. Waste Water shall be effectively treated and recycled completely either for washery operations or maintenance of green belt around the plant.

ix. Rainwater harvesting in the washery premises shall be implemented for conservation and augmentation of ground water resources in consultation with Central Ground Water Board.

x. No ground water shall be used for coal washing unless otherwise permitted in writing by competent authority (CGWA) or MoEFCC. The make-up waterrequirement of washery should not exceed 1.5 m3/tonne of raw coal.

xi. Regular monitoring of ground water level and quality shall be carried out in andaround the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoringof ground water levels shall be carried out four times a year i.e. pre-monsoon,monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO. Monitoring of water quality upstream and downstream of water bodies shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and ClimateChange/Regional Office.

xii. The project proponent shall take all precautionary measures to ensure riverine/ riparian ecosystem in and around the coal mine up to a distance of 5 km. A riverine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government

IV. Noise and Vibration monitoring and prevention

i. The noise level survey shall be carried out as per the prescribed guidelines toassess noise exposure of the workmen at vulnerable points in the minepremises, and report in this regard shall be submitted to the Ministry/RO onsix-monthly basis

ii. Adequate measures shall be taken for control of noise levels as per noise pollution Rules,2016 in the work environment. Workers engaged in blastingand drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessoriesto be monitored.

V. Coal beneficiation

i. Coal stacking plan shall be prepared separately for raw coal, clean coal, middling and rejects.

ii. Efforts should be made to reduce energy consumption by conservation, efficiency improvements and use of renewable energy.

VI. Green Belt

i. Three tier greenbelt comprising of a mix of native species, of minimum 30 mwidth shall be developed all along the washery area to check fugitive dust emissions and to render aesthetic to neighbouring stakeholders. A 3-tier green belt comprising of a mix of native species or tree species with thick leaves shall be developed along vacant areas, storage yards, loading/transferpoints and also along internal roads/main approach roads.

ii. The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.

VII. Public hearing and Human health issues

i. Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submittedto this ministry & its RO on six-monthly basis. The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% ofthe personnel identified from workforce engaged in active mining operationsshall be subjected to health check-up for occupational diseases and hearing impairment, if any. as amended time to time.

ii. Personnel (including outsourced employees) working in core zone shall wearprotective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.

iii. Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.

iv. The project proponent shall follow the mitigation measures provided in this Ministry's OM No. Z-11013/5712014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.

VIII. Miscellaneous

i. The project proponent shall make public the environmental clearance grantedfor their project along with the environmental conditions and safeguards at their cost by prominently

advertising it at least in two local n

ii. newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in theproject proponent's website permanently.

iii. The copies of the environmental clearance shall be submitted by the project proponents tithe Heads of local bodies, Panchayats and Municipal Bodies inaddition to the relevant offices of the Government who in turn has to displaythe same for 30 days from the date of receipt.

iv. The project proponent shall upload the status of compliance of the stipulatedenvironment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.

v. The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.

vi. The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.

vii. The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.

viii. The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.

ix. The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.

x. The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert AppraisalCommittee.

xi. No change in coal beneficiation process and scope of work shall be made withoutobtaining prior approval of the Ministry of Environment, Forests and Climate Change (MoEFCC) with such conditions mentioned therein. No change in the maximum quantum of raw material feed per annum against the approved washery capacity shall be made

xii. Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.

xiii. The Ministry may revoke or suspend the clearance, if implementation of anyof the above conditions is not satisfactory.

xiv. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

xv. The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

xvi. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention &Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble SupremeCourt of India / High Courts and any other Court of Law relating to the subjectmatter.

xvii. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

***

NOTARY
SK. NAZRUL ISLAM
Regn. No. 44/19
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

NOTARY
GOVT. OF INDIA

ANNEXURE-IV

Generic ToR for coal washery

i. Siting of washery is critical considering to its environmental impacts. Preferenceshould be given to the site located at pit head; in case such a site is not available, the site should be as close to the pit head as possible and coal shouldbe transported from mine to the washer preferably through closed conveyerbelt to avoid air pollution.

ii. The washery shall not be located in eco-sensitive zones areas.

iii. The washery should have a closed system and zero discharge. The storm drainage should be treated in settling ponds before discharging into rivers/streams/water bodies.

iv. A thick Green belt of about 50 m width should be developed surrounding the washery.

v. A brief description of the plant along with a layout, the specific technologyused and the source of coal should be provided.

vi. The EIA-EMP Repot should cover the impacts and management plan for theproject of the capacity for which EC is sought and the impacts of specific activities, including the technology used and coal used, on the environment of the area (within 10km radius), and the environmental quality of air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts for the rated capacity. Cumulative impacts forair and water should be a part of EIA in case coal mine, TPP and other washeries are located within 10km radius. The EIA should also include mitigative measures needed to minimize adverse environmental impacts.

vii. A Study Area Map of the core zone as well as the 10km area of buffer zoneshowing major industries/mines and other polluting sources should be submitted. These maps shall also indicate the migratory corridors of fauna, if any and areas of endangered fauna; plants of medicinal and economic importance; any ecologically sensitive areas within the 10 km buffer zone; the shortest distance from the National Park/WL Sanctuary Tiger Reserve, etc. along with the comments of the Chief Wildlife Warden of the State Govt.

viii. Data of one-season (non-monsoon) primary- base-line data on environmental quality of air (PM10, PM2.5, SOx and NOx, noise, water (surface and groundwater), soil be submitted.

ix. The wet washery should generally utilize mine water only. In case mine water is not available, the option of storage of rain water and its use should be examined. Use of surface water and ground water should be avoided.

x. Detailed water balance should be provided. The break-up of water requirement as per different activities in the mining operations vis-a-vis washery should be given. If the source of water is from surface water and/orground water, the same may be justified besides obtaining approval of the Competent Authority for its drawl.

xi. The entire sequence of mineral production, transportation, handling, transfer and storage of mineral and waste, if any, and their impacts on air quality should be shown in a flow chart with specific points where fugitive emissions can arise and specific pollution control/mitigative measures proposed to be put in place. The washed coal

and rejects should be transport by train as far as possible. Road transport of washed coal and rejects should generally be avoided. In case, the TPP is within 10km radius, it should be through conveyer belt. If transport by rail is not feasible because of the topography ofthe area, the option for transport by road be examined in detail and its impactsalong with the mitigation measures should be clearly brought out in EIA/EMP report.

xii. Details of various facilities proposed to be provided in terms of parking, restareas, canteen etc. to the personnel involved in mineral transportation, workshop and effluents/pollution load from these activities should be provided.

xiii. Impacts of CHP, if any, on air and water quality should also be spelt out along with Action Plan.

xiv. O.M. No. J-ll0I3/25/2014-IA.I dated 11th August, 2014 to be followed with regard to CSR activities.

xv. Details of Public Hearing, Notice(s) issued in newspapers,proceedings/minutes of Public Hearing, points raised by the general public and response/commitments made by the proponent along with the Action Plan and budgetary provisions be submitted in tabular form. If the Public Hearing is in the regional language, an authenticated English translation of thesame should be provided. Status of any litigations/ court cases filed/pending,if any, against the project should be mentioned in EIA.

xvi. Analysis of samples indicating the following be submitted: Characteristics of coal prior to washing (this includes grade of coal, other characteristics of ash, S and heavy levels of metals such as Hg, As, Pb,Cr etc). Characteristics and quantum of coal after washing. Characteristics and quantum of coal rejects.

xvii. Details of management/disposal/use of coal rejects should be provided. Therejects should be used in TPP located close to the washery as far as possible.If TPP is within a reasonable distance (10 km), transportation should be by conveyor belt. If it is far away, the transportation should be by rail as far as possible.

xviii. Copies of MOU/Agreement with linkages (for stand-alone washery) for thecapacity for which EC is being sought should be submitted.

xix. Corporate Environment Responsibility:

a) The Company must have a well laid down Environment Policy approvedby the Board of Directors.

b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/ deviation/ violation of the environmental or forest norms/ conditions.

c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.

d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

xx. A detailed action Plan for Corporate Social Responsibility for the project affected people and people living in and around the project area should be provided.

xxi. Permission of drawl of water shall be pre-requisite for consideration of EC.

xxii. Wastewater /effluent should confirm to the effluent standards as prescribed under Environment (Protection) Act, 1986

xxiii. Details of washed coal, middling and rejects along with the MoU with the end-users should be submitted.

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ANNEXURE-V

GENERIC TOR FOR AN OPENCAST COALMINE PROJECT for EC

(i) An EIA-EMP Report shall be prepared for MTPA rated capacity in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.

(ii) An EIA-EMP Report would be prepared for..... MTPA rated capacity to cover the impacts and environment management plan for the project specificactivities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for MTPA of coal production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.

(iii) A toposheet specifying locations of the State, District and Project site should be provided.

(iv) A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries/mines and other polluting sources. In case of ecologically sensitive areas such as BiosphereReserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found inthe 15 km study area should be given.

(v) Land use map (1: 50,000 scale) based on a recent satellite imagery of the study area mayalso be provided with explanatory note on the land use.

(vi) Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas(as per records), along with other physical features such as water bodies, etc should be furnished.

(vii) A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.

(viii) A detailed Site plan of the mine showing the proposed break-up of the landfor mining

operations such as the quarry area, OB dumps, green belt, safetyzone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channeling of the water courses,etc., approach roads, major haul roads, etc should be indicated.

(ix) In case of any proposed diversion of nallah/canal/river, the proposed route of diversion

/modification of drainage and their realignment, construction of embankmentetc. should also be shown on the map as per the approval of Irrigation and flood control Department of the concerned state.

(x) Similarly, if the project involves diversion of any road/railway line passing through the

ML/project area, the proposed route of diversion and its realignment shouldbe shown in the map along with the status of the approval of the competent authority.

(xi) Break up of lease/project area as per different land uses and their stage ofacquisition should be provided.

LANDUSE DETAILS FOR OPENCAST PROJECT should be given as per the following table:

Sl. No.	Land use	Within ML area (ha)	Outside ML area (ha)	Total
1.	Agricultural land			
2.	Forest land			
3.	Wasteland			
4.	Grazing land			
5.	Surface water bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

(xii) Break-up of lease/project area as per mining plan should be provided.

(xiii) Impact of changes in the land use due to the project if the land is predominantly agricultural land/forestland/grazing land, should be provided.

(xiv) One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-seasonmet data coinciding with the same season for AAQ collection period should be provided.

(xv) Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location

of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non- polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.

(xvi) Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and faunaduly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as ahabitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.

(xvii) Details of mineral reserves, geological status of the study area and the seamsto be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approvedMining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure planapproval of Competent Authority should be furnished for green field and expansion projects.

(xviii) Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis- a-vis the potential impacts should be provided.

(xix) Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

(xx) Detailed water balance should be provided. The break-up of water requirement for the various mine operations should be given separately.

(xxi) Source of water for use in mine, sanction of the Competent Authority in the State Govt..and impacts vis-à-vis the competing users in the upstream and downstream of the project site. should be given.

(xxii) Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/orif the area falls within dark/grey zone.

(xxiii) Impact of blasting, noise and vibrations should be given.

(xxiv) Impacts of mining on the AAQ and predictions based on modeling using the ISCST-3 (Revised) or latest model should be provided.

(xxv) Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.

(xxvi) Effort be made to reduce/eliminate road transport of coal inside and outsidemine and for mechanized loading of coal through CHP/ Silo into wagons andtrucks/tippers.

(xxvii) Details of waste OB and topsoil generated as per the approved calendar programme, and their management shown in figures as well explanatory notes tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use should be given. OB dump heights and terracing based on slope stabilitystudies with a max of 28° angle as the ultimate slope should be given. Sections of final dumps (both longitudinal and cross section) with relation tothe adjacent area should be shown.

(xxviii) Efforts be made for maximizing progressive internal dumping of O.B., sequential mining, external dump on coal bearing area and later rehandling into the mine void. --to reduce land degradation.

(xxix) Impact of change in land use due to mining operations and plan for restoration of the mined area to its original land use should be provided.

(xxx) Progressive Green belt and ecological restoration /afforestation plan (both in text, figures and in the tabular form as per the format of MOEFCC given below) and selection of species (native) based on original survey/land-use should be given.

Table 1: Stage-wise Land use and Reclamation Area (ha)

S.N.	Land use Category	Present (1st Year)	5th Year	10th Year	20th Year	24th Year (end of mine life)*
1.	Backfilled Area Reclaimed with plantation)					
2.	Excavated Area (not reclaimed)/void					
3.	External OB dump Reclaimed with					

	plantation)					
4.	Reclaimed Top soil dump					
5.	Green Built Area					
6.	Undisturbed area (brought under plantation)					
7.	Roads (avenue plantation)					
8.	Area around buildingsand Infrastructure					
	TOTAL					

* As a representative example

Table 2 : Stage Wise Cumulative Plantation

S. No.	YEAR*	Green Belt	External Dump	Backfilled Area	Others(Undisturbed Area/etc)	TOTAL
1.	1st year					
2.	3rd year					
3.	5th year					
4.	10th year					
5.	15th year					
6.	20th year					
7.	25th year					
8.	30th year					
9.	34th year (end of mine life)					
10.	34-37thYear (Post-mining)					

* As a representative example

(xxxi) Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining landuse should be prepared with detailed cost provisions. Impact and

management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.

Table 3: Post-Mining Landuse Pattern of ML/Project Area (ha)

S.N.	Land use during Mining	Land Use (ha)				
		Plantation	Water Body	Public Use	Undisturbed	TOTAL
1.	External OB Dump					
2.	Top soil Dump					
3.	Excavation					
4.	Roads					
5.	Built up area					
6.	Green Belt					
7.	Undisturbed Area					
	TOTAL					

(xxxii) Flow chart of water balance should be provided. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. should be provided. Details of STP in colony and ETP in mine should be given. Recycling of water to the max. possible extent should be done.

(xxxiii) Occupational health issues. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower inthe mine should be given.

(xxxiv) Risk Assessment and Disaster Preparedness and Management Plan should be provided.

(xxxv) Integration of the Env. Management Plan with measures for minimizing use of natural resources - water, land, energy, etc. should be carried out.

(xxxvi) Cost of EMP (capital and recurring) should be included in the project costand for progressive and final mine closure plan.

(xxxvii) Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in thestudy area and broad plan for resettlement of thedisplaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people,civic and housing amenitiesbeing offered, etc and costs along with the schedule of the implementationof the R&R Plan should be given.

(xxxviii) CSR Plan along with details of villages and specific budgetary provisions (capital

and recurring) for specific activities over the life of the project should be given.

(xxxix) Corporate Environment Responsibility:

a) The Company must have a well laid down Environment Policy approved by the Board of Directors.

b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.

c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with theenvironmental clearance conditions must be furnished.

d) To have proper checks and balances, the company should have a welllaid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/orshareholders or stakeholders at large.

(xl) Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general publicand commitments made by the proponent and theaction proposed with budgets in suitabletime frame. These details should bepresented in a tabular form. If the Public Hearing is inthe regional language,an authenticated English Translation of the same should be provided.

(xli) In built mechanism of self-monitoring of compliance of environmental regulations shouldbe indicated.

(xlii) Status of any litigations/ court cases filed/pending on the project should be provided.

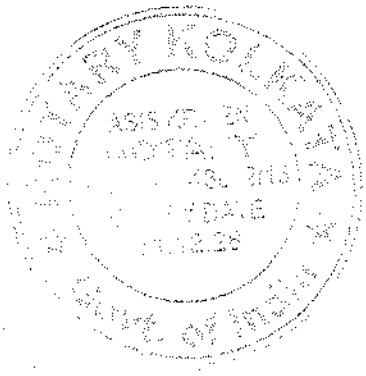
(xliii) Submission of sample test analysis of Characteristics of coal: This should include details on grade of coal and other characteristics such as ash content,S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xliv) Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept.(if req.), etc. wherever applicable.

FOREST CLEARANCE: Details on the Forest Clearance should be given as per the format given:

TOTAL ML/PROJECT AREA (ha)	TOTAL FOREST LAND (ha)	Date of FC	Extent of forestland	Balance area for which FC isyet to be obtained	Status of appl for diversion of forest land
		If more than, provide details of each FC			

****



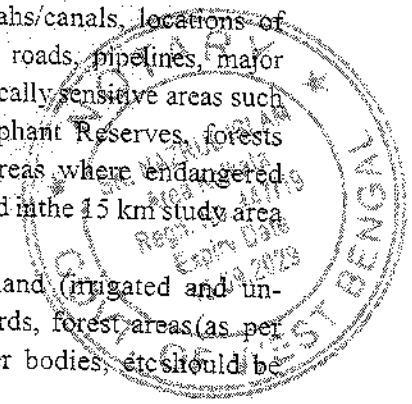
ANNEXURE -VI

GENERIC TORs FOR AN UNDERGROUND COALMINE PROJECT

(i) An EIA-EMP Report shall be prepared for MTPA rated capacity in an ML/project area of ha based on the generic structure specified in Appendix III of the EIA Notificatcn,2006.

(ii) An EIA-EMP Report would be prepared for MTPA rated capacity to cover the impacts
and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for MTPA
of coal production based on approved project/Mining Plan for MTPA.
Baseline data collection can be for any season (three months) except monsoon.

(iii) A Study area map of the core zone (project area) and 10 km area of the bufferzone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries/mines and other polluting sources. In case of ecologically sensitive areas such as BiosphereReserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found inthe 15 km study area should be given.



(iv) Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas(as per records), along with other physical features such as water bodies, etcshould be furnished.

(v) A contour map showing the area drainage of the core zone and 25 km of thestudy area (where the water courses of the core zone ultimately join the majorrivers/streams outside the lease/project area) should also be clearly indicatedin the separate map.

(vi) A detailed Site plan of the mine showing the proposed break-up of the land for mining

operations such as the quarry area, OB dumps, green belt, safetyzone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of

embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.

(vii) Original land use (agricultural land/forestland/grazing land/wasteland/waterbodies) of the area should be provided as per the tables given below. Impactsof project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified.

S. N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights (ha)	Area under Both (ha)
1.	Agricultural land			
2.	Forest Land			
3.	Grazing Land			
4.	Settlements			
5.	Others (specify)			

Area under Surface Rights

S.N.	Details	Area (ha)
1.	Buildings	
2.	Infrastructure	
3.	Roads	
4.	Others (specify)	
	TOTAL	

(viii) Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and faunaduly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as ahabitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained

and furnished.

(ix) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approvedMining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure planapproval of Competent Authority should be furnished for green field and expansion projects.

(x) Details of mining methods, technology, equipment to be used, etc., rationalefor selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.

(xi) Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts ofmining operations thereon.

(xii) One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-seasonmet data coinciding with the same season for AAQ collection period should be provided.

(xiii) Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should beselected on the basis of size of lease/project area, the proposed impacts in thedownwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non- polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surfacewater as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.

(xiv) Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zoneincluding long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/orif the area falls within dark/grey zone.

(xv) Study on subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.

(xvi) Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including useof water for sand stowing should be given separately. Source of water for usein mine, sanction of the Competent Authority in the State Govt. and impactsvis-à-vis the competing users should be provided.

(xvii) Impact of choice of mining method, technology, selected use of machinery and

impact on air quality, mineral transportation, coal handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.

(xviii) Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.

(xix) Effort be made to reduce/eliminate road transport of coal inside and outsidemine and for mechanized loading of coal through CHP/ Silo into wagons and trucks/tippers.

(xx) Details of various facilities to be provided to the workers in terms of parking,rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.

(xxi) The number and efficiency of mobile/static water sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.

(xxii) Impacts of CHP, if any on air and water quality should be given. A flow chartshowing water balance along with the details of zero discharge should be provided.

(xxiii) Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining landuse should be prepared with detailed cost provisions. Impact and managementof wastes and issues of re-handling (wherever applicable) and backfilling andprogressive mine closure and reclamation should be furnished.

(xxiv) Greenbelt development should be undertaken particularly around the transport route and CHP. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.

(xxv) Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.

(xxvi) Details of R&R. Detailed project specific R&R Plan with data on the existingsocio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenitiesbeing offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.

(xxvii) CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project shouldbe given.

(xxviii) Corporate Environment Responsibility:

a) The Company must have a well laid down Environment Policy approved bythe Board of Directors.

b) The Environment Policy must prescribe for standard operatingprocess/procedures to bring into focus any infringements/deviation/violationof the environmental or forest norms/conditions.

c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.

d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

(xxix) Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and theaction proposed with budgets in suitable time frame. These details should bepresented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.

(xxx) In built mechanism of self-monitoring of compliance of environmentalregulations should be indicated.

(xxxi) Status of any litigations/ court cases filed/pending on the project should be provided.

(xxxii) Submission of sample test analysis of Characteristics of coal: This should include details on grade of coal and other characteristics such as ash content,S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xxxiii) Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept.(if req.), etc. wherever applicable.

Details on the Forest Clearance should be given as per the format given:

Total ML /Project Area (ha)	Total Forest Land (ha)	Date of FC	Extent of Forest Land	Balance are a for which FC is yet to be obtained	Status of appl. For diversion of forest land
		If more than one provide details of each FC			

ANNEXURE-VII

GENERIC TORs FOR A N O P E N C A S T -CUM UNDERGROUND COAL MINE PROJECT

(i) An EIA-EMP Report would be prepared for a combined peak capacity of.....MTPA for OC-cum-UG project which consists of.... MTPA in an ML/project area of ha for OC and .... MTPA for UG in an ML/project area of ha based on the generic structure specified in Appendix III of the EIA Notification 2006.

(ii) An EIA-EMP Report would be prepared for MTPA rated capacity to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for MTPA of coal production based on approved project/Mining Plan for MTPA. Baseline data collection can be for any season (three months) except monsoon.

(iii) The ToRs prescribed for both opencast and underground mining are applicable for opencast – cum underground mining.

NOTARY SK. NAZRUL ISLAM Area Kolkata Regn. No. 447/19 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

ANNEXURE-VIII

LIST OF PARTICIPANTS OF EAC (COAL) IN 6th MEETING HELD ON 17-18 JANUARY, 2024 THROUGH HYBRID MODE

Sl. No.	Name	Position	17.01.2024	18.01.2024
1.	Dr. Sharad Singh Negi (I.F.S Retd.)	Chairman	*Present*	*Present*
2.	Sh. Inder Pal Singh Matharu, (I.F.S. Retd.)	Member	*Absent*	*Absent*
3.	Sh. Lalit Kapur (Retd. Adviser, MoEFCC)	Member	*Present*	*Present*
4.	Dr. Umesh Jagannathrao Kahalekar	Member	*Present*	*Present*
5.	Shri K.B. Biswas	Member	*Present (through VC)*	*Present (through VC*
6.	Sh. Savalge Chandrasekhar	Member	*Present (through VC)*	*Present (through VC)*
7.	Prof. Shyam Shanker Singh	Member	*Absent*	*Absent*
8.	Dr. Vinod Agrawal	Member	*Present*	*Present*
9.	Dr. Santosh Kumar Hampannavar	Member	*Present (through VC)*	*Present (through VC)*
10.	Prof. R M Bhattacharjee, Representative of IIT/ISM Dhanbad	Member	*Present (through VC)*	*Present (through VC)*
11.	Shri M.P Singh, Representative of CEA	Member	*Present (through VC)*	*Present (through VC)*
12.	Mr. Harmeet Sahanay Representative of IMD	Member	*Absent*	*Absent*
13.	Dr. Nazimuddin, Representative of Central Pollution Control Board	Member	*Present (through VC)*	*Present (through VC)*
14.	Shri Amit Vashishtha, Scientist 'E, MoEFCC	Member-Secretary	*Present*	*Present*
MOEF&CC				
15.	Sh. Mohit Saxsena	Sc 'D'	*Present*	*Present*

Email **SO E and F Subhadra Area Mcl**

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ANNEXURE- "N"

Fwd: Subhadra Open Cast Project-RegArea

From : GENERAL MANAGER Subhadra Area, MCL <gm-subhadra.mcl@coalindia.in> Tue, Feb 20, 2024 08:43 PM

Subject : Fwd: Subhadra Open Cast Project-RegArea SCML Environment

To : Amit Vashishtha <amit.vashishtha@nic.in> 5 attachments

Cc : sharadnegi1957@gmail.com, Akshay Shrikant Bapat <dt-pp.mcl@coalindia.in>, GM ENVT MCL <gm-env.mcl@coalindia.in>, PO Subhadra Project Subhadra Area Mcl <po-subhp.mcl@coalindia.in>, SO E and F Subhadra Area Mcl <so-enf-subha.mcl@coalindia.in>, scml@adityabirla.com

Dear Sir,

The reply along with annexures against the Query raised by Shri Sanjay Kumar Mishra through MoEF&CC is submitted for kind consideration of proposal of Subhadra Project for grant of Environmental clearance.

General Manager
Subhadra Area

From: scml@adityabirla.com
To: "GENERAL MANAGER Subhadra Area, MCL" <gm-subhadra.mcl@coalindia.in>, "GENERAL MANAGER Subhadra Area, MCL" <gm-subhadra.mcl@coalindia.in>
Sent: Tuesday, February 20, 2024 6:54:29 PM
Subject: RE: Subhadra Open Cast Project-Reg

Dear Sir,

Please find attached the justification note along with Annexures against the Grievance submitted to MoEF & CC.

Regards
PH, SCML

From: GENERAL MANAGER Subhadra Area, MCL <gm-subhadra.mcl@coalindia.in>
Sent: 13 February 2024 18:48
To: scml <scml@adityabirla.com>
Subject: Fwd: Subhadra Open Cast Project-Reg

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Sir,

Please look into the matter in the trailing mail and provide justification for the matter raised in the grievance immediately.

General Manager
Subhadra Area

From: "Amit Vashishtha" <amit.vashishtha@nic.in>
To: "GENERAL MANAGER Subhadra Area, MCL" <gm-subhadra.mcl@coalindia.in>
Cc: sharadnegi1957@gmail.com
Sent: Tuesday, February 13, 2024 9:45:46 AM
Subject: Subhadra Open Cast Project-Reg

Sir,

Please find attached herewith the Grievance submitted by Sanjaya Kumar Mishra which is self explanatory. In this regard, it is requested to provide the justification for the same, so that same may be placed before EAC for its consideration.

With Regards

Amit Vashishtha
Scientist 'E'
MoEF&CC

NOTARY Area Kolkata Regn. No. 447/19 Expiry Date 19.03.2029 GOVT. OF WEST BENGAL

396 ANNEXURE - 'M'

Query raised by Shri Sanjay Kumar Mishra through MoEF&CC: Looking into the Test Reports issued on 09.01.2023 available at Welcome to PARIVESH it is found that for the entire period of monitoring carried out between 03.10.2022 to 31.12.2022, the parameter Benzene is reported to be below detection limit, which is 0.5 microgram per cubic meter in all the stations. The villages in which the laboratory has carried out monitoring are named as: Pidhakhamana, Tangarsahi, Kosala, Korada, Kalikatta, Golabandha, Kumunda, Malibrahmani, Brahmanbil, Kalamchhuin, Chhotagolagadia.

Benzene in all the villages for the month of December 2022 needs a review. There are some other findings which show that in December 2022, the Benzene concentration in all these villages found to be varying between 2.2 to 6.4 microgram per cubic meter. The maximum was found in Golabandha.

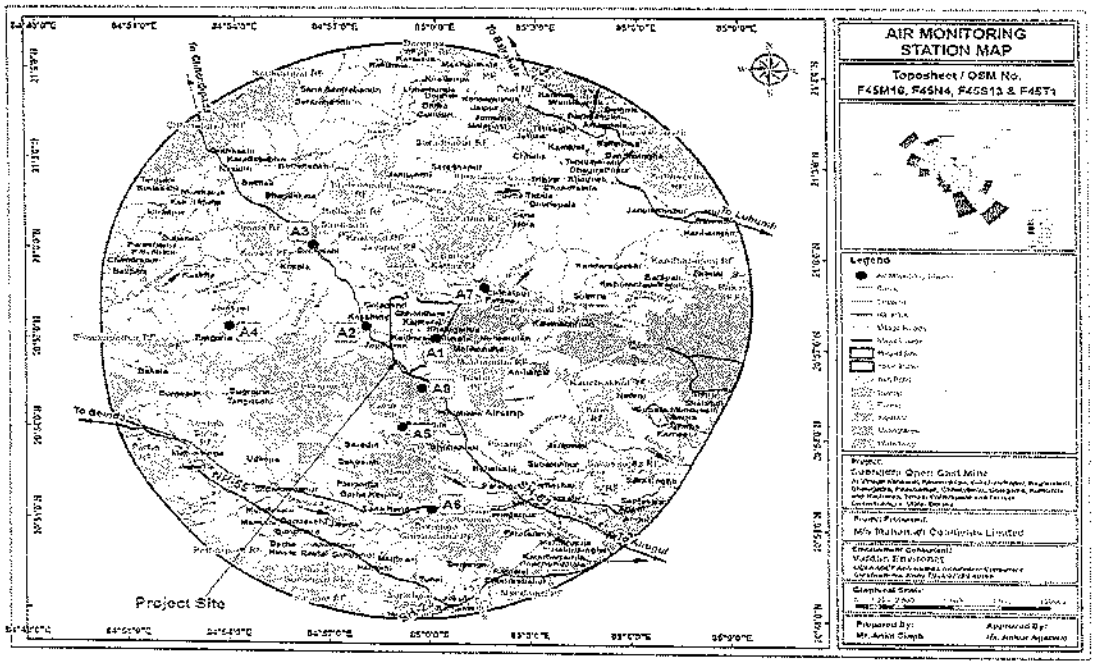
Submission/Justification: Vardan EnviroLab a NABL Accredited Lab based in Gurgaon, Haryana was engaged for carrying out Baseline Monitoring Environmental Study during the period from October to December 2022. The environmental study conducted was in accordance with the guidelines of EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and Central Pollution Control Board, New Delhi.

The locations of the Air Monitoring were as follows:

Stations	Name	Distance in Km	Latitude	Longitude
A1	Project Site	-	20° 57' 36.707" N	84° 59' 28.969" E
A2	Village Tangarasahi	1.27	20° 57' 33.378" N	84° 57' 59.721" E
A3	Village Kosala	1.02	20° 58' 49.664" N	84° 58' 15.542" E
A4	Village Korada	8.4	20° 57' 29.610" N	84° 53' 53.934" E
A5	Village Kalikata	3.34	20° 54' 11.191" N	84° 59' 6.014" E
A6	Golabandha	8.45	20° 51' 27.956" N	85° 0' 1.713" E
A7	Village Kumunda	1.40	20° 58' 53.749" N	85° 1' 31.201" E
A8	Malibrahmani	1.02	20° 55' 31.211" N	84° 59' 40.727" E

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44719
Expiry Date
15.09.2023
GOVT. OF WEST BENGAL

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Laboratory analysis of the test samples collected during the period as stated above in all the location for Benzene were found to be within the prescribed NAAQS Limit. (Lab Report is attached as **Annexure-1**)

The different techniques Adopted/Protocols for Ambient Air Quality Monitoring are as follows.

