BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH AT PUNE
ORIGINAL APPLICATION No. 62 OF 2021

IN THE MATTER OF: -

KrishiVigyanArogyaSanstha and Ors. **...Applicant(s)**

VERSUS

Maharashtra State Power Generation Company &Ors. **...Respondent(s)**

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VERSUS

Maharashtra State Power Generation Company &Ors. **...Respondent(s)**

ADDITIONAL AFFIDAVIT ON BEHALF OF RESPONDENT NO.2 i.e. THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

I, Dr. Purushottam Sakhare D/o Shri Ramdas Sakhare, aged about 56 years, presently working as Scientist "E" in the Regional Office of the Ministry of Environment, Forest &Climate Change (hereinafter referred to as "MoEF&CC"), Government of India, at Nagpur, do hereby, in my officialcapacity, solemnly affirm and state on oath as under-

1. That, I am acquainted with the facts and circumstances of the instant Original Application and duly competent to swear the present affidavit on behalf of the Ministry of Environment, Forest & Climate Change basedon the official records maintained therein.

2. It is humbly submitted that the present additional affidavit is a continuation of the previously filed affidavit dated 05.12.2023. To contextualize, the Environmental Clearance (hereinafter referred to as "EC") for M/s Maharashtra State Power Generation Company was issued by the Answering Respondent vide letter no. J-13012/87/2007-IA.II(T) dated 04.01.2010. The validity of this EC was subsequently extended vide letter dated 27.03.2015, and further amendments were granted vide letters dated 23.03.2017 and 29.05.2018. In accordance with the Answering Respondent's Standard Operating Procedure (hereinafter referred to as "SoP") dated 25.11.2022, the project was monitored by the Regional Office (hereinafter referred to as "RO"), Nagpur, on 07.12.2021, and the report was subsequently submitted to the Answering Respondent vide letter No. 4-4/2010(ENV)/9076 dated 29.12.2021. The monitoring report was

SEAL OF NOTARY ★ GOVT. OF INDIA ★ Mrs. KHURANA NAGPUR DISTT. (M.S.) REG. No. 6386

examined by the Ministry, and based on the observed non-compliance, an Action Taken Report (hereinafter referred to as "ATR") was sought from the Project Proponent. On not receiving the response to ATR from the Project Proponent, a Show Cause Notice (hereinafter referred to as "SCN") was issued to the project vide letter dated 14.08.2023. In response, the project proponent submitted his response to the SCN vide letter dated 28.08.2023.

3. It is further submitted that, as stated in the previous affidavit dated 05.12.2023, the Answering Respondent vide email dated 15.11.2023 requested the RO, Nagpur to review the response to the SCN submitted by the Project Proponent.

4. That in response, the RO, Nagpur submitted the SCN review report vide letter dated 27.12.2023, which on examination in the Ministry was observed to be incomplete and considering the gap in SCN Review report, as directed by the Ministry, another SCN review report was submitted by RO, Nagpur vide letter dated 18.01.2024. A copy of the SCN review report dated 18.01.2024 has been annexed herewithas**Annexure-R2/1**.

5. It is humbly submitted that examination of the SCN review report dated 18.01.2024 indicated persistent non-compliance. Subsequently, considering the continued non-compliance of Environmental Clearance (hereinafter referred to as "EC") condition pertaining to fly ash utilization, HDPE lining of ash pond, installation of FGD, disposal of bottom ash, and the operations of the Environment Cell, personal hearing (PH) was called on 19.03.2024. Further, it was also noted during the PH that as per the available news articles, there was collapse of fly ash bund of Koradi Thermal Power Station in 2022, which flooded three villages with toxic fly-ash slurry causing major environmental and livelihood impact. A copy of the minutes of the personal hearing have been annexed herewith as **Annexure-R2/2**. The conclusion during the personal hearing are as follows:

   i. The Project Proponent (PP) is required to formulate a Standard Operating Procedure (SOP) in a time-bound manner to adhere to the primary environmental concerns, encompassing greenbelt development, fugitive emission control, fly ash management, monitoring among others. These SOPs should be mandated to be applicable to all Thermal Power projects under its purview. It is imperative that the SOP remains resilient to any alterations in the organizational structure or advancements in activities, ensuring continuous compliance with Environmental Clearance (EC) conditions. A copy of the SoP should be submitted to Ministry's RO with a copy to C&MD, MoEFCC.

ii. The PP is required to provide the most recent stability report concerning the design, strength, and safety of the ash dyke. This report should detail the measures implemented to prevent breaches and mitigate risks such as leaching into groundwater, maintaining soil stability, and preventing airborne particles that may cause air pollution in the surrounding areas. Furthermore, this report must be prepared by an accredited institute known for its expertise and credibility in the field.

iii. PP shall also submit the action taken report regarding the collapse of the fly ash bund at Koradi Thermal Power Station in 2022.

iv. PP shall submit Quantitative Risk Assessment (QRA) Management plan for any future accident in the plant and the area likely to be affected by any such future incident by conducting mathematical modelling.

v. PP shall declare the legacy fly ash and shall submit the details of the fly ash utilized and disposed before and after the Ministry's Notification No. S.O. 5481(E) dated 31.12.2021.

vi. PP shall expedite the process of FGD installation and shall adhere to the timeline granted in MoEF&CC Notification dated 05.09.2022.

vii. PP shall submit copy of the affidavit filed by them in the Hon'ble NGT in the O.A. no. 62 of 2021 titled "Krishi Vigyan Arogya Sanstha & Ors. Vs Maharashtra State Power Generation Company Ltd. &Ors." pending before Hon'ble NGT(WZ), Pune.

viii. PP shall apply for amendment of EC conditions on PARIVESH which are not applicable/feasible to the project at the earliest.

6. It is humbly submitted that in response to the directions given during the personal hearing, the Project Proponent has provided an updated compliance status report vide letter dated 22.05.2024. A copy of the response submitted by the Project Proponent has been annexed herewith as**Annexure-R2/3**. Further, in reference to the response submitted by the Project Proponent, the point-wise observation is enumerated below:

i. The project proponent has formulated and submitted the following Standard Operating Procedures (SoP):

1. A copy of the SoP for the operation of pollution control devices has been annexed herewith as **Annexure-R2/4**.
2. A copy of the SoP for the Fly ash utilization has been annexed herewith as**Annexure-R2/5**
3. A copy of the SoP for the Ash bund operation has been annexed herewith as **Annexure- R2/6.**

NOTARY KHURANA NAGPUR DISTT. (M.S.) REG. No. 6386 GOVT. OF INDIA

It was further stated that the total project area is 652.02 hectares, of which 33% equates to 215.16 hectares. As of the present date, 278.10hectares have been developed as a green belt, representing 42.65% of the total project area. In the financial year 2023-24, 10,000 trees were planted around the plant area, including the bund.

ii. The project proponent has submitted latest ash dyke stability report w.r.t. Khasala and Koradi ash bund. A copy of the said reports have been annexed herewith as **Annexure-R2/7** and **Annexure-R2/8** respectively.

iii. The project proponent has submitted an action taken report regarding the collapse of Khasala ash bund at Koradi thermal power station in 2022, which has been annexed herewith as **Annexure-R2/9**.

iv. W.r.t. the Quantitative risk assessment (QRA) management plan the Project Proponent has submitted that the QRA study will be done by Dec-24 for outside the plant area (Ash bund)

v. The Project Proponent has outlined the details of fly ash utilization at theproject, making the following submissions:

- Fly ash utilized at Koradi TPS before Ministry Notification No. S.O.5481(E) dated 31.12.2021: 88,849 MT
- Fly ash utilized at Koradi TPS after Ministry Notification No. S.O.5481(E) dated 31.12.2021: 357,398 MT
- Fly ash disposed in the ash pond before Ministry Notification No. S.O.5481(E) dated 31.12.2021: 14,772,981 MT
- Fly ash disposed in the ash pond after Ministry Notification No. S.O.5481(E) dated 31.12.2021: 7,410,553 MT

vi. The Project Proponent has submitted that an LoA has been issued for installing Flue Gas Desulfurization (FGD) units at Units 8, 9, and 10 of the Koradi Thermal Power Station. Initial discussions with the vendor have been completed, and preparations for site clearance and power supply for construction are underway.

vii. The project proponent has provided a copy of affidavit filed before the Hon'ble tribunal in the instant case.

7. It is humbly submitted that the reports provided by the Project Proponent were examined in the Ministry. It was observed that, in accordance with the directions issued during the Personal Hearing, the Project Proponent had submitted all the stipulated documents and reports except the Quantitative Risk Assessment (QRA) Management Plan, intended to address potential future accidents at the plant. Further, the dyke stability reports forthe Khasala ash bund (**refer Annexure-R2/7**) and Koradi ash bund (**refer Annexure-**

R2/8) prescribed certain recommendations that the Project Proponent was required to comply with. However, the status of compliance and implementation of these recommendations has not been yet submitted to the Ministry. The Ministry found it necessary to verify the implementation status of the recommendations outlined in the dyke stability reports. Accordingly, vide letter dated 26.11.2024 the Project Proponent has been directed to submit an (i) Action Taken Report (ATR) addressing the status of implementation of the recommendations prescribed in the dyke stability assessment reports along with the (ii) pending Quantitative Risk Assessment(QRA) Management Plan. A copy of the letter dated 26.11.2024 has been annexed herewith as**Annexure-R2/10.**

7. It is humbly submitted that, the present additional affidavit may kindly be taken on record and into consideration and the Hon'ble Tribunal may pass appropriate Order(s). direction(s) as deemed fit and proper under the facts and circumstances of the present case.

8. It is humbly submitted that, the Answering Respondent seeks leave to make additional submissions, if required, during the course of the proceedings.

DEPONENT

(Dr. P. R. Sakhare)
वैज्ञानिक 'ई'/ Scientist 'E'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
क्षेत्रीय कार्यालय, नागपुर- [illegible]
Regional Office, Nagpur-440001

(M.S.)
REG. No. 6385
OVT. OF INDIA

VERIFICATION

I, the above-named Deponent, do hereby verify that the contents of the above affidavit are true and correct to my knowledge as per the records of the answering respondents. No part of it is false and nothing material has been concealed there from. Verified at Nagpur on this 2nd day of December, 2024.

DEPONENT

(डॉ. पी. आर. साखरे)
(Dr. P. R. Sakhare)
वैज्ञानिक 'ई'/ Scientist 'E'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
क्षेत्रीय कार्यालय, नागपुर
Regional Office, Nagpur

NOTARIAL REG
ENTRY No. 34721
DATE 2/12/2024

SEAL OF NOTARY
Mrs. KHURANA
NAGPUR
DISTT. (M.S.)
REG. No. 6386
GOVT. OF INDIA

SWORN BEFORE ME ON THIS 2nd
DAY OF Dec 20 24 AT NAGPUR BY
SHRI / SMT./ Ku Dr. P.R. Sakhare
R/o NAGPUR WHO HAS BEEN IDENTIFIED BY
SHRI / SMT. Arundhati Ray
ADVOCATE, NAGPUR
NOTARY
GOVT. OF INDIA
Nagpur (M.S.) INDIA

NOTARY
CHANCHAL KHURANA
Nagpur Dist.
(M.S.) INDIA
Regd. No.
6386
GOVT. OF INDIA

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Annexure-R2/1

भारतसरकार
GOVERNMENT OF INDIA
पर्यावरण ,वनएवंजलवायुपरिवर्तनमंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
क्षेत्रीयकार्यालय
REGIONAL OFFICE
Ground Floor, East Wing, New Secretariat Building
Civil Lines, Nagpur - 440001
E-mail: apccfcentral-ngp-mef@gov.in

सत्यमेव जयते

F. No. 4-4/2010(ENV) / 12762 Dated: 18th January, 2024

To,

The Scientist 'E' IA Division (Thermal),
Ministry of Environment, Forest & Climate Change,
Room No. 236, 2nd Floor Vayu Wing,
Indira Paryavaran Bhawan,
Jorbagh Road, New Delhi-110003
(Email: yogendra78@nic.in)

(Kind attention: Shri Yogendra Pal Singh, Scientist E)

Sub: A report on the Status of Compliances of various conditions stipulated in Environment Clearance granted by MOEF&CC vide letter No. J-13012/87/2007-IA-II(T) dated 04.01.2010 and its subsequent extension & amendments dated 27.03.2015, 23.03.2017 & 29.05.2018 for 3x660 MW expansion of Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagpur (Maharashtra) - reg.

Ref: Project Proponent vide their email dated 19.12.2023.

Sir,

I am directed to refer to the above subject and email under reference wherein the project proponent obtained Environmental Clearance granted by MOEFCC New Delhi vide letter No. J-13012/87/2007-IA-II(T) dated 04.01.2010 and its subsequent **extension &** amendments dated 27.03.2015, 23.03.2017 & 29.05.2018 for 3 x 660 MW expansion of Coal Based Power Unit by M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagpur (Maharashtra).

Unit No.	Capacity (MW)	Commercial Operation Dates (COD)	Current Status
Koradi Unit 1	120 (de-rated to 105)	03.06.1974	Decommissioned on 08.01.2011
Koradi Unit 2	120 (de-rated to 105)	24.03.1975	
Koradi Unit 3	120 (de-rated to 105)	03.03.1976	
Koradi Unit 4	120 (de-rated to 105)	22.07.1976	

Koradi Unit 5	210	15.07.1978	De-commissioned from 15.03.2017
Koradi Unit 6	210	30.03.1982	in service
Koradi Unit 7	210	13.01.1983	De-commissioned from 03.08.2021
Koradi Unit 8	660	16.12.2015	In service
Koradi Unit 9	660	22.11.2016	In service
Koradi Unit 10	660	17.01.2017	In service

2. Now, Project proponent proposes to go for installation of additional 2 x 660 MW Super Critical Thermal Power plant within existing premises of 2190 MW Koradi Power Plant. Therefore, PP requested the Regional Office, Nagpur to conduct a site visit to monitor the status of compliance of conditions stipulated in the environment clearance & its amendments granted to 3 x 660 MW units.

3. In view of the same, it is to inform that a site visit for the monitoring of compliance of conditions stipulated in the environment clearances has been conducted by Scientist-E of the Regional Office, Nagpur on 23.12.2023. As per the documents submitted by the project proponent during the monitoring, and also as informed/observed during the site visit, the details are reported to be as under:

i. MOEF&CC vide letter No. J-13012/87/2007-IA-II(T) dated 04.01.2010 granted Environmental Clearance for 3 x 660 MW expansion of Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (MAHAGENCO) (Formerly known as MSEB) located at Koradi District Nagpur (Maharashtra) **(Annexure-a)**

ii. MOEF&CC vide letter No. J-13012/87/2007-IA-II(T) dated 27.03.2015 granted extension of validity of Environmental Clearance for 3 x 660 MW expansion of Coal Based Power Unit M/s MAHAGENCO(Formerly known as MSEB) located at Koradi District Nagpur (Maharashtra) **(Annexure-b)**

iii. Amendment in EC has been obtained from MOEF&CC vide letter No. J-13012/87/2007-IA-II(T) dated 23.03.2017 for 3 x 660 MW expansion of Coal Based Power Unit M/s MAHAGENCO(Formerly known as MSEB) located at Koradi District Nagpur (Maharashtra) **(Annexure-c)**

iv. Further, Amendment in EC has been obtained from MOEF&CC vide letter No. J-13012/87/2007-IA-II(T) dated 29.05.2018 for 3 x 660 MW expansion of Coal Based Power Unit M/s MAHAGENCO(Formerly known as MSEB) located at Koradi District Nagpur (Maharashtra) **(Annexure-d)**

v. Consent to Establish for Coal Based Thermal Power Plant for 3 x 660 MW was obtained vide letter No.BO/RO(P&P)/EIC No. NG-1855-09/E/CC-41 dated 29.01.2010 **(Annexure-e)**

vi. The first amalgamated Consent to Operate for 3X660 MW Koradi TPP from MPCB had been obtained vide letter No. Format1.0/CAC/UAN No. 0000030152/CAC-1906000774 dated 17.06.2019 **(Annexure-f)**.

vii. Renewal of Consent to Operate for Coal Based Thermal Power Plant for 3 x 660 MW was obtained vide letter No.Format1.0/CAC/UAN MPCB CONSENT-0000151522/CR/2303001033 dated 16.03.2023. Which is valid upto 31.12.2023. Application for renewal of consent to operate is forwarded to MPCB & under process vide UAN No: 000187186(**Annexure-g)**

viii. **"There is a court case pending in Hon'ble NGT (Pune Bench) w.r.t. 3 x 660 MW Power Plant for non compliance of EC condition. Final hearing for the same is scheduled on 01.03.2024.**

ix. There is a Court case in the Hon'ble High Court (Nagpur Bench) as PIL No. 51/2023 against installation of proposed 2 x 660 MW Super Critical Unit at Koradi and the public hearing conducted on 29.05.2023 for the same. Last hearing was conducted on 06.12. 2023. Matter was then listed on 10.01.2024,which is further extended for two weeks on 24.01.2024.

x. One show-cause notice was issued by MoEF&CC vide letter no. IA-L-11011/112/2021-IA-I dated14.08.2023 **(Annexure-h). R**eply to the show cause by PP was submitted vide letter no. KTPS/CE(O&M)/ CHEM Div/ Env /FL-06/7162 dated 28.08.2023.

xi. *Agreement* for Construction and operating on treatment and transmission facilities for reclaimed water usage between Nagpur Municipal Corporation and Maharashtra Power Generation Company Limited for it TPS Koradi was made on 04.10.2008. Copy of agreement with NMC for 130 MLD Bhandewadi STP is enclosed as **(Annexure-i).**

xii. First Amendment to the tri-party agreement was made on 09.10.2018 between MSPGCL; Nagpur Municipal Corporation and Nagpur Waste Water Management Private Limited for lifting tertiary treated water from 190 MLD Bhandewadi STP. Copy of agreement is enclosed as **(Annexure-j).**

xiii. Monitoring reports for Stack, Ambient Air Quality, Effluent and ground water quality for FY: 2022-23 Koradi TPS, 3X660 MW are enclosed as **(Annexure-k).**

xiv. Expenditure made on environment protection measures is enclosed as **(Annexure-l).**

xv. PP has increased the ash bund height from 305.2 ML to 312.0 ML. PP informed that they have obtained approval from Central Design Organization (CDO), Nashik for same. Copy of approval from CDO Nasik is enclosed as **(Annexure-m).** *The Khasara ash bund height was raised since the ash disposal from 3 units of 660MW was to be carried out in the same bund, As per chapter-2 for project details under EIA submitted describes land for ash disposal to existing Khasara ash bund. Moreover, as per section- 5.7.3, with ref. to issued TOR (xxi-xxiii) & details regarding ash pond, impermeability extra of the EIA submitted, it mentioned that the design includes provision for raising the bund from RL 305.2 to 312 m in two stages. As such the issue of raising of ash bund height was addressed in the EIA submitted thereof.*

xvi. PP has obtained TOR vide letter No. J-13012/11/2019-IA.I (T) dated 26.06.2020 *for* ***(Annexure-n)***

xvii. Public Hearing for the same was conducted on 29.05.2023.

xviii. **Green belt details**: The total project area is 652.02 ha. 33 % of total project area is comes to be 215.16 ha. Out of total project area till dated 276.4 area has been developed as green belt. PP has proposed to plant 10,000 trees in FY 2023-24 around plant area including bund.

xix. CSR: Following activities are carried out and completed by PP;

Sr. No.	Name of Work	Actual expenditure (Rs. In Lakhs)	Remarks.
i.	**20 Bedded Hospitals.** Renovation of existing school building for conversion into 20 bedded Hospital building at Koradi.	100.59	Work completed and Orange City Hospital, Nagpur has started the Hospital w.e.f. 03.02.2014.
ii.	**Drinking Water Supply.** Additional fund for Koradi & Nanda. (Deposit work to MJP)	112.00	Work completed.
	Panjara.	82.43	Work completed.
	Waregaon, Suradevi & Bokhara.	392.10	Work completed.
	Khairy.	97.86	Work completed.
	Kaotha, Masala.	76.53	Work completed.
	Mahadulla.	33.62	Work completed.
iii.	**Tree Plantation of 5000 trees with tree guards.**	44.65	Work completed. (New Koradi, Panjara, Nanda, Bokhara & Nara)
iv.	**Junior college.**	176.75	Work completed.
v.	**Approach Road and internal roads.**		
	Strengthening and asphalting of balance road from Devi Mandir/ (Kaotha Village) to Canal and Khasara Village.	34.25	Work completed.
	Strengthening and asphalting of balance road in Nanda and Koradi rehabilitated Villages.	35.30	Work completed.
	Construction of WBM road and asphalting of road from Dakhole field to Suradevi Pandhan.	87.72	Work completed.
	Construction of WBM road from Khairy pandhan to Waregaon ash bund and Khairy in Kaotha village.	86.70	Work completed.

	Construction of WBM road & strengthening and asphalting of road at Masala toli.	22.33	Work completed.
	Providing and filling pot holes and patch repair to road from Khasara ash recovery pump house to Masala Rly Crossing.	2.98	Work completed.
	Asphalting of road from Dakhole field to Suradevi Pandhan.	34.51	Work completed.
	Providing & laying asphalting to WBM road from Khairy Pandhan to Waregaon ash bund to Kaotha village junction.	32.08	Work completed.
vi.	**Crematorium.**		
	Koradi & Nanda (Visarjan otta, condolence shed, burning shed including toilet, retaining wall & library room)	70.09	Work completed.
	Khasara (Internal road with development & cremation shed and compound wall)	26.81	Work completed.
	Koradi & Nanda Crematorium Compound wall.	12.50	Work completed.
vii.	High Mast Lighting at Koradi, Nanda and Khasara.	58.78	Work completed.
viii.	Sewage Disposal Scheme for Koradi, Nanda, Khasara, Panjara and Mahadulla. (Work executed for Mahadulla only)	50.00	Deposit work to PWD and work completed upto M.S.P.G.C.L., boundary wall.
ix.	**Infrastructure**		
	Shopping complex, Sports Complex & Community Hall at Koradi & Mahadulla (combined complex)	44.55	Work completed.
	Samaj Bhawan at Nanda, Khasara, Panjara and Mahadulla	101.59	Work completed.
	Construction of Samaj Bhawan at Suradevi.	29.82	Work completed. (The work is taken up against the provision of crematorium at Suradevi)
x.	**Other Misc. work in CSR**		
	Construction of compound wall around Z.P. School at Nanda village.	53.26	Work completed.
	Construction of compound wall around Z.P. School at Khasara village.		Work completed.
	Providing & fixing RCC benches in the various villages.		Work completed.
	Supplying furniture for library room at budhha vihar Koradi.		Work completed.

	Providing & fixing informatory board in various CSR work site.		Work completed.
	Work of construction of UCR masonry boundary wall for isolation of Bazar otta land at Mahadulla village is proposed.	37.63	Work completed.
	Drinking water supply to Suradevi and Bokhara Village.	10.07	Work completed.
	Providing water Proofing treatment to old terrace slab at Vidya Mandir School at Koradi Colony.	2.97	Work completed.
	Miscellaneous works such as providing M.S. Gate at Z.P. School and Samaj Bhawan work at Nanda.	4.53	Work completed.
	Said fund is utilized for puchase of poclian machine which is used for Jalyukta Shivar Abhiyan / Pandhan road development scheme.	45.00	Work completed.
	Total	**Rs. 2000**	

PP informed that all the activities undertaken by Mahagenco against 3 x 660 MW project stage with capital cost of Rs. 20.00 Cr. has been completed.

As informed by PP, in the aspect of training and education, from period of April 2023 to November 2023, ITI candidates were imparted training and expenditure incurred was Rs 78,17,569/- Similarly candidates as project affected person were also given training with expenditure of Rs 1, 30, 43, 595/- Skill development training was given to CSR candidates with expenditure of Rs 2, 17, 86, 847/- during the same period.

xx. Rain water Harvesting- Three rain water harvesting ponds has been constructed. Details has been given in monitoring report.

xxi. Fly ash details:

	(For FY: 2022-23)	(For FY. 2023-24) (Till Dec-2023)
Total ash Generation (Station) in MT	3269056 MT	2567847
Total ash Utilisation (Station) in MT	2362651	1527509
% Total Ash Utilization	72.27 %	59.49 %

xxii. Utilization process of Leachates of Ash bund:

PP informed that the supernatant water from ash pond is recycled and reused for ash disposal in plant premises. The light floating material of ash (cenosphere) is collected from the surface of ash water in ash bund. The pH of ash bund water *remains within neutral range* most of the time. As such leaching of metals in this *neutral range of* pH is not envisaged. Ground water analysis is carried out in which metal concentration is found in acceptable criteria.

xxiii. **There is no person from Environmental Science field being recruited.**

xxiv. **To curb further particulate emissions, PP has been suggested to procure three numbers of Trolley mounted fogger machine having 70-100 flow (easily movable) & two nos. of road sweeping machine.**

4. **One** of the EC condition is observed to be **not complied** by the PP:

Condition No. I of EC dated 04.01.2010: *Regarding installation of FGD MSPGCL has placed* LoA vide no CE (P&P)/ 3X 660MW/Koradi/FGD/1236 dated 16.11.2023 for design engineering, manufacture, assembly, testing at works, supply at site, civil, structural & architectural works and erection, testing & commissioning of FGD system for 3X 660 MW unit 8, 9 &10 at Koradi, TPS on Erection Procurement Commissioning (EPC) basis including O&M of installed FGD system for the span of three years. Work completion schedule as per LoA is 26 months for unit-8, 28 months for unit-9 & 30 months for unit-10 from zero date (16.11.2023). It was appraised by PP, that initial meeting was conducted with the vendor & accordingly site clearance activity for land development is taken up and arrangement for construction power supply is being made.

5. **Four** of the EC conditions are observed to be **partially complied** by the PP:

Condition No. vii. of EC dated 04.01.2010: Considering four years from date of operation, the PP was supposed to achieve fly ash utilization target by Jan-2021. Efforts were made to encourage utilization of pond ash in various activities such as brick manufacturing, Ash bund dyke raising, construction of national highways etc. Apparently, the total ash utilization % for FY 2020-21 for entire Koradi TPS stood to 80.96%

Since most of the thermal power plant across India are facing the problem of target achievement regarding 100% use of fly ash, MoEF&CC came out with the new notification vide no. SO 5481 (E) dated 31.12.2021 wherein as per section A(5) the applicability of notification has commenced from 01.04.2022 giving all Thermal power plant across India to dispose off the fly ash within the period of 3 years (i.e. March-2025). Similarly, the new notification states for legacy ash that the utilization of legacy ash has to be completed within 10 years from the date of publication of this notification. Hence the timeline for 100% use of legacy ash shall be up to Dec-2031. Monthly ash utilization reports of 210 MW & 660 MW units at Koradi are being send to MPCB.

Accordingly 3 x 660 MW Koradi TPS is taking following steps to improve the ash utilization-

Short Term:

- *Agency deputed at Khasara & Koradi ash bund for regular pond ash lifting. This ash is used for bricks/pipe manufacturers and road embankment. Monthly pond ash utilization for Oct -2023 for Khasara ash bund is 1,33,036 MT and Koradi ash Bund is 63,796 MT. Presently, pond ash utilization is in increasing trend.*
- *Continuous follow up & correspondence with various entrepreneurs/agencies/end users for use of pond ash/dry fly ash to use on bulk basis i.e. Road construction such as NHAI, MSRDC, MOIL, Z.P. Nagpur, various Cement Industries and small end users.*

- *This office representative identified the abandoned mines in co-ordination with District Mining Office, also visiting frequent other Govt. offices to identify the opportunities to increase the ash utilization. This office is ready to provide the pond ash free of cost for filling of ash into abandoned stone quarries in Nagpur area. But due to issue of bearing the transportation cost, ash utilization is on lower side.*
- *Ash transportation & filling of abandoned mines in Nagpur area stone quarries work proposal is in process.*
- *Promotion for ash utilization through advertisement in various newspapers on principle of "मागेलत्यालाअँश" is implemented, but only two agencies responded for ash lifting & transportation from Khasara & Koradi ash bund.*
- *Construction of WBM Road at Khasara ash bund (1500 MTR) for proper approach to transport the ash vehicles moving at round the clock.*

Long Term:

- *Infrastructure needed to achieve 100 % Legacy ash utilization in 10 years as per MOEF&CC notification. To meet required ash utilization, the work of Railway platform beside Railway shunting neck track near Koradi/ Khasara ash bund is completed. Now, the platform is ready to transport the pond ash.*
- *The work of Platform no.1 beside Railway siding line at backside of chord cabin for loading of fly ash in Railway wagon for ash utilization at 3x660MW, TPS, Koradi is completed and ready to transport.*
- *FSR, DPR & project management consultancy and construction of proposed BG railway siding & allied work for utilization of Dry Fly ash utilization at 3x660MW, TPS, Koradi. FSR is approved by Railway & DPR preparation is under process by M/s. RITES. Railway approval awaited.*
- *EOI is published by Mahagenco and agency for transportation of ash will be finalized shortly with financial assistance.*
- *Koradi TPS also exploring possibility to use of pond ash for Road Embankment/construction, backfilling of abandoned mines/stone quarries as per the MoEF & CC guidelines by coordinating with WCL & District Mining Department, NHAI, MSRDC and Stone Quarries for free of cost availability of pond ash as per their requirement.*
- *Presently Khasara Ash bund's ash is utilized in NHAI Outer Ring Road.*
- *Presently, Koradi TPS Ash Utilization target is 1.50 MT Crores for F.Y. 2023-24.As per on-going projects of NHAI/MSRDC has demanded free of cost as per prevailing policies of GOI i.e. the transportation cost including loading & unloading cost is to borne by the TPS as per the Govt. Circular. The issue of transportation cost is under discussion.*
- *MSRDC on-going Projects i.e. Samruddhi Express High-way Link Road from Jamtha to Gondia&Bhandara to Gadchiroli and Wardha to Chandrapur. The total requirement of pond ash is @ 3-4 crores MT. MSRDC demanded transportation cost borne by TPS as per norms.*
- *As per latest MoEF notification dated 01.01.2024, the issue of bearing transportation cost up to 300 km for Government projects is under consideration & Mahagenco will soon bear the transportation cost to enhance ash utilization.*

1) Availability of stone quarries for ash filling:-

The list of allotted stone quarries for Koradi TPS, are Aasola- Sawangi stone quarry mines Wardha road Nagpur. SaonerBoregaon(Junglee), Abandoned mines-Betul road nagpur, H.G. infra stone quarry mines Boregaon (junglee), M/S Guru Baxani's stone quarry Mines, Mahurazari, Nagpur. which are at very much longer distance. In the plant, the bottom ash series disposal system of Koradi TPS is designed for peripheral of 7 KM & in this 7 km of range ,there is no direct abandoned stone quarries available for day-to-day ash filling, so that it is not feasible to direct ash filling in allotted stone quarries. For Ash filling in the abandoned mines, the distance is very much longer. Hence there is no direct disposal piping available to the said longer distance about 30 to 100 Km area, it's the design constraints. Hence it is not feasible.

2) Details of the abandoned mines nearby TPS: The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is not feasible. The KTPS representative visited the nearby abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the abandoned mines is under consideration.

3) Status of private owner survey for ash utilization :-

The following agencies owner visited for survey of ash utilization

i) M/s Super Engineering works
ii) M/s Ashtech India Pvt. Ltd.
iii) M/s Tanmay Infratech Pvt. Ltd.
iv) M/s. ACC
v) M/s. MSRDC and projects

However, response from them is poor. Still negotiations are under progress to increase ash utilization percentage.

Condition No. ix. of EC dated 04.01.2010: Koradi TPS is using Khasara Ash Bund for ash disposal, Khasara Ash bund is live hence the work of HDPE & LDPE lining cannot be taken up in hand. Koradi TPS has submitted a letter requesting MoEF&CC to amend EC conditions for HDPE/LDPE lining to ash bund. Hence it was understood that any lining to the peripheral area of bund is not possible being a live bund. *Still possibility & feasibility of HDPE/LDPE lining to Khasara ash bund need to be checked.* However, PP is taking following measures to maintain the bund:

a) Stone pitching is done at dyke wall.
b) Decanted water is being recycled and reutilized in plant. Bund water is recovered though available weir & drain wells.
c) Proper maintenance of ash bund is done to avoid any breaching of bund.
d) Lagoons are in place inside the ash bund & siphoning system is also in place.
However it is to inform that since two units of 660 MW are proposed at Koradi, the ash disposal from these units shall be at Koradi ash pond. As such proposal for admin approval for HDPE/LDPE lining of Koradi ash pond is initiated.

Condition No. x. of EC dated 04.01.2010: As per CPCB letter no. B-33014/07/2020/IPC-II/TPP/7704 dtd 30.09.2020, CPCB forwarded list of abandoned mines for backfilling purpose identified by Taskforce of MoP to state PCB's out of which 3 mines are of WCL situated in Maharashtra i.e. Talwasa OC, Dholwasa OC, Naveen Kunada OC are situated in Chandrapur district and not nearby Koradi TPS. The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is not feasible. The KTPS representative visited the nearby abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the abandoned mines is under consideration.

Condition No. xlii. of EC dated 27.03.2015: There is no person from Environmental Science field being recruited.

6. PP should ensure implementation of green belt development plan and CSR/CER/EMP works with 30% funds must be earmarked for water/soil conservation and seedling planting/distribution.

7. A detailed inspection report on the compliance of conditions stipulated in the environmental clearance is enclosed herewith.

This issue with the approval of competent authority.

Encl: as above

Yours Faithfully,

(Dr. P.R. Sakhare)
Scientist 'E'

Copy to:

(i) Member Secretary, Maharashtra Pollution Control Board Kalpaturu Point, 3rd and 4th Floor Opp. PVR Cinema, Sion Circle, Mumbai- 400022 (Maharashtra) (Email: ms@mpcb.gov.in)

(ii) Dr. Vipin Itankar, District Collector, Ravindranath Tagore Marg Civil Lines Nagpur- 440001 (Maharashtra) (Email: collector_nagpur@maharashtra.gov.in; collector_nagpur@rediffmail.com)

(iii) Shri Pratik Bharne, Scientist 'E' Central Pollution Control Board, Regional Director, S. No 110, Dhankule Multipurpose Hall, Baner Road, Baner, Pune -411045 (Maharashtra) (Email: pratik.cpcb@gov.in)

(iv) The Director, Compliance and Monitoring Division, Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Aliganj, Jorbagh Road, New Delhi-110003 (Email: moefcc-monitoring@gov.in)

(v) Chief Engineer (P), Koradi Complex, Chhindwara road, Koradi-441111, Dist. Nagpur (Maharashtra) (Email: cegenkoradi@mahagenco.in; cgmkrdproj@mahagenco.in; pecsnagpur@gmail.com)

(vi) Guard File.

(Dr. P.R. Sakhare)
Scientist 'E'

Monitoring the Implementation of Environmental Safeguards
Ministry of Environment, Forest & Climate Change
Regional Office, Nagpur
Monitoring Report
Part – I
DATA SHEET

1.	Project type: River–Valley /mining/Industry/Thermal/ Nuclear / other (specify)		Thermal Power project
2.	Name of the project		3 X 660 MW Koradi TPS
3.	Clearance letter (s) /OM no and date		J-13012187/2007-IA II (T) Dtd. 04.01.2010.
4.	Location:		
	a.	District (s)	Nagpur
	b.	State (s)	Maharashtra
	c.	Latitude/ Longitude	Lat:-21°14'19" N To 21°14'46" Long:-79°05'29"E To 79°05'50"E
5.	Address for correspondence		
	a.	Address of concerned Project G.M. (with pin code & telephone/telex/fax number)	Chief Engineer (O&M), 3X660MW KTPS, Koradi Pin-441111 Phone: (07109) 262141 to 262146, 262106,262109 Fax: 262127 (Off), Email: cegenkoradi@mahagenco.in
	b.	Address of Executive Project Engineer/Manager(with pin code/fax number)	Chief Engineer (P), Koradi Complex, Chhindwara road, Koradi-441111, Dist. Nagpur. Phone: 07109-264862(P), 264863, 264869(O), Fax: 07109-264866; Email:cgmkrdproj@mahagenco.in.
6.	Salient features:		
	a.	Of the Project	1. Supercritical technology 2. Combined recirculation 3. Once through supercritical boilers 4. Constructional features 5. Sliding pressure operation 6. Oxygenated treatment 7. Metallurgical aspects
	b.	Of the Environmental Management Plans	Use of Tertiary treated water from Bhandewadi-STP.
7.	Breakup of the project Area:		
	a	Submergence area: Forest & Non forest	Forest-N/A
	b.	Others	Total plot area- 1458 sq. m Build up area including road-200 sq. meter Open space available- 400.44 sq. meter

8	Breakup of the project affected population with enumeration of those losing houses/dwelling units only agricultural land only, both dwelling units & agricultural land & landless laborers/artisan (Please indicate whether these figures are survey carried out or only provision figures, if a survey is carried out give details and years of survey)		N/A as the land was in possession of Mahagenco. Also Rehabilitation & Resettlement (R&R) policy was not applicable	
9.	Financial details:			
	a.	Project cost as originally planned and subsequent revised estimates and the years of price reference	Originally planned project cost Rs.11,880 Cr. Further cost Rs.14,987.65 Cr. is approved by cabinet on 20.02.2018.	
	b.	Allocation made for environmental management plans with item wise and year wise break -up	Above cost includes cost for Environmental Management Plan	
	Sr. No	**Particular**	**Capital Cost (inRs.) for FY 2022-23**	**Operation and Maintenance (in Rs./Annum)for FY 2022-23**
	a	Air Environment	As per CA certificate total cost of asset Rs 14851,97,81,007/-	13,00,73,038
	b	Water Pollution Control Site Sanitation & Safety		69,23,285
	c	Environmental Monitoring		40,24,224
	d	Green Belt		
	e	Solid Waste Management		-
		Total	14851,97,81,007	14,10,20,547
	f	Benefit cost ratio/Internal rate of Return and the year of assessment	-	
	g	Whether (c) includes the cost of environmental management as shown in the above	Yes	
	h	Actual expenditure incurred on the project so far (upto Nov.- 2023)	Rs. 14886.65 crs.	
	i	Actual expenditure incurred on the environmental management plans so far	Cost mentioned in above point e. includes cost for Environmental Management Plan	
10	Forest land requirement:			
	a.	The status of approval for diversion of forest land for non-forestry use	NA	
	b.	The status of clearing felling	NA	
	c.	The status of compensatory afforestation, if any	NA	

	d.	Comments on the viability & sustainability of compensatory afforestation programme in the light actual field experience so far	NA
11	The status of clear felling in non-forest areas (such as submergence area of reservoir, approach roads), if any with quantitative information		NA
12	Status of construction:		
	a.	Date of commencement (Actual and / or planned)	March 2011
	b.	Date of completion (Actual and / or planned)	U-8: 16/12/2015, U-9: 22/11/2016, U-10: 17/01/2017.
13	Reasons for the delay if the project is yet to start:		Construction phase is over and all three units are commissioned.
14	Dates of site visits:		
	a.	The dates on which the project was monitored by the Regional Office on previous occasions, if any.	06.12.2021
	b.	Date of site visit for this monitoring report.	23.12.2023
15	Details of correspondence with project authorities for obtaining action plans/information on status of compliance to safeguards other than the routine letters for logistic support for site visits. (The first monitoring report may contain the details of all the letters issued so far, but the later reports may cover only the letters issued subsequently.)		--

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A report on the Status of Compliances of various conditions stipulated in Environment Clearance granted by MOEF&CC vide letter No. J-13012/87/2007-IA-II (T) dated 04.01.2010 and its subsequent extension & amendments dated 23.03.2017 & 29.05.2018 for 3 x 660 MW expansion of Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (Formerly known as MSEB) located at Koradi District Nagpur (Maharashtra)

A monitoring report on the status of compliance of conditions stipulated in Environmental clearance is given as under:

Sl. No.	Condition	Status of EC conditions as on December-23
	Conditions as per EC dated 04.01.2010	
(i)	FGD with one unit of 660 MW will be installed initially to begin with and the requirement, if any, for the installation of FGD system with the other two units will depends upon the prevalent ambient levels of SO2. Provision for installation of FGD in all units shall be made.	**Not Complied.** Regarding installation of FGD MSPGCL has placed LoA vide no CE (P&P)/ 3X 660MW/Koradi/FGD/1236 dated 16.11.2023 for design engineering, manufacture, assembly, testing at works, supply at site, civil, structural & architectural works and erection, testing & commissioning of FGD system for 3X 660 MW unit 8, 9 &10 at Koradi, TPS on Erection Procurement Commissioning (EPC) basis including O&M of installed FGD system for the span of three years. Work completion schedule as per LoA is 26 months for unit-8, 28 months for unit-9 & 30 months for unit-10 from zero date (16.11.2023). It was appraised by PP, that initial meeting was conducted with the vendor & accordingly site clearance activity for land development is taken up and arrangement for construction power supply is being made. **(Annexure-I FGD LoA)**
(ii)	Hydro-geological study of the area shall be reviewed annually & results submitted to the Ministry & concerned agency in the State Govt. In case adverse impact on ground water quantity & quality is observed, immediate mitigating steps to contain any adverse impact on ground water shall be undertaken.	**Complied.** A detailed study of Hydro geological investigation for 3x660 MW Koradi project has been carried out.Physiochemical analysis of Ground Water is carried out periodically from MoEF approved lab. The parameters are found to be within desirable range. Hydro geological study was carried out by M/s Surya Enviro tech in the month of June-2016. **(Annexure - II-A-Hydro geological study report & II-B-Ground water report.)**

(iii)	Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel/ rivers even in lean season. It shall be ensured that natural drainage in the region is not disturbed due to activities associated with operation of the plant.	**Complied.** The 3X660 MW Koradi Project was installed on the land available with MAHAGENCO. The natural drainage system available on this land was not disturbed. Koradi TPS, 3X660 MW has installed and commissioned in-house system for trade and sewage effluent. In-house ETP & STP are in operation since inception of units i.e. 2017.
(iv)	Tri-Flue stacks of 275 m height each shall be provided with continuous online monitoring equipment's for SOx, NOx& PM. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.	**Complied.** One stack with three flue cans of 275 meters height is provided. Continuous Online monitoring system for PM, SO_2, NOx for Unit-8, 9 & 10 is commissioned and connected to CPCB & MPCB servers on 10.05.2017. Exit velocity & mercury emission is monitored regularly for all three units.**H**owever, it is to inform that exit velocity factor is load dependent and hence during fluctuating load the velocity remains below 22 m/s. Whereas, during full load operation or units operating at more than 70% PLF, the exit velocity remains more than 22 m/s. CPCB-(OCEMS): http://cpdms.forbesmarshall.in:8080/enviroconnect/ CPCB(EQMS): https://glens.glensserver.com/#/login MPCB(OCEMS & EQMS): https://onlinecems.ecmpcb.in/#/landing/industryReports/realTimeReport Mercury (Hg) emission report has analyzed by MoEF approved lab is attached herewith. **(Annexure -III- stack report enclosed)**
(v)	High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3.	**Complied.** High efficiency ESPs are installed at all three Units with design efficiency 99.9 % for particulate emission not more than 50 mg/Nm^3since commissioning of project. ESPs photographs are enclosed as **(Annexure-IV)**
(vi)	Adequate dust extraction system such as cyclones/ bag filters & water spray system in dusty areas such as in coal	**Complied.** At Coal Handling plant mist type fogging systems are commissioned at both the stack yards & are operated

	handling & ash handling points, transfer areas & other vulnerable dusty areas shall be provided.	as per requirement. The dust suppression system at all transfer points is in service.Additional spray system in CHP area is installed to prevent dust. Fire quenching line erected in stack yard to control fire in coal yard. To arrest the ash in ash handling plant following actions are taken: a) Ensure 100% availability of vent fans b) Periodical cleaning of ash filter bags. c) Ensuring optimum efficiency of filter bags purging system through regular routine check. d) Quarterly replacement of filter bags in each intermediate silo. e) Attending fly ash conveying pipelines leakage on priority and replacement of wear out portion of pipelines. f) Regular water sprinkling on nearby roads is carried out periodically. g) DS system is provided at Wagon tippler, bunker level, TP 3, 4, 5, 6 & TP 7. Total 07 DS systems in Auto mode. **Photographs of DS system enclosed as (Annexure -V)**
(vii)	Utilization of 100% fly ash generated shall be made from 4th year of operation of the proposed expansion. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	**Partially complied.** Considering four years from date of operation, the PP was supposed to achieve fly ash utilization target by Jan-2021. Efforts were made to encourage utilization of pond ash in various activities such as brick manufacturing, Ash bund dyke raising, construction of national highways etc. Apparently, the total ash utilization % for FY 2020-21 for entire Koradi TPS stood to 80.96% Since most of the thermal power plant across India are facing the problem of target achievement regarding 100% use of fly ash, MoEF&CC came out with the new notification vide no. SO 5481 (E) dated 31.12.2021 wherein as per section A(5) the applicability of notification has commenced from 01.04.2022 giving all Thermal power plant across India to dispose off the fly ash within the period of 3 years (i.e. March-2025). Similarly, the new notification states for legacy ash that the utilization of

		legacy ash has to be completed within 10 years from the date of publication of this notification. Hence the timeline for 100% use of legacy ash shall be up to Dec-2031. Monthly ash utilization reports of 210 MW & 660 MW units at Koradi are being send to MPCB. *Accordingly 3 x 660 MW Koradi TPS is taking following steps to improve the ash utilization-* ***Short Term:*** • *Agency deputed at Khasara & Koradi ash bund for regular pond ash lifting. This ash is used for bricks/pipe manufacturers and road embankment. Monthly pond ash utilization for Oct -2023 for Khasara ash bund is 1,33,036 MT and Koradi ash Bund is 63,796 MT. Presently, pond ash utilization is in increasing trend.* • *Continuous follow up & correspondence with various entrepreneurs/agencies/end users for use of pond ash/dry fly ash to use on bulk basis i.e. Road construction such as NHAI, MSRDC, MOIL, Z.P. Nagpur, various Cement Industries and small end users.* • *This office representative identified the abandoned mines in co-ordination with District Mining Office, also visiting frequent other Govt. offices to identify the opportunities to increase the ash utilization. This office is ready to provide the pond ash free of cost for filling of ash into abandoned stone quarries in Nagpur area. But due to issue of bearing the transportation cost, ash utilization is on lower side.* • *Ash transportation & filling of abandoned mines in Nagpur area stone quarries work proposal is in process.* • *Promotion for ash utilization through advertisement in various newspapers on principle of "मागेलत्यालाअँश" is implemented, but only two agencies responded for ash lifting & transportation from Khasara & Koradi ash bund.* • *Construction of WBM Road at Khasara ash bund (1500 MTR) for proper approach to transport the ash vehicles moving at round the clock.*

		Long Term: • *Infrastructure needed to achieve 100 % Legacy ash utilization in 10 years as per MOEF&CC notification. To meet required ash utilization, 'Provision of Railway platform for ash utilization beside Railway shunting neck track near Koradi/ Khasara ash bund. The platform work is completed. Now, the platform is ready to transport the pond ash. EOI published by HO Mahagenco E&S department Mumbai.* • *Platform no.1 Provision of platform beside Railway siding line at backside of chord cabin for loading of fly ash in Railway wagon for ash utilization at 3x660MW, TPS, Koradi. The said work is completed and ready to transport.* • *FSR, DPR & project management consultancy and construction of proposed BG railway siding & allied work for utilization of Dry Fly ash utilization at 3x660MW, TPS, Koradi. FSR is approved by Railway & DPR preparation is under process by M/s. RITES. Railway approval awaited.* • *Koradi TPS also exploring possibility to use of pond ash for Road Embankment/construction, backfilling of abandoned mines/stone quarries as per the MoEF & CC guidelines by coordinating with WCL & District Mining Department, NHAI, MSRDC and Stone Quarries for free of cost availability of pond ash as per their requirement.* • *Presently Khasara Ash bund's ash is utilized in NHAI Outer Ring Road.* • *Presently, Koradi TPS Ash Utilization target is 1.50 MT Crores for F.Y. 2023-24.As per on-going projects of NHAI/MSRDC has demanded free of cost as per prevailing policies of GOI i.e. the transportation cost including loading & unloading cost is to borne by the TPS as per the Govt. Circular. The issue of transportation cost is under discussion.* • *MSRDC on-going Projects i.e. Samruddhi Express High-way Link Road from Jamtha to Gondia&Bhandara to Gadchiroli and Wardha to Chandrapur. The total requirement of pond ash is @ 3-4 crores MT. MSRDC demanded transportation cost borne by TPS as per norms.*

		1. Availability of stone quarries for ash filling: The list of allotted stone quarries for Koradi TPS, are Aasola- Sawangi stone quarry mines Wardha road Nagpur. SaonerBoregaon(Junglee), Abandoned mines-Betul road nagpur, H.G. infra stone quarry mines Boregaon (junglee), M/S Guru Baxani's stone quarry Mines, Mahurazari, Nagpur. which are at very much longer distance. In the plant, the bottom ash series disposal system of Koradi TPS is designed for peripheral of 7 KM & in this 7 km of range ,there is no direct abandoned stone quarries available for day-to-day ash filling, so that it is not feasible to direct ash filling in allotted stone quarries. For Ash filling in the abandoned mines, the distance is very much longer. Hence there is no direct disposal piping available to the said longer distance about 30 to 100 Km area, it's the design constraints. Hence it is not feasible. **2. Details of the abandoned mines nearby TPS:** The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is not feasible. The KTPS representative visited the nearby abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the abandoned mines is under consideration. **3. Status of private owner survey for ash utilization:** The following agencies owner visited for survey of ash utilization i) M/s Super Engineering works ii) M/s Ashtech India Pvt. Ltd. iii) M/s Tanmay Infratech Pvt. Ltd. iv) M/s. ACC v) M/s. MSRDC and projects However, response from them is poor. Still negotiations are under progress to increase ash utilization percentage. **(Annexure-VI- MSRDC correspondence letters)**

(viii)	Fly ash shall be collected in dry form & storage facility (silos) shall be provided. 100 % fly ash utilization shall be ensured from 4th year onwards. Unutilized fly ash shall be disposed off in the slurry form. Mercury & other heavy metals (As, Hg, Cr, Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.	**Complied.** A temporary arrangement is made for disbursement of dry fly ash utilization from intermediate/ HCSD silo no. 1.Provision of three Remote silo is also made for dust free loading of ash in bulkers. Unutilized ash is disposed of by HCSD system in Khasara ash bund. Heavy metals are monitored regularly in effluent of ash bund through MoEF&CC approved lab. PP is taking all efforts for 100% ash utilization. 1125 Cum dry ash is stored per silo. **(Annexure-VII A- Silo photographs & Annexure-VII-B- Ash analysis report)**
(ix)	Ash pond shall be lined with HDP/LDP lining **or** any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety shall also be implemented to protect the ash dyke from getting breached.	**Partially Complied.** Koradi TPS is using Khasara Ash Bund for ash disposal, Khasara Ash bund is live hence the work of HDPE & LDPE lining cannot be taken up in hand. Koradi TPS has submitted a letter requesting MoEF&CC to amend EC conditions for HDPE/LDPE lining to ash bund. Hence it was understood that any lining to the peripheral area of bund is not possible being a live bund. However, PP is taking following measures to maintain the bund: a) Stone pitching is done at dyke wall. b) Decanted water is being recycled and reutilized in plant. Bund water is recovered though available weir & drain wells. c) Proper maintenance of ash bund is done to avoid any breaching of bund. d) Lagoons are in place inside the ash bund & siphoning system is also in place. **(Annexure-VIII A- Amendment EC letter. Annexure-VIII-B Stone pitching photographs)**
(x)	For disposal of bottom ash in abandoned mines (if proposed to be undertaken) it shall be ensured that the bottom & sides of the mined out areas are adequately lined with clay before bottom ashis filled up. The project proponent shall inform the State Pollution Control Board well in	**Partially Complied.** As per CPCB letter no. B-33014/07/2020/IPC-II/TPP/7704 dtd 30.09.2020, CPCB forwarded list of abandoned mines for backfilling purpose identified by Taskforce of MoP to state PCB's out of which 3 mines are of WCL situated in Maharashtra i.e. Talwasa OC, Dholwasa OC, Naveen Kunada OC are

	advance before undertaking the activity.	situated in Chandrapur district and not nearby Koradi TPS. The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is not feasible. The KTPS representative visited the nearby abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the abandoned mines is under consideration.
(xi)	Closed cycle cooling system with natural draft cooling towers shall be provided. The effluents shall be treated as per the prescribed norms.	**Complied.** Closed cycle cooling water system comprising of Natural Draft Cooling Tower is installed and in service for unit 8, 9 & 10. The effluent from blow down is treated through ETP as per norm and reused for ash disposal.
(xii)	The treated effluents conforming to the prescribed standards only shall be recirculated and reused within the plant. There shall be no discharge outside the plant boundary except during monsoon. Arrangement shall be made that effluents and storm water do not get mixed.	**Complied.** In house ETP is installed and commissioned to treat trade effluents arising from power station premises. Currently treated effluent is reused within the plant for ash disposal purpose. Separate storm water drainages are provided in plant premises. **(Annexure-IX-A** Drawing of ETP attached. **Annexure-IX-B** Latest Analytical report of ETP outlet parameter is attached).
(xiii)	A sewage treatment plant shall be provided & the treated sewage shall be used for raising green belt/plantation.	**Complied.** Two sewage treatment plants having capacity of 25 and 10 KLD are established and treated water is used for developing green belt / plantation. These sewage treatment plants are established for treating raw sewage inside industrial premises only.(**Annexure-X-** Drawing of STP attached).
(xiv)	Rainwater harvesting should be adopted. Central groundwater, Authority/ Board shall be consulted for finalization of appropriate rainwater technology within a period of three months from the date of clearance & details shall be furnished.	**Complied.** Rain water harvesting tanks at 3 locations are provided. Drawing of Rain water harvesting system is attached as **(Annexure-XI).**

(xv)	Adequate safety measure shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plan layout shall be submitted to the regional Officers of the Ministry.	**Complied.** Fire hydrant system is provided at various locations across plant area .Fire quenching line erected in stack yard to control fire in Coal yard. Latest mock drill report dated 10.03.2023 for fire incidence is attached. (**Annexure-XII**)
(xvi)	Storage facility for auxiliary liquid fuel such as LDO/HFO & LSHS shall be made in the plant area in consultation with Departmental of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	**Complied.** Oil handling plant is commissioned as per plan sanctioned by Explosive Department. License for oil handling plant is issued by Explosive department. LDO/ HFO is received from Oil India companies and use as received basis. Disaster management plan/ onsite emergency preparedness plan is prepared to address any eventuality. Main Tank FO-2 nos each capacity of 2000KL LDO-2nos each capacity of 1000KL Main tank (qty- 6000KL) license no. P/HQ/MH/15/6192 (P305883) valid upto 31/12/2027 Day Tank FO-2 nos each capacity of 500KL LDO-1no capacity of 500KL day tank(qty- 1500KL) license no. P/HQ/MH/15/6192 (P327547) valid upto 31/12/2027. (Photocopy of license as **Annexure-XIII**)
(xvii)	Regular monitoring of ground water level shall be carried out by establishing a network of existing wells & constructing new piezometers. Monitoring around the ash pound area shall be carried out particularly for heavy metal (Hg, Cr, As, Pb) & records maintained & submitted to the Regional office of the Ministry. The data so obtained should be compared with baseline data so as to ensure that the ground water quality is not adversely	**Complied.** Three Nos. of Piezo wells has been installed at periphery of Khasara Ash Bund.Analysis of Ground Water is carried out periodically through MoEF&CC approved laboratory. Recent ground water report is enclosed as (**Annexure-II-B**). At present the data cannot be fetched online due to the maintenance required for 3 piezometers Budgetary offer is called upon and thereafter enquiry shall be placed for carrying out maintenance of

	affected due to the project.	piezometer. Period of execution for completion of works shall be six months. **URL-http://35.200.247.132/webdata/webdatalogin (Annexure-XIV)**
(xviii)	Green Belt consisting of 3 tiers of plantations of native species around plant & at least 100 m width shall be raised. Wherever 100 m width is not feasible, a 50 m width shall be raised & adequate justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate less than 70%.	**Complied.** The total project area is 652.02 ha. 33 % of total project area is comes to be 215.16 ha. Out of total project area till dated 276.4 area has been developed as green belt. PP has proposed to plant 10,000 trees in FY 2023-24 around plant area including bund. Photographs of Plantation are enclosed as **(Annexure-XV)**
(xix)	First aid & sanitation arrangements are to be made for the drivers & other contract workers during construction phase.	**Complied.** First aid & sanitation arrangements were made for the drivers & other contract workers during construction phase. Now, construction phase is over and all three units are commissioned.
(xx)	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/ earmuffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain audiometric records & for treatment for any hearing loss including shifting to non-noisy/ less noisy area.	**Complied.** Acoustic enclosures are provided to high noise generating auxiliaries. Sound proof cabins are provided for staff working in high noise area. Personal protective equipments are provided to staff and contractor labors. Regular medical checkup is arranged by Medical Dispensary for audiometric examination (**Annexure-XVI**)
(xxi)	Regular monitoring of ground level concentration of SO_2, NOx, RSPM (PM10 & PM2.5) & Hg shall be carried out in the impact zone & records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations shall be decided in consultation with SPCB. Periodic reports shall be submitted to the regional Office	**Complied.** KTPS Koradi, 3X660 MW, is carrying out ambient air quality monitoring twice in week at three different locations approved by SPCB. Three CAAQMS are installed around the premises of 3X660 MW Koradi at various locations as approved from SPCB. CAAQMS connectivity to SPCB server is established, Data is available through online connectivity with MPCB server. CAAQMS connectivity to CPCB server is under process. Koradi TPS is regularly carrying out

	of this Ministry. The data shall also be put on the website of the company.	GLC study, recently carried out in May-2023 for PM, SO2&NOx emission. The concentration of pollutants predicted by Industrial source Complex (ISCST3) Dispersion modeling carried out for various locations are found to be normal **(Annexure -XVII)**
(xxii)	A good action plan for R&R (if applicable) with package for the project affected persons be submitted & implemented as per prevalent R & R policy within three months from the date of issue of this letter.	**Complied.** No additional land required and the project is installed in existing premises and hence R & R policy is not applicable to this project.
(xxiii)	An amount of Rs. 20 Crores shall be earmarked as per time capital case for CSR program. Subsequently a recurring expenditure of Rs.4 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be along with road map for implantation.	**Complied.** Assessment of implementation of CSR action plan adjoining villages of TPS had been carried out. The activities undertaken by Mahagenco with capital cost of Rs. 20.00 cr. has been completed. **(Annexure- XVIII-A CSR Expenditure)** **(Annexure-XVIII-B- Photographs attached)**
(xxiv)	As part of CSR program the company shall conduct need based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such community development activities & income generating program. This will be in addition to vocational training for individuals imparted to take self-employment & jobs.	**Complied.** The work orders for tree plantation & Fodder farm maintenance at Mahagenco's land were issued to various Mahila Bachat Gat which is helping in upliftment of poor section of society **(Annexure -XIX)**
(xxv)	Provision shall be made for the housing of construction labor within the site with all necessary infrastructure & facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structure to be removed after the completion of the project.	**Complied.** PP already provided during construction phase. Provisions were made for the housing of construction labor within the site along with all necessary infrastructure & facilities. As of now, construction phase is over and all three units are commissioned.

