BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

I.A. No. 97 of 2024

In

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 & Anr.

...RESPONDENTS

AND

IN THE MATTER OF:

Subhadra Coal Mining Limited

...APPLICANT/INTERVENOR

Versus

Sanjaya Kumar Mishra

...RESPONDENT

NOTARY KOLKATA ASIS KR SEN NOTARY Regd. No.-13602/18 EXPIRY DATE 31.12.28 Govt. of India

APPLICATION:

Advocate-on-record:

Devanshi Prasad

Devanshi Prasad
Advocate
C/o Argus Partners, Solicitors & Advocates
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Kolkata – 700016
Mob.: 8420311945
Email Id: devanshi.prasad@argus-p.com
Enrolment no.: F/653/593/2023

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Advocate for Applicant/Interveners

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BEFORE THE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

I.A. No. of 2024

In

Appeal No. 7 of 2024

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

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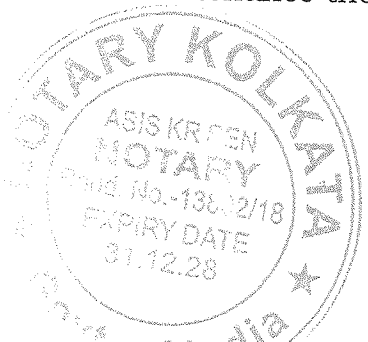
APPLICATION ON BEHALF OF THE INTERVENOR

1. The Applicant/Intervenor is a company incorporated under the provisions of the Companies Act, 2013. The Applicant is a green field project of Essel Mining & Industries Limited, located in Angul District of Odisha. The Applicant is a Mine Developer & Operator for Mahanadi Coalfields Limited (**'MCL'**), *i.e.*, the Respondent No. 2 in Appeal No. 7/EZ/2024 (hereinafter referred to as **'Appeal'**).

2. The Appellant has preferred the Appeal seeking prayers *inter alia* to quash the Environmental Clearance (EC) dated March 6, 2024 bearing 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, allocated to MCL is slated for operation with a production capacity of 25 MTPA over an area of 1111.85 hectares in Odisha.

3. The Applicant is making the instant application for intervention in the Appeal proceedings since the Applicant has a direct interest in the ongoing project being carried out at the said mines. The Applicant states that the Applicant and the project proponent MCL have entered into a Coal Mining Agreement dated June 17, 2022 (**'Mining Agreement'**) whereby the Applicant 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 the Applicant company is directly dependent upon the operation and development of said mines. The Applicant craves leave to refer to and rely upon a copy of the Mining Agreement at the time of hearing of this application, if necessary.

4. As per Clause 5.1.5 (e) of the Mining Agreement, the Applicant 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'. Further, as per Clause 29.1.6 of the Mining Agreement, the Applicant and MCL agreed to appoint the Applicant as a 'Pure Agent' of MCL by entering into a separate agency agreement.

5. Pursuant to the above, the Applicant and MCL entered into a Pure Agency Agreement dated June 17, 2022 (**'Pure Agency Agreement'**). As per Clause 2(a) of the Pure Agency Agreement, the Applicant was obligated to procure issuance of the EC from the MoEF on behalf of the project proponent. A copy of the Pure Agency Agreement is annexed hereto and marked as **Annexure A**.

6. In view of the aforesaid facts, it is submitted that inasmuch as the Applicant herein is vitally interested in the instant project and also has the necessary first-hand information in connection with the procurement of the EC on behalf of MCL by acting as the project proponent's 'Pure Agent', it is

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imperative that the Applicant is allowed to intervene in the instant proceedings.

7. 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. A copy of the email dated September 5, 2024 issued by MCL in this regard is annexed hereto marked as **Annexure B**.

8. The brief facts relevant for the present application are mentioned herein below:

   (a) The Subhadra Open Cast Mine (Utkal-A Coal Mine) was allocated to M/s Mahanadi Coalfield Limited (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 EIA Notification, 2006 dated September 14, 2006 as amended from time to time.

   (b) MCL submitted an application to MoEF for the Terms of Reference (ToR) 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 Environmental Impact Assessment (**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 C**. Subsequently, MCL submitted an application for an amendment to the ToR on December 11, 2021 to MoEF. The sectoral Expert Appraisal Committee (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 C 1**

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(c) As per the terms of the Pure Agency Agreement, for the purpose of obtaining the EC, the Applicant 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 Applicant to Vardan Environet is annexed hereto and marked as **Annexure D**. A copy of the QCI-NABET accreditation of the Vardan Environet is annexed hereto and marked as **Annexure E**.

(d) 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.

(e) 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,

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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 F**.

(f) Subsequently, Vardan Environet submitted its test reports to the Applicant 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 below the limit of quantification (BLQ). The term "Limit of Quantification" 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 G**.

(g) 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

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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 H**.

(h) 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 I**.

(i) 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 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 RA:

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2017 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 J**.

(j) 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 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 K**.

(k) 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

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included in Chapter 7 of the Final EIA/EMP report submitted on the PARIVESH portal on October 12, 2023.

(l) 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.

(m) 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

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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 L**.

(n) 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.

(o) 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 below the limit of quantification (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 Appellantbefore 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 M**.

(p) 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.

(q) 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

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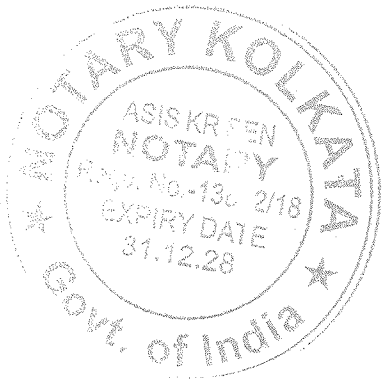
held on February 12-14, 2024 is annexed hereto and marked as **Annexure N**.

(r) 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 Appeal.

(s) The Appellant has alleged, in the Appeal, 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.

(t) 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.



(u) In this regard, the Applicant refers to the Environmental Impact Assessment (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 O**.

(v) 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 P**.

(w) 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

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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 Q**.

(x) 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 R**.

(y) The Appellant has also alleged that neither the test reports nor the Environment Assessment Committee's (EAC) 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 S**.

(z) 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 "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 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

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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 Below limit of Quantification, 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.

9. 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.

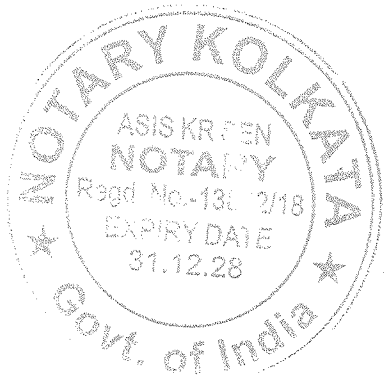
10. The Appellant has failed to establish any cause of action and therefore the present Appeal challenging the EC granted has no legs to stand on. The

present Appeal has been filed with the aim of harassing the Applicant and MCL and ought to be quashed by this Learned Tribunal.

11. As stated above, the entire commercial business and operation of the Applicant Company depends upon the EC being granted to the project proponent. Further, since the Applicant entity has procured the issuance of EC from the MoEF which is the subject matter of challenge before this Learned Tribunal, no orders can be passed by this Learned Tribunal in the absence of the Applicant.

12. In light of above facts and circumstances, the Applicant is a necessary party to the Appeal proceedings and ought to be impleaded as a party to the Appeal proceedings for proper adjudication thereof, and the instant Appeal should be dismissed.

13. The application is made *bona fide* and in the interest of justice.



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PRAYER

a. In view of the facts and circumstances stated hereinabove, it is humbly prayed that Your Lordships may be pleased to allow the instant application and allow the Applicant to intervene in the instant Appeal.

b. Dismiss the instant Appeal with costs as being completely without merit.

c. Pass such other or further orders or orders, direction or directions as this Learned Tribunal may deem fit and proper.

And your Applicant as in duty bound shall ever pray.

Drishti Prasad
Advocate for the Applicant/Intervenor

NOTARY KOLKATA
ASIS KR SEN
NOTARY
Regd. No.-13802/18
EXPIRY DATE
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Govt. of India

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VERIFICATION

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 working for gain as a Director at Subhadra Coal Mining Limited ('Applicant'), am the authorized signatory of the Applicant by virtue of Board Resolution dated 8th February 2024, do hereby verify that that the contents of paragraph 1 are true to my personal knowledge, the contents of paragraphs 2 to 5 and paragraph 6(partly) are based on records maintained by the Applicant and the contents of paragraph 6(party) and paragraphs 9 to 13 are my humble submissions before this Hon'ble Tribunal and that I have not suppressed any material fact.

Date: September 9, 2024

Place: Kolkata

For SUBHADRA COAL MINING LIMITED

Director

Signature of the Applicant

Solemnly affirmend and declared
before me on identification

ASIS KUMAR SEN
City Civil Court, Kolkata
Notary
Reg. No -13802/18

09 SEP 2024

Identified by me

ADVOCATE

Enrolment No.: F/653/593/2023

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ANNEXURE - 'A'

DUPLICATE

Registered No. 304 of 2022 0263
Dated this 17th day of June 22

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SCHEDULE - S

(See Clause 29.1.6)

NOTARY 17.6.22
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.**"

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.

Identified by me 17/06/22 Advocate Bar Angul

17/06/2022

1(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 KOLKATA ASISH KR. NAYAK Regd. No. 13 EXPIRY DATE 31.12.2028

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DISTRICT TREASURY ANGUL
12 MAY 2022
Treasury Officer, Angul

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NOTARY
M.R. Mohapatra
Angul Odisha
Regd.No 13732/18
GOVT. OF INDIA

16.6.22
Sri Akhandalamani Das
Stamp Vendor, Angul

This deed of Duplicate copy of the original (affidavit) executed by R.V. Rao ... being identified by Dayal ... Das ... explained the contents ... the executant who admitted to be ... attest the same today this ... day ... 20... under my official seal & signature

Mamuta Mohapatra
NOTARY (Central Govt.) Angul
Regd.No. 13732/18

General Manager
Subhadra Area, MCL

NOTARY KOLKATA
ASIS KR ...
Regd. No.-13...
EXPIRY DATE
31.12.28
GOVT. OF INDIA

SUBHADRA COAL MINING LIMITED
INDUSTRY HOUSE
10, CAMAC STREET
KOLKATA-17

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(b) The rules of interpretation as set out under the Project Contract shall apply *mutatis mutandis* to this Agreement.

2. Services.

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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;

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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.

Identified by me

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.

17/06/2022

General Manager

PHADRA COAL MINING LIMITED INDUSTRY HOUSE 10, CAMAC STREET KOLKATA-17

NOTARY KOLKATA

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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:

General Manager
Subhadra Area, MCL

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(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.

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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

17/06/23

SUBHADRA COAL MINING LIMITED
INDUSTRY HOUSE
10, CAMAC STREET
KOLKATA-17

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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.