S. No	Parameters	Techniques	Technical Protocol
1	Sulphur Dioxide (SO_2)	West & Gaeke	IS:5182 (P2)
2	Nitrogen Dioxide (NO_2)	Jacob & Hochheiser	IS:5182 (P6)
3	Particulate Matter PM_{10}	Gravimetric	IS:5182 (P23)
4	Particulate Matter $PM_{2.5}$	Gravimetric	IS:5182 (P24)
5	Carbon monoxide as CO	NDIR	IS: 5182 (P-10)
6	Ammonia	Spectrophotometric Method	IS 5182 (P-25): 2018
7	Arsenic	ICPMS/AAS Method	VEL/ENV/STP/110, Issue No. 01 dated on 01/11/2021
8	Benzene	GC-FID Method	IS: 5182 (P-11): 2006 RA: 2017
9	Benzo(a)pyrene	GC-FID Method	IS: 5182 (P-12): 2004 RA: 2019
10	Lead	ICPMS/AAS Method	IS: 5182 (P-22): 2004 RA: 2019
11	Nickel	ICPMS/AAS Method	IS: 5182 (P-26): 2020
12	Ozone	Spectrophotometric Method	IS 5182 (P-9):1974 RA: 2019
13	Mercury as Hg	ICPMS/AAS Method	VEL/ENV/STP/129, Issue No. 01 dated on 01/11/2021

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As mentioned above, the testing of Benzene was done as per IS: 5182 (P-11): 2006 RA: 2017 Standards using the GC-FID Method. (Indian Standard Methods for Measurement of Air Pollution is attached for reference as **Annexure- 2**)

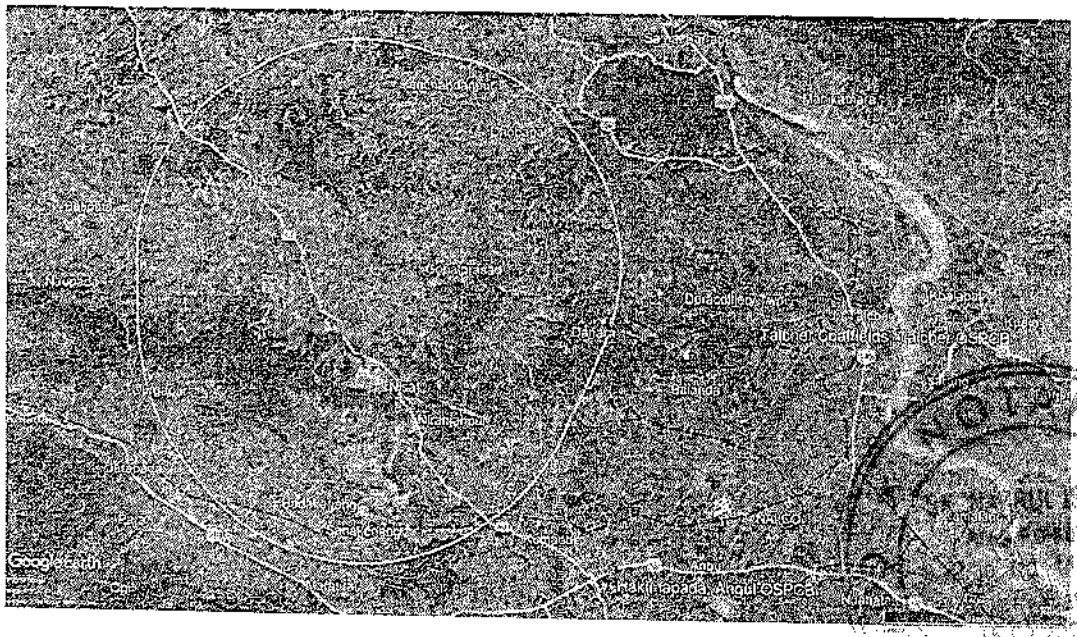
The test results show that the level of Benzene in all the locations was BLQ (Below Limit of Quantification, Limit of Quantification (LOQ) is 0.5 $\mu g/m^3$) and was as per NAAQS prescribed limits for Benzene i.e. 5.0 $\mu g/m^3$ (https://cpcb.nic.in/upload/NAAQS_2019.pdf) both within the core and buffer zone of Subhadra OCP of MCL.

Besides, the study results at 02 below mentioned locations (which are nearer to Subhadra OCP of MCL) of Central Control Room for Air Quality Management - All India, Govt of India (https://airquality.cpcb.gov.in) during the period from October to December 2022, for Benzene vide CAAQMS (CPCB) were found within the NAAQS Standards. (Reports Attached for Reference as **Annexure-3 & 4**).

Locations of CAAQMS (CPCB) monitoring stations:

1) Hakimapada Angul (Distance of 15 Km from Project Site and 5 Km from Buffer Zone)
2) Talcher Coalfields,Talcher (Distance of 17 Km from Project Site and 7Km from Buffer Zone)

Location Positions



This is to confirm that the baseline data generation and its testing was done as per the approved Protocols for Ambient Air Quality Monitoring.

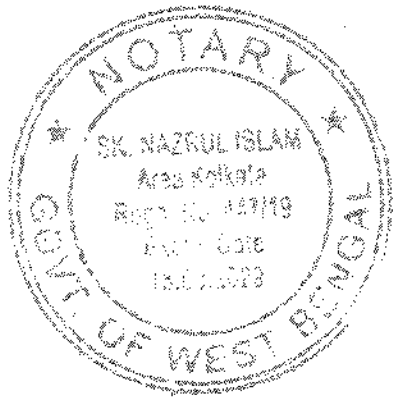
Hence, *the Benzene concentration in all these villages found to be as per the study and as per CPCB reports (reference CPCB station-Hakim pada Station nearer to Golabandha Village which is approx. 11 km) found to be within prescribed limits during the period October-December 2022.*

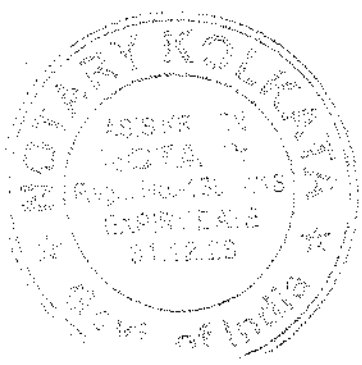
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ANNEXURE - 1

Attachment –1

Lab Report for Ambient Air Monitoring





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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/01-026	Report No:	VEL/AA/001-026
Name & Address of the Project:	M/s Subhadra Open Cast Mine, At Village Gopal Prasad, Kunuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachierSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Project Site (Pidhakhamana) (A1)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury ($\mu g/m^3$)
07.10.2022	67.5	42.6	36.8	41.3	0.89	24.3	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	66.9	45.1	37.2	40.9	0.92	23.1	32.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.10.2022	64.2	44.7	35.9	39.8	0.86	21.5	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	65.8	43.9	34.1	38.6	0.99	24.6	36.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	68.0	46.2	36.6	42.5	1.03	25.2	31.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	69.3	45.1	33.2	40.7	0.87	26.7	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	71.4	44.7	32.7	43.7	0.93	22.1	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	70.8	43.9	31.9	44.3	1.04	23.9	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	66.8	42.1	38.4	42.6	0.95	24.6	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	67.2	44.7	36.5	41.9	0.89	22.9	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	72.3	45.0	37.8	40.8	1.03	21.2	36.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	70.9	42.9	33.9	43.6	0.86	24.6	33.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	65.8	43.7	32.8	39.4	1.03	23.7	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	66.0	44.6	31.6	38.6	1.10	25.4	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	67.2	45.5	34.5	40.8	0.94	24.6	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	68.9	46.2	35.7	42.3	0.87	26.1	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	71.2	43.7	36.4	41.2	1.02	25.0	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	70.5	42.1	38.6	44.5	1.09	24.7	31.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.12.2022	72.6	45.9	37.0	40.9	0.99	23.8	32.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	69.3	44.6	33.9	39.5	0.86	21.9	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	68.4	46.7	32.8	38.6	1.05	24.6	34.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	67.2	43.8	31.6	41.2	0.93	22.7	35.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	66.6	44.0	34.6	44.6	0.87	26.1	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	65.1	42.9	35.8	43.7	1.06	25.0	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2022	64.6	45.1	36.7	42.5	0.86	24.3	35.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	68.7	46.8	38.0	41.0	0.94	22.5	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Notes- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1µg/m³)*BLQ- BelowLimit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/027-052	Report No:	VEL/AA/027-052
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TacherSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5182& CPCB Guidelines
Sample Collected By:	Vardan Envirolab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Tangarasahi (A2)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH$_3$ ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury ($\mu g/m^3$)
07.10.2022	62.3	38.4	31.6	35.9	0.83	19.6	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	61.8	41.2	30.8	36.2	0.91	21.5	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.10.2022	67.4	40.6	29.5	34.7	0.79	18.3	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	65.9	42.7	32.9	33.8	0.83	22.4	33.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	66.3	39.5	27.6	38.9	0.96	20.8	28.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	64.7	38.4	29.4	37.5	0.87	19.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	59.8	36.7	31.5	35.6	0.88	21.3	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	65.3	37.5	28.9	36.4	0.79	20.5	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	67.1	39.5	32.4	33.8	0.93	18.0	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	64.9	41.8	27.5	32.9	0.95	22.6	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	65.2	40.3	30.6	38.4	0.85	19.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	61.8	39.5	31.8	39.5	0.92	18.8	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	62.7	38.4	29.5	35.2	0.97	21.2	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	63.8	36.2	32.6	34.7	0.91	22.6	31.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	64.5	38.4	30.8	33.6	0.80	20.7	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	65.7	40.5	31.6	35.8	0.79	18.4	33.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	62.9	41.2	27.8	36.7	0.94	22.6	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	59.4	42.7	29.4	39.2	0.86	21.5	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.12.2022	61.9	38.9	28.5	37.4	0.93	20.5	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	60.8	36.7	32.7	36.5	0.97	19.3	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	62.7	38.7	31.2	33.8	0.92	22.7	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	66.3	39.0	29.7	35.6	0.88	21.5	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	65.8	41.6	31.6	34.7	0.95	18.9	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	64.2	40.7	30.8	32.8	0.85	21.2	28.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2022	62.9	42.2	32.9	37.6	0.96	19.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	61.5	39.1	27.3	39.4	0.79	20.1	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	2

Note- Arsenic (LOQ- 0.1ng/m^3), Benzene (LOQ- 0.5µg/m^3), Benzo pyrene (LOQ- 0.5ng/m^3), Lead (LOQ- 0.1µg/m^3), Nickel (LOQ- 5.0ng/m^3), Mercury (LOQ- 1ng/m^3)*BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/053-078	Report No:	VEL/AA/053-078
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Kosala (A3)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone (ng/m^3)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
03.10.2022	63.8	41.6	31.9	37.6	0.79	23.6	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	64.9	40.8	33.5	35.9	0.85	21.2	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	67.3	43.7	30.9	39.4	0.92	19.5	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	66.2	42.6	29.6	33.9	0.76	20.8	29.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	68.4	39.5	31.6	35.7	0.88	20.6	28.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	69.3	38.7	32.7	36.1	0.92	22.7	33.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	65.3	43.6	34.5	39.4	0.76	21.6	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	64.7	40.8	33.9	36.7	0.91	23.4	30.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	63.8	41.7	31.6	35.2	0.87	19.5	34.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	69.3	38.4	30.5	40.5	0.93	21.6	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	68.1	37.6	29.8	41.6	0.77	20.5	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	66.7	39.2	32.4	38.9	0.84	22.9	30.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	65.3	41.7	31.6	39.4	0.91	23.4	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	62.9	42.5	33.5	36.4	0.79	21.5	32.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	61.5	40.5	34.2	37.5	0.88	20.6	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	64.3	38.0	31.6	41.3	0.94	19.8	31.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	65.7	41.9	32.8	40.8	0.86	21.5	30.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	66.8	42.2	29.5	38.4	0.93	20.6	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	68.3	43.7	32.7	35.6	0.78	22.8	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	69.4	38.4	33.4	36.7	0.89	23.9	31.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	63.8	39.6	29.6	34.8	0.92	21.2	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	64.5	40.7	32.5	39.5	0.78	20.5	29.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	63.8	41.8	31.2	41.6	0.93	19.8	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	65.2	42.3	30.0	40.5	0.88	22.6	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	66.3	37.6	29.6	38.0	0.94	21.2	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	61.0	42.3	33.7	39.4	0.78	20.8	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³)*BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/079-104	Report No:	VEL/AA/079-104
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Korada (A4)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m³)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead ($\mu g/m^3$)	Mercury (mg/m³)
03.10.2022	55.6	28.1	23.9	26.4	0.63	16.2	28.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	51.2	29.6	21.2	23.8	0.59	15.1	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	55.7	30.5	20.8	21.2	0.61	18.4	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	54.9	32.4	24.6	30.6	0.57	17.6	25.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	56.1	31.6	23.5	28.4	0.60	16.1	26.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	52.7	29.4	25.1	27.6	0.58	17.5	29.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	53.4	32.8	22.9	26.9	0.62	18.9	25.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	56.8	31.5	24.2	22.6	0.59	15.7	27.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	55.2	30.9	23.6	23.8	0.61	16.8	26.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	54.2	29.1	21.5	24.5	0.54	18.4	25.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	51.9	28.4	20.8	25.9	0.63	16.6	29.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	52.7	32.6	25.9	25.7	0.59	15.9	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	53.8	31.7	24.6	26.8	0.62	17.2	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	54.6	30.8	23.7	27.2	0.57	18.0	25.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	55.6	28.9	22.5	28.4	0.62	17.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	53.8	29.4	21.2	29.3	0.59	16.5	29.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	52.9	32.5	23.6	21.6	0.63	15.9	26.3	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	56.1	30.6	24.7	30.5	0.52	17.1	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	54.3	31.1	25.1	25.6	0.60	18.6	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	52.8	29.4	20.6	27.2	0.55	15.9	26.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	51.6	32.5	22.8	29.4	0.63	17.7	25.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	53.0	31.0	24.6	30.0	0.59	16.2	28.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	52.9	30.9	25.0	22.6	0.63	18.0	27.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	55.4	29.4	22.9	23.7	0.55	16.6	29.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	51.6	28.6	20.5	24.9	0.61	15.9	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	56.4	32.5	21.8	25.1	0.59	18.4	25.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 1.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³), BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/105-130	Report No:	VEL/AA/105-130
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kanharei, Raijharan, Nisha P.S Angul, Tehsil TacherSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Kalikatta (A5)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(a) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
03.10.2022	63.4	38.4	28.6	35.9	0.86	20.3	28.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	61.2	39.6	29.4	33.6	0.76	21.2	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	60.9	35.4	30.9	37.8	0.82	19.4	30.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	59.4	34.2	26.3	36.2	0.75	18.5	26.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	61.0	37.6	25.8	34.8	0.81	17.6	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	64.3	36.8	28.4	33.9	0.73	21.2	32.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	65.8	40.5	30.5	32.5	0.89	18.3	31.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	62.9	38.9	27.9	37.6	0.77	19.4	30.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	63.6	39.1	25.4	36.7	0.84	20.4	27.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	64.1	36.7	29.1	35.2	0.75	21.0	26.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	62.8	38.2	31.2	34.9	0.88	18.6	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	60.9	34.6	26.7	32.8	0.96	17.5	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	59.8	38.1	29.4	35.7	0.82	19.3	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	58.3	37.6	28.3	36.2	0.76	21.5	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	62.7	38.1	26.0	37.9	0.80	20.9	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	63.4	39.2	30.7	32.5	0.76	18.6	32.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	64.7	40.5	29.1	34.9	0.84	19.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	65.0	38.8	27.3	35.6	0.79	21.2	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	61.9	36.7	25.1	34.8	0.83	17.3	29.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	58.6	37.2	29.3	32.5	0.77	21.2	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	62.9	40.2	31.6	33.7	0.82	20.6	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	63.7	39.6	28.3	37.6	0.76	18.5	32.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	64.2	35.4	29.7	35.4	0.81	19.7	26.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	61.9	34.6	28.4	34.9	0.75	21.2	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	60.0	38.7	25.6	32.5	0.89	20.6	27.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	59.3	39.1	31.8	33.6	0.74	18.6	29.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³), BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/131-156	Report No:	VEL/AA/131-156
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadur and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Golabandha (A6)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(α) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
07.10.2022	68.4	49.3	35.7	42.6	1.00	26.4	33.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.10.2022	69.5	48.4	36.1	46.2	0.91	24.9	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.10.2022	71.3	46.5	39.4	44.1	1.04	27.8	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.10.2022	70.9	45.7	38.7	43.6	1.12	28.1	37.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.10.2022	72.4	50.2	41.2	42.9	0.96	29.6	36.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.10.2022	73.4	51.9	40.6	44.7	1.09	27.1	35.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.10.2022	68.0	49.3	38.4	45.1	1.07	24.5	39.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.10.2022	71.2	48.7	39.1	46.7	1.13	25.3	37.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.11.2022	70.9	46.6	36.2	45.6	0.91	26.8	36.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
04.11.2022	66.7	47.9	35.7	43.5	1.12	27.8	35.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.11.2022	69.4	48.2	41.2	42.8	1.08	29.1	38.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
11.11.2022	72.5	51.6	40.8	45.9	1.00	26.0	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.11.2022	73.4	50.4	39.9	46.2	0.90	25.8	33.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
18.11.2022	70.9	48.5	38.5	42.5	1.08	24.6	37.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.11.2022	71.2	46.5	36.4	44.6	1.14	27.3	36.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
25.11.2022	68.4	49.7	35.1	45.7	0.99	27.4	35.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.11.2022	69.5	51.3	34.5	46.7	1.02	28.6	34.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.12.2022	72.5	50.5	38.4	46.9	1.10	29.4	37.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.12.2022	68.7	46.3	39.6	45.0	1.03	28.8	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.12.2022	69.3	45.0	41.2	43.7	1.14	25.6	38.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.12.2022	67.4	49.8	40.0	42.5	0.99	24.7	39.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.12.2022	71.0	47.5	38.4	46.0	1.06	28.5	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.12.2022	70.5	51.2	37.6	44.9	1.11	29.4	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.12.2022	68.4	50.8	36.2	43.3	0.90	26.8	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.12.2021	69.5	49.6	35.4	44.1	1.12	27.2	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.12.2022	72.3	48.4	39.4	45.9	0.98	26.6	37.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 3.1ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 4ng/m³)*BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/157-182	Report No:	VEL/AA/157-182
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5182& CPCB Guidelines
Sample Collected By:	Vardan Envirolab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Kumuda (A7)		

RESULTS

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	Ozone (µg/m³)	NH_3 (µg/m³)	Benzene (µg/m³)	B(α) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead (µg/m³)	Mercury (ng/m³)
05.10.2022	58.4	33.0	27.5	31.6	0.73	18.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.10.2022	59.1	32.7	26.3	30.8	0.69	20.4	29.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.10.2022	61.2	37.5	28.1	35.9	0.82	16.7	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.10.2022	60.7	36.4	29.3	33.4	0.76	17.5	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.10.2022	62.8	35.1	24.5	34.8	0.69	20.2	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.10.2022	63.4	35.0	26.8	30.8	0.70	18.8	25.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.10.2022	58.4	33.0	27.3	28.6	0.85	19.1	28.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.10.2022	57.6	37.4	26.9	34.6	0.79	16.2	29.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
02.11.2022	56.2	36.8	25.4	32.5	0.89	17.6	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.11.2022	59.1	38.4	30.5	30.0	0.69	20.5	30.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
09.11.2022	61.8	34.9	29.6	29.1	0.81	18.7	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.11.2022	62.4	32.7	24.2	28.6	0.77	19.6	27.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
16.11.2022	60.8	32.6	28.1	35.0	0.82	20.2	25.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.11.2022	63.0	35.7	26.9	33.7	0.69	18.0	26.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
23.11.2022	63.8	36.4	24.7	34.5	0.85	19.7	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.11.2022	57.2	37.2	25.3	30.9	0.79	16.5	29.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
30.11.2022	59.4	38.1	26.1	33.9	0.80	17.5	31.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.12.2022	61.5	32.9	27.2	28.7	0.79	18.4	30.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.12.2022	62.8	33.7	28.9	33.0	0.82	19.3	28.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.12.2022	60.8	34.6	30.7	31.9	0.75	20.0	29.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.12.2022	63.4	35.2	29.8	30.5	0.84	16.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.12.2022	56.8	37.4	24.7	34.6	0.69	17.5	28.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.12.2022	59.4	38.6	25.2	29.1	0.80	19.1	26.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.12.2022	61.5	34.9	26.8	32.6	0.77	20.0	27.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.12.2022	60.8	33.5	27.2	30.8	0.85	18.4	30.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.12.2022	62.5	32.1	28.1	35.7	0.76	16.7	28.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 0.4ng/m³), Benzene (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³) *BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Hr)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No:	VEL/SOCM/AA/183-208	Report No:	VEL/AA/183-208
Name & Address of the Project:	M/s Subhadra Open Cast Mine. At Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil TachlerSadar and Chhenipada, District- Angul, State- Odisha	Reporting Date:	09/01/2023
		Ref. No:	NIL
		Monitoring Period:	October 2022 to December 2022
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182& CPCB Guidelines
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per TOR Letter
Location:	Malibrahmani (A8)		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	B(α) P (ng/m^3)	Arsenic (ng/m^3)	Nickel (ng/m^3)	Lead ($\mu g/m^3$)	Mercury (ng/m^3)
03.10.2022	68.4	45.9	35.9	42.3	0.89	26.7	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
06.10.2022	69.1	46.7	36.2	41.2	0.93	25.2	33.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.10.2022	67.2	47.2	34.7	46.8	1.03	27.3	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
13.10.2022	71.6	48.2	39.1	45.4	1.16	23.4	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.10.2022	70.8	46.6	40.5	44.9	0.97	24.6	38.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
20.10.2022	73.4	48.1	38.8	43.7	1.06	25.7	34.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.10.2022	74.1	46.9	37.6	42.6	0.98	27.4	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
27.10.2022	72.9	47.8	35.4	40.8	1.06	26.1	36.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
31.10.2022	73.4	48.2	32.6	41.7	0.89	24.0	34.0	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
03.11.2022	71.0	47.5	34.3	42.6	1.15	23.6	37.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
07.11.2022	68.4	46.2	33.8	43.8	0.93	25.7	38.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
10.11.2022	70.9	45.9	38.1	44.7	0.89	26.1	32.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
14.11.2022	69.3	44.2	39.6	45.1	0.92	27.2	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
17.11.2022	67.8	47.6	40.5	43.9	1.19	24.5	35.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
21.11.2022	72.5	48.0	38.4	45.5	1.02	23.3	36.2	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
24.11.2022	71.6	46.9	37.6	46.2	0.98	26.9	37.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
28.11.2022	70.8	47.5	32.1	44.0	1.05	27.4	38.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
01.12.2022	74.6	45.1	33.7	41.9	0.89	24.2	32.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
05.12.2022	73.6	44.3	34.5	40.6	0.96	23.1	33.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
08.12.2022	72.5	46.8	35.8	42.8	1.13	25.0	35.6	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
12.12.2022	71.6	47.2	36.4	43.2	1.07	26.7	37.5	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
15.12.2022	70.8	48.9	37.8	45.3	0.89	27.5	38.1	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
19.12.2022	68.4	45.0	39.4	45.0	0.94	23.9	34.9	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
22.12.2022	69.3	44.7	40.2	43.6	1.02	25.4	36.4	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
26.12.2022	67.2	46.8	38.7	42.9	1.17	24.6	32.8	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
29.12.2022	71.5	47.2	37.6	41.5	0.89	26.8	33.7	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ	*BLQ
Limit as per NAAQS	100	60	80	80	4	180	400	5	1	6	20	1	--

Note- Arsenic (LOQ- 1ng/m³), Benzene (LOQ- 0.5ug/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1ug/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- 1ng/m³), *BLQ- Below Limit of Quantification, *LOQ- Limit of Quantification

(Checked By)

(Approved By)

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ANNEXURE - 2

IS 5182 (Part 11) : 2006

भारतीय मानक

वायु प्रदूषण मापन की पद्धतियाँ

भाग 11 बैंजीन, टॉल्यून एवं जाइलीन (बीटीएक्स)

(दूसरा पुनरीक्षण)

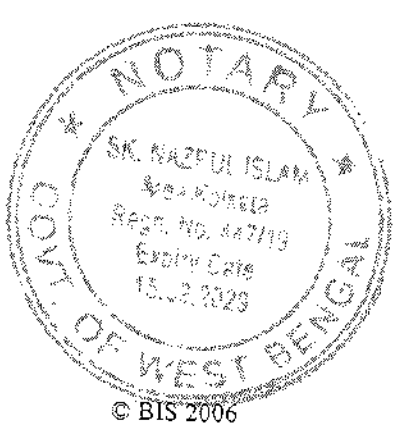
Indian Standard

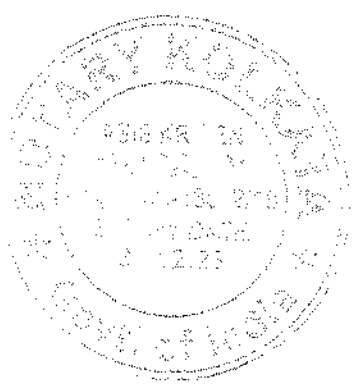
METHODS FOR MEASUREMENT OF AIR POLLUTION

PART 11 BENZENE, TOLUENE AND XYLENE (BTX)

(Second Revision)

ICS 13.040.30; 71.080.15





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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 2006

Price Group 8

489

Environment Protection and Waste Management Sectional Committee, CHD 32

FOREWORD

This Indian Standard (Part 11) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Environment Protection and Waste Management Sectional Committee had been approved by the Chemical Division Council.

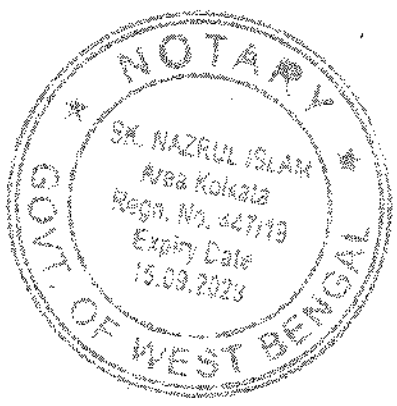
The aromatic hydrocarbons, namely, benzene, toluene and xylene have many industrial uses, most notably as a solvent for numerous materials and as a fuel additive. They are also used in the manufacture of various chemicals, rubber, insecticides, pharmaceuticals, explosives, etc. Though they are very useful chemicals, they are also extremely hazardous. They are highly flammable. While benzene is well known to be carcinogenic, there is recent evidence of carcinogenicity of toluene and xylene at high concentrations in experimental animals. It should also be noted that any future epidemiological observations of cancer risks associated with toluene or xylene would have to take account of the suspected effects of benzene impurities. Regular and systematic procedures for inspection are, therefore, necessary to ensure safety against the hazards involved.

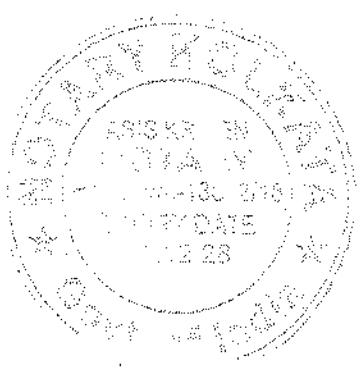
This standard was first published in 1982 and revised it in 1993 based on the development of the analytical procedures to introduce a newer method having a different type of collection, desorption media and use of N, N-Bis-cyanoethylformamide (BCEF) for determination of benzene only. The Committee responsible for the formulation of this standard further decided to revise it based on the experience gained during the last decade as well as technological development in the field. During the revision method for determination of toluene and xylene are incorporated. The revised methods include both active and passive sampling using low flow pump. Apart from the conventional CS_2 desorption, the modern techniques of automated thermal desorption without use of organic solvents is also incorporated in this revision.

There is no ISO Standard on the subject. The standard is prepared based on the measuring techniques available and use in India.

The Committee composition responsible for the formulation of this standard is given at Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.





4X0

IS 5182 (Part 11) : 2006

Indian Standard

METHODS FOR MEASUREMENT OF AIR POLLUTION

PART 11 BENZENE, TOLUENE AND XYLENE (BTX)

(Second Revision)

1 SCOPE

This standard (Part 11) prescribes active and passive sampling techniques with three gas chromatography based analytical methods for measurement of benzene, toluene and xylene in air.

2 REFERENCES

The following standard contains provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

IS No.	*Title*
4167 : 1980	Glossary of terms relating to air pollution (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, definitions given in IS 4167 shall apply.

4 METHOD 1 (ACTIVE SAMPLING USING ACTIVATED CHARCOAL TUBES, DESORBED BY CARBON DISULPHIDE)

4.1 Principle

The charcoal tubes are available in different sizes and contain varying amount of activated charcoal. The ambient air is sucked through the tube using a low flow sampler used for collection of BTX sample in a way that results in an enrichment of the relevant substances in the activated charcoal. Desorption of the adsorbed benzene is done using carbon disulphide (CS_2). The substances desorbed in the CS_2 are analyzed by capillary gas chromatography. A flame ionization detector (FID) is used for analysis while quantification is performed using the internal/external standard.

4.2 Apparatus

4.2.1 *Low Volume Pump* — Portable, battery powered pump with a low flow controller with operating range between 5 to 500 ml/min (±0.2 ml/min) to suck the air sample.

NOTE — Wherever necessary intrinsically safe pumps may be used.

4.2.2 *Sampling Sorbent (Sample) Tubes* — Glass lined (or fused silica lined) stainless steel tube or stainless steel sorbent tubes of 6 mm O.D., 8.9 cm long tubes with a 6 cm of sorbent bed of 200 mg of activated charcoal (coconut shell) or other suitable adsorbent. A typical sorbent/sample tube is shown in Fig. 1 and Fig. 2.

Modular glass or stainless tube (OD 6-8 mm length 10-15 cm) packed with chromatography grade coconut shell activated charcoal, chromatography grade. Tube must have provision for fitting of backup section with provision to measure pressure drop across the tube during sampling. The minimum quantity of charcoal required in front section is 200 mg and in backup section 50 mg. Glass beads or any other porous inert material must be packed in inlet part of front section for uniform distribution of sucked air through tube at the time of sampling.

4.2.3 *Gas Chromatograph* — Any suitable gas chromatograph with flame ionization detector (FID) with fused silica capillary columns having a length of 25 m or more, an internal diameter of 320 µm or below and with a stationary phase film thickness less than 1.5 µm as follows or equivalent may be recommended:

Capillary 624 Column	: Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm
Capillary Column	: Coating : 5 percent phenyl, 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, Film thickness (d_f) = 0.33 µm
Wall Coated Column	: Coating: Fused Silica PONA CB, Length × ID : 50 m × 0.21 mm, Film thickness (d_f) : 0.5 µm

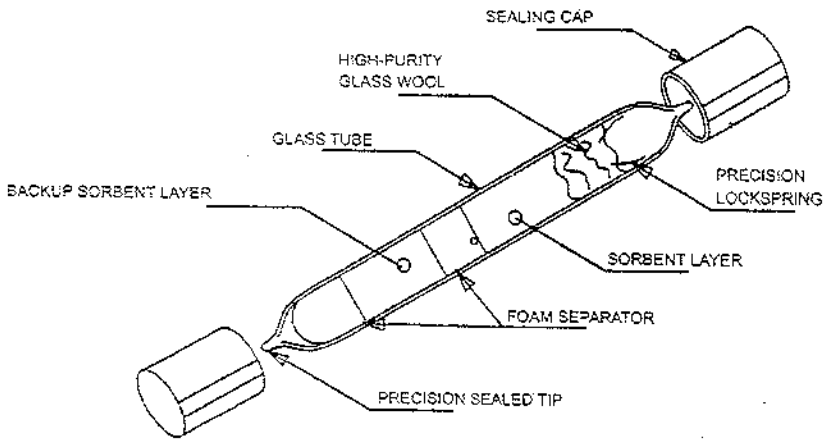


FIG. 1 SORBENT/SAMPLE TUBE FOR ACTIVE SAMPLING FILLED WITH ACTIVATED COCONUT SHELL CHARCOAL (CSC)

Capillary Column : Coating : Fused silica 100 percent dimethyl polysiloxane, Length × ID : 30 m × 0.32 ID, Film thickness (d_f) : 1.0 µm

4.3 Reagents

4.3.1 *Suitable Adsorbent* — Chromatographic grade activated charcoal (coconut shell) or other suitable adsorbent, that is, Chromosorb 106 or other suitable adsorbent having particle size in the range 60 to 80 mesh.

4.3.2 *Carbon Disulphide* (CS_2) — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 5 percent, Benzene 0.001 percent, H_2O < 0.02 percent.

4.3.3 *Benzene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

4.3.4 *Toluene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

4.3.5 *Xylene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

4.3.6 *Carrier Gas* — Helium or Nitrogen of purity > 99.9 percent, H_2O < 0.02 percent, Residues < 0.000 3 percent.

4.4 Sampling

4.4.1 *Selection of Sorbent Tube* — Samples are collected in glass sampling tube filled with a activated charcoal (coconut shell), Chromosorb 106 or other suitable adsorbent.

4.4.2 *Sample Tubes Labelling*

Sample tubes are labelled with a unique identification number and the direction of sampling flow. If empty sample tubes are obtained without labels, it is important to label and condition them before and after they are packed with adsorbent prior to use them for sampling.