(xxvi)	The project proponent shall advertise in at least two local newspaper widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance & copies of clearance letter are available with the State Pollution Control Board/ Committee & may also be seen at Website of the MOEF&CC at http://envfor.nic.in.	**Complied.** PP had advertised in accordance with the procedure of environmental clearance in newspaper. **(Annexure -XX)**
(xxvii)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, ZilaParishad /Municipal Corporation, Urban Local Body & the Local NGO, if any, from whom suggestions/ representation, if any, received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	**Complied.** PP had sent clearance letter to Panchayat, Zila Parishad /Municipal Corporation, Urban Local Body. The EC of the project proponent was available on MoEF website along with the minutes of EAC. The PP is regularly submitting compliance of EC conditions to IRO, MoEF & CC Nagpur.
(xxviii)	A separate Environment Management Cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.	**Complied.** PP has set up the Environment Management cell. The list of staff available at EMC is prepared **(Annexure-XXI)**
(xxix)	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website & shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB & the SPCB. The criteria pollutant levels namely RSPM (PM10 & PM 2.5), SOx, NOx, (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	**Complied.** PP submitted compliance to EC conditions are regularly to respective authorities by PP. Monitoring of ambient air quality parameters is carried out regularly. The reports are submitted to regional office of SPCB. Compliance of the stipulated EC conditions sent to the Regional Office of MoEF through mail. Electronic display board at entrance gate for display of CAAQMS & stack parameters is provided. Connectivity of three CAAQMS stations with SPCB server is established and registration for connectivity with CPCB server is also completed. **(Annexure-XXII**- Photograph of Main gate display board attached)

(xxx)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored date (both in hard copies as well as by e-mail) to the respective regional office of MoEF, the respective Zonal Office of CPCB & SPCB.	**Complied.** Compliance to EC conditions are regularly submitted to respective authorities by PP. Monitoring of ambient air quality parameters is carried out regularly. The reports are submitted to regional office of SPCB. Compliance of the stipulated EC conditions sent to the Regional Office of MoEF through mail. Date of submission:vide no 6895 dtd 03.08.2023.
(xxxi)	The environment statement for each financial year ending 31st March in Form-V as mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions & shall also be sent to the respective Regional Offices of the Ministry by e-mail.	**Complied.** Environment statement in Form-V of 3X660 MW Koradi for FY 2022-23 is submitted online on MPCB portal. Date of submission is 16.09.2023 **(Annexure - XXIII)**
(xxxii)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment & Forests, its regional Office and Central Pollution Control Board & State Pollution Control Board. The project proponent shall upload the status of compliance of the environmental clearance conditions on their website & update the same periodically & simultaneously send the same by e-mail to the Regional office, Ministry of Environment & Forests.	**Complied.** Compliance to EC conditions are regularly submitted to respective authorities by PP. Monitoring of ambient air quality parameters is carried out regularly. The reports are submitted to regional office of SPCB. Compliance of the stipulated EC conditions sent to the Regional Office of MoEF through mail. Electronic display board at entrance gate for display of CAAQMS & stack parameters is provided. Connectivity of three CAAQMS stations with SPCB server is established and registration for connectivity with CPCB server is also completed
(xxxiii)	Regional Office of the Ministry of Environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including EIA Report & EMP along with the additional information submitted from time to time shall be forwarded to the Regional office for their use during monitoring. Project proponent will up load	**Complied.** PP are regularly submitted EC conditions to respective authorities. Monitoring of ambient air quality parameters is carried out regularly. The reports are submitted to regional office of SPCB. Compliance of the stipulated EC conditions sent to the Regional Office of MoEF through mail. Electronic display board at entrance gate for display

	the compliance status in their website & update the same from time to time at least six-monthly basis. Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.	of CAAQMS & stack parameters is provided. Connectivity of three CAAQMS stations with SPCB server is established and registration for connectivity with CPCB server is also completed Criteria pollutant levels displayed at TPS main gate.
(xxxiv)	Separate funds shall be allocated for implementation of environment protection measures along with item wise break up. This cost shall be included as part of project cost. The funds earmarked for environment protection measures shall not be diverted for other purposes and year wise expenditure shall be reported to the ministry.	**Complied.** The activity has been completed in project stage.
(xxxv)	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure & final approval of the project by the concerned authorities & the dates of start of land development work & commissioning of plant.	**Complied.** Date of approval of Project: 18/01/2008. The dates for Land development work were informed during the initiation phase of the project and subsequently the dates of COD for respective units are also intimated to MoEF&CC accordingly. Regarding date of financial closure, it will be intimated after compliance of EC conditions. Date of comm. /COD: U-8: 16/12/2015, U-9: 22/11/2016, U-10: 17/01/2017.
(xxxvi)	Full co-operation shall be extended to the Scientist/ Officers from the Ministry/ Regional office of the Ministry at Bangalore/CPCB/SPCB who would be monitoring the compliance of environment status.	**PP has consented to condition**.
	MoEF Letter Ref. No.J- 13012/87/2007-IA. II (T) dated 27/03/2015	
(xxxvii)	Harnessing solar power within the premises of the plant particularly at available rooftops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half yearly monitoring report.	**Complied** PP has already initiated to install 5 MW solar plant in the vicinity of Koradi, TPS. **Photocopy of the LoA vide letter no. 234 dated 08.03.2022 is attached. (Annexure-XXIV)**

(xxxviii)	A long-term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute and results thereof shall be analyzed every two years and reported in monitoring reports. Thereafter, mechanism for an in-built continuous monitoring system for radioactivity and heavy metals in coal and Fly ash (including bottom ash) shall be put in place.	**Complied.** Coal & Ash samples were tested at Board of Radiation & Isotope Technology (BRIT), New Mumbai. Reports indicated that the measurement values of Coal & Ash samples are below the clearance level for radionuclides of natural origin in bulk solid material as per capital AERB (Atomic Energy Regulatory Board) directives 01/2010 (Table B) table 26.11.2010.(**Annexure -XXV)**
(xxxix)	Fugitive emissions shall be controlled to prevent impact on agriculture or non-agriculture land.	**Complied.** KTPS is taking all out efforts to reduce source emissions thereby achieving ambient air quality such as installation of ESP with 99.9 % efficiency, and over fire air(OFA) low NOx burners. Whereas, FGD installation is proposed to control SO2 emission. At Koradi TPS one stack consisting of three flue cans with height 275 m is installed which disperses the emission in wider area which minimize the impact of emission. Additionally, The dust suppression at all transfer points of CHP area and fogging system are in service. DS system is installed at site to control coal dust. Additional spray system in CHP area is installed to prevent dust. Measures taken to minimize the fugitive dust in CHP & AHP area.
(xl)	Fly ash shall not be used for agriculture purpose. No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media so that no leaching shall take place at any point of time. In case, the option for mine void filling is adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and installation of adequate clay lining shall be ascertained if required, by the State Pollution Control Board. The dumping in mine void shall be carried out in close co-ordination with the SPCB.	**PP has consented to condition.**

(xli)	Green Belt of 20-50 m width shall also be developed around the ash pond over and above the green belt around the plant boundary	**Complied.** The total project area is 652.02 ha. 33 % of total project area is comes to be 215.16 ha. Out of total project area till dated 276.4 area has been developed as green belt. PP has proposed to plant 10,000 trees in FY 2023-24 around plant area including bund.
(xlii)	An Environment cell comprising of at least one expert in Environment Science/Engineering, Ecology, Occupational Health and Social Science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the cell shall directly report to Head of the plant who would be accountable for implementation of Environmental regulations and social impact improvement/mitigation measures.	**Partially Complied.** There is no person from Environmental Science field being recruited.
(xliii)	For periodic monitoring of CSR activities, a CSR Committee or a Social Audit Committee or a suitable credible external agency shall be appointed. CSR activities shall be evaluated by an independent external agency, both concurrently and final.	**Complied.** After completion of activities under one-time capital Rs. 20.00 Cr. agency M/s Surya Envirotech has carried out CSR impact assessment study in the nearby villages of TPS and submitted the report **(Annexure -XXVI)**
(xliv)	The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable Environmental laws and regulations.	**Complied.** Environment Safeguard Responsibility Frame Work/Corporate Environment Policy is formulated by MAHAGENCO at corporate level. Photocopy of the same is enclosed as **(Annexure - XXVII)**
	MoEF Letter Ref. No.J- 13012/87/2007-IA. II (T) dated 23/03/2017	
i.	Specific condition 4(i) to be amended as "Ministry's Notification SO 3305(E) E(P) Amendment Rules, 2015 dated 07.12.2015 regarding revised emission	

	standards for PM, SO2, NO2 and Hg shall be complied with and the same shall be achieved within two years from the date of publication of the notification for all Units-8, 9 & 10 (3 x 660MW) i.e. on or before 07.12.2017".	
ii.	Change in Coal source from Machhakuta Coal Mines to Garepalma coal Sector-II Block, Mandraigarh Coalfields, Raigarh District, Chhattisgarh is permitted.	**Complied.** At present coal supply from Gare Palma coal Sector-II Block, Mand Raigarh Coalfields, Raigarh District, Chhattisgarh is not started. However, EC & FC is granted to Gare Palma Coal block. Koradi TPS is receiving coal from various mines of WCL, MCL, SCCL and SECL. Currently, TPS is using washed coal. The allocation of coal quantity is as per the Fuel Supply Agreement and as per the current requirement of TPS.
iii.	Ministry Notification No. GSR 02(E) Dtd. 02.01.2014 regarding supply of raw or blended or beneficiated coal with ash not exceeding thirty four percent shall be implemented, as applicable.	**Complied.** Koradi TPS has been using the wash coal with ash content around 34%. Now, Mahagenco and MSMC are in agreement for supply of wash coal for the period of 5 years. The MoEF & CC notification Dtd 21.05.2020 states that, "Use of coal by thermal power plant without stipulations as regards ash contents or distance, shall be permitted subject to setting up technology solution for emission norms". In this context, it may please be informed that 660 MW units at Koradi are taking all out efforts for use of low ash content coal by blending wash coal and raw coal. Analysis report for Sulphur content in coal is attached **(Annexure -XXVIII)**
iv.	The compliance of EC conditions shall be reviewed on quarterly basis. In this regard, a compliance mechanism shall be set up through plant head who is responsible for implementing the conditions stipulated in the EC, non-compliances and violations. Budget to implement various environmental pollution control measures as proposed in the EMP shall be kept in a separate account and shall not be diverted for any other purposes. Compliance reports shall be uploaded on company's website.	**Complied.** PP has consented for the same. Organizational hierarchy is established for compliance reporting mechanism at plant level. PP has been submitting EC conditions compliance on six monthly basis regularly. Last date of submission was on 03.08.2023.

	MoEF Letter Ref. No. J- 13012/87/2007-IA. II (T) dated 29/05/2018.	
i.	Construction of pillars in the water bodies (Rivers & Nallahs) shall be carried out in the dry season only.	**Complied.** Work for transportation of coal by closed pipe conveyor for a length of 16.1 km and with a capacity of 7.35 MTPA from Gondegaon and Bhanegaon mines to Koradi TPS via Khaperkheda TPS has been started as per EC amendment dated 29.05.2018. Consent to establish is received from MPCB for closed pipe conveyor system. Work completed for Khaperkheda TPS & Koradi, TPS. Trial run for Koradi portion have started from 20.11.2023. However, the system will be commissioned after receipt of consent to operate **(Annexure -XXIX)**
ii.	Dust suppression system such as mist/dry for jet sprinklers to be setup at the transfer points to arrest the fugitive dust emissions.	**Complied.** Dust suppression system in the form of sprinklers are working for closed pipe conveyor system **(Annexure -XXX)**
iii.	For every tree cut along the proposed route in the non-forest area, guidelines of FCA 1980 shall be followed in consultation with the local State Forest Department.	**Complied.** No tree cut for pipe conveyor has been done.
iv.	Noise level shall be in accordance with the Noise Pollution Rules.	**Complied.** Noise level has been maintained as per Noise Pollution Rules. Latest report of Noise levels is attached **(Annexure -XXXI)**

2. There is a court case pending in Hon'ble NGT (Pune Bench) w.r.t. 3 x 660 MW Power Plant for non compliance of EC condition. Final hearing for the same is scheduled on 01.03.2024.

3. There is a Court case in the Hon'ble High Court (Nagpur Bench) as PIL No. 51/2023 against installation of proposed 2 x 660 MW Super Critical Unit at Koradi and the public hearing conducted on 29.05.2023 for the same. Hon'ble High Court (Nagpur Bench) conducted last hearing on 10.01.2024 where the Hon'ble Corum has extended the date for further hearing after two weeks.

(Dr. P.R. Sakhare)
Scientist 'E'

Annexure - a

DATE: 13/1/10

BY SPEED POST

J -13012/87/2007-IA.II (T)
Government of India
Ministry of Environment & Forests

Telephone: 011-24368526
Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi-110 003
Dated: 4th January, 2010

To

M/s Maharashtra State Power Generation Co. Ltd.
Prakashgad, 3rd Floor, Plot No. G-9
Bandra (E)
Mumbai – 4000 51

Sub: *3x660 MW Expansion of Coal Based Power units at Koradi TPP in Nagpur District, in Maharashtra - reg. Environmental Clearance.*

Sir,

The undersigned is directed to refer to letters dated 30.07.2009, 03.10.2009 and 01.12.2009 on the subject mentioned above. The Ministry of Environment & Forests has examined the application.

2. It has been noted that the proposal is for replacement of existing 4 units of 120 MW each by 1x660 MW unit and addition of 2x660 MW units. Additional fresh water will be required for the proposed expansion project will be met from the sewage collected by Nagpur Municipal Corporation after treatment. MoU with Nagpur Municipal Corporation is in place. No additional fresh water will be drwn, since only the allotted water from Pench River (through a canal) will be utilized. It is proposed to install a tri-flue stack of 275 m height. Coal requirement will be 30,638 TPD, which will be sourced from Machhakuta Coal filed in Orissa. Washed coal will be used for the project. Ash content of the coal will be 44.65 % (maximum). Sulphur content will be 0.8 % (maximum). The slurry disposal method proposed will be based on high concentration slurry. NOC from AAI for 275 m stack height has been accorded. NOC from Gram Panchayat has also been obtained. Kolar river is at a distance of 10 km from the site. No R&R is involved. Proposed units will be installed with 99.9 % efficiency ESP. FGD with one unit of 660 MW will be installed initially and the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO_2. There are no national parks, wildlife sanctuaries, biosphere/elephant/tiger reserves, heritage sites etc within 10 km of the site. Public hearing was conducted on 25.03.2009. Cost of the project will be Rs. 11,890.0 Crores.

3. The project has been considered in accordance with the provisions of the EIA notification issued by the Ministry of Environment & Forests vide S.O. 1533 (E), dated September 14, 2006.

4. Based on the information submitted by you, as at Para 2 above and others, the Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA notification dated September 14, 2006, subject to the compliance of the following conditions:

(i) FGD with one unit of 660 MW will be installed initially to begin with and the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO_2. Provision for installation for FGD in all units shall be made.

(ii) Hydro-geological study of the area shall be reviewed annually and results submitted to the Ministry and concerned agency in the State Govt. In case adverse impact on ground water quantity and quality is observed, immediate mitigating steps to contain any adverse impact on ground water shall be undertaken.

(iii) Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel/ Rivers even in lean season. It shall be ensured that natural drainage in the region is not disturbed due to activities associated with operation of the plant.

(iv) A Tri-Flue stacks of 275 m height each shall be provided with continuous online monitoring equipments for SOx, NOx and PM. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.

(v) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3.

(vi) Adequate dust extraction system such as cyclones/ bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.

(vii) Utilisation of 100% Fly Ash generated shall be made from 4th year of operation of the proposed expansion. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.

(viii) Fly ash shall be collected in dry form and storage facility (silos) shall be provided. 100% fly ash utilization shall be ensured from 4th year onwards. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry form. Mercury and other heavy metals (As,Hg, Cr, Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.

(ix) Ash pond shall be lined with HDP/LDP lining or any other suitable impermeable media suh that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.

(x) For disposal of Bottom Ash in abandoned mines (if proposed to be undertaken) it shall be ensured that **the bottom and sides of the mined out areas are adequately lined with clay before Bottom Ash is filled up.** The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.

(xi) Closed cycle cooling system with natural draft cooling towers shall be provided. The Effluents shall be treated as per the prescribed norms.

(xii) The treated effluents conforming to the prescribed standards only shall be re-circulated and reused within the plant. There shall be no discharge outside the plant boundary except during monsoon. Arrangements shall be made that effluents and storm water do not do not get mixed.

(xiii) A sewage treatment plant shall be provided and the treated sewage shall be used for raising greenbelt/plantation.

(xiv) Rainwater harvesting should be adopted. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology within a **period of three months** from the date of clearance and details shall be furnished.

(xv) Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.

(xvi) Storage facilities for auxiliary liquid fuel such as LDO and/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.

(xvii) Regular monitoring of ground water level shall be carried out by establishing a network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg,Cr,As,Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.

(xviii) Green Belt consisting of 3 tiers of plantations of native species around plant and at least 100 m width shall be raised. Wherever 100 m width is not feasible a 50 m width shall be raised and adequate justification shall be submitted to the Ministry. Tree density shall not less than 2500 per ha with survival rate not less than 70 %.

(xix) First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.

(xx) Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non noisy/less noisy areas.

(xxi) Regular monitoring of ground level concentration of SO_2, NOx, RSPM (PM_{10} & $PM_{2.5}$) and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.

(xxii) A good action plan for R&R (if applicable) with package for the project affected persons be submitted and implemented as per prevalent R&R policy **within three months** form the date of issue of this letter.

(xxiii) An amount of Rs 20.0 Crores shall be earmarked as one time capital cost for CSR programme. Subsequently a recurring expenditure of Rs 4.0 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to

be undertaken shall be **submitted within one month** along with road map for implementation.

(xxiv) As part of CSR programme the company shall conduct need based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self employment and jobs.

(xxv) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

(xxvi) The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in.

(xxvii) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.

(xxviii) A separate Environment Management Cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.

(xxix) The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM (PM_{10} & $PM_{2.5}$), SO_2, NO_x (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.

(xxx) The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well by e- mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB.

(xxxi) The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.

(xxxii) **The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of**

Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of Environment and Forests.

(xxxiii) Regional Office of the Ministry of Environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up-date the same from time to time at least six monthly basis. **Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.**

(xxxiv) Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.

(xxxv) The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.

(xxxvi) Full cooperation shall be extended to the Scientists/Officers from the Ministry / Regional Office of the Ministry at Bangalore / CPCB/ SPCB who would be monitoring the compliance of environmental status.

4. The Ministry of Environment and Forests reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the Ministry. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.

5. The environmental clearance accorded **shall be valid for a period of 5 years** to start operations by the power plant.

6. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

7. In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition(s) imposed and to add additional environmental protection measures required, if any.

8. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1989 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.

9. Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred, within 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.

(LALIT KAPUR)
DIRECTOR

Copy to -

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary (Environment), Forests and Environment Department Government of Maharashtra.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, Maharashtra Pradesh State Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. Cine Planet, Sion Circle, Sion (E), Mumbai – 400 022
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
6. The Chief Conservator of Forests, Regional Office (WZ), E-5, Kendriya Paryavaran Bhawan, Arera Colony, Ravishankar Nagar, Bhopal - 462016.
7. The District Collector, Nagpur District, Govt. of Maharashtra.
8. The Director (EI), MOEF.
9. Guard file
10. Monitoring file.

(LALIT KAPUR)
DIRECTOR

Annexure - b

E-mail: gsachita@nic.in
ramram_2859@yahoo.co.in
Telefax: 011-24695402

भारत सरकार
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE
इंदिरा पर्यावरण भवन, जोर बाग रोड,
अलीगंज, नई दिल्ली-110 003
INDIRA PARYAVARAN BHAWAN, JOR BAGH ROAD,
ALIGANJ, NEW DELHI-110 003
Website : moef.nic.in

2nd Level, JAL Block
Date: 27th March, 2015

F. No. J-13012/87/2007-IA.II (T)

To

M/s Maharashtra State Power Generation Co. Ltd.
(Formerly known as M.S.E.B)
Corporate Environment Health & Safety Unit
HDIL Towers, "A" Wing, 3rd Floor
Prof. A.K. Marg
Bandra (E), Mumbai- 400 051
Maharashtra
Ph: 022-26582424/26584225; Fax: 022-26477273

Subject: Extension of validity of Environment Clearance for 3x660 MW Expansion of coal based power units at Koradi Thermal Power Project, Distt. Nagpur, Maharashtra by M/s. Maharashtra State Power Generation Company Ltd.

Sir,

This has reference to your letters dated 18.12.2014, 16.01.2015 and 03.02.2015 on the above subject. It is noted that Environment Clearance (EC) was accorded for the above project on 4th January, 2010.

2. The matter was placed before the EAC (Thermal Power) in its 30th Meeting held during 29th & 30th January, 2015. In acceptance of the recommendation of the EAC and in view of the information/clarification submitted by you with respect to implementation of the above mentioned power project, the validity of the said EC is extended till 30th June, 2016 to start the production/operation of all the Units of the power plant.

3. Further, under Para no.4 of the said EC dated 4th January, 2010, after the condition no. (xxxvi), the following conditions shall be added:

xxxvii) Harnessing solar power within the premises of the plant particularly at available rooftops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half-yearly monitoring report.

xxxvii) A long term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute and results thereof shall be analyzed every two year and reported in the monitoring reports. Thereafter mechanism for an in-built continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.

xxxix) Fugitive emissions shall be controlled to prevent impact on agricultural or non-agricultural land.

xl) Fly ash shall not be used for agricultural purpose. No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media so that no leaching shall take place at any point of time. In case the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and installation of adequate clay lining shall be ascertained, if required, by the State Pollution Control Board. The dumping in mine void shall be carried out in close co-ordination with the State Pollution Control Board.

xli) Green belt of 20-50 m width shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.

xlii) An Environmental Cell comprising of at least one expert in environmental science/ engineering, ecology, occupational health and social science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate senority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Plant who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.

xliii) For periodic monitoring of CSR activities, a CSR Committee or a Social Audit Committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency, both concurrently and final.

xliv) The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.

4. All other conditions mentioned in this Ministry's letter of even no. dated 8th January, 2010 shall remain the same.

This is issued with the approval of the Competent Authority.

Yours faithfully,

(Sanchita Jindal)
Scientist 'F' & Director (T)

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary, Department of Environment, Govt. of Maharashtra.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. cine Planet, Sion Circle, Sion (E) Mumbai – 400 022
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
6. The Chief Conservator of Forests, Regional Office (WZ), E-5, Kendriya Paryavaran Bhawan, Arera Colony, Ravishankar Nagar, Bhopal - 462016.
7. The District Collector, Nagpur District, Maharashtra.
8. Guard file.

(Sanchita Jindal)
Scientist 'F' & Director (T)

Annexure - c

Inward (E&S
Date: 28.

No. J-13012/87; A.II (T)
Governmen ia
Ministry of Environment, Fo nd Climate Change

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan, Jor Bagh Road,
Aliganj, New Delhi-110003

Dated: 23.03.2017

To

M/s Maharashtra State Power Generation Co. Ltd.
(Formerly known as M.S.E.B)
Corporate Environment Health & Safety Unit
HDIL Towers, "A" Wing, 3rd Floor,
Prof. A.K. Marg,
Bandra (E), Mumbai- 400 051

Ph: 022-26582424/26584225; Fax: 022-26477273

Sub: *3x660 MW Expansion of coal based power units at Koradi TPP, Distt. Nagpur, Maharashtra by M/s. Maharashtra State Power Generation Company Ltd.- reg. amendment of EC.*

Sir,

This has reference to your letters dated 20.08.2016 on the above subject. It is noted that EC was accorded for the above project on 04.01.2010. Subsequently, the validity of the EC has been extended till 30.06.2016 on 27.03.2015.

2. The matter was placed before the Re-constituted EAC (Thermal Power) in its 1st Meeting held 28.12.2016. In acceptance of the recommendation of the EAC and in view of the information/clarification furnished by you with respect to implementation of the above mentioned power project, EAC recommended for the amendment of the Environmental Clearance with respect to installation of FGD and change in coal source. The Ministry accepts the recommendations of the EAC and hereby amends the following conditions of the said Environmental Clearance.

i. Specific condition 4(i) to be amended as *"Ministry's Notification SO 3305(E) E(P) Amendment Rules, 2015 dated 07.12.2015 regarding revised emission standards for PM, SO2, NO2 and Hg shall be complied with and the same shall be achieved within two years from the date of publication of the notification for all Units-8, 9 & 10 (3x660 MW) i.e. on or before 07.12.2017."*

ii. Change in coal source from Machhakata Coal Mines to Gare Palma Coal Sector-II Block, Mand Raigarh Coalfields, Raigarh District, Chhattisgarh is permitted.

iii. Ministry's notification no.GSR 02(E) dated 02.01.2014 regarding supply of raw or blended or beneficiated coal with ash not exceeding thirty-four percent shall be implemented, as applicable.

iv. The compliance of EC conditions shall be reviewed on quarterly basis. In this regard, a compliance mechanism shall be set up through Plant Head who is responsible for implementing the conditions stipulated in the Environmental Clearance, non-compliances and violations. Budget to implement various environmental pollution control measures as proposed in the EMP shall be kept in a separate account and shall not be diverted for any other purposes. Compliance reports shall be uploaded on company's website.

4. All other conditions mentioned in this Ministry's letter of even no. dated 04.01.2010 and 27.03.2015 shall remain the same, as applicable.

This issues with the approval of the Competent Authority.

Yours faithfully,

(Dr. S. Kerketta)
Director

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary, Department of Environment, Govt. of Maharashtra.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. cine Planet, Sion Circle, Sion (E), Mumbai – 400 022.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
6. The Addl. Principal Chief Conservator of Forests (C), Ministry of Env., Forest and Climate Change, Regional Office (WCZ), Ground Floor, East Wing, New Secretariat Building, Civil Lines, Nagpur- 440001.
7. The District Collector, Nagpur District, Maharashtra.
8. Guard file.

(Dr. S. Kerketta)
Director

Annexure-d

No. J-13012/87/2007-IA.II (T)
Government of India
Ministry of Environment, Forests and Climate Change

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan, Jor Bagh Road,
Aliganj, New Delhi-110003

Dated: 29.5.2018

To

The Chief General Manager
M/s Maharashtra State Power Generation Co. Ltd.
(Formerly known as M.S.E.B)
Corporate Environment Health & Safety Unit
HDIL Towers, "A" Wing, 3rd Floor,
Prof. A.K. Marg,
Bandra (E), Mumbai- 400 051

Inward (E&S) No. 770
Date: 14/06/2018

Ph: 022-26582424/26584225; Fax: 022-26477273

Sub: 3x660 MW Expansion of coal based power units at Koradi TPP, Distt. Nagpur, Maharashtra and 1x500 MW Coal based expansion project at Khaperkheda Thermal Power Station at Khaperkheda, Nagpur, Maharashtra by M/s. Maharashtra State Power Generation Company Ltd.- reg. amendment of ECs.

Sir,

This has reference to your online application nos. IA/MH/THE/24219/2010 dated 27.9.2017 and IA/MH/THE/10223/2005 dated 27.9.2017.

2. It has been noted that Environmental Clearance for 3x660 MW Koradi Thermal Power Plant has been issued vide Ministry' letter dated 4.1.2010. Further, validity of the said EC has been extended till 30.6.2016 vide Ministry's letter dated 27.3.2015. Further, an amendment in EC regarding change in coal source and meeting revised emission norms has been issued vide Ministry's letter dated 23.3.2017. Further, it has been noted that Environmental Clearance for 1x500 MW Khaperkheda Thermal Power Plant has been issued vide Ministry's letter dated 2.6.2010.

3. It has been noted that you have requested for amendment in EC for transporting the coal of approximately 7.35 MTPA through closed pipe conveyor for a length of 16.1 km from various mines of Western Coalfields Ltd to Koradi and Khaperkehda Power Plants. The coal requirement for 3x660 MW Koradi Power Plant and 1x500 MW Khaperkheda Power Plant is 10.11 MTPA and 2.5 MTPA respectively. It has been informed by you that the coal is being transported by road.

4. The total pipe conveyor length is 16.1 Km from Bhanegaon to Koradi TPP. The breakup of the proposed pipe conveyor length is as follows:

Sector	Distance
From Gondegaon mines to Bhanegaon IP	5.36 km
Bhanegaon IP to Khaparkheda TPP	2.84 km
Khaperkheda TPP to Koradi TPP	7.9 km
Total length of conveyor	16.1km

EE (Nagpur) Pune 15/6/18

5. Coal from WCL's Gondegaon, Kamptee & Inder mines will be taken from a single point feeding at Gondegaon to be provided by WCL. The combined coal from Gondegaon will be delivered at an intermediate junction point at Bhanegaon where coal from other two mines i.e. Singhori & Bhanegaon mines will also be fed. From this junction point, coal will be fed into Khaperkheda Power Plant. One diversion line is envisaged from Khaperkheda to Koradi plant replacing the existing ropeway route.

6. The designed capacity of the conveyor is 1200 TPH for all conveyors except two conveyors which will have capacity of 250 TPH. The details of mines along with the capacities are mentioned below:

Conveyors	Receipt of coal from mines	Total evacuation capacity	Capacity of conveyor
1001CCPC-1	Gondegoan	5.5 MTPA	1076 TPH*
	Kampte		
	Inder		
1003CCPC-1	Singhori	1.85 MTPA	316 TPH*
	Bhanegaon		

7. Total 2.79 Ha of private land will be purchased on mutual agreed terms. The proposed pipe conveyor will cross 3 rivers (Pench, Kanhan and Kolar) and 17 nallahs, 16 main roads, 13 HT lines and 20 HT lines. Proposed ESZ of Pench National Park and Mansingdev Wildlife Sanctuary is at 17.33 km. No forest land is involved in the proposed route.

8. Foundation for Pipe Conveyor supporting Trestles (Concrete Trestles approximately 5.5 m to 6.0 m from existing ground level @ 22.0 m have been considered and after every 110 m four legged concrete trestles are considered to transfer the longitudinal force to ground) and other trestles for inplant conveyor. The conveyor lift is 20 m and the pipe conveyor having diameter 45 cm will be placed on trestle. As part of conveyor system total 20 concrete pillars (8 in Pench, 8 in Kanhan and 4 in Kolar) will be constructed inside the river bed. Distance between two pillars is 36 m. The depth of the pillar foundation is 6-8 m inside the river bed. The river depth varies between 2.5-3.0 m. The cost of the project is Rs.516 Crores. Expected employment for the proposed activity is 30 people.

9. The matter was placed before the Re-constituted EAC (Thermal Power) in its 11th and 16th Meetings held 26.10.2017 and 19.4.2018 respectively. In acceptance of the recommendation of the EAC in its meeting held on 19.4.2018 and in view of the information/clarification furnished by you with respect to implementation of the above mentioned power project, the ***Ministry hereby amends the Environmental Clearances dated 4.1.2010 and 2.6.2010 for transportation of coal by closed pipe conveyor for a length of 16.1 km and with a capacity of 7.35 MTPA from Gondegaon and Bhanegaon mines to Koradi Thermal Power Plant via Khaperkheda Thermal Power Plant*** subject to the following additional conditions:

i. Construction of pillars in the water bodies (Rivers and Nallahs) shall be carried out in the dry season only.
ii. Dust suppression system such as mist/dry fog jet sprinklers to be setup at the transfer points to arrest the fugitive dust emissions.
iii. For every tree cut along the proposed route in the non-forest area, guidelines of Forest (Conservation) Act, 1980 shall be followed in consultation with the local State Forest Department.
iv. Noise level shall be in accordance with the Noise Pollution Rules.

4. All other conditions mentioned in this Ministry's letter of even no. dated 4.1.2010, 27.3.2015, 23.3.2017 and 2.6.2010 shall remain the same, as applicable.

This issues with the approval of the Competent Authority.

Yours faithfully,

(Dr. S. Kerketta)
Director, IA.I

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
4. The Addl. Principal Chief Conservator of Forests (C), Ministry of Env., Forest and Climate Change, Regional Office (WCZ), Ground Floor, East Wing, New Secretariat Building, Civil Lines, Nagpur- 440001.
5. The Principal Secretary, Department of Environment, 15th Floor, New Administrative Building, Madam Cama Road, Mantralaya, Mumbai – 400032.
6. The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. cine Planet, Sion Circle, Sion (E), Mumbai – 400 022.
7. The District Collector, Nagpur District, Maharashtra.
8. Guard file/Monitoring File.
9. Website of MoEF&CC.

(Dr. S. Kerketta)
Director, IA.I

Annexure - e

MAHARASHTRA POLLUTION CONTROL BOARD

Kalpataru Point,
2nd, 3rd & 4th floor,
Opp. Cineplanet,
Near Sion Circle, Sion (E),
Mumbai - 400 022.

INWARD NO [illegible] /2009

DATE 30/11/10

REGD/SI

Consent No. BO/RO (PP)/EIC No. NO-1255-09/CC-41 Date 23 DEC 2010

Consent to Establish under Section 25 of the Water (Prevention & Control of Pollution) Act, 1974; under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 5 of the Hazardous Wastes (Management & Handling) Rules 1989 and Amendment Rules, 2003. [To be referred as Water Act, Air Act and HW (M&H) Rules respectively]

CONSENT is hereby granted to

M/s. Maharashtra State Power Generation Co. Ltd.,
Koradi Thermal Power Station at Koradi,
(Dist. Nagpur)

located in the area declared under the provisions of the Water Act, Air act and Authorization under the provisions of HW (M & H) Rules and amendments thereto subject to the provisions of the Act and the Rules and the Orders that may be made further and subject to the following terms and conditions:

1. The Consent to Establish is granted for a period up to commissioning of the project or five years whichever is earlier.

2. The Consent is valid for the manufacture of:-

Sr. No	Product	Maximum Quantity
1)	Electricity Generation	3 x 660 MW

3. **CONDITIONS UNDER WATER (Prevention and Control of Pollution) ACT, 1974:**

(i) The quantity of trade effluent from the factory shall not exceed 10188 M³/day.

(ii) The daily quantity of sewage effluent from the factory shall not exceed 640 M³/day.

(iii) **Trade Effluent:**

Treatment: The applicant shall provide comprehensive treatment system consisting of primary / secondary and/or tertiary treatment as is warranted with reference to influent quality and operate and maintain the same continuously so as to achieve the quality of the treated effluent to the following standards:

The industrial effluent arising from various sections of Power Plant shall be given such treatment either collective or individually as it is the condition permits that the final quality of effluent shall have following characteristics:

a) **Condenser Cooling Water:**

1)	pH	Between 6.5 to 8.5
2)	Temperature	Not to exceed 5 Degree C higher than the intake water temperature
3)	Free available Chlorine	Not to exceed 0.5 mg/l

b) Boiler Blow down:

1)	Suspended Solids	Not to exceed	100 mg/l
2)	Oil & Grease	Not to exceed	20 mg/l
3)	Copper (Total)	Not to exceed	1 mg/l
4)	Iron (Total)	Not to exceed	1 mg/l

c) Cooling Tower Blow down:

1)	Free available Chlorine	Not to exceed	0.5 mg/l
2)	Zinc	Not to exceed	1 mg/l
3)	Chromium (Total)	Not to exceed	0.2 mg/l
4)	Phosphate	Not to exceed	5 mg/l

d) Ash Pond Effluent:

1)	pH	Between	6.5 to 8.5
2)	Suspended Solids	Not to exceed	100 mg/l
3)	Oil & Grease	Not to exceed	20 mg/l

e) D.M. Plant Effluent:

1)	pH	Between	5.5 to 9
2)	BOD 3 days 27 Deg. C	Not to exceed	30 mg/l
3)	COD	Not to exceed	250 mg/l
4)	Suspended Solids	Not to exceed	100 mg/l
5)	Oil & Grease	Not to exceed	10 mg/l
6)	TDS	Not to exceed	2100 mg/l

(v) Trade Effluent Disposal: The treated effluent shall be maximum recycled/reused for dust suppression, for cooling tower, sprinkling on road, ash handling etc and remaining shall be used on own land for gardening.

(w) Sewage Effluent Treatment: The applicant shall provide comprehensive treatment system as is warranted with reference to effluent quality and operate and maintain the same continuously so as to achieve the quality of treated effluent to the following standards.

(1)	Suspended Solids	Not to exceed	100 mg/l.
(2)	BOD 3 days 27 C.	Not to exceed	100 mg/l.

(x) Sewage Effluent Disposal: The treated domestic effluent shall be used for gardening/irrigation. In no case effluent shall find its way to any water body directly/indirectly at any time.

(y) Non-Hazardous Solid Wastes:

Type of waste	Quantity	Treatment	Disposal
1) Fly Ash	8638 MT/D	—	Shall be sent to cement Manufacturer & brick-makers as per Govt. of India Gazette Notification vide No. SO 763(E) dtd 14-09-1999.
2) Bottom Ash & Waste Ash	2160 MT/D		

(z) Other conditions:

a) The industry should monitor effluent quality regularly.

b) The firm shall provide continuous flow meter for the measurement of the flow of the effluent.

c) Industry shall adopt clean technology like recirculation for cooling water treatment.

d) Industry shall provide dry fly ash handling & collection system and utilize the fly ash as per the fly ash notification of the Govt. of India.

e) Transportation of coal & fly ash shall be by closed system. Conveyor system wherever possible.

f) Fly ash shall be 100% utilized within six years as per the ash Notification vide No. SO 763(E), dtd 14-09-1999.

Maharashtra Pollution Control Board Mumbai

6. The applicant shall comply with the provisions of the Water (Prevention Control of Pollution) Cess Act, 1977 (to be referred as Cess Act) and Rules there under.
The daily water consumption for the following categories is as under:

(i)	Domestic	600 CMD
(ii)	Industrial Cooling	144000 CMD
(iii)	Boiler	6185 CMD
(iv)	Industrial Process	24000 CMD
(v)	Gardening	24000 CMD

The applicant shall regularly submit to the Board the returns of water consumption in the prescribed form and pay the Cess as specified under Section 3 of the said Act which is also available on MPCB website at http://mpcb.mahaonline.gov.in/pages/cessform1.pdf

4. CONDITIONS UNDER AIR (Prevention & Control of Pollution) ACT, 1981:

(i) The applicant shall install a comprehensive control system consisting of control equipments as is warranted with reference to generation of Emission and operate and maintain the same continuously so as to achieve the level of pollutants to the following standards:

Standards for Emissions of Air Pollutants

(i)	SPM/TPM	Not to exceed	50 mg/Nm³
(ii)	SO_2	Not to exceed	541 TPD

(ii) The applicant shall observe the following fuel pattern:

Sr. No.	Type of Fuel	Quantity
(i)	Coal	3068 T/Day
(ii)	Furnace Oil	61 T/Day
(iii)	LDO	41 T/Day

(iii) The applicant shall erect the chimney(s) of the following specifications:

Sr. No.	Chimney attached to	Height in Mtrs.
i)	Boiler of Unit No. I	275
ii)	Boiler of Unit No. II	275
iii)	Boiler of Unit No. III	275
iv)	DG Set 1650 KVA	12*

* above roof of building where DG Set is installed

(iv) Control Equipment:

1 Electrostatic Precipitator of sufficient capacity shall be provided to Boiler and any other sources of particulate matter, so as to ensure that TPM emission do not exceed 50 mg/Nm³.

2 Dust collection system and automatic water sprinkler system shall be provided to Coal Handling Plant.

3 Dust collector of sufficient capacity shall be provided to coal crusher and any other sources of SPM.

4 There shall not be any fugitive emission from coal storage yard.

5 Industry shall install opacity meter.

6 Closed containers shall be used for transportation of coal.

7 The industry shall make necessary provisions for installing FGD with sufficient efficiency in its design and layout, and sufficient land space so that it can be installed in future, as and when directed by Board.

(v) Conditions for DG Sets:

1 Noise from DG Sets shall be controlled by providing acoustic enclosure or by treating the room acoustically.

2 Acoustic shield provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room shall be designed for minimum 25 dB(A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB(A) shall be provided. The measurement of insertion loss shall be done at different at 0.5 meters from acoustic enclosure/ room and then averaged.

3. The Applicant should make efforts to bring down noise level outside the premises with ambient noise level requirements by proper planting surrounding premises.
4. Installation of DG set must be strictly in compliance with recommendations of DG set manufacturer.
5. A proper routine and preventive maintenance procedure for DG Set should be set and followed in connection with the DG set to ensure that it would help to avoid noise levels of DG Sets going beyond permissible limits.
6. The DG set shall be operated only in case of power failure. The applicant shall make arrangement for regular electrical power.
7. The Applicant shall not cause any nuisance in the surrounding area due to operation of DG sets.
8. In case of problems like D.G. set is not in operation shall it is not back to rail/factory position.

(VI) Other Conditions:

1. The coal handling system shall be covered with proper hooding and ventilation arrangements connecting to dust suppression system so as not to allow any fugitive emissions.
2. A separate environment monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.
3. The industry shall not cause any nuisance in surrounding area.
4. The industry shall install three Continuous Automatic Ambient Air & Micrometeorological monitoring stations at locations specified by the State Pollution Control Board to be set up & operate at its own cost measuring SO_2, NO_x and particulate matter. These CAAQMS shall also have necessary provision of online transfer of data to MPCB. The air quality observed shall be displayed for public information at the factory gate through the specialized display Board.
5. The industry shall install online stack monitoring system for the prescribed parameter with provision to transfer the data on-line to MPCB.
6. If due to any technological improvements or otherwise this Board is of opinion that all or any of the conditions referred above require variation (including the change of any control equipment, either in whole or in part), the Board shall after giving the applicant an opportunity of being heard vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions so varied.

(VII) The applicant shall provide ports to the chimney(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to and for use of the Board's Staff. The plan(s) (s) (s) attached in various sources of emission shall be designated by numbers such as S-1, S-2 etc. and these shall be painted / displayed to facilitate identification.

(VIII) The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB(A) during day time and 70 dB(A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.

(IX) CONDITIONS UNDER HW (M &H) RULES, 1989 & AMENDMENT RULES, 2003:

The applicant shall handle hazardous wastes as specified below:

Sr. No.	Item No. of Process generating HW as per Schedule-I	Type of Waste	Quantity	Disposal
1.	5.1	Spent oil	72 MT/A	Sale to MPCB/CPCB authorized re processor
2.	5.2	Spent oil	60 MT/A	
3.		Used Batteries	80 Nos./A	
4.	34.4	ETP Sludge	800 MT/A	CHWTSDF

Maharashtra Pollution Control Board Mumbai

(3)

7. [illegible] of all the conditions and stipulations contained in the Environmental Clearance dated [illegible] and Consent to Establish/Operate granted by the Board shall be submitted to the Board's concerned Regional Office of Directorate of Industrial Safety and Health, Government of Maharashtra, Mumbai as well as to the Local Body. In case of non-submission of compliance, the Production activities connected to it shall be stopped.

8. General conditions:

(i) The applicant shall bring minimum 33% of the available open land under green cover/agril plantation. The applicant shall submit a yearly statement by 30th September every year on available open plot area, no. of trees surviving as on 31st March of the year and no. of trees planted by September end.

(ii) The applicant shall provide for an alternate electric power source sufficient to operate all pollution control facilities installed by the applicant and operate the same in case of power failure to maintain compliance with the terms and conditions of this consent. In the absence of same, the applicant shall stop, reduce or otherwise, control production to abide by terms & conditions of this consent regarding pollution levels.

(iii) The firm shall submit to MPCB, the Environmental Statement Report for the financial year ending 31st March in the prescribed Form-V as per the provisions of rule 14 of the Environment (Protection) (Second Amendment) Rules, 1992 before 30th September every year.

(iv) The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained. The applicant shall also submit a comparative statement of designed power and chemical consumptions vis-a-vis actual power and chemical consumption along with Environmental statement.

(v) Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers down stream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system. Water pollution control discharge from other premises shall not be allowed to mix with the effluents from the factory.

(vi) The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous wastes to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf. An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.

(vii) The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.

9. Applicant shall ensure to implement mitigation measures mentioned in Environment Management Plan.

10. The applicant shall obtain Consent to Operate from Maharashtra Pollution Control Board, before Actual Commencement of the production activity.

11. The applicant shall comply with the conditions of Environmental Clearance granted by MoEF, GOI vide No. [illegible] dated 06.9.2010.

Maharashtra Pollution Control Board
Mumbai

12. This Board reserves the right to amend or add any conditions in this consent and the same shall be binding on the Applicant.

13. This Consent is issued pursuant to the decision of Consent Appraisal Committee meeting held on 07.09.2009.

14. The capital investment of the existing project is Rs. 331.54 Crores & the capital investment of the proposed project is Rs. 11650/- Crores.

To,
M/s. Maharashtra State Power Generation Co. Ltd
Koradi Thermal Power Station at Koradi
Dist Nagpur

(Mahesh Pathak)
Member Secretary

Copy to:
1) Regional Officer, MPC Board, Nagpur.
2) Sub Regional Officer, MPC Board, Nagpur-I
3) Chief Accounts Officer, MPC Board, Mumbai.

Received Consent fee of -

Amount	D. D. No.	Date	Drawn on
Rs 4,70,500/-	852371	29.01.2010	Bank of Maharashtra
Rs 2,50,000/-	00534	18.01.2007	Bank of Maharashtra
Rs 7,20,500/-			

4) Cash Branch, MPC Board, Mumbai. 5) Master file.

ANNEXURE-I

1. The applicant shall maintain good house keeping and take adequate measures for control of pollution from all sources so as not to cause nuisance to the [illegible]

2. The applicant shall bring [illegible] of the available open land under green coverage/ plantation.

3. Solid Waste.—The non-hazardous solid waste arising in the factory premises, excepting the be disposed of scientifically so as not to cause any [illegible] The applicant shall take necessary permissions from civic authorities for disposal in dumping ground.

4. The applicant shall provide for an alternate electric power [illegible] sufficient to operate all pollution control facilities installed by the applicant to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise control production to abide by terms and conditions of the consent to prevent pollution level.

5. The applicant shall not change or alter the quantity, quality, the rate of discharge, or provision or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board.

6. The applicant shall provide facility for collection of [illegible] of trade and sewage effluents, air emissions and hazardous wastes to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.

7. The applicant shall make an application for renewal of the consent at least 90 days before the date of expiry of the consent.

8. The firm shall submit to this office, the 30th day of September every year, the Environmental Statement Report for the financial year ending 31st March (in the prescribed Form-V as per the provisions of rule 14 of the Environment (Protection) Second Amendment Rules, 1992.

9. Authorised person shall be opened and made available to the Board's officers during their visit to the site.

10. The applicant shall install a separate meter showing the consumption of energy for operation of [illegible] and [illegible] effluent/sewage treatment and air pollution control system. A register showing consumption of electricity used for treatment shall be maintained.

11. Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of collection system with arrangement for measuring the flow. No effluent shall be admitted in the [illegible] downstream of the terminal manholes. No effluent shall find its way other than designed and provided collection system.

12. Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.

13. The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.

ANNEXURE-II

TERMS AND CONDITIONS OF AUTHORISATION

1. The authorisation shall comply with the provisions of the Environment (Protection) Act, 1986 and the rules made thereunder.

2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the State Pollution Control Board.

3. The person authorised shall not rent, lease, sell, transfer or otherwise transport the hazardous wastes without obtaining prior permission of the State Pollution Control Board.

4. Any unauthorised change in personnel, equipment or working conditions or quantities in the application by the person authorised shall constitute a breach of the authorisation.

5. It is the duty of the authorised person to take permission of the State Pollution Control Board to close down the facility.

6. Application for the renewal of an authorisation shall be made as laid down in rule 5 (6) (d).

7. (a) Category No. — by land fill.

The hazardous waste to be disposed of through landfill shall not contain following constituents in excess of limits specified below :—

Sulphate	1000 mg/kg
Chloride	1000 mg/kg
Mixture of heavy metals (Cu+Ni+Cr+Zn)	25 mg/kg
Lead	1.0 mg/kg
Hg	0.01 mg/kg

The firm shall take appropriate measures to put a lining to landfill site so as to prevent the passage of leachates to ground water. Leachates generated, if any, shall be connected to existing Effluent Treatment Plant facilities for treatment and disposal as per the consent conditions stipulated under Water (Prevention and Control of Pollution) Act, 1974.

(b) Category No. — by land fill.

The wastes will either be disposed of through contractor or will be sold through the authorisation shall be disposed of [illegible] information of the officer. The firm shall ensure that the Contractors handling solid wastes obtain authorisation under Water (Prevention and Control of Pollution) Act, 1974 and authorisation under Environment (Protection) Act, 1986, i.e. Rules published on 28th July, 1989 and 27th November, 1989.

[illegible] through authorised.

The firm shall meet the emission standards as prescribed by [illegible] for the incinerator plant.

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Annexure - f

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701
Fax: 24024068 /24023515
Website: http://mpcb.gov.in
E-mail: cac-cell@mpcb.gov.in

Kalpataru Point, 2nd - 4th Floor,
Opp. Cine Planet Cinema,
Near Sion Circle, Sion (E)
Mumbai - 400 022

Consent No: Format 1.0/ BO/CAC-Cell/UAN No. 0000030152 /CAC - 1906000779 Date- ~~---/10/2018--~~ 17/06/2019

To,
M/s. Koradi Thermal Power Plant,
3x660 MW (Coal based Thermal Power Plant),
MAHAGENCO (Unit-8,9 & 10),
Koradi, Tal: Kamptee, Dist: Nagpur-441111.

Subject: Renewal of Consent to Operate RED category.

Ref :1. Consent to operate granted by the Board vide no. Format 1.0/BO/CAC Cell/EIC No.0000011405/8th CAC 1704000482, Dt.11.04.17 (For Unit # 8)
2. Consent to operate granted by the Board vide no. Format 1.0/BO/CAC-Cell/NG-16/CAC/CAC-824 Dt. 03.10.2016 (For Unit # 9)
3. Consent to operate granted vide no. Format 1.0/BO/CAC-Cell/UAN No. 0000016152/CAC/ CAC-1612000970 Dt. 28.12.2016 (For Unit # 10)
4. Environmental Clearance granted by MOEF, GOI vide No. J-13012/87/2007-IA. II (T) Dated 04.01.2010.
5. The Minutes of CAC meeting held on 27.03.2018.

Your application: UAN No. 0000030152 Dated: 13.07.2017.
For: Consent to Operate under RED category.
under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 5 of the Hazardous and Other Wastes (M & T M) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. The consent to operate is granted for a period up to 31.08.2019.
2. The actual capital investment of the industry is Rs. 14042.64 Crores as per certificate issued by Chartered Accountant. Earlier investment was Rs. 11880.00 Crores (as per consent granted vide above ref. no. 2).
3. The Consent is valid for the manufacture of –

Sr. No.	Product / By-Product Name	Maximum Quantity in MW
1	Electricity Generation [Coal based]	3 Nos X 660 MW [1980 MW]

4. Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	12954	As per Schedule –I	100 % used Recycled/Reused for Ash handling, Spraying, Cleaning, dust suppression, Etc. and industry shall achieve zero discharge.
2.	Domestic Effluent	240	As per Schedule –I	On land for gardening purpose.

5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr. no	Description of stack / source	Number of Stack	Standards to be achieved
1	Boiler (3 Nos X 660 MW)	01	As per Schedule –II
2	D.G. Set -3 x 1900 KVA (Standby)	03	

6. **Conditions about Non Hazardous Wastes :**

Sr. no.	Type Of Waste	Quantity & UoM	Treatment	Disposal
1	Fly Ash	10800.0 T/D	--	Shall be send to Cement manufacturer, Brick manufacturer, dispose as per MOEF and CC, GOI, Notification vide no.SO 763 (E) dated 14.09.1999 and amended time to time thereof.
2	Bottom Ash	2770.0 T/D	--	

7. **Conditions under Hazardous Waste (MH & TM) Rules, 2016 for treatment and disposal of hazardous waste:**

Sr. No.	Type Of Waste	Category	Quantity	UOM	Treatment	Disposal
1	Used oil/ Spent oil	5.1	12.0	MT/A	--	Sale to authorized CPCB/ MPCB preprocessor/recycler
2	Spent Grease/Waste /residue containing oil	5.2	6.0	MT/A	--	sale to authorized CPCB/ MPCB preprocessor/recycler
3	Glass wool	---	5.0	MT/A	--	CHWTSDF
4	Waste resin	---	2.0	MT/A	--	CHWTSDF

8. **The Board reserves the right to review, amend, suspend, revoke etc. this consent and the same shall be binding on the industry.**

9. **This consent should not be construed as exemption from obtaining necessary NOC/permission from any other Government authorities.**

10. **The applicant shall comply with conditions stipulated in Environmental Clearance granted by MOEF & CC vide no. J-13012/87/2007-IA.II (T) Dated 04.01.2010.**

11. **Industry shall promote adoption of clean coal (with ash content less than 34%) and clean power generation technologies and comply with the notification issued by MoEF for utilization of fly ash from coal or lignite based thermal power plants dated 14th September, 1999 and as amended on 3rd November, 2009 & amendment dated 02nd January 2014.**

12. **The applicant shall comply with the recommendations of the task force for implementation of CREP recommendations for Thermal Power Plants.**

13. **Industry shall comply the standards stipulated by the Ministry of Environment, Forest and Climate Change vide Notification dated 07.12.2015.**

14. **The Sulphur and ash contents in the coal to be used in the project shall not exceed 0.5 % and 34 % respectively.**

Schedule-I

Terms & conditions for compliance of Water Pollution Control:

1) A] As per your application, you have provided the Effluent Treatment Plant (ETP) with the design capacity of 12000 m3/D.

B] The Applicant shall operate the effluent treatment plant (ETP) to treat the trade effluent so as to achieve the following standards prescribed by the Board or under EP Act, 1986 and Rules made there under from time to time, whichever is stringent.

Sr No.	Parameters	Standards prescribed by Board
I.	Compulsory Parameter	Limiting Concentration in mg/l, except for pH
01	pH	Between 6.5 to 8.5
02	Oil & Grease	Not to exceed to 10 mg/l
03	BOD 3 days at 27°C	Not to exceed to 30 mg/l
04	Total Dissolved Solids	Not to exceed to 2100 mg/l
II.	For Condenser Cooling water	
01	Temperature	Not to exceed 5°C. than that of intake water temp.
02	Free available chlorine	Not to exceed 0.5 mg/l
III	Boiler Blow Down	
01	Suspended Solids	Not to exceed 100 mg/l
02	Oil & Grease	Not to exceed to 10 mg/l
03	Copper (Total)	Not to exceed 1.0 mg/l
04	Iron (Total)	Not to exceed 1.0 mg/l
IV.	Cooling Tower Blow Down	
1	Free available chlorine	Not to exceed 0.5mg/l
2	Zinc	Not to exceed 1.0mg/l
3	Chromium (Total)	Not to exceed 0.2 mg/l
4	Phosphate	Not to exceed 5.0 mg/l
V	D.M. Plant Effluent	
1	pH	Between 5.5 to 9
2	BOD 3 days	Not to exceed 30 mg/l
3	COD	Not to exceed 250 mg/l
4	Suspended Solids	Not to exceed 100 mg/l
5	Oil & Grease	Not to exceed 10.0 mg/l
6	TDS	Not to exceed 2100 mg/l

C) The treated effluent shall 100 % used Recycled/Reused for Ash handling, Spraying, Cleaning, dust suppression, Etc. and Industry shall achieve zero discharge.

2) A.] As per your consent application, you have provided the sewage treatment plant of capacity 35 KLD consist of MBBR technology.

B] The Applicant shall operate the sewage treatment system to treat the sewage so as to achieve the following standards/ prescribed under EP Act, 1986 and Rules made there under from time to time, whichever is stringent.

(1)	Suspended Solids	Not to exceed	50	mg/l
(2)	BOD 3 days 27°C	Not to exceed	30	mg/l.
(3)	COD	Not to exceed	100	mg/l.

15. Industry shall comply MoEF office memorandum dated 26.08.2015 by protocol for sampling, analysis of coal and reporting of compliance in respect of implementation of the Gazette Notification on use & supply of raw or blended of beneficiated coal with ash content not exceeding 34% on quarterly average basis.

16. Industry shall either make the agreement with coal washeries or shall provide own washeries to get the blended/ beneficiated coal with ash content less than 34% and submit the BG of Rs. 10 lakhs towards compliance of the same.

17. Industry shall comply the directions with the direction issued by CPCB vide letter dated 11.12.2017 regarding installation of FGD within stipulated time period.

18. Industry shall install the Automatic real time monitoring system for coal ash analysis.

19. Industry shall ensure the connectivity of online monitoring system to MPCB server for the parameter TPM, SO2 and NOx.

20. This consent should not be construed as exemption from obtaining necessary NOC/permission from any other Government authorities.