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General Manager
Subhadra Area, MCL

17/6/22

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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:

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On behalf of the PRINCIPAL

Signed:

By: R. 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

SUBHADRA COAL MINING LIMITED INDUSTRY HOUSE 10, CAMAC STREET KOLKATA 17

Identified by me
17/06/22
Adv.
(Bar Asso) Angul
0120/83
9437360158

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ANNEXURE-'B'

Office of the General Manager
(Subhadra Area)
NEAR BIJU MAIDAN
Po/Dist: Angul – 759122 (Odisha)
Website :www.mcl.gov.in
mail Id: gmsubhadraarea@gmail.com
gm-subhadra.mcl@coalindia.in
Phone No-06764-296537

Ref No: MCL/ GM(SA)/ 2024/ 141

Date: 05.09.2024

To,

The Project Head
M/s SCML(MDO)
Camp : Bhubanpur, Parang
Near Pitabali Temple
Angul-759143
Mail Id: scml@adityabirla.com

Sub: Direction to M/s Subhadra Coal Mining Limited [MDO, Subhadra Opencast Project, MCL (Utkal - A Mine)] for taking action to intervene in the matter of the appeal No - 07/2024 (IA No. 38/2024) of Sanjaya Kumar Mishra vs MoEF&CC & Ors and defend its interest as Pure Agent of MCL in the capacity of MDO of Subhadra Opencast Project (Utkal - A Mine), MCL as per the Contract Agreement dated 17.06.2022 as any adverse order by the Hon'ble National Green Tribunal, the Eastern Zone Bench, Kolkata shall adversely impact interest of M/s SCML

Ref No: email dated 03.08.2024 at 5.16 PM
email dated 16.08.2024 at 9.39 PM
Meeting at 5.30 PM on 05.09.2024 in the office of MCL's appointed Advocate Shri Ayan Poddar at Kolkata

Dear Sir,

As it has already been communicated to M/s SCML that Sanjaya Kumar Mishra has filed an appeal in the Hon'ble National Green Tribunal, the Eastern Zone Bench, Kolkata vide No. 07/2024 (IA No. 38/ 2024) against MoEF&CC & Ors challenging the grant of Environment Clerance of Subhadra Project by MoEF&CC, New Delhi on 06.03.2024. Since the interest of Mahanadi Coalfields Limited is involved in this case, MCL has already appointed advocate/ reputed counsel soas to intervene in this case and defend its interest. Being the Pure Agent of MCL in the capacity of MDO of Subhadra Opencast Project (Utkal - A Mine), MCL as per the Contract Agreement dated 17.06.2022, the interest of M/s Subhadra Coal Mining Limited (M/s SCML) is also fully involved in this case as any adverse order by the Hon'ble National Green Tribunal, the Eastern Zone Bench, Kolkata shall adversely impact the Environment Clearance of Subhadra Project (Utkal-A Coal Mine) resulting into gross deficiency in the execution of the contract on the part of M/s Subhadra Coal Mining Limited.

Therefore, M/s Subhadra Coal Mining Limited is again directed to take immediate action to intervene in this case by independently appointing reputed counsel to defend its interests in the Hon'ble National Green Tribunal, the Eastern Zone Bench, Kolkata as the cause of this case has arisen by the acts of M/s Subhadra Coal Mining Limited and its consultant(s).

Yours faithfully,

Kripa S Singh

General Manager
Subhadra Area

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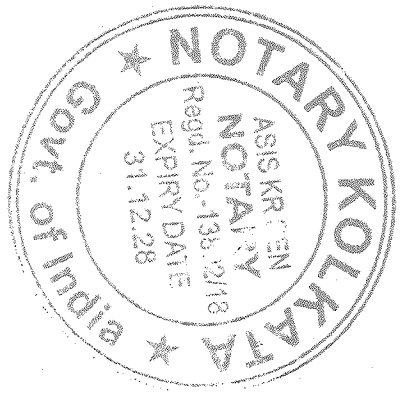
Forwarded for kind information to:

(1) CMD, MCL – The Authority (2) D (P), MCL (3) DT (OP), MCL (4) D (F), MCL (5) DT (P&P), MCL (6) GM (E&F), MCL (7) GM (CMC), MCL (8) GM (L&R), MCL (9) GM (P&P),MCL (10) GM (Legal), MCL	(1) MD, M/s Essel Mining & Industries Ltd (2) Head (Coal Mining), M/s Essel Mining & Industries Ltd

Copy to:
(1) PO, Subhadra Project/ SO (Min/ P&P), Subhadra Area
(2) SO(Personnel), Subhadra Area
(3) SO(L&R), Subhadra Area
(4) SO (Survey/ E&F), Subhadra Area



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.

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(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

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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

(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.

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(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.

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(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), 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

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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.

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EXPIRY DATE
31.12.28

~~42~~ ANNEXURE - 'C-1'

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 - 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 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

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45 ANNEXURE-'D'

ADITYA BIRLA

SUBHADRA COAL MINING

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

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) f**or 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

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ADITYA BIRLA
SUBHADRA COAL MINING

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. <u>Baseline Study</u>

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.

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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

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.

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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: 2022.08.11 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=3e9dec6afb72fc742fd6e8a4af836f926ffa0ad06b81ada958d75a7d70f81e23, postalCode=122050, street=PLOT NO 82A,IMT MANESAR,GURGAON,Gurgaon,Haryana-122050, serialNumber=24ae6c36b2fd8e64f2f6f0c52d0e3b1d6b076825c1b414a7a07b1b86f8889016, ou=Sales, o=VARDAN ENVIRONET, cn=ANSHUL YADAV
Date: 2022.08.12 13:54:25 +05'30'

ANSHUL YADAV
(Authorized Signatory)

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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. **General Responsibilities of Service Provider:**

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 or 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:**

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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

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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

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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 or 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.

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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

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~~60~~ 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.

NOTARY KOLKATA Govt. of India Regd. No. 12/18 EXPIRY DATE 31.12.2028

QUALITY COUNCIL® OF INDIA
QCI 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

NOTARY KOLKATA GOVT. OF INDIA ASIS KR. SEN NOTARY Regd. No.-135/2/18 EXPIRY DATE 31.12.2024

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	Malibrabmani	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

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

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	Malibrabmani	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 Envirolab

~~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	Report No:	VEL/AA/001-026
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	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:	Project Site (Pidhakhamana) (A1)	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
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	41.3	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	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	--

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- BelowLimit of Quantification, *LOQ- Limit of Quantification

VARDAN ENVIROLAB (Checked By) Kushal

VARDAN ENVIROLAB (Approved By) Pratap Singh

NOTARY KOL ASIS KR SEN NOTARY Regd. No.-136/2 EXPIRY DATE 31.12.23

Terms & Conditions

- The results reported relate only to the samples tested. In case sample is not drawn the results apply to the sample as received.
- This test report in full or in part, shall not be reproduced in any court of law without prior written approval of the laboratory.
- To confirm the authenticity of this certificate of analysis, please contact us through email at lab@vardan.co.in
- Laboratory is not responsible for the authenticity of photocopied test report. The test samples will be retained only for specific period
- The report no. with Suffix A-Amended Report.
- This test report will not be used for publicity or advertising or media purpose without prior written permission on the laboratory.
- Giving opinions does not imply endorsement of the tested sample by the lab. Under no circumstances, the lab accepts any liability caused by the use or misuse of the test report.

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
		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(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	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	33.6	*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)
Kusum Sharma

(Approved By)
Pratap Singh

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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
		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:	Kosala (A3)		

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)
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)

VARDAN ENVIROLAB (Approved By)

NOTARY GURUGRAM ASIS KUMAR NOTARY Regd. No. EXPIRY 31.12.2023

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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/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/m^3)	Ozone ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Benzène ($\mu g/m^3$)	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	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- 1.1ng/m³), Benzène (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/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
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(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	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	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	20.0	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	0.75	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 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 ($\mu g/m^3$)	Benzène ($\mu g/m^3$)	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	0.90	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), Benzène (LOQ- 0.5µg/m³), Benzo pyrene (LOQ- 0.5ng/m³), Lead (LOQ- 0.1µg/m³), Nickel (LOQ- 5.0ng/m³), Mercury (LOQ- Ang/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:	Kumunda (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)	Benzène (µg/m³)	B(α) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead (µg/m³)	Mercury (ng/m³)
05.10.2022	58.4	33.9	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	35.9	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	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), Benzène (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
		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(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	44.6	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	24.0	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	43.7	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	42.9	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- 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/209-234	Report No:	VEL/AA/209-234
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:	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	0.80	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	58.8	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- 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/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 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:	Kalamchhuin (A10)		

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)
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- 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)
Kushal Singh

(Approved By)
Pradip Singh

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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, 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:	ChhotaGolagadia (A11)		

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 ($\mu g/m^3$)	Benzène ($\mu g/m^3$)	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	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	20.0	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	26.0	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	26.5	*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), Benzène (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)
Kushal Sharma

(Approved By)
Pradip Singh

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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
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:	Dera (A12)		

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)	Benzène (µg/m³)	B(α) P (ng/m³)	Arsenic (ng/m³)	Nickel (ng/m³)	Lead (µg/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- 0.1ng/m³), Benzène (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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ANNEXURE - 'H'

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

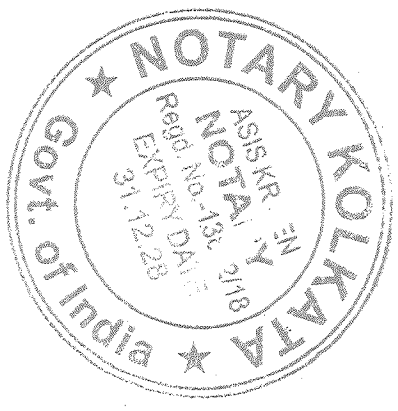
S. No.	Pollutant	Time Weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)	
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	• Improved West and Geake • Ultraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	• Modified Jacob & Hochheiser (Na-Arsenite) • Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 µm) or $PM_{10} \mu g/m^3$	Annual*	60	60	• Gravimetric • TOEM • Beta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5 microns) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	• Gravimetric • TOEM • Beta attenuation
		24 hours**	60	60	
5	Ozone (O_3) $\mu g/m^3$	8 hours **	100	100	• UV photometric • Chemiluminescence • Chemical method
		1 hour **	180	180	
6	Lead (Pb) $\mu g/m^3$	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	

(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) $\mu g/m^3$	Annual*	100	100	• Chemiluminescence • Indophenol blue method
		24 hours**	400	400	
9	Benzene (C_6H_6) $\mu g/m^3$	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.



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 छोड 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"
Bharṭṛhari—Nītiśatakam
"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

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 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.