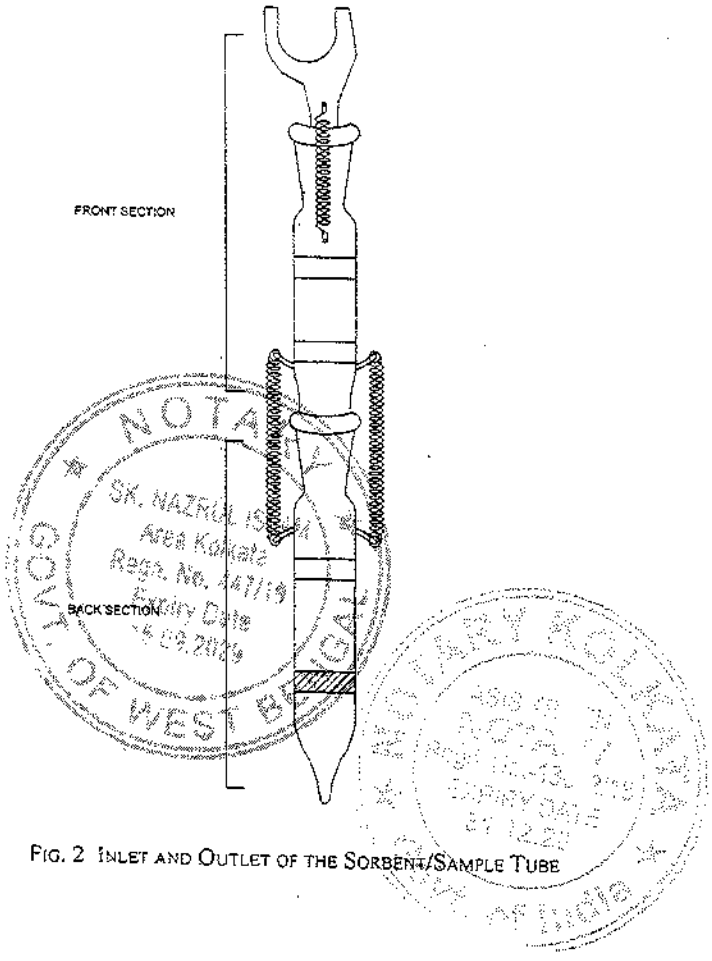


FIG. 2 INLET AND OUTLET OF THE SORBENT/SAMPLE TUBE

4X2

4.4.3 *Sampling Procedure and Sampling Rate*

A sample is collected by opening a tube at two ends, connecting it to a sample pump, and pulling air through the tube with the pump. Airborne chemicals are trapped onto the surface of the sorbent:

a) Two tubes are used in series to take care of breakthrough (if any) compatible to the thermal desorber. The sampling is carried out using low flow sampler. The schematic diagram of sampling train is given in Fig. 3.

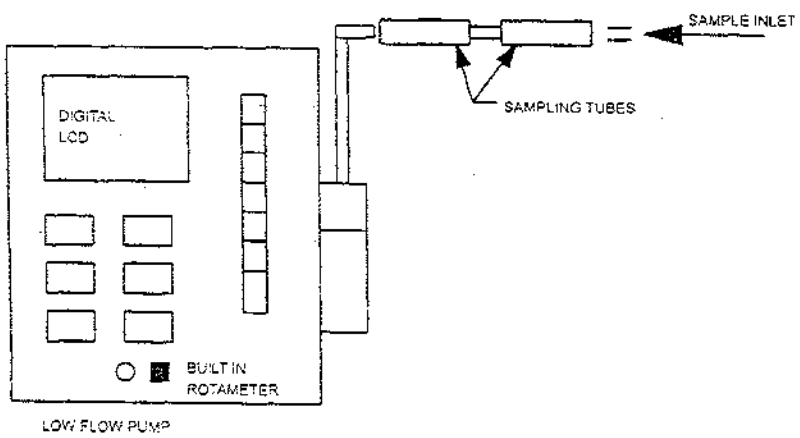


FIG. 3 LOW FLOW SAMPLING PUMP WITH SAMPLING TRAIN

b) Keep the tube in a vertical position during sampling to prevent the possibility of channelling that can lead to under sampling.

c) The arrow on the tube indicates air flow direction and should point to the tube holder and pump. If no arrow is present, the smallest section should be near the tube holder.

d) Sampling flow rate in the range of 20-100 ml/min is required (±2 percent) for ambient air.

e) A sample component may breakthrough from the back end of tube, if excessive flow rates are used. Sample is to be discarded, if the breakthrough is observed more than 10 percent. If analyzed concentration in backup section is more than 10 percent of front section, sample needs to be discarded.

The tube is then sealed with push-on caps, and sent to a laboratory for analysis.

4.4.4 *Storage of Blank and Sampled Tubes*

Seal clean, blank sorbent tubes and sampled tubes using inert fittings and PTFE ferrules. Wrap capped tubes individually in uncoated aluminum foil. Use clean, sealable metal cans containing a small packet of activated charcoal or activated charcoal/silica gel for storage and transportation of multiple tubes. Store the multi-tube storage container in a clean environment at 4 ± 1°C.

4.5 Procedure

4.5.1 *Calibration*

Prepare a mix stock standard solution of 50 µg/µl of benzene, toluene and xylene each gravimetrically using a micro syringe in the eluting solvent that is CS_2. Prepare further diluted solutions of concentration range of 10, 1.0, 0.10 µg/µl with CS_2 from stock standard in a clean vial. Make up to 1 ml solution. Introduce immediately 1 µl standard solution into the injector of GC directly and plot the curve between the concentration and response (peak area). Prepare fresh standard solutions with each batch of samples. A typical chromatogram of standard mixture is given in Fig. 4.

4.5.2 *Analytical Procedure*

Samples collected through active sampling (sorbent tubes) are extracted or desorbed by conventional solvent (generally 1-5 ml of carbon disulphide) using ultrasonication for 15 min to remove analyte from the sorbent material. Desorbed samples are analyzed using gas chromatograph (GC) fitted with capillary column and flame ionization detector (FID). A single tube may provide enough samples to permit several analyses.

The following set of conditions is generally used:

a) *Gas flow:*

Nitrogen : 30 ml/min (FID make up + Column), (Column flow 1 ml/min approximately)
Hydrogen : 30 ml/min
Air : 300 ml/min

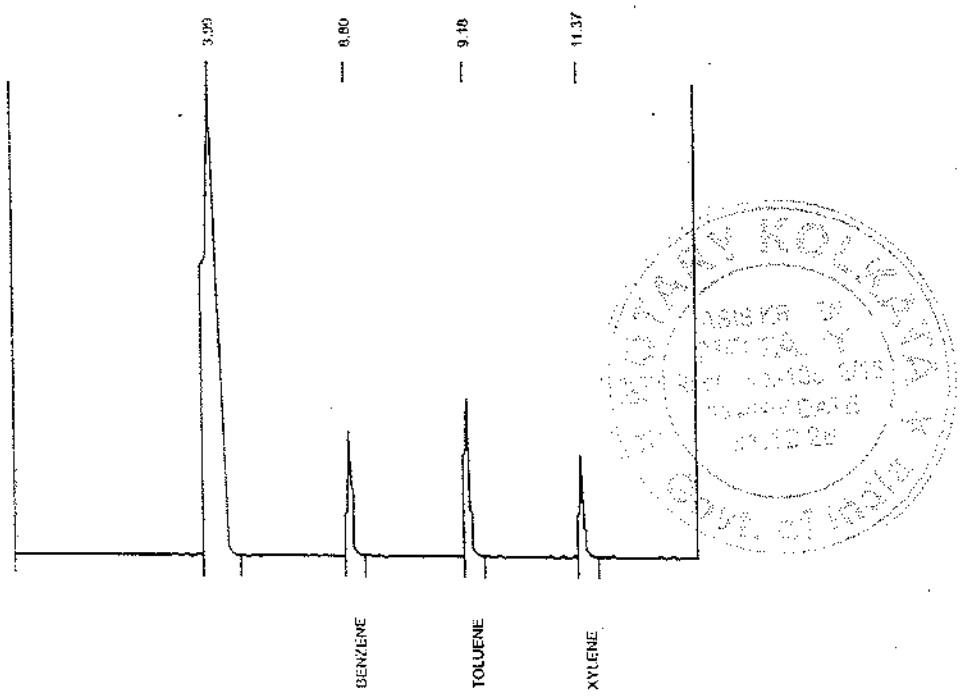


FIG. 4 TYPICAL CALIBRATION CHROMATOGRAM OF BENZENE, TOLUENE AND XYLENE
(Using column PE 624 at 0.017 4 µg/µl concentration of analytes)

NOTE — Instead of nitrogen, helium may also be used as carrier gas for flow setting and corresponding retention time of analytes may vary.

Capillary column 624, Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm

b) *Temperature programming*

Injection port : 250°C

FID : 300°C

Column/Oven : 50°C (hold for 3 min) , ramp1 @ 10°C/min. to 140°C (1 min) ramp 2 @ 20°C/min to 240 (1 min)

Injection volume: 5 µl, Total run time: 19.5 min, Split : 10

- Benzene RT 6.80 min, Search window : 1.00 s, 3.00 percent
- Toluene RT 9.18 min, Search window: 1.00 s, 3.00 percent
- Xylene RT 11.37 min, Search window: 1.00 s, 3.00 percent

NOTE — Temperature programming and retention time (RT) of analyte may vary column to column to get appropriate resolution of analyte peaks. Injection volume and split may also vary according to nature and probable concentration of analyte present in the extract.

4.6 Calculation

Amount of analyte compound found on tube can be converted into mg/m³, by using the formula:

$$\text{Volume of air (m}^3\text{) (sucked through the adsorption tube)} = \frac{S \times t}{10^6}$$

where

S = sampling rate, in ml/min; and

t = sampling time, in min.

$$\text{Concentration (µg/m}^3\text{) (at ambient condition)} = \frac{C \times V_1 \times 10^3}{V_2 \times V_3}$$

where

C = amount of compound found injection sample volume from standard curve, in µg/µl;

V_1 = total volume of the sample extracted in ml;

V_2 = volume of sample extract injected into GC, in µl; and

V_3 = volume of air sucked through the tube, in m³.

Blank value is to be subtracted from the amount of compound found in the sample.

$$\text{Concentration (µg/m}^3\text{) at (STP)} = \frac{C \times 101.3\,(273 + T)}{273 \times P}$$

where

C = concentration at ambient condition, in µg/m³;

T = temperature of the ambient air, in °C; and

P = atmospheric pressure, in kPa.

5 METHOD 2 (ACTIVE SAMPLING USING TENAX/CHROMOSORB 106 SORPTION TUBES, DESORBED THERMALLY)

5.1 Principle

Thermal desorption tubes filled with Tenax TA or other suitable adsorbent as Chromosorb-106, etc, are used for adsorption of benzene, toluene, and xylene in place of charcoal tube. The ambient air is sucked through the tube using a low flow personal sampler in a way that results in an enrichment of the relevant substances on the adsorbent. These tubes are directly connected to the automated thermal desorbers coupled with the gas chromatograph equipped with capillary column and flame ionization detector. The thermal desorption technique offer the advantage of a greatly improved analytical sensitivity, as solvent is not used in this process and the collected sample is not diluted. In most cases analytical recovery is close to 100 percent and desorption efficiency corrections are not required.

5.2 Apparatus

5.2.1 *Sampling Device : Low Volume Pump* — Intrinsically safe, portable, battery powered pump (SKC, PA, USA or equivalent make) (*see* Fig. 3) with a low flow capable of accurate and adjustable flow controller with operating range between 5 to 500 ml/min to suck the air sample with great accuracy in the range of 20-100 ml/min is required (±2 percent). The time programmable, built in flow indicator, rechargeable battery operated low flow pump with adjustable run time up to 8 h should be preferred for sampling of BTX.

5.2.2 *Sampling Sorbent (Sample) Tube* — Automated Thermal Desorption (ATD) tubes of stainless steel filled with absorbing material are required. Stainless steel or glass sorbent tubes (*see* Fig. 5) of 8.9 cm long, 6 mm O.D. with a 6 cm sorbent bed in the central portion packed with greater than 200 mg of solid adsorbent material (that is Tenax TA, Chromosorb106 or any other suitable adsorbent).

NOTE — To be suitable for thermal desorption, sorbent must meet exact specifications that include low contaminant background, high thermal stability and sufficient adsorptive strength to retain components of interest and should also release them quickly when heat is applied.

5.2.3 *Automated Thermal Desorption Apparatus (Two-Stage Thermal Desorption)*

Two-stage automated thermal desorption is recommended to use heat and a flow of inert (carrier) gas to extract volatiles from a solid adsorbent matrix directly into the carrier gas and transfer them to downstream system elements such as the analytical column of a GC.

Two-stage automated thermal desorption is used for the best high resolution capillary chromatography (that is, analytes desorbed from the sorbent tube must be refocused before being rapidly transferred to the GC analytical column).

Typical key components and operational stages of a two-stage desorption system are presented in Fig. 6 and Fig. 7.

5.2.4 *Focusing Tube*

The narrow (typically < 3 mm ID) tube containing a small bed of sorbent, which is maintained near or below ambient temperature and used to refocus analytes thermally desorbed from the sorbent tube. The focusing trap is typically packed with 20 mg of Carbopack™ B (60/80 mesh) and 50 mg of a Carboxen™ 1000-type sorbent (60/80 mesh).

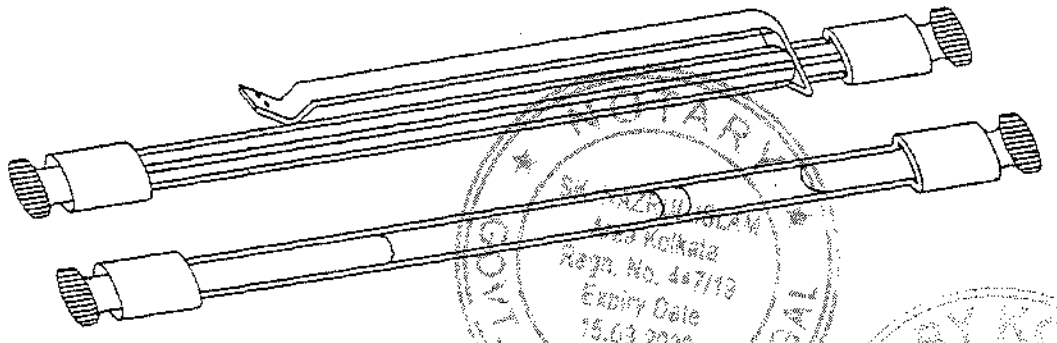


FIG. 5 SORBENT/SAMPLE TUBES OF STAINLESS STEEL OR GLASS FILLED WITH ADSORBING MATERIAL (TENAX OR SO) AND PROTECTING CAPS

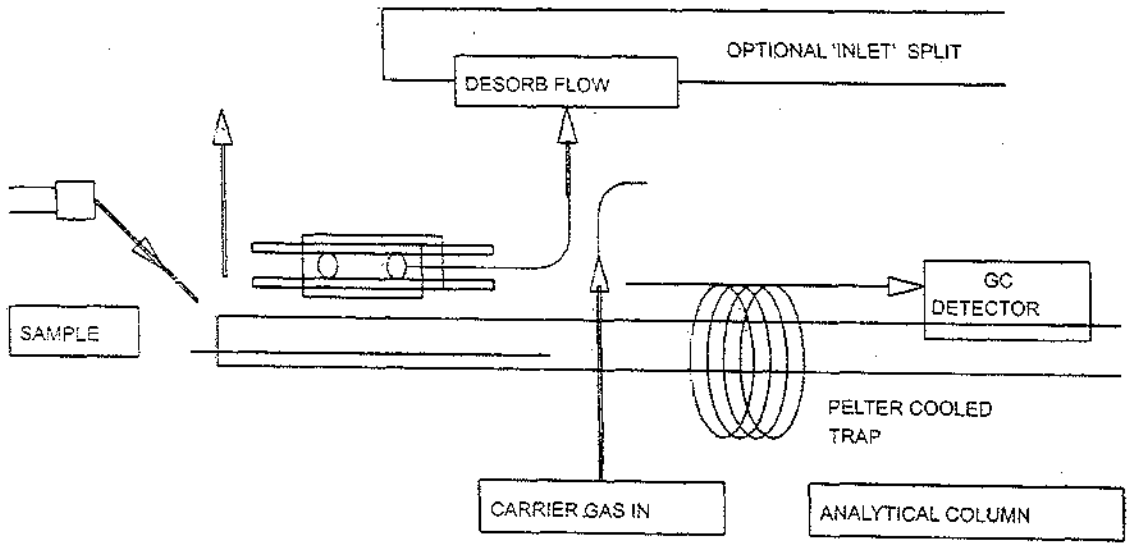


FIG. 6 STAGE 1 : SAMPLE TUBE DESORPTION OR AIR SAMPLE TRANSFER TO TRAP

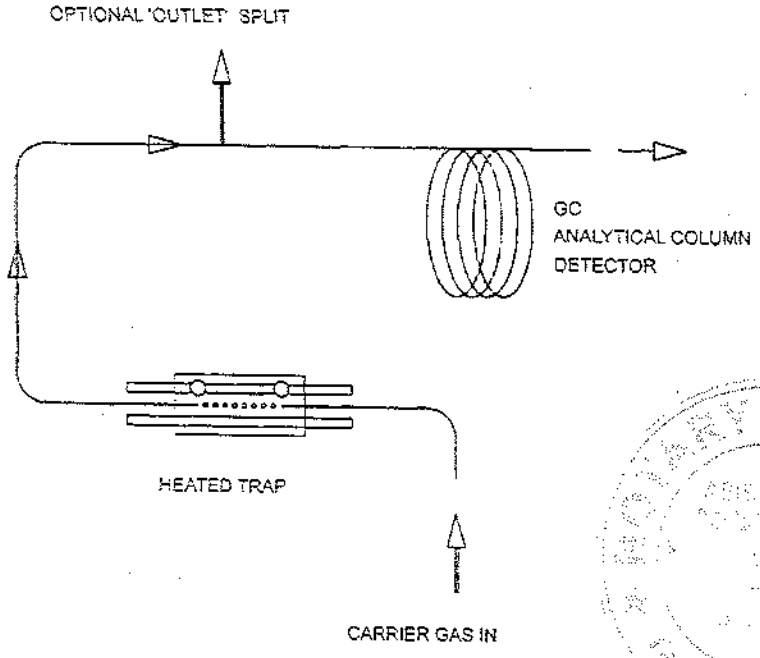


FIG. 7 STAGE 2 : TRAP DESORPTION
(Sample transfer to GC Column)

Once all the BTX have been transferred from the sorbent tube to the focusing tube, the focusing tube is heated rapidly to transfer the analytes into the capillary column of GC in the form of a band of vapor.

5.2.5 *Electronic Cryogen Systems*

Automated thermal desorber have electronic systems to cool the focusing tube or cold trap. Other non-automated desorber require typically cryogens, that is, liquid nitrogen, liquid argon, or liquid carbon dioxide to cool the focusing tube.

The cryogen-free trap cooling option with a multistage Peltier electrical closed cycle coolers is used. At its low temperature, the trap must provide quantitative analyte retention for target compounds as well as quantitative and rapid desorption of target analytes.

5.2.6 *Thermal Desorber — GC Interface*

The interface line is leak-tight and lined with an inert

material such as deactivated fused silica. Alternatively, thread the capillary column itself through the heated transfer line/interface and connected directly into the thermal desorber.

Place the sealed tubes on the thermal desorber (Perkin Elmer Model ATD 400 Automated System or equivalent). Heat the interface between the thermal desorber and the GC uniformly.

Other thermal desorbers may have different arrangements for automation. Alternatively, use equivalent manual desorption.

NOTE — Use of a metal syringe-type needle or unheated length of fused silica pushed through the septum of a conventional GC injector is not recommended as a means of interfacing the thermal desorber to the chromatograph. Such connections result in cold spots, cause band broadening and are prone to leaks.

5.2.7 *High Resolution Capillary Column Chromatography*

Any suitable gas chromatograph equipped with flame ionization detector (FID) with fused silica capillary columns having a length of 25 metres or more, an internal diameter of 320 µm or below and with a stationary phase film thickness less than 1.5 µm as follows or equivalent may be recommended:

Capillary 624 Column	: Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm
Capillary Column	: Coating: 5 percent phenyl 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, Film thickness (d_f) : 0.33 µm
Wall Coated Column	: Coating: Fused Silica PONA CB, Length × ID : 50 m × 0.21 mm, Film thickness (d_f) : 0.5 µm
Capillary Column	: Coating: Fused silica 100 percent dimethyl polysiloxane, Length × ID : 30 m × 0.32 mm, 1.0 µm film thickness

5.3 Reagent

5.3.1 *Carbon Disulphide* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 5 percent, Benzene < 0.000 1 percent, H_2O < 0.02 percent.

5.3.2 *Benzene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

5.3.3 *Toluene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

5.3.4 *Xylene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

5.3.5 *Carrier Gas* — Helium or Nitrogen of purity > 99.9 percent, H_2O < 0.02 percent, Residues < 0.000 3 percent.

5.4 Sampling

5.4.1 *Sampling Location* — Site should be free from any obstacle to free flow of the air in the vicinity.

5.4.2 *Selection of Sorbent Tube and Sorbent Mesh Size* — Samples are collected in SS or glass sampling tube filled with Tenex TA, Chromosorb 106 or other suitable adsorbent (two in series to take care of breakthrough, if any) and compatible to the thermal desorber. The sorbents of particle size in the range 60 to 80 mesh should be used for tube packing.

5.4.3 *Conditioning the Tube*

Condition newly packed tubes for at least 2 h (30 min for preconditioned, purchased tubes) at 320°C while passing at least 30 ml/min of pure Nitrogen or Helium carrier gas through them.

Tube conditioning before reuse of sample tube is also must.

Once conditioned, seal the tube with brass, 1/4 inch fittings and PTFE ferrules. Wrap the sealed tubes in uncoated aluminium foil and place the tubes in a clean, air-tight, opaque container.

A package of clean sorbent material, for example, activated charcoal or activated charcoal/silica gel mixture, may be added to the container to ensure clean storage conditions.

Store in a refrigerator (organic solvent-free) at 4±1°C, if not to be used within a day. On second and subsequent uses, the tubes will generally not require further conditioning as above. However, tubes with an immediate prior use indicating high levels of pollutant trace gases should be reconditioned prior to continued usage.

NOTE — Other sorbents may require different conditioning temperatures.

5.4.4 *Sample Tubes Labelling*

Sample tubes are labelled with a unique identification number and the direction of sampling flow. Stainless steel tubes are most conveniently labelled by engraving. Glass tubes are best labelled using a temperature resistant paint. If empty sample tubes are obtained without labels, it is important to label them before packing and condition them after packing with adsorbent prior to use them for sampling.

4X7

5.4.5 *Sampling Procedure and Sampling Rate*

A sample is collected by opening a tube at two ends, connecting it to a sample pump, and pulling air through the tube with the pump. Airborne chemicals are trapped onto the surface of the sorbent:

a) Two tubes are used in series to take care of breakthrough (if any) compatible to the thermal desorber. The sampling is carried out using low flow sampler. The schematic diagram of sampling train is given in the Fig. 3.

b) Keep the tube in a vertical position during sampling to prevent the possibility of channelling that can lead to under-sampling.

c) The arrow on the tube indicates air flow direction and should point to the tube holder and pump. If no arrow is present, the smallest section should be near the tube holder.

d) Sampling flow rate in the range of 20 - 30ml/min is required (±0.2 ml/min) for ambient air.

e) A sample component may breakthrough from the back end of tube if excessive flow rates are used.

Sample is to be discarded if the breakthrough is observed more than 10 percent.

NOTE — A sample component may breakthrough from the back end of tube if excessive flow rates are used. The sample is to be discarded, if the breakthrough is observed more than 10 percent.

5.4.6 *Sampling Period*

The sorbent tubes are exposed in field for previously determined period (generally between 1 - 4 h or so). Before and after sampling the samples are stored and transported to field/laboratory in sealed containers.

NOTE — Exposure period may be shortened for highly polluted area that is near gasoline dispensing station, garage, refinery or other direct emission source.

5.4.7 *Blank and Sampled Tube Storage*

Seal clean, blank sorbent tubes and sampled tubes using inert, fittings and PTFE ferrules. Wrap capped tubes individually in uncoated aluminium foil. Use clean, sealable metal cans containing a small packet of activated charcoal or activated charcoal/silica gel for storage and transportation of multiple tubes. Store the multi-tube storage container in a clean environment at 4 ± 1°C.

5.5 Procedure

5.5.1 *Calibration*

A standard solution of the compounds of interest in the elution solvent is prepared gravimetrically, using a micro syringe, by adding pure compounds or pre-weighed blends to flasks partially filled with the elution solvent (CS_2). Prepare Benzene standard solution and a blank 0.043 5 µg/ml, 0.087 µg/µl, 0.174 µg/µl, 0.261 µg/µl and 0.348 µg/µl.

1 µl each of standard solution was injected into the sorption/sample tube, which is desorbed thermally, and analyte is transferred to capillary GC directly. Plot the curve between the concentration and response (peak area).

Multi-point external calibration is used on ATD-GC taking 5 levels of BTX standard solution using CS_2 as a diluting solvent or introduction of a fixed volume gas phase standard (optional).

Typical chromatogram for benzene, toluene and xylene is given in Fig. 8 and typical calibration graphs for benzene, toluene and xylene is given in Fig. 9.

5.5.2 *Analytical Procedure*

Remove the sorbent and extract the trapped chemical from sample tubes using heat. Samples collected through this technique (sorbent tubes) may be desorbed by Automated Thermal Desorber generally by 2-stage desorption technique on ATD-GC. The desorbed samples are transferred to gas chromatograph (GC) directly and analysed using capillary column and flame ionization detector (FID). No solvent is required in this process.

a) *Desorption of the sorbent tube onto a focusing trap* — Place the sealed tubes on the thermal desorber (Automated system or equivalent). Heat the interface between the thermal desorber and the GC uniformly.

Desorption of the sorbent tube (typically 200-300°C for 5-15 min with a carrier gas flow of 30-100 ml/min and refocusing of the target analytes on a focusing trap held at near-ambient or sub-ambient temperatures.

Reverse the flow direction of N_2 or He gas, set the flow rate to at least 30 ml/min, and heat the tube to 325°C (in this case) to achieve a transfer of BTX onto a focusing tube at a temperature of 27°C or so.

NOTE — Analytes should be desorbed from the tube in backflush mode, that is, with the gas flow in the reverse direction to that of the air flow during sampling.

b) *Rapid desorption of the focusing trap* — Rapid desorption of the focusing trap (typically 40°C/s to a top temperature of 250-350°C, with a hold time of 10-15 min at the top temperature and an inert/carrier gas flow of 30-100 ml/min) take place to transfer the analytes into the analytical column.

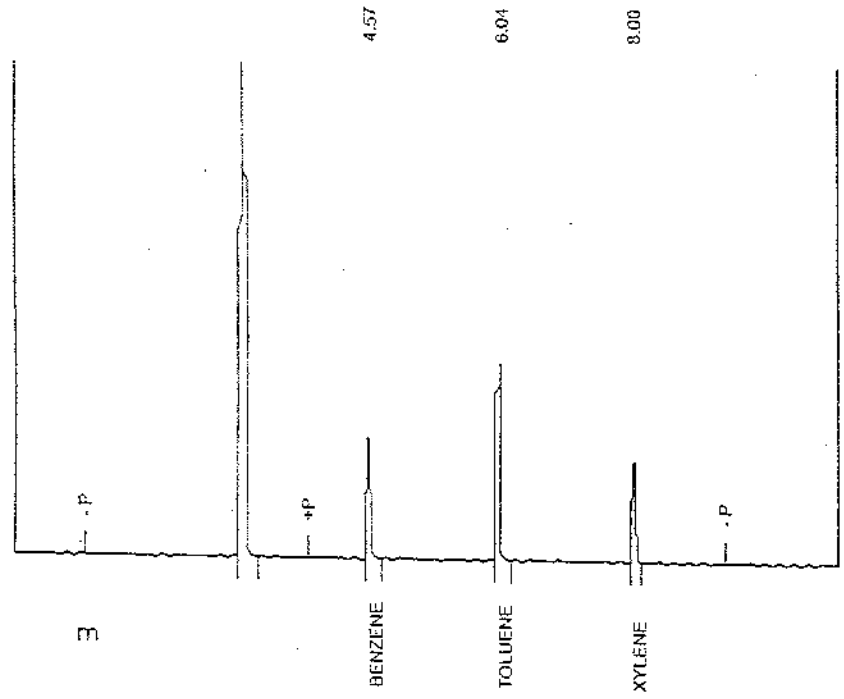
Analytes are transferred to the column in the form of narrow band of vapor. Desorption in the focusing

trap initiates the analytes to run through GC column. Different thermal desorbers may have different arrangements for automation. Alternatively, use equivalent manual desorption

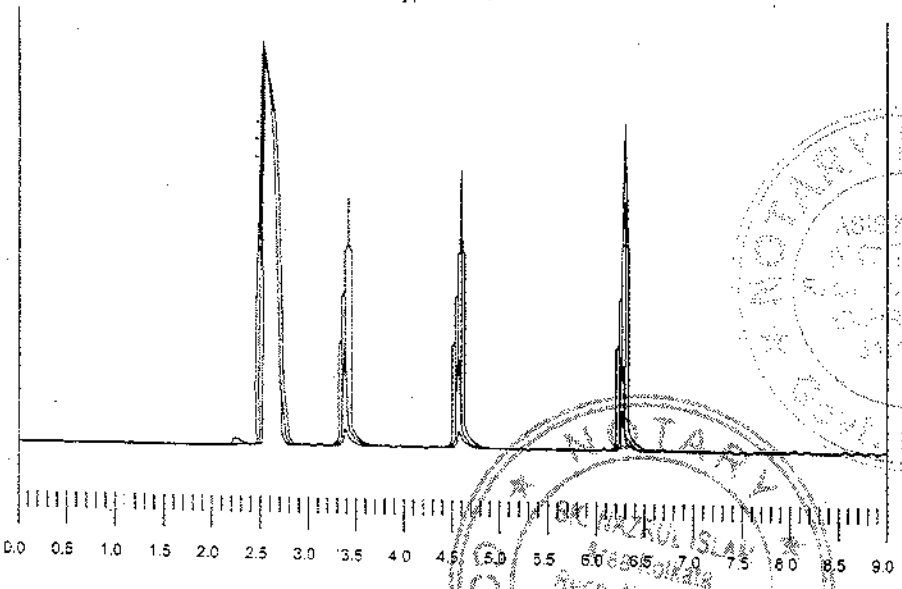
NOTE — Components should normally be desorbed from the focusing trap in backflush mode, that is, with the gas flow through the cold trap in the reverse direction to that used during analyte focusing.

c) *Sample splitting* — If the sample loading is high, it is usually possible to eliminate sufficient water to prevent analytical interference by using sample splitting.