For and on behalf of the
Maharashtra Pollution Control Board

(E. Ravendiran, IAS)
Member Secretary

Received Consent fee of –

Sr. No.	Amount (Rs.)	D.D. No.	Date	Drawn On
1.	Rs.2,60,85,268/-	UTR NO. 94402091	05.07.2017	State Bank of India
2.	Rs.2,49,66,047/-	UTR NO. 109809556	29.05.2018	State Bank of India

Copy to:

1. Regional Officer, MPCB, Nagpur /Sub-Regional Officer –Nagpur-II, MPCB, Nagpur.
   - They are directed to ensure the compliance of the consent conditions.
2. Chief Accounts Officer, MPCB, Mumbai.
3. CC/CAC desk - for record & website updation purposes.

C] The treated effluent shall be Recycled/Reused for Ash handling, coal handling, Spraying, Cleaning, dust suppression, sprinkling on road and ash quenching purpose and remaining shall be utilized for plantation /gardening.

3] The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or and extension or addition thereto.

4] The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

5] The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and detailed water budget is given below:.

Sr. no	Purpose for water consumed	Water consumption quantity (CMD)
1.	Industrial Cooling, spraying in mine pits or boiler feed	95000
2.	Domestic purpose	800
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	40000
4.	Processing whereby water gets polluted & pollutants are easily biodegradable and are toxic	0

6] The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under Environmental Clearance / CREP guidelines.

Schedule-II

Terms & conditions for compliance of Air Pollution Control:

1. As per your application, you have provided the Air pollution control (APC)system and also erected following stack (s) and to observe the following fuel pattern-

Sr. No.	Stack Attached To	APC System	Height in Mtrs.	Type of Fuel	Quantity & UoM	S %	SO2 Kg/Day
1.	Boiler unit no.8,9,10. [3X 660 MW]	ESP Each unit	275 each	Coal	30,000 MT/Day	0.5%	80000

Coal should have max 34% ash & 0.5% Sulphur content.

2. The Applicant shall provide Specific Air Pollution control equipment's as per the conditions of EP Act, 1986 and rule made there under from time to time / Environmental Clearance / CREP guidelines. (Concern section shall mention specific control equipment's)

3. The applicant shall operate and maintain above mentioned air pollution control system, so as to achieve the level of pollutants to the following standards:

1] Standard for unit 8, 9 &10:

i	Particulate Matter	Not to exceed	50 mg/ Nm^3
ii	Sulphur Dioxide(SO_2)	Not to exceed	200 mg/ Nm^3 [For unit having capacity of 500 M and above]
iii	Oxides of Nitrogen (NOx)	Not to exceed	300 mg/ Nm^3
iv	Mercury (Hg)	Not to exceed	0.03 mg/ Nm^3

4. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof, alteration, or replacement alteration well before its life come to an end or erection of new pollution control equipment.

5. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).

6. The applicant shall operate four continuous automatic ambient air and microbiological monitoring station at location indicated by MPC Board to set up and operate at its own cost measurement of So_2, NOx and particulate matter. These CAAQMS shall also have necessary provision of networking to the Air Quality Monitoring network of MPCB.

7. **Control Equipment's:**

a) Electrostatic Precipitator of sufficient capacity provided to each Boiler and any other sources of particulate matter shall be operate and maintain so as to ensure that TPM emission do not exceed 50 mg/Nm^3
b) Dust collection system and automatic water sprinkler system provided to Coal Handling Plant shall be operate and maintain continuously.
c) Dust collector of sufficient capacity provided to coal crusher and any other sources of SPM shall operate and maintain continuously.
d) There shall not be any fugitive emission from coal storage yard.
e) The industry shall make necessary provisions for installing FGD with 90 % efficiency in its design and layout ad sufficient floor space so that it can be installed in future, as & when directed by Board.

Schedule-III
Details of Bank Guarantees

BG fresh/extend Bank Guarantee:

Sr. No.	BG Code	Amt of BG Imposed	Submissi on Period	Purpose of BG	Compliance Period	Validity Date
	PNC1			Handling and disposal of fly ash		
1	PNC1a	1/- Lakh	15 Days	Mitigation of seepages from wet fly ash conveying system.	Continuous	31.12.2019
2	PNC1b	1/- Lakh	15 Days	Providing arrangement for reuse of 100% seepage water arising from ash pond for ash slurry.	Continuous	31.12.2019
3	PNC1c	1/- Lakh	15 Days	Scientific operation of ash pond i.e. uniform distribution of wet slurry in the pond so as to have minimum depth of water.	Continuous	31.12.2019
4	PNC1d	1/- Lakh	15 Days	Utilization of fly ash as per fly ash notification 1999.	Continuous	31.12.2019
5	PNC1e	5/- Lakh	15 Days	To switch over 100% usable dry fly ash collection & storage.	Continuous	31.12.2019
6	PNC1e	5/- Lakh	15 Days	Operation & maintenance of effluent treatment plant to achieve disposal standards.	Continuous	31.12.2019
7	PWO1	5/- Lakh	15 Days	Scientific closure of abandoned ash pond with soil cover & plantation over it.	Continuous	31.12.2019
8	PA01	25/- Lakh	15 Days	Operation & maintenance of air pollution control device to achieve emission standards.	Continuous	31.12.2019
9	--	5/- Lakh	15 Days	Real time monitoring system for coal ash analysis.	Continuous	31.12.2019
10	--	25/- Lakh	15 Days	Installation of FGD for Unit No. 9 as per condition of environmental clearance.	Continuous	31.12.2019
11	--	10/- Lakh	15 Days	Installation of STP.	Continuous	31.12.2019

Note:

(1) The above bank guarantees shall be submitted by the applicant at the respective regional Office within 15 days of the date of combined consent and Authorization.

(2) Project proponent shall extend period of bank guarantee for a period up to: Validity of consent + 4 months period.

Schedule-IV

General Conditions:

1) The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.
2) Industry should monitor effluent quality, stack emissions and ambient air quality monthly/quarterly.
3) The applicant shall provide ports in the chimney/(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to/and for use of the Board's Staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
4) Whenever due to any accident or other unforeseen act or even, such emissions occur or is apprehended to occur in excess of standards laid down, such information shall be forthwith Reported to Board, concerned Police Station, office of Directorate of Health Services, Department of Explosives, Inspectorate of Factories and Local Body. In case of failure of pollution control equipment's, the production process connected to it shall be stopped.
5) The applicant shall provide an alternate electric power source sufficient to operate all pollution control facilities installed to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise, control production to abide by terms and conditions of this consent.
6) The firm shall submit to this office, the 30th day of September every year , the Environmental Statement Report for the financial year ending 31st March in the prescribed Form-V as per the provisions of rule 14 of the Environment (Protection) (Second Amendment) Rules, 1992.
7) The industry shall send used oil to reprocess/re refiners authorized by MPCB & the Hazardous Waste to CHWTSDF as per the provision contain in the HW(MH&TM) Rules 2016.
8) The industry should comply with the Hazardous Waste (M,H & TM) Rules, 2016 and submit the Annual Returns as per Rule 5(6) & 22(2) of Hazardous Waste (M,H & TM) Rules, 2016 for the preceding year April to March in Form-IV by 30th June of every year.
9) An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.
10) The applicant shall obtain Consent to Operate from Maharashtra Pollution Control Board before actual commencement of the Unit/ Activity for proposed other units (in case of Consent to establish).
11) **The applicant shall make an application for renewal of the consent at least 60 days before the date of the expiry of the consent.**
12) Industry shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act,1981 and Environmental Protection Act,1986 and industry specific standard under EP Rules 1986 which are available on MPCB website(www.mpcb.gov.in).
13) The industry shall constitute an Environmental cell with qualified staff/personnel/agency to see the day to day compliance of consent condition towards Environment Protection.
14) Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers downstream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system.
15) Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.
16) The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained.
17) Conditions for D.G. Set

a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.

b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.

c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper sitting and control measures.

d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.

e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use

f) D.G. Set shall be operated only in case of power failure.

g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.

h) The applicant shall comply with the notification of MoEF dated 17.05.2002 regarding noise limit for generator sets run with diesel

18) The industry should not cause any nuisance in surrounding area.

19) The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB (A) during day time and 70 dB (A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.

20) The applicant shall maintain good housekeeping.

21) The applicant shall bring minimum 33% of the available open land under green coverage/ plantation. The applicant shall submit a statement on available open plot area, number of trees surviving as on 31st March of the year and number of trees planted by September end, with the Environment Statement.

22) The non-hazardous solid waste arising in the factory premises, sweepings, etc. be disposed of scientifically so as not to cause any nuisance / pollution. The applicant shall take necessary permissions from civic authorities for disposal of solid waste.

23) The applicant shall not change or alter the quantity, quality, the rate of discharge, temperature or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board. The industry will not carry out any activity, for which this consent has not been granted/without prior consent of the Board.

24) The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.

25) The industry shall submit quarterly statement in respect of industries' obligation towards consent and pollution control compliance's duly supported with documentary evidences (format can be downloaded from MPCB official site).

26) The industry shall submit official e-mail address and any change will be duly informed to the MPCB.

27) The industry shall achieve the National Ambient Air Quality standards prescribed vide Government of India, Notification dt. 16.11.2009 as amended.

28) The industry shall comply with the notification issued by MoEF for utilization of fly ash from coal or lignite based thermal power plants dated 14th September, 1999 and as amended on 3rd November, 2009.

29) Industry shall provide dry fly ash handling & collection system and utilize the fly ash as per the fly ash notification of the Govt. of India.

30) The use of beneficiated coal as per GOI Notification shall be implemented. Transportation of coal to site by seaways at port and further transportation of coal shall be carried out through trucks by covering tarpaulin properly till the railway facility from Railway station to the factory site provided.Fly ash shall be by transported through bunker having closed system,truck by covering tarpaulin properly and coal carrying conveyor belt shall be covered from all side with provision of water springing/spraying system properly.

31) The applicant shall Operate online opacity meter/continuous monitoring system for process stack emission analysis & same shall be directly connected to MPCB website http://mpcb.gov.in as well as to the respective Regional Office within 3 months period and operate the same regularly.

32) The applicant shall Operate three continuous automatic ambient air and micrometeorological monitoring station at location indicated by MPC Board to be set up and operate at its own cost for measurement of SO2, NOx and particulate matter. These CAAQMS shall also have necessary provision of networking to the Air Quality Monitoring network of MPCB.

33) They shall promote adoption of clean coal and clean power generation technologies.

34) The coal handling system shall be covered with proper hooding and ventilation arrangements connected to dust suppress agent so as not to allow any fugitive emissions.

35) If due to any technological improvements or otherwise this Board is of opinion that all or any of the conditions referred above require variation (including the change of any control equipment either in whole or in part), this Board shall after giving the applicant an opportunity of being heard very all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions so varied.

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Annexure - g

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
Fax: 24023516
Website: http://mpcb.gov.in
Email: cac-cell@mpcb.gov.in

Kalpataru Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

RED/L.S.I (R48)
No:- Format1.0/CAC/UAN No.MPCB-CONSENT-0000151522/CR/2303001033

Date: 16/03/2023

To,
M/s Koradi Thermal Power Plant. MAHAGENCO,
3X660 MW, Unit No.8,9 & 10,
(Coal Based Thermal Power Plant),
Khasara No. 188-189,Koradi,
Tal-Kamptee,Dist-Nagpur.

Your Service is Our Duty

Sub: **Renewal of consent with increase in CI under RED category.**

Ref:
1. Earlier Consent granted by Board vide No.Format1.0/CAC/UAN No.116947/CR-2207000886 dated 19.07.2022 valid up to 31.12.2022
2. The Minutes of Consent Appraisal Committee Meeting held on 09.02.2022.

Your application No.MPCB-CONSENT-0000151522 Dated 25.10.2022

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The consent to renewal is granted for a period up to 31/12/2023**
2. **The capital investment of the project is Rs.14862.1497 Crs. (As per C.A Certificate submitted by industry Existing-Rs.14540.7267 Cr. + Increase in C.I. - Rs. 321.423 Cr= Total CI-Rs. 14862.1497 Cr.)**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
Products			
1	Electricity Generation (3x660 MW) Unit No.8,9 & 10 (Coal Based Themal Power Plant)	1980	MW

4. **Conditions under Water (P&CP), 1974 Act for discharge of effluent:**

Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	10739	As per Schedule-I	100% recyle/reused for dust suppression,cooling tower,Ash Handling Plant etc.

Sr No	Description	Permitted	Standards to	Disposal
2.	Domestic effluent	283	As per Schedule-I	100% recyle/reused for dust suppression,cooling tower,Ash Handling Plant etc.

5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr No.	Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	3	BOILER	3	As per Schedule -II

6. **Non-Hazardous Wastes:**

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	Fly Ash	10000	MT/Day	Recycle	Shall be sent to Cement Manufacturing Plant, Brick Manufacturing Plant and dispose as per MoEF-CC,GoI Notification No.SO-763(E) dated 14.09.1999 and as amended time to time thereof.
2	Bottom Ash	2400	MT/Day	Recycle	As above

7. **Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for treatment and disposal of hazardous waste:**

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
1	5.1 Used or spent oil	10	MT/M	Recycle	Send to Authorised Recycler/Re-processor
2	5.2 Wastes or residues containing oil	6	MT/M	Incineration	CHWTSDF
3	Glass Wool	8	MT/M	Landfill	CHWTSDF
4	Waste Resin	2	MT/M	Landfill	CHWTSDF
5	35.3 Chemical sludge from waste water treatment	2	MT/Day	Landfill	CHWTSDF

8. The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding on the industry.
9. This consent should not be construed as exemption from obtaining necessary NOC/ permission from any other Government authorities.
10. The applicant shall comply with the conditions of the Environmental Clearance granted by MoEF-CC, GoI vide letter No. J-13012/87/2007. IA.II (T) dtd. 04.01.2010.
11. The Energy source for lighting purpose shall preferably be LED based.
12. PP shall comply with the MoEF & CC amended notification no. S.O.1561 (E) dtd. 21.05.2020 for setting up Technology Solution for emission norms, Management of Ash Ponds and Coal Transportation.

13. The PP shall harvest rainwater from roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial applications within the plant
14. The applicant shall comply with the recommendations of the task force for implementation of CREP recommendation for Thermal Power Plants.
15. The Industry shall comply the standards stipulated by the Ministry of Environment, Forest and Climate Change vide Notification dtd 07.12.2015.
16. PP shall install Flue Gas De-sulphurisation (FGD) System up to 31.12.2024 and comply with the emission norms as per the timeline prescribed in MoEF & CC Notification dated 05.09.2022.
17. PP shall not use the high ash and Sulphur content coal (i.e. more than 34% & 0.5% respectively).
18. PP shall dispose the Hazardous waste under the category 35.3 (Chemical sludge arises from wastewater treatment) to the CHWTSDF and submit the manifest as per the HWM Rules 2016 & as amended within one month.
19. PP shall provide Online Real time coal ash analyzer within 3 months.
20. PP shall comply with the Fly Ash Notification, 2016 and as amendment thereof to achieve 100% utilization of Fly Ash. PP shall dispose legacy pond ash regularly.
21. Industry shall install online continuous monitoring system as per CPCB guidelines & data to be transmitted directly from Data Logger to Board server .
22. By forfeiting the BG of Rs.25.0 Lakh towards noncompliance of consent conditions and EC conditions.
23. PP shall submit the bank guarantee as per BG regime for the Power plant.
24. The applicant shall make an application for renewal of consent 60 days prior to date of expiry of the consent.

. This consent is issued as per communication letter dated 03/11/2022 which is approved by competent authority of the board.

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Signed by: Dr. Y.B.Sontakke
Joint Director(WPC) & InCharge Of CAC-Cell
For and on behalf of
Maharashtra Pollution Control Board
cac-cell@mpcb.gov.in
2023-03-16 15:44:48 IST

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date	Transaction Type
1	29081453.00	MPCB-DR-15046	25/10/2022	NEFT
2	1285692.00	MPCB-DR-17728	03/03/2023	NEFT

Copy to:

1. Regional Officer, MPCB, Nagpur and Sub-Regional Officer, MPCB, Nagpur I
   - They are directed to ensure the compliance of the consent conditions.
   - They are directed to forfeit the bank guarantee of Rs.25.0 Lakh towards non compliance of consent conditions & EC conditions.
2. Chief Accounts Officer, MPCB,Sion, Mumbai
3. CAC desk-for records and website updation purpose.

SCHEDULE-I

Terms & conditions for compliance of Water Pollution Control:

1. A] As per your application, you have provided the Effluent Treatment Plant (ETP) with the design capacity of 12000 m3/day.

B] The Applicant shall operate the effluent treatment plant (ETP) to treat the trade effluent so as to achieve the following standards prescribed by the Board or under EP Act, 1986 and Rules made there under from time to time, whichever is stringent:

Sr.No	Parameters	Limiting concentration not to exceed in mg/l, except for pH
For Condenser Cooling Water		
(1)	pH	Between 6.5 to 8.5
(2)	Temperature	Not to exceed 5°C than that of intake water temp.
(3)	Free available chlorine	Not to exceed 0.5 mg/l
Boiler Blow Down		
(1)	Suspended Solids	Not to exceed 100 mg/l
(2)	Oil & Grease	Not to exceed 10 mg/l
(3)	Copper (Total)	Not to exceed 1 mg/l
(4)	Iron (Total)	Not to exceed 1 mg/l
Cooling Tower Blow Down		
(1)	Free available chlorine	Not to exceed 0.5 mg/l
(2)	Zinc	Not to exceed 1 mg/l
(3)	Chromium (Total)	Not to exceed 0.2 mg/l
(4)	Phosphate	Not to exceed 5 mg/l
D.M. Plant Effluent		
(1)	pH	5.5 to 9
(2)	Suspended Solids	Not to exceed 100 mg/l
(3)	Oil & Grease	Not to exceed 10 mg/l
(4)	BOD 3 days	Not to exceed 30 mg/l
(5)	COD	Not to exceed 250 mg/l
(6)	TDS	Not to exceed 2100 mg/l
Ash Pond Effluent		
(1)	pH	6.5 to 8.5
(2)	Suspended Solids	Not to exceed 100 mg/l
(3)	Oil & Grease	Not to exceed 10 mg/l

C] The Industry shall ensure connectivity online monitoring system to the MPCB server including separate energy meter for pollution control system.

D] The treated effluent shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise. In no case, effuent shall find its way to outside factory premises.

2. A] As per your application, you have provided Sewage Treatment Plant of designed capacity 35 CMD for the treatment of 283 CMD of sewage.

B] The Applicant shall operate the sewage treatment system to treat the sewage so as to achieve the following standards.

Sr.No	Parameters	Standards (mg/l)	
1	Suspended Solids	Not to exceed	50 mg/l
2	BOD 3 days 27°C	Not to exceed	30 mg/l
3	COD	Not to exceed	100 mg/l

C] The treated sewage shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise. In no case, sewage shall find its way to outside factory premises.

3. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification there of & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.

4. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

5. The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and as amended, by installing water meters and other provisions as contained in the said act:

Sr. No.	Purpose for water consumed	Water consumption quantity (CMD)
1.	Industrial Cooling, spraying in mine pits or boiler feed	92501.00
2.	Domestic purpose	942.59
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	0.00
4.	Processing whereby water gets polluted & pollutants are not easily biodegradable and are toxic	0.00
5.	Gardening	90

6. The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance/ CREP guidelines.

7. The industry shall reduce specific water consumption 3.5 m3/MWh as per MoEF&CC notification dtd. 7th Dec 2015 and as amended 28th June, 2018.

SCHEDULE-II

Terms & conditions for compliance of Air Pollution Control:

1. As per your application, you have provided the Air pollution control (APC) system and erected following stack (s) to observe the following fuel pattern:

Stack No.	Source	APC System provided/proposed	Stack Height(in mtr)	Type of Fuel	Sulphur Content(in %)	Pollutant	Standard
1	Boiler of Unit No.8	ESP	275.00	Coal 10000 MT/Day	0.5	PM	50 Mg/Nm³
						SO2	200 Mg/Nm³
						NOx	450 Mg/Nm³
						Mercury	0.03 Mg/Nm³
2	Boiler of Unit No.9	ESP	275.00	Coal 10000 MT/Day	0.5	PM	50 Mg/Nm³
						SO2	200 Mg/Nm³
						NOx	450 Mg/Nm³
						Mercury	0.03 Mg/Nm³
3	Boiler of Unit No.10	ESP	275.00	Coal 10000 MT/Day	0.5	PM	50 Mg/Nm³
						SO2	200 Mg/Nm³
						NOx	450 Mg/Nm³
						Mercury	0.03 Mg/Nm³

2. The Applicant shall provide Specific Air Pollution control equipments as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance / CREP guidelines.

3. The applicant shall operate and maintain above mentioned air pollution control system, so as to achieve the level of pollutants to the following standards:

Units	Parameters	Standards
Standards for Thermal Power Plant:		
Unit 8,9 &10 of 660 MW each	**TPPs (Units) installed after 1st January, 2003, upto 31st December, 2016***	
	Particulate Matter	50 mg / Nm³
	Sulphur Dioxide (SO_2)	200 mg / Nm³
	Oxides of Nitrogen (NOx)	450 mg/ Nm3
	Mercury (Hg)	0.03 mg / Nm³

4. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.

5. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
6. Control Equipment.
   a) Electrostatic Precipitator (ESP) of sufficiet capacity provided to Boiler and any other sources of particulate matter shall be Operate and maintain so as to ensure that TPM emission does not exceed 50 mg/Nm3.
   b) Dust collecting system and automatic water sprinkler system provided to Coal Handling Plants shall be operate and maintain continuously.
   c) Dust collector of sufficient capacity provided to coal crusher and any other source of SPM shall operate and maintain continuously.
   d) There shall not be any fugutive emission from coal storage yard.
   e) The industry shall make necessary provisions for installing FGD with 90% efficiency in its design and layout ad sufficient floor space so that it can be installed in future, as & when directed by Board.

SCHEDULE-III
Details of Bank Guarantees:

Sr. No.	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
1	C2R	Rs. 70 Lakh	15 days	Towards Operation and Maintenance of Air Pollution Control Devices to achieve emission standards.	Continuous	31.12.2024
2	C2R	Rs. 10 Lakh	15 days	Installation of Real Coal Ash Analyser	3 months	31.12.2024
3	C2R	Rs. 5 Lakh	15 days	To switch over to 100 % usable dry fly ash collection and storage	6 months	31.12.2024
4	C2R	Rs. 1 Lakh	15 days	Towards utilization of fly ash as per fly ash notification 1999. & as amended to date	Continuous	31.12.2024
5	C2R	Rs. 1 Lakh	15 days	Towards Mitigation of seepages from wet fly ash conveying system	3 months	31.12.2024
6	C2R	Rs. 1 Lakh	15 days	Towards Scientific operation of ash pond i.e. uniform distribution of wet slurry in the pond so as to have minimum depth of water	Continuous	31.12.2024
7	C2R	Rs. 1 Lakh	15 days	Towards providing arrangement for reuse of 100% seepage water, arising from ash pond, for ash slurry	3 months	31.12.2024
8	C2R	Rs. 5 Lakh	15 days	Towards Scientific closure of abandoned ash pond with soil cover and plantation over it	6 months	31.12.2024
9	C2R	Rs. 5 Lakh	15 days	Towards Operation & maintenance of the Effluent Treatment Plant & STP to achieve disposal standards	Continuous	31.12.2024
10	C2R	Rs. 25 Lakh	15 days	Towards installation of FGD to unit No.8,9 & 10	31.12.2024	31.12.2024
11	C2R	Rs. 10 Lakh	15 days	Towards installation of STP of adequate capacity	6 months	31.12.2024

Sr. No	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date

The above Bank Guarantee(s) shall be submitted by the applicant in favour of Regional Officer at the respective Regional Office within 15 days from the date of issue of Consent.

BG Forfeiture History

Srno.	Consent (C2E/C2O/C2R)	Amount of BG Imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture
1	C2R	Rs.70.0 Lakh	within 15 days	Towards Operation and maintenance of Pollution control system & compliance of consent conditions	Rs.25.0 Lakh	Towards non compliance of consented conditions and EC conditions

BG Return details

Srno.	Consent (C2E/C2O/C2R)	BG Imposed	Purpose of BG	Amount of BG Returned
NA				

SCHEDULE-IV
General Conditions:

1. Conditions for D.G. Set
   a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.
   b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.
   c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper sitting and control measures.
   d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.
   e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use.
   f) D.G. Set shall be operated only in case of power failure.
   g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.
   h) The applicant shall comply with the notification of MoEFCC, India on Environment (Protection) second Amendment Rules vide GSR 371(E) dated 17.05.2002 and its amendments regarding noise limit for generator sets run with diesel.
2. The applicant shall maintain good housekeeping.
3. The non-hazardous solid waste arising in the factory premises, sweepings, etc. be disposed of scientifically so as not to cause any nuisance / pollution. The applicant shall take necessary permissions from civic authorities for disposal of solid waste.

4. The applicant shall not change or alter the quantity, quality, the rate of discharge, temperature or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board. The industry will not carry out any activity, for which this consent has not been granted/without prior consent of the Board.
5. The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.
6. The industry shall submit quarterly statement in respect of industries obligation towards consent and pollution control compliance's duly supported with documentary evidences (format can downloaded from MPCB official site).
7. The industry shall submit official e-mail address and any change will be duly informed to the MPCB.
8. The industry shall achieve the National Ambient Air Quality standards prescribed vide Government of India, Notification No. B-29016/20/90/PCI-L dated. 18.11.2009 as amended.
9. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.
10. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.
11. The PP shall provide personal protection equipment as per norms of Factory Act
12. Industry should monitor effluent quality, stack emissions and ambient air quality monthly/quarterly.
13. Whenever due to any accident or other unforeseen act or even, such emissions occur or is apprehended to occur in excess of standards laid down, such information shall be forthwith Reported to Board, concerned Police Station, office of Directorate of Health Services, Department of Explosives, Inspectorate of Factories and Local Body. In case of failure of pollution control equipments, the production process connected to it shall be stopped.
14. The applicant shall provide an alternate electric power source sufficient to operate all pollution control facilities installed to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise, control production to abide by terms and conditions of this consent.
15. The industry shall recycle/reprocess/reuse/recover Hazardous Waste as per the provision contain in the Hazardous and Other Wastes (M & TM) Rules 2016, which can be recycled /processed /reused /recovered and only waste which has to be incinerated shall go to incineration and waste which can be used for land filling and cannot be recycled/reprocessed etc. should go for that purpose, in order to reduce load on incineration and landfill site/environment.
16. An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.
17. Industry shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act, 1981 and Environmental Protection Act, 1986 and industry specific standard under EP Rules 1986 which are available on MPCB website (www.mpcb.gov.in).

18. Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers downstream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system.
19. Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.
20. The industry should not cause any nuisance in surrounding area.
21. The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB (A) during day time and 70 dB (A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.
22. The industry shall create the Environmental Cell by appointing an Environmental Engineer, Chemist and Agriculture expert for looking after day to day activities related to Environment and irrigation field where treated effluent is used for irrigation.
23. The applicant shall provide ports in the chimney/(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to/and for use of the Board's Staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
24. The industry should comply with the Hazardous and Other Wastes (M & TM) Rules, 2016 and submit the Annual Returns as per Rule 6(5) & 20(2) of Hazardous and Other Wastes (M & TM) Rules, 2016 for the preceding year April to March in Form-IV by 30th June of every year.
25. The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained.
26. The applicant shall bring minimum 33% of the available open land under green coverage/ plantation. The applicant shall submit a yearly statement by 30th September every year on available open plot area, number of trees surviving as on 31st March of the year and number of trees planted by September end.
27. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions.
28. The firm shall submit to this office, the 30th day of September every year, the Environment Statement Report for the financial year ending 31st March in the prescribed FORM-V as per the provisions of Rule 14 of the Environment (Protection) (second Amendment) Rules, 1992.
29. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
30. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).

31. The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.

This certificate is digitally & electronically signed.

Annexure - h

Speed Post/Online

F. No. IA-L-11011/112/2021-IA-I
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)
*****

Indira Paryavaran Bhavan
Jor Bagh Road, Aliganj
New Delhi-110 003
Email: shruti.rai@nic.in

Dated: 14th August, 2023

Sub: Show Cause Notice under Section 5 of Environment (Protection) Act, 1986 for non-submission of action taken report w.r.t non compliances observed for the project 3x660 MW expansion of coal based power unit M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagapur (Maharashtra) - reg.

Ref: I. Monitoring report submitted by IRO, Nagpur vide letter dated 29.12.2021.
ii. Letter seeking clarification/ATR issued to PP vide ref no. IA-L-11011/112/2021-IA-I dated 28.01.2022.

WHEREAS, Environmental Clearance (EC) was granted to **M/s Maharashtra State Power Generation Company Limited (MSPGCL)** located at Koradi District Nagpur (Maharashtra)" vide letter dated J-13012/87/2007-IA.II (T) dated 4.01.2010 and its extension of validity granted vide letter No. J-13012/87/2007-IA-II (T) dated 27.03.2015, amendments in EC was granted vide letter No. J-13012/87/2007-IA-II (T) dated 23.03.2017 & J-13012/87/2007-IA-II (T) dated 29.05.2018, subject to implementation of the various conditions and environmental safeguards contained therein, and

2. WHEREAS, the project was monitored for ascertaining compliance to the conditions stipulated in the aforesaid environmental clearance by the Regional Office of this Ministry at **Nagpur** on **07.12.2021** which has submitted its report to Ministry vide letter No. **4-4/2010(ENV)/9076** dated **29.12.2021 (copy enclosed).**

3. WHEREAS, the report was examined by the Ministry and Action Taken Report wrt observed non-compliance was sought from the project proponent vide letter no. **IA-L-11011/112/2021-IA-I** dated **28th January, 2021.**

4. WHEREAS, the Partial/Non-Compliances reported by the Regional Office, Nagpur, as also enlisted in ATR letter dated 28th January 2021 of the Ministry

are major in nature. These *inter-alia* include not adhering to the Fly ash Notification, no HPD/LDP lining the ash pond, fly ash collecting silos are under construction, no piezometers are installed around the ash dyke, no regular groundwater monitoring, development of green belt, non compliance with the revised emission standards for PM, SO2, NO2 & Hg as per Notification SO 3305(E) dated 07.12.2015 etc.

5. WHEREAS, though this ongoing major non-compliance pose serious risk to the environment, it is noted that it's been more than one (1) year since the issuance of the ATR letter from the Ministry and the response of the Project Proponent is still awaited.

4. In the above context, your attention is drawn to provision of Section 5 of the Environment (Protection) Act, 1986 which is as reproduced below:

"For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes power to direct-

a. *The closure, prohibition or regulation of any industry, operation or process; or*
b. *Stoppage or regulation of the supply of electricity or water or any other service."*

3. NOW, THEREFORE, you are directed to submit your response as to why this Ministry should not initiate action against you under the provision of Environment (Protection) Act, 1986 for non-compliance of the EC conditions and non-submission of action taken report wrt observed non-compliances of EC conditions. You are advised to submit your reply within 15 (fifteen) days of the receipt of this Notice failing which Ministry will be constrained to initiate action, as deemed fit and appropriate under the provision of Section 5 of the Environment (protection) Act, 1986 and in the circumstances of the case with or without any further notice to the Project. In your response, it may also be clearly stated whether a hearing is required by the project proponent before a final order is passed by this Ministry. Further, this Show Cause is without prejudice to any other legal action which may be taken against you.

This issues with the approval of the Competent Authority.

Encl: as above

(Dr. Shruti Rai Bhardwaj)
Director/Scientist 'F'

To,

M/s Maharashtra State Power Generation Company Limited (MSPGCL)
3x660 MW Koradi Thermal Power Station,
District Nagpur, Maharashtra-441111

Annexure - i

VETTED Copy

CONSTRUCTION AND OPERATING AGREEMENT OF TREATMENT & TRANSMISSION FACILITIES FOR RECLAIMED WATER USAGE

Between

Nagpur Municipal Corporation,
Nagpur

And

Maharashtra Power Generation Company Ltd.
For its Thermal Power Stations at
Koradi & Khaperkheda, Nagpur.

2008-2009

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BD 951275

महाराष्ट्र MAHARASHTRA

15670

दिनांक- 3 OCT 2008

CONSTRUCTION AND OPERATING AGREEMENT
OF TREATMENT & TRANSMISSION FACILITIES
FOR RECLAIMED WATER USAGE

THIS CONSTRUCTION AND OPERATING AGREEMENT ("Agreement") is entered into this 4th day of Oct. 2008 between the Nagpur Municipal Corporation OF NAGPUR ("NMC") and MAHARASHTRA POWER GENERATION COMPANY ("MAHAGENCO").

RECITALS

A. NMC desires to deliver reclaimed water to MAHAGENCO for Non-Potable application in Thermal Power Plant.

B. MAHAGENCO desires to accept reclaimed water for Non- Potable application in Thermal Power Plant

C. The Parties desire to construct and operate certain facilities for the treatment and transmission of water

P.T.O.

Annexure - j

महाराष्ट्र MAHARASHTRA © 2018 ©

This stamp paper is part and parcel of the first Amendment to the Agreement dated December 19, 2017 entered into between the Maharashtra State Power Generation Company Ltd, The Nagpur Municipal Corporation and Nagpur Waste Water Management Pvt Ltd dtd 30/11/2018.

2. Amendment Agreement in full force and effect:

2.1 This First Amendment shall form an integral part of the Original Agreement and shall be read along with the Original Agreement.

2.2 This First Amendment shall modify the Original Agreement and understanding set out in the Original Agreement, as applicable, only to the limited extent set out herein. Except as specifically and expressly amended by this First Amendment, all other provisions of the Original Agreement including the Base Water Rate, Effective Water Rate and Treated Water Rate shall remain unchanged and in full force and effect and shall continue to remain applicable and binding on the Parties.

2.3 This First Amendment shall be co-extensive and co-terminus with the Original Agreement and shall ipso facto and automatically stand terminated upon termination of the Original Agreement.

2.4 In the event of conflict between the terms of this First Amendment and the provisions of the Original Agreement, the provisions of this First Amendment shall prevail in relation to the matters set out herein.

IN WITNESS WHEREOF, each Party (or their duly authorized representatives) has executed this First Amendment on the date mentioned below:

for Maharashtra State Power Generation Co. Ltd (MAHAGENCO) Name: Designation: Director (Projects) MAHAGENCO	D.R. Munde Witness:
for Nagpur Municipal Corporation (NMC) Name: Designation:	R.J. Dufare Dy. Engr. NMC Witness:
for Nagpur Waste Water Management Pvt. Ltd. (OPERATOR) Name: Designation:	A.J. Kotecar Witness:

Annexure - I

KORADI THERMAL POWER STATION, 3X660 MW, KORADI

STACK EMISSION DATA FOR APRIL- 2022 TO MARCH- 2023

UNIT No. 08

MONTH	Unit	Temp. °C	Velocity (m/sec)	Total Gas Quantity (Nm^3/hr)	Flow Rate (m^3/sec)	SPM (mg/Nm^3)	SO_2 (mg/Nm^3)	SO_2 (T/day)	NOx (mg/Nm^3)	O2 (%)	CO (mg/Nm^3)	Pb (mg/Nm^3)	Mercury (mg/Nm^3)
Apr-22	8	117	24	2318998	939	46	1562	87	343	8.1	3.5	<0.02	0.0011
May-22	8	123	25	2386843	942	48	1514	87	335	8.0	3.9	<0.02	0.0011
Jun-22	8	124	25	2314735	956	46	1455	81	328	8.1	3.2	<0.02	0.0013
Jul-22	8	UNIT SHUT DOWN											
Aug-22	8	126	25	2434803	1015	46	1209	71	335	8.0	2.8	<0.02	0.0010
Sep-22	8	114	23	2181699	889	44	1401	73	331	7.9	3.6	<0.02	0.0011
Oct-22	8	115	24	2276618	910	46	1417	77	328	7.93	3.9	<0.02	0.0012
Nov-22	8	121	24	2294951	935	42	1368	75	328	7.65	2.0	<0.02	0.0015
Dec-22	8	118	24	2276811	917	41	1430	78	331	7.68	3.6	<0.02	0.0021
Jan-23	8	116	24	2311112	929	39	1411	78	328	7.8	5.2	<0.02	0.0025
Feb-23	8	115	25	2355142	948	40	1663	94	343	8.0	5.1	<0.02	0.0030
Mar-23	8	119	25	2359569	952	44	1530	87	341	8.0	5.9	<0.02	0.0026
Avg.:		**119**	**24**	**2319189**	**940**	**44**	**1451**	**81**	**334**	**7.9**	**3.9**	**<0.02**	**0.0017**
Min:		114	23	2181699	889	39	1209	71	328	7.7	2.0	<0.02	0.0010
Max:		126	25	2434803	1015	48	1663	94	343	8.1	5.9	<0.02	0.0030

UNIT No. 09

Apr-22	9	116	23	2234691	899	47	1542	83	344	8.1	3.2	<0.02	0.0011
May-22	9	127	24	2300397	942	48	1572	87	331	8.2	3.6	<0.02	0.0010
Jun-22	9	122	24	2208957	908	47	1429	76	323	8.1	3.08	<0.02	0.0012
Jul-22	9	122	25	2313265	959	43	1314	73	332	8.2	3.5	<0.02	0.0012
Aug-22	9	129	26	2375035	1004	38	1470	84	332	8.0	2.9	<0.02	0.0009
Sep-22	9	120	24	2274666	931	49	1518	83	335	8.2	3.2	<0.02	0.0011
Oct-22	9	117	23	2217073	892	45	1084	58	333	8.4	4.4	<0.02	0.0012
Nov-22	9	121	24	2228903	909	37	1392	75	329	7.7	2.3	<0.02	0.0015
Dec-22	9	118	23	2214591	889	42	1406	75	329	7.7	3.9	<0.02	0.0021
Jan-23	9	117	24	2278437	919	43	1485	81	335	8.1	4.3	<0.02	0.0026
Feb-23	9	116	24	2324244	932	37	1648	92	339	8.1	6.0	<0.02	0.0023
Mar-23	9	123	25	2346230	957	39	1589	90	343	7.9	6.6	<0.02	0.0026
Avg.:		**121**	**24**	**2276374**	**928**	**43**	**1454**	**80**	**334**	**8.1**	**3.9**	**<0.02**	**0.0016**
Min:		116	23	2208957	889	37	1084	58	323	7.7	2.3	<0.02	0.0009
Max:		129	26	2375035	1004	49	1648	92	344	8.4	6.6	<0.02	0.0026

UNIT No. 10

Apr-22	10	115	24	2255663	917	50	1390	75	339	8.2	2.9	<0.02	0.0011
May-22	10	125	25	2418473	973	45	1598	93	334	8.1	3.4	<0.02	0.0011
Jun-22	10	124	25	2302897	952	42	1408	78	329	8.0	3.1	<0.02	0.0013
Jul-22	10	122	25	2312285	959	45	1397	77	326	8.0	3.2	<0.02	0.0013
Aug-22	10	124	25	2301511	960	45	1314	73	332	8.1	3.1	<0.02	0.0010
Sep-22	10	121	24	2201183	905	45	1313	69	328	8.0	3.6	<0.02	0.0011
Oct-22	10	119	24	2294080	932	43	1378	76	327	8.1	4.0	<0.02	0.0012
Nov-22	10	120	24	2274233	923	42	1264	69	322	8.0	3.4	<0.02	0.0014
Dec-22	10	118	24	2321258	930	41	1386	77	330	7.8	3.5	<0.02	0.0021
Jan-23	10	116	25	2422377	973	43	1484	86	328	8	4	<0.02	0.0026
Feb-23	10	116	25	2344441	943	42	1668	93	348	8	6	<0.02	0.0022
Mar-23	10	120	25	2344939	950	44	1593	90	342	8	6	<0.02	0.0025
Avg.:		**120**	**25**	**2316112**	**943**	**44**	**1432**	**80**	**332**	**8.0**	**3.9**	**<0.02**	**0.0016**
Min:		115	24	2201183	905	41	1264	69	322	7.8	2.9	<0.02	0.0010
Max:		125	25	2422377	973	50	1668	93	348	8.3	6.4	<0.02	0.0026

Koradi Thermal Power Station, 3X660 MW, KORADI

AMBIENT AIR QUALITY MONITORING DATA FROM APRIL- 2022 to MARCH- 2023

LOCATION	MONTH	PARAMETER											
		PM 2.5	PM 10	SO_2	NO_x	NH_3	O_3	CO	Pb	Benzo Pyrene	Benzene (C_6H_6)	Nickel (Ni)	Arsenic (As)
		ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	mg/m3	ug/m3	ng/m3	ug/m3	ng/m3	ng/m3
Arya Nagar	Apr-22	24.0	60.3	16.8	19.2	21.3	20.0	0.96	BDL	BDL	1.24	3.25	0.32
	May-22	23.0	51.0	12.9	15.3	20.8	21.0	0.95	BDL	BDL	1.20	3.58	0.31
	Jun-22	18.5	34.4	13.9	16.6	21.2	20.5	0.92	BDL	BDL	1.17	3.01	BDL
	Jul-22	12.0	20.3	10.4	11.7	20.5	20.5	0.86	BDL	BDL	1.05	3.26	0.32
	Aug-22	14.7	26.9	11.0	12.1	20.0	20.0	0.88	BDL	BDL	1.11	3.83	0.32
	Sep-22	21.0	42.0	12.7	13.0	20.8	20.8	0.87	BDL	BDL	1.20	3.10	0.31
	Oct-22	18.4	38.4	13.3	14.0	21.2	20.4	0.92	BDL	BDL	1.24	BDL	0.33
	Nov-22	23.1	47.5	13.6	15.3	21.8	21.0	0.91	BDL	BDL	1.34	3.41	0.37
	Dec-22	25.8	61.9	15.0	17.2	22.0	20.8	0.87	BDL	BDL	1.30	3.32	BDL
	Jan-23	34.4	59.6	14.5	17.2	21.3	20.5	0.87	BDL	BDL	1.25	3.15	BDL
	Feb-23	22.0	55.7	15.3	18.8	20.7	20.8	0.87	BDL	BDL	1.23	BDL	BDL
	Mar-23	22.5	57	17	20	22	22	0.86	BDL	BDL	1.31	BDL	BDL
	Avg	**20.8**	**46.2**	**13.9**	**15.8**	**21.1**	**BDL**	**0.89**	**BDL**	**BDL**	**1.22**	**3.32**	**0.33**
Bokhara	Apr-22	22.6	59.4	15.4	18.4	22.0	20.6	0.98	BDL	BDL	1.25	3.39	0.34
	May-22	24.3	50.4	12.8	15.6	21.6	20.3	0.94	BDL	BDL	1.21	3.26	0.32
	Jun-22	18.3	33.5	13.3	16.0	22.0	20.3	0.94	BDL	BDL	1.16	3.45	BDL
	Jul-22	12.9	19.7	9.9	11.4	20.5	BDL	0.90	BDL	BDL	1.05	3.81	0.31
	Aug-22	13.7	27.0	10.9	11.9	20.0	20.0	0.86	BDL	BDL	1.12	3.54	0.31
	Sep-22	17.6	38.3	14.0	15.6	20.9	20.0	0.89	BDL	BDL	1.19	3.03	0.31
	Oct-22	15.9	34.0	12.1	13.9	22.0	20.7	0.95	BDL	BDL	1.22	BDL	BDL
	Nov-22	22.8	49.0	14.3	16.3	21.0	21.2	0.92	BDL	BDL	1.29	3.41	0.33
	Dec-22	24.1	56.0	14.1	16.6	22.1	21.1	0.86	BDL	BDL	1.29	3.27	0.32
	Jan-23	21.8	54.5	14.7	17.1	21.2	20.6	0.91	BDL	BDL	1.30	BDL	0.32
	Feb-23	22.4	56	16.3	18.3	20.7	21.6	0.93	BDL	BDL	1.27	3.25	BDL
	Mar-23	20.5	56.3	17.0	19.3	22.5	22.5	0.91	BDL	BDL	1.32	BDL	BDL
	Avg	**19.7**	**44.5**	**13.7**	**15.9**	**21.5**	**20.8**	**0.92**	**BDL**	**BDL**	**1.22**	**3.38**	**0.32**
Khasala	Apr-22	26.9	62.2	14.8	19.4	22.1	21.0	0.96	BDL	BDL	1.24	3.47	0.31
	May-22	26.5	62.9	13.5	16.3	22.0	20.3	0.96	BDL	BDL	1.20	3.42	0.31
	Jun-22	24.1	46.8	14.0	16.0	22.9	20.8	0.96	BDL	BDL	1.18	3.42	BDL
	Jul-22	12.6	28.9	12.4	14.0	20.7	20.5	0.91	BDL	BDL	1.09	3.58	0.32
	Aug-22	18.6	36.7	11.1	12.1	20.5	20.4	0.88	BDL	BDL	1.17	4.10	0.31
	Sep-22	21.0	44.6	15.1	16.9	21.0	21.0	0.95	BDL	BDL	1.22	3.19	0.31
	Oct-22	22.5	50.4	14.0	15.1	21.8	21.0	0.95	BDL	BDL	1.25	3.26	BDL
	Nov-22	24.4	61.5	15.5	17.3	21.7	21.2	0.95	BDL	BDL	1.32	3.36	0.31
	Dec-22	26.7	61.8	14.4	17.3	21.6	20.9	0.90	BDL	BDL	1.31	BDL	3.58
	Jan-23	24.6	64.5	14.7	17.0	21.4	20.9	0.89	BDL	BDL	1.39	3.00	0.33
	Feb-23	24.6	59.3	18.0	18.9	21.2	21.0	0.91	BDL	BDL	1.28	BDL	BDL
	Mar-23	25.4	60.1	17.2	20.0	21.6	21.7	0.93	BDL	BDL	1.30	BDL	BDL
	Avg	**23.1**	**52.1**	**14.6**	**16.7**	**21.5**	**21.0**	**0.93**	**BDL**	**BDL**	**1.24**	**3.42**	**0.72**

KORADI THERMAL POWER STATION, 3 X 660 MW, KORADI
EFFLUIENT ANALYSIS REPORT FOR F.Y. 2022-23

LOCATION		MONTH	Temp.	pH	Residual free chlorine	TDS	TSS	Chloride (as Cl)	Sulphate (as SO_4)	Total phosphate (as PO_4)	Nitrate (as NO_3-N)	Fluoride(as F)	DO	BOD	COD	Oil & Grease	Fixed Dissolved Solids	Free Ammonia	Total Kjeldahl Nitrogen	Sulphide (as S)	Iron(Fe)	Manganese (as Mn)	Copper (as Cu)	Lead (Pb)	Zinc (Zn)	Arsenic (as As)	Mercury	Chromium Trivalent (as Cr^{+3})	Nickel (as Ni)	Selenium(as Se)	Chromium Hexa (as Cr^{+6})	Chromium Total (as Cr)	Cadmium (as Cd)	Phenolic Compounds (as C_6H_5OH)	Cyanide (as CN)	Vanadium (as V)	Biossay Test
	LIMITS		Shall not exceed 5 degree C above recipient water temp.	5.5-9.0	max.	-	100 max	-	-	1.0 max	10 max	2.0 max	-	30 max	250 max	10 max	-	3.0 max	100 max	2.0 max	3.0 max	1 max	3.0 max	0.1 max	5.0 max	0.2 max	0.01 max	0.1 max	3.0 max	0.05 max	0.1 max	2.0 max	2.0 max	1.0 max	0.2 max	-	-
ETP outlet		April-22	30.0	8.2	BDL	1100	190	265.0	81.2	0.8	6.4	0.6	5.2	19.0	48.0	N.D	950.0	BDL	0.82	0.15	0.012	BDL	BDL	N.D	0.09	N.D	N.D	BDL	BDL	BDL	BDL	BDL	N.D	N.D	N.D	0.00	N.A
		May-22	29.0	8.2	BDL	1360	130	407.0	147.5	0.3	6.4	0.2	5.6	4.2	20.0	N.D	1062.0	2.1	0.90	0.25	0.054	0.026	BDL	N.D	0.10	N.D	N.D	BDL	BDL	BDL	BDL	BDL	N.D	N.D	N.D	0.11	N.A
		Jun-22	28.0	8.3	BDL	1360	110	258.0	215.0	0.3	8.5	0.5	6.0	5.6	24.0	BDL	944.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Jul-22	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Aug-22	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Sep-22	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Oct-22	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Nov-22	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Dec-22	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Jan-23	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Feb-23	28.0	8.1	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Mar-23	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Average	28.0	8.1	BDL	1172	94	224.0	180.0	0.3	5.7	0.6	5.3	4.8	23.2	BDL	852.0	BDL	0.64	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ash Slurry (Khairatee)		April-22	30.0	8.2	BDL	1160.0	110	266.0	130.0	0.5	7.5	0.5	5.6	5.6	24.0	BDL	1020.0	0.1	0.90	0.25	0.054	0.026	BDL	N.D	0.10	N.D	N.D	BDL	BDL	BDL	BDL	BDL	N.D	N.D	N.D	0.11	N.A
		May-22	29.0	8.4	BDL	1360	130	407.0	147.5	0.3	6.4	0.2	5.6	4.2	20.0	N.D	1062.0	2.1	0.90	0.25	0.054	0.026	BDL	N.D	0.10	N.D	N.D	BDL	BDL	BDL	BDL	BDL	N.D	N.D	N.D	0.11	N.A
		Jun-22	28.0	8.3	BDL	1360	110	258.0	215.0	0.3	8.5	0.5	6.0	5.6	24.0	BDL	944.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Jul-22	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Aug-22	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Sep-22	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Oct-22	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Nov-22	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Dec-22	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Jan-23	27.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Feb-23	28.0	8.1	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Mar-23	28.0	8.0	BDL	1180	90	215.0	201.0	0.2	5.4	0.6	5.2	3.6	24.0	BDL	840.0	BDL	0.63	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		Average	28.0	8.1	BDL	1172	94	224.0	180.0	0.3	5.7	0.6	5.3	4.8	23.2	BDL	852.0	BDL	0.64	0.11	0.036	BDL	BDL	BDL	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

KORADI THERMAL POWER STATION, 3 X 660 MW, KORADI
GROUND WATER SAMPLE ANALYSIS AVERAGE REPORT
Nov-22

Sr No.	VILLAGE	SAMPLES	Temp.	pH	Residual free chlorine	TDS	TSS	Chloride (as Cl)	Sulphate (as SO4)	Nitrate (as NO3)	Alkalinity total (CaCO3)	Total Hardness (as CaCO3)	Total Phosphate (as PO4)	Fluoride (as F)	DO	BOD	COD	Oil & Grease	Sulphide (as S)	Cyanide (as CN)	Phenolic Compounds (as C6H5OH)	Free Chlorine (as Cl2)	Iron (as Fe)	Manganese (as Mn)	Copper (as Cu)	Lead (as Pb)	Zinc (as Zn)	Arsenic (as As)	Nickel (as Ni)	Mercury (as Hg)	Chromium Hexa (as Cr6)	Chromium Total (as Cr)	Cadmium (as Cd)	Selenium (as Se)	Vanadium (as V)	Free Ammonia	Total Kjeldahl Nitrogen	Bacteriology Test	Gamma Emitters (as Cs-137)
1	Pesjara	Dugwell	29	7.2	BQL	482	BQL	69	91	23.8	204	270	0.169	0.619	6.4	2.7	10	BQL	BQL	BQL	BQL	328	0.238	0.81	BQL	BQL	0.059	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.28	Free from Acute Infectious	BQL
		Borewell	31	7.6	BQL	554	9.8	128.0	96.8	33.0	144.0	430.0	0.118	0.620	6.5	2.4	8	BQL	BQL	BQL	BQL	404	0.234	0.096	BQL	BQL	0.067	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.35	Free from Acute Infectious	BQL
3	Mahadulla	Dugwell	28	7.9	BQL	476	BQL	67.0	82.0	22.0	208.8	260.0	0.094	0.522	6.0	2.6	9	BQL	BQL	BQL	BQL	336	0.271	0.013	BQL	BQL	0.060	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.22	Free from Acute Infectious	BQL
		Borewell	30	7.6	BQL	714	BQL	88	72.1	45	368	398	0.149	0.641	6.9	2.5	8	BQL	BQL	BQL	BQL	512	0.252	0.092	BQL	BQL	0.063	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.35	Free from Acute Infectious	BQL
5	Koradi	Dugwell	27	7.6	BQL	482	BQL	70	56	23.8	224	330	0.155	0.490	6.4	2.8	10	BQL	BQL	BQL	BQL	348	0.269	0.015	BQL	BQL	0.09	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.24	Free from Acute Infectious	BQL
		Borewell	29	7.4	BQL	1108	BQL	152	133	16.4	592	740	0.097	0.530	6.3	2.6	9	BQL	BQL	BQL	BQL	704	0.264	0.014	BQL	BQL	0.068	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.49	Free from Acute Infectious	BQL
4	Nanda	Dugwell	28	7.7		469	BQL	68.3	48.7	23.9	204.8	306.0	0.165	0.497	6.6	3.4	12	BQL	BQL	BQL	BQL	336	0.275	0.013	BQL	BQL	0.061	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.35	Free from Acute Infectious	BQL
		Borewell	29	7.6		634	20.0	178.0	81.0	33.6	148.8	350.0	0.141	0.529	6.5	3.6	9	BQL	BQL	BQL	BQL	392	0.269	0.019	BQL	BQL	0.061	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.36	Free from Acute Infectious	BQL
5	Bandhavi	Dugwell	28	7.4	BQL	492	BQL	68	72	25	222	298	0.122	0.523	6.3	3.5	12	BQL	BQL	BQL	BQL	336	0.27	0.014	BQL	BQL	0.059	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.42	Free from Acute Infectious	BQL
		Borewell	28	7.8	BQL	570	BQL	130	111	27.1	140	322	0.118	0.508	6.4	3.6	10	BQL	BQL	BQL	BQL	402	0.245	0.014	BQL	BQL	0.059	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.3	Free from Acute Infectious	BQL
6	Bhansia	Dugwell	27	7.7	BQL	664.0	BQL	69	132	8.7	552	344	0.152	0.545	6.4	3.1	11	BQL	BQL	BQL	BQL	476	0.279	0.028	BQL	BQL	0.061	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.45	Free from Acute Infectious	BQL
		Borewell	29.0	7.6	BQL	1160.0	BQL	120	261	36.1	328	576	0.812	0.670	6.5	3.8	10	BQL	BQL	BQL	BQL	892	0.299	0.026	BQL	BQL	0.065	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.29	Free from Acute Infectious	BQL
7	Khasara	Dugwell	28	7.4	BQL	904	BQL	781	160	30.3	300	422	0.144	0.505	6.3	2.7	9	BQL	BQL	BQL	BQL	708	0.279	0.014	BQL	BQL	0.057	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.58	Free from Acute Infectious	BQL
		Borewell	28	7.6	BQL	846	BQL	152	125	16.4	360	412	0.112	0.519	6.4	3.1	11	BQL	BQL	BQL	BQL	684	0.282	0.016	BQL	BQL	0.061	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.39	Free from Acute Infectious	BQL
8	Kalachu	Dugwell	27	7.6	BQL	356	6.0	104.0	101.0	23.8	280.0	312.0	0.169	0.553	6.3	3.3	12	BQL	BQL	BQL	BQL	792	0.279	0.014	BQL	BQL	0.064	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.56	Free from Acute Infectious	BQL
		Borewell	28	7.4	BQL	652	BQL	153	144	16.2	368	304	0.113	0.560	6.4	2.5	9	BQL	BQL	BQL	BQL	468	0.264	0.016	BQL	BQL	0.048	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.45	Free from Acute Infectious	BQL
9	Khati	Dugwell	29	7.5	BQL	822	8	198	120	5.48	344	348	0.102	0.458	6.5	2.6	9	BQL	BQL	BQL	BQL	624	0.431	0.032	BQL	BQL	0.062	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.01	BQL	0.45	Free from Acute Infectious	BQL
		Borewell	30	7.3	BQL	874	BQL	207	94	24.2	460	424	0.091	0.484	6.6	3.1	11	BQL	BQL	BQL	BQL	702	0.31	0.031	BQL	BQL	0.129	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.24	Free from Acute Infectious	BQL

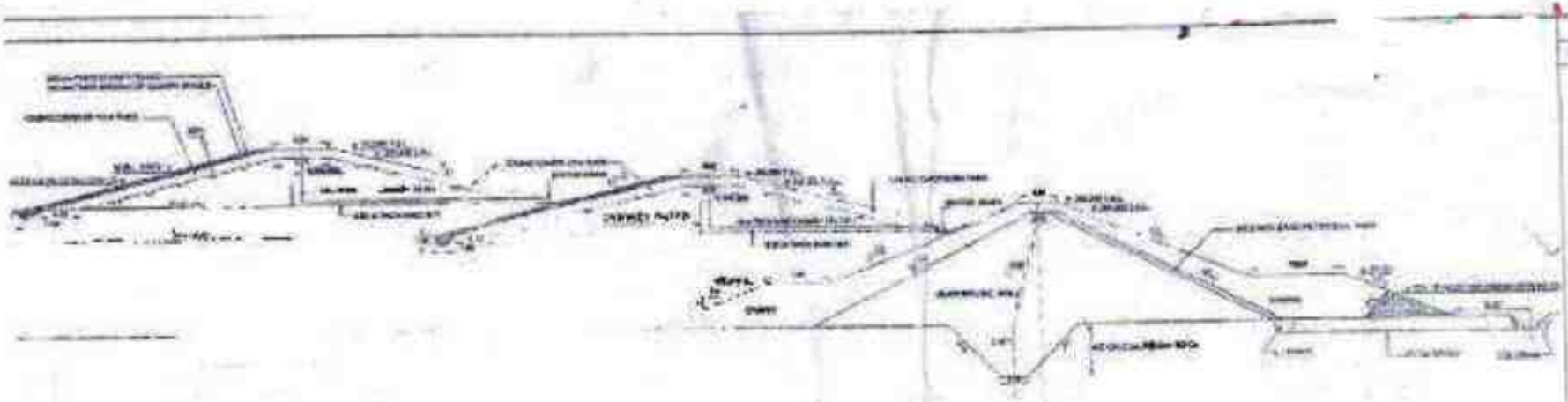
Annexure - I

1329

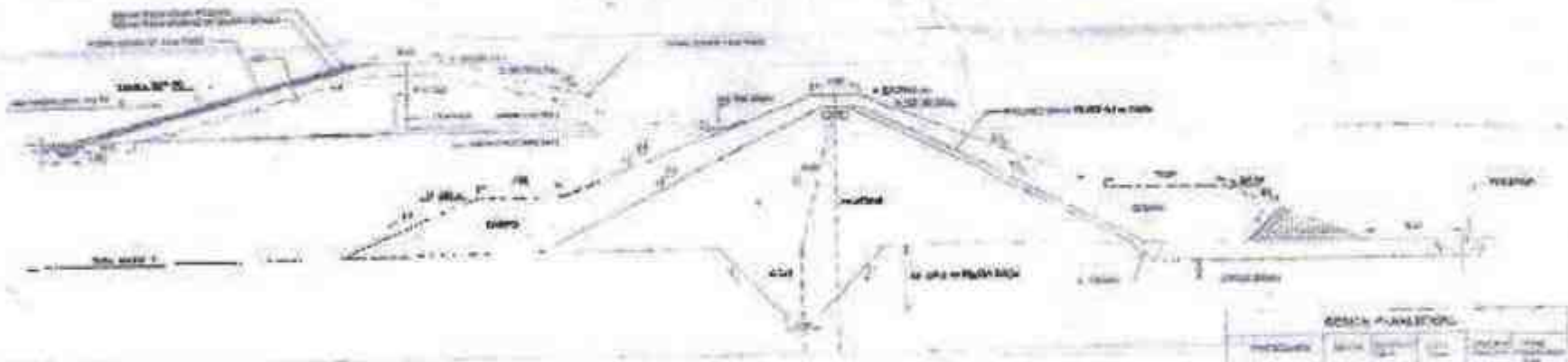
Koradi Thermal Power Station, 3X660 MW

Environmental Expenditure For April- 2022 to March- 2023

Sr. No.	Details of measures for Environment Protection	Section	Order Value		Total	Proposed Expenditure (In Lakhs) FY 2022-23	Total Proposed Expenditure (In Lakhs) FY 2023-24
			Supply	Work			
1	ESP maint . & procurement of spares for ESP maint.&	AHP	-	-	119.54114	1,300.73038	1,737.86038
2	Bag filters maint. at ash silo and Ash handling				1181.18924		
3	Procurement of various pumps, spares, mainte. of pipelines, AND LINE LAYING WORK &ERECTION OF PIPELINE	TM	73.22369	11.20579	-	69.23285	8.36114
4	Work of Tree plantation at & around various locations of Khasala Bund	Civil	40.24224		40.24224	40.24224	40.24224
						1,410.20547	



CROSS SECTION OF ASH BUND AT R.D. 895.00K m UP TO R.L. 312.00m AS PHASE II



CROSS SECTION OF ASH BUND AT R.D. 895.000 m UP TO R.L. 308.500m AS PHASE-I

GENERAL NOTES

1330

Annexure - m

12/4/2021

5.7.3 Details regarding ash pond, impermeability etc. (TOR xxi-xxiii)

Ash bund at Khasara for KTPS has been designed by the Irrigation (now Water Resources Deptt) Department of Maharashtra. Present ash bund has been constructed from RD 00 to 3450 m with spillway location at RD 832.75 –RD 986.25 m. Design also includes provision for raising the bund from RL305.2 to 312 m in two stages.