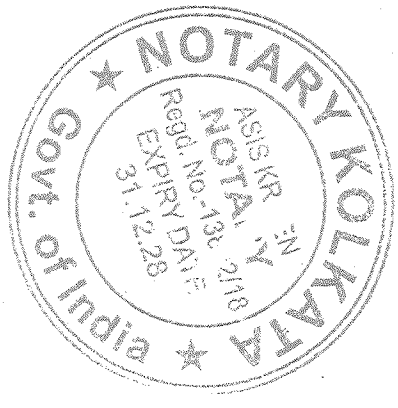
The aromatic hydrocarbons, namely, benzene, toluene and xylene have many industrial uses, most notably as a solvent for numerous materials and as a fuel additive. They are also used in the manufacture of various chemicals, rubber, insecticides, pharmaceuticals, explosives, etc. Though they are very useful 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*)'.



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

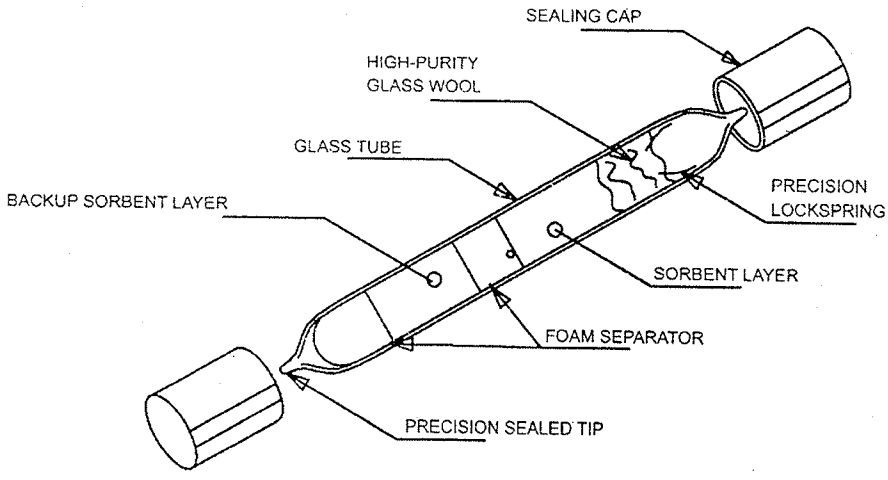


FIG. 1 SORBENT/SAMPLE TUBE FOR ACTIVE SAMPLING FILLED WITH ACTIVATED COCONUT SHELL CHARCOAL (CSC)

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.

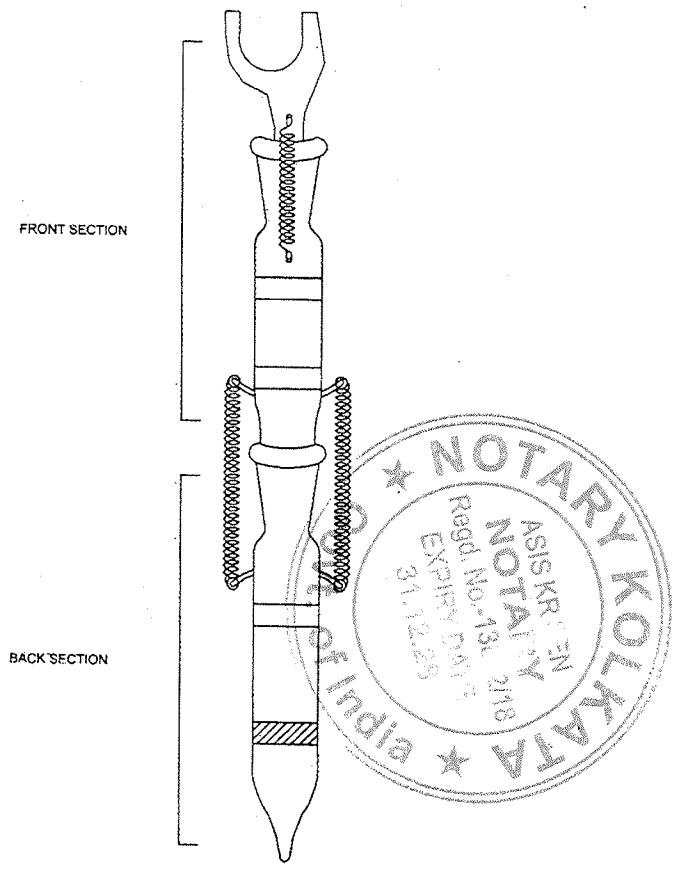


FIG. 2 INLET AND OUTLET OF THE SORBENT/SAMPLE TUBE

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.

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*

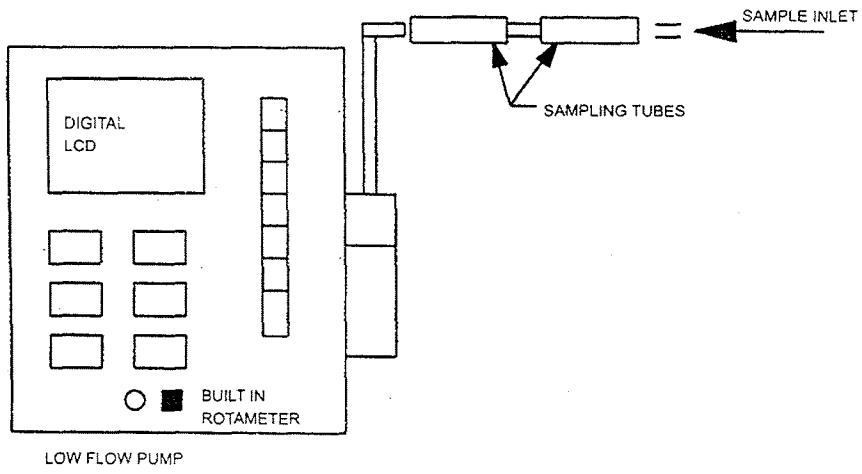


FIG. 3 LOW FLOW SAMPLING PUMP WITH SAMPLING TRAIN

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

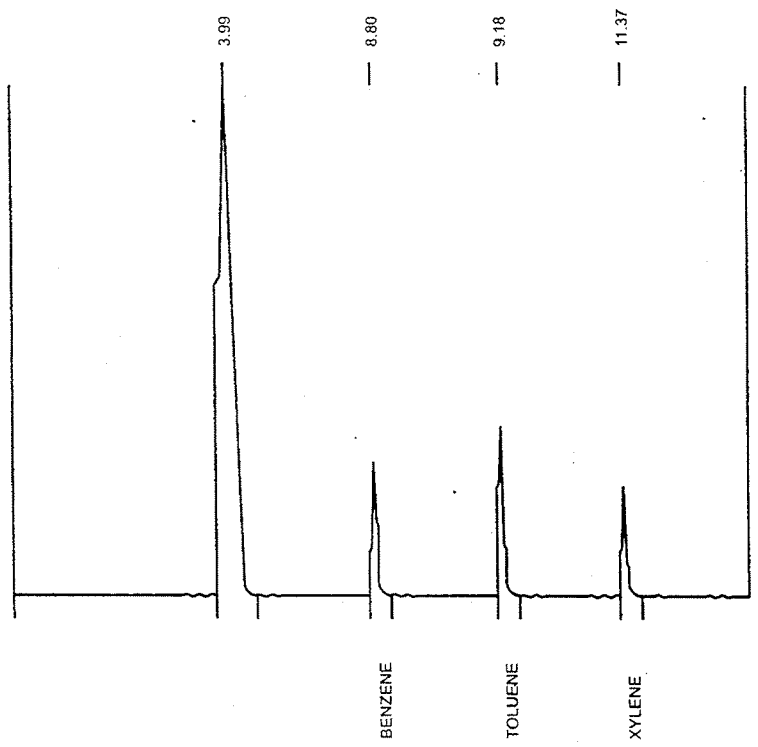


FIG. 4 TYPICAL CALIBRATION CHROMATOGRAM OF BENZENE, TOLUENE AND XYLENE
(Using column PE 624 at 0.017 4 µg/µl concentration of analytes)

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).