Sample may be split either: (a) between the focusing trap and the capillary column (single splitting) during trap (secondary) desorption, or (b) between both the



8A Typical View



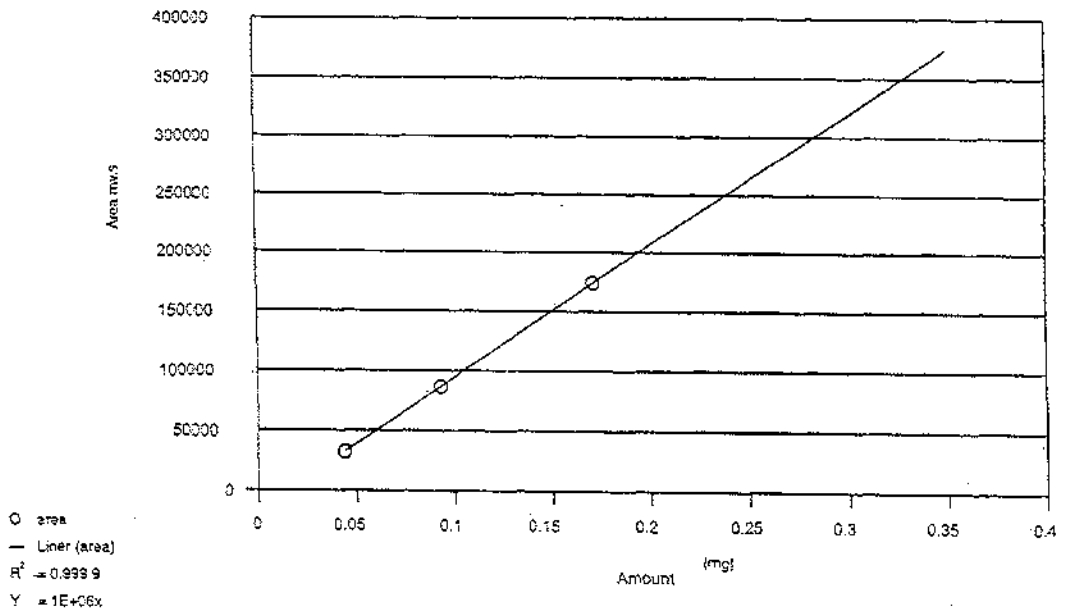
8B Overlay View on ATD-GC-FID System

FIG. 8 CHROMATOGRAMS OF BENZENE, TOLUENE AND XYLENE (Using Column PE5, 25 m × 0.20 mm, d_f = 0.33 µm 5 percent phenyl 95 percent dimethyl polysiloxane, at concentration of analytes, 0.017 4 µg/µl)

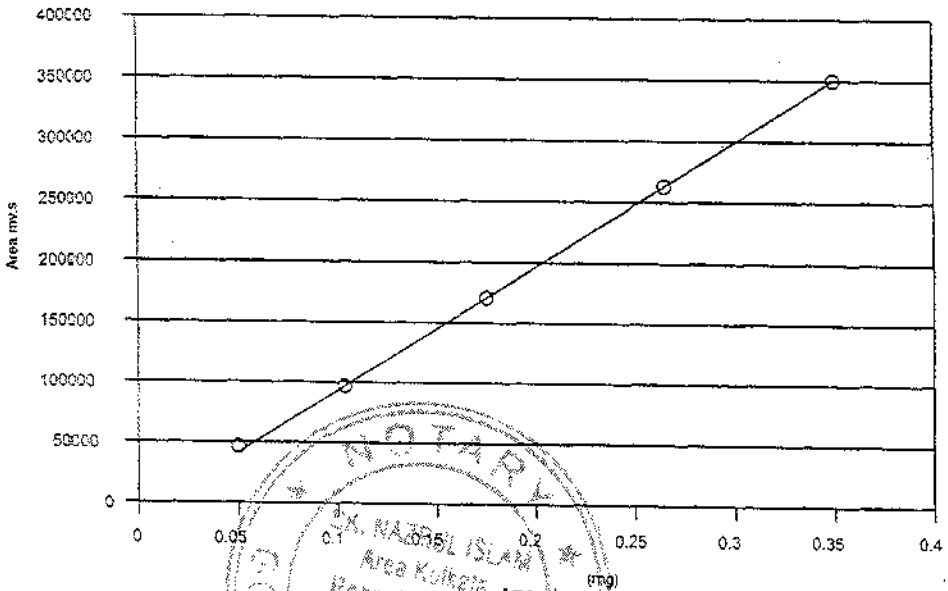
49

tube and the focusing trap during primary (tube) desorption, that is, double splitting. It may, in fact, be necessary to split the sample in some cases to prevent overloading the analytical column or detector due to excess water accumulation or during the analysis of high concentration/large volume air samples.

NOTE — Sample splitting is one of the key approaches to water management. Moisture management by sample splitting is applicable to relatively high concentrations (10 ppb) or large volume air samples.The mass of water retained by the sorbent tube during sample collection may be sufficiently reduced by the split alone to eliminate the need for further water management steps.

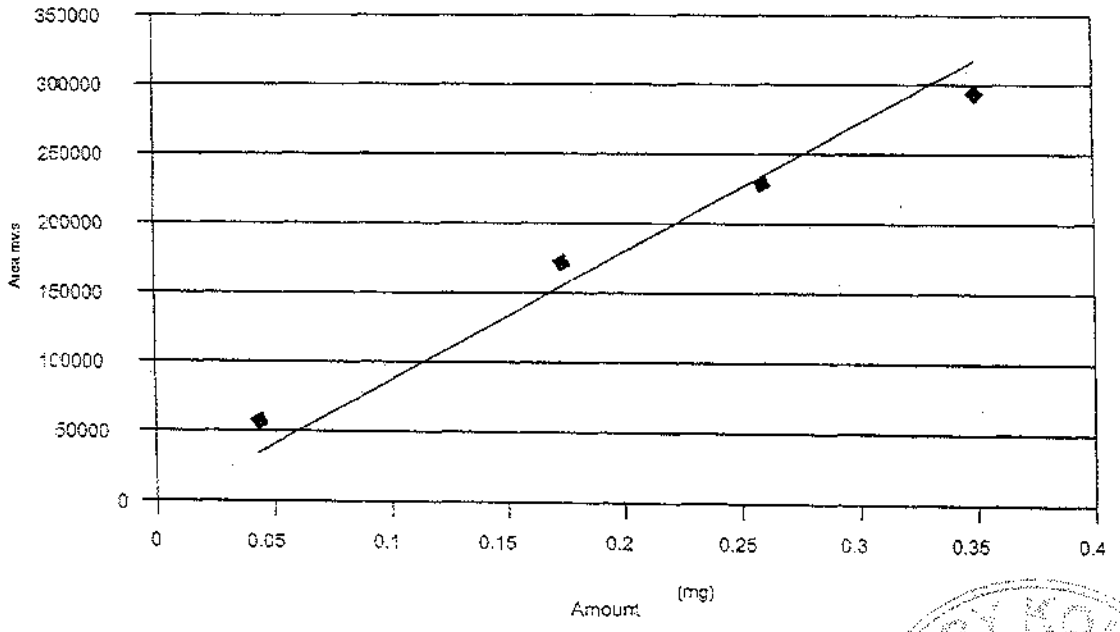


9A Benzene



9B Toluene

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Series 1, — Liner (Series 1), $R^2 = 0.963\,5$, and $y = 692\,229x$

9C Xylene

FIG. 9 CALIBRATION GRAPH

d) *Trap desorption and GC/MS analysis* — After each tube is desorbed, rapidly heat the focusing trap and apply pure Nitrogen or helium carrier gas. Sample splitting is necessary to accommodate the capillary column. Analytes are transferred to the column in a narrow band of vapor.

The GC run is initiated based on a time delay after the start of thermal desorption. The analytical cycle and ATD and GC conditions are described as follows:

1) *ATD Conditions*

i) Purge time: 1 min (After leak test air is purged to reduce analyte oxidation).

ii) Tube oven temperature : 300°C, Desorb time is 12 min.

iii) Cold trap low temperature : –30°C.

iv) Heat rate of cold trap: 40°C/s up to 225°C for 20 min.

v) Heated valve temperature: 6 Port rotary valve: 200°C.

vi) Transfer line temperature: 225°C.

vii) Inlet and Outlet split: 50 and 20 ml/min before and after cold trap respectively.

(These vary depending on nature and probable concentration of analyte in the sample).

2) *GC Conditions*

i) The ambient laboratory temperature should be between 10°C and 35°C with a relative humidity 20 percent to 75 percent with no condensation. The GC-ATD will operate safely between 15°C and 32°C.

ii) Capillary Column, coating: 5 percent phenyl 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, $d_f = 0.33$ µm.

iii) Detector: Flame ionization detector (FID) at 260°C.

iv) Air and H_2 Gas: 400 ml/min and 40 ml/min (10 : 1).

v) Carrier Gas: Nitrogen.

vi) Attenuation and Range: – 6 and 1.

vii) Injector: Off.

viii) Oven initial temperature: 50°C hold for 2 min.
Ramp 1 – 8.0°C/min to 140°C hold for 3 min.
Ramp 2 – 10.0°C/min to 250°C hold for 3 min.

ix) Run Time : 30.25 min.

x) Benzene RT 4.57 min, Search window : 1.00 s, 3.00 percent.

xi) Toluene RT 6.04 min, Search window : 1.00 s, 3.00 percent.

xii) Xylene RT 8.00 min, Search window : 1.00 s, 3.00 percent.

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NOTE — Temperature programming and retention time (RT) of analyte may vary column to column to get appropriate resolution of analyte peaks. Injection volume and split may also vary according to nature and probable concentration of analyte present in the extract.

e) *Conditioning of sorbent tubes reuse* — All volatiles should be stripped from the sorbent tubes during the thermal desorption process leaving them clean and ready for reuse. The tubes should be resealed to ensure they are kept clean and ready for immediate reuse.

5.6 Calculation

Amount of analyte compound found on tube can be converted into mg/m³ by using the formula:

$$\text{Volume of air, in m}^3 \text{ (sucked through the adsorption tube)} = \frac{s \times t}{10^6}$$

where

s = sampling rate, in ml/min; and

t = sampling time, in min.

$$\text{Concentration, in } \mu\text{g/m}^3 \text{ (at ambient condition)} = \frac{C_2}{V_3}$$

where

C_2 = amount of anlyte compound found on sample tube in µg; and

V_3 = volume of air sucked through the tube, in m³.

Blank value is to be subtracted from the amount of compound found in the sample.

$$\text{Concentration, in mg/m}^3 \text{ at (STP)} = \frac{C \times 101.3\ (273 + T)}{273 \times P}$$

where

C_3 = concentration at ambient condition, in mg/m³;

T = temperature of the ambient air, in °C; and

P = atmospheric pressure, in kPa.

6 METHOD 3 (PASSIVE SAMPLING USING COCONUT SHELL ACTIVATED CHARCOAL PASSIVE DIFFUSION SAMPLER TUBES)

6.1 Principle

Controlled diffusion with an activated charcoal tube is used to enrich the substances targeted for analysis. A diffusion sampling system comprises a sampling layer and a diffusion path in front of this layer. The diffusion path is filled with porous cellulose acetate, to prevent convection currents. The sample is taken by exposing the tube to ambient air (protected from rain). During this exposure time, the analytes stream into the activated charcoal due to the concentration gradient between the air and the desorption layer hand are adsorbed by the charcoal. Once the sample has been collected, the tubes are taken to the laboratory where desorption is done and the substances dissolved in the CS_2 are analyzed using capillary gas chromatography (GC) equipped with flame ionization detector (FID).

6.2 Apparatus

6.2.1 *Sampling Device* — Passive diffusion sampler or Sorption diffusion tube (Fig. 10) of known dimensions (length, internal diameter etc), or standard make [*Orsa-5, Drager, Lubeck. Germany; Radiello diffusive sampler, Fondozione Salvatore Maugeri (FSM), Italy; SKC diffusive sampler series 5, PA, USA* or other equivalent make] filled with known amount (generally 400 mg or so but less than 600 mg) of coconut shell activated charcoal (crystalline form, mesh size between 30 and 80 mesh) and of known diffusion constant, uptake rate and desorption efficiency (for benzene toluene and xylene) provided with protecting hood and passive diffuser tube

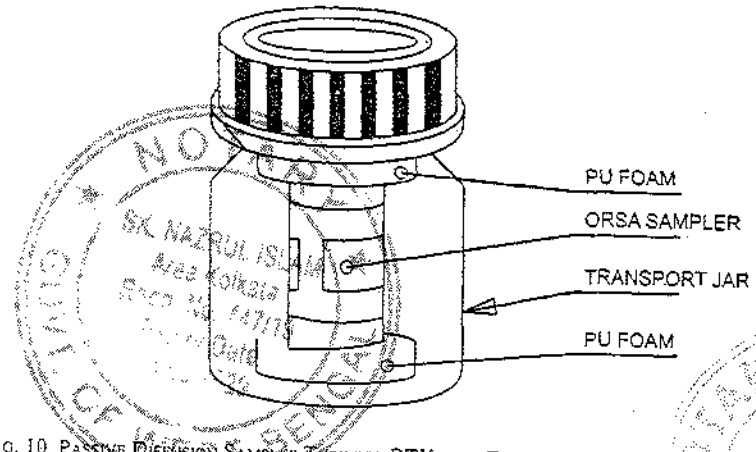


FIG. 10 PASSIVE DIFFUSION SAMPLER TUBE FOR BTX WITH TRANSPORTATION BOTTLE

holder to protect the tube from rain and direct sunlight. Suitable diffusion barrier like acetate cellulose is provided at ends of diffusive sampler tubes. All the supporting parts that is diffusive tube body, tube holder, clip etc should be made of stainless steel or polycarbonate or polyethylene. The glass bottles (*see* Fig. 10) are used for storing and transporting the sample tubes before and after sampling to/from field and laboratory.

6.2.2 *Gas Chromatograph* — Any suitable gas chromatograph equipped with flame ionization detector (FID) with fused silica capillary columns having a length of 25 m or more, an internal diameter of 320 µm or below and with a stationary phase film thickness less than 1.5 µm as follows or equivalent may be recommended.

Capillary 624 Column : Coating: cyanopropyl phenyl polysiloxane, Length × ID : 30 m × 0.25 mm, Film thickness (d_f) : 1.4 µm

Capillary Column : Coating: 5 percent phenyl, 95 percent dimethyl polysiloxane, Length × ID : 25 m × 0.20 mm, Film thickness (d_f) : 0.33 µm

Wall Coated Column : Coating: Fused Silica PONA CB, Length × ID : 50 m × 0.21 mm, Film thickness (d_f) : 0.5 µm

Capillary Column : Coating: Fused silica 100 percent dimethyl polysiloxane, Length × ID : 30 m × 0.32 ID, Film thickness (d_f) : 1.0 µm

6.3 Reagents

6.3.1 *Carbon Disulphide* (CS_2) — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 5 percent, Benzene 0.000 1 percent, H_2O < 0.02 percent.

6.3.2 *Benzene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

6.3.3 *Toluene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

6.3.4 *Xylene* — Chromatographic grade, Purity > 99.9 percent (GLC), Residue < 0.000 3 percent, H_2O < 0.02 percent.

6.3.5 *Carrier Gas* — Helium or Nitrogen of purity > 99.9 percent, H_2O < 0.02 percent, Residues ≤ 0.000 3 percent.

6.4 Sampling

6.4.1 *Sampling Location*

The sorption diffusion tube with tube hood is placed with the pillar at the height of 1.8-2.1 m at desired location. Site should be free from any obstacle to free flow of the air in the vicinity.

6.4.2 *Sampling Rate*

The sampling is performed through natural diffusion (sampling rate generally range between 5 and 10 ml/min). The analyte is adsorbed on to activated charcoal.

6.4.3 *Sampling Period*

The diffusive samplers are exposed in field for previously determined period [generally for a fortnight (15 days) or so].

NOTE — Exposure period may be shortened to a week or few days only for highly polluted area that is near gasoline emissions or dispensing station, garage or so.

6.4.4 *Sample Diffuser Tubes Labelling* — Sample tubes are labelled with a unique identification number.

6.4.5 *Blank and Sampled Tube Storage*

Before and after sampling the samples are stored and transported to field/laboratory in sealed glass bottle. Store these tubes in storage container having clean environment maintained at 4 - 5°C.

6.5 Procedure

6.5.1 *Calibration*

Prepare a mix stock standard solution of 50 µg/µl of benzene, toluene and xylene each gravimetrically, using a micro syringe in the elution solvent that is CS_2. Prepare further diluted solutions of concentration range of 10, 1.0, 0.10 µg/µl with CS_2 from stock standard in a clean vial. Make up to one millilitre solution. Introduce immediately 1 ml standard solution into the injector of GC directly and plot the curve between the concentration and response (peak area). A typical chromatogram of standard mixture is given in Fig. 11.

6.5.2 *Analytical Procedure*

Samples collected through passive technique (sorbent diffusion tubes) may be desorbed by conventional solvent (generally carbon disulphide). The samples extracted in carbon disulphide are analysed on Capillary GC equipped with flame ionization detector (FID). 1 µl of each standard solution is injected into the column. GC conditions are given as follows:

GC-FID conditions

Capillary column : Wall coated fused silica, PONA, d_f - 0.5 µm

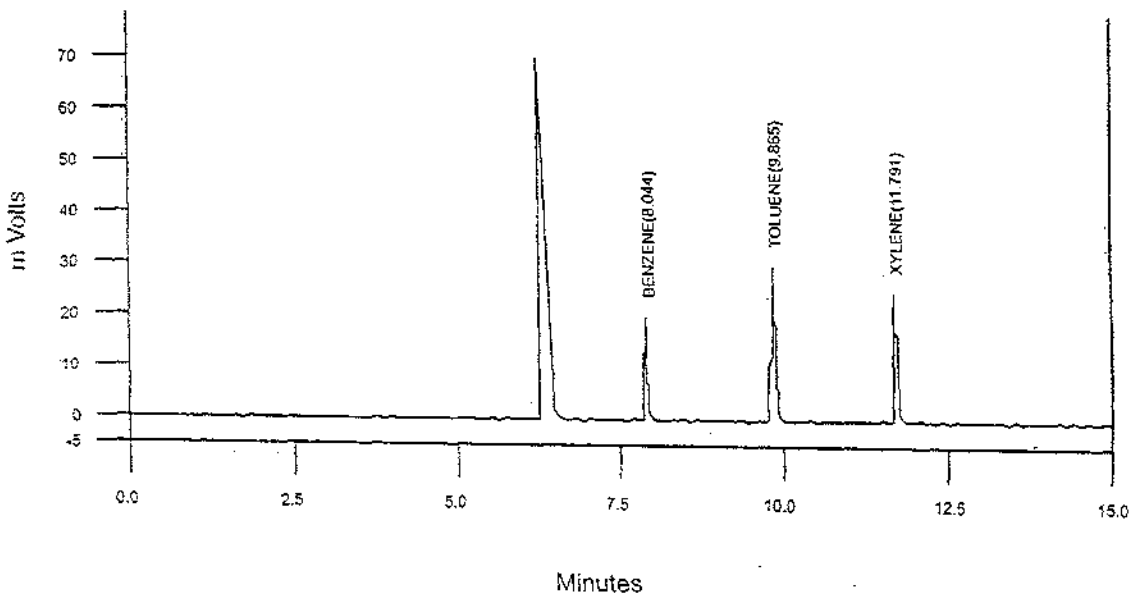


FIG. 11 STANDARD CHROMATOGRAM OF BENZENE, TOLUENE AND XYLENE
(Using CP_Silica PONA capillary column 50 m × 0.2 mm ID, film thickness d_f - 0.5 µm)

Length × ID : 50 m × 0.21 mm

Gas flow:

a) Nitrogen : 30 ml/min (Make up + column), (Column flow: 1 ml/min)

b) Hydrogen : 30 ml/min

c) Air : 300 ml/min

Temperature programming:

Injection port : 250°C FID : 300°C

Oven : 60° - 230°C @ 10°C/min

Typical Injection volume: 2 µl, total run time: 20 min.

- Benzene RT 8.06 min, Search window : 1.00 s, 3.00 percent
- Toluene RT 9.86 min, Search window : 1.00 s, 3.00 percent
- Xylene RT 11.78 min, Search window : 1.00 s, 3.00 percent

NOTE — Temperature programming and retention time (RT) of analyte may vary column to column to get appropriate resolution of analyte peaks. Injection Volume and split may also vary according to nature and probable concentration of analyte present in the extract.

6.6 Calculation

Calculations are given as follows:

$$C = (M - M_{blank}) \times K_{ORSA} \times 1\,000 / DE \times D \times t$$

where

C = concentration of the measured compound/ analyte, in mg/m³;

M = determined mass of the measured compound, in ng;

M_{blank} = weight of analyte organic vapour on blank tube, in ng;

K_{ORSA} = equipment constant of the diffusive sampler (that is 0.8 cm⁻¹ for Drager's ORSA 5 diffusive sampler);

1000 = conversion factor to get µg/m³ from, in mg/m³;

DE = desorption efficiency (that is 0.98 for Drager's ORSA 5 diffusive sampler);

D = diffusion coefficient in cm²/s at 25°C and 1 013 kPa (Benzene 0.085 9 cm²/s, Toluene 0.076 4 cm²/s, Xylene 0.072 7 cm²/s for Drager's ORSA 5 diffusive sampler); and

t = sampling duration, in seconds.

Alternatively following formulae may be applied for calculations:

$$C = (M - M_{blank}) / DE \times U \times t$$

where

C = concentration of the measured compound, in µg/m³;

M = determined mass of the measured compound, in ng;

M_{blank} = weight of analyte organic vapour on blank tube, in ng;

DE = desorption efficiency (0.98);

U = uptake rate in l/h at 25°C (benzene 0.387 l/h, toluene 0.343 l/h, xylene); and

t = sampling duration, in hours.

$$\text{Concentration (mg/m}^3\text{) at (STP)} = \frac{C_3 \times 101.3\ (273 + T)}{298 \times P}$$

where

C_3 = concentration at ambient condition, in µg/m³;

T = temperature of the ambient air; in kelvin; and

P = atmospheric pressure, in kPa.

7 CONVERSION OF CONCENTRATION IN PPB

$$C\ [\text{ppb}] = C\ [\mu\text{g/m}^3] \times 24.1/M$$

where

24.1 = molar volume at 20°C in litres; and

M = molar mass.

8 INTERFERENCES AND LIMITATIONS

8.1 Interference from Sorbent Artifact and Minimizing Artifact Interference

Stringent tube conditioning and careful tube capping and storage procedures are essential for minimizing artifacts. System and sorbent tube conditioning must be carried out using more stringent conditions of temperature, gas flow and time than those required for sample analysis.

NOTE — A reasonable objective is to reduce artifacts to 10 percent or less of individual analyte masses retained during sampling.

8.2 Artifacts from Long-Term Storage of Blank Tubes

Literature reports of the levels of artifacts on (a) Carbotrap/pack™ C, Carbotrap/pack™ B; and Carbosieve™ SIII multi-bed tubes; and (b) Tenax® GR tubes by workers when sealing the tubes using metal Swagelok®-type caps and PTFE ferrules with multi-tube, glass storage jars are reported to be between 0.01 ng after 1-2 months and 0.1 ng after six months respectively. Artifact levels reported for other porous polymers are higher, for example, 5 ng for Chromosorb 106 after one week.

Some varieties of charcoal contain metals which will catalyze the degradation of some organic analytes during thermal desorption at elevated temperatures thus producing artifacts and resulting in low analyte recoveries.

8.3 Artifacts Generated During Sampling and Sample Storage

8.3.1 *Active Sampling*

Benzaldehyde, phenol and acetophenone artifacts are reported to be formed via oxidation of the polymer Tenax when sampling high concentration (100 - 500 ppb) ozone atmospheres.

Tenax should thus be used with an ozone scrubber when sampling low levels (< 10 ppb) of these analytes in areas with appreciable ozone concentrations.

Carbotrap pack type sorbents have not been reported to produce this level of artifact formation. Once retained on a sorbent tube, chemically stable VOCs, loaded in laboratory conditions, have been shown to give good recoveries, even under high ozone concentrations for storage of a year or more.

8.3.2 *Passive Sampling*

The uptake rate of diffusive samplers is not significantly affected by air movement, provided the air velocity exceeds a threshold value which depends on design. Generally, air velocities greater than 0.1 ms^{-1} and below 10 ms^{-1} are sufficient for the passive sampling.

8.3.3 Temperature correction for sampled air volume is to be made, if sampling is performed below 20°C or above 30°C .

9 DETECTION LIMITS AND MAXIMUM QUANTIFIABLE CONCENTRATIONS OF AIR POLLUTANTS

The method of detection limit is defined for each system by making seven replicate measurements of a concentration of the compound of interest near the expected detection limit (within a factor of five), computing the standard deviation for the seven replicate concentrations, and multiplying this value by 3.5 (the Student's t value for 99 percent confidence for seven values).

Detection limits for atmospheric monitoring vary depending on several key factors. They are:

a) Sample storage condition,

b) Injection volume,

c) Minimum artifact levels,

d) GC detector selection, and

e) Volume of air sampled. The volume of air sampled is in turn dependent upon a series of variables including SSVs, pump flow rate limitations and time-weighted-average monitoring time constraints.

Generally detection limits range about sub-ppb for BTX in one litre air samples using the GC-FID. Detection limits are greatly dependent upon the proper management of water for GC capillary analysis of volatile organics in air using sorbent technology.

9.1 Safe Sampling Volume (SSV)

Usually calculated by halving the retention volume (indirect method) or taking two-thirds of the breakthrough volume (direct method), although these two approaches do not necessarily give identical results. The latter definition is generally used.

9.2 Breakthrough Volume (BV)

The volume sampled when the amount of analyte collected in a backup sorbent tube reaches a certain percentage (typically 5 percent) of the total amount collected by both sorbent tubes.

10 QUALITY ASSURANCE (VALIDATING THE SAMPLE COLLECTION PROCEDURE)

10.1 Blanks

Artifact levels on laboratory and field blanks should be at the low or sub-nanogram level for carbonaceous sorbents and Tenax® and at the double digit ng level for Porapaks®, Chromosorb®. If artifact levels are considerably above this, careful attention must be paid to the tube conditioning and storage procedures.

Artifact peaks, which are 10 percent or more of the area of average component peaks, should be marked as artifacts in the final data reports.

10.2 Performance Criteria for the Monitoring Pump

Records of the pump flow rate delivered against the pump flow rate or pressure selected on a pump should be reviewed at least once per three months. If the performance of any pump has been found to have changed significantly over that time; for example if completely different pump settings are required to deliver the same pump flow rate, the pump should be serviced by the manufacturer or their approved agent.

10.3 Performance Criteria for the Solid Adsorbent Sampling of Ambient Air

There are four performance criteria, which must be met for a system. These criteria are:

a) A method detection limit of 0.5 ppb,

b) Duplicate (analytical) precision within 20 percent on synthetic samples of a given target analyte or vapor in a typical vapor mix in humidified zero air,

c) Agreement within 25 percent for distributed volume pairs of tubes taken in each sampling set, and

d) Audit accuracy within 30 percent for concentrations normally expected in contaminated ambient air (0.5 to 25 ppb).

10.4 Calibration of Response

The multi-level calibration procedures and calibration frequencies should be followed for this. It is also advisable to analyze a single level calibrant (i.e. tubes loaded with analyte masses in the mid-range of those expected to be collected during sampling) approximately every tenth sample during an analytical sequence, as a check on system performance.

10.5 Analytical Precision of Duplicate Pairs

The measure of analytical precision used for this method is the absolute value of the relative difference between two identical samples (same flow rate over the same time period from with a common inlet to the sample volume). The analytical precision is expressed as a percentage as follows:

$$\text{Analytical precision} = [(X_1 - X_2)/X \times 100]$$

where

X_1 = a measurement value taken from one of the two tubes used in sampling,

X_2 = a measurement value taken from the second of two tubes used in sampling, and

X = average of X_1 and X_2.

The analytical precision is a measure of the precision achievable for the entire sampling and analysis procedure including the sampling and thermal desorption process mentioned above and the analytical procedure.

10.6 Accuracy

A measure of accuracy is the degree of agreement with audit standards. Audit accuracy is defined as the relative difference between the measurement result and the nominal concentration of the compound:

$$\text{Audit accuracy, percent} = \frac{(\text{Spiked value} - \text{Observed value}) \times 100}{(\text{Spiked value})}$$

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ANNEX A
(*Foreword*)

COMMITTEE COMPOSITION

Environment Protection and Waste Management Sectional Committee, CHD 32

Organization	*Representative(s)*
In personal capacity (*40/14, C.R. Park, New Delhi 110019*)	PROF DILIP BISWAS (*Chairman*)
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Gujarat Pollution Control Board, Ahmedabad	SHRI D. C. DAVE
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Indian Council of Medical Research, New Delhi	DR H. N. SAIYAD
Indian Oil Corporation Limited, Faridabad	DR M. P. SINGH

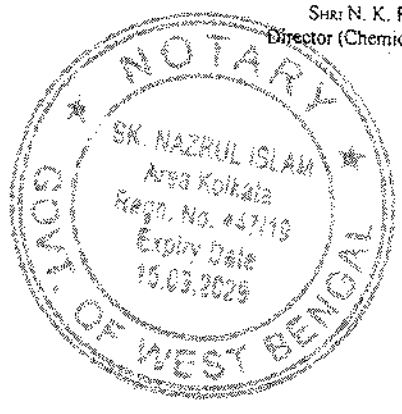
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Area Kolkata
Regn. No. 447/19
From Date
19.12.2029
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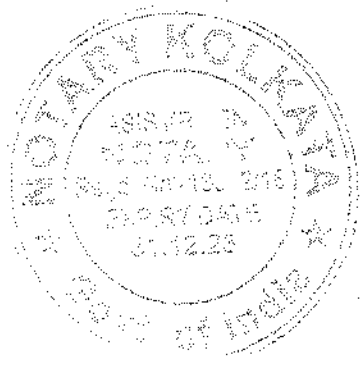
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4 X 7

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Ministry of Environment & Forests, New Delhi	REPRESENTATIVE
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This Indian Standard has been developed from Doc: No. CHD 32 (1336).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

ANNEXURE - 3

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

Station: Hakimapada, Angul - OSPCB
State: Odisha
City: Angul
Parameter: Benzene
Average Period: 24 Hours
From: 01-10-2022T00:00:00Z 00:00
To: 31-12-2022T12:22:59Z 00:00

Prescribed Standards		0-5
Exceeding Standards		NA
Remarks		
From Date	To Date	Benzene (ug/m3)
01-10-2022 00:00	02-10-2022 00:00	None
02-10-2022 00:00	03-10-2022 00:00	None
03-10-2022 00:00	04-10-2022 00:00	None
04-10-2022 00:00	05-10-2022 00:00	None
05-10-2022 00:00	06-10-2022 00:00	None
06-10-2022 00:00	07-10-2022 00:00	None
07-10-2022 00:00	08-10-2022 00:00	None
08-10-2022 00:00	09-10-2022 00:00	None
09-10-2022 00:00	10-10-2022 00:00	None
10-10-2022 00:00	11-10-2022 00:00	None
11-10-2022 00:00	12-10-2022 00:00	None
12-10-2022 00:00	13-10-2022 00:00	None
13-10-2022 00:00	14-10-2022 00:00	None
14-10-2022 00:00	15-10-2022 00:00	None
15-10-2022 00:00	16-10-2022 00:00	None
16-10-2022 00:00	17-10-2022 00:00	None
17-10-2022 00:00	18-10-2022 00:00	None
18-10-2022 00:00	19-10-2022 00:00	None
19-10-2022 00:00	20-10-2022 00:00	None

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Regn. No. 447/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

20-10-2022 00:00	21-10-2022 00:00	None
21-10-2022 00:00	22-10-2022 00:00	None
22-10-2022 00:00	23-10-2022 00:00	None
23-10-2022 00:00	24-10-2022 00:00	None
24-10-2022 00:00	25-10-2022 00:00	None
25-10-2022 00:00	26-10-2022 00:00	None
26-10-2022 00:00	27-10-2022 00:00	None
27-10-2022 00:00	28-10-2022 00:00	None
28-10-2022 00:00	29-10-2022 00:00	None
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30-10-2022 00:00	31-10-2022 00:00	None
31-10-2022 00:00	01-11-2022 00:00	None
01-11-2022 00:00	02-11-2022 00:00	None
02-11-2022 00:00	03-11-2022 00:00	None
03-11-2022 00:00	04-11-2022 00:00	None
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15-11-2022 00:00	16-11-2022 00:00	None
16-11-2022 00:00	17-11-2022 00:00	None
17-11-2022 00:00	18-11-2022 00:00	None

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

18-11-2022 00:00	19-11-2022 00:00	None
19-11-2022 00:00	20-11-2022 00:00	None
20-11-2022 00:00	21-11-2022 00:00	None
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13-12-2022 00:00	14-12-2022 00:00	None
14-12-2022 00:00	15-12-2022 00:00	None
15-12-2022 00:00	16-12-2022 00:00	None
16-12-2022 00:00	17-12-2022 00:00	None

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NAZRUL ISLAM
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REG. NO.
EXPIRY DATE
GOVT. OF WEST

432

CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

17-12-2022 00:00	18-12-2022 00:00	None
18-12-2022 00:00	19-12-2022 00:00	None
19-12-2022 00:00	20-12-2022 00:00	None
20-12-2022 00:00	21-12-2022 00:00	None
21-12-2022 00:00	22-12-2022 00:00	None
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28-12-2022 00:00	29-12-2022 00:00	None
29-12-2022 00:00	30-12-2022 00:00	None
30-12-2022 00:00	31-12-2022 00:00	None
31-12-2022 00:00	31-12-2022 12:22	None

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SIKSHA BHAWAN

423

CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Annexure - 4

Date: Wednesday, Feb 14 2024
Time: 12:14:35 PM

Station: Talcher Coalfields,Talcher - OSPCB
State: Odisha
City: Talcher
Parameter: Benzene
Average Period: 24 Hours
From: 01-10-2022T00:00:00Z 00:00
To: 31-12-2022T12:17:59Z 00:00