This design includes details of a) control levels, b) foundation, c) seepage control measures , depth of COT, its location , backfilling, d) internal drainage arrangement with i) chimney filter, ii) sand mat, iii) toe drains, for starter bund, raised section, iv) drainage wells.

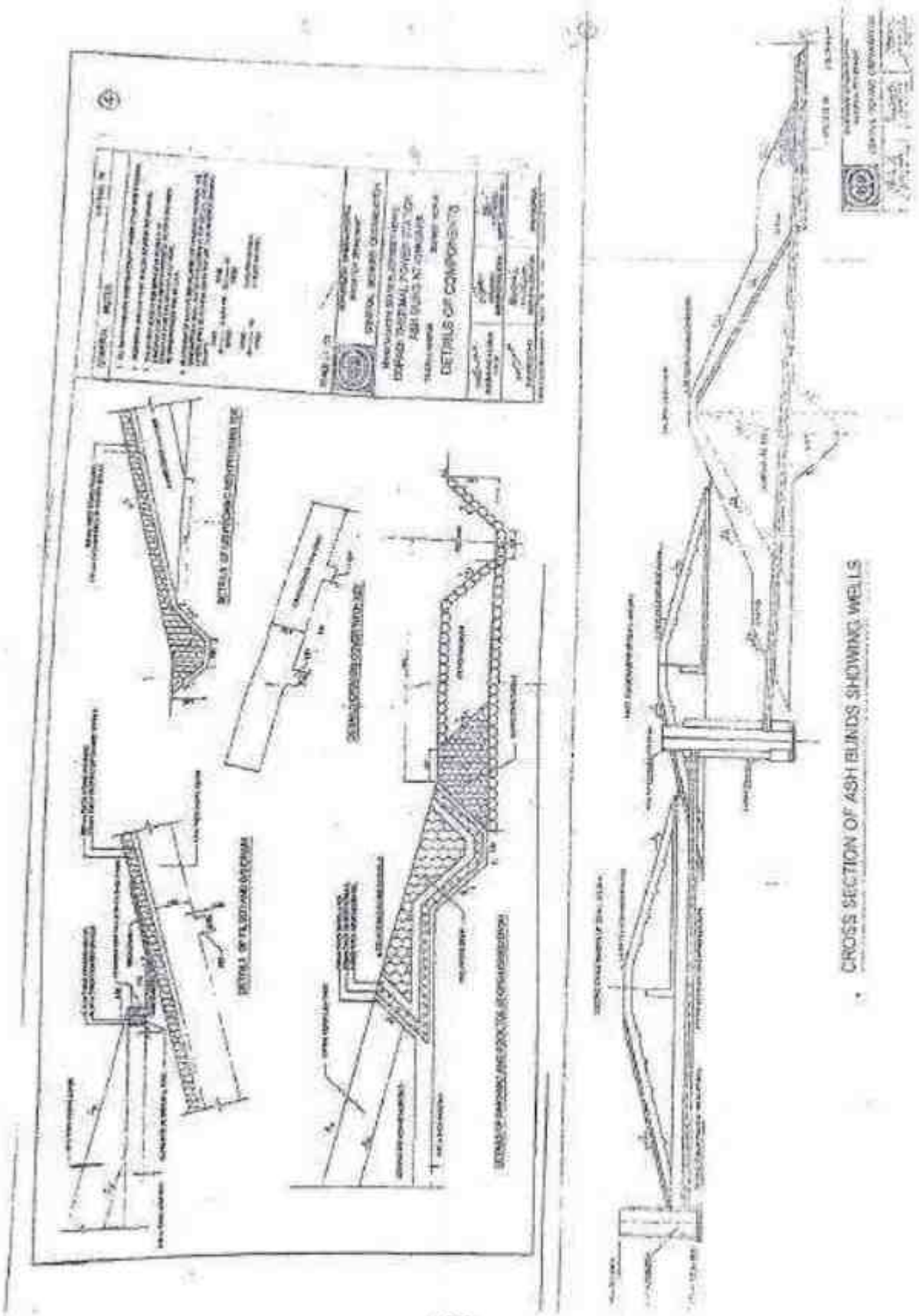
- Soil will not be used for hearting and instead ash from power plant will be used
- Ash has been tested for its properties to provide impervious core
- Design parameters for checking ash bund – tan ϕ =0.62, cohesion T/m^2 = 0.4, G.D.D. T/m^3 = 0.96, specific gravity =2.2 , core pressure =100.
- All care has been taken to provide impervious bottom.
- Location, details of components and cross sections of ash bund are given in **Figures 37 & 38.**

Schedule for ash utilization – new units

Daily generation @ 10,700 TPD

1.	Bricks	@ 1600 TPD
2.	Cement	MOU with cement plants has been signed and be operational after plant is commissioned @ 2300 TPD
3.	Road construction	As per requirement - 1700 TPD
4.	Landfill	4000 TPD
5.	Soil amendment	1100 TPD
6.	Others (Please specify)	--

FIGURE 37


DETAILS OF COMPONENTS
CROSS SECTION OF ASH BUNDS SHOWING WELLS

Annexure- n

No. J-13012/11/2019 -IA.I(T)
Government of India
Ministry of Environment, Forest and Climate Change

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj,
New Delhi-110003

Dated: 26.06.2020

To

The Chief General Manager
M/s. Maharashtra State Power Generation Co. Ltd.
JDO: Towers, 4th Floor, A-Wing, Prof A.K. Marg, Bandra (E),
Mumbai-400051.

Sub: **Proposed 2x660 MW Super Critical Thermal Power Project (Expansion) within the premises of 2400 MW Koradi Power Plant at Village Koradi, Tehsil- Kamptee, District Nagpur, Maharashtra by M/s Maharashtra State Power Generation Company Limited (MAHAGENCO) - reg. ToR**

Sir,

The undersigned is directed to refer your online application No. **IA/MH/THE/102533/2019 dated 20.4.2019** for grant of Terms of Reference (ToR) regarding above mentioned project.

2. It has been noted that you have requested for grant of Terms of Reference (ToR) for establishing 2x660 MW Super-critical Thermal Power Project in the premises of 2x210 MW & 3x660 MW Koradi Power Plant near Village Koradi, Tehsil Kamptee, District Nagpur.

3. It has been noted that the existing power generating units No.1-5: 4x120 MW and 1x200 MW have been de-commissioned. Further, it has been noted that Unit Nos.6-7: 2x210 MW & Nos.8-10: 3x660 MW are under operation. It was further informed that the infrastructure is to be dismantled to clear the area for proposed project.

4. The total area available in the Koaradi power plant is 652.02 ha out of which 68.28 ha will be used for proposed power project. The part-wise details of area is provided as below:

Details	2x210 MW (existing)	3x660 MW (existing)	2x660 MW (Proposed)	Total
Project Area	411.74 ha	172 ha	68.28 ha	652.02 ha
Greenbelt	103.72 ha		111.3 ha	215.06 ha (33% of 652.02 ha)

5. The break-up of proposed project area is as below:

Sl.No.	Facility	Area
1	Main Plant	40 acres
2	Coal Handling System	29.07 acres
3	Water system	16.06 acres
4	Switch Yard	12.90 acres
5	BoP facilities, stores, road	12.25 acres
6	Greenbelt (20%)	36.39 acres
7	Roads	22.05 acres
Total project area		168.75 acres (68.28 ha)

6. It has been noted that the additional area of 111.3 ha has been identified for greenbelt for makeup of 33% greenbelt out of total plant area of 652.02 ha which also includes greenbelt for proposed project.

7. The project does not involve any forest land. There are no National Parks/Wildlife Sanctuaries/other protected areas situated within the 10 Km radial distance of project. However, Gorewada Zoo and Wildlife Rescue Centre 6.5 km from the project site.

8. The other important areas such as Koradi Mahalaxmi Temple: 0.5 km, Koradi lake: 1 km, Kolar River: 2 km, Pench River: 7.5 km, Kanhan River: 4.5 km, Kamptee Cantonment: 7 km and Air Force Maintenance Command: 10 Km, are located from project site.

9. The proposed project site is well connected with road network. Nearest railway station is Godhni Railway Station: 5.0 km. The site is connected to NH69 Nagpur-Bhopal National highway at 1.0 Km. Nagpur city is located at 4.0 Km from the project site.

10. The Coal requirement for the proposed project is 7.18 MMTPA with consideration of worst coal of GCV 3200 Kcal/kg at BMCR at 85% PLF. It is proposed to utilize existing coal linkages to the tune of 3.165 MMTPA of those units (Koradi Unit-5: 200 MW decommissioned on 2.3.2017, Nashik Unit-4&5:2x210 MW to be decommissioned in July, 2020 & Jan, 2021) which are either closed or going to close up to FY 2023-24. For balance coal requirement of @ 4.015 MMTPA, it is proposed to use the coal from M/s WCL's Umred and its nearby coal mines; for which necessary Fuel supply agreement shall be made. The work of construction of Pipe conveyor is under progress for transportation of coal from Singhori, Bhanegaon, Gondegaon, Inder and Kamthi. The coal from Umrer area of WCL will be transported by Rail.

11. The water requirement for the proposed project is 34.69 MM^3/year. About 27 m3/day fresh water from Pench Dam will be used for domestic purpose. The water required for power generation and cooling purpose will be sourced from Tertiary Treated sewage water from Nagpur Municipal Corporation. Treated Sewage Water would be conveyed through cross country pipeline at a distance of 11km. A pipeline of 22 km was already laid from Right Bank Canal of Pench Dam at Navegaon Kairi

upto Koradi Water Pond (Pond No.3). The pump house at Koradi Pond is inturn will supply the water to Koradi Power Plant.

12. The proposed project is expected to generate approx. 2.48 MMT of ash per annum, out of which about 80% (1.98MMT) is fly ash and 20% (0.5MMT) Bottom ash. Koradi Power plant presently has two ash ponds. One is at Koradi (150 ha) which is almost filled and the second one is at Kasara (250 ha). The existing ash pond will be used for unutilised ash generated from the proposed project and no additional land is required for ash pond.

13. It has been informed that a fly ash cluster is under development in Koradi for utilization of fly ash and is expected to be operational by 2021. The 100 % ash will be utilized as per MoEF notification. At present, the ash utilisation percentage from Koradi Power Plant is about 30%.

14. LDO and HFO would be required for cold start-up and flame stabilization at lower load. The requirement of fuel oil has been estimated to be about 29,490 KL per annum. LDO 9830 KL/annum and HFO 19660 KL/annum. Fuel will be transported by rail route to the plant site from the nearest depot.

15. The power evacuation from new 2x660 MW units will be evacuated through a dedicated 400 kV switchyard of MAHATRANSCO.

16. Adequately designed Electrostatic Precipitators with more than 99.89% efficiency are envisaged for control of PM emissions. The amount of SO_x emissions shall be less than 100mg/Nm3 after installation of FGD (Flue Gas Desulfurizer) system for each unit by combining common utilities and the installation of chimney as per MoEF&CC guidelines. The amount of NOx emissions shall be less than 100mg/Nm3 after installation of SCR for each unit after economizer outlet when the units are operating at MCR.

17. A total capital outlay of Rs.9,882 Crores, including interest during construction and other financial charges, would be involved. A total manpower requirement of 534 persons has been envisaged for the propose station.

18. The proposal was considered by the EAC (Thermal Power Projects) in its meetings held on 28.5.2019, 23.8.2019, 4.12.2019 and 10.4.2020. The Sub-committee conducted the site visit during 01st -3rd August, 2019 for assessing the site suitability and aspects of present status of environment & pollution control measures and submitted its report.

19. In acceptance of the recommendations of the EAC (Thermal Power) in its meeting held on 10.4.2020 and in view of the information/clarifications furnished by you, **the Ministry hereby grants the following specific ToRs in addition to the Standard ToRs for the above mentioned project under Schedule 1(d): Thermal Power Projects of the EIA Notification dated September 14, 2006 and subsequent amendments, for preparation of EIA/EMP report:**

i. The EIA study and assessment pollution load and impact prediction shall be carried out for two scenarios, i.e. Scenario-1: One unit of 660 MW proposed project and existing Koradi units; Scenario-2: Two units of 660 MW proposed project and existing Koradi units. Further, the assessment is to be done

based on actual status of pollution without FGD and with FGD, as the FGD is yet to be implemented.

ii. The issue of ToR for two units does not guarantee the Environmental Clearance. The decision on which shall be taken only after assessment of the pollution load and incremental pollution of both scenarios as above.

iii. The Status Compliance to the issues mentioned in the Ministry's Show-cause letter dated 29.1.2020 shall be submitted.

iv. The status of action plan to be submitted as per the recommendations/ observations of the Sub-committee in its visit during 01st -3rd August, 2019.

v. The water requirement from the proposed project shall be met from Treated Sewage Water from Nagpur City. Status of transportation pipelines is to be submitted.

vi. The flya ash generation & utilisation vis-a-vis 100% utilisation target as per the Flyash Notification in the last five years is to be submitted.

vii. Emissions of existing units in comparison with emission standards will be provided.

viii. The stability of existing ash dykes (Koradi-150 ha and Kasara-250 ha) shall be assessed considering the geological strata conditions, nearby habitations, and rainfall to recommend additional strengthening measures, if any. The study shall be conducted by reputed organisation/institution.

ix. The emergency ash disposal system to be designed for proposed project shall be based on High Concentrated Slurry Disposal System.

20. The Standard ToRs for Thermal Power Projects to be complied with are uploaded on the website of the Ministry PARIVESH: https://parivesh.nic.in.

21. Besides the above, the following general points shall be followed:

a. All documents to be properly referenced with index, page numbers and continuous page numbering.
b. Where data is presented in the report especially in table, the period in which the data was collected and the source should invariably be indicated.
c. Where the documents provided are in a language other than English, an English translation should be provided.
d. The Questionnaire for environmental appraisal of thermal power projects as devised earlier by the Ministry shall also be filled and submitted.
e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI) / National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/ EMP reports prepared by them and data provided by other organization / Laboratories including their status of approvals etc. In this regard circular no. F.No. J-11013/77/2004-IA-II (I) dated 2nd December, 2009 is posted on the Ministry's website http://www.moef.nic.in may be referred.

22. In addition to the above, information on the following may also be incorporated in the EIA report.

1. Is the project intended to have CDM-intent?

(i) If not, then why?

(ii) If yes, then

a. Has PIN (Project Idea Note) or PCN (Project Concept Note) submitted to the NCA (National CDM Authority) in the MoEF?

b. If not, then by when is that expected?

c. Has PDD (Project Design Document) been prepared?

d. What is the Carbon intensity? from your electricity generation projected (i.e. CO_2 Tons/MWH or Kg/KWH)

e. Amount of CO_2 in Tons/year expected to be reduced from the baseline data available on the CEAs web-site (www.cea.nic.in)

2. Notwithstanding 1(i) above, data on (d) & (e) above shall be worked out and reported.

23. **The Environmental Clearance shall be applied only after fuel and water linkages are firmed up.**

24. After preparing the Draft EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned issues, the same shall be submitted to the concerned SPCB for conducting the public hearing as per procedure of EIA notification 2006. The issues emerged during public hearing shall be further incorporated in the Draft EIA/EMP report. The final EIA/EMP report along with public hearing report and the requisite documents (*including written objections, if any*) shall be submitted to the Ministry for appraisal by the Expert Appraisal Committee for consideration of awarding environmental clearance under the provisions of Environmental Impact Assessment notification dated September 14, 2006.

25. The TORs prescribed shall be valid for a period of **four years** from the date of issue for submission of final EIA/ EMP reports, after public consultation.

This issues with the approval of the Competent Authority.

Yours faithfully,

(Dr. S. Kerketta)
Director (IA.I)

Copy to:-

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.

4. The Addl. Principal Chief Conservator of Forests (C), Ministry of Env., Forest and Climate Change, Regional Office (WCZ), Ground Floor, East Wing, New Secretariat Building, Civil Lines, Nagpur- 440001.
5. The Principle Secretary, Department of Environment, -Mantralaya, Govt. of Maharashtra, Mumbai-400032.
6. The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. cine Planet, Sion Circle, Sion (E), Mumbai – 400 022.
7. The District Collector, Nagpur District, Nagpur, Maharashtra.
8. Monitoring/Guard file.
9. Website of MoEF&CC.

Director, IA.I

Annexure - I (a)

MAHAGENCO

MAHARASHTRA STATE POWER GENERATION CO. LTD.

Office of the **Chief Engineer (P&P)**, 'Prakashgad', 3rd floor, Bandra(East),
MUMBAI-400051 Ph:(0)26474211/26472131(P)26475759, Fax No.022-26475329,
E-Mail:cgmgpp@mahagenco.in

Ref. No. CE (P&P)/3x660MW/ Koradi /FGD/ 1236 Date: 1 6 NOV 2023

LETTER OF AWARD
(EPC Contract)
(By Speed Post/Email)

To
M/s. Shapoorji Pallonji And Company Private Limited
SP Centre, 41/44, Minoo Desai Marg,
Colaba, Mumbai 400005, India.
Email: reby.thomas@shapoorji.com, mayank.rudra@shapoorji.com
birendra.singh@shapoorji.com

(M/s. Shapoorji Pallonji & Co. Pvt. Ltd. in Collaboration and Technology Transfer Agreement with M/s. Rudis d.o.o. Trbovlje, Slovenia, Europe.)

Kind Attn: Mayank Rudra

Subject: Award of Contract for Design, Engineering, Manufacture, Assembly, Testing at Works, Supply at Site; Civil, Structural & Architectural Works and Erection, Testing & Commissioning of FGD System for 3x660MW Unit 8,9 &10 at Koradi TPS on EPC basis including O&M of the installed FGD system for the span of 3 years as prescribed in E-Tender No. 3000035577.

Reference:
1. SRM Tender No. 3000035577 published on 10.03.2023 and subsequent amendment-1 dated & Prebid queries reply dated 19.04.2023 and amendment-2 dated 28.04.2023.
2. M/s. SPCPL Bid proposal No. SPCPL/FGD/KORADI/01/of 2023-24 dated 10.04.2023 for RFx response No. 3400104623.
3. Cover- I (Techno-commercial Bid) opened on 24.05.2023.
4. Cover- II (Price Bid) opened on 21.06.2023.
5. M/s. SPCPL bid proposal no. SPCPL/FGD/KORADI/01 of 2023-24 vide email dated 06.07.2023.

Dear Sir,

With reference to your Bid proposal dated 10.04.2023 under ref (2) & E-Reverse Auction through M/s. MSTC platform on 05.07.2023 and subsequent correspondence, Maharashtra State Power Generation Company Ltd. (MSPGCL) (herein after referred to as 'Owner') is pleased to inform that, your offer against Tender No. 3000035577 is accepted and Letter of Award is hereby placed on M/s. Shapoorji Pallonji And Company Private Ltd, Mumbai 400005, India (herein after referred to as 'Contractor') in Collaboration and Technology Transfer Agreement with Qualified FGD Manufacturer (QFGDM) M/s Rudis d.o.o. Trbovlje, Slovenia, Europe for Design, Engineering,

Manufacture, Assembly, Testing at Works, Supply at Site; Civil, Structural & Architectural Works and Erection, Testing & Commissioning of FGD System for 3x660MW Koradi TPS on EPC basis including O&M of the FGD system for the span of 3 years as prescribed in E-Tender No. 3000035577 read with subsequent corrigendum, addendum, correspondence, amendments, clarifications, resolutions etc, on the following terms and conditions :

1.0 AWARD OF CONTRACT :

The award covers the activities and services for Design, Engineering, Manufacture, Assembly, Testing at Works, Supply at Site; Civil, Structural & Architectural Works and Erection, Testing & Commissioning of FGD System and Auxiliaries for 3x660MW Unit no.8,9 &10 at Koradi TPS on EPC basis including O&M of the FGD system for the span of 3 years along with supply of spares and consumable for O&M as prescribed in E-Tender No. 3000035577 read with subsequent corrigendum, addendum, correspondence, amendments, clarifications, resolutions etc. as a fully integrated package as prescribed in the bid specification.

2.0 SCOPE OF CONTRACT:

2.1 It is not the intent to list out complete scope of work hereunder. However, the broad scope of the work shall include Design, engineering, manufacture, procurement, inspection and testing at manufacturer's works, supply, packing and delivery at project site, unloading & storage at site, in-plant transportation and handling at site, fabrication, erection, dismantling of existing facilities/structures, interconnection with existing units, pre-commissioning, testing, successful commissioning, trial operation, performance testing and handing over of complete Wet Limestone based FGD system together with including electrical and C&I systems for coal fired thermal units 8,9 & 10 of 3x660MW Koradi TPS , of MSPGCL along with all auxiliaries & accessories, special tools & tackles and associated civil works as specified, including Operation & Maintenance (O&M) for 3 years of the installed FGD System as prescribed in Tender No. 3000035577 dated 10.03.2023 read with subsequent corrigendum, addendum, correspondence, amendments, clarifications, resolutions etc. as a fully integrated package.

2.2 The bid specification and the subsequent correspondence referred above shall form the integral part of this contract. The equipment/system/item /services required for successful completion and operation of plant, if not explicitly stated but required and explicitly not excluded from the scope of work, shall deemed to have been included in the contractor's scope and shall be supplied/provided by the contractor within the contract price.

2.3 The contractor, within the contract price for supply, apart from the equipment/materials stipulated therein, shall supply all consumables like, grease, lubricating oils, chemicals, paints, ink & graphs for recorders etc. up to

takeover of the unit by owner as stipulated in Cl No. 41.0, Section 2, Volume-I of bid specification. The Contractor shall also arrange any additional quantities required specifically for the Performance Guarantee Test. The commissioning spares required during erection, testing and commissioning shall be arranged by the contractor.

3.0 EPC - CONTRACT PRICE:

3.1 The total price for Design, Engineering, Manufacture, Assembly, Testing at Works, Supply at Site, Civil, Structural & Architectural Works and Erection, Testing & Commissioning of FGD System for 3x660MW Koradi TPS on EPC basis as mentioned above shall be **₹ 1345.90 Cr** including GST **(Rs. One Thousand Three Hundred Forty Five Crore and Ninety Lakh Only)** on firm price basis as detailed below:

Sr.		Particulars	Price in INR	Applicable Taxes	
				Tax	Rate
1		**Supply of Equipment, and Materials**			
	1.1	Supply of Indigenous Equipment & Materials	4,09,25,94,950.50	GST	18%
	1.2	Supply of Imported Equipment, and Materials to be directly delivered to the site on CFR basis	2,04,62,97,475.25	Total custom duty	8.5%
				GST	18%
	1.3	Supply of Steel, Cement and other aggregates for Civil, Structural and Architectural Works	1,59,15,64,702.97	GST	18%
	1.4	Inland Freight for FOR Site Delivery of 1.1to 1.3 above	28,42,07,982.67	GST	18%
	1.5	Amount of Taxes & Duties on 1.1 to 1.4 for the purpose of ceiling	1,62,11,69,105.68		
	Total		**9,63,58,34,217.08**		
2		**Erection, Testing & Commissioning**			
	2.1	Equipment Related Design & Engineering (except for Civil Design & Engineering)	28,42,07,982.67	GST	18%
	2.2	Erection, Testing & Commissioning	56,84,15,965.35	GST	18%
	2.3	Amount of Taxes & Duties on 2.1 & 2.2 above, for the purpose of ceiling	15,34,72,310.64		
	Total		**1,00,60,96,258.66**		
3		**Civil Construction, Structural and Architectural Works**			
	3.1	Civil Works related Design Engineering	22,73,66,386.14	GST	18%
	3.2	Civil Construction, Structural and Architectural Works	2,15,99,80,668.32	GST	18%
	3.3	Amount of Taxes &Duties on 3.1 & 3.2 above for the purpose of ceiling	42,97,22,469.80		
	Total		**2,81,70,69,524.26**		
Grand Total (1+2+3)			**13,45,90,00,000.00**		
Rs. One Thousand Three Hundred Forty Five Crore and Ninety Lakhs Only.					

4.0 LOCAL CONTENT:

The minimum local content percentage shall be more than 60% as prescribed by the Nodal Ministry.

5.0 TAXES AND DUTIES:

5.1 The GST shall be paid to the contractor for the supply of materials/ services rendered against this contract as per applicable rate, however total amount of GST shall be paid up to the ceiling limit.

5.2 Custom duty: The contractor shall be payable at actual on the basis of documentary evidence. Total amount of custom duty shall be paid up to the ceiling limit.

5.3 Taxes & Duties shall be payable as stipulated under the Clause No 8.0, Section - 2A and Clause No. 23, Section-2B, Volume –I of Bid specification.

5.4 Statutory variation during the currency of the Contract shall be payable as stipulated under the Clause No. 9, Section – 2A and Clause No. 24 Section-2B, Volume - I of Bid specification.

6.0 SIGNING OF THE CONTRACTS: Following two contracts shall be entered into by MSPGCL with Contractor:

6.1 **First Contract :** For Design, Engineering, Manufacture, Assembly, Testing at Works, Supply at Site; Civil, Structural & Architectural Works, Insurance and Erection, Testing & Commissioning of FGD System and Auxiliaries on Engineering Procurement & Construction (EPC) basis.

6.2 **Second Contract:** O&M Contract for providing the services of Operation & Maintenance of FGD plant for the period of 3 years including the supply of all the spares, consumables for the continuous Operation & Maintenance of the Plant.

6.3 Initially, first contract shall be signed; however the second contract for O&M of the FGD plant shall be signed after acceptance of PG tests of last unit. The Contracts shall be signed in Mumbai at the office of Chief Engineer (P&P)

7.0 CONTRACT PERFORMANCE SECURITY:

7.1 The Contractor, within 30 Days from the date of issuance of the LOA, shall submit the bank guarantees as under:

i) The Contract performance Bank Guarantees amounting to 10% of the EPC Contract Price strictly in the format as per Schedule-8 (A), Section-I, Volume-I of bid specification, issued by any Nationalized/ scheduled commercial bank as notified by the Reserve Bank of India, payable at Mumbai.

ii) The Contract performance security amounting to 10% of the O&M Contract Price strictly in the format as per Schedule-8 (A), Section-I, Volume-I of bid specification, issued by any Nationalized/scheduled commercial bank as notified by the Reserve Bank of India, payable at Mumbai.

iii) On Demand Bank Guarantee amounting to 1.5% of the EPC Contract Price issued on behalf of every executants of Deed of joint undertaking (DJU) i.e.

by QFGDM M/s. Rudis d.o.o. Trbovlje, Slovenia, Europe, in the format as per Schedule-8(B), Section-I, Volume-I of bid specification, issued by any Nationalised/ scheduled commercial bank as notified by the Reserve Bank of India, payable at Mumbai.

7.2 All above Contract Performance Securities except for Contract Performance Security of 10% of O&M Contract Price shall be kept valid for the period of 90 Days beyond the expiry of the Defect Liability Period.

7.3 The Contract performance security of 10% of O&M Contract Price shall be kept valid till the end of Contract for Operation & Maintenance of 3 years after acceptance of PG test by MSPGCL.

7.4 In case the Contractor fails to submit the Bank Guarantees as above within the stipulated period or the extension granted by the Owner, if any, for this purpose, the Bid Security submitted by the contractor shall be liable to be forfeited and the Contract awarded shall be liable to be cancelled/terminated at the risk and cost of the Contractor.

7.5 For the purpose of above bank guarantee, the Contract Price shall be including taxes & duties.

7.6 All above bank guarantees are to be submitted to Chief Engineer (P&P), MSPGCL, HO, Mumbai.

8.0 DEFECT LIABILITY (GUARANTEE) PERIOD:

Defect Liability Period (Guarantee period) shall be as per clause no. 43, Section-2, Volume-I of Bid Specification.

9.0 ZERO DATE OF CONTRACT:

The zero date of contract shall be the date of issuance of the Letter of Award.

10.0 WORK COMPLETION SCHEDULE:

The duration for Completion of the project as stated in Schedule-6 of contract commencing from Zero date. The detail of Work Completion Schedule is as under:

Sr. No	Milestone	Duration in Months		
		Unit-8	Unit-9	Unit-10
1.	Design, Engineering, Manufacture/Procurement, Assembly, Testing at manufacturer's works, packaging into properly sized units and shipping, transport, delivery to site, receipt, unloading, handling and storage at site, Civil, Structural & Architectural Works, Erection, Testing and Commissioning and putting into operation of the FGD Systems and auxiliaries after completion of trial operation.	26	28	30

Sr. No	Milestone	Duration in Months		
		Unit-8	Unit-9	Unit-10
2	Completion of Performance Guarantee Test and handing over the unit to the owner	29	31	33

Note:

1) The work of common utilities/auxiliaries shall be completed along with the work of first Unit (i.e. Unit-8), before start of Trial Operation.
2) PG Test of final unit shall be carried out with all the earlier units and common auxiliaries in running condition.

11.0 PROJECT MANAGER:

The project Manager for implementation of FGD installation project at 3x660MW Koradi TPS Unit nos. 8,9 &10 shall be Chief Engineer (Project), Koradi.

12.0 TERMS OF PAYMENT FOR SUPPLY:

As Stipulated under Clause No. 12.0, Sec-2A, Volume-I of bid specification.

12.1 Application for the Payments:

12.1.1 For all payments, the application and the invoices along with the documents listed in the relevant clauses of terms of payment shall be submitted by the Contractor to the Project Manager. However, for the Advance Payment, the application and the invoices along with the documents listed in the relevant clauses of terms of payment shall be submitted by the Contractor to the Chief Engineer (P&P) and the advance payment shall be released from Head Office, Prakashgad, Mumbai.

12.1.2 The supply invoice (except in case of advance payment), shall invariably contain the Purchase Order (approved BBU) number, Item code as per the Purchase Order and delivery challan no. of the contractor vide which the material was delivered.

12.1.3 Each such application shall state the amount claimed and shall set forth in detail, in the order of the Purchase Order, particulars of the materials/the equipment delivered pursuant to the contract. No sum shall be included in any payment application in respect of the goods that, according to the decision of the Engineer, does not comply with the contract.

12.1.4 The payments shall be released by the Project Manager/HO, Mumbai or the financing institute(s) with whom the owner has tied up the funding for this project through Crossed Cheque/NEFT/RTGS.

12.1.5 The owner, as per guidelines and conditions specified herein, shall arrange the payment to the contractor only for the supplies made under the contract. All payments during the currency of the contract shall be "on account" payments only. The payments shall be made in Indian Rupees as per the contract.

12.2 **Advance Payment:**

12.2.1 Seven percent (7%) Ex-Works price for supply of equipment/ materials along with applicable taxes shall be paid as the first instalment of the advance within thirty (30) days from the date of submission of the documents as under:

i) Invoice in triplicate (one original + two copies).

ii) A Copy of Letter of Award issued by the owner duly acknowledged by the contractor.

iii) A copy of the acceptance of the contract performance security issued by the owner/ Project Manager.

iv) A copy of the acceptance of the bank guarantee of equivalent amount submitted by the contractor against advance payment.

v) A copy of All Risk Marine-cum-Erection Insurance.

12.2.2 Further one & half percent (1.5%) Ex-Works/ CIF price for supply of equipment/ materials shall be paid as second instalment of advance within thirty (30) days from the date of submission of the documents as under whichever is later:

i) Invoice in triplicate (one original + two copies).

ii) Copy of the Micro Detail Project Schedule Network duly approved by the Chief Engineer (P&P)

iii) A copy of the acceptance of the Bank Guarantee of equivalent amount submitted by the contractor against advance payment.

12.2.3 Further one & half percent (1.5%) Ex-Works/CIF price for supply of equipment/ materials shall be paid as third instalment of advance within thirty days from the date of submission of the documents as under whichever is later:

i) Invoice in triplicate (one original + two copies).

ii) Copy of the letter of the owner forwarding signed contract agreement to the contractor.

iii) A copy of the acceptance of the bank guarantee of equivalent amount submitted by the contractor against advance payment.

12.2.4 In the event of order for more than one unit, the unit wise advance shall be in proportion with the contract price allocated to the respective unit.

12.2.5 The advance paid as above shall be interest free upto the scheduled date of taking over as per the approved project schedule. The advance shall be adjusted against the supplies made by the contractor on prorate basis and shall be determined by the value of goods delivered by the contractor against the contract irrespective of the fact whether payment against such supplies are made by the owner or otherwise. However, the contractor may seek

accelerated /one-time adjustment of the advance before scheduled date of taking over of the unit as per approved project schedule.

12.2.6 For the unrecovered advance, if any, beyond the scheduled date of taking over of the unit as per the approved schedule, interest at the rate of i) one percent higher than the rate of borrowing by the owner for this project or ii) the prevailing Retail Prime Lending Rate (RPLR) of State Bank of India whichever is higher shall be levied.

12.2.7 The Contractor may, if he so desires, reduce the value of Bank Guarantee(s) submitted against advance payments after every six (6) months to the extent of advance actually adjusted. The application for reduction in the value of the Bank Guarantee shall be submitted to the Project Manager.

12.3 **Payment Against Supply of Materials/Equipment:**

12.3.1 75% of the of Ex-works supply price as per the approved billing break-up minus advance adjustment on pro-rata basis (e.g. 65% if the advance paid till then is 10%) along with 100% taxes & duties stipulated under clause 8, Section-2A, Volume-I of Bid specification as may be applicable shall be paid on pro-rata basis within 30 days from the date of submission of invoice and the related documents as mentioned below:

(i)	Invoice (detailing taxes & duties)	:	1 original + 2 copies
(ii)	Packing slip for each consignment included in invoice.		3 copies
(iii)	Pre-despatch clearance certificate by the Owner wherever applicable or Supplier's certificate confirming that IIA/ Mahagenco inspection is not applicable.	:	1 original + 2 copies
(iv)	Copy of Stores Receipt Note (SRN) issued by Owner's site authority.	:	1 original + 2 copies

12.3.2 The entire amount of applicable taxes and duties payable/reimbursable as per Clause No. 8.0, Section 2A, Volume-I of Bid Specification shall be paid/reimbursed along with the payment of respective invoice.

12.3.3 25% payment of invoice values shall be retained and out of which 15% payment of invoice values shall be released on achievement of important milestones in the project completion ,as stipulated below.

12.3.4 **Milestone Payments :**

15% payment of invoice value out of retained 25% of invoice value shall be released within 30 days from the date of achievement of milestones of each FGD unit separately as under and submission of the application of release of respective payment:

Sr.	Milestone Activity	% of Payment
1	Supply & Erection of Booster Fans	2

Sr.	Milestone Activity	% of Payment
ii	Supply & Erection of Ball Mill	2
iii	Supply & Erection of Absorber with limestone slurry pumps & Spray system.	3
iv	Supply & Erection of Limestone & Gypsum Handling System	2
v	Commissioning of all above System	2
vi	Trial run of the FGD system	2
vii	Signing of O&M Contract	2

For claiming above payments, the contractor, along with his application for release of the payment, shall submit the certificate issued by the project manager to the effect that the said milestone is achieved and supplies to achieve said milestone are completed by the contractor.

12.4 **Final Payment against Supply of Equipment/material:**

12.4.1 The balance 10% payment against supply of the equipment/material, shall be released after completion of successful PG Test against submission of application for release of payment along with

i) Certificate issued by the owner/engineer declaring completion of successful Performance Guarantee Test.

ii) Certificate issued by the Project Manager declaring the completion of all the supplies to be made against the contract.

12.5 **Payment of Inland Freight Charges:**

100% Inland Freight charges along with applicable taxes and duties thereon shall be paid to the contractor on receipt of the respective material at site against submission of invoice and Copy of Stores Receipt Note (SRN) issued by the site officials.

12.6 **Payments against Statutory Variation:**

100% Payments towards Statutory Variation as per clause no. 9.0, Section 2A, Volume-I of Bid Specification shall be made to the contractor along with payment of respective invoice and documentary evidence of applicability of such statutory variations.

12.7 **Statutory Deductions (Deduction of Tax at Source):**

12.7.1 Statutory deduction towards Income Tax under the Income Tax Act and any other taxes & duties as may be applicable under any other act(s), shall be made by the owner from the contractor's respective invoices, as per the prevailing statutory requirements and necessary TDS certificate shall be issued in favour of the contractor.

12.7.2 However, if the contractor submits the certificate(s) from the respective statutory authorities exempting the contractor from deduction of such tax(es)

or allowing deduction at lower rate or allowing deduction of certain amount, as the case may be, the action as per the stipulations of the certificate shall be taken while releasing the payments to the Contractor.

12.7.3 As per the provisions of Building & Other Construction Workers Act-1996, BOCW cess@1% of contract price shall be deducted from the invoices of the Contractor and deposited to the concerned authorities. Any increase or decrease in the rate from the next day of the Record Date shall accrue to the Owner.

13.0 TERMS OF PAYMENT FOR SERVICES

As Stipulated under Clause 27.0, Section-2B, Volume-I of bid specification.

13.1 Application for the Payments:

13.1.1 For all payments, the application and the invoices along with the documents listed in the relevant clauses of terms of payment shall be submitted by the Contractor to the Project Manager. However, for the Advance Payment, the application and the invoices along with the documents listed in the relevant clauses of terms of payment shall be submitted by the Contractor to the Chief Engineer (P&P) & the advance payment shall be released from Head Office, Prakashgad, Mumbai.

13.1.2 The invoice (except in case of advance payment), shall invariably contain the Work Order (approved BBU) number, Item code as per the Work Order, the date completion of the particular service and any other details called for.

13.1.3 Each such application shall state the amount claimed and shall set forth in detail, in the order of the Work Order, particulars of the services rendered pursuant to the contract. No sum shall be included in any payment application in respect of the service that, according to the decision of the Engineer, does not comply with the contract.

13.1.4 The payments shall be released by the Project Manager/HO or the financing institute (s) with whom the owner has tied up the funding for this project.

13.1.5 The owner, as per guidelines and conditions specified herein, shall arrange the payment to the contractor only for the services rendered under the contract. All payments during the currency of the contract shall be "on account" payments only. The payments shall be made in Indian Rupees as per the contract.

13.2 Advance Payment:

13.2.1 10% of contract price and taxes payable on the advance payment, if any, shall be paid within 30 days upon mobilisation of contractor's establishment at site

for undertaking services against this contract and submission of the documents as under:

i) Invoice in triplicate detailing taxes & duties (one original + two copies).
ii) A Copy of Letter of Award issued by the owner duly acknowledged by the contractor.
iii) A copy of the acceptance of the contract performance security issued by the owner/ the Project Manager.
iv) A copy of the acceptance of the bank guarantee of equivalent amount submitted by the contractor against advance payment.
v) A copy of "site mobilisation of contractor's establishment" certificate issued by the Project Manager.
vi) A copy of All Risk Marine-cum-Erection Insurance.

13.2.2 In the event of order for more than one unit, the unit wise advance shall be in proportion with the Contract Price allocated to the respective unit.

13.2.3 The advance paid as above shall be interest free up to the scheduled date of Taking over of the unit as per the approved project schedule. The advance shall be adjusted against the Services rendered by the contractor on prorate basis and shall be determined by the value of Services rendered by the contractor in against the contract irrespective of the fact whether payment against such Services rendered are made by the owner or otherwise. However, the contractor may seek accelerated/onetime adjustment of the advance on or before the scheduled date of Taking over of the unit as per the approved project schedule.

13.2.4 For the un-recovered advance, if any, beyond the scheduled date of completion of trial operation of the unit as per the approved project schedule, interest at the rate of of i) one percent (1%) higher than the rate of borrowing by the owner for this project or ii) the prevailing Retail Prime Lending Rate (RPLR) of State Bank of India whichever is higher shall be levied.

13.2.5 The Contractor may, if he so desires, reduce the value of Bank Guarantee(s) submitted against advance payments after every six (6) months to the extent of advance actually adjusted. The application for reduction in the value of the Bank Guarantee shall be submitted to the Project Manager.

13.3 **Payments towards Services Rendered:**

13.3.1 75% of the Basic Contract Price as per the approved billing breakup minus advance adjustment on prorate basis (e.g.65%+10% advance) together with GST as stipulated under Clause No. 23, Section-2B, Volume-I of Bid specification above shall be paid on prorate basis within 30 days from the date of submission of the invoice and related documents as mentioned below:

allowing deduction at lower rate or allowing deduction of certain amount, as the case may be, the action as per the stipulations of the certificate shall be taken while releasing the payments to the Contractor.

13.7.3 As per provisions of Building & Other Construction Workers Act-1996 (BOCW) cess @1% of the Contract Price shall be deducted from the invoices of the Contractor and deposited to the concerned authorities. Any increase or decrease in the rate from the next day to the Record Date shall accrue to the Owner.

14.0 O&M FOR 3 YEARS CONTRACT:

As stipulated in Section-4 A, B & C, Volume-I of bid specification.

14.1 Scope of the Contract

The scope of work shall completely cover the Operation & Maintenance of FGD plant for a period of 3 years. Supply of all types of maintenance spares, consumables (excluding Limestone) and critical spares required for entire period of 3 years is in the scope of the contractor. Contractor has to maintain all the spares required for planned maintenance, major breakdown and annual overhaul based on his experience.

14.2 O&M Contract Price

As per tender terms & conditions, O&M cost for 1st year shall be 2% of the EPC contract value (excluding applicable taxes) and for subsequent years 3% escalation shall be given on the previous year's O&M cost. The per year value for O&M of FGD for Units 8, 9 & 10 shall be as under:

Sr.	Year	Annual Price for O&M in Rs. Cr
Tender Price excluding applicable taxes & duties		1125.46
1	First Year	22.51
2	Second Year	23.18
3	Third Year	23.88
Total Contract Price for 3 years (excl. taxes)		69.57
Total Contract Price for 3 years (incl. taxes)		82.10

The total O&M contract price for 3 years shall be ₹ 69.57 Crore excluding GST (Rs. Sixty Nine Crore and Fifty Seven Lakh only) and ₹ 82.10 Crore including GST (Rs. Eighty Two Crore and Ten Lakh only).

14.3 O&M Contract Period:

14.3.1 The contract period shall be 3 years from the date of completion of PG Test of the FGD, provided the PG tests of all the units are accepted by the owner.

In case, the PG test is not acceptable to Mahagenco, the contractor shall perform the PG test after necessary corrections/modifications in the system.

14.3.2 Contractor shall commence the O&M work of the individual unit from the next day on which PG test of the unit is accepted by owner. However commencement date for O&M contract shall be the date on which PG test of last unit is accepted. As such contract period of 3 years shall commence from this date.

14.3.3 Under such circumstances compensation for O&M work of completed units till acceptance of PG tests of last unit shall be granted and will be calculated as per rates mentioned in Clause No. 2.0, Section-4C, Volume-I of bid specification. For this purpose applicable rates shall be the monthly rates applicable for the first year of O&M Contract and no escalation shall be given.

14.4 **Payment Terms:**

Payment towards price for O&M of the plant shall be released on Pro-rata basis during O&M of the plant for each month. The payment towards O&M shall be released by Chief Engineer (O&M), Koradi TPS on Monthly basis along with 100% applicable taxes & duties as per provisions of Clause No. 26.0, Section-4B, Volume-I of bid specification.

14.5 **Taxes and Duties:**

The taxes & duties shall be paid to the contractor for the O&M services rendered against this contract as applicable, as stipulated under the Clause No. 23, Section-4B, Volume-I of bid specification.

15.0 INSURANCE:

15.1 Insurance for EPC Contract shall be maintained as per Clause No. 28, Section-2 and Clause- 6.0, Section-2B, Volume-I of Bid Specification.

15.2 The terms of Insurance during O&M Contract shall be as per Clause No. 6, Section-4B, Volume-I of Bid Specification.

16.0 LIQUIDATED DAMAGES -

16.1 **Liquidated Damages EPC Part :**

Liquidated damages shall be as stipulated under Clause No.30, Section-2, Volume-I of bid specification.

16.1.1 **Liquidated Damages for Delay in Completion of Works:**

If the contractor fails to complete the works covered under the contract for the FGD System as per provisions of the terms and conditions of the contract within the guaranteed work completion period as per Schedule – 6 of the contract, the contractor shall pay liquidated damages to the owner (along with the applicable GST on LD) at the rate stipulated under Clause No. 6.1, Section – 3, Volume – I of the contract. For this purpose, the date of completion of work shall be the date on which Trial Operation of each Unit (As per Schedule-6 Table Sr. No. 1) is completed.

16.1.2 **Liquidated Damages for failure to meet Performance Guarantees:**
If after the completion of the performance guarantee test in accordance with the Clause No.39, Section-2, Volume-I of bid specification, it is proven that the performance guarantees are deviating from their value guaranteed by the contractor as stipulated under the Clause No. 6.2, Section - 3, Volume – I of the contract, the contractor shall pay the owner the Liquidated Damages as stipulated thereunder.

16.1.3 The aggregate liability of the contractor towards payment of Liquidated Damages stipulated under clause Nos. 30.1 and 30.2, Section-2, Volume-I of bid specification shall not exceed 10% and 7.5 % of the contract price respectively. For the purpose of the clause No 30.0, Section-2, Volume-I of bid specification the contract price shall mean the total contract price as per Price Schedule (Schedule-I) of this contract along with amount of taxes & duties. The overall cap for liquidated damages against Cl. No. 30.1 & 30.2, Section-2, Volume-I of bid specification shall be limited to 15% of contract price indicated at Price Schedule along with amount of taxes & duties.

16.2 **Liquidated Damages – O&M Part :**

Liquidated damages shall be as Stipulated under Clause-30, Section-4A, Volume-I and Clause-4.0, Section-4C, Volume-I of bid specification.

16.2.1 The Liquidated Damages shall be levied on Availability of FGD Unit, if not achieved at the end of every month as Guaranteed by the bidder in Schedule-7. The LD shall be levied in accordance with Clause No. 4.0, Section 4C, Volume-I of bid specification.

16.2.2 Monthly Contract Value shall be considered for calculating the Liquidated Damages for failure to meet availability. The availability shall be calculated as specified under Clause No. 4.1, Section 4C, Volume-I of bid specification. For this purpose the payment shall be the monthly as indicated in Clause No. 3.0, Section 4C, Volume-I of bid specification.

16.2.3 The rates of Liquidated Damages to meet plant availability shall be as per Clause No. 4.3, Section 4C, Volume-I of bid specification.

16.2.4 The Liquidated damages shall be limited to 10% of the contract value for corresponding month in which availability is calculated excluding taxes & duties.

16.2.5 Taxes & duties as applicable on Liquidated Damages shall be on account of the contractor. Mahagenco shall recover the same along with Liquidated Damages from the contractor.

17.0 **MSPGCL'S REPRESENTATIVE AT SITE:**

Chief Engineer (Project), Koradi and/or his representative appointed for the purpose shall be MSPGCL's representative at site and shall act as In-charge for all site works for the EPC contract purpose. The Contractor's Resident Engineer shall report to them for all day to day works.

18.0 CONSIGNEE :

All the goods supplied pursuant to the contract shall be consigned to,

M/s. Shapoorji Pallonji And Company Private Limited,
C/o. Chief Engineer (Project), Koradi
Site Koradi TPS,
Maharashtra State Power Gen. Co. Ltd.,
Koradi TPS, Koradi.

19.0 MATERIAL INSPECTION & MDCC:

For Material Inspection and MDCC, Clause No. 3.0 & 4.0, Section -2A, Volume -I of Bid specification shall be applicable.

Controller of Quality shall be Chief Engineer (Construction), Koradi. Review and carrying out of material inspection before despatch & issue of MDCC shall be carried out by Consultant M/s. Fichtner Consulting Engineers (India) Pvt. Ltd.

20.0 FORCE MAJEURE:

No Party will be responsible for non-performance of any or all of their obligations under this Agreement if such non-performance is due to reasons beyond the reasonable control of the Parties. "Force Majeure" situations are also included in the expression "beyond the reasonable control of the Parties" including, but not restricted to acts of god, declared or undeclared war, riots, civil wars, fires, floods, epidemics, strikes, freight embargoes, expropriation by Government authorities, rebellion, sabotage, abrupt change political / economical situations, depreciation of currency.

Provisions of clause No. 62.0, Section 2 & clause No. 62.0, Section-4A, Volume-I of Bid specification shall be applicable for force majeure.

21.0 TERMINATION OF CONTRACT BY MSPGCL:

The owner (MSPGCL), if reaches to the conclusion that the execution of the work is getting delayed inordinately and the contractor is wilfully not taking adequate measures to makeup the delay or is not capable to take adequate measures to make up the delays, apart from levying Liquidated Damages, the owner may invoke provisions of clause no. 61.0, Section-2 & clause no. 61, Section-4A, Volume-I of Bid specification.

22.0 ARBITRATION :

THE ARBITRATION AND CONCILIATION ACT, 1996 (including amendments thereto) and the rules thereunder, and any statutory notification thereof shall apply to the arbitration proceedings. If any disputes and differences of any kind whatsoever arising out of or in connection with the contract shall be as per clause no. 64, Section-2 & clause no. 64, Section-4A, Volume-I of Bid Specification.

23.0 JURISDICTION OF THE CONTRACT :

The contract shall be governed by the Indian laws and will be subject to the jurisdiction of the Courts in Mumbai, having jurisdiction to entertain the dispute.

24.0 OWNER'S CONSULTANT:

M/s. Fichtner Consulting Engineers (India) Pvt. Ltd. Chennai is Owner's consultant for this project. The postal address of consultant is as under:

M/s. Fichtner Consulting Engineers (India) Pvt. Ltd.
Menon Eternity, 9th Floor,
No. 165, St. Mary's Road, Alwarpet,
Chennai 600 018, India.
Fax: +91-44-45932809
Phone : +91-44-45932600
E-mail: fichtner@fichtnerindia.com Web: www.fichtner.co.in

This Letter of Award (LOA) is not exhaustive and is not intended to cover the entire scope and terms & conditions of the contract. All terms and conditions shall be applicable as per the bid specification as prescribed in E-Tender No. 3000035577 read with subsequent corrigendum, addendum, correspondence, amendments, clarifications, resolutions etc.

It is requested to confirm the acceptance of Letter of Award within 7 days from receipt of this letter on a letter head of the company duly signed & sealed by the authorized signatory along with signed & stamped copy of this LoA.

Thanking you,

Yours truly,

Chief Engineer (P&P)

Copy s.w.rs.to: (By email)
1. Director (Projects)/(Operations)/(Finance), MSPGCL, Mumbai
2. Executive Director (Projects)/(O&M-I/II), MSPGCL, Mumbai.

Copy f. w. cs to: (By email)
1. Chief Engineer (Projects) MSPGCL, Koradi.
2. CGM (Finance)/ (Accounts) MSPGCL, Mumbai.
3. Chief Engineer (Civil-I/II) MSPGCL, Dharavi, Mumbai / Bhusawal.
4. Chief Engineer (Const.) MSPGCL, Koradi.
5. Chief Engineer (O&M) MSPGCL, Koradi.

Copy to: (By email)
1. OSD to C.M.D. Mumbai
2. GM (Accounts) MSPGCL, Mumbai.
3. Sr. Manager (Loan), MSPGCL, Mumbai.
4. Sr. Manager (P& P, Accounts), Mumbai.

Annexure - II-A

Preparation of Hydro Geological Investigation Report for Approval of Rain Water Harvesting System, at Koradi

REPORT PREPARED BY

Surya Envirotech,

237 Hanuman Nagar, Nagpur

REPORT PREPARED FOR

Maharashtra State Power Generation Company Ltd. [MAHAGENCO]

MAHAGENCO

Maharashtra State Power Generation Co. Ltd.

June 2016

FOREWORD

M/s Maharashtra State Power Generation Company Limited (MSPGCL), Koradi 3x660 Coal Based Thermal Power Plant, Koradi, Taluka Kamptee Dist. Nagpur has resolute to prepare **"Preparation of Hydro Geological Investigation Report for Approval of Rain Water Harvesting System, at Koradi"** to eliminate the adverse effect on ground water occurred due to the expansion activity at 3x660 MW Coal Based Thermal Power Plant at Koradi Dist. Nagpur.

Keeping in mind the concept of sustainable development the management of Maharashtra State Power Generation Company Limited (MSPGCL), Koradi has decided to implement ground water recharge through rain water harvesting system in the plant area. To carry out the scientific study for the same, project authority retained **M/s Surya Envirotech, Nagpur** to undertake the study and **"Preparation of Hydro Geological Investigation Report for Approval of Rain Water Harvesting System, at Koradi"**

The timely cooperation and assistance rendered by officials of M/s MSPGCL is gratefully acknowledged.

Place: Nagpur

Date: 23/06/2016

Mr. Milind Joshi

Director Surya Envirotech

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Chapter I
Introduction

Preamble

Maharashtra State Power Generation Company Ltd. (MAHAGENCO) Koradi is one of the largest Thermal Power Plant, Taluka Kamptee, District Nagpur, and Maharashtra State. To meet the energy requirements of rural and urban sector and the industrial demand, MAHAGENCO has been playing a leading role by constructing and operating power generating plants at Koradi in Maharashtra State. The project is one of the most ecofriendly projects with minimum impact on environment.

Water requirement will be as follow-51MM^3 /year for 3 units, 40MM^3 recycled water from NMC Sewage Treatment Plant (Bhandewadi), 11MM^3 from existing source (pench). It's probably the first power project in India, Utilizing water from the treated sewage water of a city, thus avoiding use of fresh water which can be utilized for other necessary requirements such as drinking, agriculture etc.

With a view to minimize the gap between power demand and actual supply, MAHAGENCO has decoded to install a 3X660MW Thermal Power Plant, village Koradi, Taluka Kamptee, District Nagpur, Maharashtra State.

The Expansion power plant site is situated nearly 18 km in southeastern direction from the district place i.e. Nagpur. It is accessible by all season tar road from Nagpur. **(Fig. 1: Index map).**

1.0 Reconnaissance

Maharashtra State Power Generation Company proposes to install 3x660 MW Thermal Power Project at Koradi, Taluka Kamptee, District Nagpur, Maharashtra State.

1.1 Project Description

The Expansion Koradi Thermal Power Project (3X660 MW) is a coal based thermal power project based on super-critical boiler parameters. It shall be located in Koradi between Panjra and Mahadula villages. Koradi town is at 1-1.5 km and district head quarter is 15 kms from the expansion project site. The geographical location of the township and ash disposal areas are as follows:

The main plant and township area is located from Latitude 21° 24' 09" N and 79° 09' 99" E Longitude and Ash disposal Area is located from 21° 59' 14" N to 22° 00' 36" N Latitude and 85° 10' 36.8" E to 85° 11' 44.64" E Longitude.

The site is approachable from Nagpur-Betul National Highway. The commercial airport is Nagpur located at about 23 km .The Koradi Thermal power plant area is bounded by Panjra village at East, Koradi and Waregaon village at the east, Bokhara village at the West and Nanda and Mahadula at the North. The township is situated very close to the plant site on the East. The expansion project's ash disposal area is located in the South- East of main plant.

1.2 Objectives of the study

Thermal power project consume large quantities of water for their operation, which is obtained from the surface water source, which may affect the surface water hydrology of the area. In addition, there are certain structures and activities which may affect the ground water hydrology also such as – dewatering during construction of the project, construction of water impoundment structure on stream to draw water, construction of raw water reservoir inside main plant area, construction and operation of ash dyke area etc. Further, fresh water becoming a scare resource day by day, MAHAGENCO understands its responsibility towards conservation of surface and ground water resources for the benefit of the project as general population within the study area, (10 km from the boundary of the project.)