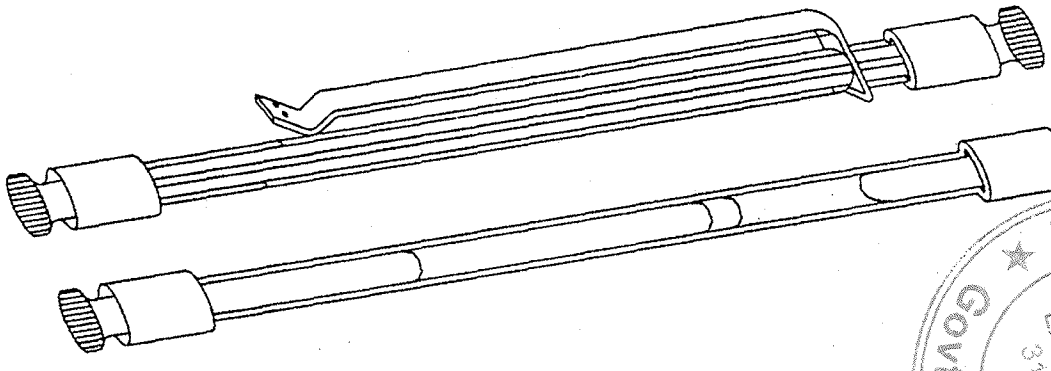


FIG. 5 SORBENT/SAMPLE TUBES OF STAINLESS STEEL OR GLASS FILLED WITH ADSORBING MATERIAL (TENAX OR SO) AND PROTECTING CAPS

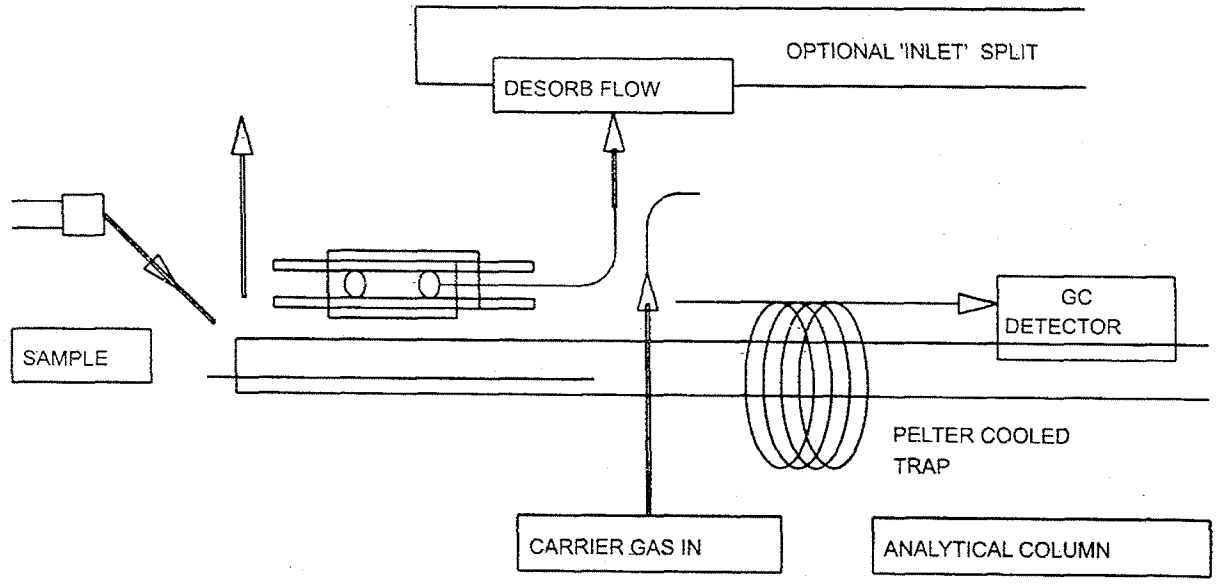


FIG. 6 STAGE 1 : SAMPLE TUBE DESORPTION OR AIR SAMPLE TRANSFER TO TRAP

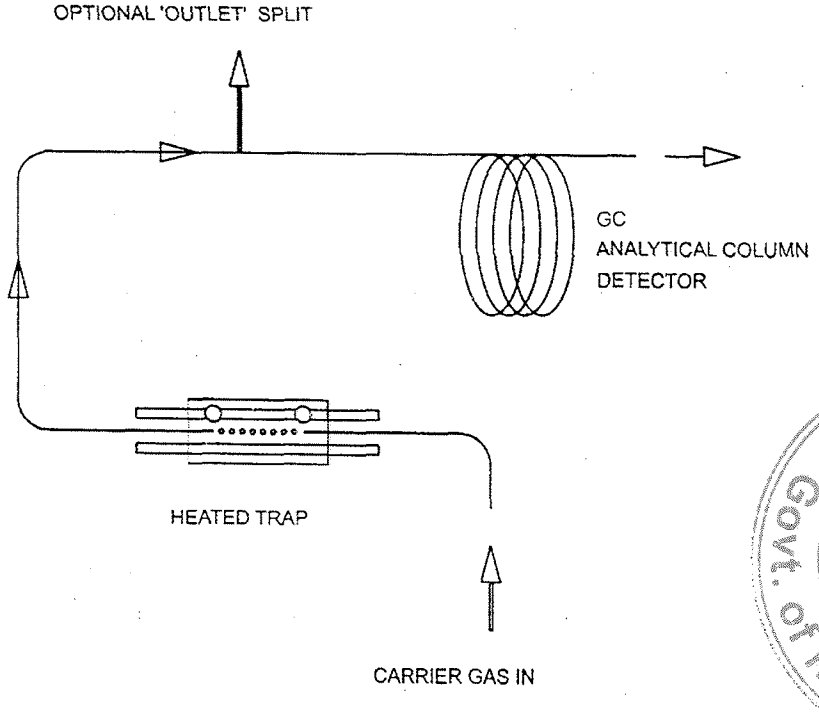


FIG. 7 STAGE 2 : TRAP DESORPTION
(Sample transfer to GC Column)

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.

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.

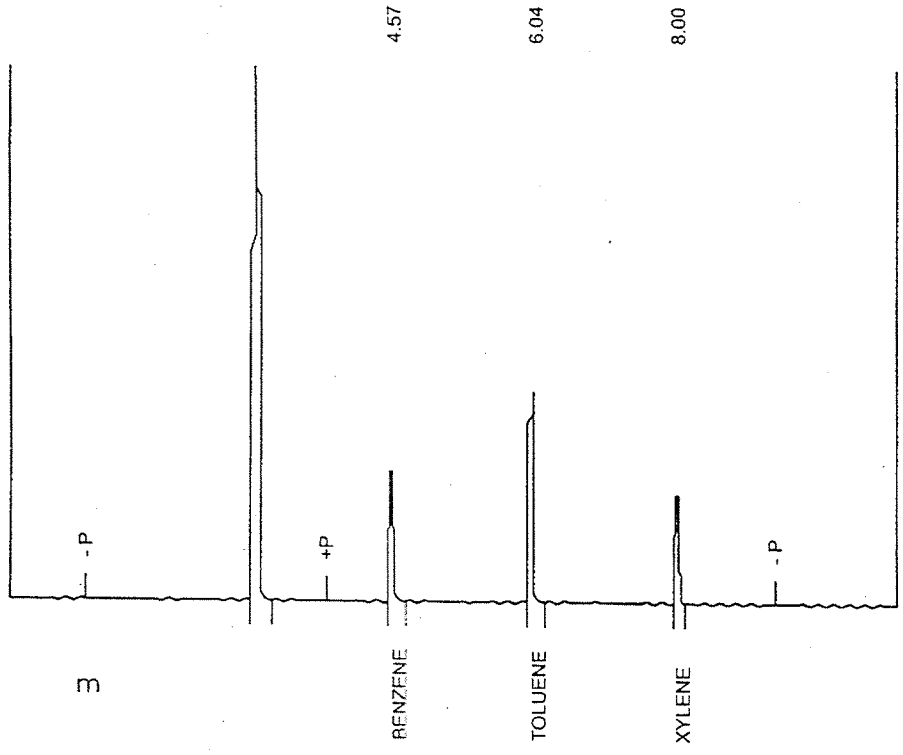
   Analytes are transferred to the column in the form of narrow band of vapor. Desorption in the focusing

trap initiates the analytes to run through GC column. Different thermal desorbers may have different arrangements for automation. Alternatively, use equivalent manual desorption

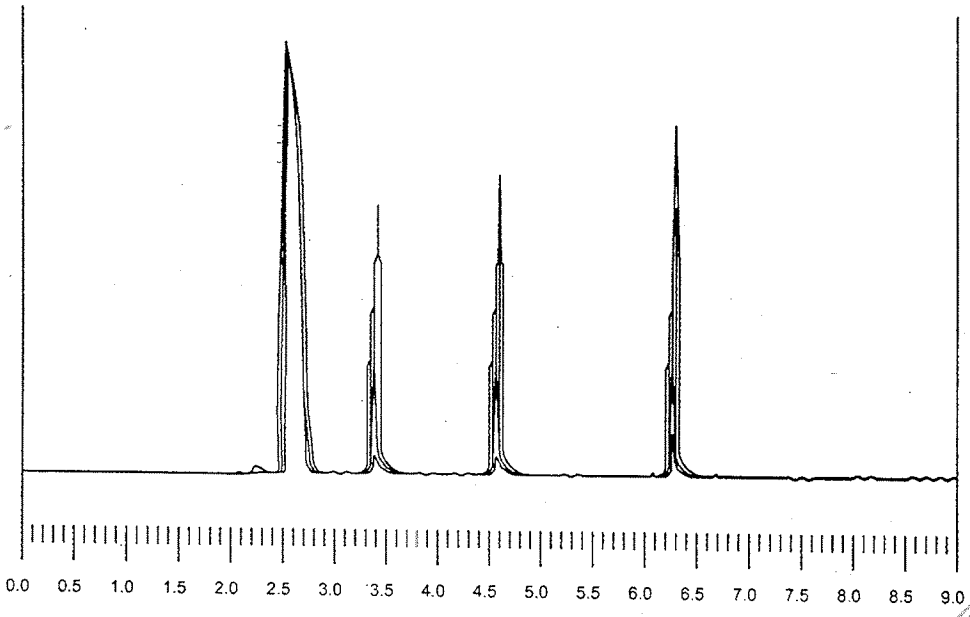
NOTE — Components should normally be desorbed from the focusing trap in backflush mode, that is, with the gas flow through the cold trap in the reverse direction to that used during analyte focusing.