Prescribed Standards		0-5
Exceeding Standards		NA
Remarks		
From Date	To Date	Benzene (ug/m3)
01-10-2022 00:00	02-10-2022 00:00	0.0
02-10-2022 00:00	03-10-2022 00:00	0.0
03-10-2022 00:00	04-10-2022 00:00	0.0
04-10-2022 00:00	05-10-2022 00:00	0.0
05-10-2022 00:00	06-10-2022 00:00	0.0
06-10-2022 00:00	07-10-2022 00:00	0.0
07-10-2022 00:00	08-10-2022 00:00	0.0
08-10-2022 00:00	09-10-2022 00:00	0.0
09-10-2022 00:00	10-10-2022 00:00	0.0
10-10-2022 00:00	11-10-2022 00:00	0.0
11-10-2022 00:00	12-10-2022 00:00	0.0
12-10-2022 00:00	13-10-2022 00:00	0.0
13-10-2022 00:00	14-10-2022 00:00	0.0
14-10-2022 00:00	15-10-2022 00:00	0.0
15-10-2022 00:00	16-10-2022 00:00	0.0
16-10-2022 00:00	17-10-2022 00:00	0.0
17-10-2022 00:00	18-10-2022 00:00	0.0
18-10-2022 00:00	19-10-2022 00:00	0.0
19-10-2022 00:00	20-10-2022 00:00	0.01

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Govt. of West Bengal

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

20-10-2022 00:00	21-10-2022 00:00	0.0
21-10-2022 00:00	22-10-2022 00:00	0.0
22-10-2022 00:00	23-10-2022 00:00	0.0
23-10-2022 00:00	24-10-2022 00:00	0.0
24-10-2022 00:00	25-10-2022 00:00	0.0
25-10-2022 00:00	26-10-2022 00:00	0.0
26-10-2022 00:00	27-10-2022 00:00	0.0
27-10-2022 00:00	28-10-2022 00:00	0.0
28-10-2022 00:00	29-10-2022 00:00	0.0
29-10-2022 00:00	30-10-2022 00:00	0.07
30-10-2022 00:00	31-10-2022 00:00	0.0
31-10-2022 00:00	01-11-2022 00:00	0.0
01-11-2022 00:00	02-11-2022 00:00	0.0
02-11-2022 00:00	03-11-2022 00:00	0.0
03-11-2022 00:00	04-11-2022 00:00	0.0
04-11-2022 00:00	05-11-2022 00:00	0.0
05-11-2022 00:00	06-11-2022 00:00	0.0
06-11-2022 00:00	07-11-2022 00:00	0.0
07-11-2022 00:00	08-11-2022 00:00	0.0
08-11-2022 00:00	09-11-2022 00:00	0.0
09-11-2022 00:00	10-11-2022 00:00	0.0
10-11-2022 00:00	11-11-2022 00:00	0.0
11-11-2022 00:00	12-11-2022 00:00	0.0
12-11-2022 00:00	13-11-2022 00:00	0.0
13-11-2022 00:00	14-11-2022 00:00	0.0
14-11-2022 00:00	15-11-2022 00:00	0.09
15-11-2022 00:00	16-11-2022 00:00	0.34
16-11-2022 00:00	17-11-2022 00:00	0.0
17-11-2022 00:00	18-11-2022 00:00	0.04

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Govt. of WEST BENGAL

ASSISTANT SECRETARY

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

18-11-2022 00:00	19-11-2022 00:00	0.15
19-11-2022 00:00	20-11-2022 00:00	0.7
20-11-2022 00:00	21-11-2022 00:00	0.26
21-11-2022 00:00	22-11-2022 00:00	0.0
22-11-2022 00:00	23-11-2022 00:00	0.0
23-11-2022 00:00	24-11-2022 00:00	0.0
24-11-2022 00:00	25-11-2022 00:00	0.0
25-11-2022 00:00	26-11-2022 00:00	0.03
26-11-2022 00:00	27-11-2022 00:00	0.33
27-11-2022 00:00	28-11-2022 00:00	0.37
28-11-2022 00:00	29-11-2022 00:00	0.0
29-11-2022 00:00	30-11-2022 00:00	0.0
30-11-2022 00:00	01-12-2022 00:00	0.0
01-12-2022 00:00	02-12-2022 00:00	0.0
02-12-2022 00:00	03-12-2022 00:00	0.0
03-12-2022 00:00	04-12-2022 00:00	0.0
04-12-2022 00:00	05-12-2022 00:00	0.0
05-12-2022 00:00	06-12-2022 00:00	0.0
06-12-2022 00:00	07-12-2022 00:00	0.14
07-12-2022 00:00	08-12-2022 00:00	0.3
08-12-2022 00:00	09-12-2022 00:00	0.38
09-12-2022 00:00	10-12-2022 00:00	0.2
10-12-2022 00:00	11-12-2022 00:00	0.44
11-12-2022 00:00	12-12-2022 00:00	0.11
12-12-2022 00:00	13-12-2022 00:00	0.07
13-12-2022 00:00	14-12-2022 00:00	0.04
14-12-2022 00:00	15-12-2022 00:00	0.11
15-12-2022 00:00	16-12-2022 00:00	0.15
16-12-2022 00:00	17-12-2022 00:00	0.4

486

CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

CPCB

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

17-12-2022 00:00	18-12-2022 00:00	0.34
18-12-2022 00:00	19-12-2022 00:00	0.15
19-12-2022 00:00	20-12-2022 00:00	0.11
20-12-2022 00:00	21-12-2022 00:00	0.18
21-12-2022 00:00	22-12-2022 00:00	0.23
22-12-2022 00:00	23-12-2022 00:00	0.21
23-12-2022 00:00	24-12-2022 00:00	0.39
24-12-2022 00:00	25-12-2022 00:00	0.37
25-12-2022 00:00	26-12-2022 00:00	0.54
26-12-2022 00:00	27-12-2022 00:00	0.3
27-12-2022 00:00	28-12-2022 00:00	0.39
28-12-2022 00:00	29-12-2022 00:00	0.07
29-12-2022 00:00	30-12-2022 00:00	0.12
30-12-2022 00:00	31-12-2022 00:00	0.3
31-12-2022 00:00	31-12-2022 12:17	0.17

NOTARY SK. NAZRUL ISLAM Govt. of West Bengal

Govt. of India NOTARY

ANNEXURE - 'O'

~~372~~ ~~Annexure R1/5~~ ~~284~~

437 ~~ANNEXURE - 'A'~~

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(Coal Mining)
***

सत्यमेव जयते

Minutes of AGENDA FOR 7th MEETING OF THE EXPERT APPRAISAL COM MITTEE (COAL MINING SECTOR) meeting Coal Mining held from 12/02/2024 t o 14/02/2024 Date: 24/02/2024

MoM ID: EC/MOM/EAC/880056/2/2024

Agenda ID: EC/AGENDA/EAC/880056/2/2024

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

12/02/2024	10:30 AM	05:30 PM
13/02/2024	10:30 AM	05:30 PM
14/02/2024	10:30 AM	01:30 PM

1. Opening remarks

At the outset, the Chairman welcomed the Expert members & other participants and requested to start the proceeding as per the agenda adopted for this meeting. The list of Members participated in the meeting is at ANNEXURE VIII. Note - Due to Editor issue, Final Approved Minutes of the EAC is enclosed herewith in PDF as a [ANNEXURE]. Please refer this document and Treat as approved Minutes of the EAC [Coal Sector].

2. Confirmation of the minutes of previous meeting

Confirmation of the Minutes of 6thMeeting of the EAC (Coal): The minutes of the 6th Meeting of the EAC (Coal) held during 17th& 18th January 2024 has been confirmed by the Chairman with the following corrections: 6th EAC Meeting (Agenda Item No 6.5): Expansion of Prakasham Khani Opencast Coal mine (Amalgamation of Manuguru OC II Expansion & Manuguru OC IV Extension) for increase in production capacity from 9.75 MTPA to 10.45 MTPA in the ML area of 2402.40 ha (2214.84 ha Forest Land and 187.56 ha non-forest land) of Singareni Collieries Company Limited (SCCL) located in Village & Mandal Manuguru, District Bhadradri Kothagudem (Telangana) - For Environmental Clearance under Ministry's OM dated 11.04.2022 (Stage I - 20% expansion) – reg. [Online Proposal No IA/TG/CMIN/447190/2023; File No. J-11015/78/2013-IA-II(M)] The Committee observed that PP submitted a LOI dated 24.06.2019 for an area of 233.54 Ha falling outside the lease area. The Committee is of the view that PP shall submit an undertaking to the effect that no mining operation shall be carried out in an area of 233.54 Ha before obtaining the mining lease and other permission/clearances from the concerned authority as per law. The Committee therefore, prescribed the following additional condition to be included in EC: "Any mining operation in an area of 233.54 Ha shall only be carried out after obtaining the mining lease and other permission/clearance from the concerned authorities as per law." 6th EAC Meeting (Agenda Item No 6.7): Expansion of Jalagam Vengala Rao Opencast Mine (amalgamation of Jalagam I & II) with increase in production capacity from 10 MTPA to 12 MTPA with coal washery of 4 MTPA capacity in ML Area 1953.46 ha by M/s Singareni Collieries Company Limited at village Kommepalli near

Sathupalli town, Sathupalli mandal, Khammam District, (Telangana) – Reconsideration for Environmental Clearance under Ministry's OM dated 11.04.2022 (Stage I - 20% expansion) – reg. [Online Proposal No. IA/TG/CMIN/447089/2023; File No. J-11015/268/2007-IA-II(M) The Committee observed that PP submitted a LOI dated 17/9/2018 for an area of 89.85 Ha falling outside the lease area. The Committee is of the view that PP shall submit an undertaking to the effect that no mining operation shall be carried out in an area of 89.85 Ha before obtaining the mining lease and other permission from the concerned authorities as per law. The Committee therefore, prescribed the following additional condition to be included in EC: "Any mining operation in an area of 89.85 Ha shall only be carried out after obtaining the mining lease and other permission/clearance from the concerned authorities as per law." 6th EAC Meeting (Agenda Item No 6.8): Himgir Coal Washery project for (5 MTPA) in an area of 13.52 ha. of M/s ACB (India) Limited located in Tehsil Hemgir, District Sundargarh, (Odisha)-Amendment in EC: It has mentioned in the approved MoM that "Based on the document submitted and discussion held, the Committee is of the view that w.r.t requested of expansion capacity from 2.5 MTPA to 5 MTPA and for additional amendment sought by PP i.e. Specific Condition No. (iii) as mentioned above, the same may be considered after submission of the following: a) Proposal for amendment in EC conditions shall be submitted a fresh in PARIVESH 2.0 Portal. b) Submission of fresh traffic study and one-month baseline data. c) Cost analysis of deployment of electric tippers vis a vis. installation of belt conveyor system for transportation of mineral from washery to railway siding. d) Certified Compliance Report from concerned RO for compliance of 90% of the conditions. The Committee is of the view that point c) mentioned above shall be read as "Cost analysis of deployment of electric tippers vis a vis. installation of belt conveyor system for transportation of mineral from washery to railway siding, along with a time bound action plan so that the matter can be discussed in the subsequent meeting". 5th EAC Meeting (Agenda No. 5.3) Expansion of Bhubaneswari OCP for increase in Mine lease area from 638.341 Ha to 658.724 Ha [638.341ha+20.383ha (forest area)] keeping existing production capacity 30 MTPA by M/s Mahanadi Coalfields Ltd. located in the villages Jilinda, Hensmul (Sharasahi), Hensmul (Talasahi), Naraharipur, Khandualbhal, Kandhal, Madanmohanpur, Langijoda and Anadipur,Tehsil Talcher Sadar, District Angul (Odisha) – For Terms of Reference- reg. The EAC in the MoM for the aforementioned project recorded in MoM that :"5.3.4 The Committee after detailed deliberations noted that the instant proposal is for Terms of Reference for project wherein PP will have to maintain coal production on similar capacity i.e 30 MTPA (on granted EC) but with slight increase of area from 638.341ha to 658.724 Ha (i.e 20.383). It has been noted that PP has already conducted public hearing on the same mine area i.e 658.724 ha which is being proposed and had also included the forest land i.e 20.383 ha. Further, EIA- EMP was already prepared for similar capacity for same mine area i.e 658.724 ha. However, PP in the past could not able to utilise the entire mine area due to delay in obtaining FC for 20.383 ha. Now PP is in process of getting the FC for 20.383 ha and accordingly requesting the committee to exempt the public area to avoid repetition the same process of pubic hearing, which has already been done for requirement of EIA-EMP report. The Committee noted the reason cited by PP and opined that in fact it is a case of amendment of EC as PP has already prepared EIA-EMP and already conducted the public hearing on existing mine area and capacity which is proposed to be operated by PP. Earlier due to pressure of coal production PP curtailed the area wherein forest land has been involved as there is delay in process and land acquisition. Due to the stated reasons and in view of the above, the EAC recommended to prepare EIA-EMP report with public consultation by inviting written submission from the affected persons in place of conducting detailed public hearing. Meanwhile PP shall have to collect the additional baseline data at…" Further, the Committee in the specific ToR conditions no (i) mentioned that "PP shall conduct public consultation by issuing public notice in local media, newspapers (English, Hindi and local language) Report through concerned SPCB in the concerned districts as per the provisions/procedure contained in the EIA Notification, 2006 for information of the stakeholders about the present coal mining operations inviting comments and their redressal. All the issues raised and PP reply should be incorporated in EIA." As there is an ambiguity about whether the EAC has recommended the proposal with public consultation i.e. (Public Hearing & written submission) or only Public Consultation i.e. only written submission. The Committee examined the issue and is of the view that as per the provision of EIA Notification 2006: (a) All applications seeking prior environmental clearance for expansion with increase in the production capacity beyond the capacity for which prior environmental clearance has been granted under this notification or with increase in either lease area or production capacity in the case of mining projects or for the modernisation of an existing unit with increase in the total production capacity beyond the threshold limit prescribed in the Schedule to this notification through change in process and or technology or involving a change in the product -mix shall be made in Form 1 and they shall be considered by the concerned Expert Appraisal Committee or State Level Expert Appraisal Committee within sixty days, who will decide on the due diligence necessary including preparation of Environment Impact Assessment and public consultations and the application shall be appraised accordingly for grant of environmental clearance in respect of projects or activities other than falling in clause (b) and (c). In view of the above facts, the Committee is of the view that specific ToR conditions no (i) shall be read as "PP shall conduct public consultation (i.e. by inviting written submissions) by issuing public notice in local media, newspapers (English, Hindi and local language) Report through concerned SPCB in the concerned districts as per the provisions/procedure contained in the EIA Notification, 2006 for information of the stakeholders about the present coal mining operations inviting written comments/submissions and their redressal. All the issues raised and PP reply should be incorporated in EIA." 5th EAC Meeting (Agenda Item No 5.6): Gondkhari Underground Coal Mine of production capacity 2.0/3.0 MTPA (Normative/Peak) in the mine lease area of 862.00 Ha of M/s Adani Power Maharashtra Limited (APML) located atVillage Gondkhari, Tehsil Kalmeshwar, District Nagpur (Maharashtra) – Reconsideration for Environmental

Clearance reg. The specific condition no (vi) is mentioned as "PP shall implement the activities-wise proposed budget for Public Hearing Budget (as mentioned in EIA-EMP report) and Capital cost of Rs. 58 Lakh (as EMP cost mentioned in the above para no. 5.6.3 (ix)) in time bound manner as per 5.6.3 of minutes. The details of annual expenditure incurred shall be part of report to be submitted to IRO, MoEF&CC. PP needs to include the audited figures against the expenditure and activities to be monitored by through dedicated monitoring mechanism. The maintenance of all activities shall be covered through recurring cost of Public Hearing, and continued as a part of CSR budget.' The Committee noted that in place of capital cost the recurring cost was mentioned in the above condition therefore the above condition shall be read as "PP shall implement the activities-wise proposed budget for Public Hearing Budget (as recommended by the EAC, mentioned in Annexure 2) & EMP Capital cost of Rs. 34.32 Cr in time bound manner. The details of annual expenditure incurred shall be part of report to be submitted to IRO, MoEF&CC. PP needs to include the audited figures against the expenditure and activities to be monitored by through dedicated monitoring mechanism. The maintenance of all activities shall be covered through recurring cost of Public Hearing, and continued as a part of CSR budget." 5th EAC Meeting (Agenda Item No 5.12):Expansion of Amrapali Opencast Coal Mine from 20.16 MTPA to 24.19 MTPA (Peak) in an ML area of 619.87 ha of M/s Central Coalfields Limited located in District Chatra (Jharkhand) - For Environmental Clearance under OM dated 11.04.2022 (Stage-I - 20% expansion) - reg. The Committee observed that Ministry granted expansion EC of 20.16 MTPA in an area of 619.87 Ha on 10.05.2021 with following condition "PP should ensure that coal transportation from Amrapali Railway siding through belt conveyor within two years from grant of EC" The above condition was amended vide letter dated 12.05.2023 as "PP should ensure that coal transportation from Amrapali Railway siding through belt conveyor within 18 months i.e upto Jan 2025 from May 2023" Now, while recommending the further expansion upto 24.19 MTPA (under stage I), in the MoM the specific condition no (ii) in MoM is mentioned as " PP should complete the coal transportation from Amrapali railway siding through belt conveyor before 08.05.2023 and SPCB shall issue CTO accordingly." Considering the above facts, the Committee is of the view that the above condition shall be read as "PP should complete the coal transportation from Amrapali railway siding through belt conveyor before January 2025 and SPCB shall issue CTO accordingly".

3. Details of proposals considered by the committee

Day 1 -12/02/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Tokisud Block II Coal Mine by TWENTY FIRST CENTURY MINING PRIVATE LIMITED located at RAMGARH,JHARKHAND

Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/JH/CMIN/456147/2023	IA-J-11015/53/2023-IA-II(M)	12/01/2024	Mining of minerals (1(a))

3.1.2. Project Salient Features

Agenda No. 7.3
Proposal for grant of ToR to Tokisud Block II Coal Mine (Lease Area 192.26 Ha. having 1.5 MTPA capacity) of Twenty First Century Mining Private Limited located at Anchal Patratu, Ramgarh District, Jharkhand State - For Terms of Reference – Reg.
[Online Proposal No. IA/JH/CMIN/456147/2023; File No. IA-J-11015/53/2023-IA-II(M), Fresh ToR]

[Consultant: P&M Solution, Noida; NABET/EIA/2326/RA 0298 valid till 7.05.2026]

7.3.1: The Twenty First Century Mining Private Limited has made an application online vide proposal no. **IA/JH/CMIN/456147/2023 dated 12/01/2024** along with the application in the prescribed format (Form-I), copy of the pre-feasibility report and for undertaking detailed EIA study as per the EIA Notification, 2006 for the project mentioned above. The proposed project activity is listed at S.No. - 1(a) Mining of Minerals Under Category "B1" of the schedule of the EIA Notification, 2006 and does not attract general conditions. The proposal is being appraised at the Central

Additional Agenda:

Agenda:7.14

6th EAC Meeting (Agenda No 6.1) Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) – Reconsideration for Environmental Clearance – reg.

[Proposal No. IA/OR/CMIN/445297/2023; File No. IA-J-11015/72/2021- IA-II(M)]

Member Secretary informed the Committee that after the approval of the MoM for this agenda item a complaint was received against the project on 10/02/2024. The Committee noted that the complaint was addressed previous Member Secretary and now forwarded to the new Member Secretary.

The Committee observed that in the complaint it has mentioned that *"I would like to bring it your kind information that the results reported in respect of Benzene in all the villages for the month of December 2022 needs a review. There are some other findings which show that in December 2022, the Benzene concentration in all these villages found to be varying between 2.2 to 6.4 microgram per cubic meter. The maximum was found in Golabandha."*

The Committee noted that the allegation made by the complainant is without any documentary proof to support his argument. However, the Committee is of the view that PP may be asked to clarify on this issue. Member secretary informed that, an email in this regard has already been sent to PP on 13/02/2024 as per direction of the EAC.

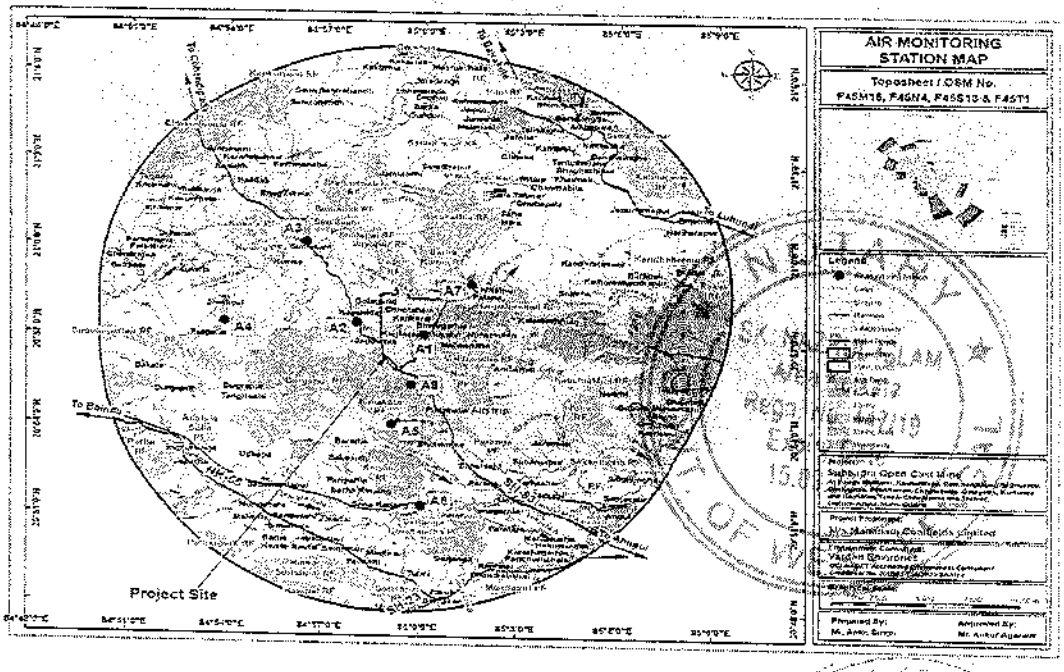
Committee noted that PP vide email date 20/02/2024 submitted its justification wherein it has mentioned that:

Vardan EnviroLab a NABL Accredited Lab based in Gurgaon, Haryana was engaged for carrying out Baseline Monitoring Environmental Study during the period from October to December 2022. The environmental study conducted was in accordance with the guidelines of EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and Central Pollution Control Board, New Delhi.

The locations of the Air Monitoring were as follows:

SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

Stations	Name	Distance in Km	Latitude	Longitude
A1	Project Site	-	20° 57' 36.707" N	84° 59' 28.969" E
A2	Village Tangarasahi	1.27	20° 57' 33.378" N	84° 57' 59.721" E
A3	Village Kosala	1.02	20° 58' 49.664" N	84° 58' 15.542" E
A4	Village Korada	8.4	20° 57' 29.610" N	84° 53' 53.934" E
A5	Village Kaliakata	3.34	20° 54' 11.191" N	84° 59' 6.014" E
A6	Golabandha	8.45	20° 51' 27.956" N	85° 0' 1.713" E
A7	Village Kumunda	1.40	20° 58' 53.749" N	85° 1' 31.201" E
A8	Malibrabmani	1.02	20° 55' 31.211" N	84° 59' 40.727" E



*Laboratory analysis of the test samples collected during the period as stated above in all the location for Benzene were found to be within the prescribed NAAQS Limit. (Lab Report is attached as **Annexure-1**)*

The different techniques Adopted/Protocols for Ambient Air Quality Monitoring are as follows.

S. No	Parameters	Techniques	TechnicalProtocol
1	SulphurDioxide(SO_2)	West&Gaeke	IS:5182(P2)
2	Nitrogen Dioxide(NO_2)	Jacob& Hochheiser	IS:5182(P6)
3	ParticulateMatterPM10	Gravimetric	IS:5182(P23)
4	ParticulateMatterPM2.5	Gravimetric	IS:5182 (P24)
5	Carbon-monoxide as CO	NDIR	IS:5182(P-10)
6	Ammonia	Spectrophotometric Method	IS 5182 (P-25): 2018
7	Arsenic	ICPMS/AAS Method	VEL/ENV/STP/110, Issue No. 01 dated on 01/11/2021
8	Benzene	GC-FID Method	IS: 5182 (P-11): 2006 RA: 2017
9	Benzo(a)pyrene	GC-FID Method	IS: 5182 (P-12): 2004, RA: 2019
10	Lead	ICPMS/AAS Method	IS: 5182 (P-22):2004 RA: 2019
11	Nickel	ICPMS/AAS Method	IS: 5182 (P-26), 2020
12	Ozone	Spectrophotometric Method	IS 5182 (P-9):1974 RA: 2019
13	Mercury as Hg	ICPMS/AAS Method	VEL/ENV/STP/129, Issue No. 01 dated on 01/11/2021

*As mentioned above, the testing of Benzene was done as per IS: 5182 (P-11): 2006 RA: 2017 Standards using the GC-FID Method. (Indian Standard Methods for Measurement of Air Pollution is attached for reference as **Annexure- 2**)*

The test results show that the level of Benzene in all the locations was BLQ (Below Limit of Quantification, Limit of Quantification (LOQ) is 0.5 µg/m³) and was as per NAAQS prescribed limits for Benzene i.e. 5.0µg/m³ (https://cpcb.nic.in/upload/NAAQS_2019.pdf) both within the core and buffer zone of Subhadra OCP of MCL.

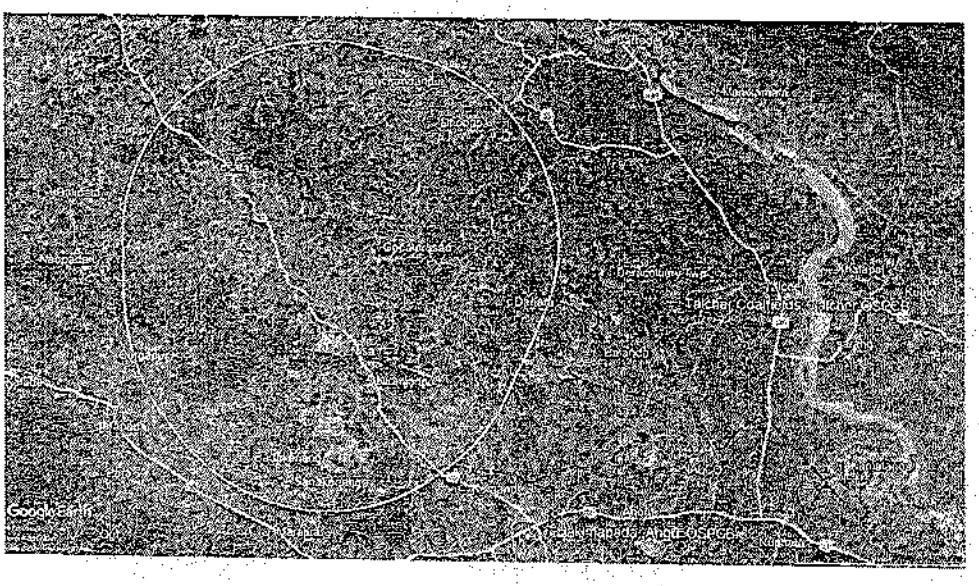
Besides, the study results at 02 below mentioned locations (which are nearer to Subhadra OCP of MCL) of Central Control Room for Air Quality Management - All India, Govt of India (https://airquality.cpcb.gov.in) during the period from October to December 2022, for

Benzene vide CAAQMS (CPCB) were found within the NAAQS Standards. (Reports Attached for Reference as ***Annexure-3 & 4****).*

Locations of CAAQMS (CPCB) monitoring stations:

1) *Hakimapada Angul (Distance of 15 Km from Project Site and 5 Km from Buffer Zone)*
2) *Talcher Coalfields,Talcher (Distance of 17 Km from Project Site and 7Km from Buffer Zone)*

Location Positions



This is to confirm that the baseline data generation and its testing was done as per the approved Protocols for Ambient Air Quality Monitoring.

Hence, *the Benzene concentration in all these villages found to be as per the study and as per CPCB reports (reference CPCB station-Hakim pada Station nearer to Golabandha Village which is approx. 11 km) found to be within prescribed limits during the period October-December 2022.*

The Committee noted that EIA/EMP report is prepared by the NABET Accredited consultant and PP also submitted an undertaking in the form-1 that "data *and information given in the application and enclosures are true to be best of my knowledge and belief and I am aware that if any part of the data and information is found to be false or misleading at any stage, the project will be rejected and clearance given if any to the project will be revoked at our risk and cost.*"Therefore, in the absence of any proof by the complainant the Ministry may take further necessary action as per recommendation already given by the EAC.

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File No.: IA-J-11015/72/2021-IA-II(M)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
***

Dated 06/03/2024

To,

Shital Kumar Sahoo
Mahanadi Coalfields Limited
ANAND VIHAR, BURLA , BURLA SAMBALPUR, SAMBALPUR, ODISHA, , 768020
mcl4cil@gmail.com

Subject: **Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Talcher Sadar and Chhendipada, District Angul (Odisha) – Environmental Clearance – reg.**

Sir/Madam,

This is in reference to your application submitted to MoEF&CC vide proposal number IA/OR/CMIN/445297/2023 dated 12/10/2023 for grant of prior Environmental Clearance (EC) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC23A0101OR5745830N
(ii) File No.	IA-J-11015/72/2021-IA-II(M)
(iii) Clearance Type	Fresh EC
(iv) Category	A
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vi) Sector	Coal Mining
(vii) Name of Project	Subhadra Open Cast Project
(ix) Location of Project (District, State)	ANUGUL, ODISHA
(x) Issuing Authority	MoEF&CC
(xii) Applicability of General Conditions	No

3. The proposal is for Environmental Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Talcher Sadar and Chhendipada, District Angul (Odisha).

4. Terms of Reference (ToR) was granted vide letter no. J-11015/70/2021-IA. II(M) dated 22.11.2021 and Amendment in

ToR vide letter dated **28.02.2022.** Public Hearing was conducted on 25.08.2023 under the Chairmanship of Shree Pratap Pritimaya, O.A.S. (S) ADM, Angul. Proposal for EC with EIA/EMP report was submitted on PARIVESH portal.

5. Project Proponent alongwith QCI NABET consultant (Vardan Environet) made the detailed presentation in the 3rd & 6th EAC meeting held during 16-17 November, 2023 & 17th Jan 2024, respectively and interalia provided the following information to the EAC:

(i) The Subhadra Open Cast Coal Mine of MCL is located in Kankarei, Pirakhaman, Balichandrapur, Raijharan, Kaunsichipa, Golagadia, Chhotabereni, Kumunda, Bhalugadia, Baghuabol villages and Jaipur RF Tehsil Talcher and Chhendipada, District Angul (Odisha).

(ii) The project area is covered under Survey of India Topo sheet No. F45S13 & F45T1 (RF 1:50000) and is bounded by the geographical coordinates ranging from 20°55'56.225" N and 20°58'47.344" N and longitudes84°58'42.383" E and 85°0'50.476" E. The DGPS coordinates of the ML area are given in Table 2.1 of EIA Report.

(iii) Project does not fall in the Critically Polluted Area (CPA), where the MoEF&CC's vide its OM dated 13thJanuary, 2010 has imposed moratorium on grant of Environment Clearance.

(iv) There are no National Parks, eco-sensitive Zones, within 10 km radius.

(v) The Utkal A (Subhadra) Coal Mine has been allotted by Ministry of Coal vide order no NA-103/1/2021-NA dated 18.11.2021.

(vi) 125.24ha (Reserve Forest Land: 0.75 ha, Govt. Revenue Forest area: 124.49 ha) of forest land have been reported to be involved in the project. Applications for Forest Clearance was submitted vide Proposal No. FP/OR/MIN/150133/2021 dt. 25.01.2022. Stage I FC has been recommended in the FAC meeting held on 20.10.2023. Stage I FC has been granted vide letter no -8-06/2023-FC dated 05.12.2023.

(vii) There is no national park or wildlife sanctuary within the study area. However, due to presence of Schedule-I Fauna application submitted to DFO, Angul for approval of site specific wild life management plan.

(viii) Mining plan (including Progressive Mine closure plan) has been approved by the MCL Board vide letter no. MCL/SBP/CS/BD-257/Exct/2023/13262 dt- 13.05.2023.