1.3 The study area

The present study area is of 10 km radial aerial distance around the Expansion Project site. Out of all the villages 12 villages are selected for sampling. These 12 villages which are in near vicinity of Expanded Thermal Power Plant were selected for sampling of both hydrogeological study as well as study of ground water quality. The map showing villages under study area is shown in **Figure 1.2.**

97% of all fresh water that is found on planet is stored underground. This vast water reserve, on which atleast 1500 million people depend for their drinking water supply, is stored in the pores that exist in materials such as sand and gravel, and in the fractures that are found in rocks such as sandstone and limestone.

Groundwater supplies are recharged by rainwater that infiltrates down through the soil and the unsaturated layer below it. When rainwater reaches the water table and joins an aquifer.

Groundwater supplies are coming under increasing pressure from growing human populations that consume increasing amounts of water as development proceeds. One result is that many groundwater reserves, particularly in arid areas, are being over-exploited with water being abstracted from them at unsustainable rates.

Groundwater is also becoming increasingly polluted. One of the major sources is foul water and sewage from cites in developing countries with inadequate sanitation systems. In many urban aquifers, levels of nitrate are high and potentially dangerous microorganisms are finding their way into wells and boreholes used for drinking water. The rain from rubbish tips and landfills, eventually finding their way into aquifers leach other industries is also polluting groundwater.

Many aquifers are being over-exploited in the sense that is being abstracted from them faster than the average rate of recharge. This leads to a reduction in groundwater in permanent storage and is sometimes called groundwater mining. Development of this kind is unsustainable and deprives future generations of a resource which is being used up by this generation.

M/s SURYA ENVIROTECH Nagpur, a Consultancy Firm working in the field of Environment conservation has been appointed to carry out the Hydro-geological study. This study has been carried out during May 2016 and it pertains to the study area spread over 10 km radius from project site (Fig. 1.2: Study area map).

Table No. 1.1

Sampling Locations

Sr. no.	Village	Distance from Power Plant Site	Direction from Power Plant Site
1	Mahadula	1.0 km	North
2	Panjra(Plant Site)	0.5km	East
3	Bokhara	5.5 km	West
4	Mhasala	7.0 km	Southeast
5	Kawatha,	6.5 km	Southeast
6	Khain	7.5 km	Southeast
7	Lonkhairi	5.5 km	Northeast
8	Waregaon	5.5 km	East
9	Suradevi	2.5 km	Northeast
10	Koradi,	1.0 km	Northeast
11	Nanda	1.5 km	North
12	Khasala	6.0 km	South

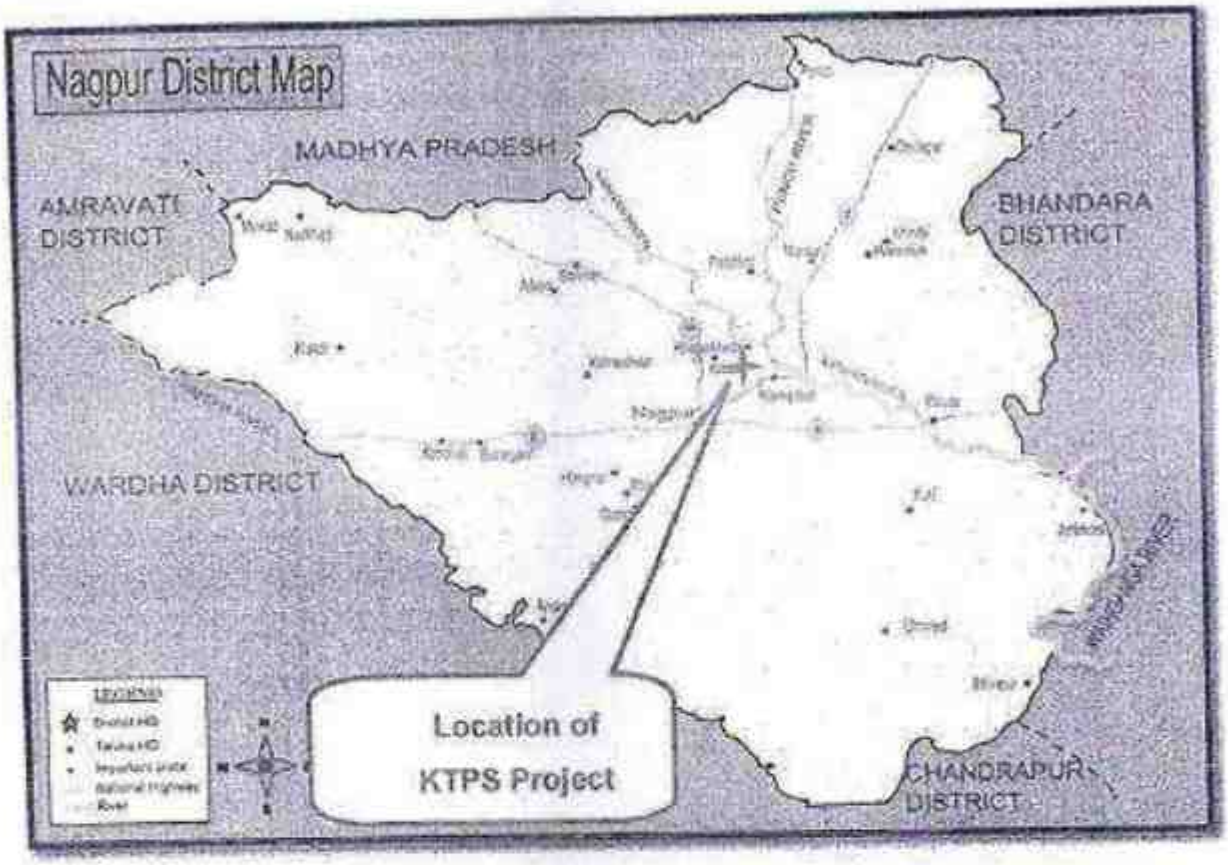


Fig. 1.1: Index map

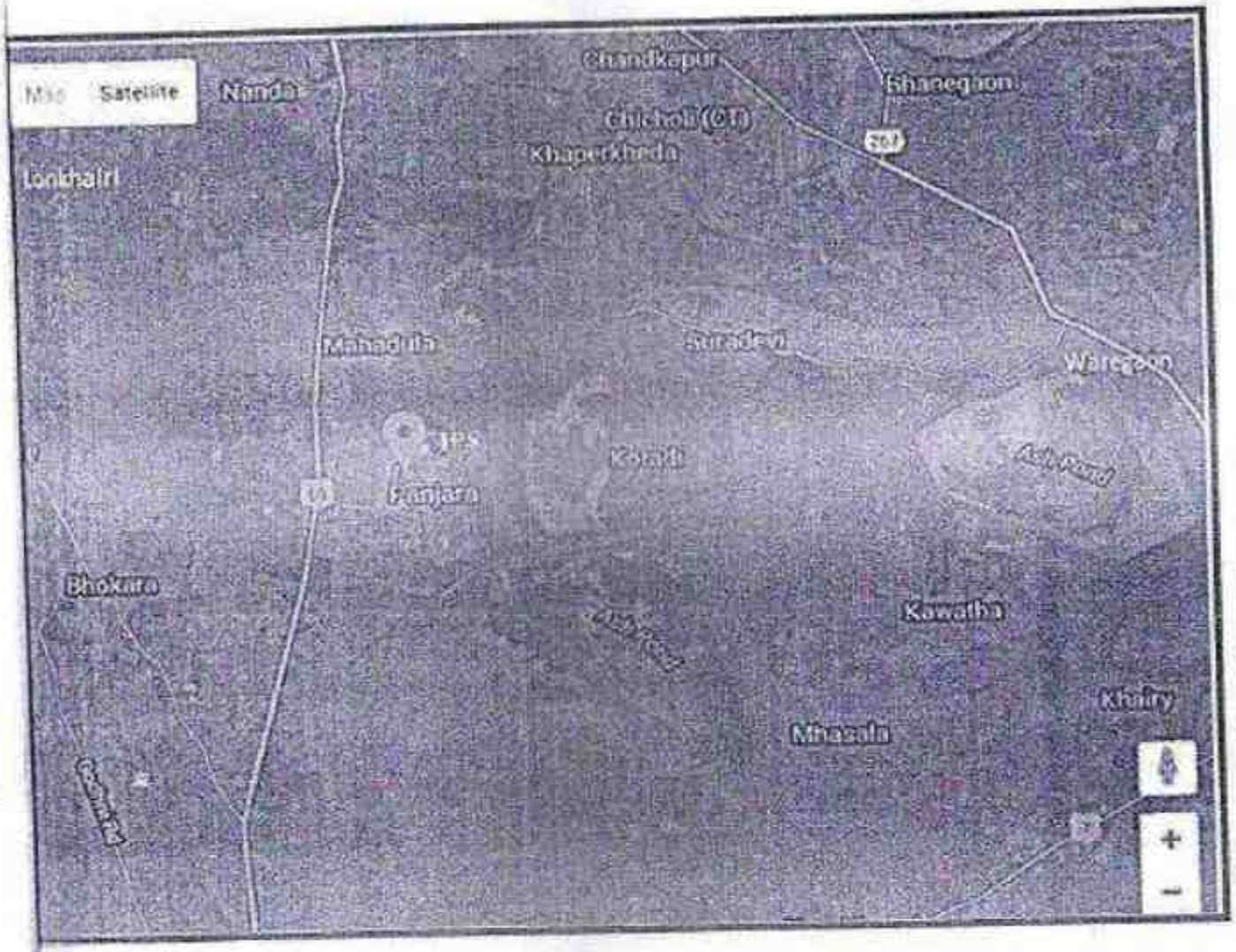


Figure 1.2 Study Area Map

Chapter II
Geology & Hydrogeology

2.0 GEOLOGY

The geology of the Nagpur region is famous for the metamorphic rocks, which occur in all the districts in the Nagpur region except Wardha and some part of Nagpur district. The other geological formation Deccan Traps occur in the Wardha and North and North-West part of Nagpur District.The Koradi Thermal Power Plant premises of the firm is situated in Koradi village. The premises cover an area of about 173.95 hectares i.e., 1.7395 sq.km or 1739513 sq.m. Out of this Rooftop area is around 80057 sq.m, Greenbelt Area is 168987 sq.m, Road/Pavement area is 188023 sq.m, area under other utility is 1302446 sq.m.

The Nagpur region has complex topography of hilly terrain, undulating terrain & plains. Nearly 40% area is occupied by forests having hilly terrains. The Wardha, Wainganga, Painganga, Pranhita, Indravati rivers are forming major basins in the area. The drainage pattern is dendritic to sub parallel. The stratigraphic succession of the geologic formations in the region is given below.

Table 2.1

Stratigraphy of the rock types occurring in the Nagpur Region

Age	Rock Type	Geology	Geographical distribution in Nagpur Region.
Lower Eocene to Upper cretaceous	Igneous Rocks	Deccan Trap, Volcanic lava flows with inter trappean beds.	Wardha and Some parts of Nagpur district & Chandrapur.
		Lamatas and Bagh Beds	Parts of Nagpur.
Jurrassic upper Gondwana	Metamorphic	Chikiala & Kota stages. Lime stone	Sironcha taluka of Gadchiroli district.
Triassic	Sedimentary Rocks	Pachmari & Maler's stages – Clays, Sandstones.	Sironcha taluka of Gadchiroli district.

Age	Rock Type	Geology	Geographical distribution in Nagpur Region.
Permian Lower Gondwana	Sedimentary Rocks	Mangli Beds – Sandstone	Warora Taluka of Chandrapur district.
		Kamptee series – Sandstone, Shale, Coal	Nagpur & Chandrapur district.
		Barakar Series – Sandstone, Shales and Coal.	Nagpur & Chandrapur district.
Upper Carboniferrous	Metamorphic Rocks	Talchir series – Boulders, Green shale, Sand stones, Shales, Clays)	Nagpur & Chandrapur district.
Proterozoic	Sedimentary Rocks	Vindhyan super group (Lime stones, Shales & Sandstones)	Chandrapur district.
		Cuddapah equivalent Limestones & shales	Sironcha Taluka of Gadchiroli district.
Precambrian	Metamorphic Rocks	Sakoli Series Quartzites schists,Phyllites, Iron ore series Quartzites schists,Phyllites,	Gadchiroli, Chandrapur, Nagpur & Bhandara districts.
		Sausar Series Marbles gneisses,schists granite	Nagpur & Bhandara districts.
		Penisular Basement complex (Archeans) Gneisses, schists,Granites	Gadchiroli, Chandrapur, Nagpur and Bhandara Districts

2.1 HYDROGEOLOGY

Hydrogeology map of Nagpur District.The important water bearing formations of Nagpur district are discussed below.

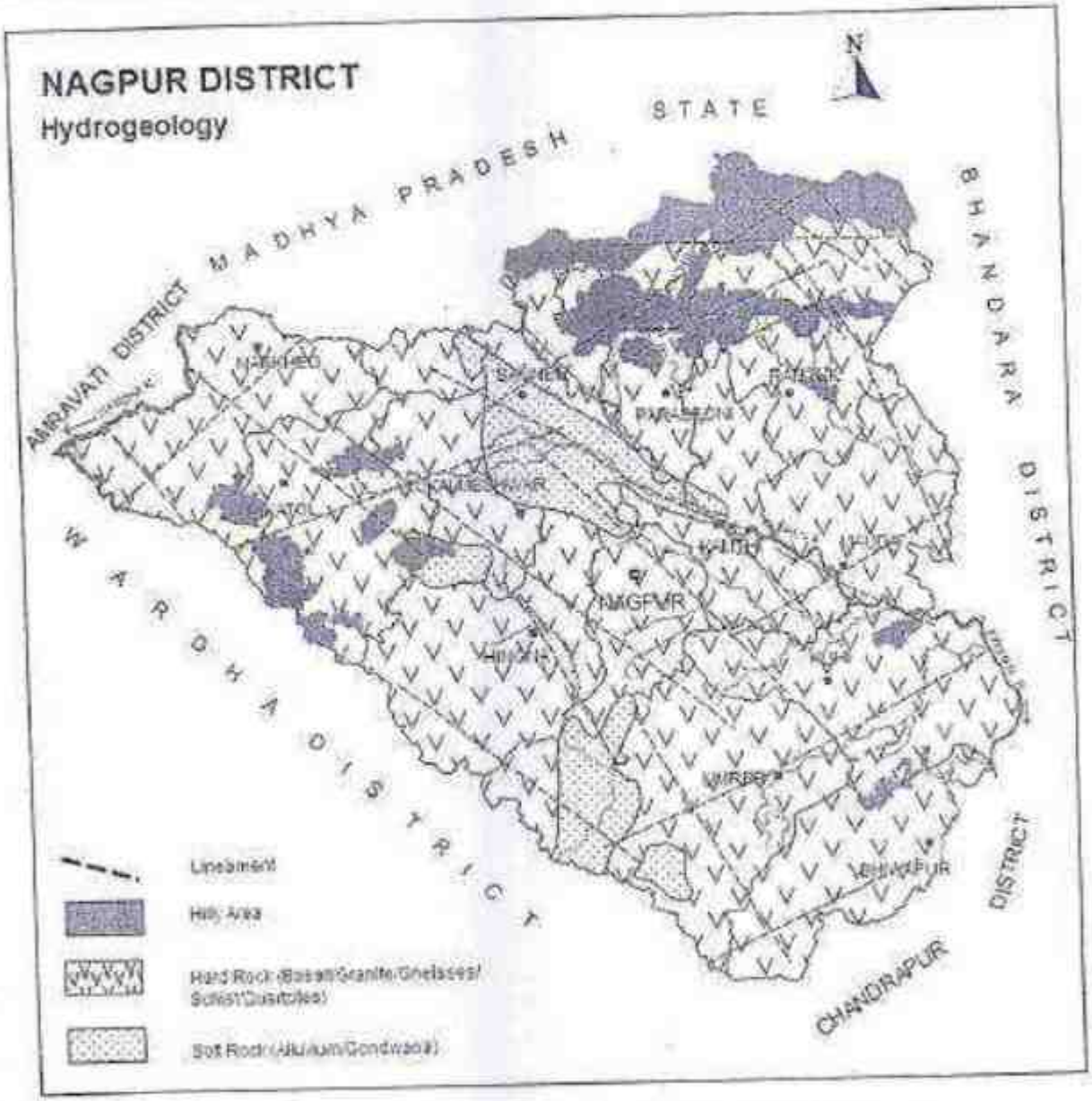


Figure 2.1: A map depicting the hydrogeological features

In the region, occurrence and movement of Groundwater depends upon the rock formation of the area. It is generally influenced by the following factors.

1. Integranulor primary porosity & permeability.
2. Thickness and extent of weathered zones.
3. Topographic setting of the area.
4. Surface water bodies influencing groundwater recharge.
5. Development of joints, fractures, lineaments constituting secondary permeability.

2.1.1 ARCHEAN ROCKS

These are oldest rock type belonging to Dharwarian, Sakoli group and Sausar group in Nagpur, Bhandara, Gondia, Chandrapur and Gadchiroli district. Granite, gneisses, schists are the major rock units. Hydrogeologically they do not possess primary porosity and acts as a media for groundwater occurrence and movement. The aquifer in general occurs between 21 to 40 mtr. Depth from ground level.

2.1.2 PRECAMBRIAN ROCKS

Rocks of Vindhyan & Cuddapah system falls under this age group mainly found in Chandrapur district and Sironcha Taluka of Gadchiroli district. Limestones, Shales and Sandstones are the major litho units. Hydrogeologically limestones form good adquifer due to secondary porosity whereas groundwater availability in shale is very poor. The well depth varies from 6 to 12 mtrs. with yield range 27 to 90 KLPD in winter and 15 to 27 KLPD in summer season.

2.1.3 GONDWANA ROCKS

They are sedimentary rocks mostly comprised of sand stone, shale and coal seams found in Nagpur, Chandrapur and Sironcha tahsil of Gadchiroli dist. Kamptee and Barakar sandstone are most widely spread rocks in this group in Chandrapur & Nagpur dist. The groundwater occurs in confined as well as semi confined condition. The sandstone is good aquifer and Groundwater occurs in abundance due to primary as well as secondary priority and transitivity. The average depth of wells ranges from 6 to 12 mtr. And yielding upto 180 KLPD water in

winter and upto 80 KLPD in summer season. Groundwater Surveys & Development Agency, has drilled large no. of tube wells in this formation, especially for drinking water purposes.

2.1.4 DECCAN TRAPS

The igneous extensive rocks covering entire Wardha district, 50% area of Nagpur district 3% area of Chandrapur district. The basaltic lava flows is only rock type of Deccan Trap in the districts. While considering the occurrence of groundwater in the basaltic hard rocks, which possess very poor primary porosity, it is interesting to note that the basaltic lava flows develop vesicular character, especially in the flow crust. Further secondary features like weathering, jointing and shearing develop storage space, which make the basaltic rocks capable of holding and translating ground water. The average depth of the wells varies from 9 to 15 mtr. And diameter 4 to 8 mtr. The range of water level varies from 3 to 7 mtr. And yield ranges 18 to 90 KLPD in winter and 18 to 45 KLPD in summer.

2.1.5 ALLUVIUM

The alluvium occurs along the Wardha River in Nagpur, Wardha & Chandrapur district along the Wainganga River in Bhandara and Gadhciroli district. The Alluvium deposited along those river banks are good aquifer and water bearing formation is comprised of pebbles, gravels and sand. The average depth of this formation is about 20 to 30 mtrs. The average water level ranges from 10 to 22 mtrs. and yield ranges from 40 to 180 KLPD.

MAJOR RIVERS :

Nagpur	-	Pench, Kanhan, Wardha, Kolar, Wainganga.
Wardha	-	Wardha.
Bhandara	-	Wainganga, Bawanthadi.
Gadchiroli	-	Godavari, Wainganga, Indravati and Pranhita.
Chandrapur	-	Wardha, Painganga, Irai.
Gondia	-	Bagh,Wainganga.
Elevation	-	Minimum – 160 mtr M.S.L. (Gadhiroli district) Maximum – 600 mtr.M.S.L. (Chandrapur district)

The available storage potential of groundwater in Deccan Traps is strictly limited as it is governed by local weathering and fracturing characteristics and water-bearing properties of basaltic formation. It can thus be rapidly depleted by heavy abstraction. The ground water potential of Gondwana sediments occurring below Deccan basalt is not known, as tapping (Drilling & construction of tubewell) soft rock aquifer below hard rock is difficult and costly affair. Most of the dug wells dry up in the summer, causing damage to the crops and plantations. Increasing demand

for water supply could be met from deeper aquifers. In places, there is industrial pollution of groundwater. In rural areas, inadequate sanitation and diffuse agricultural pollution threaten groundwater quality over the long term. Chandrabhaga watershed in Nagpur District, Maharashtra, forms a part of the Deccan plateau. It is characterized by Deccan basaltic Traps underlain by Gondwana sediments. The key groundwater related issues in the area are the following

Table No 2.2

District wise Average water levels in Nagpur Region (Year-2007)

1.Nagpur District Premonsoon Water level in M:	**3.20**
Postmonsoon Water level in M:	**8.20**
2. Major Drainage : Two Rivers	Wardha and Wainganga
3. Land Use (2000-01):	
Forest Area:	1350 sq. km.
Net Area Sown:	5074 sq.km.
Cultivable Area :	5759 sq. km.
4. Soil Type: Medium to deep clay, black cotton soil, medium loamy alluvia soil, shallow sandy, clay red soil	
5.Geology:	
Recent :	Alluvium
Upper Cretaceous-Lower Eocene :	Deccan Trap Basalt
Cretaceous :	Lameta
Permian to Carboniferous :	Gondwana
Archean :	Crystalline rocks
6. Hydrogeology:	
Water Bearing Formation : Archean- Weathered and fractured Granite Gneiss, Gondwana- Kamptee and Barakar Sandstone, Trap-covered Gondwana; Deccan Trap-Weathered/Fractured /Jointed Massive or Vesicular Basalt; Alluvium-Sand and Gravel	
Premonsoon Depth to Water Level (May-2011) :	0.08 to 15.59 m bgl
Postmonsoon Depth to Water Level (Nov.-2011) :	0.60 to 10.60 m bgl
Premonsoon Water Level Trend (2001-2010) :	Rise: 0.02 to 0.54 m/year Fall: 0.006 to 0.86 m/year
Postmonsoon Water Level Trend (1998-2007):	Rise: Negligible to 0.63 m/year Fall: 0.001 to 0.24 m/year

2.2 CLIMATE AND RAINFALL

The climate of the district is characterized by a hot summer and general dryness throughout the year except during the south-west monsoon season, i.e., June to September. The mean minimum temperature is 12°C and means maximum temperature is more than 45°C.

The normal annual rainfall (1901-1992) over the district ranges from about 1000 mm to 1200 mm. It is the minimum in the western parts around Katol (985.4mm) and increases in the eastern direction and reaches a maximum around Umrer (1213.6 mm).

Rainfall data from 14 rain gauge stations for the periods 2002-2011 are given in table 3. The average annual rainfall for the last 10 years ranges from 753.9 in Hingni to 1164.9 in Umrer. It is also observed that all stations have recoded average annual rainfall within the range of district normal annual rainfall except at Hingni, Katol, Narkhed and Kamleshwar where it is less than.

Table No 2.3

Rainfall data of Nagpur District (2002-2011)

In mm Taluka	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Nagpur city	1176.1	1431.5	702.3	973.4	975.7	741	952.9	954.4	1395.3	879.4	1018.2
Nagpur gramin	966.7	1229	689	1274.7	1205.5	968.3	953.2	947.4	1494.7	913.8	1064.0
Kamthi	1035.8	1208.7	707.1	1475.8	1178.2	1205	791.6	1032.6	1098.6	861.3	1059.5
Hingni	479.2	770	583.3	920.4	814.9	806	683.1	724.7	942.2	814.8	753.9
Ramtek	1101.3	822.5	733.9	1435.5	1133	1370.8	865.3	905.2	1184	885.1	1043.7
Parshi wani	850.1	1056.9	858.4	1239.5	1106.2	878.8	1068.6	983.6	1086.6	1043.8	1017.3
Wadha	904	1171.6	631.3	1679.1	1114.3	1030.9	814.1	1280.4	1520.5	1366.2	1151.2
Katol	649.6	920.1	555.1	1092.3	937.4	1271.8	773.2	888.4	1027.9	801.8	891.8
Narkhed	822.8	778	606.7	914.9	768.6	1281.3	671	954.1	1136.9	764.9	869.9
Savner	823.6	1063.6	812.6	1497.2	974.1	1209	873.6	941.6	1076.4	945.8	1022.0
Kalmeshwar	740	1092.9	808.6	1320.9	916.4	1203.4	675.9	780.5	1180.5	855.2	957.4
Umred	846.2	1296.8	747.1	1856.3	1014.2	1464	1060.3	926.2	1551.2	887.1	1164.9
Bhiwapur	923.3	1146.3	740.4	1431.2	1045.6	1341.8	853.2	993.7	1690.1	1088.4	1125.4
Kuhi	859.2	1057.2	596.4	1543.8	828.6	1286	817.9	950.3	1291.5	1024.7	1025.6
Average	889.9	1074.7	698.0	1332.5	1000.9	1146.9	846.7	947.4	1262.7	938.0	1011.8

2.3 Geomorphology and Soil Types

The district forms part of Deccan Plateau having flat topped and terraced features. Eastward and northeastwards the landscape changes due to the change in the underlying rocks. The rocks of Gondwana series present a low rolling topography with a poor soil cover and vegetation. On the north the upland ranges are the extension of Satpuras which gradually narrows down towards west. South of these upland range stretches the Ambegad hills, the western extremity of which is the Nagpur district. The Ramtek temple is on the spur of this range. The Girad hill range extends along the southeast and separates the valley of the Kar from that of Jamb upto Kondhali. Another main hill range runs northwards through Katol taluka from Kondhali to Kelod separating the Wardha and Wainganga valleys. The northeastern and east central parts of the district is drained by the Wainganga and its tributaries. The central and western portion is drained by the Wena which is a tributary of Wardha river.

There are six types of soils found in Nagpur district. The details are as follows:

1) **Kali soils:** These are black cotton soils which are fine grained clayey in texture and varies in depth from 1 m to 6 m or more and retain moisture. They are found around Kalmeshwar, Saoner and Nagpur.

2) **Morand soils:** These are predominant in the district. They are black cotton soils with higher percentage of lime than the Kali soils. They are black, grey or light to dark brown in colour, clayey in texture and have a depth of about 1 to 3 m.

3) **Khardi soils:** They are shallow soils mixed with sand and found mainly in hills. These are grey in colour, clay loam in texture.

4) **Bardi soils:** They are red gravel covered with boulders found on summits and slopes of trap hills and are less fertile in nature.

5) **Kachchar soils:** They are mainly found in the banks of Kanhan river and are alluvial soils, loamy in nature and vary in depth from 1 to 3 m.

6) **Wardi soils:** They are red soils with a large amount of sand. They are shallower and clayey loam in nature. They are mainly found in the paddy tracts in the eastern part of the district.

Ground Water Scenario

2.4 Physiography

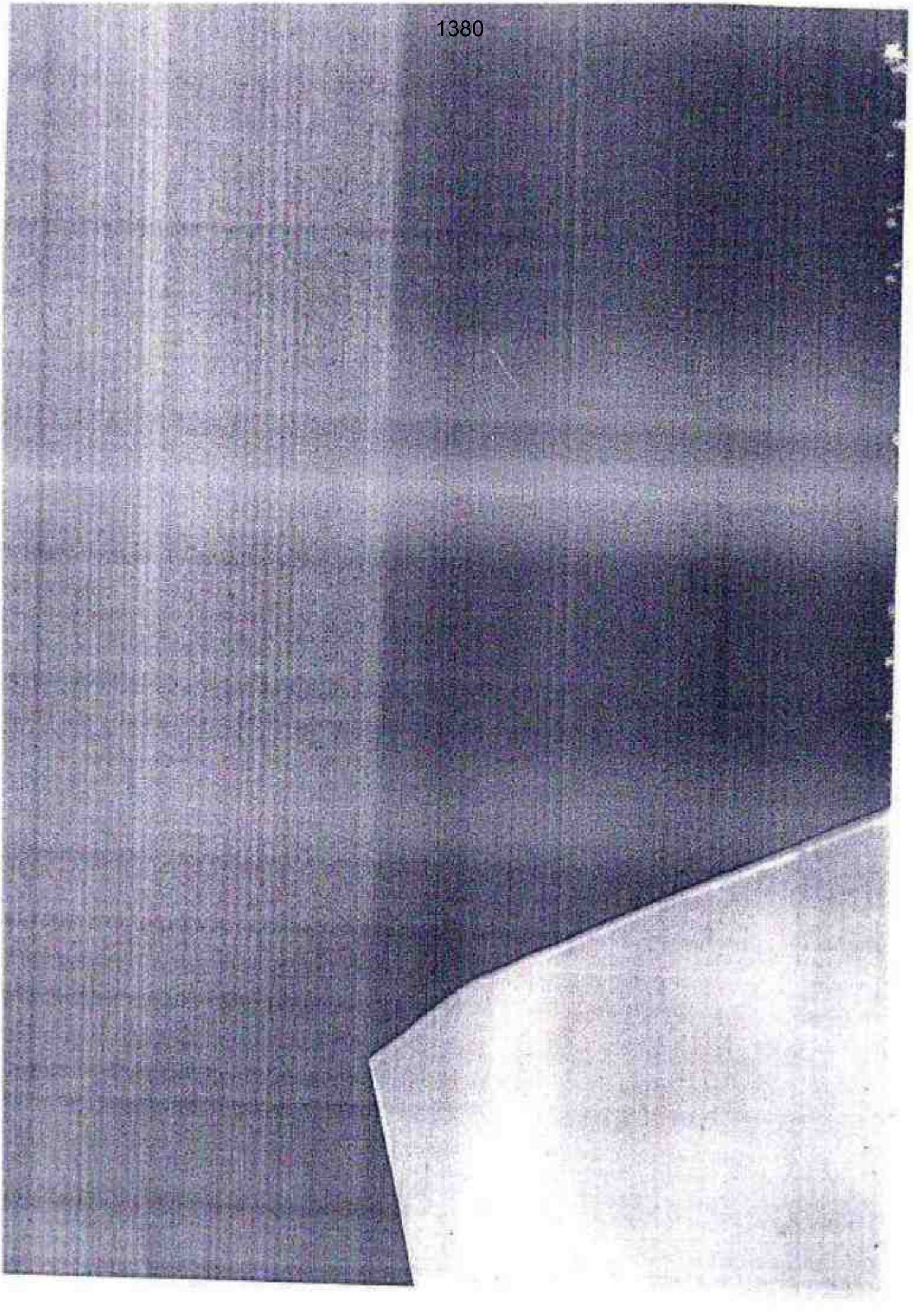
The Koradi Thermal Power Plant area comprises of undulating topography with heigh contour observed in south western part of the factory premises and minimum contour is seen in north eastern part. Thus a variation of 22 m is observed in the area. The physiographic gradient or slope in the area is roughly from south-west corner towards north-east part. The land is covered by coarse grained, black.

In the area, the rainfall runoff is generated follows the physiographic gradient towards north east in general. However, entire site area is devoid of any surface water body. It falls on more or less a water divide and does not show any significant drainage or minor streams.

2.5 GROUND WATER AVAILABILITY

2.5.1 Water Level Scenario

Central Ground Water Board periodically monitors the National Hydrograph Network Stations (NHNS) stations in Nagpur district, four times a year i.e., in January, May (Premonsoon), August and November (Postmonsoon). The data on pre and post monsoon water level along with fluctuation during 2011.



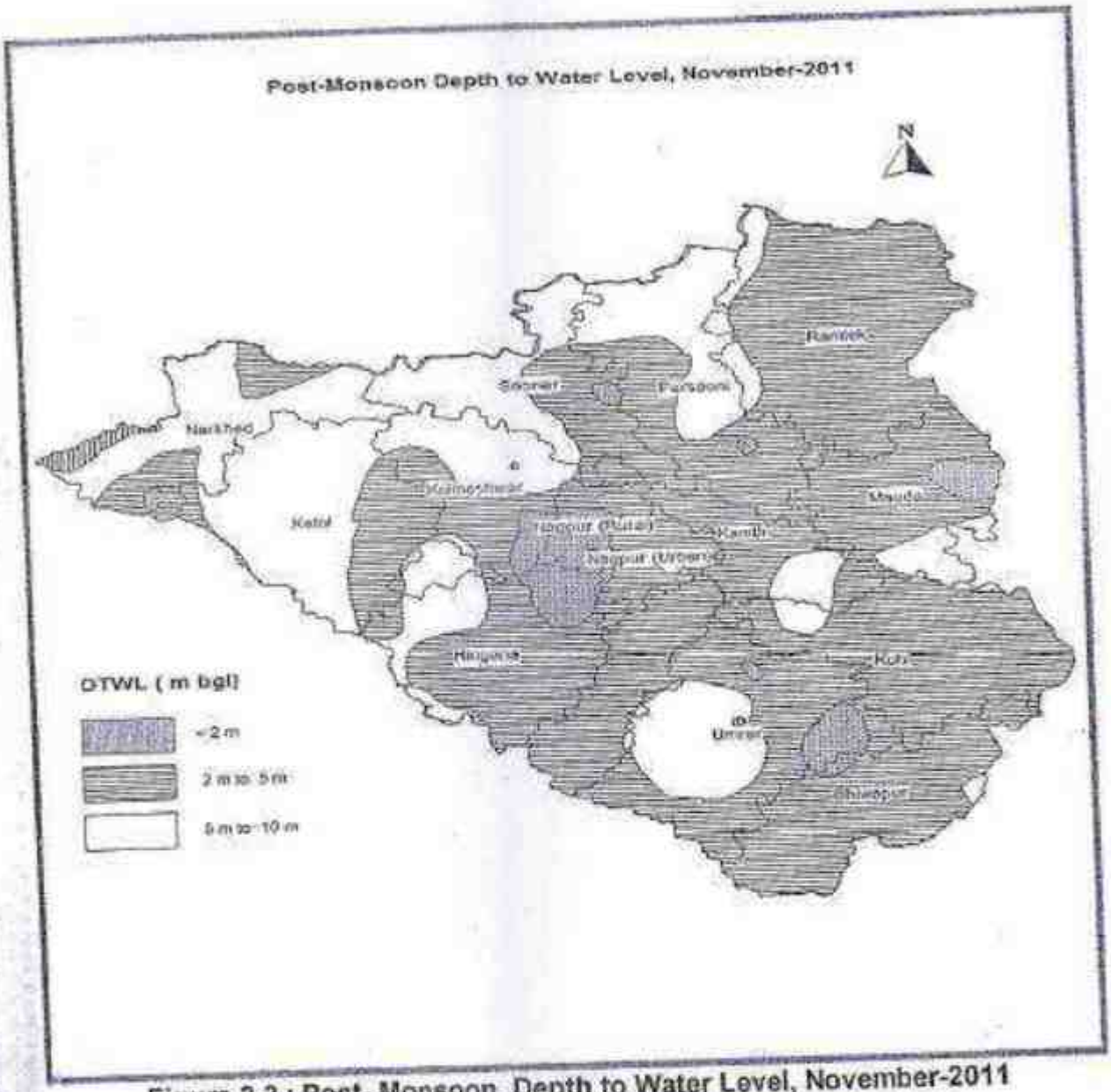


Figure 2.2 : Post- Monsoon Depth to Water Level, November-2011

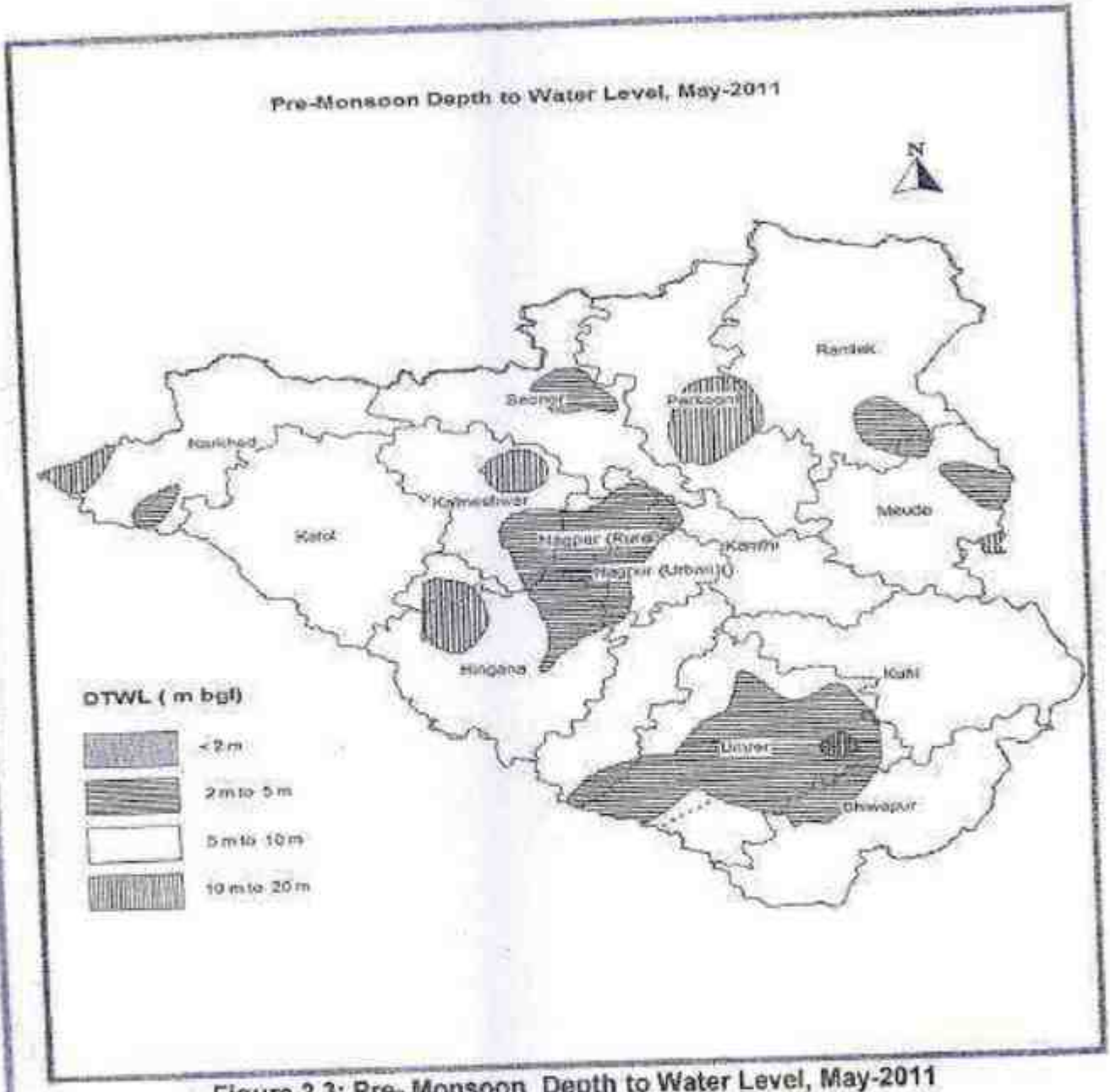


Figure 2.3: Pre- Monsoon Depth to Water Level, May-2011

Table 2.4

Details of Dugwells around site Premises

Sr. No.	Village	Latitude	Longitude	Diameter (m)	Depth (m)	Water Level (m bgl)
1	Bhokhara	N 21°13'41.31"	E 79°4'3.83"	14	14.5	3.5
2	Mahadula	N 21°15'8.22"	E 79°4'3.83"	3.30	10	3.40
3	Koradi	N 21°15'16.14"	E 79°4'3.83"	1.8	3.7	0.8
4	Nanda	N 18°48'24.4"	E 79°4'3.83"	1.5	5.10	1.65
5	Lonkhairi	N 21°13'41.31"	E 79°4'3.83"	3.20	8	2.80
6	Panjra(PlantSite)	N 21°13'41.31"	E 79°4'3.83"	1.3	12.4	1.9
7	Mhasala	N 21°13'41.31"	E 79°4'3.83"	6	14.3	1.7
8	Khasala	N 21°13'41.31"	E 79°4'3.83"	18.6	12.7	1.6
9	Kavatha	N 21°13'41.31"	E 79°4'3.83"	10.9	8	2
10	Khairi	N 18°50'26.2"	E 79°4'3.83"	8.15	6.1	4.9
11	Waregaon	N 21°13'41.31"	E 79°4'3.83"	6.30	14.9	1.9
12	Suradevi	N 21°13'41.31"	E 79°4'3.83"	1.9	3.6	1.7

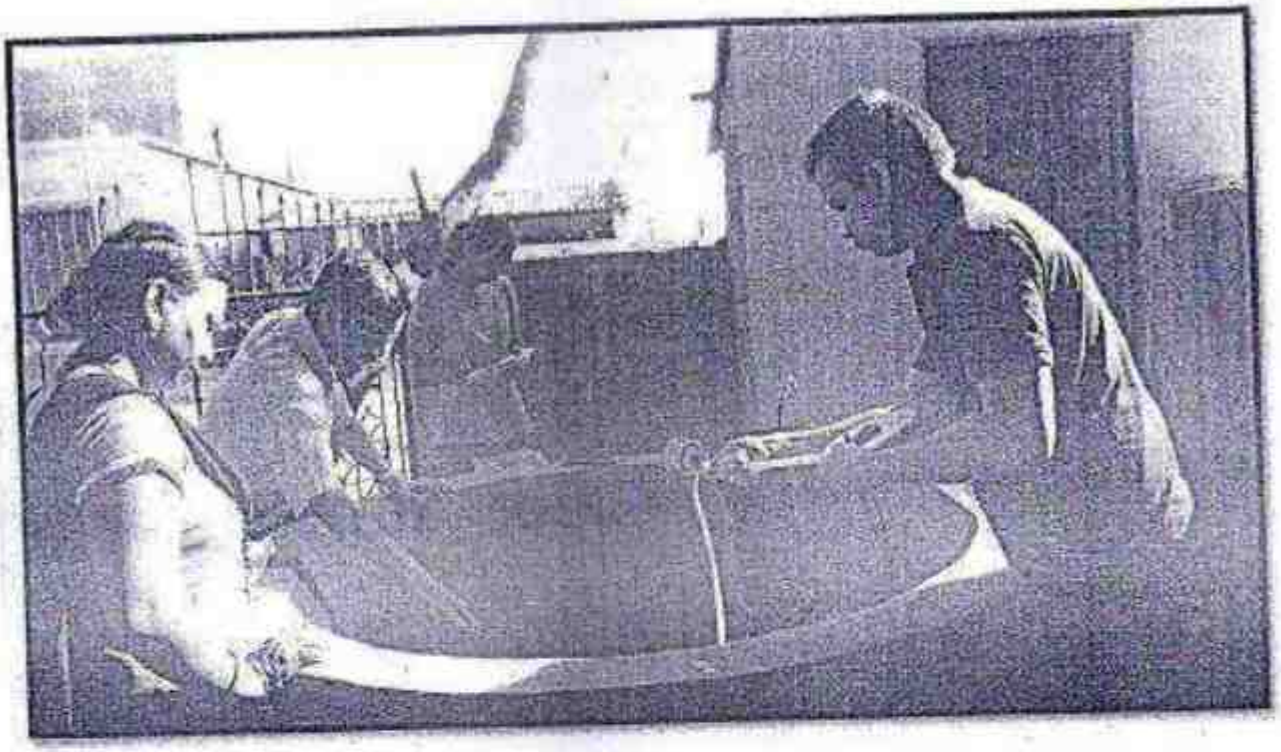


Figure 2.4: Measurement of Ground Water Level

2.5.2 Ground water resources

For planning the abstraction of ground water in the area it is imperative to know the availability of the resources in the area of study. The ground water resources position of the Nagpur area of Nagpur district was taken into consideration since the area comes under Nagpur. The Groundwater resources of Nagpur area sourced from Ground Water Information of Nagpur District prepared by Central Groundwater Board – CGWB, Government of India are detailed below. This area has been rated "Safe" for groundwater development. The relevant part of the ground water resources estimation status of Nagpur is reproduced below (cgwb.gov.in/District Profile/Maharashtra/Nagpur.pdf).

Table 2.5

Ground Water Resources of Nagpur area, Nagpur District.

Area type	Net annual ground water availability (ham/yr)	Annual ground water draft (ham/yr)			Allocation for domestic & industrial requirement supply up to next 25 years (ham/yr.)	Ground water availability for future irrigation (ham/yr)	Stage of ground water development (%)	Category
		Irrigation	Domestic & industrial uses	Total				
Command	246.37	32.29	10.25	42.54				Safe
Non Command	6252.49	1587.56	396.58	1984.14				
TOTAL	6498.49	1619.85	406.83	2026.67	878.77	3928.23	31.19	

Figure 2.5: Preparation for Infiltration Test

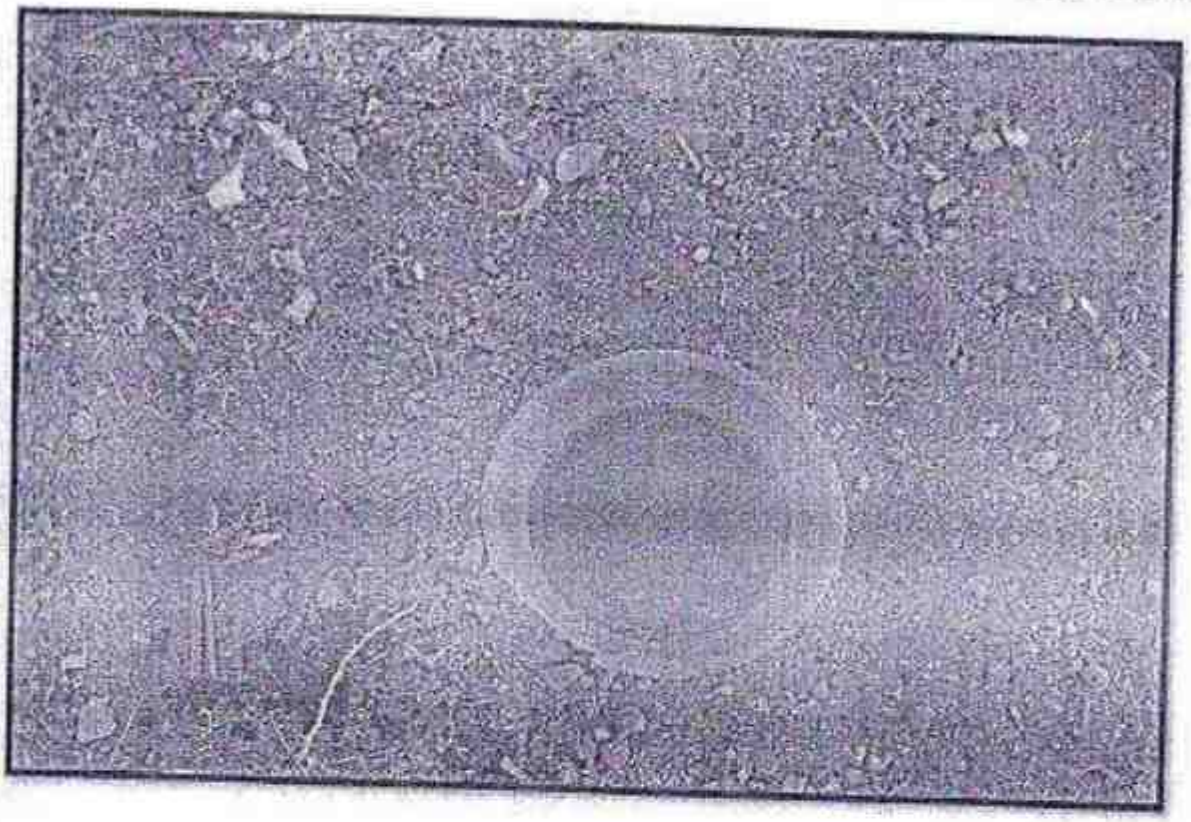


Figure 2.6 : Infiltration Test

2.6 INFILTRATION TEST

Infiltration as the downward entry of water into soil, and infiltration rate (infiltration capacity) as the maximum rate at which a soil will absorb water impounded on the surface at a shallow depth when adequate precautions are taken regarding border, or fringe, effects. The volume of water passing into the soil per unit of area per unit of time.

- Soil compaction due to rain drop impact and other effects. The use of hard agricultural equipment can have consequences on the surface layer of soil.The infiltration test is shown in below Table 2.6.

Table:2.6
Infiltration Test

Sr No.	Name of Village	Height (cm)	InfiltrationRate (min.)	InfiltrationTest (h/infiltration rate)
1	Mahadula	24	3.42	3.42
2	Panjra	24	21.15	1.13
3	Bokhara	24	10.19	2.35
4	Mhasala	24	1.47	16.32
5	Kawatha	24	81.33	0.29
6	Khairy	24	13.70	1.75
7	Lonkhairy	24	21.62	21.62
8	Waregaon	24	12.70	1.88
9	Suradevi	24	10.37	2.31
10	Koradi	24	0.81	0.81
11	Nanda	24	0.75	0.75
12	Khasala	24	5.00	4.8

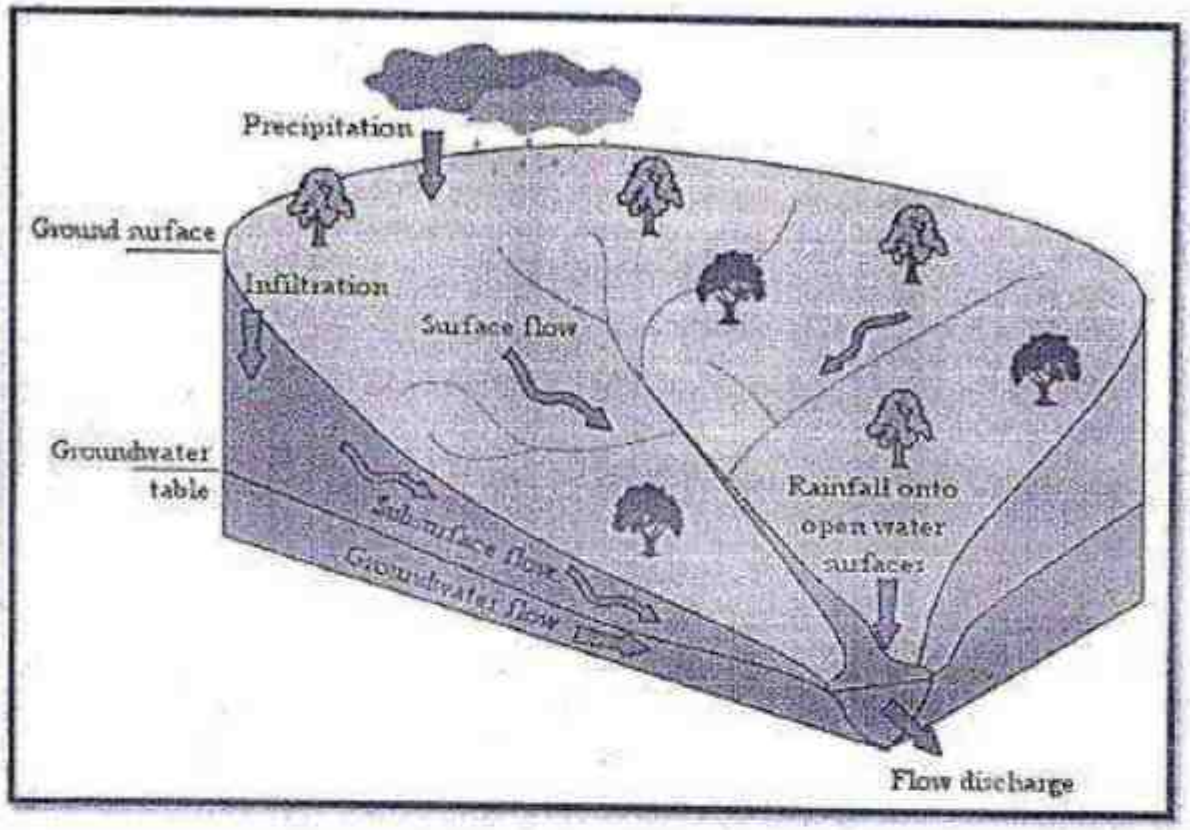


Figure 2.7:The infiltration process depending on soil type and flow

Factors which influence infiltration

The main factors that influence the infiltration are:

- The soil type (texture, structure, hydrodynamic characteristics). The soil characteristics influence capillary forces and adsorption;
- The soil coverage. Vegetation has positive influence on infiltration by increasing the time of water penetration in soil;
- The topography and morphology of slopes;
- The flow supply (rain intensity, irrigation flow);
- The initial condition of soil humidity. Soil humidity is an important factor of infiltration regime. The infiltration regime evolves differently in time for dry or wet soils;

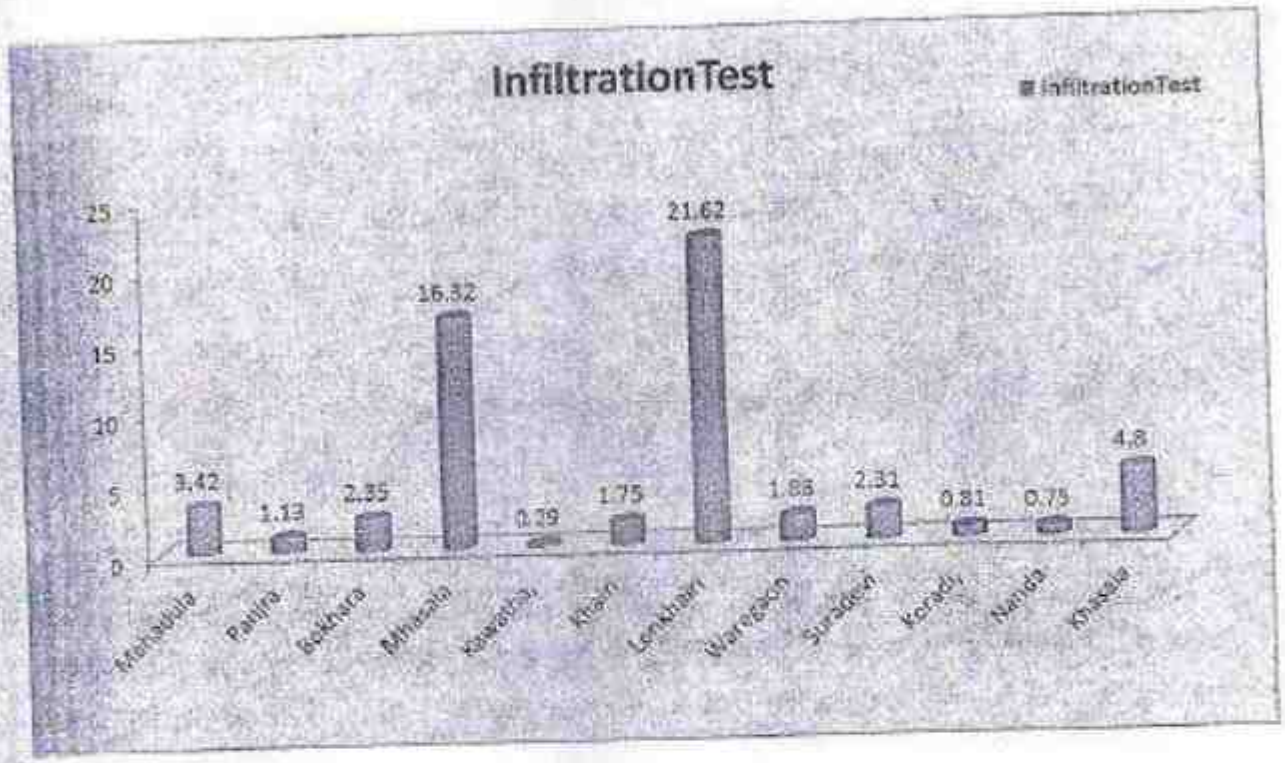


Figure 2.8 : Infiltration Test

Chapter III
Ground Water Quality

3.0 Introduction

Water is dynamic system. During sampling the water is removed from its natural environment. Due to this change the chemical composition of water may not remain same but may tend to adjust itself according to its new environment. Constituents of the water sample may interact with the surface wall of the container and consequently their concentration may be altered. This is particularly true for metals.

The raw water quality assessment is to maintain and restore the desirable level of environment quality in general (wholesomeness) and then the requirements of the 'best designated uses'. With this approach, protection of best designated use is not abandoned, but the overall health of ecosystem is given its rightful place. In case of major organized uses of water, three important uses are common in India, that is:-

1) Raw water used for producing community water supply
2) Outdoor bathing at mass bathing reaches, and
3) Irrigation

The Primary Water Quality Criteria, developed by CPCB was based on 'designated best use' concept, which is there is one use that demands highest level of water quality. The water quality monitoring results were assessed with respect to indicator of oxygen consuming substances (Bio-chemical oxygen demand). Over the period it has become necessary to review the criteria for enlarging the base of parameters for optimum interpretation of water quality getting deteriorated due to municipal and industrial discharge.

The objective of the sampling is to collect a portion of material small enough in volume to be conveniently transported to and handled in the laboratory while still accurately representing the material being sampled.

3.1 Objectives of Determining Water Quality

- To study the existing surface water and groundwater resources within the impact zone of the action with respect to Water Quality Criteria developed by CPCB
- To predict the quantitative impacts on the water resources due to the proposed water use / abstraction of ground water on account of the action
- To predict the changes in the water quality due to the effluent discharge into water bodies from proposed actions by following water quality prediction models criteria

- To evaluate the adequacy of the proposed water conservation measures, like recycling and reuse, to meet the various water quality criteria
- To recommend the water pollution mitigation measures at source, pathway and receptors.

3.2 Planning for Site Selection

The monitoring of water quality to give reliable and usable data requires that analytical and other resources are used to the best advantage. The first step in the planning of water monitoring is to decide what data is needed and how it is useful. The type of investigation, purpose of study and anticipated variations are other points to be considered.