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

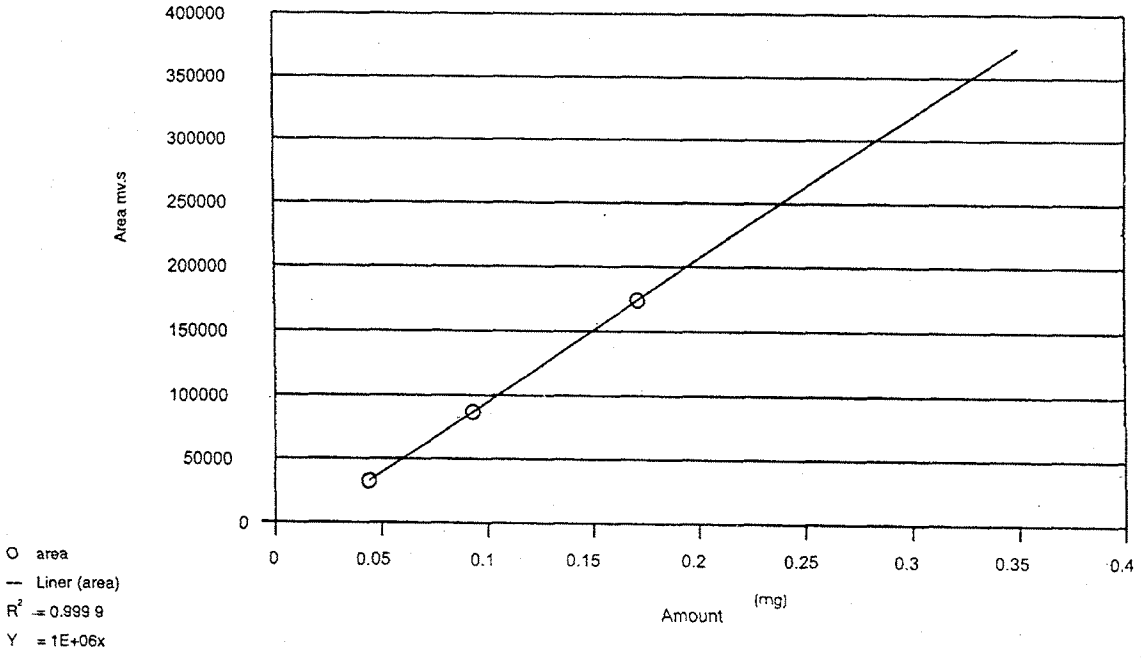


8B Overlay View on ATD-GC-FID System

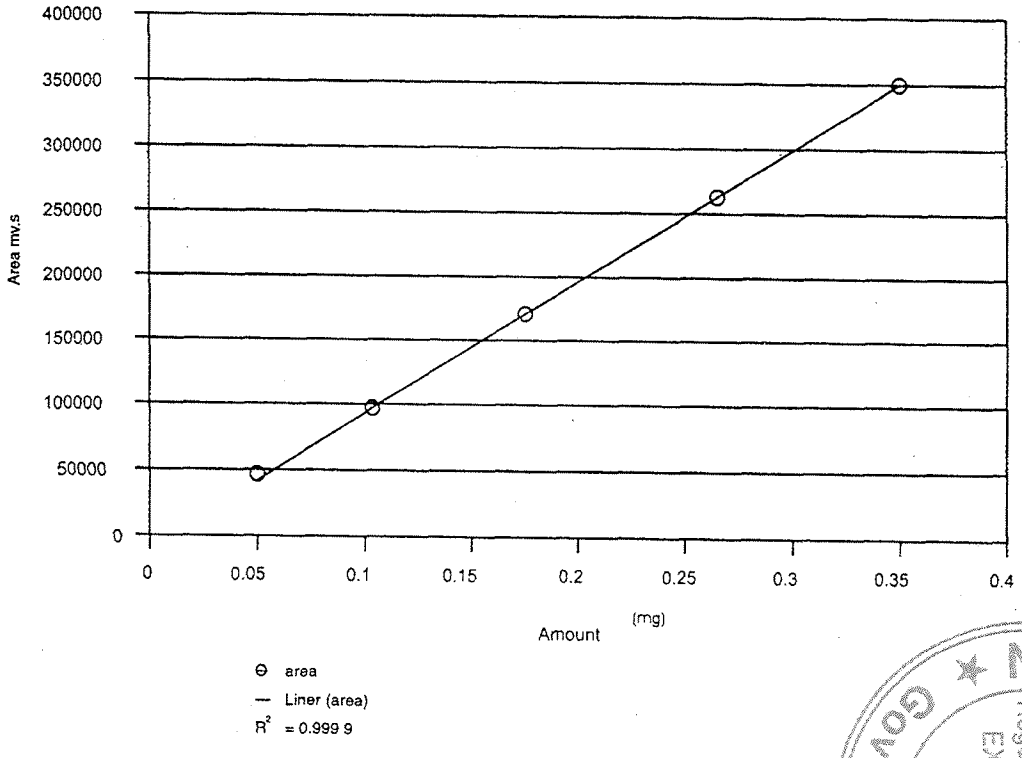
FIG. 8 CHROMATOGRAMS OF BENZENE, TOLUENE AND XYLENE (Using Column PE5, 25 m × 0.20 mm, d_f = 0.33 µm 5 percent phenyl 95 percent dimethyl polysiloxane, at concentration of analytes, 0.017 4 µg/µl)

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.

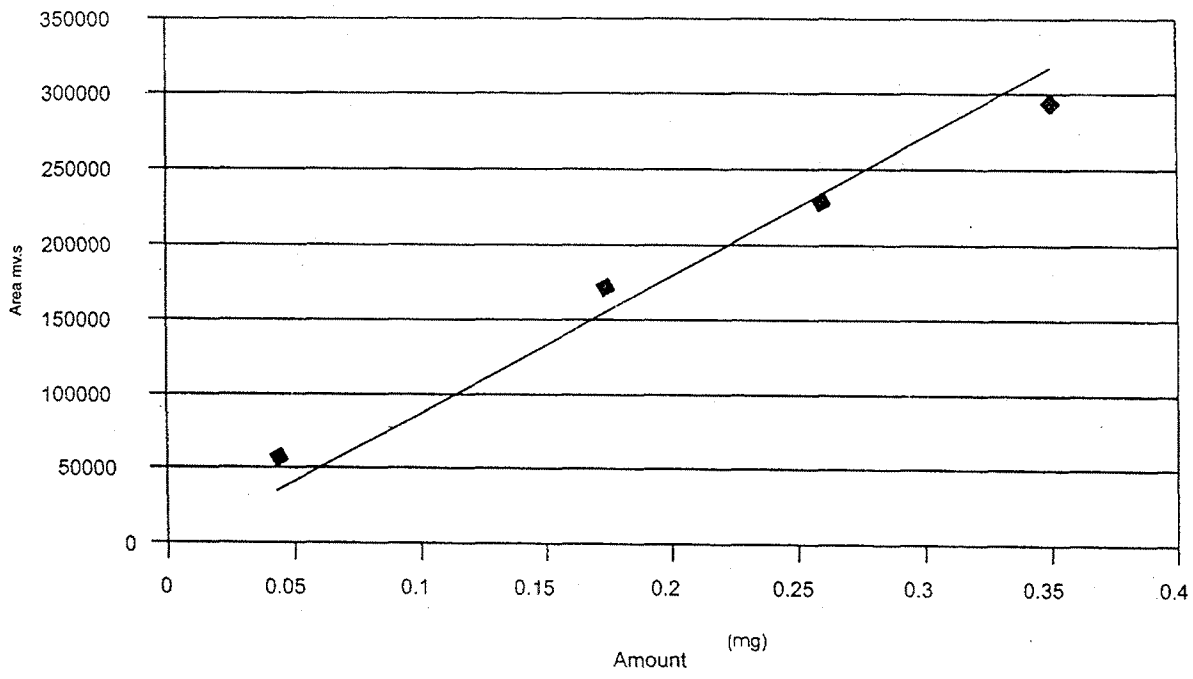
NOTE — Sample splitting is one of the key approaches to water management. Moisture management by sample splitting is applicable to relatively high concentrations (10 ppb) or large volume air samples.The mass of water retained by the sorbent tube during sample collection may be sufficiently reduced by 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/m^3 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 m^3.

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/m^3;

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

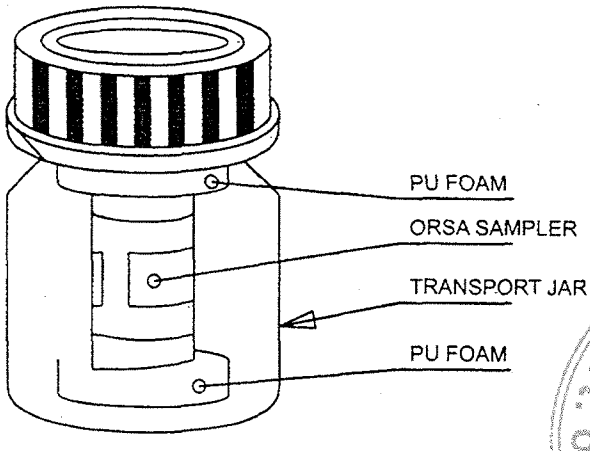


FIG. 10 PASSIVE DIFFUSION SAMPLER TUBE FOR BTX WITH TRANSPORTATION BOTTLE

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

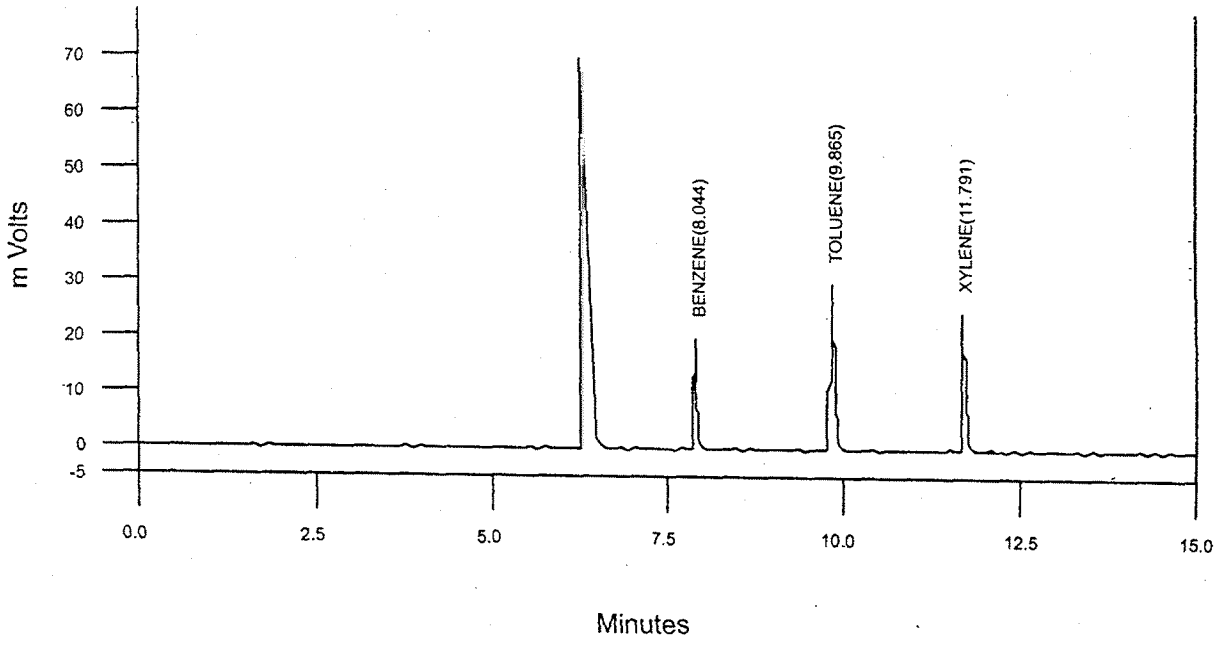


FIG. 11 STANDARD CHROMATOGRAM OF BENZENE, TOLUENE AND XYLENE
(Using CP_Silica PONA capillary column 50 m × 0.2 mm ID, film thickness d_f - 0.5 µm)

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:

$$\text{Audit accuracy, percent} = \frac{(\text{Spiked value} - \text{Observed value}) \times 100}{(\text{Spiked value})}$$

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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Member Secretary
SHRI N. K. PAL
Director (Chemical), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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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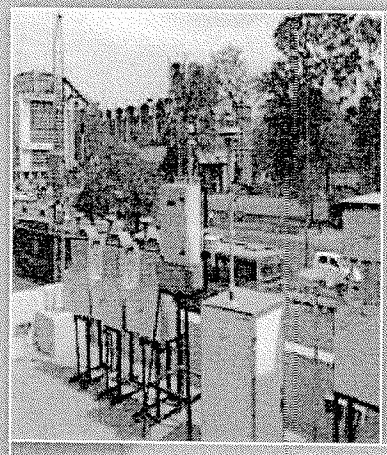
National Ambient Air Quality Series:
NAAQMS/37/2012-13

Guidelines for the Measurement of Ambient Air Pollutants

Volume-II



Guidelines for Real Time Sampling & Analyses

IN PURSUIT OF CLEAN ENVIRONMENT
स्वच्छ पर्यावरण के लिए प्रतिबद्ध

CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment & Forests
Website: http://www.cpcb.nic.in

ANNEXURE- 'J'