(ix) Method of mining will be Open Cast Mechanized Mining. With due consideration to geo-mining characteristics of the deposit, the mine is proposed to be worked by shovel-dumper combination for OB excavation and Surface Miner for coal winning and loading by Front End Loader.

(x) LAND USE DETAILS OF MINE: Pre Mining land use details

S. No	Type of Land	Within ML Area (Area in Ha)	Outside ML Area (Area in Ha)	Total (Area in Ha)
1	Agricultural	800.50	Nil	800.50
2	Forest	125.24	Nil	125.24
3	Wasteland	NA	NA	NA
4	Grazing land	58.67	Nil	58.67
5	Water bodies	6.28	Nil	6.28
6	Settlements	NA	NA	NA
7	Others (Specify)			
8	Old Excavation Area (East Quarry)	NA	NA	NA
9	Old Excavation Area (West Quarry)	NA	NA	NA

10	Old OB Dumps	NA	NA	NA
11	Roads	0.25	Nil	0.25
12	R & R Colony	NA	NA	NA
13	Staff Colony	NA	NA	NA
14	Green Belt	NA	NA	NA
15	Balance Area	NA	NA	NA
16	Barren land**	92.64	Nil	92.64
17	Township**	Nil	Nil	Nil
18	Community/others use area**	28.27	Nil	28.27
19	Total Project Area	1111.85	Nil	1111.85

**** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Barren land of 92.64, Community/others use area of 28.27 Ha.)**

Post Mining

S. No.	Land Use	Land Use (End of Life)	Land Use (ha)				
			Plantation	Water Body	Public use	Undisturbed	Total
1	External OB Dump	24.17	0	0	0	0	24.17
2	Top Soil Dump	8.97	0	0	0	0	8.97
3	Excavation	881.28	0	0	0	0	
4	Roads, buildings Infrastructure	Roads: 15.72	0	0	15.72	0	118.16
		Township: 27.12	1.26	0	25.86	0	
		Infra: 75.32	0	0	0	0	
5	Green Belt	6.89	0	0	0	0	6.89
6	Undisturbed Area	0	0	0	0	0	0
7	Safety Zone	11.79	11.79	0	0	0	11.79
8	Rationalization Area	25.34	25.34	0	0	0	25.34
9	Diversion / Below River / Nala /Canal	8.42	0	0	8.42	0	8.42
10	Water Harvesting	35.36	0	35.36	0	0	35.36
11	Staff Colony		0	0	0	0	
12	Backfilled Area**	715.24	182.52	0	0	0	715.24
13	Excavated Void Without Plantation**	130.68	0	0	0	0	130.68
14	Coal Stock Yard**	9.76	0	0	0	0	9.76
15	Embankment**	11.49	0	0	11.49	0	11.49
16	Explosive Magazine**	5.58	0	0	0	0	5.58
Total Area		**1111.85**	**220.91**	**35.36**	**61.49**	**0**	**1111.85**

** (As per the above table the total land use area is 1111.85 Ha. The other land use types are Backfilled Area of 715.24Ha., Excavated Void without Plantation of 130.68 Ha., Coal Stock Yard of 9.76 Ha., Embankment of 11.49 Ha., and Explosive Magazine of 5.58 Ha.)

(xi) Total Geological Reserve reported in the mine lease area is 1142.67MT with 790.95MT Mineable Reserves by opencast mining. Out of total mineable reserve of 790.95MT, 768.83 MT are available for extraction. Percent of extraction is 67%.

(xii) Thickness of seams to be worked on: Opencast mining method is proposed for extraction of coal seam XI to IID. The effective thickness of the seams XI to IID is varying from 0.06m to 75.90m.
Grade of coal: Wt. Avg. G-13 (GCV – 3690 Kcal/Kg)

(xiii) Stripping Ratio: Only In-situ: 0.80 With Re-handling: 0.93

(xiv) Average gradient: - 3.480(1 in 16.44)

(xv) Maximum thickness of seams: Seam XI to IID varies from 0.06m to 75.90 m

(xvi) The project has 1 external OB dumps (temporary) in an area of 24.17 ha with 88m height and103.72Mm3 of OB.1 internal OB dump in an area of 715.24ha with 613.18 Mm3 (Insitu) 103.72 Mm3 (Re handling) of material is envisaged in the project.

(xvii) Total quarry area is 881.28 ha out of which backfilling will be done in 715.24 ha up to 30m while final mine void will be created in an area of 130.68 ha with a depth of 160 m RL and 35.36 ha water body. Backfilled quarry area 182.52 ha shall be reclaimed with plantation, 495.27 ha agriculture land and 37.45 ha will be returned as forest land.

(xviii) Transportation of coal:
In pit: Initially through Dumper and in Pit Conveyor after few years.
Surface to siding: From surface hopper (20 No.) by belt conveyor (18 Nos.)
Siding to loading: Through two Rapid Loading System (RLS) (02 Nos)
Capacity 5000tonne each
Quantity being transported by Road/Rail/Conveyor: As per approved mining plan
Transportation will be carried out as per Approved Mining Plan.

(xix) Reclamation has been planned in an area of 965.45ha, comprising of 538.17 ha Agricultural use, 220.91 ha Plantation, 35.36 ha Water Body& 125.24 ha Forest Land return Area, Nala diversion, Township &Embankment. &130.68 ha of final void area will be left unplanted.

(xx) Life of mine is 36 Years (including 2 Year of construction)

(xxi) Coal linkage - The mine has been allotted to MCL by the Ministry of Coal vide order no NA-103/1/2021-NA dated 18.11.2021. There shall be no restriction to carry on mining operations for own consumption, sale or for any other purpose.

(xxii) The Primary baseline data for specific micro-meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Post Monsoon season i.e. October to December, 2022.

(xxiii) Public hearing for the project of 25 MTPA capacity in an area of 1111.85ha was conducted on 25.08.2023 at Ground near Pirakhaman Primary school under Kankarei gram Panchayat of Chhendipada Tehsil of Angul District under the Chairmanship of Shree Pratap Pritimaya, O.A.S. (S) ADM, Angul. Major issues raised in the Public Hearing & appropriate action to address the issues raised in the Public Hearing have already been taken, proposed to be taken are given in the action plan prepared and mentioned in Chapter -7 in Final EIA/EMP report.

(xixv) No court cases, violation cases are pending against the project of the PP.

(xxv) The project does not involve violation of the EIA Notification, 2006 and amendment issued thereunder since it is a Greenfield project.

(xxvi) Out of the total area of 1111.85 hectares of land to be acquired for the project 696.95 hectares are private land and the remaining areas are Government and Forest lands. While the acquisition of private land has a direct bearing on the personal social and economic status of the land owners. About 1853 families have been identified for displacement due to Subhadra OCP. The R & R benefits will be provided as per norms under R& R policy-2006 of Government of Odisha.

(xxvii) **Benefit of the Project:** Employment Generation-Proposed coal mine shall provide an opportunity of direct employment to 2108 persons and total indirect employment of approx. 5000 persons. The project is reported to be beneficial in terms of energy security for the development of country. Total cost of the project is Rs. 3955.65 Crore. Cost of production is Rs 678 per tonne., Fund for the CSR will be allocated based on 2% of the average net profit of the Company for the three immediately preceding financial years or Rs. 2.0 per tonne of coal production of previous year

whichever is higher. Different peripheral development and community development works will be taken up. R&R cost Rs 405.46Crore. Environment Management Cost was: Capital Rs 2295 Lakh; & Recurring Rs. 201Lakh.

6. Proposal was earlier considered by the EAC in its 3rd meeting held during 16.11.2023-17.11.2023. EAC after detailed deliberation deferred the project and sought additional information. Project Proponent submitted the information as sought by the EAC on the PARIVESH portal, accordingly proposal was considered by the EAC in its 6th meeting held during 17-18 January 2024. During the meeting the Committee deliberated on various issues related to project including issues raised during PH, EMP, Grazing land, plantation, transportation of mineral, water requirement, diversion of nallha. Mining lease area etc. EAC after detailed deliberation **recommended** the Environmental Clearance for Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha of M/s Mahanadi Coalfield Limited located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Tachler Sadar and Chhendipada, District Angul (Odisha) with the specific conditions and standard EC conditions (Annexure 1) under the provisions of EIA Notification, 2006 and its amendments. Detailed deliberation, observation and recommendation of the EAC are available on the PARIVESH website.

7. Based on the representation received the proposal was again considered in 7th EAC meeting held during 12-14 February, 2024 wherein the Committee recommended that , *the Ministry may take further necessary action as per recommendation already given by the EAC.*

8. The MoEF&CC has examined the proposal in accordance with the provisions contained in the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the EAC hereby accords *Environmental Clearance to* **M/s Mahanadi Coalfield Limited** *for* **Subhadra Open Cast Mine with production capacity of 25 MTPA in mine lease area of 1111.85 ha located at Village Gopal Prasad, Kumuda, Nisha, Kankarei, Raijharan, Nisha P.S Angul, Tehsil Talcher Sadar and Chhendipada, District Angul (Odisha)** with the specific conditions and standard EC conditions (Refer: Annexure-I) under the provisions of EIA Notification, 2006 and its amendments.

9. The proponent shall obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

10. The Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

11. The PP is under obligation to implement commitments made in the Environment Management Plan, which forms part of this EC.

12. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

13. The coal company/project proponent shall be liable to pay the compensation against the illegal mining, if any, and as raised by the respective State Governments at any point of time, in terms of the orders dated 2nd August, 2017 of Hon'ble Supreme Court in WP (Civil) No.114/2014 in the matter of 'Common Cause Vs Union of India & others.

14. The concerned State Government shall ensure no mining operations to commence till the entire compensation for illegal mining, if any, is paid by the project proponent through their respective Department of Mining & Geology, in strict compliance of the judgment of Hon'ble Supreme Court. This environmental clearance shall not be operational till such time the project proponent complies with the above-said judgment of Hon'ble Supreme Court, as applicable, and other statutory requirements.

15. General Instructions:

(i) The project proponent shall prominently advertise it at least in two local newspapers of the District or State, of which

one shall be in the vernacular language within seven days indicating that the project has been accorded environment clearance and the details of MoEF&CC website where it is displayed.

(ii) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn must display the same for 30 days from the date of receipt.

(iii) The project proponent shall have a well laid down environmental policy duly approved by the Board of Directors (in case of Company) or competent authority, duly prescribing standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions.

(iv) Action plan for implementing EMP and environmental conditions along with responsibility matrix of the project proponent (during construction phase) and authorized entity mandated with compliance of conditions (during operational phase) shall be prepared. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Six monthly progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six-Monthly Compliance Report.

(v) Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.

(vi) The Regional Office of this MoEF&CC shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

16. This issue with an approval of the Competent Authority.

<u>Copy To</u>

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. The Additional Principal Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A-31, Chandershekharpur, Bhubaneswar- 751023 (Odisha).
3. The Secretary, Department of Environment & Forests, Government of Orissa, Secretariat, Bhubaneswar (Odisha).
4. The Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 32
5. The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118, Nilkanthanagar, Unit VIII, Bhubaneshwar - 751012 (Odisha).
6. District Collector, Angul, Government of Odisha
7. PARIVESH portal

Annexure I

Specific EC Conditions for (Mining Of Minerals)

I. Specific Conditions:

S. No	EC Conditions
1.1	*Any activity of the forest land shall only be carried out after obtaining necessary forest clearance.*
1.2	*PP to obtain the CTO for 25 MTPA (peak) capacity after grant of EC.*
1.3	*PP shall deploy electric vehicles to the extent of 50% of transportation fleet for evacuation of coal through road up to Balaram Siding (Approx. 11 KM) till commencement of rail evacuation system with CHP of Subhadra OCP which is likely to commence from the fourth year of mining operations. PP shall monitor the EV usage through installation of adequate number of CCTV cameras. Till such time transportation from a dedicated road and village road shall not be used for the same.*
1.4	*PP shall adopt 6 ponds outside the lease area in different village and carry out the various activities for their protection and maintenance as proposed in the plan submitted for the same to Ministry The budget earmarked for water conservation plan for these ponds is Rs. 1.00 crores shall be kept in a spate account and audited annually. PP while submitting the compliance report to Regional Office and on Parivesh Portal as the case may be also submit evidence of implementation of the plan including geo tagged photographs.*
1.5	*PP shall develop greenbelt on approximately 38% of the lease area, i.e. on 426.15 ha of land as proposed in the plantation plan submitted to the Ministry and maintain a survival rate of at least 70% (after 10 years of the plantation) by carrying out gap plantation in case of mortality. The budget earmarked for the plantation shall be kept in a separate account. PP should annually submit the audited statement of expenditure along with proof of activities viz. photographs (before & after with geolocation date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation etc. to the Regional Office of MoEF&CC and on PARIVESH Portal as the case may be for the activities carried out during previous year. Third party monitoring of the plantation shall be done preferably by an institution of MoEFCC (eg ICFRE).*
1.6	*PP shall maintain atleast10 mtrs width tree plantation of broad leaved species and wind break/greenshield of about 10 mts height along the boundary of coal storage yard.*
1.7	*PP shall implement the activities-wise proposed to address the issues raised during Public Hearing. The budget earmarked for the same is Rs.1235 lakhs and the same shall be kept in a separate account and audited annually. The details of activities undertaken, amount spent along with documentary proof shall be a part of report to be submitted to IRO, MoEF&CC. The maintenance of all activities shall be covered through recurring cost of Public Hearing, and continued as a part of CSR budget.*
1.8	*PP shall ensure that all type of plastic waste generated from the mines shall be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. In pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic(SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.*
1.9	*All the mitigation measures committed / envisaged in the EIA/EMP report and subsequent submission (ANNEXURE 2) shall be implemented which also includes i). Fog cannon*

S. No	EC Conditions
	installation: to mitigate dust emissions, ii) Increased greenbelt development budget: aligned with the expanded plan and iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. The budget as per revised EMP is Rs 2995 Lakh (Capital) and Rs 201 Lakh (Recurring) shall be kept in a separate account. PP should annually submit the audited statement along with proof of activities carried to the Regional Office of MoEF&CC and PARIVESH Portal as the case may be for the activities carried out during previous year.
1.10	*PP to install 2 continuous ambient air quality monitoring stations at suitable locations preferably on village side with consultation of SPCB. The real time data so generated shall be uploaded on company website and linked with website of CPCB &SPCB. In addition, data should also be displayed digitally at entry and exit gate of mine lease area for public display.*
1.11	*PP shall implement Effluent Treatment Plant for wastewater generated from workshop and Sewage Treatment Plant for its colony. No untreated water shall be discharged from mine boundaries to ponds/nallah/river.*
1.12	*PP to install solar lights along the road used for transportation of minerals also take up installation of solar lights in rural areas with its maintenance within the study area of 10 km radius buffer zone within one year.*
1.13	*Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented. The prevention measure for burns, malaria and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.*
1.14	*PP shall conduct feasibility studies for assessment of voids for backfilling of ash and mixing of ash with overburden, taking up backfilling ash and OB mixing activities during operations as well as post closure of mines in line with the Fly Ash Utilization Notification, 2021.*
1.15	*Hon'ble Supreme Court in its Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India &Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition along with geo tagged photographs shall be sent to the Regional Office of the MoEF&CC.*
1.16	*PP shall strengthen the existing Environment Management division of the unit under intimation to the IRO*

Standard EC Conditions for (Mining of minerals)

1. Statutory Compliance

S. No	EC Conditions
1.1	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
1.2	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
1.3	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. TThe implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
1.4	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee prior to start/commencement of mining operations/production
1.5	The project proponent shall obtain the necessary permission from the Central Ground Water Authority
1.6	Solid/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.
1.7	Permission of power supply to be taken from the concerned authority for meeting power demand of the project site.
1.8	The maximum production or peak production at any given time shall not exceed the limit as prescribed in the EC.
1.9	Validity of Environment Clearance is as per life of the mine mentioned in EC letter or 30 years as per EIA Notification, 2006 and its amendments thereon
1.13	All the conditions stipulated in previous Environment Clearance conditions should be strictly complied within certain timeline

2. Air Quality Monitoring And Mitigation Measure

S. No	EC Conditions
2.1	Continuous ambient air quality monitoring stations as prescribed in the status be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. The new CAAQMS should be installed with expansion.

S. No	EC Conditions
2.2	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
2.3	Transportation of coal, to the extent, if permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun/ Fog cannon etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
2.4	The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
2.5	PP to install solar lights along the road used for transportation of coal to avoid the accidents at night and also seek its maintenance.
2.6	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.
2.7	Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
2.8	Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.
2.9	Adequate measures on EMP should be analyzed on annual basis to assess the trend of air pollution data from continuous monitoring station and quarterly report shall be generated and submitted with 6 monthly compliance reports to RO, MoEF&CC.
2.10	Effective safeguard measures for prevention of dust generation and subsequent suppression like regular water sprinkling shall be carried out in areas prone to air pollution. The Fugitive dust emission from all sources shall be regularly controlled by installation of required equipment's. It should be ensured that air pollution level confirm to the standards prescribed by the MOEFCC/CPCB
2.11	Adequate number of Fog canon (mist sprayer) shall be installed to reduce the impact of air pollution at dust generating sources with time bound action plan.
2.12	PP should Install Wind breaker/shield arrangement along the railway siding for reducing the dust propagation in upwind direction.

S. No	EC Conditions
2.13	Post environmental closure third party monitoring by reputed instituted in air quality, water, land & soil etc shall be carried out and analysed with EMP measures at regular interval. A suitable recommendation in this regard, shall be furnished to IRO, MoEF&CC for compliance. The data used for analysis shall be obtained from continuos AQMS, site specific water regime. Also third party shall analyses the implementation of river diversion, meeting to the requirement of project report.
2.14	Comparison of average monthly temperature of pre and post mine operation after obtaining EC shall be elaborated for post three years and a record to be maintain at regular interval.

3. Water Quality Monitoring And Mitigation Measures

S. No	EC Conditions
3.1	The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.
3.2	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012/1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
3.3	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
3.4	Monitoring of water quality upstream and downstream of river including pons, lakes, tanks shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.
3.5	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
3.6	Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon, and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.
3.7	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming

S. No	EC Conditions
	to the specific requirement (standards).
3.8	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP /STP needs to be provided.
3.9	The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.
3.10	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
3.11	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A rivarine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.
3.12	Quality of polluted water generated from the operations which include COD and acid mine drainage and metal contamination shall be monitored along with TDS, DO, TSS. The monitored data shall be uploaded on the website of the company as well as displayed at the site in public domain.
3.13	Domestic water shall be providing to the residents/villages which are coming under the zone of influence of the project due to ground water extraction and mining operation by installing adequate number of RO plants with proper supply line and Taps within 2 years
3.14	No obselete technologies for sewage treatment shall be implemented. Construction of Sewage Treatment Plant with latest technology should be completed within 2 years and treated water shall be reused for plantation. CTE and CTO of STP shall be obtained as per the norms.

4. Noise And Vibration Monitoring And Prevention

S. No	EC Conditions
4.1	Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
4.2	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS.

S. No	EC Conditions
4.3	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.

5. Mining Plan

S. No	EC Conditions
5.1	5- Star Rating is mandatory to obtaine certification as per guidelines of Mininstry of Coal
5.2	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.
5.3	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
5.4	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.
5.5	Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.
5.6	PP shall adopt mining method by preferably using surface miners for the project and silo loading through in-pit conveyor should be adopted
5.7	Tranportation of coal till Railway Siding shall be developed to avoid transportation through Road

6. Land Recalmation

S. No	EC Conditions
6.1	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shall be submitted to MOEFCC Regional Office (RO).
6.2	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Post-mining land be rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.
6.3	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining"/"post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.

S. No	EC Conditions
6.4	Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
6.5	Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office.
6.6	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.
6.7	Top soil should be stored separately at marked area and necessary vegetation shall be maintained to avoid any entrainment of dust
6.8	Progressive backfilling of mine and progressive reclamation of OB dump shall be done
6.9	Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoic air born of particles
6.10	PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads/ manufacture of artificial sand, aggregates/ use for farmers etc.)
6.11	All approach roads to mine and all other roads which are in regular use should be black topped. The maintenance of road shall be done by PP in collaboration with state government
6.12	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC.

7. Green Belt

S. No	EC Conditions
7.1	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
7.2	Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads. And Plantation should also be carried out in nearby area with consent of forest department and gram panchayat within 10 km radius with its proper maintanance

8. Public Hearing And Human Health Issues

S. No	EC Conditions
8.1	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on six-monthly basis.
8.2	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.
8.3	Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.
8.4	Implementation of the time bound action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the time bound action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.
8.5	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-IA.II (M), dated 29th October, 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.
8.6	PP to conduct need based assessment survey of the area to for in order to decide the activities to be carried under the CSR and to provide detail of the activity carried out with adequate budgetary provision and time bound action plan.
8.7	PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
8.8	Permanent Health care facilities of Hospital should be established within 5 km of project boundary

S. No	EC Conditions
	for the local people.
8.9	PP must ensure an emergency action plan during pandemic in order to provide assistance to the nearby villages located within the 10 km radius buffer zone (If required)
8.10	PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year
8.11	PP to take measure for installation of Renewable Energy sources in nearby area falling within 10 km radius
8.12	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours
8.13	Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.
8.14	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.
8.15	Compensation of the land acquired for the project shall be settled as per the R&R Policy within fixed timeline

9. Corporate Environment Responsibility

S. No	EC Conditions
9.1	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environmental/forest/wildlife norms/conditions and/or shareholders/stake holders.
9.2	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
9.3	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
9.4	Self environmental audit shall be conducted annually. Every three years third party environmental

S. No	EC Conditions
	audit shall be carried out.
9.5	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority

10. Miscellaneous

S. No	EC Conditions
10.1	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
10.2	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
10.3	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
10.4	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
10.5	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
10.6	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
10.7	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
10.8	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
10.9	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
10.10	No further expansion or modifications in the plant shall be carried out without prior approval of the

S. No	EC Conditions
	Ministry of Environment, Forests and Climate Change.
10.11	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
10.12	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
10.13	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
10.14	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
10.15	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.

Additional EC Conditions

N/A

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.09.2024
GOVT. OF WEST BENGAL

Annexure 2

Budgetary Provision for Public Hearing issues and EMP

Public Hearing Budget

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year- 2	Year- 3	Year- 4	Year- 5	Total
Air & Water Pollution control measures	Different measures to control Air pollution/Water Pollution like utilization of water sprinklers, fixed sprinklers, fog canon etc.	Kosala village (NW), Sandhapal (NW) Natada (E), Ambapal (E)	80	80	80	80	80	400
Infrastructure development	Construction of Road, School, Solar Street lights supply, Cremation ground etc.	Villages - Kusumpal, Mallibandh, Ambapal,	50	50	50	50	50	250
Plantation	Plantation - Avenue & Community etc.	Kankarei, Pirakhamana, Raijharan, Balichandrapur	5	5	5	10	10	35
Healthcare	Health Care and vaccination,	Health centres - Angul DHH,	50	50	50	50	50	250

Proposed Activities under Public Hearing Commitment Scheme		Place of Implementation	Phasing of Allocated proposed PH commitment Budget (Rs. Lakh)					
			Year-1	Year- 2	Year- 3	Year- 4	Year- 5	Total
	awareness camp, mobile medical camp, Immunization, medicine etc.	Kosala CHC, Chhendipada CHC, Mandapada PHC **Villages** - Nisha, Kosala, Raijharan, Balichandrapur, Sandhapal						
Water & Sanitation	Drinking Water Supply and Construction of wells, ponds, hand pumps and tube wells	Village - Kumunda, Ambapal, Natada,	30	30	30	30	30	**150**
Education & Livelihood Generation	Skill Development Training, Support to schools and other educational institutions	Kankarei High School, Kosala High School, Raijharan High School	30	30	30	30	30	**150**
Total			**245**	**245**	**245**	**250**	**250**	**1235**

NOTARY SK. NAZRUL ISLAM Advocate Kolkata Regn. No. 44712 Expiry Date 15.09.2024 GOVT. OF WEST BENGAL

NOTARY KOLKATA ASISH KR. SEN NOTARY Regn. No. 13(-)2019 EXPIRY DATE 31.12.23 GOVT. OF INDIA

(B) EMP budgetary provision (Capital and Recurring)

	Activity / Item	Units	Unit Cost	Capital Cost	Recurring Cost
1.	**Air Pollution Control**				
a	Truck Mounted Tankers with Mist Spray Sprinkling Arrangement for Haul Roads/Mine/Safety zone etc.	2	35	70	10
b	Mobile Water Mist Spray Sprinkler / truck mounted fog cannon for coal transportation route	1	50	50	6
c	Fixed type Mist spray at Coal stock pile/crusher/Transfer Points etc.	2	15	30	5
d	Wind Barrier Wall & Vertical Greenery System at proposed Railway Siding	LS	LS	30	4
e	Fixed fog cannons at coal stockyard	4	10	40	4
f	CAAQMS	2	15	30	3
	Sub Total			**250**	**32**
2.	**Water Pollution Control**				
a	Garland Drain	LS	LS	60	10
b	Effluent Treatment Plant (ETP)	1	LS	90	9
c	Sewage Treatment Plant (STP)	1	LS	40	6
d	Mine Water Sedimentation Pond & Pumps	1	20	20	5
	Sub Total			**210**	**30**
3.	**Noise Control**				
a	Noise Pollution Control Measures	LS	LS	100	20
	Sub Total			**100**	**20**

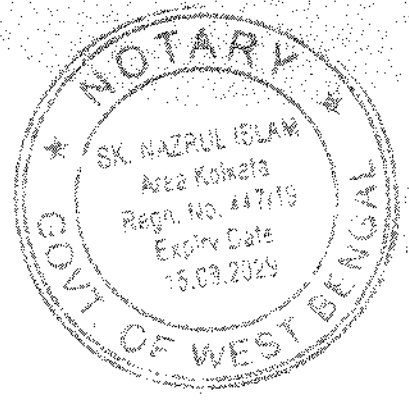
4.	**Conservation of Natural Resources**				
a	Solar lighting arrangement	50	0.7	35	2
b	Pond Conservation of 06 ponds outside the lease area	LS	LS	100	5
c	Soil Preservation (Biological Reclamation)	LS	LS	25	2
Sub Total				**160**	**9**
5.	**Reclamation & Nursery Development**				
a	Green Belt Development & Avenue Plantation etc.	LS	LS	500	55
Sub Total				**500**	**55**
6.	**Fire Fighting Equipment**				
a	Fire tender	1	100	100	10
b	Advance Fire fighting equipment, Fire extinguisher, smoke detectors (for office and workshop), fire Automatic Fire Detection and alarm system etc.	10	30	300	30
Sub Total				**400**	**40**
7.	**Occupational Health**				
a	Personnel Protection Equipment (Ear muffs/plugs, Goggles, Gloves, Helmets, Dust Mask, Safety Boots)	1500	LS	50	10
Sub Total				**50**	**10**
8.	**Miscellaneous**				
a	Awareness Programme (Display Boards (Digital) etc.	-	LS	30	2
b	CCTV camera for monitoring loading and transport, mine blast, fire, dust generation monitoring,	LS	LS	10	1

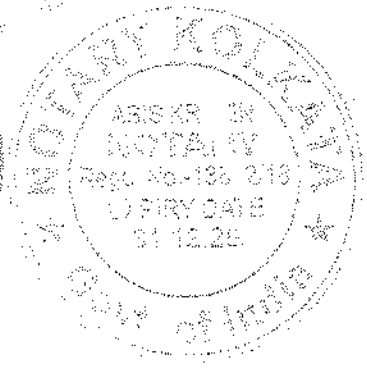
NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44/1
Expiry Date
15.05.2025
GOVT. OF WEST BENGAL

ASSISTANT NOTARY
Regd No-13L 2012
EXPIRY DATE
GOVT. OF INDIA

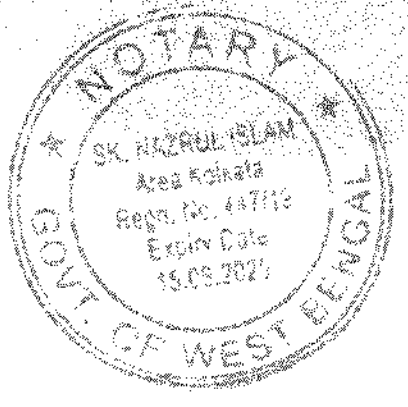
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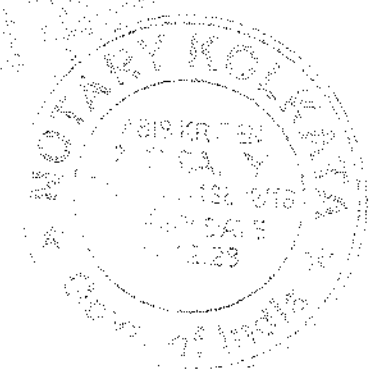
c	Equipment for Plantation O & M like water tanker, tractor with trolley, other equipment	LS	LS	50	2
Sub Total				**90**	**5**
9.	Public Hearing Budget			**1235**	**0**
Total Cost (Rs. Lakhs)				**2995**	**201**





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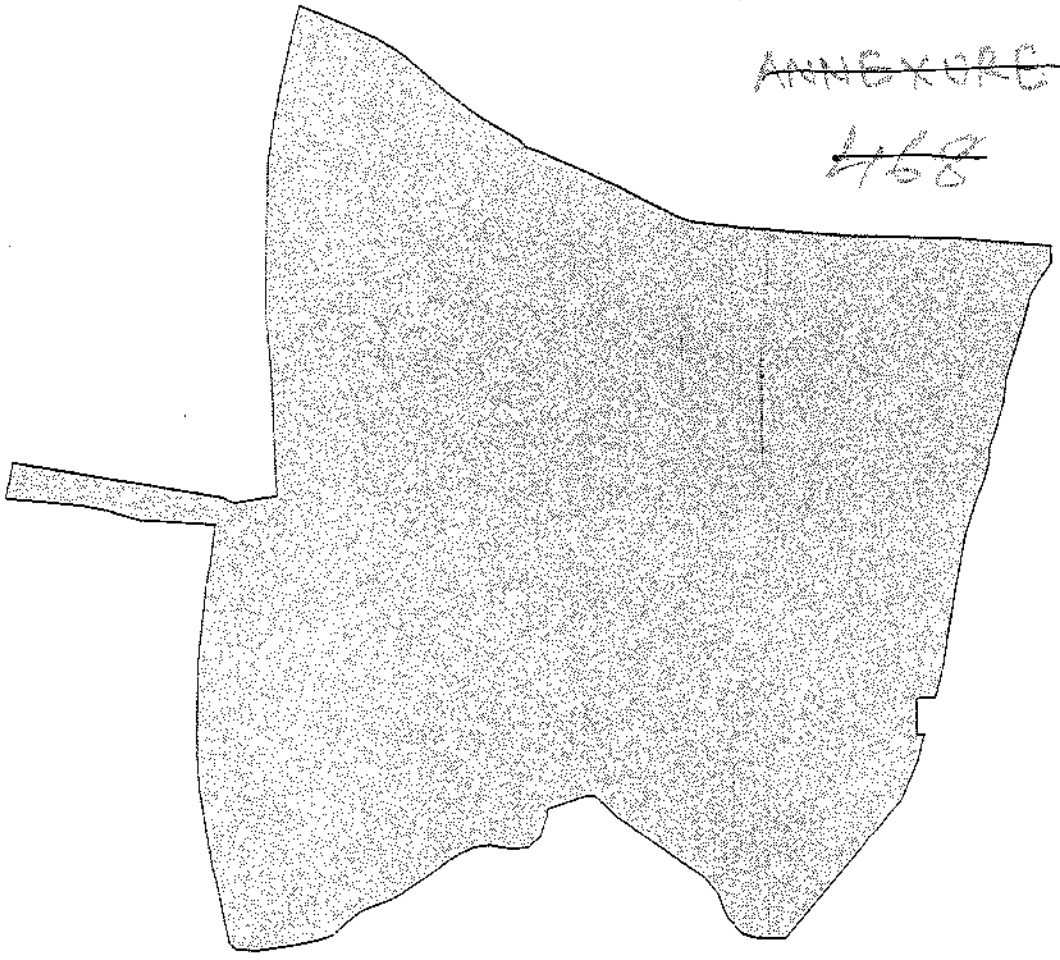