3.3 Site Location for Groundwater

For the selection of sites for underground water, it will be necessary to obtain hydrological information. The first step will be the choice of acquire and its relative importance will be assessed from its total yield, the population served, its value to industry and agriculture and the magnitude of threats to its water quality.

3.4 Sampling Equipment

Various types of sampling equipment have been devised. Sampling equipments are –

1) Grab Samplers
2) Depth Integrating Sampler
3) Discrete Samplers
4) Dissolved Oxygen Sampler

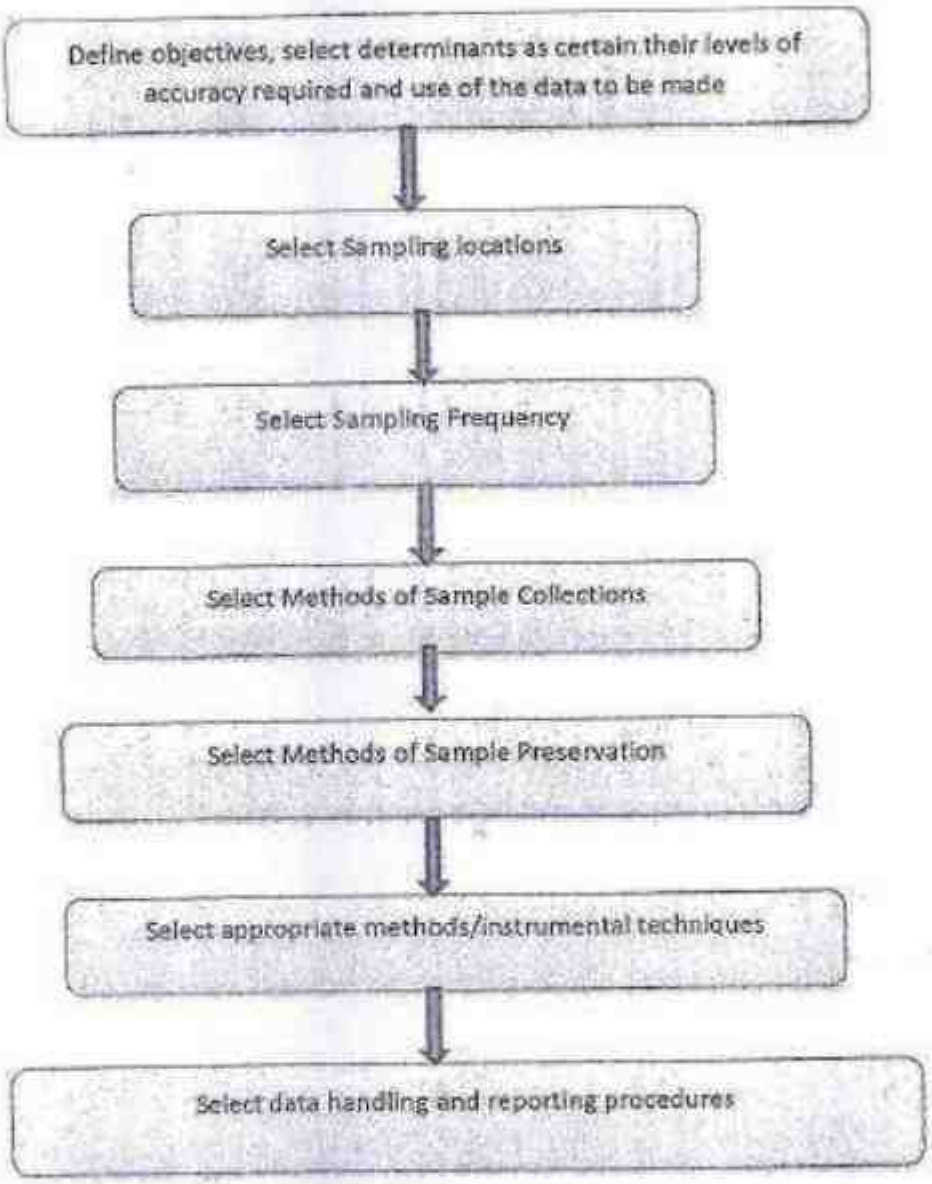


Figure 3.1: Sequential Steps in Designing Sampling Programme

Figure 3.2: Water Sampling at Site

3.5 Sample Preservation, Handling and Transport

By the time that a sample is collected in the field and transported for analysis in the laboratory, some physical change and chemical / biochemical reactions, may take place in the sample container which will change the intrinsic quality of the sample. It is therefore, necessary to preserve the sample before shipping to prevent or minimize these changes. This done by various procedures such as keeping the samples in the dark, adding chemical preservatives lowering the temperature to retard reactions by freezing or by a combination of these methods.

3.6 METHODOLOGY FOR WATER ANALYSIS

1) pH – The pH is determined by measurement of the electromotive force of a cell comprising an indicator electrode (an electrode responsive to hydrogen ions such as glass electrode) immersed in the test solution and a reference electrode (usually a mercury calomel electrode). Contact is achieved by means of a liquid junction, which forms a

part of the reference electrode. The emf of this cell is measured with pH meter. This is a high impedance electrometer calibrated in terms of pH.

2) **Conductivity** –Conductivity is the capacity of water to carry an electrical current and varies both number and a type of ions in the solution, which is turn, is related to the concentration of ionized substances in the water. Conductivity measurement by conductivity cell consisting of a pair of rigidly mounted electrodes. Each conductivity cell has its own cell constant depending on its shape, size and the position of the electrodes. Using standard solution of KCL (0.01 M) .The result may be expressed as milli Siemens/meter or micro Siemens/cm.

3) **Total Suspended Solids (TSS)** - All solids are measured gravimetrically. Filter a suitable volume of a sample through a glass fiber (GF) filter paper dried at 105^{0}and. Cool in a desiccator weighed then calculate TSS.

4) **Total Dissolved Solids (TDS)** - All solids are measured gravimetrically. Residue left after the evaporation and subsequent drying in oven at specific temperature 103-105^{0}C or 180^{0}C of a known volume of sample are total solids. Total solids includes are total suspended solids and total dissolved solids. Take a known volume of sample in a china dish ignited to constant weight. Evaporate the sample to dryness at 103-105^{0}C for 24 hrs. Cool in a desiccator, weigh and record the reading then calculate TDS.

5) **Chemical oxygen demand (COD)** - Test determines the oxygen equivalent of organic matter is susceptible to oxidation with the help of strong chemical oxidant .COD estimation by open reflux method. The organic matter gets oxidized completely by potassium dichromate and silver sulphate catalyst in the presence of concentrated sulphuric acid to produce carbon dioxide and water. The excess potassium dichromate remaining after the reaction is titrated with ferrous ammonium sulphate. The dichromate consumed gives the oxygen required for oxidation of the organic matter.

6) **Biochemical Oxygen Demand (BOD)** –It is the quantity of oxygen utilized by a mixed population of micro-organism in the aerobic oxidation of decomposable organic matter in a sample of water under controlled conditions of temperature and incubation period. The BOD test is widely used to determine the pollution load of water, the degree of pollution in water body at any time and their utilized during a specified incubation period for the biochemical degradation of organic material and oxygen used to oxidize inorganic material such as sulfides' and ferrous ions by computing a difference between initial and

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final and DO. Generally temperature is controlled at 20°C and the test is conducted for 5 days, as 70 to 80 % of the waste is oxidized during the period. The test can also performed at any other temperature at 27°C and 3 day BOD.The incubation period in days and temperature in°C is essential to be mentioned.

7) **Dissolved oxygen (DO)**-Analysis of DO is a key test in water pollution control .It is necessary to know DO level to assess quality of raw water and to keep a check on stream pollution. The determination of DO the method is Winkler or iodometric method with Azide Modification. Oxygen present in sample rapidly oxidizes the dispersed divalent manganous hydroxide to its higher valency which is precipitated as a brown hydrated oxide after the addition of NaOH and KI. Acidification manganese reverts to divalent state and liberates iodine from KI equivalent to the original DO content. The liberated iodine is titrated against $Na_2S_2O_3$ using starch as an indicator.

8) **Dissolved Phosphate**-Presence of phosphate in water analysis is necessary for biological degradation of wastewater. Phosphorus is an essential nutrient for the growth of organisms and help for the primary productivity of a body of water. In acidic condition orthophosphate reacts with ammonium molybdate to form molybdophosphoric acid. It is further reduced to molybdenum blue by adding reducing agent such as stannous chloride .The intensity of the blue coloured complex is measured at 690 nm which is directly proportional to the concentration of phosphate present in the sample.

9) **Nitrate**-Nitrate is the most highly oxidized form of nitrogen compounds commonly present in natural waters. Measurement of the ultraviolet absorption at 220 nm enables rapid determination of nitrate. The nitrate estimation with UV Spectrophotometric Method. In this method dissolved organic matter may also absorb at 220 nm and nitrate does not absorb at 275 nm. Take 50ml sample filtered after add 1ml of 1N HCL and mixed thoroughly. Read the absorbance at 220nm and 275nm.

10) **Ammonia**-Ammonia is produced by the microbiological degradation of organic nitrogenous matter. It appears therefore in many ground as well as surface waters. Concentrations of ammonia above a certain level in water polluted either due to sewage or industrial wastes are toxic to fish. Ammonia produces a yellow colored compound when reacted with alkaline (NaOH) Nessler reagent provided the sample is clarified properly. Pretreatment with $ZnSO_4$ and NaOH precipitates. Addition of EDTA (before Nessler

reagent) or Rochelle salt solution prevents precipitation of residual Ca and Mg in the presence of alkaline Nessler reagent. Take the absorbance at 410nm.

11) **Heavy Metals**-Estimation of metals in portal water is very important because some metals are essential where as other may adversely affect water consumers, treatment systems or the biological systems of water bodies. A few metals may be either beneficial or toxic depending on their concentrations. Estimation of heavy metals by Atomic Absorption spectrometry (AAS). In AAS a light beam is directed through the flame into a monochromatic and onto a detector that measure the amount of light absorbed by the atomized element in the flame emission. Take well mixed 50ml samples add 5ml Concentrate HCL heat for 15-30 min. On a sand bath filter through 0.45um membrane filter paper. Volume makeup to 50 ml with distilled water and analysis.

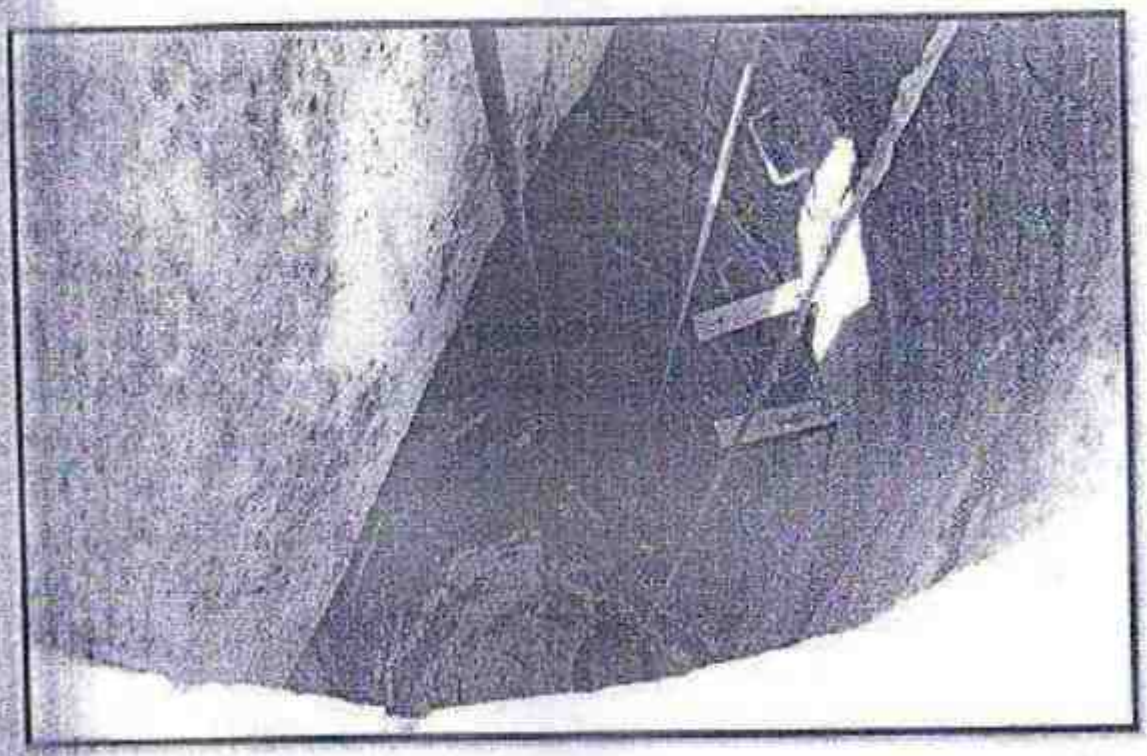

Figure 3.3: Ground Water Sampling

3.7 Results and Discussions

Table 3.1

Physico-Chemical Parameters of Ground Water Samples

Name of village	pH	TSS mg/lit	TDS mg/lit	Dissolved Oxygen mg/lit	COD mg/lit	BOD mg/lit	Dissolved Phosphate mg/lit	Nitrate as NO_3 mg/lit	Ammonia mg/lit
Mohadula	7.9	1	389	5.2	5.0	4	0.03	1.23	0.01
Parli(Plant site)	7.8	4	704	5.6	5.3	2	0.42	1.56	0.02
Bokhara	8.1	1	541	5.8	5.0	3	0.40	2.0	0.02
Mhasala	7.8	1	582	6.0	5.2	3	0.21	2.21	0.01
Kawatha,	8.0	2	562	5.5	5.4	2	0.12	2.21	0.02
Khairy	7.9	1	486	6.0	5.6	4	0.01	0.33	0.01
Lonkhairi	8.0	2	578	5.2	5.0	3	0.22	0.36	0.01
Waregaon	7.9	4	731	3.8	5.0	2	1.2	2.10	0.02
Suradevi	8.1	1	601	5.6	5.0	3	1.08	1.95	0.02
Koradi	7.9	1	191	5.4	3.8	3	0.45	1.94	0.01
Nanda	8.0	1	584	5.8	4.3	2	0.02	1.01	0.01
Khasala	8.1	1	545	6.1	4.8	3	0.01	1.33	0.01

Table 3.2

Heavy Metal - Ground Water Sample in mg/lit

Name of village	Arsenic as As*	Cobalt as Co*	Chromium as Cr*	Copper as Cu	Magnesium as Mg	Manganese as Mn	Nickel as Ni	Lead as Pb*	Zinc as Zn	Iron as Fe
Mahadula	0.01	ND	ND	ND	32.00	0.01	0.01	0.11	0.03	0.13
Pagra(Plot Site)	0.02	ND	ND	ND	63.00	0.01	0.02	0.04	0.14	0.29
Bokhara	0.01	ND	ND	ND	45.00	0.01	0.02	0.11	0.07	0.14
Bhasala	0.01	ND	ND	ND	52.00	0.01	0.01	0.11	0.09	0.13
Kawatha,	0.06	ND	ND	ND	44.00	0.02	0.001	0.06	0.41	0.21
Khairy	0.01	ND	ND	ND	29.00	0.02	0.01	0.02	0.10	0.25
Umkhetri	0.01	ND	ND	ND	79.00	0.01	0.01	0.06	0.21	0.24
Waregaon	0.04	ND	ND	ND	65.00	0.01	0.02	0.01	0.01	0.11
Kuradevi	0.03	ND	ND	ND	58.98	0.02	0.02	0.08	0.01	0.13
Koradi	0.01	ND	ND	ND	45.00	0.01	0.01	0.02	0.01	0.21
Nanda	0.01	ND	ND	ND	61.00	0.01	0.01	0.02	0.12	0.11
Khasala	0.02	ND	ND	ND	38.00	0.02	0.01	0.03	0.25	0.13

Table 3.3

Prescribe Limits of Indian Standards for Drinking Water

Sr. No	Parameter	Requirement desirable Limit
1	pH	6.5-8.5
2	TSS mg/lit	NS
3	TDS mg/lit	NS
4	Dissolved Oxygen mg/lit	NS
5	COD mg/lit	NS
6	BOD mg/lit	NS
7	Dissolved Phosphate mg/lit	NS
8	Nitrate as NO_3 mg/lit	45
9	Ammonia mg/lit	0.05
10	Arsenic as As* mg/lit	0.05
11	Cobalt as Co* mg/lit	0.02
12	Chromium as Cr* mg/lit	0.05
13	Copper as Cu mg/lit	0.05
14	Magnesium as Mg mg/lit	30
15	Manganese as Mn mg/lit	0.1
16	Nickel as Ni mg/lit	0.02
17	Lead as Pb* mg/lit	0.1
18	Zinc as Zn mg/lit	5.0
19	Iron as Fe mg/lit	0.3

*CPCB follows the same Standard IS10500 as the Desirable limits for Drinking Water

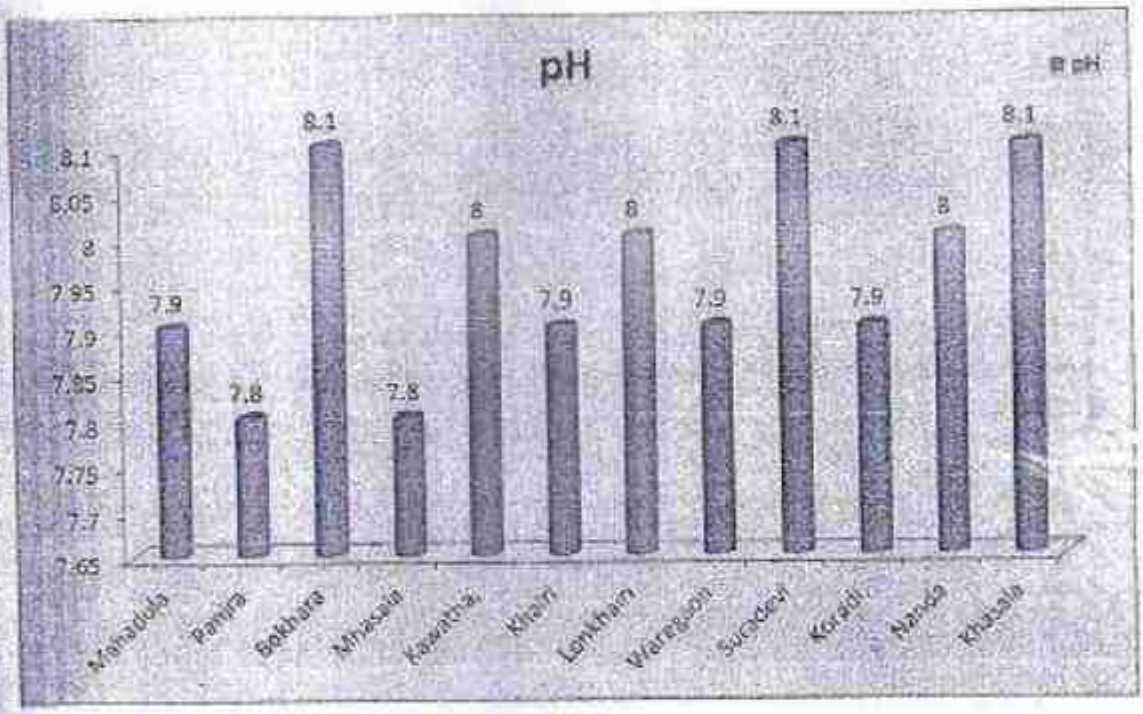

Figure 3.4: Analytical Results for pH in Water Samples

The pH is monitored at all the 12 locations and we get different values of pH at all the locations. The pH is alkaline at all the locations and within the prescribed limits laid by CPCB. pH ranges between 7.8-8.1. The highest alkaline pH values received are at Bokhara, Suradevi & Khasala i.e. 8.1 while lowest at Mhasala & Panjra (Plant Site) are 7.8. If the pH level of water either get acidic or alkaline beyond the stipulated limits it will affect the mucous membrane of living beings and Material of Construction of water supply system.

4.0 RAIN WATER HARVESTING AND INDUCED RECHARGE STRUCTURES

The concept of rain water harvesting is an ancient one and has become popular in recent times because of the vagaries of the monsoon, depleting water resources but the most important of all is its user friendliness. It has become an important and ecofriendly tool to protect ground water and useful and cost effective method to boost water resources in any area. Rainwater harvesting is the technique of collection and storage of rainwater in surface or sub-surface aquifers, before it is lost as surface run-off. The technique of rain water harvesting involves collection of rain water from localized catchment such as roofs, paved area, and open land, etc. or impounding of runoff by creating barriers across small streams/rivulets.

Induced recharge to ground water is the way of recharging the aquifers by artificial means by utilizing the surplus water resources available. This helps in directly recharging the targeted ground water aquifer by bypassing the unfavorable strata.

Taking into account the topographical situation, hydrogeological situation, rainfall incident and space availability of the plant area, one type of structures is suggested i.e. Surface water pond with recharge shaft.

4.1 RAINFALL OVER THE AREA

The rainfall over the area is one of the deciding factors to estimate the scope of rain water harvesting possibility of the area. Rainfall is the sole source available for natural and induced recharge. Thus its quantity, distribution and intensity are important for implementing rain water harvesting and artificial recharge of the ground water aquifers.

The southwest monsoon season spread across 4 months period from June to September is responsible for most of the entire rainfall falling over the area. The monthly normal of the rainfall for Nagpur area of Nagpur district are given in Table below.

Table: 4.1

Monthly normal of Rainfall at Nagpur

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Normal Rainfall (mm)	3	3.1	1.7	5.5	5.1	151.9	275.4	275.3	155.5	65.9	30	7.2

As the June to September is monsoon period, maximum rainfall is during this period and the annual normal monsoon rainfall is 275 mm (73%).

Table: 4.2

Yearly Rainfall at Nagpur

Year	Rainfall in mm
2004	791.5
2005	1,329.30
2006	1,076.40
2007	1,250.70
2008	840.8
2009	986.7
2010	1,289.40
2011	973.1
2012	1,019.90
2013	1,443.50

Table: 4.3

Area Bifurcation in Expansion Project

Area Type	Area (sq.m)	Rainfall (m)	Runoff Co-efficient	Total Yearly Runoff generated and available for RWH (m3)
Rooftop area	80057	1.2	0.8	76854.72
Greenbelt Area	168987	1.2	0.15	30417.66
Road/Pavement area	188023	1.2	0.85	191783.46
Other	1302446	1.2	0.85	1328494.92
Total area	1739513 Sq. mt.			1627550.76

Thus from the total area, yearly rainfall run off that can be harvested is about 1627550.76 m^3. The rain water harvesting system is to be designed for rainfall intensity of 100 mm/hr which is the most probable maximum occurring rainfall in a single day. However in case rain intensity exceeds 100 mm/hr, to prevent flooding, overflow connections from recharge structures will be provided, which will in turn dispose the overflow in the raw water reservoir of the project area.

Viable Rain Water Harvesting Structures

The yearly rainfall that can be harvested from KTPP campus is about 1627550.76 m^3. Thus out of 1627550.76 m^3rainwater available in the project area, about 74% will be used for surface water pond-cum-recharge shaft, whereas 26% will be used for recharge trenches. If excess rain water is available in year of heavy rainfall, it can also be utilized for fulfilling part of their requirements by transferring this water into the raw

4.2 Rain Water Available for Harvesting

The project is spread over 17, 39,513 sq.m. area. The breakup of area as per the land use / surface type and proportionate amount of rainwater occurring on respective areas is tabulated below. The runoff for the project area has been calculated as follows:

$Q = A * I * C$

Where Q = Run off

A = Total catchment area in hectare

I = Intensity of Rainfall in mm / hr

C = Runoff coefficient

The CPWD has provided a run off co-efficient for calculating rain water availability from different types of surfaces such as roof top area, ground surface area, paved area, road area etc. The same were used for calculation of rain water endowment of that particular area.

The Koradi Thermal Power Plant Expansion project area receives an average annual rainfall of about 559 mm. There are 6 different land use / surface area types in the project layout with their area and generation of runoff i.e., availability of rain water over these surfaces is as tabulated in Table.4.3

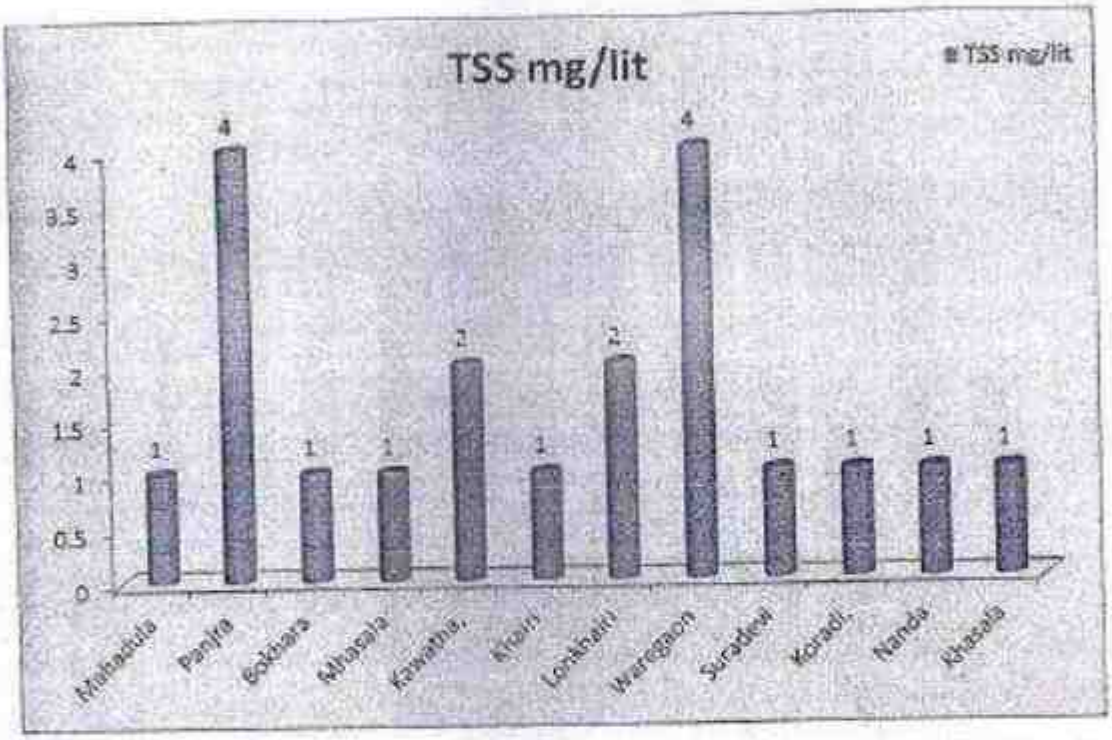

Figure 3.5: Analytical Results for Total Suspended Solids in Water Samples

The values of Total Suspended Solids (TSS) in all the 12 locations are well within the prescribed limits laid by CPCB. TSS ranges between 1-4 mg/lit .The presence of TSS in almost 08 samples is 1.0mg/lit. While it is highest but well within the limit is at Waregaon & Panjra (Plant Site) i.e. 4.0 mg/lit.

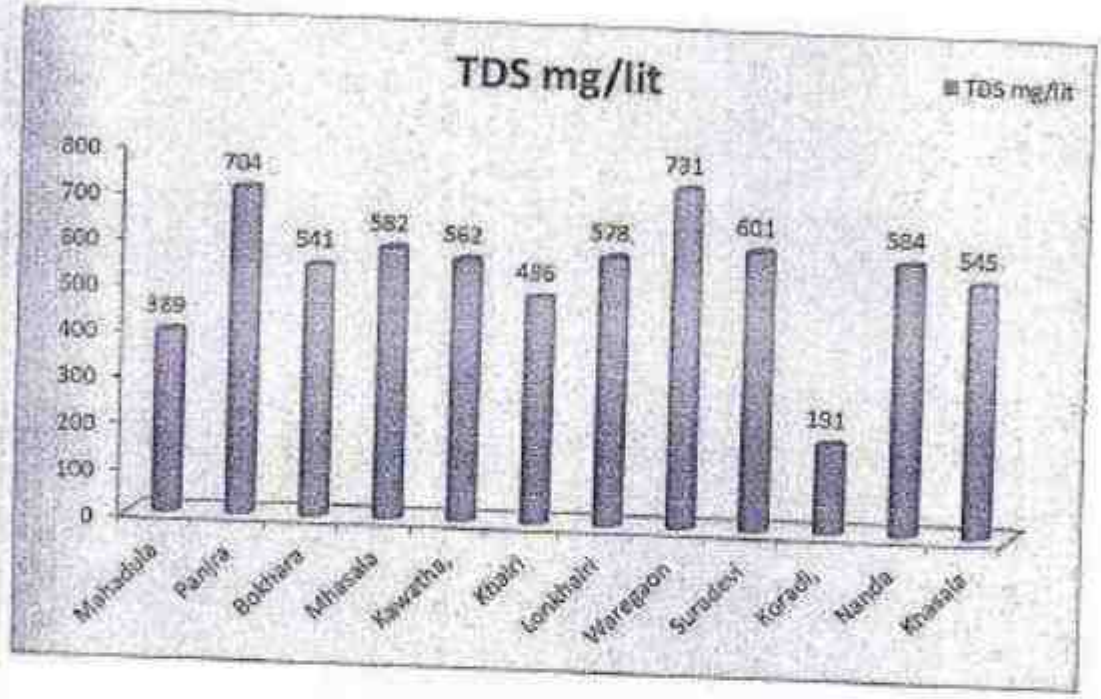

Figure 3.6: Analytical Results for Total Dissolved Solids in Water Samples

The values of Total Dissolved Solids (TDS) in all the 12 locations are well within the prescribed limits laid by CPCB. TDS ranges between 191- 731 mg/lit. Highest value of TDS at Waregaon i.e. 731 mg/lit due to some dissolved solids are present and lowest value of TDS at Koradi i.e. 191 mg/lit.

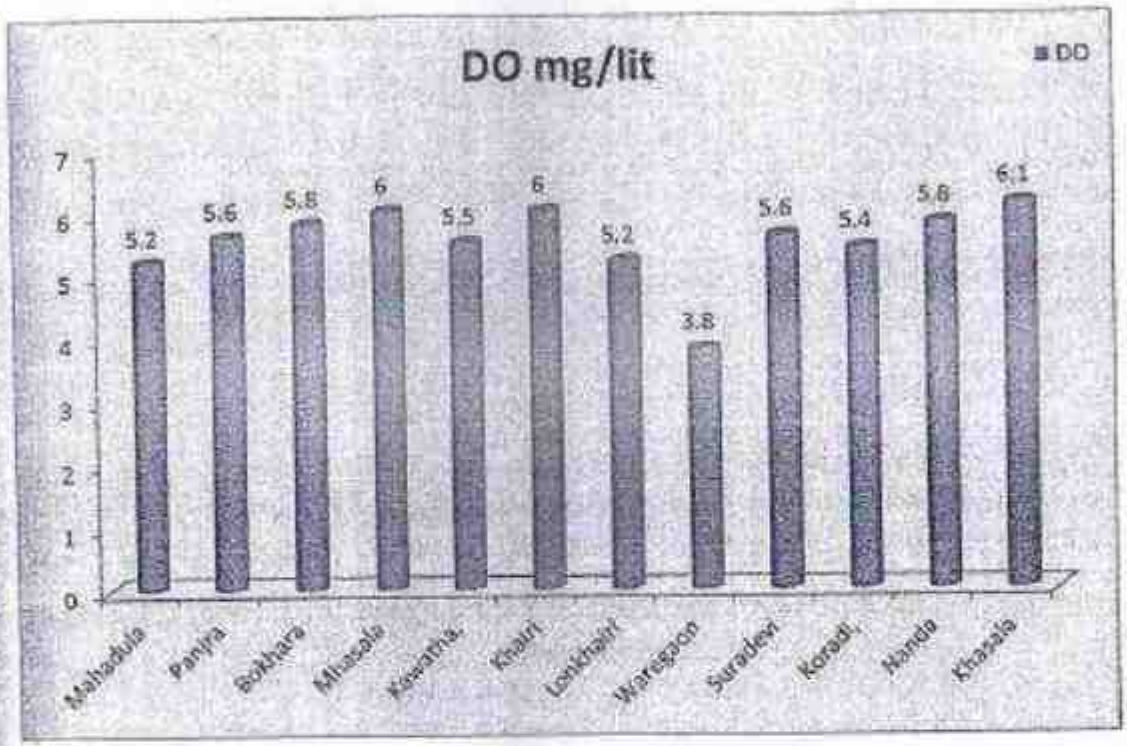

Figure 3.7: Analytical Results for Dissolved Oxygen in Water Samples

Dissolved Oxygen in the w samples (DO) in all the 12 locations are well within the scribed limits laid by CPCB. Tl hest value of DO found in the sample collected khasala and it is 6.1 mg/lit whereas the low 3.8 mg/lit at Waregaon.

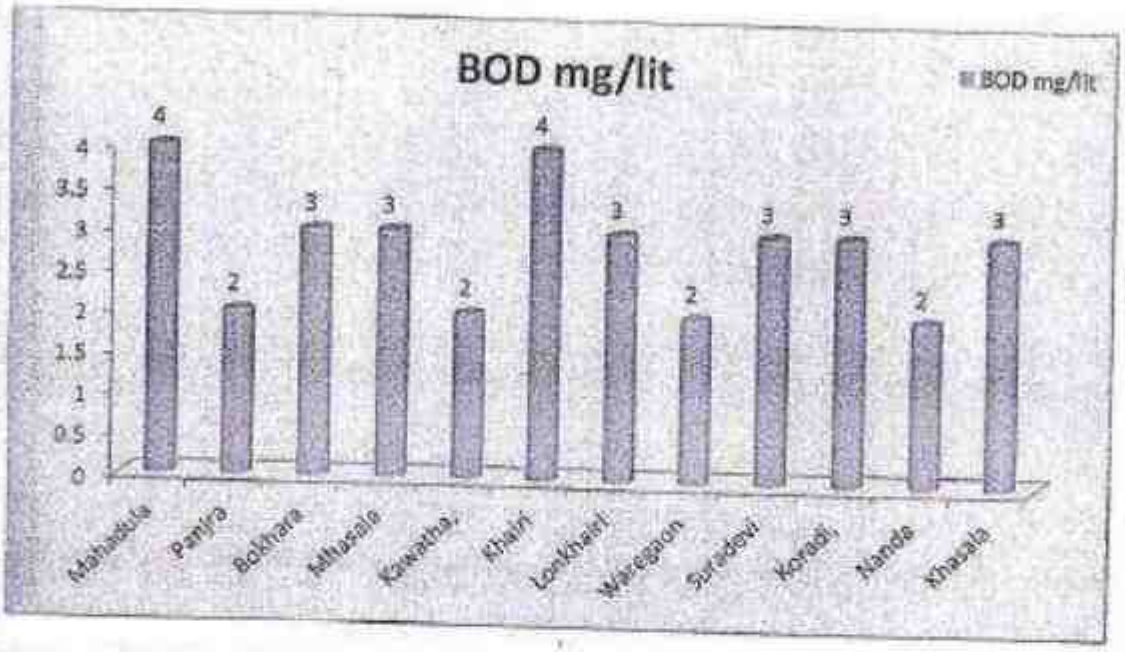

Figure 3.8: Analytical Results for Bio-Chemical Oxygen Demand in Water Samples

The values of Bio-Chemical Oxygen Demand (BOD) in all the 12 locations are well within the prescribed limits laid by CPCB.The ranges of BOD are less than 5. The value of BOD is lowest 2 mg/lit at 04 locations out of 12 sampling locations. The highest value is found at Mahadula and Khairy i.e. 4.0 mg/lit.

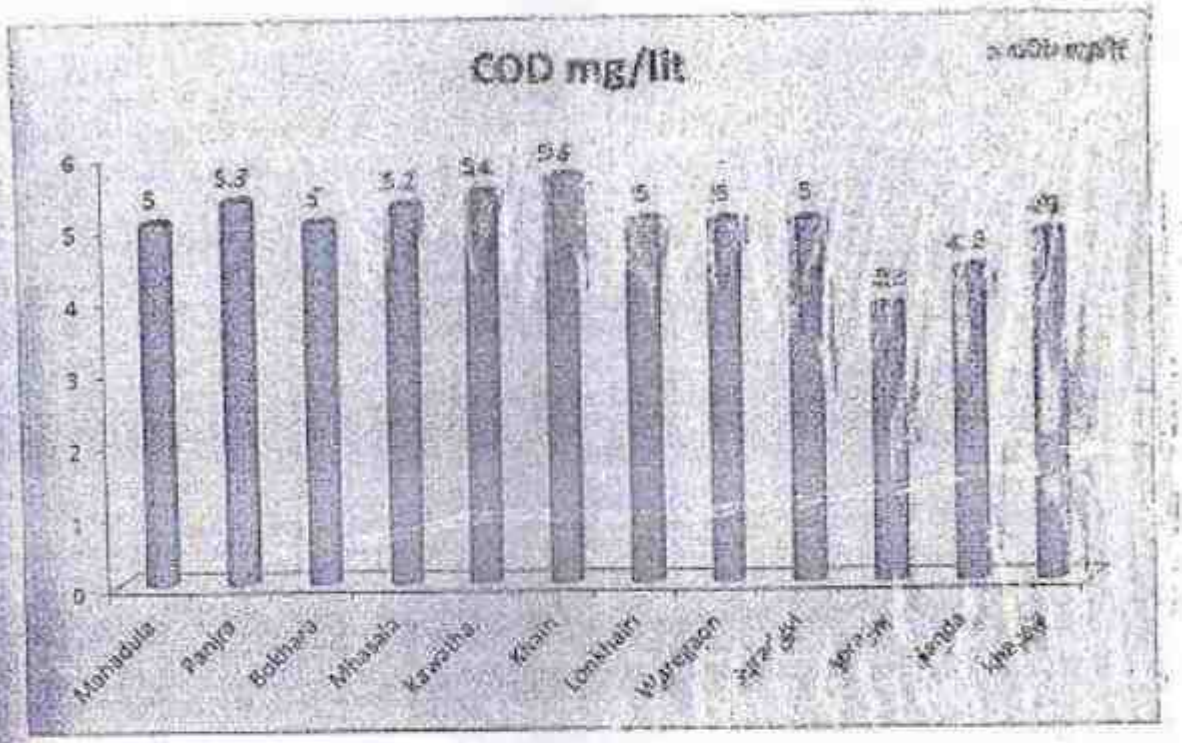

Figure 3.9: Analytical Results for Chemical Oxygen Demand in Water Samples.

The values of Chemical Oxygen Demand (COD) in all the 12 locations are very low within the prescribed limits laid by CPCB. The value of COD is lowest 3.8 mg/lit at Koradi .The highest value is found at Khairy i.e. 5.6 mg/lit.

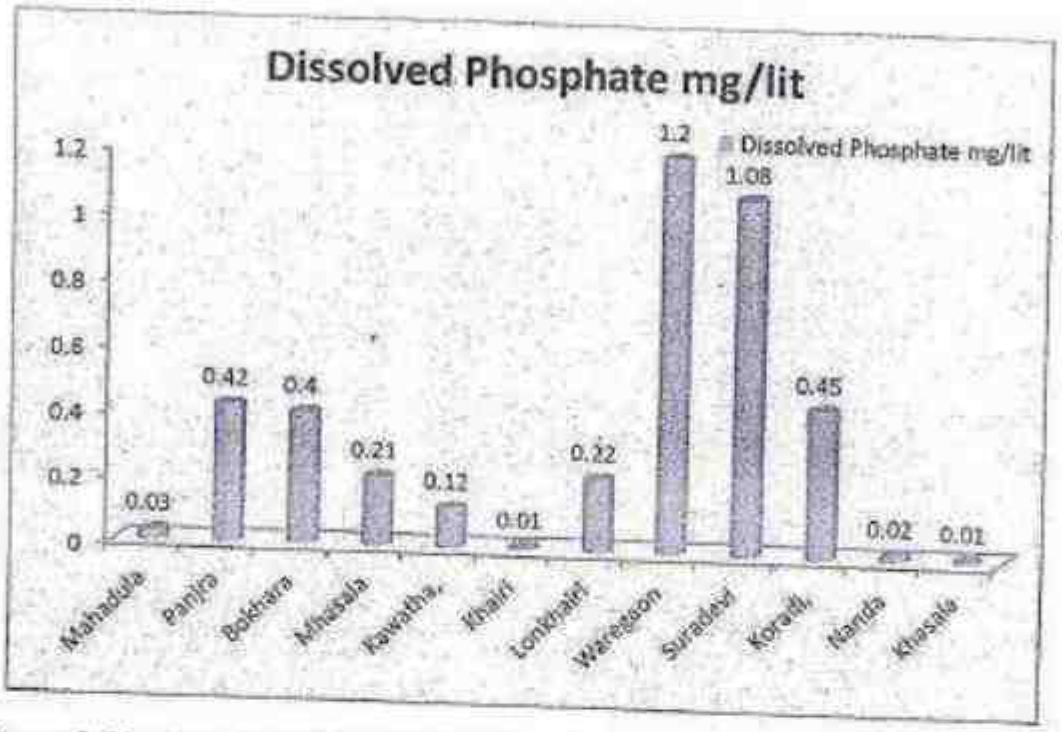

Figure 3.10: Analytical Results for Dissolved Phosphate in Water Samples

The values of Dissolved Phosphate in all the 12 locations are well within the prescribed limits laid by CPCB. The value of Dissolved Phosphate is lowest 0.01 mg/lit at Khairy & Khasala. The highest value is found at Waregaon i.e. 1.2 mg/lit.

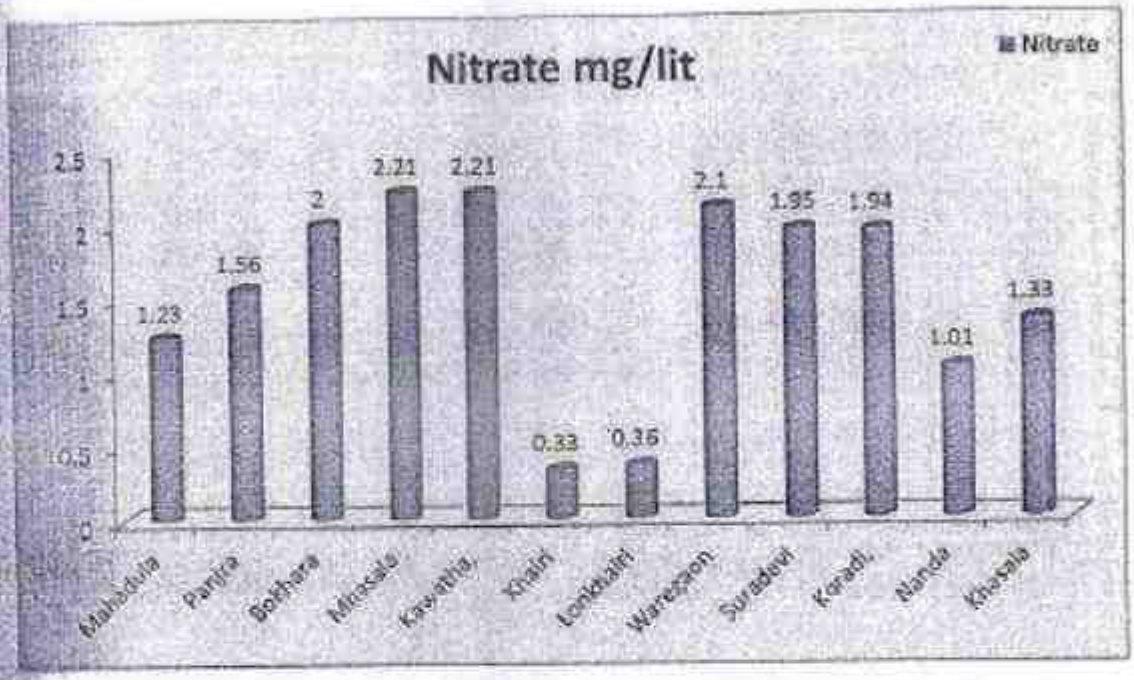

Figure 3.11: Analytical Results for Nitrate in Water Samples

The presence of Nitrate as NO_3 in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Mhasala and Kavatha location and the value is 2.21 mg/lit whereas lowest value is at Khairy i.e. 0.33 mg/lit. If this water exceeds the higher limit and get consumed by human being will affect by the disease viz. methanemoglobinemia and in plant kingdom eutrophication may takes place.

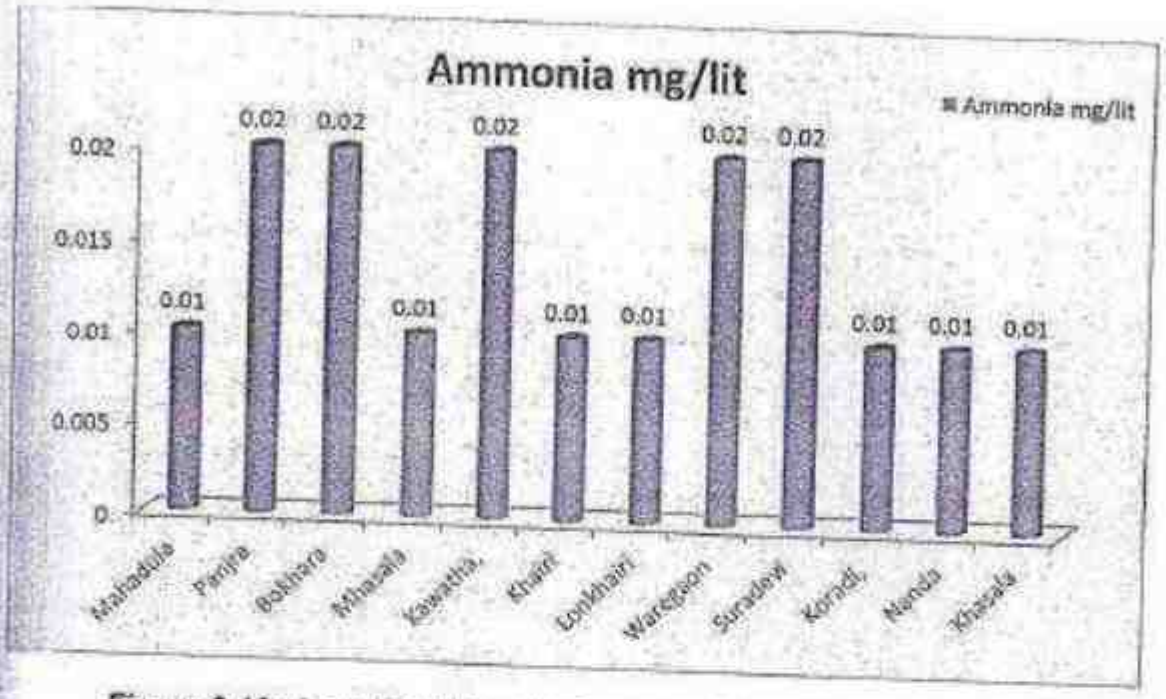

Figure 3.12: Analytical Results for Ammonia in Water Samples

The presence of Ammonia in the ground water samples is well within the prescribed limits laid by CPCB.The ranges between 0.01 to 0.02 mg/lit. The highest value in all the 12 locations was found in Panjra (Plant Site), Bokhara, Kawatha, Waregaon & Suradevi location and the detected value is 0.02 mg/lit whereas lowest value is at Mahadula, Mhasala, Khairy, Dokhairy,Koradi, Nanda, Khasala i.e. 0.01 mg/lit.

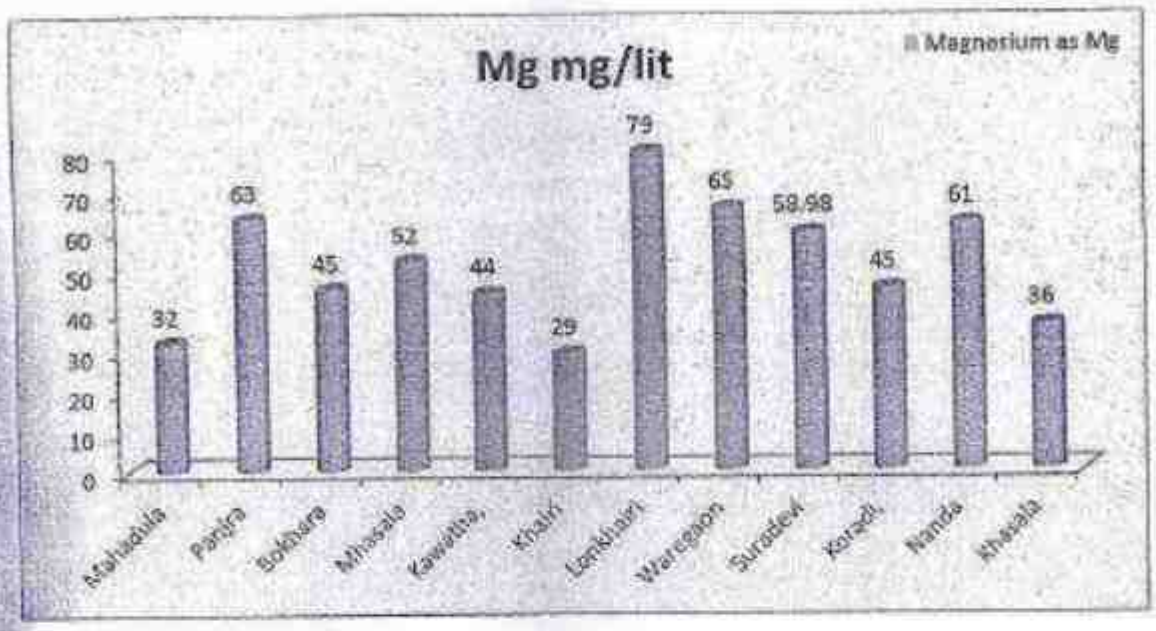

Figure 3.13: Analytical Results for Magnesium in Water Samples

The presence of Magnesium (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Lonkhairy location and the value is 79 mg/lit whereas lowest value is at Khairy is 29 mg/lit. The results show that the alarming situation is at Panjara (Plant Site), Lonkhairy, Waregaon and Nanda. The slight increase in concentration of Mg in ground water results in Encrustation in water supply structure, allied pipelines used for water supply, household water collections utensils and adverse effects on domestic use.

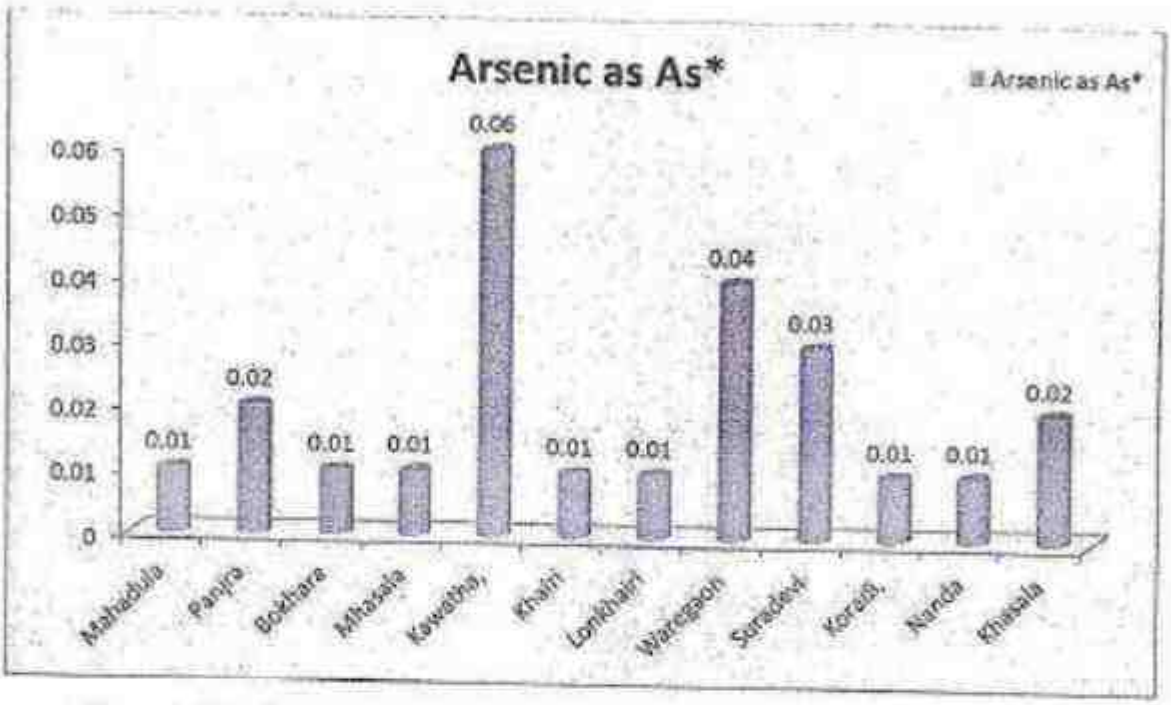

Figure 3.14: Analytical Results for Arsenic in Water Samples

The presence of Arsenic (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The constration of Arsenic exceeds the limit is at Kawtha ie 0.06 mg/lit The highest value in all the 12 locations was found in kawatha, Waregaon & Suradevi location and the value is 0.06, 0.04, 0.03 mg/lit respectively. whereas lowest value is at Mohadula, Bokhara, Mhasala, Khairy, Lonkhairy, Koradi, Nanda, i.e. 0.01 mg/lit. Beyond this the water becomes toxic. Limit is 0.05.

The ash bund of the Koradi thermal power plant is at Kawatha village whereas of Khaparkheda is at Waregaon village. The village Suradevi is at near vicinity of ash bund area of Koradi Thermal Power Plant. The concentration of Arsenic should be maintained at lower side in water as it is toxic heavy metal.

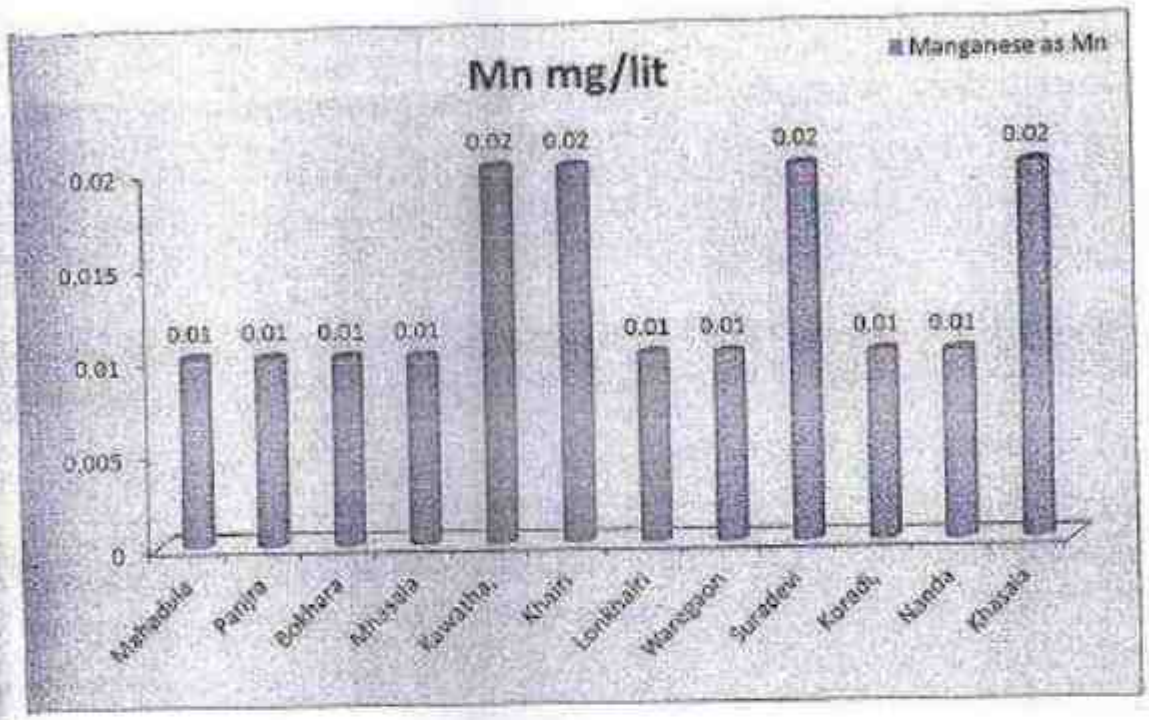

Figure 3.15 Analytical Results for Manganese in Water Samples

The presence of Manganese (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Kawatha, Khairi, suradevi, Khasala location and the value is 0.02 mg/lit whereas lowest value is at Mahaduta, Panjra (Plant Site), Bokhara, Mhasala, Lonkhairi, Waregaon, Koradi, Nanda, i.e. 0.01 mg/lit. If the ground water quality gets contaminated by exceeding the limit of this heavy metal which is 0.1 mg/lit the taste / appearance of water get affected. It has adverse effect on domestic uses and water storage structures.

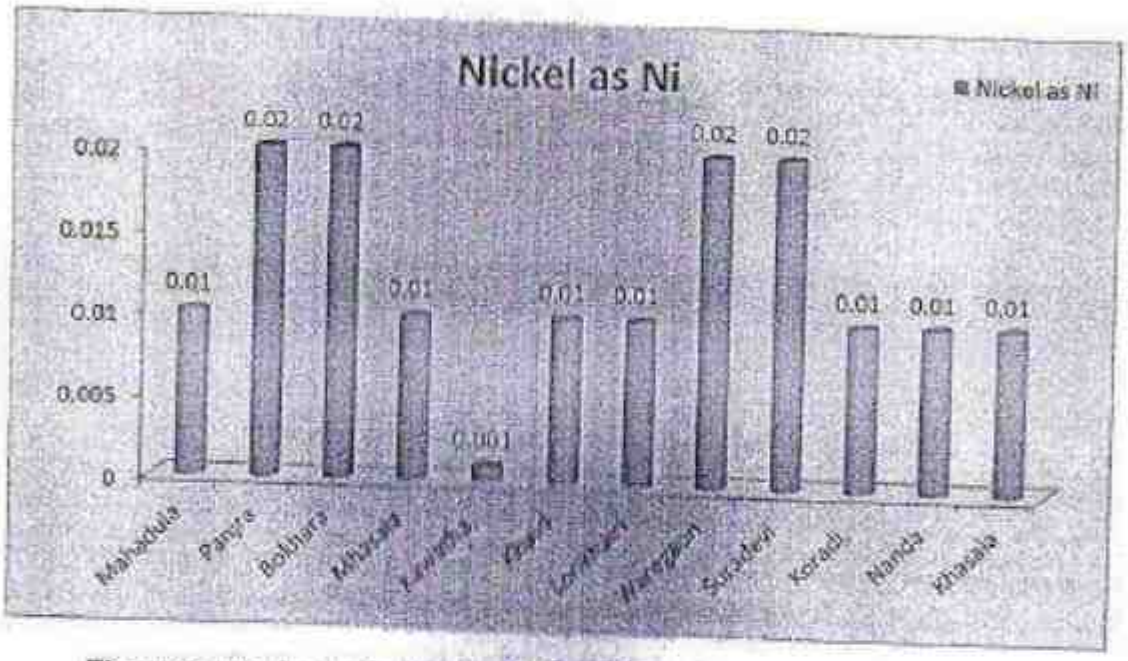

Figure 3.16: Analytical Results for Nickel in Water Samples

The presence of Nickel (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Panjra (Plant Site), Bokhara, Waregaon & Suradevi location and the value is 0.02 mg/lit whereas lowest value is at Kawatha, i.e. 0.001 mg/lit.