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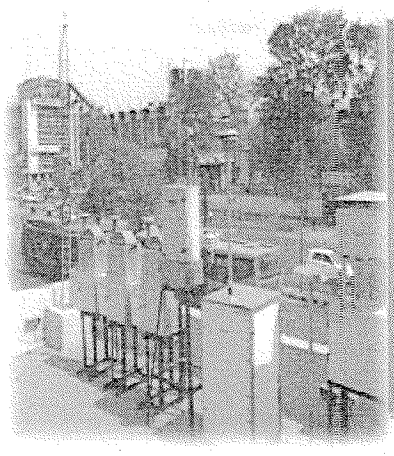
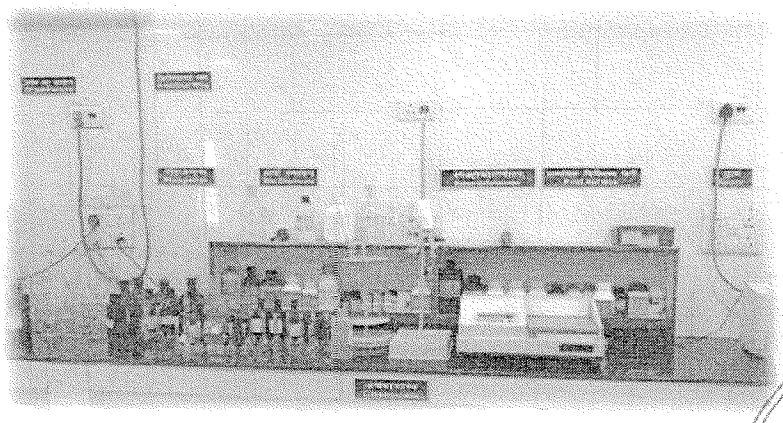
National Ambient Air Quality Series:
NAAQMS/37/2012-13

Guidelines for the Measurement of Ambient Air Pollutants

VOLUME-II



Guidelines for Real Time Sampling & Analyses



CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment & Forests
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अध्यक्ष
MIRA MEHRISHI
Chairman

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Central Pollution Control Board
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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

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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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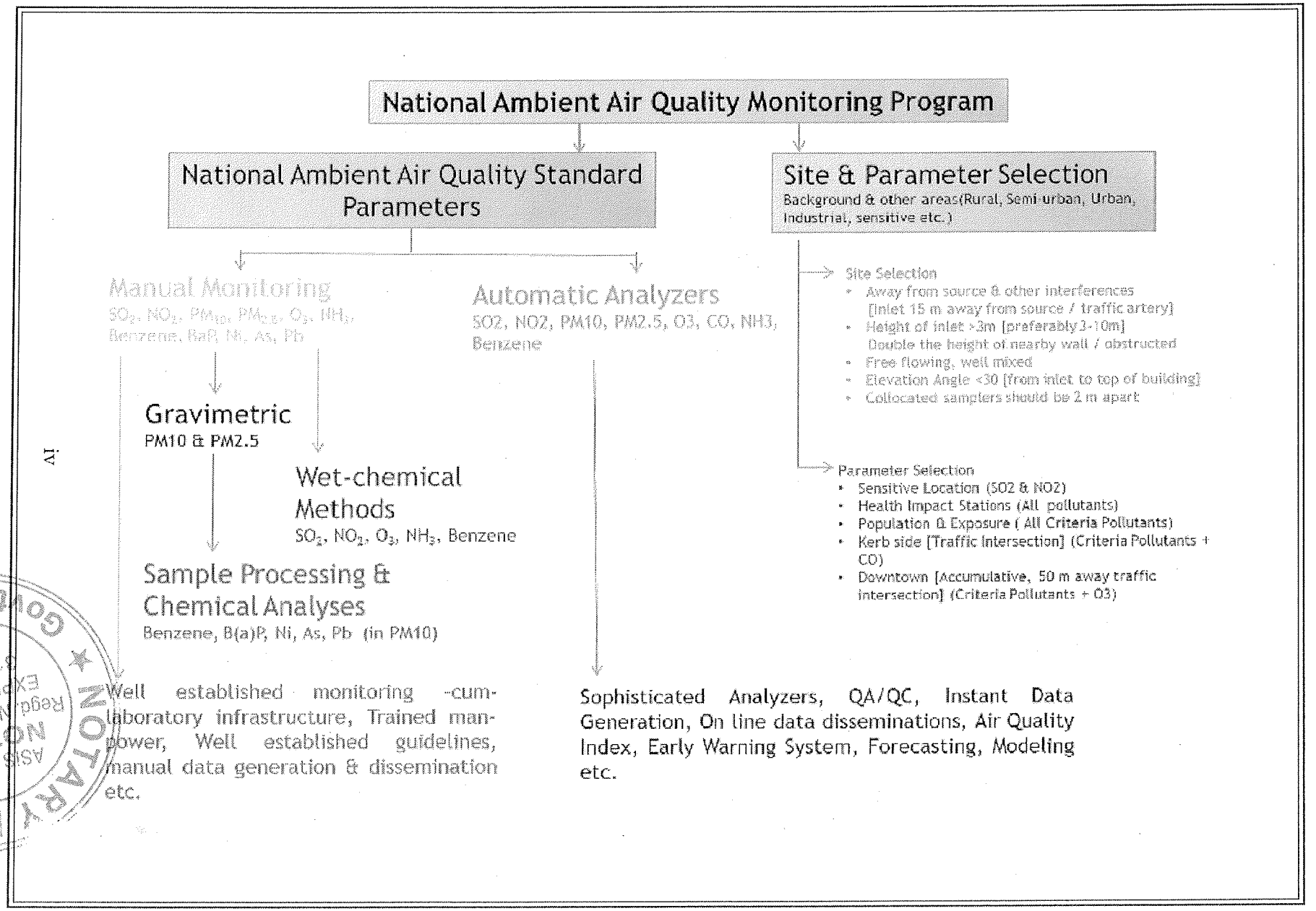
NATIONAL AMBIENT AIR QUALITY STANDARDS (2009)

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 * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogen Dioxide (NO_2), µg/m³	Annual * 24 Hours **	40 80	30 80	-Jacob & Hochheiser modified ($NaOH$-$NaAsO_2$) Method -Gas Phase Chemiluminescence
Particulate Matter (Size less than 10µm) or PM_{10}, µg/m³	Annual * 24 Hours **	60 100	60 100	-Gravimetric -TEOM -Beta attenuation
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m³	Annual * 24 Hours **	40 60	40 60	-Gravimetric -TEOM -Beta attenuation
Ozone (O_3) µg/m³	8 Hours * 1 Hour **	100 180	100 180	-UV Photometric -Chemiluminescence -Chemical Method
Lead (Pb) µg/m³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter
Carbon Monoxide (CO), mg/m³	8 Hours ** 1 Hour **	02 04	02 04	-Non dispersive Infrared (NDIR) Spectroscopy
Ammonia (NH_3), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -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.



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National Ambient Air Quality Monitoring Program

National Ambient Air Quality Standard Parameters & Methods

Manual : SO_2, NO_2, PM10, PM2.5, O_3, NH_3, Benzene, Ni, As, Pb, B(a)P	Parameters	Automatic : SO_2, NO_2, PM10, PM2.5, O_3, CO, NH_3, Benzene
Improved West & Geake Method	SO_2	Ultra-violet Fluorescence
Modified Jacob & Honchheiser 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 ED-XRF using Teflon filter	Ni, Pb	
AAS / ICP after sampling using EPM 2000	As	
Solvent Extraction followed by HPLC / GC Analyses	B(a)P	

IX

Contents

X2

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.

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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:

$$\rho_1 = \frac{\rho_2 \times m_r \times 298\rho}{24\,450 \times T \times 101.3}$$

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,

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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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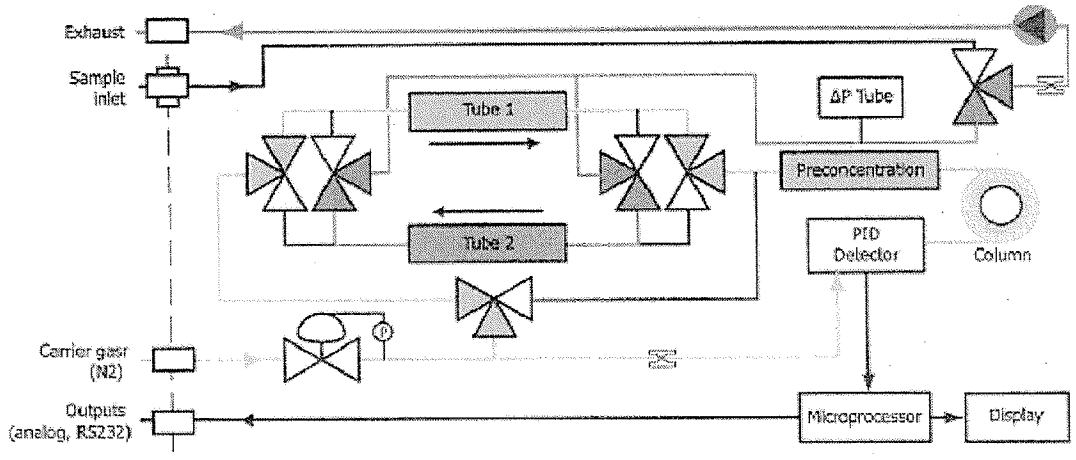
FLOW DIAGRAM OF BTX ANALYSER



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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.

IN PURSUIT OF CLEAN ENVIRONMENT
स्वच्छ पर्यावरण के लिए प्रतिबद्ध

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A Clean PARIVESH for all is our goal

NOTARY KOLKATA
ASIS KR SEN
NOTARY
Regn. No.-13, 2018
Expiry Date

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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/2212151001

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
- Telephone No.
- Contact person
- Sample description
- Condition of the Sample
- Sample seal is intact
- Tests required

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- 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.

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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