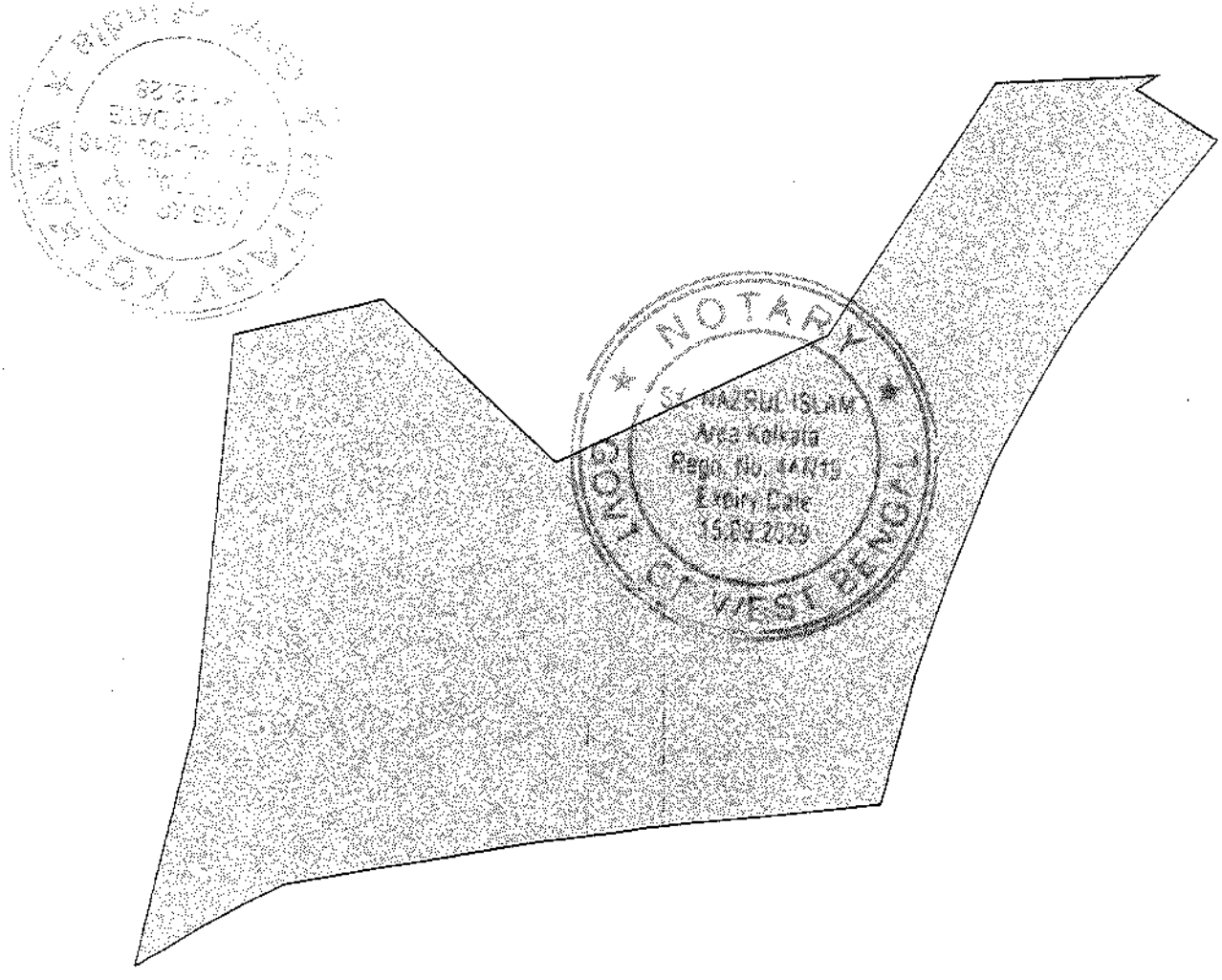


ANNEXURE-'P'

~~ANNEXURE-'O'~~

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ANNEXURE-I

~~769~~ ~~ANNEXURE-I~~ **ANNEXURE : VI**

CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2015 & OHSAS 45001:2018 Certified Company, Empanelled with CCCL, ORSAC and SPCB of Govt. of Odisha
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization. Empanelled with PCCF(Wildlife) &CWLW,Odisha
Enlisted in Construction Industry Development Council (CIDC) established by the Planning Commission (Govt. of India)
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986 & NABL Accredited Laboratory

Report no. - CEMC/MMRDL/060323/A1 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Sl. No.	Location →	Core Zone (R&R Colony)					Near Sana Mahitala Village					Hariatala Village				
	Date of sampling↓	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³
1	1 - 02-12-2022	69.5	38.4	15.4	19.0	-	56.3	31.3	10.1	13.1	-	56.4	32.5	6.0	12.3	-
2	4 - 05-12-2022	66.8	37.0	16.3	20.5	-	63.5	35.5	10.3	11.1	-	58.0	33.0	7.3	11.1	-
3	9 - 10-12-2022	72.6	43.1	13.6	12.7	-	60.9	32.5	8.8	10.7	-	50.1	27.9	BDL	10.7	-
4	12 - 13-12-2022	71.9	43.4	14.8	18.5	-	65.8	37.1	10.3	11.9	-	59.4	31.7	6.8	10.7	-
5	16 - 17-12-2022	77.2	44.6	14.3	15.8	-	64.7	35.9	7.5	12.6	-	57.7	32.2	6.5	11.9	-
6	19 - 20-12-2022	76.9	43.5	13.3	22.5	-	65.9	38.4	7.3	9.9	-	59.4	35.4	BDL	10.7	-
7	24 - 25-12-2022	78.5	44.6	13.8	18.5	-	68.2	38.4	10.3	10.7	-	55.7	30.4	7.3	10.7	-
8	27 - 28-12-2022	67.7	39.2	15.3	21.8	-	58.7	32.0	7.3	15.0	-	48.3	28.0	BDL	9.5	-
9	1 - 02-01-2023	65.3	35.5	13.7	20.3	-	67.7	38.5	9.5	13.5	-	56.7	32.9	BDL	9.7	-
10	4 - 05-01-2023	69.8	39.6	13.5	22.4	-	65.4	37.4	7.3	14.4	-	56.5	33.3	BDL	12.3	-
11	9 - 10-01-2023	66.0	38.0	12.0	15.2	BDL	57.9	33.0	11.3	14.8	BDL	58.4	32.5	7.1	12.3	BDL
12	12 - 13-01-2023	72.7	40.9	15.9	17.8	BDL	59.2	35.2	7.1	10.2	BDL	54.7	30.8	8.1	11.4	BDL
13	16 - 17-01-2023	77.2	43.4	14.2	18.2	-	55.5	31.7	8.1	11.0	-	51.2	28.5	BDL	9.3	-
14	19 - 20-01-2023	72.6	42.8	14.7	16.5	-	67.6	38.2	7.8	13.1	-	52.4	30.1	BDL	11.9	-
15	24 - 25-01-2023	74.7	40.8	12.7	17.7	-	59.5	35.7	8.1	12.7	-	49.3	26.7	BDL	9.7	-
16	27 - 28-01-2023	78.3	46.4	13.0	16.1	-	56.8	30.5	9.8	11.8	-	48.0	28.0	BDL	11.8	-
17	1 - 02-02-2023	66.0	36.1	14.5	21.5	-	59.7	34.3	7.1	10.6	-	57.9	34.3	6.1	9.7	-
18	4 - 05-02-2023	73.4	40.4	14.0	19.5	-	63.1	38.3	10.6	12.2	-	54.0	32.5	BDL	11.0	-
19	8 - 09-02-2023	78.2	42.9	14.0	22.0	-	63.8	37.9	11.3	13.9	-	54.0	32.3	BDL	11.0	-
20	11 - 12-02-2023	75.7	43.2	16.4	18.6	-	62.5	34.5	10.6	14.8	-	60.8	36.2	BDL	11.9	-
21	15 - 16-02-2023	71.3	41.2	12.2	13.1	-	65.9	36.4	8.7	14.8	-	47.9	26.0	7.7	9.7	-
22	18 - 19-02-2023	69.9	38.7	12.7	17.8	-	67.0	35.9	11.4	13.9	-	57.7	34.2	BDL	11.0	-
23	22 - 23-02-2023	70.4	39.2	12.2	13.5	-	62.2	34.2	7.4	14.0	-	49.2	27.5	BDL	10.1	-
24	25 - 26-02-2023	65.7	37.9	13.5	16.5	-	55.7	34.2	11.4	14.0	-	48.7	28.3	6.3	11.8	-
	Minimum	65.3	35.5	12.0	12.7	-	55.7	30.5	7.1	9.9	-	47.9	26.0	BDL	9.3	-
	Maximum	78.5	46.4	16.4	22.5	-	68.2	38.6	11.4	15.0	-	60.8	36.2	8.1	12.3	-
	Average	72.3	41.0	13.9	18.2	-	62.5	35.3	9.2	12.7	-	54.2	31.0	BDL	10.9	-
	98 percentile	78.4	45.8	16.4	22.5	-	68.0	38.5	11.4	14.9	-	60.2	35.8	7.9	12.3	-

Note: BDL of NH3 <20 µg/m3 and SO2 <4 µg/m3
BDL: Below Detection Limit

Authorized Signatory

Seal of Laboratory

CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.
An ISO 9001-2015 & OHSAS 45001:2018 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha
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ANNEXURE : VI Contd..

Report no. - CEMC/MMRDL/060323/A2 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Sl. No.	Location →	Raijharah Village					Malibandha Village					Near JSPL Town Gate				
	Date of sampling↓	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³
1	2 - 03-12-2022	63.8	35.0	7.3	10.3	-	70.4	40.9	10.5	10.7	-	74.8	41.8	13.5	24.1	-
2	5 - 06-12-2022	59.4	35.1	7.3	16.6	-	75.1	42.5	11.1	17.0	-	71.2	41.0	12.5	24.1	-
3	10 - 11-12-2022	60.9	33.7	10.6	11.8	-	67.0	36.9	10.6	14.2	-	80.1	47.7	14.3	20.5	-
4	13 - 14-12-2022	59.3	40.5	10.8	11.0	-	64.1	35.4	12.1	14.6	-	78.1	47.5	17.4	22.2	-
5	17 - 18-12-2022	66.4	37.9	8.6	13.4	-	70.4	39.9	10.0	17.8	-	75.0	43.3	16.9	22.9	-
6	20 - 21-12-2022	67.2	39.3	9.3	13.1	-	67.8	37.1	9.8	15.8	-	76.3	44.3	15.1	21.3	-
7	25 - 26-12-2022	65.1	36.7	11.3	12.2	-	74.1	43.8	11.1	11.5	-	80.6	47.7	16.1	17.8	-
8	28 - 29-12-2022	60.3	36.4	11.1	12.6	-	75.2	42.1	11.1	13.1	-	73.6	44.2	15.1	14.6	-
9	2 - 03-01-2023	59.7	32.5	9.3	15.2	-	68.3	39.3	10.3	18.6	-	73.3	44.2	15.7	17.3	-
10	5 - 06-01-2023	61.0	35.1	10.8	16.1	-	62.5	35.1	10.8	16.5	-	70.6	43.3	14.9	23.7	-
11	10 - 11-01-2023	68.0	37.9	8.1	14.8	BDL	71.9	39.7	9.8	11.0	BDL	77.8	47.0	18.6	20.7	BDL
12	13 - 14-01-2023	62.6	33.5	8.1	12.3	BDL	65.5	37.0	11.2	13.5	BDL	81.0	48.0	18.1	20.3	BDL
13	17 - 18-01-2023	68.2	39.2	8.3	14.8	-	63.2	34.6	9.8	12.3	-	80.7	46.2	14.5	19.9	-
14	20 - 21-01-2023	60.6	33.3	10.3	13.1	-	72.5	41.9	10.1	16.1	-	70.9	42.8	15.2	21.1	-
15	25 - 26-01-2023	65.0	35.6	10.8	16.5	-	68.1	40.3	11.5	17.3	-	76.8	43.3	14.9	19.0	-
16	28 - 29-01-2023	63.9	35.4	10.5	13.5	-	66.0	35.4	11.0	15.6	-	80.1	45.0	18.4	23.2	-
17	2 - 03-02-2023	62.8	35.6	7.4	11.0	-	71.8	41.3	11.4	15.6	-	76.7	44.3	18.3	22.0	-
18	5 - 06-02-2023	65.1	36.2	9.5	10.1	-	70.9	38.9	9.8	12.7	-	82.2	47.1	16.9	24.5	-
19	9 - 10-02-2023	66.7	40.9	9.8	14.8	-	71.5	39.2	11.6	13.5	-	78.6	44.3	14.8	15.6	-
20	12 - 13-02-2023	68.7	37.8	10.0	17.3	-	69.1	37.2	11.6	14.0	-	81.0	45.8	16.9	23.3	-
21	16 - 17-02-2023	68.7	37.5	10.6	15.6	-	65.3	36.7	11.6	12.3	-	78.1	47.1	18.5	23.7	-
22	19 - 20-02-2023	65.9	37.5	9.8	10.6	-	68.9	40.4	10.3	16.9	-	74.4	43.3	18.2	24.9	-
23	23 - 24-02-2023	58.5	34.1	10.8	12.2	-	68.0	38.0	11.4	16.5	-	79.0	45.5	16.1	22.0	-
24	26 - 27-02-2023	61.2	32.6	9.2	15.6	-	71.3	39.6	10.6	15.7	-	80.1	44.8	18.2	16.9	-
Minimum		58.5	32.5	7.3	10.1	-	62.5	34.6	9.8	10.7	-	70.6	41.0	12.5	14.6	
Maximum		69.3	40.9	11.3	17.3	-	75.2	43.8	12.1	18.6	-	82.2	48.0	18.6	24.9	
Average		64.1	36.2	9.6	13.5	-	69.1	38.9	10.8	14.8	-	77.1	45.0	16.1	21.1	
98 percentile		69.0	40.7	11.2	17.0	-	75.2	43.2	11.9	18.6	-	81.6	47.9	18.5	24.7	

Note: BDL of NH3 <20 µg/m3 and SO2 <4 µg/m3
BDL: Below Detection Limit

Authorized Signatory

Seal of Laboratory

CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

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ANNEXURE : VI Contd..

Report no. - CEMC/MMRDL/060323/A3 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Sl. No.	Location →	Barodia Village					Nisha Village				
	Date of sampling↓	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	NH_3 µg/m³
1	3 - 04-12-2022	63.0	37.2	13.1	13.9	-	69.2	39.6	7.8	15.0	-
2	6 - 07-12-2022	68.8	39.7	11.8	18.2	-	73.7	42.1	9.0	17.8	-
3	11 - 12-12-2022	71.1	39.2	12.3	15.4	-	66.2	38.4	8.3	17.0	-
4	14 - 15-12-2022	63.8	37.2	12.1	13.0	-	64.9	37.1	11.8	15.4	-
5	18 - 19-12-2022	69.4	38.8	11.8	15.8	-	70.4	40.1	8.8	16.2	-
6	21 - 22-12-2022	61.1	34.2	13.3	19.0	-	68.7	41.6	11.6	12.7	-
7	26 - 27-12-2022	66.3	36.3	12.8	19.0	-	77.1	44.3	8.3	16.2	-
8	29 - 30-12-2022	66.0	36.2	11.8	18.2	-	70.3	41.2	7.0	16.2	-
9	3 - 04-01-2023	67.6	37.6	13.0	18.2	-	75.2	45.7	8.8	15.6	-
10	6 - 07-01-2023	70.7	40.6	10.8	19.1	-	67.3	38.0	7.8	15.6	-
11	11 - 12-01-2023	71.9	40.2	13.2	19.0	BDL	66.0	38.9	9.3	13.1	BDL
12	14 - 15-01-2023	64.6	37.0	12.5	12.7	BDL	64.5	34.6	7.8	12.7	BDL
13	18 - 19-01-2023	70.0	39.5	12.7	20.3	-	76.4	44.2	12.0	13.1	-
14	21 - 22-01-2023	72.5	38.7	12.0	13.1	-	70.8	38.9	7.6	13.1	-
15	26 - 27-01-2023	72.5	38.4	13.2	19.9	-	72.0	[illegible]	7.5	18.6	-
16	29 - 30-01-2023	61.5	36.3	11.7	19.9	-	67.2	[illegible]	11.8	14.4	-
17	3 - 04-02-2023	69.2	40.2	13.2	19.0	-	63.8	[illegible]	8.7	16.1	-
18	6 - 07-02-2023	60.6	35.9	11.6	18.6	-	68.5	38.0	7.9	18.1	-
19	10 - 11-02-2023	64.1	37.4	11.1	12.7	-	71.2	[illegible]	[illegible]	14.4	-
20	13 - 14-02-2023	63.5	35.8	12.4	18.2	-	63.4	[illegible]	[illegible]	13.1	-
21	17 - 18-02-2023	71.4	42.4	11.3	11.4	-	70.8	41.4	[illegible]	19.3	-
22	20 - 21-02-2023	67.8	40.5	13.2	19.0	-	74.0	43.2	[illegible]	12.4	-
23	24 - 25-02-2023	67.5	39.1	11.1	15.2	-	73.9	43.1	[illegible]	19.1	-
24	27 - 28-02-2023	70.5	39.8	13.2	14.8	-	69.7	38.7	9.3	16.5	-
	Minimum	60.6	34.2	10.8	11.4	-	63.4	34.6	6.9	12.7	-
	Maximum	72.5	42.4	13.3	20.3	-	77.1	45.7	12.0	19.1	-
	Average	67.3	38.3	12.3	16.8	-	70.1	40.9	8.8	15.6	-
	98 percentile	72.5	41.6	13.3	20.1	-	76.8	45.1	11.9	18.8	-

Note: BDL of NH3 <20 µg/m3 and SO2 <4 µg/m3
BDL: Below Detection Limit

Authorized Signatory

Seal of Laboratory

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ANNEXURE : VI Contd..

Report no. - CEMC/MMRDL/060323/A4 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Sl. No.	Location →	Core Zone (R&R Colony)	Near Sana Mahitala Village	Hariatala Village
	Date of sampling↓	CO (mg/m³)	CO (mg/m³)	CO (mg/m³)
1	01 - 02-12-2022	0.687	0.354	0.138
2	04 - 05-12-2022	0.501	0.259	0.171
3	09 - 10-12-2022	0.506	0.294	0.283
4	12 - 13-12-2022	0.575	0.398	0.171
5	16 - 17-12-2022	0.517	0.284	0.297
6	19 - 20-12-2022	0.602	0.374	0.138
7	24 - 25-12-2022	0.538	0.289	0.138
8	27 - 28-12-2022	0.522	0.229	0.283
9	01 - 02-01-2023	0.480	0.408	0.129
10	04 - 05-01-2023	0.565	0.384	0.208
11	09 - 10-01-2023	0.666	0.234	0.283
12	12 - 13-01-2023	0.512	0.423	0.255
13	16 - 17-01-2023	0.522	0.398	0.119
14	19 - 20-01-2023	0.586	0.234	0.311
15	24 - 25-01-2023	0.522	0.403	0.116
16	27 - 28-01-2023	0.464	0.393	0.316
17	01 - 02-02-2023	0.634	0.488	0.377
18	04 - 05-02-2023	0.559	0.408	0.250
19	08 - 09-02-2023	0.575	0.274	0.283
20	11 - 12-02-2023	0.528	0.299	0.255
21	15 - 16-02-2023	0.506	0.408	0.339
22	18 - 19-02-2023	0.458	0.403	0.116
23	22 - 23-02-2023	0.639	0.239	0.288
24	25 - 26-02-2023	0.591	0.408	0.344
	Minimum	0.458	0.229	0.116
	Maximum	0.687	0.458	0.344
	Average	0.552	0.344	0.225
	98 percentile	0.677	0.442	0.342

NOTARY SK. NAZRUL ISLAM Regd. No. 1/2019 Angul (W.B.)

Authorized Signatory

Seal of Laboratory

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ANNEXURE : VI Contd..

Report no. - CEMC/MMRDL/060323/A5 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Sl. No.	Location →	Raijharah Village	Malibandha Village	Near JSPL Town Gate
	Date of sampling↓	CO (mg/m^3)	CO (mg/m^3)	CO (mg/m^3)
1	02 - 03-12-2022	0.300	0.459	0.541
2	05 - 06-12-2022	0.417	0.441	0.536
3	10 - 11-12-2022	0.458	0.500	0.724
4	13 - 14-12-2022	0.241	0.401	0.591
5	17 - 18-12-2022	0.441	0.468	0.48
6	20 - 21-12-2022	0.388	0.432	0.663
7	25 - 26-12-2022	0.452	0.410	0.558
8	28 - 29-12-2022	0.446	0.468	0.503
9	02 - 03-01-2023	0.329	0.504	0.508
10	05 - 06-01-2023	0.429	0.450	0.519
11	10 - 11-01-2023	0.376	0.437	0.719
12	13 - 14-01-2023	0.452	0.468	0.536
13	17 - 18-01-2023	0.352	0.432	0.802
14	20 - 21-01-2023	0.435	0.405	0.525
15	25 - 26-01-2023	0.364	0.468	0.541
16	28 - 29-01-2023	0.452	0.414	0.785
17	02 - 03-02-2023	0.229	0.437	0.636
18	05 - 06-02-2023	0.358	0.428	0.558
19	09 - 10-02-2023	0.417	0.473	0.503
20	12 - 13-02-2023	0.358	0.468	0.625
21	16 - 17-02-2023	0.347	0.441	0.519
22	19 - 20-02-2023	0.370	0.446	0.458
23	23 - 24-02-2023	0.229	0.468	0.796
24	26 - 27-02-2023	0.247	0.414	0.686
Minimum		0.229	0.401	0.458
Maximum		0.458	0.504	0.802
Average		0.370	0.449	0.596
98 percentile		0.455	0.502	0.799

BPDas
Authorized Signatory

Seal of Laboratory

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ANNEXURE : VI Contd..

Report no. - CEMC/MMRDL/060323/A6 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Sl. No.	Location →	Barodia Village	Nisha Village
	Date of sampling↓	CO (mg/m^3)	CO (mg/m^3)
1	03 - 04-12-2022	0.493	0.394
2	06 - 07-12-2022	0.463	0.387
3	11 - 12-12-2022	0.533	0.377
4	14 - 15-12-2022	0.511	0.453
5	18 - 19-12-2022	0.529	0.449
6	21 - 22-12-2022	0.560	0.348
7	26 - 27-12-2022	0.493	0.360
8	29 - 30-12-2022	0.493	0.444
9	03 - 04-01-2023	0.516	0.370
10	06 - 07-01-2023	0.538	0.432
11	11 - 12-01-2023	0.524	0.377
12	14 - 15-01-2023	0.480	0.344
13	18 - 19-01-2023	0.511	0.372
14	21 - 22-01-2023	0.573	0.458
15	26 - 27-01-2023	0.498	0.335
16	29 - 30-01-2023	0.568	0.406
17	03 - 04-02-2023	0.511	0.456
18	06 - 07-02-2023	0.546	0.382
19	10 - 11-02-2023	0.573	0.399
20	13 - 14-02-2023	0.458	0.379
21	17 - 18-02-2023	0.542	0.372
22	20 - 21-02-2023	0.555	0.372
23	24 - 25-02-2023	0.520	0.433
24	27 - 28-02-2023	0.573	0.387
	Minimum	0.458	0.344
	Maximum	0.573	0.358
	Average	0.523	0.398
	98 percentile	0.573	0.457

Authorized Signatory

Seal of Laboratory

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ANNEXURE : VI Contd..

Report no. - CEMC/MMRDL/060323/A7 Issued Date-06.03.2023

AIR QUALITY TEST REPORT

Name & Address of the Client : M/s. JINDAL STEEL & POWER LTD.,ANGUL,ODISHA
Sampling by : CEMC'S Representative
Sample Description : Air
Sampling duration : 01.12.2022 to 28.02.2023

Location	Date of Sampling	Pb ($\mu g/m^3$)	As (ng/m^3)	Ni (ng/m^3)	BaP (ng/m^3)	C_6H_6 ($\mu g/m^3$)
Core Zone (R&R Colony	16-17/01/2023	BDL	BDL	BDL	N.D	N.D
	19-20/01/2023	BDL	BDL	BDL	N.D	N.D
Near Sana Mahitala Village	16-17/01/2023	BDL	BDL	BDL	N.D	N.D
	19-20/01/2023	BDL	BDL	BDL	N.D	N.D
Hariatala Village	16-17/01/2023	BDL	BDL	BDL	N.D	N.D
	19-20/01/2023	BDL	BDL	BDL	N.D	N.D
Raijharah Village	17-18/01/2023	BDL	BDL	BDL	N.D	N.D
	20-21/01/2023	BDL	BDL	BDL	N.D	N.D
Malibandha Village	17-18/01/2023	BDL	BDL	BDL	N.D	N.D
	20-21/01/2023	BDL	BDL	BDL	N.D	N.D
Near JSPL Town Gate	17-18/01/2023	BDL	BDL	BDL	N.D	N.D
	20-21/01/2023	BDL	BDL	BDL	N.D	N.D
Barodia Village	06-07/02/2023	BDL	BDL	BDL	N.D	N.D
	10-11/02/2023	BDL	BDL	BDL	N.D	N.D
Nisha Village	06-07/02/2023	BDL	BDL	BDL	N.D	N.D
	10-11/02/2023	BDL	BDL	BDL	N.D	N.D

Note: BDL of Pb<0.01 µg/m3; As<0.1 ng/m3; Ni<3.2 ng/m3
N.D: Not detected * BDL: Below Detection Limit

BPDas
Authorized Signatory

Seal of Laboratory

ANNEXURE - 'R' 1463

~~ANNEXURE - 'Q'~~

~~476~~

CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

ANNEXURE - 3

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

Station: Hakimapada, Angul - OSPCB
State: Odisha
City: Angul
Parameter: Benzene
Average Period: 24 Hours
From: 01-10-2022T00:00:00Z 00:00
To: 31-12-2022T12:22:59Z 00:00

Prescribed Standards		0-5
Exceeding Standards		NA
Remarks		
From Date	To Date	Benzene (ug/m3)
01-10-2022 00:00	02-10-2022 00:00	None
02-10-2022 00:00	03-10-2022 00:00	None
03-10-2022 00:00	04-10-2022 00:00	None
04-10-2022 00:00	05-10-2022 00:00	None
05-10-2022 00:00	06-10-2022 00:00	None
06-10-2022 00:00	07-10-2022 00:00	None
07-10-2022 00:00	08-10-2022 00:00	None
08-10-2022 00:00	09-10-2022 00:00	None
09-10-2022 00:00	10-10-2022 00:00	None
10-10-2022 00:00	11-10-2022 00:00	None
11-10-2022 00:00	12-10-2022 00:00	None
12-10-2022 00:00	13-10-2022 00:00	None
13-10-2022 00:00	14-10-2022 00:00	None
14-10-2022 00:00	15-10-2022 00:00	None
15-10-2022 00:00	16-10-2022 00:00	None
16-10-2022 00:00	17-10-2022 00:00	None
17-10-2022 00:00	18-10-2022 00:00	None
18-10-2022 00:00	19-10-2022 00:00	None
19-10-2022 00:00	20-10-2022 00:00	None

NOTARY ... Sk. Nazrul ... Area Kolkata ... Regn. No. 44/... Expiry Date 15.09.2025 ... DIST. - 24 PGS. WEST BENGAL

NOTARY KOLKATA ... ASIS KR. SEN NOTARY Regd. No.-13[illegible] EXPIRY DATE 31.12.25 ... Govt. of India

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

20-10-2022 00:00	21-10-2022 00:00	None
21-10-2022 00:00	22-10-2022 00:00	None
22-10-2022 00:00	23-10-2022 00:00	None
23-10-2022 00:00	24-10-2022 00:00	None
24-10-2022 00:00	25-10-2022 00:00	None
25-10-2022 00:00	26-10-2022 00:00	None
26-10-2022 00:00	27-10-2022 00:00	None
27-10-2022 00:00	28-10-2022 00:00	None
28-10-2022 00:00	29-10-2022 00:00	None
29-10-2022 00:00	30-10-2022 00:00	None
30-10-2022 00:00	31-10-2022 00:00	None
31-10-2022 00:00	01-11-2022 00:00	None
01-11-2022 00:00	02-11-2022 00:00	None
02-11-2022 00:00	03-11-2022 00:00	None
03-11-2022 00:00	04-11-2022 00:00	None
04-11-2022 00:00	05-11-2022 00:00	None
05-11-2022 00:00	06-11-2022 00:00	None
06-11-2022 00:00	07-11-2022 00:00	None
07-11-2022 00:00	08-11-2022 00:00	None
08-11-2022 00:00	09-11-2022 00:00	None
09-11-2022 00:00	10-11-2022 00:00	None
10-11-2022 00:00	11-11-2022 00:00	None
11-11-2022 00:00	12-11-2022 00:00	None
12-11-2022 00:00	13-11-2022 00:00	None
13-11-2022 00:00	14-11-2022 00:00	None
14-11-2022 00:00	15-11-2022 00:00	None
15-11-2022 00:00	16-11-2022 00:00	None
16-11-2022 00:00	17-11-2022 00:00	None
17-11-2022 00:00	18-11-2022 00:00	None

NOTARY KOLKATA ASIS KR SEN NOTARY Regd. No. 138 12/18 EXPIRY DATE 21.12.28 Govt. of India

NOTARY GOVT. OF WEST BENGAL 15.03.2029

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

18-11-2022 00:00	19-11-2022 00:00	None
19-11-2022 00:00	20-11-2022 00:00	None
20-11-2022 00:00	21-11-2022 00:00	None
21-11-2022 00:00	22-11-2022 00:00	None
22-11-2022 00:00	23-11-2022 00:00	None
23-11-2022 00:00	24-11-2022 00:00	None
24-11-2022 00:00	25-11-2022 00:00	None
25-11-2022 00:00	26-11-2022 00:00	None
26-11-2022 00:00	27-11-2022 00:00	None
27-11-2022 00:00	28-11-2022 00:00	None
28-11-2022 00:00	29-11-2022 00:00	None
29-11-2022 00:00	30-11-2022 00:00	None
30-11-2022 00:00	01-12-2022 00:00	None
01-12-2022 00:00	02-12-2022 00:00	None
02-12-2022 00:00	03-12-2022 00:00	None
03-12-2022 00:00	04-12-2022 00:00	None
04-12-2022 00:00	05-12-2022 00:00	None
05-12-2022 00:00	06-12-2022 00:00	None
06-12-2022 00:00	07-12-2022 00:00	None
07-12-2022 00:00	08-12-2022 00:00	None
08-12-2022 00:00	09-12-2022 00:00	None
09-12-2022 00:00	10-12-2022 00:00	None
10-12-2022 00:00	11-12-2022 00:00	None
11-12-2022 00:00	12-12-2022 00:00	None
12-12-2022 00:00	13-12-2022 00:00	None
13-12-2022 00:00	14-12-2022 00:00	None
14-12-2022 00:00	15-12-2022 00:00	None
15-12-2022 00:00	16-12-2022 00:00	None
16-12-2022 00:00	17-12-2022 00:00	None

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

CPCB

Date: Wednesday, Feb 14 2024

Time: 12:19:20 PM

17-12-2022 00:00	18-12-2022 00:00	None
18-12-2022 00:00	19-12-2022 00:00	None
19-12-2022 00:00	20-12-2022 00:00	None
20-12-2022 00:00	21-12-2022 00:00	None
21-12-2022 00:00	22-12-2022 00:00	None
22-12-2022 00:00	23-12-2022 00:00	None
23-12-2022 00:00	24-12-2022 00:00	None
24-12-2022 00:00	25-12-2022 00:00	None
25-12-2022 00:00	26-12-2022 00:00	None
26-12-2022 00:00	27-12-2022 00:00	None
27-12-2022 00:00	28-12-2022 00:00	None
28-12-2022 00:00	29-12-2022 00:00	None
29-12-2022 00:00	30-12-2022 00:00	None
30-12-2022 00:00	31-12-2022 00:00	None
31-12-2022 00:00	31-12-2022 12:22	None

NOTARY
SK. NAZRUL ISLAM
Kolkata
Regn. No. 44/19
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

NOTARY KOLKATA
Govt. of India

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Annexure - 4

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

Station: Talcher Coalfields,Talcher - OSPCB
State: Odisha
City: Talcher
Parameter: Benzene
Average Period: 24 Hours
From: 01-10-2022T00:00:00Z 00:00
To: 31-12-2022T12:17:59Z 00:00