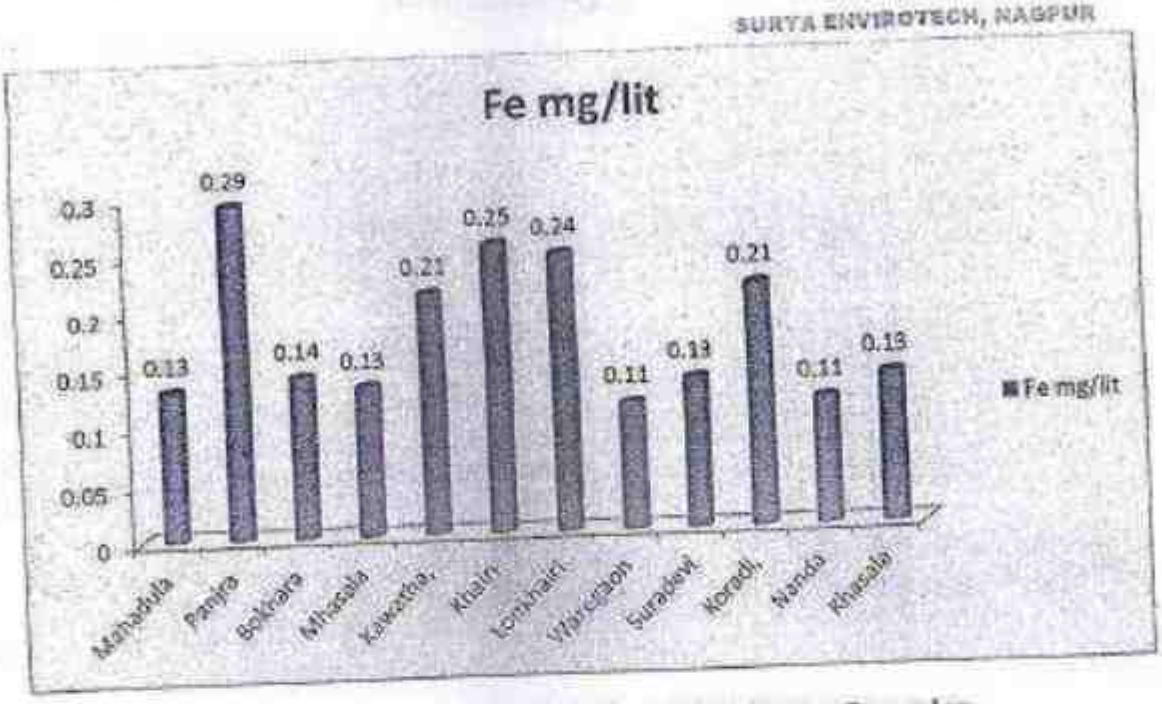

Figure 3.17: Analytical Results for Iron in Water Samples

The presence of Iron (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Panjra (Plant Site) location and the value is 0.29 mg/lit whereas lowest value is at Waregaon, Nanda, i.e. 0.11 mg/lit. Beyond this limited taste / appearance are affected has adverse effect on domestic uses and water structures and promotes iron bacteria.

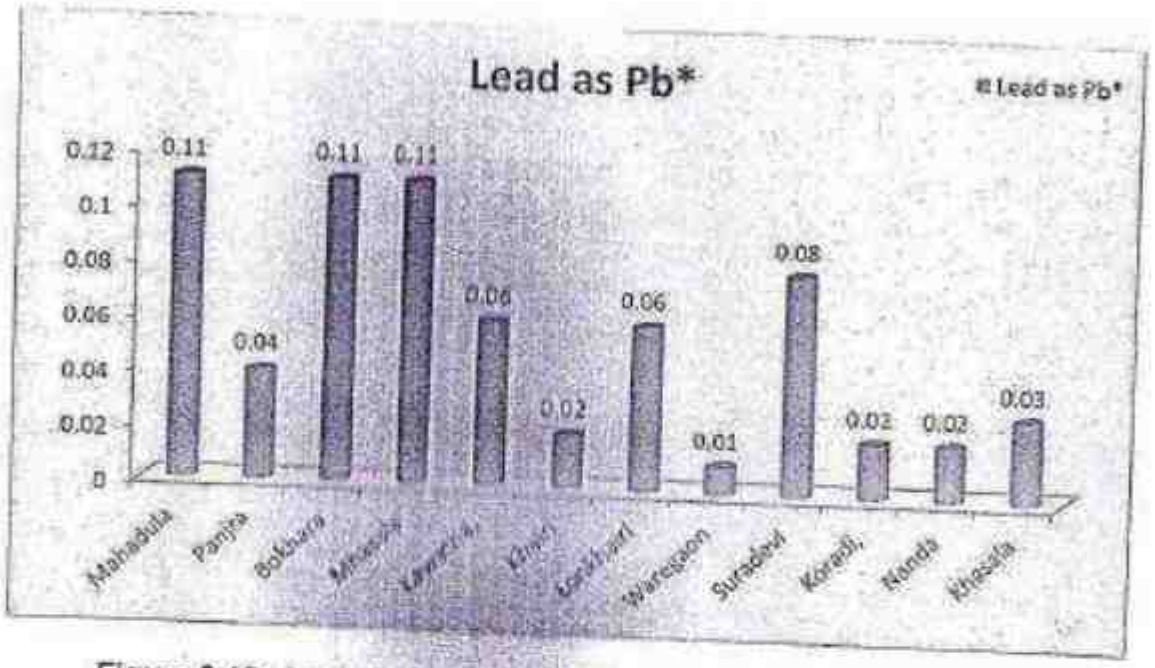

Figure 3.18: Analytical Results for Lead in Water Samples

The presence of Lead (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Mahadula, Bokhara, Mhasala location and the value is 0.11 mg/lit whereas lowest value is at Waregaon, i.e. 0.01 mg/lit, the excess concentration may become water toxic.

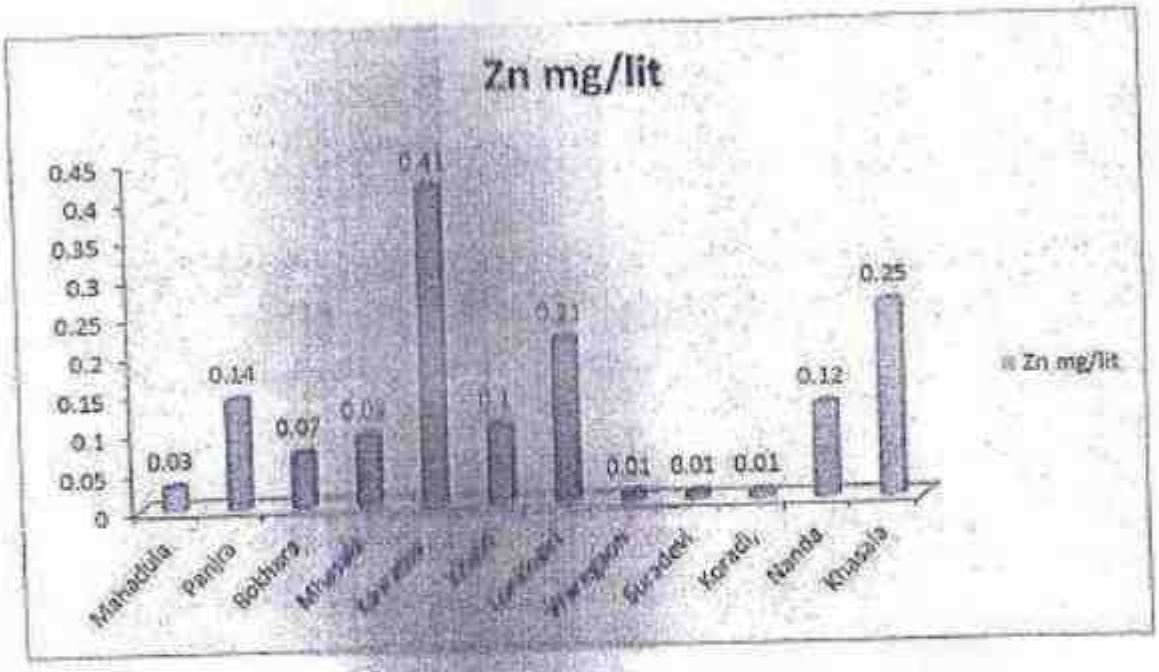

Figure 3.19: Analytical Results for Zinc in Water Samples

The presence of Zinc (heavy metal) in the ground water samples is well within the prescribed limits laid by CPCB. The highest value in all the 12 locations was found in Kawatha location and the value is 0.41 mg/lit whereas lowest value is at Waregaon, Suradevi, Koradi, i.e. 0.01 mg/lit. Beyond this it can cause astringent taste and opalescence in water.

Chapter IV
Rain Water Harvesting Schemes

water reservoir. To harvest the available quantity of rain water following structures are suggested.

4.3 Surface water ponds with Recharge Shaft

The structures mentioned in coming paras go very well with the project where ample surface area is available.

Surface water pond:

Area	: 48,000 sq.m.
Depth	: 2.0 m
Single filling	: 90,000 cu.m
Harvesting potential considering 2 fillings	:1,80,000 cu.m.
@ 95% efficiency	:1,71,000 cu. m. or 0.17 MCM
Proposed Recharge Shafts	
Numbers	:10
Depth	: 10.00 m from bottom of pond
Dimensions (L X B)	: 3 X 3 m

However the KTPP shall construct four number of this kind of rainwater harvesting pond in their premises.

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The functioning of the Surface water pond with recharge pit is depicted as Figure 4.1.

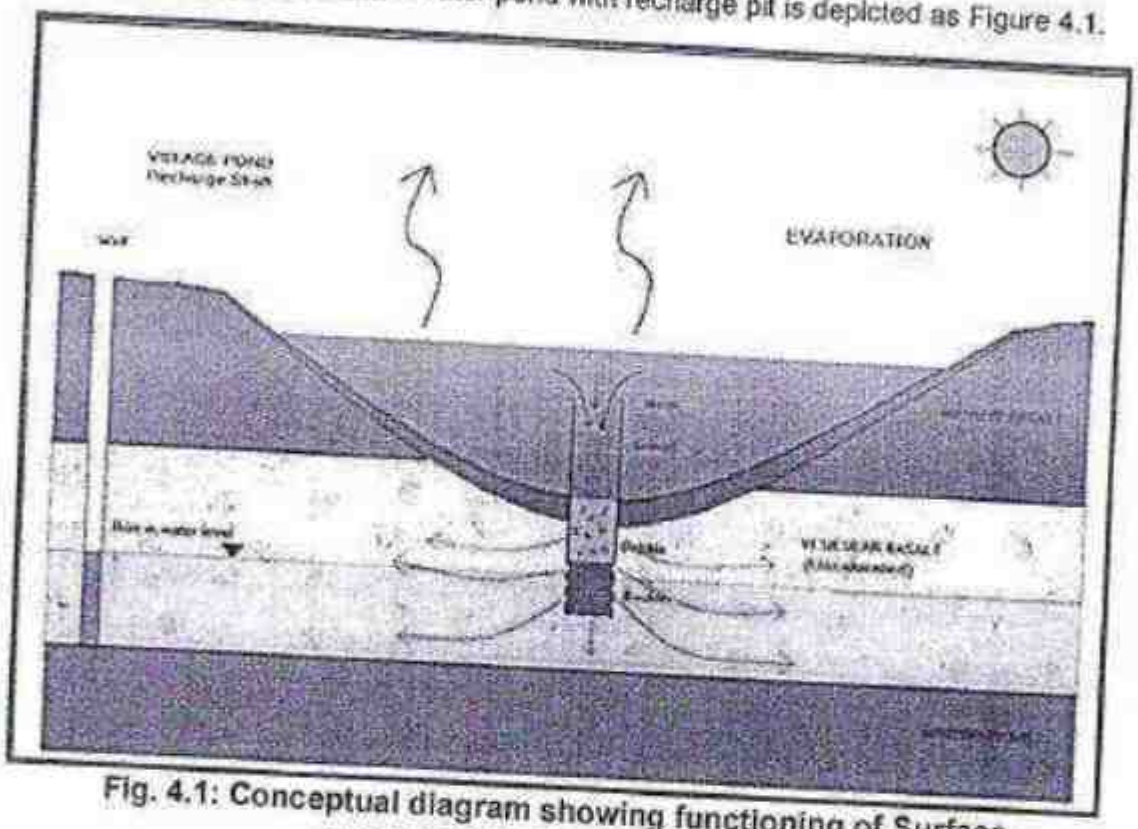

Fig. 4.1: Conceptual diagram showing functioning of Surface water pond with recharge shaft

To prevent silting of these percolation lakes/ponds, the end portion of the storm water drain pipes carrying the rain water from the catchments is advised to be provided with appropriate online filters. Similarly regular de-silting of these structures should be done so that maximum benefit is obtained due to rain water harvesting and recharging.

The rainwater harvested is advised to be filtered before collecting in the lagoons/ water conservation-cum-recharge ponds. For this, the terminal 25 to 30 m section of the storm water drains; just before their connection with the surface water ponds is advised to be filled with #2mm to #3mm sized sand to filter out the suspended particles. This sand will act as a filter to separate the suspended particles that will settle over the rooftops of

various buildings. This sand should be kept fixed in its place with the help of mesh of appropriate size.

This pond can also be used from aesthetic point of view as a part of landscaping of the KTPP campus, however proper safety measures such as fencing around the lagoon should be provided to avoid any mishaps as the depth of the lagoon will be 2 m.

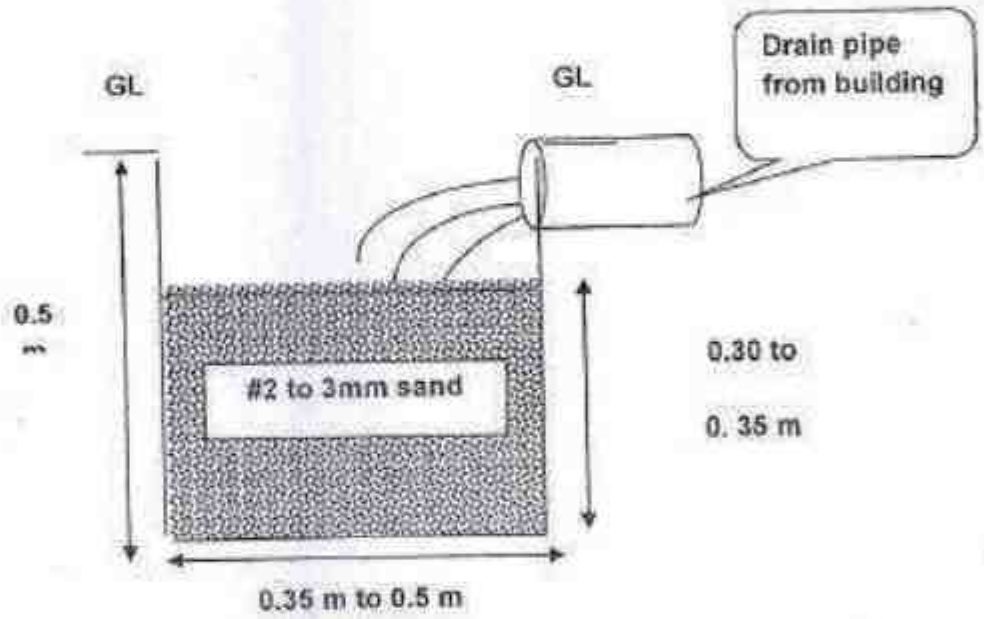

Fig. 4.2: Vertical Cross Section of Storm water Drain

The ground water resources availability is 2026.67 ham/year i.e., 202.667 MCM and the Nagpur area are classified as SAFE as per the evaluation of CGWB and GSDA.

Chapter V
Inference of the Hydro-Geological Study

5.0 Inference of the Hydrogeological Study in the Project Area.

The precipitation of rain water in the earth curst through ground surface is responsible for the recharge ground water table. Due to increase in population, urbanization and industrialization the utilization of surface and ground water is increasing day by day and ground water table is trailing its level tremendously.

The Project Authority of MAHAGENCO, keeping in mind the concept of sustainable development decided to carryout Rainwater Harvesting Scheme in the project area. The infiltration test results conclude that Runoff is 45 % in the study area result shown in Table 2.6.

Runoff is defined as the portion of the precipitation that makes its way towards rivers or oceans as surface or subsurface flow. After the occurrence of infiltration and other loses from the precipitation (rainfall), the excess rainfall flows out through the small natural channels on the land surface to the main drainage channels. Such types of flow are called surface flows. This surface flow in modern infrastructural development flow out in sewerage collections and go to vain. The increase in precipitation by artificial recharge to enhance ground water level is achieved by suggesting suitable recharge structures for the study area. The implementation of the suggested structures will help in increase in ground water recharge by reducing rain runoff. These structures are efficient and runoff may reduce and recharge percentage may increase from 55 to 90 %.

The present ground water quality in the study is good and all the parameters analysed are well within prescribed limits. The project authority should be always aware every time to maintain the status of their Effluent Treatment Plant, Sewerage Treatment Plant treated water quality before its reutilization even for irrigation for greenbelt they had developed in their plant premises. The walls and corners of Ash Bund should be protected from leakage. The parameters of heavy metals are at the higher side and may cross the prescribed limit hence proper mitigation measures should be taken during operation of the plant.

Groundwater quality was monitored to assess the impact of the Hydrogeological activity. The assessment parameters indicated highly mineralized parameters. Presently ash is made into ash slurry and discharged into ashpond. The ashpond overflow is again recycled back for ash slurry preparation. The groundwater quality around ash pond does not indicate any impact due to seepage from the pond on the groundwater.

Annexure - II (b)

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0312230804	Date: 14.08.2023
ULR No.:	TC748723000012655F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550016724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Suradevi Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	29.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.2	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	522	IS 3025 (Part 16) 2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	121	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	89.0	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	16.9	APHA 24th Ed. 2023, 4500 NO_3 B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	194	APHA 24th Ed. 2023, 2320 B
10.	Total Hardness (as CaCO3)	mg/L	312	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.392	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.33	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.6	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.9	IS 3025 (Part 44) 2023
15.	Chemical Oxygen Demand	mg/L	10	APHA 24th Ed. 2023, 5220-B

Reviewed and authorised by

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Technical Manager
Chemical Testing

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TEST REPORT

Report No.:	ME-0312230804	Date: 14.08.2023
ULR No.:	TC748723000012665F	

Sr. No.	Parameter	Unit	Result	Method Reference
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 6630- B & C
22.	Fixed Dissolved Solids	mg/L	424	IS 3025 (Part 18): 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.116	IS 3025 (Part 2): 2019
24.	Manganese (as Mn)	mg/L	0.018	IS 3025 (Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.005)	IS 3025 (Part 2): 2019
27.	Zinc (as Zn)	mg/L	0.057	IS 3025 (Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025 (Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2): 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0312230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No. KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Suradevi Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	W/SAP/WW/56

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TEST REPORT

Report No.:	ME-0311230804	Date: 14.08.2023
ULR No.:	TC748723000012654F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550016724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Suradevi Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	26.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	6.8	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ: 0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	469	IS 3025 (Part 16): 2023
5.	Total Suspended Solids	mg/L	BQL (LOQ: 5)	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	81.0	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	60.6	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	23.0	APHA 24th Ed. 2023, 4500- NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	244	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	266	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.543	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.40	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.9	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.0	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	7	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

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TEST REPORT

Report No.:	ME-0311230804	Date: 14.08.2023
ULR No.:	TC748723000012864F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI) 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	356	IS 3025 (Part 18) 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.115	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.017	IS 3025 (Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	IS 3025 (Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025 (Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019

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Note:
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TEST REPORT

Report No.:	ME-0303230804	Date: 14.08.2023
ULR No.:	TC748723000012648F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4500015724/1007 PO Date: 22.06.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Dugwell Mhasala Village	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	13.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	27.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	8.1	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	635	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	8	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	74.0	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	133	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	21.6	APHA 24th Ed. 2023, 4500-NO_3 B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	276	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	364	APHA 24th Ed. 2023, 2340 C
11.	Phosphate Total (as PO_4)	mg/L	0.352	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.41	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.9	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.6	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	12	APHA 24th Ed. 2023, 5220 B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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TEST REPORT

Report No.:	ME-0303230804	Date: 14.08.2023
ULR No.:	TC748723000012648F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI) 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.39	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	465	IS 3025 (Part 18) 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.229	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.016	IS 3025(Part 2), 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.040	IS 3025(Part 2), 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2), 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ 0.01)	IS 3025(Part 2), 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2), 2019

END OF REPORT

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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0303230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Dugwell Mhasala Village	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	13.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	W/SAP/WW/58

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0304230804	Date: 14.08.2023
ULR No.:	TC748723000012647F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Mhasala Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	13.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	29.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.4	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	1218	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	5	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	234	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	280	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	23.7	APHA 24th Ed. 2023, 4500 NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	360	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	458	APHA 24th Ed. 2023, 2340 C
11.	Phosphate Total (as PO_4)	mg/L	0.324	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.35	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.9	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.2	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	8	APHA 24th Ed. 2023, 5220-B

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0304230804	Date: 14.08.2023
ULR No.:	TC748723000012647F	

Sr. No.	Parameter	Unit	Result	Method Reference
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MER): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S²-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	1068	IS 3025 (Part 18): 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.146	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.032	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.005)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.034	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-03042308041N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Mhasala Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	13.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WSAP/WW/66

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0305230804	Date: 14.08.2023
ULR No.:	TC748723000012648F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Khasala Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	28.0	APHA 24th Ed. 2023, 2550 B
2.	pH	-	7.5	APHA 24th Ed. 2023, 4500-H+ B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	955	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540 D
6.	Chloride (as Cl)	mg/L	180	APHA 24th Ed. 2023, 4500-Cl B
7.	Sulphate (as SO_4)	mg/L	137	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	23.5	APHA 24th Ed. 2023, 4500- NO_3, B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	420	APHA 24th Ed. 2023, 2320 B
10.	Total Hardness (as CaCO3)	mg/L	510	APHA 24th Ed. 2023, 2340 C
11.	Phosphate Total (as PO_4)	mg/L	0.382	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.27	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	7.0	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.9	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	10	APHA 24th Ed. 2023, 5220 B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0305230504	Date: 14.08.2023
ULR No.:	TC748723000012648F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI) 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.39	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	786	IS 3025 (Part 18) 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.096	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.013	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.035	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0306230604	Date: 14.08.2023
ULR No.:	TC748723000012649F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.06.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Khasala Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	30.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.5	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	935	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	148	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	183	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	25.2	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	400	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	480	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.441	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.33	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.7	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.3	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	8	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0306230604	Date: 14.06.2023
ULR No.:	TC748723000012649F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI), 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S- C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN- C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	702	IS 3025 (Part 18):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.126	IS 3025 (Part 2): 2019
24.	Manganese (as Mn)	mg/L	0.015	IS 3025 (Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	IS 3025 (Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025 (Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112 B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2): 2019

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0306230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water -	Sampling Done by	Laboratory
Sampling Location	Khasala Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WI/SAP/WAI/56

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0307230804	Date: 14.08.2023
ULR No.:	TC748723000012650F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Khairi Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	27.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.6	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	670	IS 3025 (Part 16) 2023
5.	Total Suspended Solids	mg/L	8	APHA 24th Ed. 2023, 2540 D
6.	Chloride (as Cl)	mg/L	214	APHA 24th Ed. 2023, 4500-Cl B
7.	Sulphate (as SO_4)	mg/L	140	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	15.8	APHA 24th Ed. 2023, 4500 NO_3 B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	292	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	340	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.382	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.38	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.9	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.3	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	11	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0307230804	Date: 14.08.2023
ULR No.:	TC748723000012650F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.45	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	750	IS 3025 (Part 18):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.065	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.018	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.006)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.026	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0307230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Khairi Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS 3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	IS/SAPHWW/65

END OF REPORT

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TEST REPORT

Report No.:	ME-0308230804	Date: 14.08.2023
ULR No.:	TC748723000012651F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.06.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Khairi Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	26.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.5	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	1071	IS 3025 (Part 16) 2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	240	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	170	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	21.6	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	398	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	490	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.507	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.29	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.7	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.8	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	12	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

Harish Mondhi
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TEST REPORT

Report No.:	ME-0308230804	Date: 14.08.2023
ULR No.:	TC748723000012651F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	890	IS 3025 (Part 18): 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.121	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.017	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.022	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0309230804	Date: 14.08.2023
ULR No.:	TC748723000012652F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Kawtha Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	28.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	8.1	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	960	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	BQL (LOQ:5)	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	210	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	202	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	20.9	APHA 24th Ed. 2023, 4500- NO_3-B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	284	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	378	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.752	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.31	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.7	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.0	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	10	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0309230804	Date: 14.09.2023
ULR No.:	TC748723000012652F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI) 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.39	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S- C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	840	IS 3025 (Part 18) 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.104	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.057	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.028	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	0.009	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0309230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Kawtha Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS 3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WI/SAP/WN/56

END OF REPORT

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TEST REPORT

Report No.:	ME-0310230804	Date: 14.08.2023
ULR No.:	TC748723000012653F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Kawtha Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	30.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.5	APHA 24th Ed. 2023, 4500 H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	1088	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	280	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	135	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	20.4	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	384	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	404	APHA 24th Ed. 2023, 2340 C
11.	Phosphate Total (as PO_4)	mg/L	0.499	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.48	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.9	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.7	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	9	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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TEST REPORT

Report No.:	ME-0310230804	Date: 14.06.2023
ULR No.:	TC748723000012653F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.22	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500 CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	928	IS 3025 (Part 18) 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.102	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.018	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.041	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025:Part 2): 2019

END OF REPORT

Note:
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0310230604N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Kawtha Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WI/SAP/WW/55

END OF REPORT

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0313230804	Date: 14.08.2023
ULR No.:	TC748723000012656F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Panjra Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	28.0	APHA 24th Ed. 2023, 2550 B
2.	pH	-	7.8	APHA 24th Ed. 2023, 4500-H+ B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	321	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	8	APHA 24th Ed. 2023, 2540 D
6.	Chloride (as Cl)	mg/L	40.0	APHA 24th Ed. 2023, 4500-Cl B
7.	Sulphate (as SO_4)	mg/L	51.6	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	4.32	APHA 24th Ed. 2023, 4500- NO_3 B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	162	APHA 24th Ed. 2023, 2320 B
10.	Total Hardness (as CaCO3)	mg/L	188	APHA 24th Ed. 2023, 2340 C
11.	Phosphate Total (as PO_4)	mg/L	0.490	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.36	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.8	APHA 24th Ed. 2023, 4500 O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.9	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	13	APHA 24th Ed. 2023, 5220 B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0313230804	Date: 14.08.2023
ULR No.:	TC748723000012656F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	236	IS 3025 (Part 16) 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.557	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.012	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

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Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0313230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Panjra Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WISAPHWW/55

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TEST REPORT

Report No.:	ME-0314230804	Date: 14.08.2023
ULR No.:	TC748723000012657F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.06.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Panjra Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	30.0	APHA 24th Ed. 2023, 2550 B
2.	pH	-	8.6	APHA 24th Ed. 2023, 4500 H+ B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500 Cl G
4.	Total Dissolved Solids	mg/L	568	IS 3025 (Part 16): 2023
5.	Total Suspended Solids	mg/L	5	APHA 24th Ed. 2023, 2540 D
6.	Chloride (as Cl)	mg/L	97.0	APHA 24th Ed. 2023, 4500-Cl- B
7.	Sulphate (as SO_4)	mg/L	90.0	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	6.25	APHA 24th Ed. 2023, 4500-NO_3 B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	266	APHA 24th Ed. 2023, 2320 B
10.	Total Hardness (as CaCO3)	mg/L	330	APHA 24th Ed. 2023, 2340 C
11.	Phosphate Total (as PO_4)	mg/L	0.285	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.36	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.8	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	1.7	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	6	APHA 24th Ed. 2023, 5220-B

Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0314230804	Date: 14.08.2023
ULR No.:	TC748723000012667F	

Sr. No.	Parameter	Unit	Result	Method Reference
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI), 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.34	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	433	IS 3025 (Part 16): 2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.093	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.012	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.005)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.038	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ 0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0314230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Panjra Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WWS4PWW/59

END OF REPORT

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TEST REPORT

Report No.:	ME-0315230804	Date: 14.08.2023
ULR No.:	TC748723000012658F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Nanda Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	27.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.6	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	545	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	6	APHA 24th Ed. 2023, 2540 D
6.	Chloride (as Cl)	mg/L	99.0	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	44.0	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	24.1	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	306	APHA 24th Ed. 2023, 2330 B
10.	Total Hardness (as CaCO3)	mg/L	360	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.745	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.38	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.6	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.3	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	8	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0315230804	Date: 14.08.2023
ULR No.:	TC748723000012658F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI) 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	407	IS 3025 (Part 18):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.653	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.013	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.036	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0315230604N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.06.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Nanda Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WI/SAP/WW/56

END OF REPORT

Note:
1. BQL: Below Quantification Limit
2. LOQ: Limit of Quantification.
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, GHIWDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0316230804	Date: 14.08.2023
ULR No.:	TC748723000012659F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Nanda Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	29.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.3	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ 0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	644	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	126	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	34.8	APHA 24th Ed. 2023, 4500-SO_4-E
8.	Nitrate (as NO_3)	mg/L	40.2	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	326	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	440	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.487	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.31	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.6	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.0	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	7	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ 1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Technical Manager
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0316230804	Date: 14.08.2023
ULR No.	TC748723000012659F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN. C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530 B & C
22.	Fixed Dissolved Solids	mg/L	515	IS 3025 (Part 18):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.309	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.016	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.048	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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2. LOQ: Limit of Quantification.
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0316230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Nanda Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WISAPHWI:56

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0317230804	Date: 14.08.2023
ULR No.:	TC748723000012660F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Mahaduta Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	28.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.6	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	796	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	6	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	119	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	102	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	23.6	APHA 24th Ed. 2023, 4500- NO_3 B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	392	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	460	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.373	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.32	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.7	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.5	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	12	APHA 24th Ed. 2023, 5220-B

Reviewed and authorised by

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Technical Manager
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TEST REPORT

Report No.:	ME-0317230804	Date: 14.08.2023
ULR No.:	TC748723000012660F	

Sr. No.	Parameter	Unit	Result	Method Reference
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.39	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	637	IS 3025 (Part 18):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.091	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.030	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0317230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Mahadula Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WI/SAP/WW/58

END OF REPORT

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TEST REPORT

Report No.:	ME-0318230804	Date: 14.08.2023
ULR No.:	TC748723000012681F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Mahadula Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	30.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.4	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	748	IS 3025 (Part 16): 2023
5.	Total Suspended Solids	mg/L	9	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	153	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	90.8	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	22.4	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	340	APHA 24th Ed. 2023, 2330-B
10.	Total Hardness (as CaCO3)	mg/L	386	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.695	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.42	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.9	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.9	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	10	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

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Technical Manager
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0318230804	Date: 14.08.2023
ULR No.:	TC748723000012661F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.34	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S²-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	612	IS 3025 (Part 18):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.186	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.017	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	0.012	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0318230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Powar Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Mahadula Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WISAP/WW:66

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0319230804	Date: 14.08.2023
ULR No.:	TC748723000012662F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Koradi Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	29.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	8.0	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl G
4.	Total Dissolved Solids	mg/L	565	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	92.0	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	79.6	APHA 24th Ed. 2023, 4500- SO_4-E
8.	Nitrate (as NO_3)	mg/L	30.5	APHA 24th Ed. 2023, 4500-NO_3- B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	266	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	380	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.794	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.40	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	7.0	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	3.3	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	11	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, (B), GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0319230804	Date: 14.09.2023
ULR No.:	TC748723000012662F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S -C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530 B & C
22.	Fixed Dissolved Solids	mg/L	455	IS 3025 (Part 16):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.074	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.012	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	0.063	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500-Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	0.014	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Reviewed and authorised by

Harish Mendhi
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Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0319230804N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550016724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Koradi Village Dugwell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS:6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ:0.01)	WI/SAP/WW/56

END OF REPORT

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Reviewed and authorised by

Harish Mendhi
Technical Manager
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Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0320230804	Date: 14.08.2023
ULR No.:	TC748723000012663F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Koradi Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can 100 mL X 1 No. PVC Can 1L X 1 No. Glass Bottle
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Temperature	°C	30.0	APHA 24th Ed. 2023, 2550-B
2.	pH	-	7.9	APHA 24th Ed. 2023, 4500-H+-B
3.	Free Chlorine (Residual)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-Cl-G
4.	Total Dissolved Solids	mg/L	521	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	7	APHA 24th Ed. 2023, 2540-D
6.	Chloride (as Cl)	mg/L	78.0	APHA 24th Ed. 2023, 4500-Cl-B
7.	Sulphate (as SO_4)	mg/L	53.6	APHA 24th Ed. 2023, 4500- SO_4 E
8.	Nitrate (as NO_3)	mg/L	35.6	APHA 24th Ed. 2023, 4500-NO_3, B
9.	Alkalinity Total (as $CaCO_3$)	mg/L	268	APHA 24th Ed. 2023, 2320-B
10.	Total Hardness (as CaCO3)	mg/L	348	APHA 24th Ed. 2023, 2340-C
11.	Phosphate Total (as PO_4)	mg/L	0.404	APHA 24th Ed. 2023, 4500-P, E
12.	Fluoride (as F)	mg/L	0.37	APHA 24th Ed. 2023, 4500-F, D
13.	Dissolved Oxygen	mg/L	6.8	APHA 24th Ed. 2023, 4500-O, B & C
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	2.3	IS 3025 (Part 44): 2023
15.	Chemical Oxygen Demand	mg/L	8	APHA 24th Ed. 2023, 5220-B
16.	Oil and Grease	mg/L	BQL (LOQ:1)	IS 3025 (Part 39): 2021

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

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TEST REPORT

Report No.:	ME-0320230804	Date: 14.08.2023
ULR No.:	TC748723000012683F	

Sr. No.	Parameter	Unit	Result	Method Reference
17.	Free Ammonia	mg/L	BQL (LOQ:0.1)	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
18.	Total Kjeldahl Nitrogen	mg/L	0.28	APHA 24th Ed. 2023, 4500 N Org-B
19.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	APHA 24th Ed. 2023, 4500-S-C, D
20.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 4500-CN, C & E
21.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	APHA 24th Ed. 2023, 5530- B & C
22.	Fixed Dissolved Solids	mg/L	416	IS 3025 (Part 16):2022
	Product Group: Residues in water (Ground Water)			
23.	Iron (as Fe)	mg/L	0.086	IS 3025 (Part 2) 2019
24.	Manganese (as Mn)	mg/L	0.048	IS 3025(Part 2): 2019
25.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
26.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	IS 3025 (Part 2) 2019
27.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	IS 3025(Part 2): 2019
28.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	IS 3025(Part 2): 2019
29.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019
30.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	APHA 24th Ed. 2023, 3112-B
31.	Hexavalent Chromium (as Cr^{+6})	mg/L	BQL (LOQ:0.02)	APHA 24th Ed. 2023, 3500- Cr-B
32.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
33.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	IS 3025 (Part 2) 2019
34.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	IS 3025 (Part 2) 2019
35.	Vanadium (as V)	mg/L	BQL (LOQ:0.01)	IS 3025(Part 2): 2019

END OF REPORT

Note:
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0320230604N	Date: 14.08.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550015724/1007 PO Date: 22.08.2022
Sample Description / Type	Ground water	Sampling Done by	Laboratory
Sampling Location	Koradi Village Borewell	Sample Quantity / Packing	5L X 2 No. PVC Can 500 mL X 1 No. PVC Can
Date of Sampling	04.08.2023	Date of Receipt of Sample	04.08.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	04.08.2023	Date of Completion of Analysis	12.08.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Water (Ground Water)			
1.	Bioassay test	-	Free from acute lethal toxicity	IS 6582:1971
2.	Trivalent Chromium (as Cr^{+3})	mg/L	BQL (LOQ 0.01)	WI/SAP/WA/58

END OF REPORT

Note:
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Reviewed and authorised by

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Chemical Testing

ANNEXURE - III

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No	ME-1132231114	Date: 20.11.2023
ULR No	TC748723000018501F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No. KTPS/4550019674/0861 PO Date. 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.10	Sample Quantity / Packing	Thimble: 1 X 1 No. SO_2: 30 mL X 1 No. PVC Bottle NO_X 25 mL X 1 No. PVC Bottle Hg: 200 mL X 2 No. PVC Bottle CO_2/CO/O_2: Bladder 2 L X 1 No.
Date of Sampling	13.11.2023	Date of Receipt of Sample	14.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	14.11.2023	Date of Completion of Analysis	20.11.2023

Stack Details	
Stack Identity	Unit No.10
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	?
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	9386
Load at the time of monitoring (MW)	572
Time of Monitoring (h)	11:00

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Flue gas Temperature	°C	130	IS 11255 (Part 3):2008
2	Flue gas Velocity	m/s	24.7	IS 11255 (Part 3):2008
3	Flue gas Flow Rate	Nm^3/h	2306204	IS 11255 (Part 3):2008
4	Particulate Matter (PM) corrected to 6% O_2	mg/Nm^3	41	IS 11255 (Part 1):1985

Reviewed and authorised by

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TEST REPORT

Report No.	ME-1132231114	Date 20.11.2023
ULR No.	TC748723000018501F	

Sr. No.	Parameter	Unit	Result	Method Reference
5	Sulphur Dioxide (SO_2) corrected to 6% O_2	mg/Nm^3	1710	IS 11255 (Part 2):1985
6	Oxides of Nitrogen (NO_x) corrected to 6% O_2	mg/Nm^3	350	IS 11255 (Part 7): 2005
7	Oxygen	%	8.2	IS: 13270: 1992
8	Mercury (Hg)	mg/Nm^3	0.0036	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/60/2013-14 Chapter 5 & 6, Page No. 54 - 84
9	Carbon Monoxide	mg/Nm^3	10.8	IS 5182 (Part 10): 1999
10	Carbon Dioxide	%	12.4	IS: 13270: 1992
11	Lead (as Pb)	mg/Nm^3	BQL(LOQ:0.02)	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/60/2013-14, Chapter 5 and 6: 2014
12	Moisture	%	3.16	IS 11255 (Part 3):2008

END OF REPORT

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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS LTD.

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No ME-1132231114N Date 20.11.2023
ULR No -

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**	PO No PO Date	KTPS/4550019674/0861 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No 10	Sample Quantity / Packing	SO_2 30 mL X 1 No. PVC Bottle
Date of Sampling	13.11.2023	Date of Receipt of Sample	14.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	14.11.2023	Date of Completion of Analysis	20.11.2023

Stack Details	
Stack Identity	Unit No.10
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	9388
Load at the time of monitoring (MW)	572
Time of Monitoring (h)	11:00

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Sulphur Dioxide (SO_2) corrected to 6% O_2	t/d	94.6	IS 11255 (Part 2) 1985

END OF REPORT

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Reviewed and authorised by

Harish Mendhi
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Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No	ME-1620231122		Date 27.11.2023
ULR No	TC748723000918931F		

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No. KTPS/4550019674/0861 PO Date 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.08	Sample Quantity / Packing	Thimble: 1 X 1 No SO_2: 30 mL X 1 No. PVC Bottle NO_x: 25 mL X 1 No. PVC Bottle Hg: 200 mL X 2 No. PVC Bottle CO_2/CO/O_2: Bladder 2 L X 1 No.
Date of Sampling	20.11.2023	Date of Receipt of Sample	22.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	23.11.2023	Date of Completion of Analysis	27.11.2023

Stack Details	
Stack Identity	Unit No.08
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	8023
Load at the time of monitoring (MW)	592
Time of Monitoring (h)	09:40

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Flue gas Temperature	°C	118	IS 11255 (Part 3):2008
2	Flue gas Velocity	m/s	24.7	IS 11255 (Part 3):2008
3	Flue gas Flow Rate	Nm^3/h	2376700	IS 11255 (Part 3):2008
4	Particulate Matter (PM) corrected to 6% O_2	mg/Nm^3	39	IS 11255 (Part 1):1985

Reviewed and authorised by

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Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT SOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No: ME-1941231127 | Date: 02.12.2023
ULR No: TC748723000019233F

Sr. No.	Parameter	Unit	Result	Method Reference
5	Sulphur Dioxide (SO_2) corrected to 6% O_2	mg/Nm³	1678	IS 11255 (Part 2) 1985
6	Oxides of Nitrogen (NO_x) corrected to 6% O_2	mg/Nm³	344	IS 11255 (Part 7) 2005
7	Oxygen	%	8.0	IS: 13270: 1992
8	Mercury (Hg)	mg/Nm³	0.0035	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/60/2013-14 Chapter 5 & 6; Page No. 54 - 64
9	Carbon Monoxide	mg/Nm³	5.4	IS 5182 (Part 10): 1999
10	Carbon Dioxide	%	12.2	IS: 13270: 1992
11	Lead (as Pb)	mg/Nm³	BQL(LOQ 0.02)	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/60/2013-14, Chapter 5 and 6: 2014
12	Moisture	%	3.11	IS 11255 (Part 3) 2008

END OF REPORT

Note:
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Reviewed and authorised by

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TEST REPORT

	Report No	ME-1940231127N	Date: 02.12.2023
	ULR No	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No. KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.09	Sample Quantity / Packing	SO_2 30 mL X 1 No. PVC Bottle
Date of Sampling	27.11.2023	Date of Receipt of Sample	27.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	28.11.2023	Date of Completion of Analysis	02.12.2023

Stack Details	
Stack Identity	Unit No.09
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	7529
Load at the time of monitoring (MW)	512
Time of Monitoring (h)	10:30

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Sulphur Dioxide (SO_2) corrected to 6% O_2	t/d	98.1	IS 11255 (Part 2):1985

END OF REPORT

Note:
1. BQL: Below Quantification Limit
2. LOQ: Limit of Quantification
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA.
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No	ME-1941231127N	Date	02.12.2023
ULR No	-		

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)	PO No PO Date	KTPS/4550019674/0861 17.08.2023

Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.10	Sample Quantity / Packing	SO_2 30 mL X 1 No. PVC Bottle
Date of Sampling	27.11.2023	Date of Receipt of Sample	27.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	28.11.2023	Date of Completion of Analysis	02.12.2023

Stack Details	
Stack Identity	Unit No.10
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	8358
Load at the time of monitoring (MW)	561
Time of Monitoring (h)	11:30

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Sulphur Dioxide (SO_2) corrected to 6% O_2	t/d	96.4	IS 11255 (Part 2) 1985

END OF REPORT

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Chemical Testing

MEEPL

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Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No: ME-1620231122
ULR No: TC748723000018931F

Date: 27.11.2023

Sr. No.	Parameter	Unit	Result	Method Reference
5	Sulphur Dioxide (SO_2) corrected to 6% O_2	mg/Nm^3	1718	IS 11255 (Part 2):1985
6	Oxides of Nitrogen (NO_x) corrected to 6% O_2	mg/Nm^3	371	IS 11255 (Part 7): 2005
7	Oxygen	%	8.4	IS: 13270: 1992
8	Mercury (Hg)	mg/Nm^3	0.0034	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14 Chapter 5 & 6; Page No: 54 - 84
9	Carbon Monoxide	mg/Nm^3	8.9	IS 5182 (Part 10): 1999
10	Carbon Dioxide	%	12.2	IS: 13270: 1992
11	Lead (as Pb)	mg/Nm^3	BQL(LOQ 0.02)	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14, Chapter 5 and 6: 2014
12	Moisture	%	3.1	IS 11255 (Part 3):2008

END OF REPORT

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Harish Mendhi
Technical Manager
Chemical Testing

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Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1620231122N	Date: 27.11.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.08	Sample Quantity / Packing	SO_2:30 mL X 1 No. PVC Bottle
Date of Sampling	20.11.2023	Date of Receipt of Sample	22.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	23.11.2023	Date of Completion of Analysis	27.11.2023

Stack Details	
Stack Identity	Unit No.08
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	8023
Load at the time of monitoring (MW)	592
Time of Monitoring (h)	09:40

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Sulphur Dioxide (SO_2) corrected to 6% O_2	t/d	88.1	IS 11255 (Part 2):1985

END OF REPORT

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Harish Mendhi
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No	ME-1621231122	Date: 27.11.2023
ULR No	TC748723000016932F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No: KTPS/4550019674/0881 PO Date: 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.10	Sample Quantity / Packing	Thimble: 1 X 1 No SO_2: 30 mL X 1 No. PVC Bottle NO_x: 25 mL X 1 No. PVC Bottle Hg: 200 mL X 2 No. PVC Bottle CO_2/CO/O_2: Bladder 2 L X 1 No
Date of Sampling	20.11.2023	Date of Receipt of Sample	22.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	23.11.2023	Date of Completion of Analysis	27.11.2023

Stack Details	
Stack Identity	Unit No.10
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	6063
Load at the time of monitoring (MW)	587
Time of Monitoring (h)	10:50

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Flue gas Temperature	°C	123	IS 11255 (Part 3):2008
2	Flue gas Velocity	m/s	25.8	IS 11255 (Part 3):2008
3	Flue gas Flow Rate	Nm^3/h	2460351	IS 11255 (Part 3):2008
4	Particulate Matter (PM) corrected to 6% O_2	mg/Nm^3	42	IS 11255 (Part 1):1985

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, G. GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No: ME-1621231122
ULR No: TC748723000018932F

Date: 27.11.2023

Sr. No.	Parameter	Unit	Result	Method Reference
5	Sulphur Dioxide (SO_2) corrected to 6% O_2	mg/Nm³	1668	IS 11255 (Part 2):1985
6	Oxides of Nitrogen (NO_x) corrected to 6% O_2	mg/Nm³	361	IS 11255 (Part 7): 2005
7	Oxygen	%	8.2	IS: 13270: 1992
8	Mercury (Hg)	mg/Nm³	0.0032	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14 Chapter 5 & 6; Page No. 54 - 84
9	Carbon Monoxide	mg/Nm³	10.4	IS 5182 (Part 10): 1999
10	Carbon Dioxide	%	12.4	IS: 13270: 1992
11	Lead (as Pb)	mg/Nm³	BQL(LOQ:0.02)	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14, Chapter 5 and 6: 2014
12	Moisture	%	2.8	IS 11255 (Part 3):2008

END OF REPORT

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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-1621231122N	Date: 20.11.2023
ULR No.	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No. KTPS/4550019674/0861 PO Date 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.10	Sample Quantity / Packing	SO_2:30 mL X 1 No. PVC Bottle
Date of Sampling	20.11.2023	Date of Receipt of Sample	22.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	23.11.2023	Date of Completion of Analysis	27.11.2023

Stack Details	
Stack Identity	Unit No.10
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	6023
Load at the time of monitoring (MW)	587
Time of Monitoring (h)	10:50

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Sulphur Dioxide (SO_2) corrected to 6% O_2	t/d	98.5	IS 11255 (Part 2):1985

END OF REPORT

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Harish Mondhi
Technical Manager
Chemical Testing

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Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-1939231127		Date: 02.12.2023
ULR No.	TC748723000019231F		

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.08	Sample Quantity / Packing	Thimble: 1 X 1 No. SO_2: 30 mL X 1 No. PVC Bottle NO_x:25 mL X 1 No. PVC Bottle Hg: 200 mL X 2 No. PVC Bottle CO_2/CO/O_2: Bladder 2 L X 1 No.
Date of Sampling	27.11.2023	Date of Receipt of Sample	27.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	28.11.2023	Date of Completion of Analysis	02.12.2023

Stack Details	
Stack Identity	Unit No.08
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	7845
Load at the time of monitoring (MW)	603
Time of Monitoring (h)	09:20

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Flue gas Temperature	°C	117	IS 11255 (Part 3):2008
2	Flue gas Velocity	m/s	25.0	IS 11255 (Part 3):2008
3	Flue gas Flow Rate	Nm^3/h	2412152	IS 11255 (Part 3):2008
4	Particulate Matter (PM) corrected to 6% O_2	mg/Nm^3	40	IS 11255 (Part 1):1985

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, G. GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No	ME-1939231127	Date: 02.12.2023
ULR No	TC748723000019231F	

Sr. No.	Parameter	Unit	Result	Method Reference
5	Sulphur Dioxide (SO_2) corrected to 6% O_2	mg/Nm³	1573	IS 11255 (Part 2):1985
6	Oxides of Nitrogen (NO_x) corrected to 6% O_2	mg/Nm³	310	IS 11255 (Part 7): 2005
7	Oxygen	%	8.2	IS: 13270: 1992
8	Mercury (Hg)	mg/Nm³	0.0036	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14 Chapter 5 & 6, Page No. 54 - 84
9	Carbon Monoxide	mg/Nm³	4.9	IS 5182 (Part 10): 1999
10	Carbon Dioxide	%	12.2	IS: 13270: 1992
11	Lead (as Pb)	mg/Nm³	BQL(LOQ 0.02)	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14, Chapter 5 and 6: 2014
12	Moisture	%	3.08	IS 11255 (Part 3):2008

END OF REPORT

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Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1839231127N	Date: 02.12.2023
ULR No.:	-	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550019674/0851 PO Date: 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.08	Sample Quantity / Packing	SO_2:30 mL X 1 No. PVC Bottle
Date of Sampling	27.11.2023	Date of Receipt of Sample	27.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	28.11.2023	Date of Completion of Analysis	02.12.2023

Stack Details	
Stack Identity	Unit No.08
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	7845
Load at the time of monitoring (MW)	603
Time of Monitoring (h)	09:20

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Sulphur Dioxide (SO_2) corrected to 6% O_2	t/d	91.1	IS:11255 (Part 2):1985

END OF REPORT

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Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1940231127	Date: 02.12.2023
ULR No.	TC748723000019232F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Stack Emission	Sampling Done by	Laboratory
Sampling Location	Unit No.09	Sample Quantity / Packing	Thimble: 1 X 1 No. SO_2: 30 mL X 1 No. PVC Bottle NO_x:25 mL X 1 No. PVC Bottle Hg: 200 mL X 2 No. PVC Bottle CO_2/CO/O_2: Bladder 2 L X 1 No.
Date of Sampling	27.11.2023	Date of Receipt of Sample	27.11.2023
Sampling Procedure	As per method reference		
Date of Start of Analysis	28.11.2023	Date of Completion of Analysis	02.12.2023

Stack Details	
Stack Identity	Unit No.09
Stack attached to	ESP of Boiler
Material of construction	RCC & MS
Stack height above ground level (Meter)	275
Stack Diameter (Meter)	7
Stack shape at top	Round
Type of fuel	Coal
Fuel Consumption (t/d)	7629
Load at the time of monitoring (MW)	512
Time of Monitoring (h)	10:30

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Stack Emission)			
1	Flue gas Temperature	°C	121	IS 11255 (Part 3):2008
2	Flue gas Velocity	m/s	24.8	IS 11255 (Part 3):2008
3	Flue gas Flow Rate	Nm^3/h	2379406	IS 11255 (Part 3):2008
4	Particulate Matter (PM) corrected to 6% O_2	mg/Nm^3	45	IS 11255 (Part 1):1985

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1940231127	Date: 02.12.2023
ULR No.:	TC748723000019232F	

Sr. No.	Parameter	Unit	Result	Method Reference
5	Sulphur Dioxide (SO_2) corrected to 6% O_2	mg/Nm³	1718	IS 11255 (Part 2):1985
6	Oxides of Nitrogen (NO_x) corrected to 6% O_2	mg/Nm³	316	IS 11255 (Part 7): 2006
7	Oxygen	%	8.4	IS: 13270: 1992
8	Mercury (Hg)	mg/Nm³	0.0034	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14 Chapter 5 & 6; Page No. 54 - 84
9	Carbon Monoxide	mg/Nm³	6.9	IS 5182 (Part 10): 1999
10	Carbon Dioxide	%	12.0	IS: 13270: 1992
11	Lead (as Pb)	mg/Nm³	BQL(LOQ:0.02)	CPCB Guidelines for the Measurement of Source Emission Monitoring, LATS/80/2013-14, Chapter 5 and 6: 2014
12	Moisture	%	2.67	IS 11255 (Part 3):2008

END OF REPORT

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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

ESP photographs

Annexure - V

MAHAGENCO
Maharashtra State Power Generation Co. Ltd.
CIN : U40100MH2005SGC153648

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of: Chief Engineer (O & M), T.P.S., Koradi, Dist. Nagpur, PIN – 441111
Phone: (07109) 262141 to 262146,262106, 262109 FAX: 262122(Off)
Email –cegeokoradi@mahagenco.in

KTPS/CE (O&M)/Ash Uti/2023-24/ Date:-

№ 0 8 0 5 7 10 NOV 2023

To,
The Superintendent Engineer,
MSRDC (Ltd.),
Patwardhan High School,
Sitabardi, Nagpur-440001

Sub:- Construction of Super Communication Expressway, Nagpur to Bhandara- Gondia & Nagpur to Gadchiroli.

- **Usage of Pond ash /Fly Ash for construction, Regarding**

Ref :- 1. MOEF & CC gazette notifications dtd.03.11.2009 and amendment dtd.25.01.2016.
2. Your office letter No. MSRDC/05/Nag/921/ dtd.14.09.2023.

With reference to the above subject matters, our office is ready to provide the fly ash/ pond ash to MSRDC for the road construction of Nagpur to Bhandara- Gondia and Nagpur to Gadchiroli Super communication Expressway. Our TPS has present legacy ash (Khasara & Koradi ash bund) is @ 3.25 Crore MT.

Therefore, it is requested to you arrange to transport the ash from both the Khasara & Koradi ash bunds from our TPS. This office representative was already discussed to MSRDC, Nagpur regarding the Mahagenco Policy of Fly Ash Utilization on free of cost, but the transportation cost is to be borne by MSRDC as the end users.

This is for your information & further needful please.

Chief Engineer (O&M)
MSPGCL,KTPS Koradi

Copy submitted w.r.to:
1. Executive Director (O&M-II), Vidyut Bhavan, Katol Road, Nagpur
2. Executive Director (E&S), MSPGCL, Prakashgad, Mumbai-51

Copy forwarded to:
1. The Chief Engineer (E&S-PG-II), MSPGCL, H.D.I.L. Tower, Mumbai-51

Maharashtra State Road Development Corporation Limited

MSRDC

No. MSRDC/05/Nag/ 921/
Date: 14/09/23

To,
The Executive Director (Project-II)
Generation Construction
Koradi Thermal Power Station,
Distt. Nagpur
Email : edcpZkoradi@mahagenco.in

Chief Engineer
Koradi Thermal Power
M.S.P.G.C.L. NAGPUR
04 OCT 2023
Receipt No.

Sub:- Construction of Super Communication Expressway i) Nagpur to Gondia, ii) Sawarkheda to Gadegaon iii) Seldoh to Rajura.
- **Usage of Pond ash / Fly Ash for construction**

Ref:- MOEF&CC gazette notifications dtd. 03.11.2009 and amendment dtd. 25.01.2016.

The Nagpur being second capital of the State and Major urban hub in Eastern Maharashtra, the Deputy Chief Minister & Finance Minister, Maharashtra has announced in the budget speech of March, 2022 that "Hindu Hrudaysamrat Balasaheb Thackeray Maharashtra Samruddhi Mahamarg (HHBTMSM) will be extended from Nagpur to Bhandara-Gondia & Nagpur to Gadchiroli". Therefore, it is proposed to develop Expressway connector to HHBTMSM at Nagpur with Gondia & Gadchiroli and link between HHBTMSM to Chandrapur.

Govt. of Maharashtra is implementing subjected project of expressways in Maharashtra. MSRDC Ltd. Nagpur is entrusted with the above Project Expressways in Nagpur, Bhandara, Gondia, Gadchiroli, Chandrapur & Wardha District.

The work of above project is at DPR level and M/s. Monarch Surveyors & Engineering Consultants Pvt. Ltd., Pune has been appointed as DPR Consultant. As per prevailing policies of Govt. of India, fly ash / pond ash is to be used in construction of road structure which is available free of cost at the thermal power station. As per the Govt. Circular, the transportation cost, loading & unloading cost is to borne by the Thermal Power organization.