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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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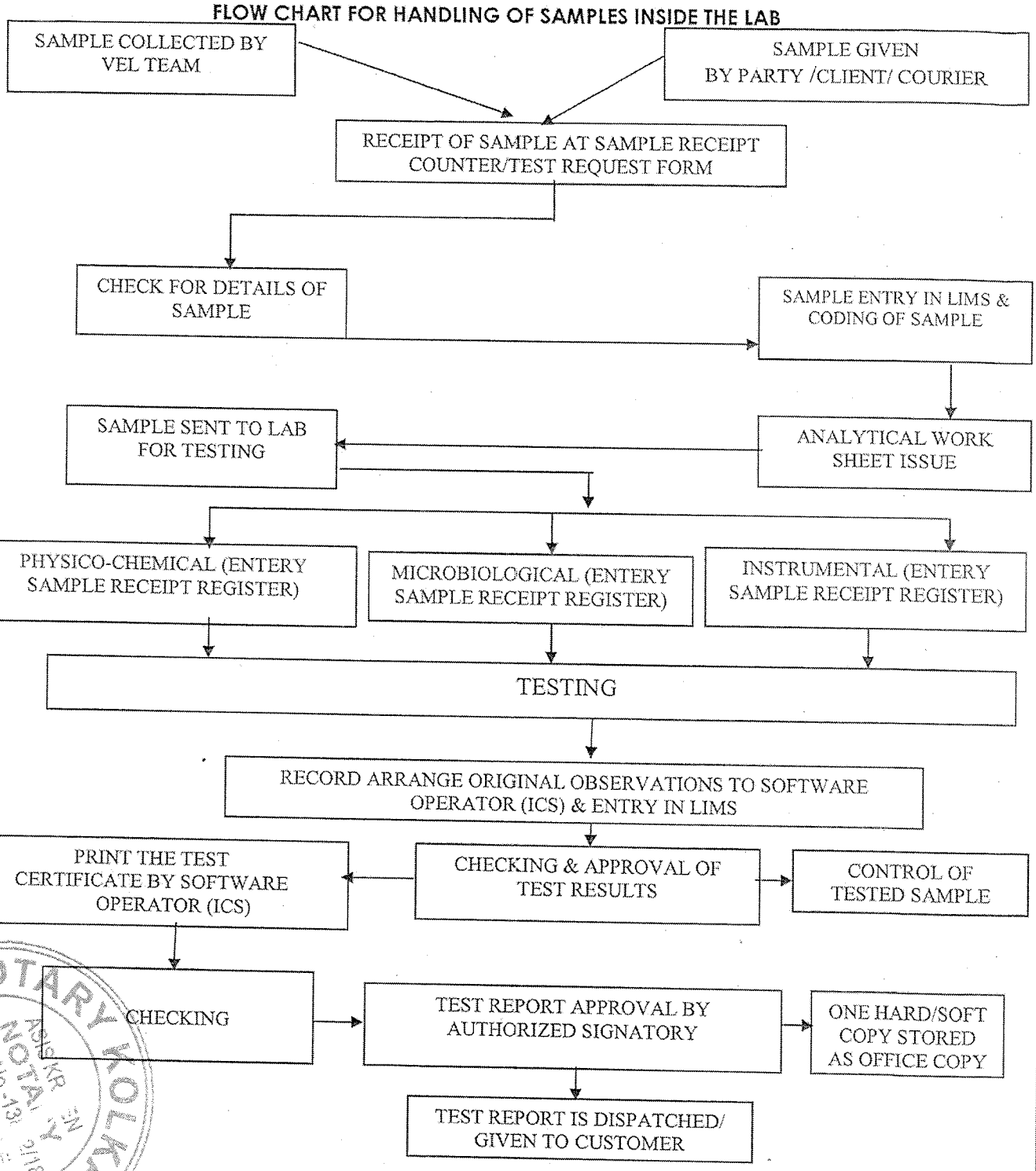
FLOW CHART FOR HANDLING OF SAMPLES INSIDE THE LAB



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.

- **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**

Procedure No. VEL/QSP/7.4/01

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	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

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samples from any damage and deterioration, during storage and testing in the laboratory.

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- 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..
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- 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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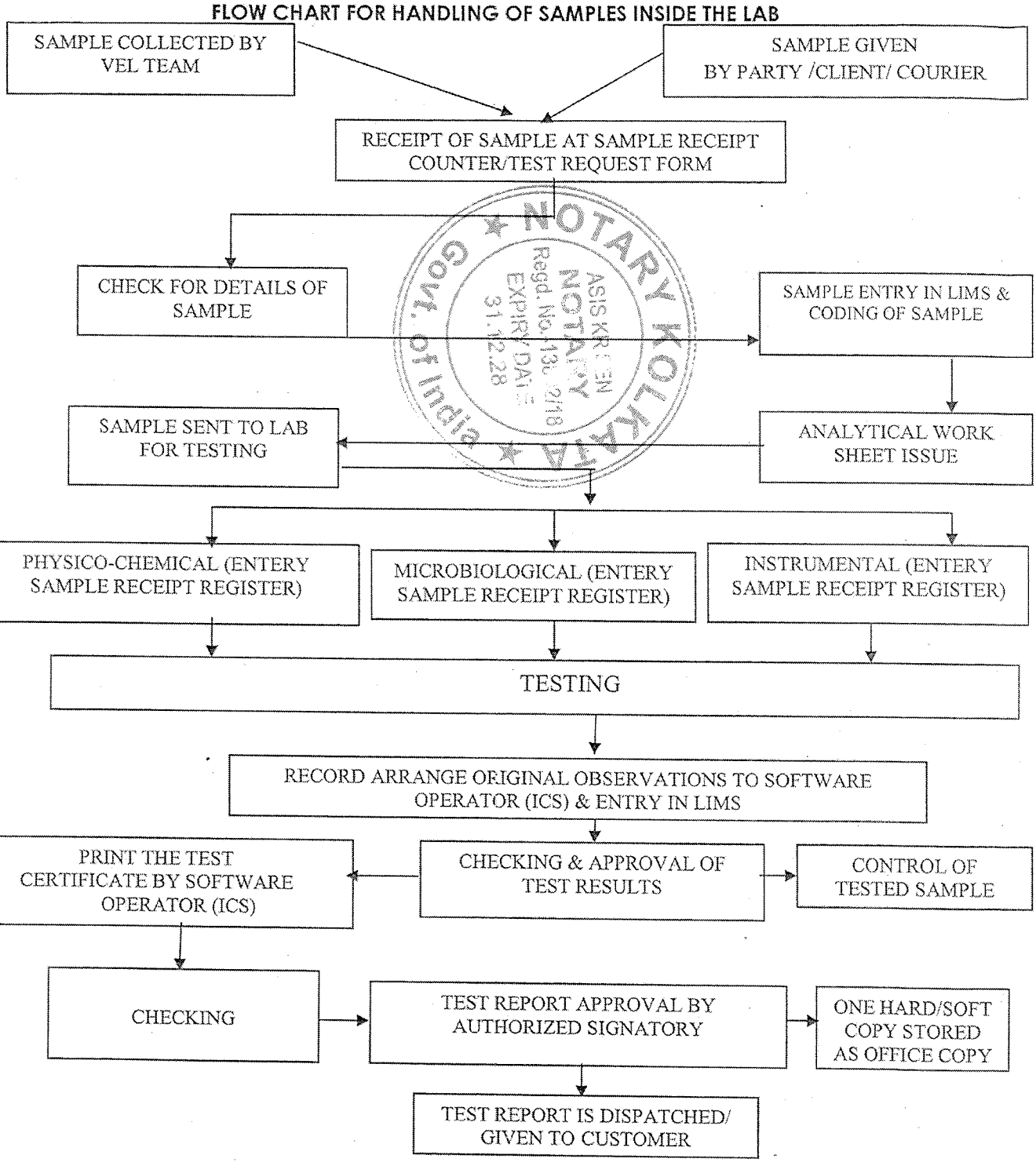
FLOW CHART FOR HANDLING OF SAMPLES INSIDE THE LAB



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7. 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.
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  - Hazardous chemical reagent like KCN, CNBr, are firstly neutralized by sodium thiosulphate and adjusted to PH 7 by acid or alkali and then disposed.
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- **Disposal of Microbiological waste:**
  - All used media, culture etc. are sterilized auto clave at 121°C (151b/m²) for 30 minutes.
  - After autoclaving, collect the media in a big vessel and allow cooling and mixing with water.
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  - Syrups, Oral suspension and capsule are made to slurry with H_2O & adjusted to PH 7 by acid / alkali.
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- 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.

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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**

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138 ANNEXURE-' L'

Annexure R1/3

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/Exct/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

to 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 $\mu g/m^3$, whereas the $PM_{2.5}$ is in the range of 28.1 to 51.9 $\mu g/m^3$. The SO_2 concentrations within the study area are in the range of 21.2 to 46.9$\mu g/m^3$ and the NOx are in the range of 20.5 to 41.2 $\mu g/m^3$. 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 $\mu g/m^3$. The NH_3 concentrations within the study area are in the range of 25.2 to 39.1 $\mu g/m^3$.

Air Pollution Impact Prediction - Post-Monsoon - The incremental increase in the values were projected to be 15.6168 $\mu g/m^3$ for PM_{10}, 8.9239 $\mu g/m^3$ for $PM_{2.5}$, 0.44623 $\mu g/m^3$ for SO_2, and 0.33468 $\mu g/m^3$ for NOx and for CO, 0.000223 mg/m^3. The value of Total GLC is 88.2168 $\mu g/m^3$

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).

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.*

Agenda No. 3.3

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)
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सत्यमेव जयते

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 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
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 su pply 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 I ndian 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 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: 4 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 – FCIS/EST-Rev-8(173)/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."

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, dully 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 a 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:

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:

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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.*

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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.

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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 3.5 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.*

3.1.5. 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 up heaving 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.	

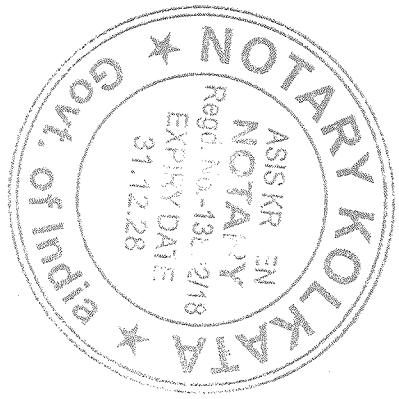
6.2.2 Earlier the proposal was considered in the 48th EAC meeting held on 25th August, 2023 wherein the committee has deferred the proposal for want of requisite information. The PP has submitted the reply on Parivesh portal vide letter dated 18.12.2023 and proposal was considered in 6th EAC meeting 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. 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 therma l power plant as proposed in EIAEMP report.	Prevailing EC has been granted for the production capacity of 2.75 MTPA (Normativ e). The coal production from the mine was 2.75 MTPA in FY 2022-23. The dispatch o f 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. G MR Warora and Sai Wardha Power Generation Ltd located near to the project purchas es a total quantity of 2.0202 MT. Remaining 1.48 MTPA of coal was transported to ot her coal customers. The traffic study has been conducted considering the transportatio n 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 al leged in the petition are authenticated by the site inspection report. Therefore, PP should plan to avoid the usage/construction of road for transportation of co al near the sensitive zone such as school, hospital, etc. and submit the alternati ve 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 pollutio n till the period of completion of mechanised system.	In this project the coal is transported to either nearby thermal power plan (only 1.30 k m 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, th e coal could not be transported to Majri Railway Siding. The route from the project sit e to Majri Railway Siding passes through the Warora Town. The Warora town does n ot have any peripheral road in west. Hence the coal could not be evacuated by the pres ent 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 altern ate coal evacuation route. Approval for construction of this road is issued by Dy. Secr etary, Revenue and Forest Department, Govt. of Maharashtra, Mumbai vide letter no. \$-'), this road will serve the purpose of local transport and public use also and deconge st 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 o f 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 far mers. 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 Oct ober, 2023. Out of 12 locations, 6 locations are near to the coal transportation route an d others are located within buffer zone of the project. During the traffic study, the leve l 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 u nder very good category in Section A & B and Section C as excellent. Vehicles carryi ng coal are being covered with tarpaulin to prevent spillage. Vehicles hired to carry co al 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 p recaution 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 i s enclosed.
4.	PP shall submit the drone video of OB dump along with the construction of T oe-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 Nationa l Institute of Technology, Nagpur on "Feasibility study regarding toe wall and providi ng remedial measures for black cotton soil dump towards Yekona Village in Amalgam ated Yekona I & II OC Mine". Based on the technical study the remedial measures pro posed 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 incl uding thermal power plant.	The MoU/FSA copies signed for coal transportation with Major consumers deliberate d under point no. 2 are enclosed.