Prescribed Standards		0-5
Exceeding Standards		NA
Remarks		
From Date	To Date	Benzene (ug/m3)
01-10-2022 00:00	02-10-2022 00:00	0.0
02-10-2022 00:00	03-10-2022 00:00	0.0
03-10-2022 00:00	04-10-2022 00:00	0.0
04-10-2022 00:00	05-10-2022 00:00	0.0
05-10-2022 00:00	06-10-2022 00:00	0.0
06-10-2022 00:00	07-10-2022 00:00	0.0
07-10-2022 00:00	08-10-2022 00:00	0.0
08-10-2022 00:00	09-10-2022 00:00	0.0
09-10-2022 00:00	10-10-2022 00:00	0.0
10-10-2022 00:00	11-10-2022 00:00	0.0
11-10-2022 00:00	12-10-2022 00:00	0.0
12-10-2022 00:00	13-10-2022 00:00	0.0
13-10-2022 00:00	14-10-2022 00:00	0.0
14-10-2022 00:00	15-10-2022 00:00	0.0
15-10-2022 00:00	16-10-2022 00:00	0.0
16-10-2022 00:00	17-10-2022 00:00	0.0
17-10-2022 00:00	18-10-2022 00:00	0.0
18-10-2022 00:00	19-10-2022 00:00	0.0
19-10-2022 00:00	20-10-2022 00:00	0.01

NOTARY KOLKATA GOVT. OF WEST BENGAL

NOTARY KOLKATA GOVT. OF India

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

20-10-2022 00:00	21-10-2022 00:00	0.0
21-10-2022 00:00	22-10-2022 00:00	0.0
22-10-2022 00:00	23-10-2022 00:00	0.0
23-10-2022 00:00	24-10-2022 00:00	0.0
24-10-2022 00:00	25-10-2022 00:00	0.0
25-10-2022 00:00	26-10-2022 00:00	0.0
26-10-2022 00:00	27-10-2022 00:00	0.0
27-10-2022 00:00	28-10-2022 00:00	0.0
28-10-2022 00:00	29-10-2022 00:00	0.0
29-10-2022 00:00	30-10-2022 00:00	0.07
30-10-2022 00:00	31-10-2022 00:00	0.0
31-10-2022 00:00	01-11-2022 00:00	0.0
01-11-2022 00:00	02-11-2022 00:00	0.0
02-11-2022 00:00	03-11-2022 00:00	0.0
03-11-2022 00:00	04-11-2022 00:00	0.0
04-11-2022 00:00	05-11-2022 00:00	0.0
05-11-2022 00:00	06-11-2022 00:00	0.0
06-11-2022 00:00	07-11-2022 00:00	0.0
07-11-2022 00:00	08-11-2022 00:00	0.0
08-11-2022 00:00	09-11-2022 00:00	0.0
09-11-2022 00:00	10-11-2022 00:00	0.0
10-11-2022 00:00	11-11-2022 00:00	0.0
11-11-2022 00:00	12-11-2022 00:00	0.0
12-11-2022 00:00	13-11-2022 00:00	0.0
13-11-2022 00:00	14-11-2022 00:00	0.0
14-11-2022 00:00	15-11-2022 00:00	0.09
15-11-2022 00:00	16-11-2022 00:00	0.34
16-11-2022 00:00	17-11-2022 00:00	0.0
17-11-2022 00:00	18-11-2022 00:00	0.04

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

18-11-2022 00:00	19-11-2022 00:00	0.15
19-11-2022 00:00	20-11-2022 00:00	0.7
20-11-2022 00:00	21-11-2022 00:00	0.26
21-11-2022 00:00	22-11-2022 00:00	0.0
22-11-2022 00:00	23-11-2022 00:00	0.0
23-11-2022 00:00	24-11-2022 00:00	0.0
24-11-2022 00:00	25-11-2022 00:00	0.0
25-11-2022 00:00	26-11-2022 00:00	0.03
26-11-2022 00:00	27-11-2022 00:00	0.33
27-11-2022 00:00	28-11-2022 00:00	0.37
28-11-2022 00:00	29-11-2022 00:00	0.0
29-11-2022 00:00	30-11-2022 00:00	0.0
30-11-2022 00:00	01-12-2022 00:00	0.0
01-12-2022 00:00	02-12-2022 00:00	0.0
02-12-2022 00:00	03-12-2022 00:00	0.0
03-12-2022 00:00	04-12-2022 00:00	0.0
04-12-2022 00:00	05-12-2022 00:00	0.0
05-12-2022 00:00	06-12-2022 00:00	0.0
06-12-2022 00:00	07-12-2022 00:00	0.14
07-12-2022 00:00	08-12-2022 00:00	0.3
08-12-2022 00:00	09-12-2022 00:00	0.38
09-12-2022 00:00	10-12-2022 00:00	0.2
10-12-2022 00:00	11-12-2022 00:00	0.44
11-12-2022 00:00	12-12-2022 00:00	0.11
12-12-2022 00:00	13-12-2022 00:00	0.07
13-12-2022 00:00	14-12-2022 00:00	0.04
14-12-2022 00:00	15-12-2022 00:00	0.11
15-12-2022 00:00	16-12-2022 00:00	0.15
16-12-2022 00:00	17-12-2022 00:00	0.4

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CENTRAL POLLUTION CONTROL BOARD

CONTINUOUS AMBIENT AIR QUALITY

Date: Wednesday, Feb 14 2024

Time: 12:14:35 PM

17-12-2022 00:00	18-12-2022 00:00	0.34
18-12-2022 00:00	19-12-2022 00:00	0.15
19-12-2022 00:00	20-12-2022 00:00	0.11
20-12-2022 00:00	21-12-2022 00:00	0.18
21-12-2022 00:00	22-12-2022 00:00	0.23
22-12-2022 00:00	23-12-2022 00:00	0.21
23-12-2022 00:00	24-12-2022 00:00	0.39
24-12-2022 00:00	25-12-2022 00:00	0.37
25-12-2022 00:00	26-12-2022 00:00	0.54
26-12-2022 00:00	27-12-2022 00:00	0.3
27-12-2022 00:00	28-12-2022 00:00	0.39
28-12-2022 00:00	29-12-2022 00:00	0.07
29-12-2022 00:00	30-12-2022 00:00	0.12
30-12-2022 00:00	31-12-2022 00:00	0.3
31-12-2022 00:00	31-12-2022 12:17	0.17

NOTARY
SK. NAZRUL ISLAM
Govt. of West Bengal

12. DISCLOSURE OF CONSULTANT

12.1 INTRODUCTION

Vardan Environet is a pioneer consulting organisation of India specializing in Environmental Protection, Industrial Pollution Control, Environmental & Mechanical testing, and engineering field. Vardan assists clients in comprehensive environmental and engineering services ranging from conceptual planning and preliminary investigation to detailed engineering designs. Local knowledge coupled with national and international experience of proven technical know-how and a strong commitment from our team of experts enables Vardan to assist in solving the clients environmental and engineering problems successfully with competence by first analysing then visualizing and finally utilizing technically strong and dedicated skill.

Vardan has successfully completed a wide range of multi-disciplinary assignments/reports. The company's project formulation requires preliminary and detailed project investigation. The objective of the investigation is to assess the technical viability and cost effectiveness of the proposals vis-à-vis the objective and benefit. Vardan was founded in 2012 and brought together a number of consultancy services with a track record of performance in the environmental Science and Engineering field.

Headquartered in Gurugram, Vardan has prominent presence in Delhi-NCR, Rajasthan, Maharashtra, Madhya Pradesh, West Bengal and Jharkhand. With a man-power of over more than 200 professionals, the organization comprises of senior retired government officers from various departments like Pollution Control Board, Mines & Geology, Civil Services, SAIL, GAIL, NEERI who have decades of experience in the field of environmental management. The team also Comprises of young, dynamic and progress driven Environment, Civil, Mechanical & Chemical engineers, Geologists, GIS experts, Ecologists and Auditors.

Vardan Envirolab, a sister concern provides reliable and precise testing services for a wide range of Environmental, Chemical, Food testing, Microbiology and Building Materials with in-house Equipment/instruments of advance technology along with experienced technical staff.

12.2 SERVICES OF VARDAN ENVIRONET

- Environmental Impact Assessment (EIA), Environmental Management Plan (EMP), Environmental Compliance, Mining Plan, Social Impact Assessment,

- Testing of water, Waste water, Ambient & work zone air, stack emissions, noise, soil, limestone, dolomite, iron ore, coal, cement, bricks, concrete, blocks, steel bars & wires, Indoor Air Quality monitoring, Sludge.
- Hydrological surveys for ground water clearance.
- Approvals/NOC/Clearances from various Government Authorities.
- Detailed Project report/Feasibility report/Plans/Designs.
- Environmental Quality Monitoring and analysis.
- Geotechnical investigations, Topographical Survey, Planning and Designs.
- EHS, Energy and water Audit, risk/hazard studies and disaster management plan (both onsite and off-site)

12.3 RECOGNITIONS

- Approved by NABET in 21 sectors for preparation of EIA/EMP reports.
- Vardan EnviroLab is recognized by Ministry of Environment, Forest & Climate Change, Govt. of India under Environmental Protection Act 1986.
- Vardan EnviroLab is accredited by NABL in the field of Testing.
- Vardan EnviroLab is certified by OHSAS 18001:2007.
- Vardan EnviroLab is certified by ISO 14001:2015.
- Vardan EnviroLab is certified by ISO 9001:2015.
- Vardan EnviroLab is approved by HSPCB & RSPCB.

12.4 LIST OF SOFTWARE MODELS FOR ENVIRONMENTAL STUDIES

- Multisource Dispersion Model based on Gaussian Model (ISCST3, AERMOD)
- Noise Propagation Model (Dhawani Pro)
- Risk and Hazard studies through Aloha model
- GIS mapping through Arc GIS, watershed & area drainage mapping, cadastral mapping, DGPS survey, 3D modelling, Urban/Rural area planning & management and Digital Elevation Model.
- Transect and line intercepts for Ecology and Biodiversity studies
- Extrapolative method & Intuitive technique (Delphi technique) in socio-economic assessment.

NOTARY SK. NAZRUL ISLAM Area Kolkata

12.5 KEY MANAGEMENT PERSONNEL OF VARDAN

Table 12.1: Key Management Personnel of Vardan

S. No.	Name	Designation	Experience (Years)
1.	R.S. Yadav	Managing Director	32
2.	Roopika Sharma	CEO	12
3.	Aman Sharma	Partner	14
4.	Anshul Yadav	Partner	10

12.6 EMINENT CLIENTELE OF VARDAN

Vardan has executed around 1500 projects across all over India in a short span of time covering both public and private sectors. Following are some of our reputed clients.

Indian Oil, HPCL, NTPC, NHPC, BPCL, Delhi Metro, GAIL, GPIL, SAIL, NHAI, APCPL, RITES, MPPGCL, Indian Railways, JK Lakshmi Cement Ltd., L&T, Tata, Adani, Hero, Honda, HCL, Panasonic, Jaypee group, DLF, Godrej, Haldiram's, Unitech, JBM, Trident hotels, Lanco, Aditya Birla, Mangalam cement, JW Marriot, Eros group and many others.

NOTARY GOVT. OF WEST BENGAL
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 44/19
Expiry Date
15.09.2020

NOTARY GOVT. OF India
ASHISH ME
Regd. No. 24
Expiry DATE
31.12.20

12.7 CERTIFICATIONS OF VARDAN

QCI

Quality Council of India

National Accreditation Board for Education & Training

NABET

Certificate of Accreditation

Vardan Environet, Gurugram

Plot No. 82-A, Sector 5, IMT Manesar, Gurugram, Haryana

The organization is accredited as Category-A under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per) NABET	Sector (as per) MoEFCC	Cat.
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
2	Offshore & Onshore Oil and gas exploration, development & production	2	1 (b)	B
3	River Valley projects	3	1 (c)	A
4	Thermal power plants	4	1 (d)	B
5	Coal washeries	6	2 (b)	A
6	Mineral beneficiation	7	2 (c)	A
7	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
8	Cement Plants	9	3 (b)	A
9	Coke oven plants	11	4 (a)	A
10	Chemical fertilizers	16	5 (a)	A
11	Petro-chemical complexes	18	5 (c)	A
12	Synthetic organic chemicals industry	21	5 (f)	A
13	Distilleries	22	5 (g)	A
14	Sugar industry	25	5 (j)	B
15	Oil & gas transportation pipeline, passing through national parks/ sanctuaries/coral reefs /ecologically sensitive Areas including LNG terminal	27	6 (a)	A
16	Isolated storage & handling of hazardous chemicals	28	-	B
17	Airports	29	7 (a)	A
18	Industrial estates/ parks/ complexes/ Areas, export processing zones (EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
19	Highways	34	7 (f)	A
20	Building and construction projects	38	8 (a)	B
21	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated April 21, 2023 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2731 dated May 01, 2023. The accreditation needs to be renewed before the expiry date by Vardan Environet, Gurugram following due process of assessment.

Sr. Director, NABET
Dated: May 01, 2023

Certificate No. NABET/EIA/2326/RA 0284

Valid up to May 04, 2026

For the updated list of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

SK NAZRUL ISLAM ... 15.03.2023 ... OUT OF WEST BENGAL

12.8 ENVIRONMENTAL MONITORING AND ANALYSIS LABORATORY

Environmental Baseline data generation has been carried out by NABL Accredited laboratory Vardan Envirolab, Sector-5, IMT Manesar, Gurgoan, Haryana. The laboratory has also been accorded recognition as Environment Laboratory by CPCB (MoEF&CC). NABL Accreditation Certificate of Vardan Envirolab is given below.

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD

No. LE/99/7/2021-INST LAB-HO-CPCB-HO/Pt.I Dated: 24th January 2022

Provisional Certificate

To,

Head of Laboratory,
M/s Vardan Enviro Lab,
Plot No. 82 A, Sector 5 / IMT Manesar, Gurgaon-122051,
Haryana.

Subject: Recognition of M/s Vardan Enviro Lab, Plot No. 82 A, Sector 5 / IMT Manesar, Gurgaon-122051, Haryana, as Environmental laboratory under the Environmental (Protection) Act, 1986.

Sir,

I am directed to refer the online application, dated 05/10/2022 for the recognition of your laboratory under Environmental (Protection) Act, 1986. Based on the recommendations of the concerned Division, approval of Competent Authority for recognition of Environmental laboratories and your acceptance of the revised terms and conditions at Annexure-III & IV of the guidelines for recognition of environmental laboratories, CPCB approves the renewal of recognition M/s Vardan Enviro Lab, Plot No. 82 A, Sector 5 / IMT Manesar, Gurgaon-122051, Haryana and shall be notified in the Gazette of India. Considering the current requirement of mandatory accreditation certificate of the laboratory, this recognition shall be valid up to 27/08/2024.

2. As sought in the aforementioned application, M/s Vardan Enviro Lab, Plot No. 82 A, Sector 5 / IMT Manesar, Gurgaon-122051, Haryana may undertake the following tests:

i. **Physical Tests-Conductivity**, Colour, pH, Fixed & Volatile Solids, Total Solids, Total Dissolved Solids, Total Suspended Solids, Turbidity, Temperature, Velocity & Discharge Measurement of Industrial Effluent Stream, Flocculation Test (Jar test), Odour, Salinity, Settleable Solids and Sludge Volume Index.
ii. **Inorganic (General and Non-metallic):** Acidity, Alkalinity, Ammoniacal Nitrogen, Chloride, Chlorine Residual, Dissolved Oxygen, Fluoride, Total Hardness, Total Kjeldahl Nitrogen (TKN), Nitrite Nitrogen, Nitrate Nitrogen, Phosphate, Sulphate, Bromide, Chlorine Demand, Iodine, Sulphite Silica, Cyanide and Sulphide.
iii. **Inorganic (Trace Metals):** Boron, Cadmium, Calcium, Total Chromium, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium Absorption Ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Antimony, Cobalt and Vanadium.
iv. **Organics (General) and Trace Organics:** Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Phenolic Compounds, Pesticides (each) (Organo-Chlorine and Organo Nitrogen-Phosphorus), Total Organic Carbon, Surfactant, Poly-Nuclear Aromatic Hydrocarbon (PAH), Poly-Chlorinated Biphenyl (PCBs) each, Organic Carbon (in Solid) and Carbon/Nitrogen Ratio.
v. **Microbiological Test:** Total Coliform, Faecal Coliform, *E. coli*, *Faecal Streptococci* and Total Plate Count, *Coliphage* and *Enterococci*.
vi. **Toxicological Tests:** Bioassay Method for Evaluation of Toxicity using Fish and Measurement of toxicity factor using zebra fish (dimensionless toxicity test
vii. **Biological Test:** Benthic Organism Identification and Count, Planktonic Identification Count and Chlorophyll.
viii. **Characterization of Hazardous Waste:** Preparation of Leachate (TCLP Extract/Water Extract), Corrosivity, Ignitibility (Flash point), Reactivity, Toxicity and Measurement of Heavy Metals/Pesticides in the Waste/Leachate.
ix. **Soil/Sludge/Sediment and Solid Waste:** Boron, Cation Exchange Capacity (CEC), Electrical Conductivity,

Conductivity, Nitrogen (Available), Organic Carbon/Matter (Chemical Method), pH, Phosphorous (Available), Phosphate (Ortho), Phosphate (Total), Potassium, SAR in Soil Extract, Sodium, Soil moisture, TKN, Calorific Value, Ammonia, Bicarbonate, Calcium, Calcium Carbonate, Chloride, Colour, Exchangeable Sodium Percentage (ESP), Heavy Metal, Magnesium, Nitrate, Nitrite, PAH, Pesticide, Sulphate Sulphur, Total Organic Carbon, Total Water Soluble Salt and Water Holding Capacity.

x. **Ambient Air/ Fugitive Emissions:** Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Total Suspended Particulate Matter, Respirable Suspended Particulate Matter PM_{10}, Ammonia, Carbon Monoxide, Chlorine, Fluoride, Lead, Methane, Non-Methane Hydrocarbon, Ozone, Benzene Toluene Xylene (BTX), Polycyclic Aromatic Hydrocarbon (PAH), Benzo-a-Pyrine & others, $PM_{2.5}$ and Volatile Organic Carbon.

xi. **Stack Gases/ Source Emission:** Particulate Matter, Sulphur Dioxide, Velocity & Flow, Carbon Dioxide, Carbon Monoxide, Temperature, Oxygen, Oxides of Nitrogen, Acid Mist, Ammonia, Chlorine, Fluoride (Particulate), Fluoride (Gaseous), Hydrochloric acid, Total Hydro Carbon, Hydrogen Sulphide and Carbon Disulphide.

xii. **Noise Level:** Noise Level Measurement (20-140 dBa) and Ambient Noise and Source Specific Noise.

xiii. **Meteorological:** Ambient Temperature, Wind Direction, Wind Speed, Relative Humidity and Rainfall.

3. Further, the following analysts have been approved as Government Analysts.

i. Sh. Gaurav Pratap Singh
ii. Dr. Shiv Prakash Singh
iii. Ms. Deepika Mehta

4. The laboratory shall compulsorily participate in the Analytical Quality Exercise conducted by the Central Pollution Control Board (CPCB) to ascertain the capability of the laboratory and analysis carried out and shall submit quarterly progress report to CPCB.

5. The surprise inspection/periodic surveillance of the recognized environment laboratory will be undertaken by CPCB to assess its proper functioning systematic operation and reliability of data generated at the laboratory.

6. It is also mandatory for the laboratory to have requisite accreditations of the ISO: 17025 and ISO:45001 and its renewal as per accreditation rules. This recognition is subject to such accreditations and renewals as applicable. The laboratory is required to apply online for further renewal of recognition through CPCB web portal after renewal of the mandatory accreditations / certifications concerned.

7. The laboratory should compulsorily follow the accepted terms and conditions. In case of serious non-compliance of any of the terms and conditions, the laboratory may be black listed for a minimum period of two years and civil/criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

Yours faithfully,

24/11/2023

Divisional Head
Instrumentation laboratory

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 54715
Expiry Date
15.03.2029
GOVT. OF WEST BENGAL

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

VARDAN ENVIRO LAB

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

PLOT NO. 82A, SECTOR 5, IMT MANESAR, GURGAON, HARYANA, INDIA

in the field of

TESTING

Certificate Number: TC-6299

Issue Date: 28/08/2022 Valid Until: 27/08/2024

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Identity : VARDAN ENVIRO LAB

Signed for and on behalf of NABL

NOTARY
SK. NAZRUL ISLAM
Area Chief Executive Officer
V. Venkateswaran
Regn. No. 167119
Expiry Date
15.09.2029
GOVT. OF WEST BENGAL

NOTARY
Asstt. Kr. Mitra
Regd. No.-134
31.12.19

CERTIFICATE OF REGISTRATION

ICI UK

This is to certify that the management system of

M/S VARDAN ENVIROLAB

has been formally assessed by
INTERNATIONAL CERTIFICATION & INSPECTION UK LTD.
and found to comply with the requirements of

ISO 9001:2015

(Quality Management Systems)

Scope of Registration:

PROVISION OF TESTING DISCIPLINE FOR ENVIRONMENTAL, CHEMICAL, FOOD MICROBIOLOGICAL AND MECHANICAL SAMPLES.

Registered Site (s):

PLOT NO.82-A, SECTOR-5, IMT MANESAR, GURUGRAM - 122051, HARYANA, INDIA.

NOTARY
SK. NAZRUL ISLAM
Area Kolkata
Regn. No. 447/19
Expiry Date
15.03.2029
GOVT. OF WEST BENGAL

:: Certificate No :: ICIINDI/3807/XX

Date of initial registration:	07 January 2020
First Surveillance Audit on or before:	10 December 2020
Second Surveillance Audit on or before:	10 December 2021
Re-certification Due:	06 January 2023

This Certificate is property of ICI UK Ltd. and remains valid subject to satisfactory surveillance audits.

Peter Collins
Executive Director
International Certification & Inspection UK Limited.

To check validity of the certificate please visit at www.ici-uk.co

This certification of registration is issued by International Certification & Inspection UK Limited accredited with Accreditation Board For Certification bodies (www.ab-cb.org). This certificate remains the property of International Certification & Inspection UK Limited and has to returned upon request.

NOTARY
ANIRBAN MUKHERJEE
Regd. No. 15/2019
EXPIRY DATE
31.12.2023
GOVT. OF WEST BENGAL

492

CERTIFICATE OF REGISTRATION

ICI UK

This is to certify that the management system of

VARDAN ENVIROLAB

has been formally assessed by
INTERNATIONAL CERTIFICATION & INSPECTION UK LTD.
and found to comply with the requirements of

ISO 14001:2015

Environmental Management Systems

Scope of Registration:

Testing of Environmental Parameters, Food Products, Pharmaceuticals, Building Materials, Disinfection Services, Auditing and Other Technical Services

Registered Site (s):

Plot No. 82-A, Sector - 5, IMT Manesar, Gurugram - 122051, (Haryana), India.

NOTARY SK. NAZRUL ISLAM Area Kolkata Regd. No. 447/15 Expiry Date 15.09.2029 GOVT. OF WEST BENGAL

:: Certificate No :: ICIINDI/4534/XX

Date of initial registration:	20 June 2020
First Surveillance Audit on or before:	10 May 2021
Second Surveillance Audit on or before:	10 May 2022
Re-certification Due:	19 June 2023

This Certificate is property of ICI UK Ltd. and remains valid subject to satisfactory surveillance audits.

Peter Collins
Executive Director
International Certification & Inspection UK Limited.
27 Old Gloucester Street, London, WC1N 3AX, United Kingdom

To check validity of the certificate please visit at www.ici-uk.co

This certification of registration is issued by International Certification & Inspection UK Limited accredited with Accreditation Board For Certification bodies (www.ab-cb.org). This certificate remains the property of International Certification & Inspection UK Limited and must be returned upon request.

NOTARY ADDITIONAL DISTRICT & SESSIONS JUDGE Regd. No. 447/15 EXPIRY DATE 31.12.25 GOVT. OF WEST BENGAL

CERTIFICATE OF REGISTRATION

ICI UK

This is to certify that the management system of

M/S VARDAN ENVIROLAB

has been formally assessed by
INTERNATIONAL CERTIFICATION & INSPECTION UK LTD.
and found to comply with the requirements of

ISO 45001:2018

Occupational Health and Safety

Scope of Registration:

PROVISION OF TESTING SERVICES FOR ENVIRONMENTAL SAMPLE (WATER, WASTE WATER, AMBIENT AIR, NOISE, STACK EMISSION), BUILDING MATERIALS SAMPLE (CEMENT, CONCRETE, BRICKS, FLYASH BLOCK, STEEL), DRUGS AND PHARMACEUTICAL SAMPLE & FOOD AND AGRICULTURAL PRODUCTS.

Registered Site (s):

PLOT NO. 82 - A, SECTOR -5, IMT MANESAR - 122051, HARYANA, INDIA.

NOTARY * SK. NAZRUL ISLAM * Govt. of West Bengal * Regn. No. 14719 Expire Date 10.08.2029

:: Certificate No :: ICIINDI/3806/XX

Date of initial registration:	07 January 2020
First Surveillance Audit on or before:	10 December 2020
Second Surveillance Audit on or before:	10 December 2021
Re-certification Due:	06 January 2023

This Certificate is property of ICI UK Ltd. and remains valid subject to satisfactory surveillance audits.

Peter Collins
Executive Director
International Certification & Inspection UK Limited.

To check validity of the certificate please visit at www.ici-uk.com

This certification of registration is issued by International Certification & Inspection UK Limited accredited with Accreditation Board For Certification Bodies (www.ab-cb.org). This certificate remains the property of International Certification & Inspection UK Limited and must be returned upon request.

NOTARY * SK. NAZRUL ISLAM * Govt. of West Bengal * Regn. No. 14719 Expire Date 10.08.2029

Table 3.7: National Ambient Air Quality Standards vide GSR 826 (E), Dt.16.11.09

Sr. No.	Parameter	Time Weighted Average	Concentration in Ambient Air	
			Industrial Area, Residential, Rural & Other Areas	Ecologically Sensitive Area (Notified by Central Government)
1	SO_2 (µg/m³)	Annual*	50	20
		24 Hours**	80	80
2	NOx (µg/m³)	Annual*	40	30
		24 Hours**	80	80
3	PM_{10} (µg/m³)	Annual*	60	60
		24 Hours**	100	100
4	$PM_{2.5}$ (µg/m³)	Annual*	40	40
		24 Hours**	60	60
5	CO (mg/m³)	8 hours**	2.0	2.0
		1 hour**	4.0	4.0
6	Ozone, O_3 (µg/m³)	8 hours**	100	100
		1 hour**	180	180
7	Lead Pb (µg/m³)	Annual*	0.5	0.5
		24 Hours**	1.0	1.0
8	Ammonia (µg/m³)	Annual*	100	100
		24 Hours**	400	400
9	Benzene (µg/m³)	Annual	05	05
10	Benzo (a) Pyrene (BaP) (ng/m³)	Annual	01	01
11	Arsenic (ng/m³)	Annual	06	06
12	Nickel (ng/m³)	Annual	20	20

Table 3.8: Techniques Adopted/Protocols for Ambient Air Quality Monitoring

S. No	Parameters	Techniques	Technical Protocol
1	Sulphur Dioxide (SO_2)	West & Gaeke	IS:5182 (P2)
2	Nitrogen Dioxide (NO_2)	Jacob & Hochheiser	IS:5182 (P6)
3	Particulate Matter PM_{10}	Gravimetric	IS:5182 (P23)
4	Particulate Matter $PM_{2.5}$	Gravimetric	IS:5182 (P24)

NOTARY ... GOVT. OF WEST BENGAL ... Expiry Date 15.09.2023

S. No	Parameters	Techniques	Technical Protocol
5	Carbon-monoxide as CO	NDIR	IS: 5182 (P-10)
6	Ammonia	Spectrophotometric Method	IS 5182 (P-25): 2018
7	Arsenic	ICPMS/AAS Method	VEL/ENV/STP/110, Issue No. 01 dated on 01/11/2021
8	Benzene	GC-FID Method	IS: 5182 (P-11): 2006 RA: 2017
9	Benzo(a)pyrene	GC-FID Method	IS: 5182 (P-12): 2004, RA: 2019
10	Lead	ICPMS/AAS Method	IS: 5182 (P-22):2004 RA: 2019
11	Nickel	ICPMS/AAS Method	IS: 5182 (P-26), 2020
12	Ozone	Spectrophotometric Method	IS 5182 (P-9):1974 RA: 2019
13	Mercury as Hg	ICPMS/AAS Method	VEL/ENV/STP/129, Issue No. 01 dated on 01/11/2021

Source: Baseline Monitoring Report, Vardan enviro Lab

3.4.2.3 Air Quality Monitoring

Ambient air quality analysis reports are appended below in the **Table 3.9** and attached as **Annexure IX**. The graphical representations of the results are depicted in **Figure 3.4, 3.5, 3.6 & 3.7.**

3.4.2.4 Data Analysis

The Ambient Air Quality survey has been carried out within 10 km radius of mine site. Eight (8) locations were set up post-monsoon monitoring for a period of October – December 2022. Measurement of Particulate matter (PM_{10} & $PM_{2.5}$), SO_2, NOX, CO, O_3, NH3, Benzene, Ba(P), arsenic, Nickel, Lead, Mercury levels helps to understand the existing environmental scenario. The results of PM_{10}, $PM_{2.5}$, SO2, NOX, O3, NH3, Benezen are expressed in $\mu g/m^3$ whereas the results of CO are expressed in mg/m^3 and results of Ba(P), Aresenic, Nickel, Lead, Mercury are expressed in ng//m^3. The results of all the locations were further computed for statistical parameters like 98 Percentile and Arithmetic mean (AM). The results are shown in **Table 3.9**. The graphical representations of the results are depicted in Figure 3.4, 3.5, 3.6 & 3.7. Lab Reports are enclosed as **Annexure-IX.**

ANNEXURE-'U'

QUALITY COUNCIL OF INDIA
Creating an Ecosystem for Quality

National Accreditation Board for Education and Training

Certificate of Accreditation

Vardan Environet LLP (*formerly Vardan Environet*), Gurugram

Plot No. 82-A, Sector 5, IMT Manesar, Gurugram, Haryana-122051

The organization is accredited as Category-A under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
2	Offshore & Onshore Oil and gas exploration, development & production	2	1 (b)	B
3	River Valley projects	3	1 (c)	A
4	Thermal power plants	4	1 (d)	B
5	Coal washeries	6	2 (a)	A
6	Mineral beneficiation	7	2 (b)	A
7	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
8	Cement Plants	9	3 (b)	A
9	Coke oven plants	11	4 (b)	A
10	Chemical fertilizers	16	5 (a)	A
11	Petro-chemical complexes	18	5 (c)	A
12	Synthetic organic chemicals industry	21	5 (f)	A
13	Distilleries	22	5 (g)	A
14	Sugar Industry	25	5 (j)	B
15	Oil & gas transportation pipeline, passing through national parks/ sanctuaries/coral reefs /ecologically sensitive Areas including LNG terminal	27	6 (a)	A
16	Isolated storage & handling of hazardous chemicals	28	-	B
17	Airports	29	7 (a)	A
18	Industrial estates/ parks/ complexes/ Areas, export processing zones (EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
19	Highways	34	7 (f)	A
20	Building and construction projects	38	8 (a)	B
21	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated April 21, 2023 and Supplementary Assessment minutes dated November 17, 2023 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2751 dated May 01, 2023. The accreditation needs to be renewed before the expiry date by Vardan Environet LLP (formerly Vardan Environet), Gurugram following due process of assessment.

Sr. Director, NABET
Dated: July 05, 2024

Certificate No.
NABET/EIA/2326/RA 0284_Rev.01

Valid up to
May 04, 2026

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

VARDAN ENVIROLAB LLP

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017
"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

Plot No. 82A, Sector 5, IMT Manesar, Gurgaon, Haryana

in the field of

TESTING

Certificate Number	TC-5299
Issue Date	28/08/2024
Valid Until	27/08/2026

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity : Vardan Envirolab LLP

Signed for and on behalf of NABL

8907897010000000312

N. Venkateswaran
Chief Executive Officer

BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

Appeal No. 7 of 2024

Under Section 16(h) read with Section 18(1) of the National Green Tribunal Act, 2010

IN THE MATTER OF:

Sanjaya Kumar Mishra

...APPELLANT

Versus

Ministry of Environment, Forest and Climate Change & Ors.

...RESPONDENTS

AFFIDAVIT IN OPPOSITION

VOLUME No.: - III

Page No:- 1264 TO 1484

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Advocate On Record

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