3.2.3. Deliberations by the committee in previous meetings

Date of EAC 1 :25/08/2023



Deliberations of EAC 1 :

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 Manakchand 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 mechanised 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% to 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 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 Co al Handling Plant shall be through m echanized covered trucks for 3 years. No transportation by trucks after 3 y ears and proposed railway siding/pip e 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 a dditional measures i.e i)Use upto 25% CNG/EV Tippers for the coal transportation, ii) ensure that transportation of mineral is in co vered 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 s pan on the transportation route to thermal power plant, vi) allowing the vehicle having valid fitness certificate and PUC, vii) wheel w ashing facility and viii) installation of CCTV camera at mine entrance etc. PP shall also implement the measures proposed in letter d ated 18.01.2024 submitted to the Ministry for mitigating air pollution.*
(xviii) "Toe wall of atleast 15 mts to 20 mts height sh ould be constructed along the OB dump to protect ye kona village."	*PP shall implement the recommendation made by VNIT by June 2024 for the stability of OB Dump and allied protection of Yekona village. Ther e 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 recome ndations. PP shall submit the compliance of the same to RO, MoEF&CC along with documentary proof viz. photograph before and after imple mentation, ii) certificate from VNIT that the recommendation made by them has been implemented in letter and spirit and audited expenditure st atement.* *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:

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' 00" 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'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	0.36	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

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:

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' 00" 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'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	0.36	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 15.48 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 G-10 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
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

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 ₹6/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 therein 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 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.*

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 Notification, 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 nment 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.	Propoer 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, infra 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 eloboration 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 ISI 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 mininmize 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 the ultimate 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

uce 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 transportaion area of coal shall be provided with details of species selected and survival rate. Adequate greenbelt nearby areas, coal stock yard and transportaion area of coal shall be provided with 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					

1.

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 restoration 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 applicable) and backfilling and progressive mine closure and reclamation should be furnished. Table 3: Post-Mining Landuse Pattern of ML/Project Area (ha)

1.

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			

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 - water, 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 clearanc e 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/PRO JECT AR EA (ha)	TOTAL FORES TL AN D (ha)	Date of F C	Balance are a for which FC is yet to be obtained	Status of a ppl for. di version 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 acrreditation) 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 chapter,s 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)	03/01/2024	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(ii) 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-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:

1. 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.
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	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	175.59
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		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:

1. 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.

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 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 %.
2. 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.
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	126.745
	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**

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, Bandagirigudam village). The PM2.5 concentration varied from 21.9µg/m 3 (BA-1, Pageder u 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.
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, 430 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, 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:

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:

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(vi i)	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(vii i)	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)

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 12.02.2021 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. 258/T/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, 2023 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. 241.885 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 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:*

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. 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.*
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 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 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 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 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 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
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 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 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 ad acent 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.

3.5. 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 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/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 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:

1. **Location of Project:**

1. 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).

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- 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.

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	881.28	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 – 3690 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 38m 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.

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, 495.27 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 & 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–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 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, 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 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:

1. Employment Generation-Proposed coal mine shall provide an opportunity of direct employment to 2108 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. 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 sub

<table>
<tr><td></td><td></td><td>mitted to Engineer-In-Chief, DoWR, Govt of Odisha for consideration of diversion proposal.
Approval from DoWR, Govt of Odisha is awaited.</td></tr>
<tr><td>2.</td><td>PP shall submit the R&R approval from the concerned District Administration along with their preparedness.</td><td>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:
<table>
<tr><td>Component</td><td>ORRP 2006 up to 8th Biennial Revision dated 17.10.2022</td><td>MCL vetted R&R plan dated 19.01.2023</td></tr>
<tr><td rowspan="3">Provision of Employment
or
One-time Cash Compensation in lieu of employment
or
Annuity in lieu of employment/Financial Assistance</td><td>Yes</td><td>01 member of Displaced Family of 02 categories (Category i&ii as per ORRP 2006)</td></tr>
<tr><td>Rs.10,41,550/- per Family for Category i & goes diminishing to Rs.1,82,000/- for Category vi
(Applicable to all Affected Families)</td><td>Rs.16,00,000 to Category i & ii</td></tr>
<tr><td>No</td><td>Rs.21,000/- per month per PDF (Category I & ii) with Biennial Increment of Rs.1000</td></tr>
<tr><td>Home-stead Land or Cash in lieu of land</td><td>Ac.0.10 or Rs.1,04,155 per PDF</td><td>Rs.6,00,000 per PDF</td></tr>
<tr><td>House Building Assistance</td><td>Rs. 3,12,465 per PDF</td><td>Rs. 3,12,465 per PDF</td></tr>
<tr><td>Assistance for Temporary Shed</td><td>Rs.20,831 per PDF</td><td>Rs.20,831 per PDF</td></tr>
<tr><td>Maintenance Allowance or Subsistence grant for displaced families for a period of one year</td><td>Rs.4166 per month per PDF for 1 year</td><td>Rs.49,992/(@Rs.4166/ month/PDF upto period of 1 yr)</td></tr>
<tr><td>Transportation cost for PDFs</td><td>Rs.4166 per PDF</td><td>Rs.4166 per PDF</td></tr>
</table>
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.</td></tr>
<tr><td>3.</td><td>PP shall submit the compliance of ToR condition no. xi, xii, xx, xxi, xxvi, xxx and Amended ToR no. (iv) & (vii) and (xxvii).</td><td>PP has submitted the point wise compliance to the ToR conditions and enclosed the same.</td></tr>
<tr><td>4.</td><td>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).</td><td>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.</td></tr>
</table>

		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 cons ervation 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	Latitu de	Longit ude	Area (m2)	Avg. Dept h (m)	Volume (m3)	Catchment A rea (m2)
1	Kumunda 1	20.977 108	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 Expe nditure (R s.)
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 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 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 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 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 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 enclose d.
1 0.	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.
1 1.	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.
1 2.	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 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.
1 3.	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, 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.
1 4.	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 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: -

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, xv, 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 EMP 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/Exct/2023/15262 dated 13.05.2023.
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. 8-06/2023-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 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:

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 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.
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 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:*

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/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 preventive 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*

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 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 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 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 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 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
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 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 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 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:

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 (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 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	--	--	--

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**

(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.)	• 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 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
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

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, 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.*

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 80o45'43.38" 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	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

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. 2.57 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

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:** 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**

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 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.
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 (Jaganthapuram village) to 69µg/m3 (Rejarla). The PM2.5 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 1.25mg/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 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/Hgl/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's/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 detail 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 MoEFCC (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 comp leting 90% of the EC conditions along with compliance of R emediation plan, Natural Resource Augmentation plan and Community Resource Augmentation plan. Also, status of co nstruction of school and hospital and its operational shall be submitted.	• Director, Sub-Office, MoEF&CC, Hyderabad inspected the mine on 20.09.2023 and is sued Certified Compliance Report on 20.10.2023. • 90% of Remediation plan, Natural Resource Augmentation Plan and Community Reso urce Augmentation Plan activities have been completed.

		• 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 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 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 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 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, Azadirac hta indica, Limonia acidissima, Ficus bengalensis, Aegle marmelos, Mitragyna parvifolia, Da lbergia latifolia, Pterocarpus marsupium, Syzygium cumini, Albizzia procera, Terminalia bell arica, 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 de gree and by developing dedicated environment laboratory at with certain timeline.	• SCCL has a full-fledged Environment Cell, led by General Manager (Environment) w ho directly reports to the Director of the company. • Corporate Environment Department functioning under the GM (Environment) is havi ng officers with environmental degrees. • Further there are 11 administrative Areas under the control of Area General Managers wh o will be guided by GM (Environment) related to environmental protection and oth er compliance conditions. In each Area, environment cell is functioning with an enviro nment officer having environmental degrees. • In addition, qualified environmental officers in each Project are also working for fulfill ing the necessary statutory compliance. In each operational area, an Environment Management Committee (EMC) has been constitute d 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-s and plant with the ML area.	• In compliance to the EC condition of JVR Coal Mine (I&II Exp.) project, an M-sand p lant has been established on a pilot scale in Medapalli open cast project (MOCP) of SC CL. • 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 proj ect area.
11.	PP should survey to assess the number of house damaged du e to blasting within & in the radius of 1km from periphery o f ML boundary and its remediation plan.	• The criteria for vibration standards, peak particle velocity (PPV) has been globally use d in practice for assessment of blast induced damage to structures. DGMS technical c ircular 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 DG MS. • Controlled blasting techniques are also being followed to reduce the blast induced grou nd vibrations while blasting near to habitation. • There was no damage observed to the houses within 1 km from the periphery of the mi ne 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 colo ny), Kistaram (SC & BC colony) with an expenditure of Rs.2.04 Crores.
12.	PP should submit the CCO certified past production detail b efore 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 earlie r 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 le vel 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 d one 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 o f 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/HgI/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. Mo EF&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 33%.	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 (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 6thEAC 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.*

3.2.6.2. 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 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 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 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 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 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 accorcance 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 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 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.

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 Topo Sheet No. 64 J /11, Scale- 1:50000 and is bounded by the geographical coordinates ranging from 22018'00" 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)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 FAC meeting held on 17.01.2024.	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. 10.09 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

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 convention 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 first mile 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 4000 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 envisage to bring the land back to its original land use to the maximum extent possible.

1. 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

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 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 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 0.08 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 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	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-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 11487 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 Applicat on 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 OC 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, inpit 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, 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 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, 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, 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			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:

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
l	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**

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. 79 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 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.

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

N/A

3.3.4. 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 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. 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% (46.85 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 PM10, PM2.5, SO2 and NO2 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 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 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

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*

1. *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.*

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 quarry 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 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:

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 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.*
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 3 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 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.*
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, 1980.*
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 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.*

12.	*Backfilling shall start by the 1" 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.*
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. 15.15 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. 564.44 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 5-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 canons 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 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.
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 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.*
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 to (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 development 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 rivarine/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 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.*
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 simular 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 appropriate y 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 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 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 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
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 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 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.

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)	har***********@imd.gov.in	Absent
13	Prof R M Bhattacharjee	Member (EAC)	rmb***********@iitism.ac.in	Present (through VC)
14	Amit Vashishtha	Scientist E	ami***********@nic.in	Present

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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/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 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/Exct/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: - 3.48^0(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–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 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**

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**

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/Financia l 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.416 6/ 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.

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

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		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	20.977108	85.025407	3778	2.5	9445	155153
2	Kumunda 2	20.976208	85.022746	18234	4.0	72936	292358
3	Kumunda 3	20.981686	85.020091	5968	3.7	22082	195593
4	Kumunda 4	20.97635	85.021548	12689	2.7	34260	172818
5	Malibandh	20.950179	85.01819	16320	3.0	48960	378829
6	Ampal	20.940402	85.047824	4026	3.1	12481	71147
Total				*61015*		*200163.5*	*1265898*