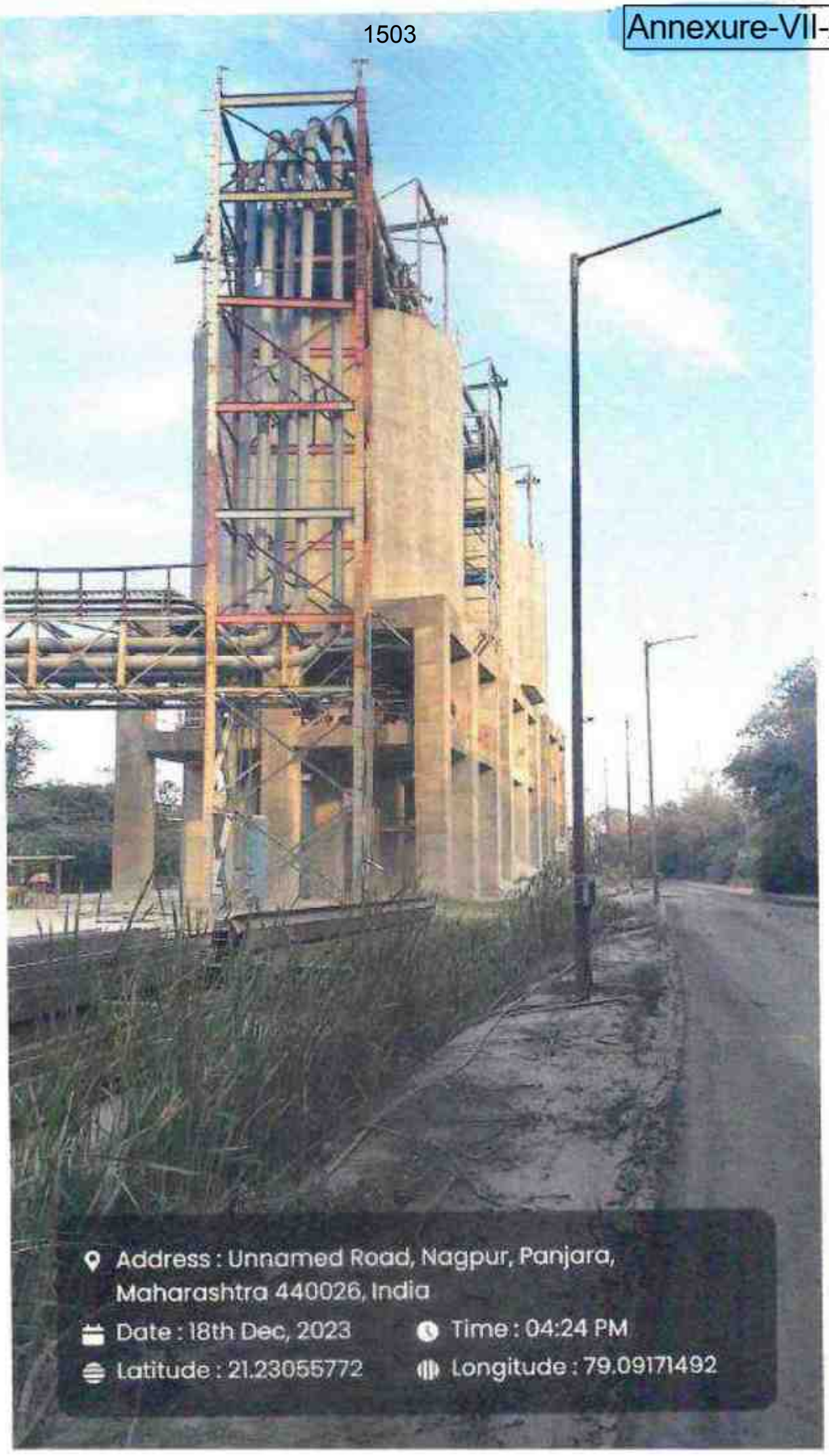
In this context, it is requested to inform the availability of ash throughout the year and concurrence for its supply for use in the subjected project as per the reference notification. Hoping for your positive response. The contact person of this office is Shri Gajanan Yenkar, Executive Engineer (Mob No. 9923454530). Also, it is requested to inform the contact details of your concerned officer, so as expedite the matter.

EXECUTIVE DIRECTOR (PROJECT-II)
MAHAGENCO, NAGPUR
INWARD NO. 96 DT. 20 OCT 2023

(Ashwini A. Ghuge)
Superintending Engineer
MSRDC (Ltd.), Nagpur

1. Copy submitted to the Joint Managing Director (Engg.I), MSRDC Ltd. Mumbai for favour of information please.
2. Copy submitted to the Joint Managing Director, MSRDC Ltd. Nagpur for favour of information please.
3. Copy submitted to the Chief Engineer (Nodal), MSRDC Ltd. Mumbai for favour of information please.
4. Copy to the Superintending Engineer (Coordination), MSRDC Ltd. Mumbai for favour of information.
5. Copy to the M/s. Monarch Surveyors & Engineering Consultants Pvt. Ltd. Pune
   - It is requested to pursue the matter with concerned office for getting the requisite information.

Annexure-VII-A



Address : 64XR+443, Kalameshwar-Kamptee Road, Maharashtra 441111, India
Date : 18th Dec, 2023
Time : 04:20 PM
Latitude : 21.24737792
Longitude : 79.14076534

Annexure - VII -B

Mahabal Enviro Engineers Pvt. Ltd.
A-87/805, 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-0756231012N		Date. 25.10.2023
ULR No.	-		
Name of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.	PO No PO Date	KTPS/465001961/4/0861 17.08.2023
Nature of Sample	Fly Ash	Sampling Done by	Customer
Sample Type Sample Location	Unit No. # 08	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Testing Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
1	pH at 10% Suspension	-	8.4	CPCB Manual LATS/15/2003-2004 Ch. 17.4 Page No. 167 2004
2	Moisture content	%	BQL (LOQ:0.1)	IS 9235: 1999
3	Organic Content	%	0.194	IS 10158: 1982
4	Water Retaining capacity	%	60.0	FAO Sec II.5, page No. 51
5	Chloride	mg/kg	106	USEPA / SW 846/ 9253 1994
6	Sulphate	mg/kg	594	USEPA / SW 846/ 9038 Rev 0, Sep 1996
7	Cadmium	mg/kg	2.39	ASTM D-3683
8	Chromium	mg/kg	82.2	ASTM D-3683
9	Copper	mg/kg	46.9	ASTM D-3683
10	Iron as Fe	mg/kg	31299	ASTM D-3683
11	Lead	mg/kg	19.0	ASTM D-3683
12	Zinc	mg/kg	58.1	ASTM D-3683
13	Nickel	mg/kg	43.9	ASTM D-3683
14	Mercury	mg/kg	0.106	CPCB(HW), Page No. 62
15	Sodium as Na	mg/kg	590	IS 9497 1980
16	Potassium as K	mg/kg	410	IS 9497 1980

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.: ME-0756231012N
ULR No.: -
Date: 25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
1	Calcium	mg/kg	15451	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations. (FAO) Sec. III, 8.1, Pg. No. 115:1984
2	Magnesium	mg/kg	5794	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations. (FAO) Sec. III, 8.1, Pg. No. 115:1984
3	Total Kjeldhal Nitrogen	mg/kg	671	IS 10158: 1982
4	Fixed Residue	%	99.7	IS 10158: 1982
5	Total Phosphate	mg/kg	556	IS 10158: 1982
6	Fluoride	mg/kg	10.9	CPCB (HW), Page no 75 & APHA 24th Ed. 2023 4500F, D

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as received basis.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
5. This report is not to be reproduced except in full, without the written approval of the laboratory.
6. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0756231012		Date: 25.10.2023
ULR No.:	TC748723000016395F		
Name & Address of Customer:	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.		PO No.: KTPS/4550019674/0921 PO Date: 17.08.2023
Name / Type / Description:	Fly Ash	Sampling Done by	Customer
Sampling Location:	Unit No. # 08	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling:	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure:	Sample tested as received		
Date of Start of Analysis:	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Building Material (Fly Ash)			
1.	Silicates as SiO_2	%	65.0	IS 1727, 1967
2.	Alumina as Al_2O_3	%	24.1	IS 1727, 1967

END OF REPORT

Note: 1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as received basis.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0757231012N		Date: 25.10.2023
ULR No.:	-		
Name and address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.	PO No.: KTPS/4550019674/0861 PO Date: 17.08.2023	
Sample Description / Type	Fly Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 09	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
1	pH at 10% Suspension	-	8.2	CPCB Manual LATS/16/2003-2004 ,Ch. 7.7.4, Page No. 167:2004
2	Moisture content	%	BQL (LOQ:0.1)	IS 9235: 1999
3	Organic Content	%	0.476	IS 10158: 1982
4	Water Retaining capacity	%	63.3	FAO Sec II.5, page No. 91
5	Chloride	mg/kg	186	USEPA / SW 846/ 9253:1994
6	Sulphate	mg/kg	898	USEPA / SW 846/ 9036 Rev 0, Sep 1995
7	Cadmium	mg/kg	2.79	ASTM D-3683
8	Chromium	mg/kg	76.6	ASTM D-3683
9	Copper	mg/kg	50.8	ASTM D-3683
10	Iron as Fe	mg/kg	31373	ASTM D-3683
11	Lead	mg/kg	23.9	ASTM D-3683
12	Zinc	mg/kg	91.9	ASTM D-3683
13	Nickel	mg/kg	38.8	ASTM D-3683
14	Mercury	mg/kg	0.133	CPCB(HW), Page No. 62
15	Sodium as Na	mg/kg	1227	IS 9497:1980
16	Potassium as K	mg/kg	231	IS 9497:1980

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0757231012N
ULR No.:	-

Date: 26.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
1	Magnesium	mg/kg	3830	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Sec. III, 6-1, Pg. No. 115:1984
2	Total Kjeldhal Nitrogen	mg/kg	470	IS 10158: 1982
3	Fixed Residue	%	99.5	IS 10158: 1982
4	Total Phosphate	mg/kg	529	IS 10158: 1982
5	Fluoride	mg/kg	10.2	CPCB (HW), Page no 75 & APHA 24th Ed. 2023 4500F, D

END OF REPORT

Notes:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as received basis.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
5. This report is not to be reproduced except in full, without the written approval of the laboratory.
6. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0757231012
ULR No.:	TC748723000016396F

Date: 25.10.2023

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.	PO No PO Date	KTPS/4550/19674/2351 17.08.2023
Sample Description / Type	Fly Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 09	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Building Material (Fly Ash)			
1	Silicates as SiO_2	%	60.1	IS: 1727, 1967
2	Alumina as Al_2O_3	%	25.4	IS: 1727, 1967

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as received basis.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
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Reviewed and authorised by

Harish Mendhi
Technical Manager
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Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.: ME-0758231012N | Date: 25.10.2023
ULR No.:

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.	PO No.	KTPS/4550019674/0861
		PO Date	17.08.2023
Sample Description / Type	Fly Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 10	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
1.	pH at 10% Suspension	-	8.8	CPCB Manual LATS/19/2003-2004, Ch. 7.7.4 Page No. 167:2004
2.	Moisture content	%	BQL (LOQ:0.1)	IS 9235: 1999
3.	Organic Content	%	0.154	IS 10158: 1982
4.	Water Retaining capacity	%	67.6	FAO Sec. II.5, page No. 61
5.	Chloride	mg/kg	106	USEPA / SW 846/ 9253:1994
6.	Sulphate	mg/kg	324	USEPA / SW 846/ 9038,Rev 0, Sep 1994
7.	Cadmium	mg/kg	2.39	ASTM D-3683
8.	Chromium	mg/kg	82.2	ASTM D-3683
9.	Copper	mg/kg	48.3	ASTM D-3683
10.	Iron as Fe	mg/kg	39569	ASTM D-3683
11.	Lead	mg/kg	28.9	ASTM D-3683
12.	Zinc	mg/kg	51.5	ASTM D-3683
13.	Nickel	mg/kg	36.5	ASTM D-3683
14.	Mercury	mg/kg	BQL(LOQ:0.1)	CPCB(HW), Page No. 62
15.	Sodium as Na	mg/kg	938	IS 9497:1980
16.	Potassium as K	mg/kg	415	IS 9497:1980
17.	Calcium	mg/kg	11864	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Sec. III, 8-1, Pg. No. 115:1984

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.: ME-0758231012N
ULR No.: -

Date: 25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
16	Magnesium	mg/kg	3214	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Soil, 0 83, Pg No. 115:1984
17	Total Kjeldhal Nitrogen	mg/kg	837	IS 10158: 1982
18	Fixed Residue	%	99.76	IS 10158: 1982
19	Total Phosphate	mg/kg	749	IS 10158: 1982
20	Fluoride	mg/kg	11.5	CPCB (HW), Page no.75 & APHA (22nd Ed.) 4500F, D

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as received basis.
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Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

	Report No.:	ME-0758231012	Date: 25.10.2023
	ULR No.:	TC748723000016397F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.		PO No KTPS/45569/1567/07/361 PO Date 17.08.2023
Sample Description / Type	Fly Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 10	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Building Material (Fly Ash)			
1	Silicates as SiO_2	%	65.0	IS: 1727, 1967
2	Alumina as Al_2O_3	%	28.2	IS: 1727, 1967

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as received basis.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
5. This report is not to be reproduced except in full, without the written approval of the laboratory.
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Reviewed and authorised by

Harish Mondhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 17,14,17-B, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone : 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No. ME-0759231012N | Date 25.10.2023
ULR No.: -

Name & Address of Customer: **THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.**

PO No KTPS/455/0196/74/2023
PO Date 17.08.2023

Sample Description / Type	Bottom Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 08	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
1	pH at 10% Suspension	-	8.8	CPCB Manual LATS/16/2003-2004 Cr. 7 7 4 Page No. 167:2004
2	Moisture content	%	42.5	IS 9235: 1999
3	Organic Content	%	1.93	IS 10158: 1982
4	Water Retaining capacity	%	81.6	FAO Sec. II.5, page No. 61
5	Chloride	mg/kg	142	USEPA / SW 846/ 9253 1994
6	Sulphate	mg/kg	199	USEPA / SW 846/ 9038 Rev 0 Sep 1995
7	Cadmium	mg/kg	2.40	ASTM D-3683
8	Chromium	mg/kg	76.9	ASTM D-3683
9	Copper	mg/kg	39.0	ASTM D-3683
10	Iron as Fe	mg/kg	31505	ASTM D-3683
11	Lead	mg/kg	17.0	ASTM D-3683
12	Zinc	mg/kg	75.5	ASTM D-3683
13	Nickel	mg/kg	41.6	ASTM D-3683
14	Mercury	mg/kg	0.107	CPCB(HW), Page No. 82
15	Sodium as Na	mg/kg	824	IS 9497:1980
16	Potassium as K	mg/kg	152	IS 9497:1980
17	Calcium	mg/kg	9982	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Sec. III, 5-1 Pg No 115:1984

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.: ME-0759231012N
ULR No. -

Date: 25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
4	Magnesium	mg/kg	5748	US EPA 200.2 & Part Wet and Dry ... of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Vol. II & I Pg No 115:1984
6	Total Kjeldhal Nitrogen	mg/kg	976	IS 10158: 1982
5	Inert Residue	%	55.6	IS 10158: 1982
7	Total Phosphate	mg/kg	533	IS 10158: 1982
3	Fluoride	mg/kg	9.46	CPCB (HW), Page no 76 & APHA 24th Ed 2023 4500F, D

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results are on dry basis except Moisture & pH
4. The result listed refers only to the tested sample(s) and applicable parameter(s)
5. This report is not to be reproduced except in full, without the written approval of the laboratory
6. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mandhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

	Report No.:	ME-0759231012	
	ULR No.:	TC748723000016398F	Date: 25.10.2023
Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.		PO No: KTPS/4552/16.7/CE PO Date: 17.08.2023
Description / Type	Bottom Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 08	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Building Material (Bottom Ash)			
1.	Silicates as SiO_2	%	52.9	IS:1727,1967
2.	Alumina as Al_2O_3	%	24.9	IS:1727,1967

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as on Dry basis.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
5. This report is not to be reproduced except in full, without the written approval of the laboratory.
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Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Envirо Engineers Pvt. Ltd.
PLOT NOS. 13/14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA 4...
Phone : 0712-2612162/2612212 email : nagpur@mahabal.com

TEST REPORT

Report No.: ME-0760231012N
ULR No.: -
Date: 25.10.2023

Parameter	Unit	Result	Method Reference
Calcium	mg/kg	10166	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Sec. III, 8-1, Pg No 115:1984
Magnesium	mg/kg	2345	US EPA 200.2 & Physical and Chemical methods of Soil and Water Analysis Food and Agriculture Organization of the United Organization of the United Nations, (FAO) Sec. III, 8-1, Pg No 115:1984
Total Kjeldhal Nitrogen	mg/kg	966	IS 10158: 1992
Feed Residue	%	58.9	IS 10158: 1992
Total Phosphate	mg/kg	476	IS 10158: 1992
Fluoride	mg/kg	12.3	CPCB (HW), Page no 75 & APHA 24th Ed 2012 4500F, D

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results are on dry basis except Moisture & pH.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
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Reviewed and authorised by
Harish Mandhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS LTD.

Mahabal Enviro Engineers Pvt. Ltd.
PLOT NOS. 13,14,17, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0760231012		Date: 25.10.2023
ULR No.:	TC748723000016399F		
Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.	PO No PO Date	KTPS/4550019674/0851 17.08.2023
Sample Description / Type	Bottom Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 09	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date/ Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Groups: Building Material (Bottom Ash)			
1	Silicates as SiO_2	%	59.1	IS: 1727, 1967
2	Alumina as Al_2O_3	%	26.4	IS: 1727, 1967

END OF REPORT

Note: 1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

	Report No.:	ME-0761231012N	
	ULR No.:	-	Date: 25.10.2023

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.		PO No: KTPS/4558019674/0661 PO Date: 17.08.2023
Sample Description / Type	Bottom Ash	Sampling Done by	Customer
Sampling Location	Unit No. # 10	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Date of Start of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Discipline: Chemical Testing; Product Group: Building Material (Bottom Ash)			
1	pH at 10% Suspension	-	8.9	CPCB Manual LATS/16/2003-2004 Dt. 7.7.6 Page No. 167:2004
2	Moisture content	%	38.6	IS 9235: 1999
3	Organic Content	%	4.0	IS 10158: 1982
4	Water Retaining capacity	%	61.3	FAO Sec. 8.5, page No. 81
5	Chloride	mg/kg	168	USEPA / SW 846/ 9253:1994
6	Sulphate	mg/kg	120	USEPA / SW 846/ 9036 Rev 0, Sep 1995
7	Cadmium	mg/kg	2.38	ASTM D-3683
8	Chromium	mg/kg	85.4	ASTM D-3683
9	Copper	mg/kg	41.5	ASTM D-3683
10	Iron as Fe	mg/kg	38049	ASTM D-3683
11	Lead	mg/kg	23.8	ASTM D-3683
12	Zinc	mg/kg	66.2	ASTM D-3683
13	Nickel	mg/kg	38.7	ASTM D-3683
14	Mercury	mg/kg	BQL(LOQ:0.1)	CPCB(HW), Page No. 82
15	Sodium as Na	mg/kg	844	IS 9497: 1980
16	Potassium as K	mg/kg	143	IS 9497: 1980

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.
Plot Nos. 13,14,17, Gram Panchayat Bokhara, Chhindwara Road, Koradi, Nagpur, Maharashtra, India
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.: ME-0761231012N
ULR No.: -

Date: 29/10/2023

Sr. No.	Parameter	Unit	Result	Method Reference
3	Calcium	mg/kg	10600	US EPA 200.2 & Physical and Chemical Methods of Soil and Water Analysis Food and Agriculture Organization of the United Nations, (FAO) Soil Bulletin 10 115:1984
4	Magnesium	mg/kg	4716	US EPA 200.2 & Physical and Chemical Methods of Soil and Water Analysis Food and Agriculture Organization of the United Nations, (FAO) Soil Bulletin 10 115:1984
5	Total Kjeldhal Nitrogen	mg/kg	941	IS 10158: 1982
6	Fixed Residue	%	57.4	IS 10158: 1982
7	Total Phosphate	mg/kg	602	IS 10158: 1982
8	Fluoride	mg/kg	11.4	CPCB (HW), Page no 76 & APHA 23rd Ed 2017, 4500F, D

END OF REPORT

Nt: 1. BQL: Below Quantification Limit.
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Harish Mendhi
Technical Manager
Chemical Test

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0761231012
ULR No:	TC748723000016400F

Date: 25.10.2023

Name & Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station(3X660MW) Koradi, Dist. Nagpur.	PO No: KTPS/4580/136747/R1 PO Date: 17.08.2023	
Sample Type	Bottom Ash	Sampling Done by	Customer
Sample Location	Unit No. # 10	Sample Quantity / Packing	1 kg X 1 No. Polythene Bag
Date of Sampling	11.10.2023	Date of Receipt of Sample	12.10.2023
Sampling Procedure	Sample tested as received		
Period/Date of Analysis	13.10.2023	Date of Completion of Analysis	25.10.2023

Sr. No.	Parameter	Unit	Result	Method Reference
	Boiler Chemical Testing: Ash at Dosing Building (Bottom Ash)			
1	Silica as SiO_2	%	63.4	IS 1727, 1967
2	Alumina as Al_2O_3	%	25.1	IS 1727, 1967

END OF REPORT

Note: 1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. All results expressed as on Dry basis.
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Reviewed and authorised by

Harish Nandbi
Technical Manager
Chemical Testing

Annexure - VIII-A

MAHAGENCO
Maharashtra State Power Generation Co. Ltd.
CIN: U40100MH2005SGC153648

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of Chief Engineer (O & M), T.P.S., Koradi, Nagpur, PIN – 441111
Phone: (07109) 262141 to 262146, 262106, 262109 FAX: 2621276(Off)
Email – cegenkoradi@mahagenco.in

Ref No: CE (O&M)/KTPS/660MW/CD/Env. Cell/FL-03/ 00607 Date: 16 FEB 2022

To,
The Director
GoI, Ministry of Environment Forest and Climate Change
3rd Floor, Indira Paryavaran Bhavan,
Jor Bagh Road
Aliganj New Delhi- 110003.

Sub: Amendment in E.C granted to 3 x 660 MW KTPS Koradi for condition related to HDP/LDP lining to ash bund and utilization of Fly ash shall not be used for agriculture purpose and approval for additional condition of raising of dyke wall of ash bund-reg

Ref.: EC No. J-13012/87/2007-IA.II (T) dtd. 04/01/2010

Dear Madam / Sir,

This has reference to the Environmental Clearance (E.C) Granted vide reference to 3 x 660 MW KTPS Koradi Project with certain conditions which need to be complied in view of Compliance reporting mechanism. Whereas 3 x 660 MW KTPS Koradi has been complying with the conditions mentioned under E.C granted and submitting the monthly report to MoEF & CC in this regard. Also it is to inform that, prior to obtaining the E.C, 3 X 660 MW Koradi Project had submitted and EIA as part of the standard procedure wherein it was informed to the Ministry about presence of active ash bund viz: Koradi & Khasara and that the P.P after commissioning of the new project (3 x 660 MW) shall dispose of the ash in these active ash bunds. As such there would not be any additional requirement for fresh land to be made available for any new bund. Hence it was given to understand that since both the existing ash bunds are active, any lining to the peripheral area of the bund was not possible on technical grounds. In view of the submissions made thereof, it was apprehended that the condition of HDP/LDP lining would not be incorporated in the E.C condition being granted to 3 x 660 MW Koradi Project. However the condition was incorporated and eventually need to be complied. In lieu of the status of ash bund as elaborated, it is requested to reconsider the condition of HDP/LDP Lining and delimit it to "apply any other suitable implementation media to ash bund such that no leachates take place at any point of time". (Condition No: ix of EC dated 04.01.2010). Here it is worthwhile to mention that stone pitching and compacting is carried out on the outer surface of Dyke wall to prevent dyke wall from breaching and avoiding percolation.

Further, another condition regarding non-use of fly ash in agriculture activities (condition no: xl of amended EC DT: 27/03/2015), it is to bring to the kind notice that recently the ministry has published Notification no: S.O 5481 (E) DT: 31/12/2021, wherein it is permitted to use fly ash as soil conditioner after scientific testing of soil in control mode. Hence this office proposes herewith to amend the said condition in view of the guidelines as per new notification no: 5481 (E) DT: 31/12/021.

Apparently the Project Proponent would like to draw your kind attention to the fact that till date the disposal of ash from 3 x 660 MW KTPS Koradi is to Khasara ash bund. At present the bund is in active stage and disposal of ash is done by ash slurry lines. The bund is in operation since 01/01/2020 and the capacity was exhausted for first instance in 2007. Subsequently the bund height was raised from 305 to 308.50 ML from Feb 2007 to May 2010. This was prior to granting of Environmental Clearance to proposed units of 660 MW at Koradi. Also during the submission of EIA, it was mentioned that the ash from new 660 MW Koradi units shall be disposed of to Khasara ash bund.

Accordingly as the necessity arised due to the operation of new three units of 660 MW, Khasara ash bund height was subsequently increased to accommodate the ash generated

MAHAGENCO
Maharashtra State Power Generation Co. Ltd.

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of: Chief Engineer (O & M), T.P.S., Koradi, Nagpur, PIN – 441111
Phone: (07109) 262141 to 262145, 262106, 262109 FAX: 262127(Off)
CIN: U40100MH2005SGC153648 Email – cegenkoradi@mahagenco.in

At this juncture since the E.C was granted and the project was in construction phase, the approval for raising bund height was not envisaged as the process for increase in capacity of bund was carried out earlier also, i:e during operation of 120 & 210 MW units of Koradi TPS & before issuance of E.C to new units of 660 MW. Subsequently four units of 120 MW each and two units of 210 MW each are decommissioned till date.

Now as mentioned above, since the Khasara ash bund remains active till date and further it has been accorded approval by CDO Nashik for enhancing the capacity, activity of raising of dyke wall of Khasara bund is taken up to accommodate the ash released from 3 x 660 MW units. The existing raising of dyke wall of Khasara bund shall accommodate ash disposed of up to 2026. The work is in progress and shall be completed in next three months. In view of this, it is requested to accord approval for raising work of dyke wall which is continued till date and expected to be completed by June 2022.
Submitted for your kind consideration and with a request to amend the E.C conditions accordingly and issue No Objection for work of raising of Dyke wall of Khasara ash bund for the capacity up to 2026.

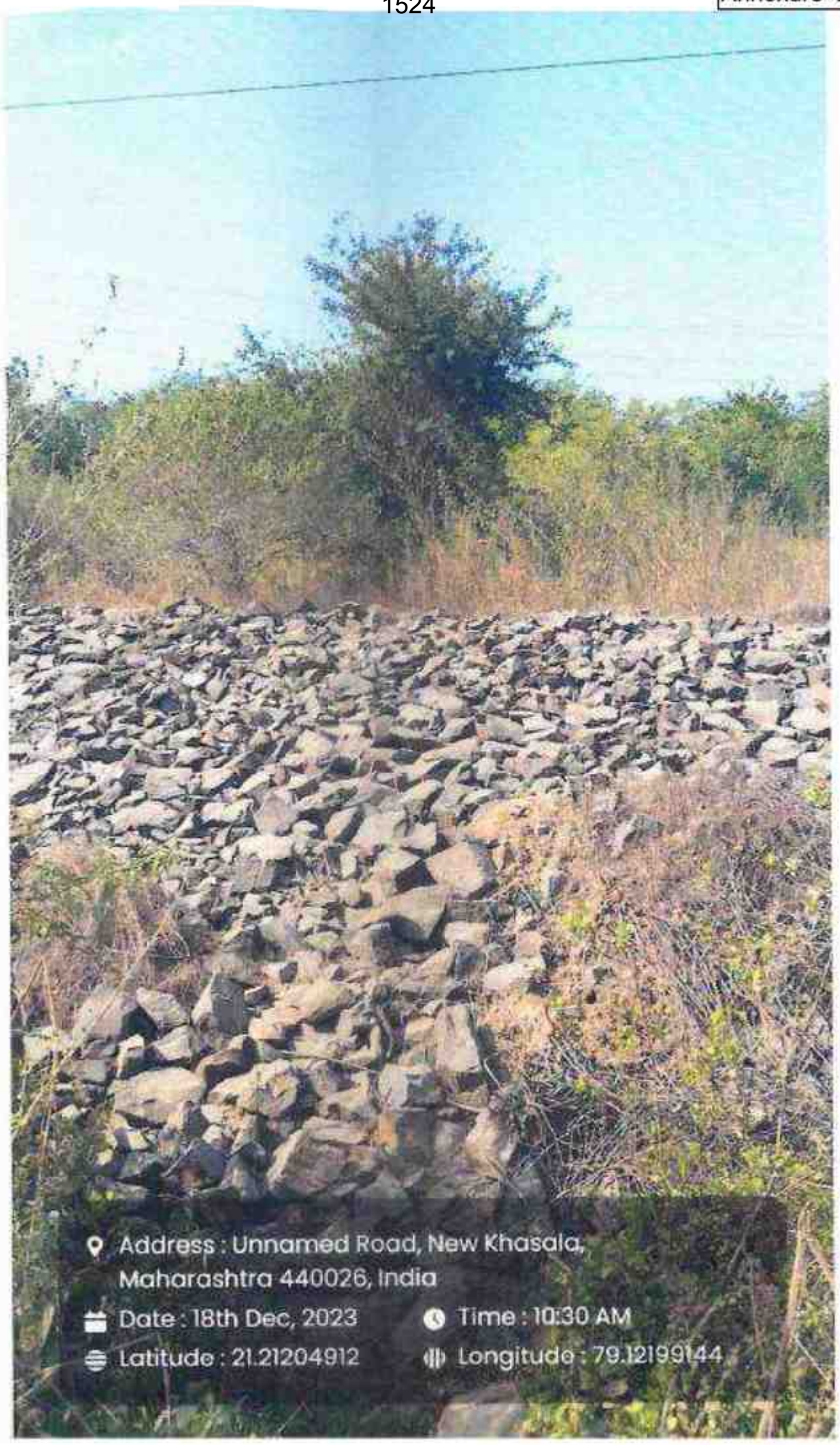
Thanking You.

Yours faithfully,

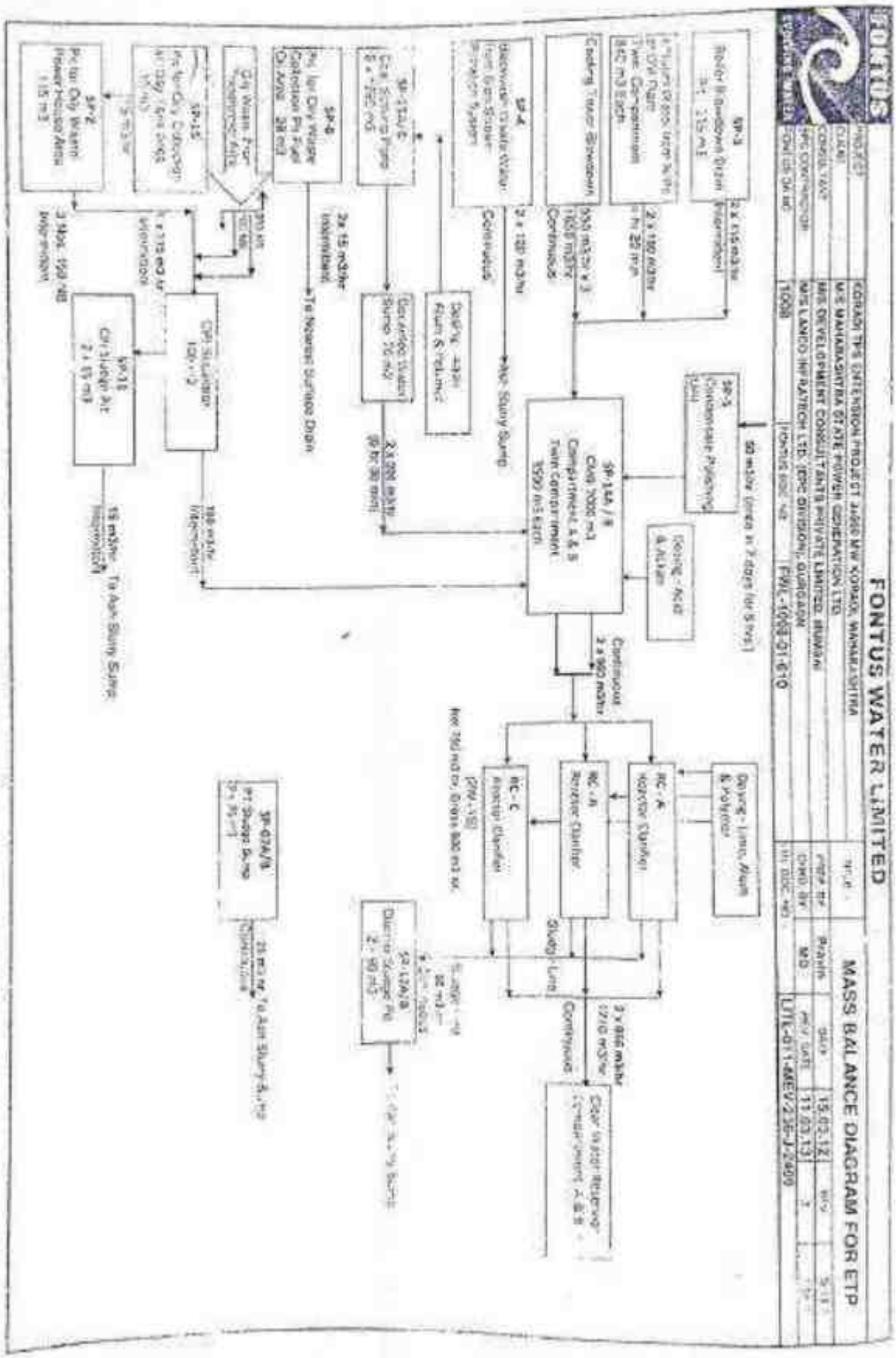
Chief Engineer
Koradi TPS, 3X660 MW

Copy s.w.rs.to:
Executive Director (E&S), 4th floor, HDIL Tower, Bandra (E), Mumbai-51
Copy f.w.c to:
1) Chief Engineer (C)-1 MAHAGENCO Dharavi Mumbai
2) Chief Engineer (C) 3 X 660 MW Koradi Exp Project Koradi

Annexure-VIII-B



Annexure - IX (a)



Annexure - IX-B

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0133231102		Date: 08.11.2023
ULR No.:	TC748723000017608F		

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550019674/0951 PO Date: 17.08.2023
Sample Description / Type	Industrial Effluent	Sampling done by	Laboratory
Sampling Location	ETP Outlet	Sample Quantity / Packing	5 L X 2 No. PVC Can 100 mL X 1 No. PVC Can 500 mL X 1 No. PVC Can 1 L X 1 No. Glass Bottle
Date of Sampling	02.11.2023	Date of Receipt of Sample	02.11.2023
Sampling Procedure	IS:3025(Part I), APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	02.11.2023	Date of Completion of Analysis	07.11.2023

Sr. No.	Parameter	Unit	Result	#Limit	Method Reference
	Discipline: Chemical Testing; Product Group: Pollution & Environment (Waste Water)				
1.	Temperature	°C	28.0	Shall not exceed 5°C above the receiving water temperature	APHA 24th Ed. 2023, 2550-B
2.	pH	-	8.3	5.5 to 9.0	APHA 24th Ed. 2023, 4500 H+ B
3.	Total Residual Free Chlorine	mg/L	BQL (LOQ 0.05)	1.0 Max.	APHA 24th Ed. 2023, 4500-Cl-G
4.	Total Dissolved Solids	mg/L	1030	-	IS 3025 (Part 15):2023
5.	Total Suspended Solids	mg/L	5	100 Max.	APHA 24th Ed. 2023, 2540-D
6.	Fixed Dissolved Solids	mg/L	859	-	IS 3025 (Part 18): 2022
7.	Chloride (as Cl)	mg/L	312	-	APHA 24th Ed. 2023, 4500-Cl-B
8.	Sulphate (as SO_4)	mg/L	128	-	APHA 24th Ed. 2023, 4500- SO_4-E
9.	Nitrate (as NO_3-N)	mg/L	1.10	10 Max.	APHA 24th Ed. 2023, 4500-NO_3-E
10.	Dissolved Oxygen	mg/L	5.2	-	APHA 24th Ed. 2023, 4500-O, B, C
11.	Biochemical Oxygen Demand (3days 27°C)	mg/L	10	30 Max.	IS 3025 (Part 44):2023
12.	Chemical Oxygen Demand	mg/L	36	250 Max.	APHA 24th Ed. 2023, 5220-B
13.	Oil and Grease	mg/L	BQL (LOQ 2)	10 Max.	IS 3025 (Part 39):2021

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0133231102	Date: 08.11.2023
ULR No.:	TC748723000017608F	

Sr. No.	Parameter	Unit	Result	#Limit	Method Reference
14.	Phosphate Total (as P)	mg/L	0.685	5.0 Max	APHA 24th Ed. 2023, 4500-P E
15.	Fluoride (as F)	mg/L	0.72	2.0 Max	APHA 24th Ed. 2023, 4500-F- D
16.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	2.0 Max	APHA 24th Ed. 2023, 4500-S--C/D
17.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	1.0 Max	APHA 24th Ed. 2023, 5530- B & C
18.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	0.2 Max	APHA 24th Ed. 2023, 4500-CN,C& E
19.	Iron (as Fe)	mg/L	0.632	3 Max	IS 3025 (Part 2):2019
20.	Manganese (as Mn)	mg/L	0.033	2 Max	IS 3025 (Part 2):2019
21.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	3.0 Max	IS 3025 (Part 2):2019
22.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	0.1 Max	IS 3025 (Part 2):2019
23.	Zinc (as Zn)	mg/L	BQL (LOQ:0.02)	5.0 Max	IS 3025 (Part 2):2019
24.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	0.2 Max	IS 3025 (Part 2):2019
25.	Nickel (as Ni)	mg/L	BQL (LOQ:0.01)	3.0 Max	IS 3025 (Part 2):2019
26.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	0.01 Max	APHA 24th Ed. 2023, 3112-B
27.	Chromium Hexa (as Cr^{6+})	mg/L	BQL (LOQ:0.02)	0.1 Max	APHA 24th Ed. 2023, 3500- Cr-B
28.	Chromium Total (as Cr)	mg/L	BQL (LOQ:0.01)	2.0 Max	IS 3025 (Part 2):2019
29.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	2.0 Max	IS 3025 (Part 2):2019
30.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	0.05 Max	IS 3025 (Part 2):2019
31.	Vanadium (as V)	mg/L	0.015	-	IS 3025 (Part 2):2019
32.	Free Ammonia (as NH_3)	mg/L	0.10	5.0 Max	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
33.	Total Kjeldahl Nitrogen	mg/L	0.78	100 Max	APHA 24th Ed. 2023, 4500 N_{org} B
34.	Chromium Trivalent (as Cr^{3+})	mg/L	BQL (LOQ:0.01)	-	WI/SAP/WW/55

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. #: Limits as per E(P)A rules- general standard for disposal in inland surface water.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
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Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

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Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-0133231102N	Date: 08.11.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No : KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Industrial Effluent	Sampling done by	Laboratory
Sampling Location	ETP Outlet	Sample Quantity / Packing	5 L X 2 No. PVC Can
Date of Sampling	02.11.2023	Date of Receipt of Sample	02.11.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	02.11.2023	Date of Completion of Analysis	07.11.2023

Sr. No.	Parameter	Unit	Result	#Limit	Method Reference
1.	Bioassay test	-	Free from acute lethal toxicity	-	IS 6582:1971

END OF REPORT

Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. #: Limits as per E(P)A rules- general standard for disposal in inland surface water.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
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Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1782231124	Date: 01.12.2023
ULR No.:	TC748723000019093F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)		PO No.: KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Industrial Effluent	Sampling done by	Laboratory
Sampling Location	ETP Outlet	Sample Quantity / Packing	5 L X 2 No. PVC Can 100 mL X 1 No. PVC Can 500 mL X 1 No. PVC Can 1 L X 1 No. Glass Bottle
Date of Sampling	23.11.2023	Date of Receipt of Sample	24.11.2023
Sampling Procedure	IS:3025(Part I); APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	24.11.2023	Date of Completion of Analysis	30.11.2023

Sr. No.	Parameter	Unit	Result	#Limit	Method Reference
	Discipline: Chemical Testing; Product Group: Pollution & Environment (Waste Water)				
1.	Temperature	°C	28.0	Shall not exceed 5°C above the receiving water temperature	APHA 24th Ed. 2023, 2550-B
2.	pH	-	6.9	5.5 to 9.0	APHA 24th Ed. 2023, 4500-H+ B
3.	Total Residual Free Chlorine	mg/L	BQL (LOQ:0.05)	1.0 Max.	APHA 24th Ed. 2023, 4500 Cl-G
4.	Total Dissolved Solids	mg/L	1114	-	IS 3025 (Part 16):2023
5.	Total Suspended Solids	mg/L	11	100 Max.	APHA 24th Ed. 2023, 2540-D
6.	Fixed Dissolved Solids	mg/L	955	-	IS 3025 (Part 18): 2022
7.	Chloride (as Cl)	mg/L	280	-	APHA 24th Ed. 2023, 4500-Cl-B
8.	Sulphate (as SO_4)	mg/L	318	-	APHA 24th Ed. 2023, 4500- SO_4-E
9.	Nitrate (as NO_3-N)	mg/L	1.30	10 Max.	APHA 24th Ed. 2023, 4500-NO_3 E
10.	Dissolved Oxygen	mg/L	5.9	-	APHA 24th Ed. 2023, 4500-O, B, C
11.	Biochemical Oxygen Demand (3days 27°C)	mg/L	8.0	30 Max.	IS 3025 (Part 44):2023
12.	Chemical Oxygen Demand	mg/L	28	250 Max.	APHA 24th Ed. 2023, 5220-B
13.	Oil and Grease	mg/L	BQL (LOQ:2)	10 Max.	IS 3025 (Part 39):2021

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1782231124	Date: 01.12.2023
ULR No.:	TC748723000019093F	

Sr. No.	Parameter	Unit	Result	#Limit	Method Reference
14.	Phosphate Total (as P)	mg/L	0.572	5.0 Max.	APHA 24th Ed. 2023, 4500-P E
15.	Fluoride (as F)	mg/L	0.67	2.0 Max.	APHA 24th Ed. 2023, 4500-F- D
16.	Sulphide (as S)	mg/L	BQL (LOQ:0.05)	2.0 Max.	APHA 24th Ed. 2023, 4500-S--C/D
17.	Phenolic Compounds (as C_6H_5OH)	mg/L	BQL (LOQ:0.001)	1.0 Max.	APHA 24th Ed. 2023, 5530- B & C
18.	Cyanide (as CN)	mg/L	BQL (LOQ:0.001)	0.2 Max.	APHA 24th Ed. 2023, 4500-CN,C& E
19.	Iron (as Fe)	mg/L	0.764	3 Max.	IS 3025 (Part 2):2019
20.	Manganese (as Mn)	mg/L	0.102	2 Max.	IS 3025 (Part 2):2019
21.	Copper (as Cu)	mg/L	BQL (LOQ:0.01)	3.0 Max.	IS 3025 (Part 2):2019
22.	Lead (as Pb)	mg/L	BQL (LOQ:0.008)	0.1 Max.	IS 3025 (Part 2):2019
23.	Zinc (as Zn)	mg/L	0.555	5.0 Max.	IS 3025 (Part 2):2019
24.	Arsenic (as As)	mg/L	BQL (LOQ:0.007)	0.2 Max.	IS 3025 (Part 2):2019
25.	Nickel (as Ni)	mg/L	0.021	3.0 Max.	IS 3025 (Part 2):2019
26.	Mercury (as Hg)	mg/L	BQL (LOQ:0.0005)	0.01 Max.	APHA 24th Ed. 2023, 3112-B
27.	Chromium Hexa (as Cr^{6+})	mg/L	BQL (LOQ:0.02)	0.1 Max.	APHA 24th Ed. 2023, 3500- Cr-B
28.	Chromium Total (as Cr)	mg/L	0.014	2.0 Max.	IS 3025 (Part 2):2019
29.	Cadmium (as Cd)	mg/L	BQL (LOQ:0.0027)	2.0 Max.	IS 3025 (Part 2):2019
30.	Selenium (as Se)	mg/L	BQL (LOQ:0.01)	0.05 Max.	IS 3025 (Part 2):2019
31.	Vanadium (as V)	mg/L	0.016	-	IS 3025 (Part 2):2019
32.	Free Ammonia (as NH_3)	mg/L	0.11	5.0 Max.	Test Procedures for Water and Wastewater Maharashtra Engineering Research Institute Government of Maharashtra (MERI): 1992
33.	Total Kjeldahl Nitrogen	mg/L	0.56	100 Max.	APHA 24th Ed. 2023, 4500 Nor_g B
34.	Chromium Trivalent (as Cr^{3+})	mg/L	0.013	-	WI/SAP/WW/56

END OF REPORT

Note:
1. BQL: Below Quantification Limit
2. LOQ: Limit of Quantification.
3. #: Limits as per E(P)A rules- general standard for disposal in inland surface water.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
5. This report is not to be reproduced except in full, without the written approval of the laboratory.
6. This report is not to be reproduced except in full, without the written approval of the laboratory.
7. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1782231124N	Date: 01.12.2023
ULR No.:	-	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**		PO No.: KTPS/4550019674/0861 PO Date: 17.08.2023
Sample Description / Type	Industrial Effluent	Sampling done by	Laboratory
Sampling Location	ETP Outlet	Sample Quantity / Packing	5 L X 2 No. PVC Can
Date of Sampling	23.11.2023	Date of Receipt of Sample	24.11.2023
Sampling Procedure	IS:3025(Part I), APHA 24th Ed. 2023, 1060-B		
Date of Start of Analysis	24.11.2023	Date of Completion of Analysis	30.11.2023

Sr. No.	Parameter	Unit	Result	#Limit	Method Reference
1.	Bioassay test	-	Free from acute lethal toxicity	-	IS 6582:1971

END OF REPORT

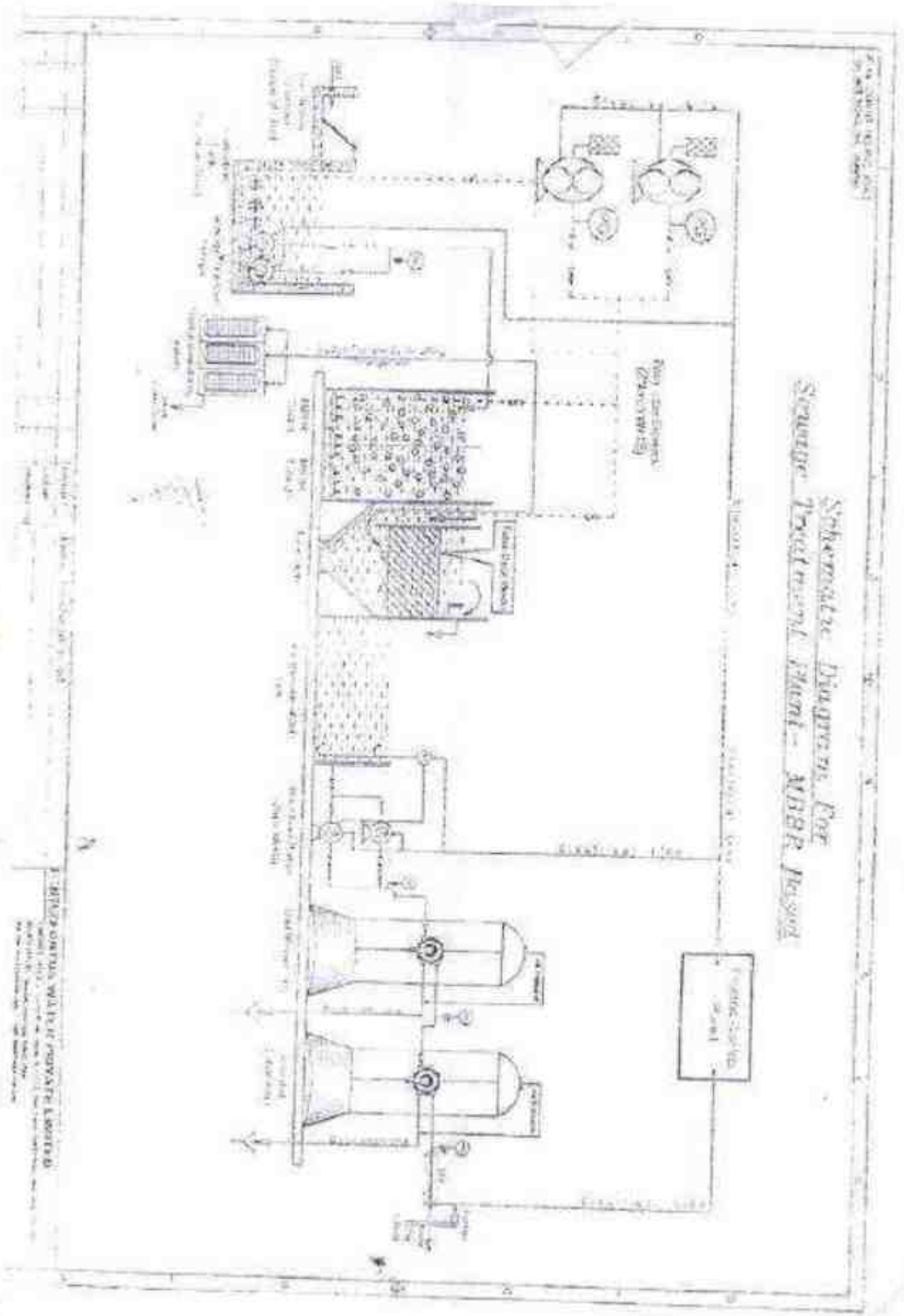
Note:
1. BQL: Below Quantification Limit.
2. LOQ: Limit of Quantification.
3. #: Limits as per E(P)A rules- general standard for disposal in inland surface water.
4. The result listed refers only to the tested sample(s) and applicable parameter(s).
5. This report is not to be reproduced except in full, without the written approval of the laboratory.
6. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

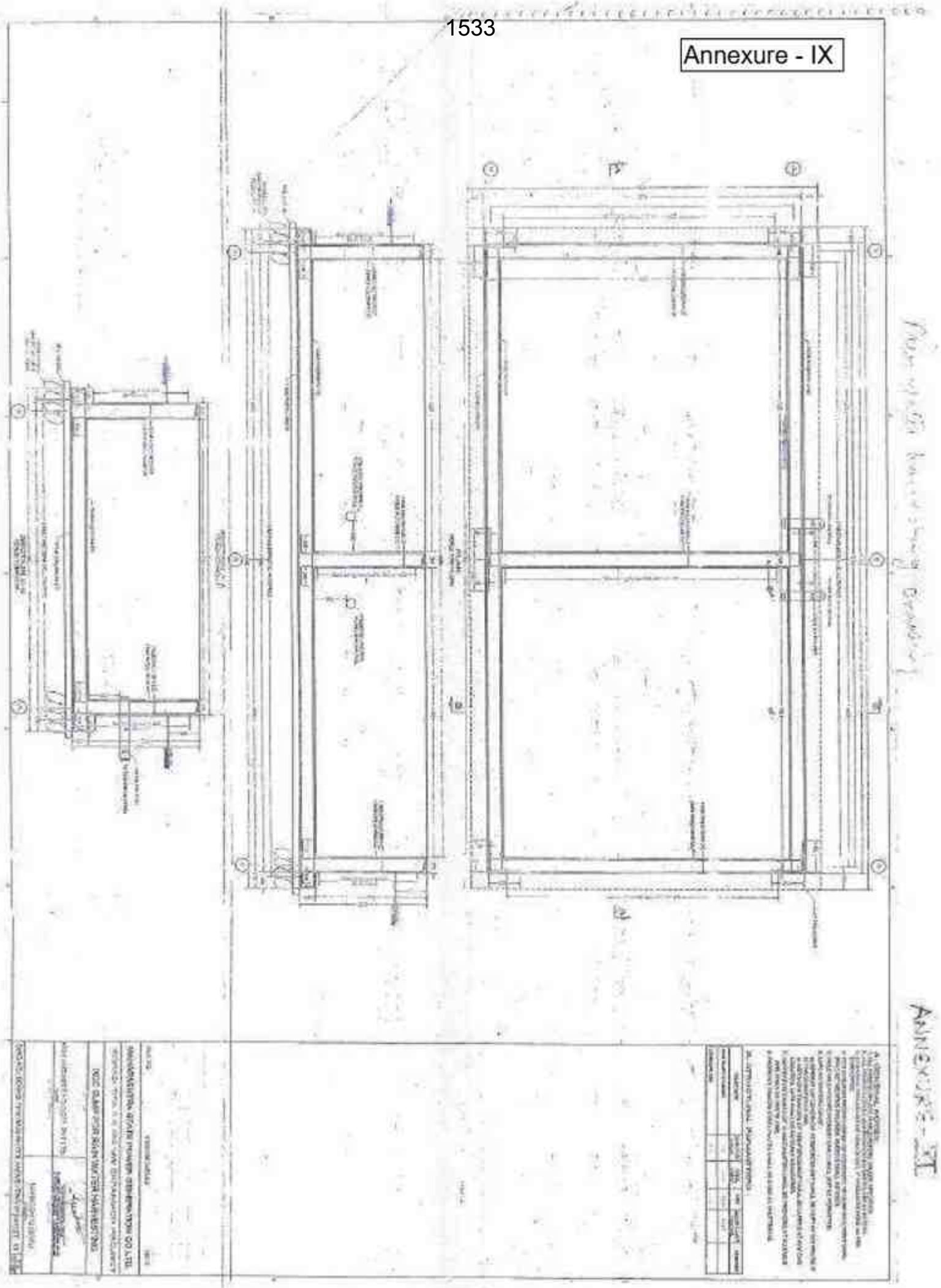
Harish Mendhi
Technical Manager
Chemical Testing

MAHABAL ENVIRO ENGINEERS PVT. LTD.

Annexure - X



Annexure - IX



Annexure - XII

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of Chief Engineer (O & M), T.P.S., Koradi, Dist. Nagpur, Pin - 441111
Phone: (07109) 262541 to 262545, 262547, 262100 Extn 5121/5122
Email - ceo.kor@mahagenco.in

KTPS/3X660MW/Safety /Mock drill/ No 4 2 5 7. Date: - 13.03.2023

Mock Drill report

14 MAR 2023

Sub. : - Observations of Fire mock drill conducted on 10.03.2023 at 3x660MW KTPS, Koradi.

Mock drill of Fire conducted at Apron feeder tail end Wagon tippler no. 1 CHP (Coal Handling plant)

Observations:-

Sr. No.	Events Observed	Time	Response time (in Min.)
1.	Fire observed at Apron feeder tail end Wagon tippler no. 1 CHP (Coal Handling plant).	10.45	00
2.	Shri.S.S.Chate (Incident Observer), AE (CHP-Oprt.) after observing fire, informed about fire to Control room.	10.45	00
3.	Shri. A.Lakkawar (Add.E.E) informed about fire to Fire fighting, Ambulance	10.45	01
4.	S.E (Admin) reached at site @.	10.49	04
5.	Fire tender-1 reached at site and started work immediately.	10.57	12
6.	Dy.C.E (CHP) reached at site @.	10.57	12
7.	Executive Engineer (CHP-Oprt.) reached at site @.	11.00	15
8.	Security staff reached at site @.	11.08	23
9.	Ambulance reached at site @.	11.05	23
10.	Fire fighting activity completed.	11.05	20
11.	C.E (O&M) reached at site @.	11.15	30
12.	Dy.C.E (Admin) reached at site @.	11.18	33
13.	Injured persons send to Hospital @	No Casualty	
11.	Head counting is done by Safety Officer and given all clear messages.	11.20	35

Total Mock Drill activity time 35 Min. & **Lead time is 20.00 Min.**

Head Count 35

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)

Observation by safety section which needs corrective action at the earliest.

S. N.	Observations	Corrective Action required	Concerned Section
1	Scrap found in tunnel area near apron feeder.	Scrap near apron feeder should be removed with immediate effect, being tunnel area, it comes under confined space, during emergency situation area should be free from any type of scrap for rescue team free moment and for employee/workers moment. Also scrap material catches fire very easily therefore area should be cleaned for safe working environment.	CHP(O&M)
2	Fire extinguishers not found near apron feeder.	Fire extinguishers are the most important and the most primary and basic thing used for extinguishing the fire. Fire extinguishers were not available near apron feeder, it should be made available at the earliest. Also proper training for operating fire extinguishers shall be imparted by Fire Fighting department periodically (For employees and workers).	Fire Fighting
3	Heavy coal dust found on stairs case and all the area inside the tunnel (Wagon tippler-1).	Being CHP area it is obvious that coal dust will remain in that premises, but continuous cleaning and removal of coal dust is to be carried out as summer season is started and coal dust catches fire easily housekeeping.	CHP(O&M)
4	Driver of ambulance reported alone with ambulance.	Required at least one attendant for help and one first aider.	Contract operating authority.
5	Fire Fighting staff completed the activity in 20 Mins.	Fire staff reached at site and started their rescue activity immediately. They could have reduce their lead time by reaching at site quite early.	Fire Fighting

Submitted for information and corrective action please.

Safety Officer,
3x660 MW KTPS, Koradi.

Copy s.w.r.to:-

1. The Chief Engineer (O&M) KTPS, Koradi.
2. The Dy. Chief Engineer (Admin/CHP), 3x660MW KTPS, Koradi.
3. All Supdt. Engineer, 3x660MW KTPS, Koradi.
4. Medical Supdt. KTPS, Koradi.

Copy To:-

1. Dy.CFO KTPS, Koradi.
2. Executive Engineer (CHP-Oprt.) 3x660MW KTPS, Koradi.
3. Executive Engineer (CHP-Maint.) 3x660MW KTPS, Koradi.

Annexure - XIII

भारत सरकार
Government of India
वाणिज्य और उद्योग मंत्रालय
Ministry of Commerce & Industry
पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसो)
Petroleum & Explosives Safety Organisation (PESO)
विभागीय परीक्षण केन्द्र, 12 कि.मी. स्टोन, अमरावती रोड
गोंडखैरी- 440023
National Academy of Petroleum & Explosives Safety and Testing Staff
12 Km Stone, Amravati Road, Gondakhairi,
Nagpur - 440023

E-mail : dycceexpnagpur@explosives.gov.in
Phone/Fax No : 07104 - 280374,280569

संदर्भ /No. : P/HQ/MH/15/6191 (P305883)

दिनांक /Dated : 22/12/2022

सेवा में
/To.

M/s. The Chief Engineer,Maharashtra State Power Generation Company Limited,
3X660 MW Koradi Expansion Project.,
Koradi Complex,Chhindwara Road.,
Koradi,
Nagpur (Rural),
Taluka: Nagpur (Rural),
District: NAGPUR,
State: Maharashtra
PIN: 441111

विषय /Sub : Khasra No. 285,286,287 and 94/1,94/2, 3X660 MW Expansion Project, Koradi, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 में स्थित विस्फोटक पेट्रोलियम वर्ग C अधिष्ठापन में अनुज्ञप्ति सं P/HQ/MH/15/6191 (P305883) के नवीकरण के संदर्भ में।
Existing Petroleum Class C Installation at Khasra No. 285,286,287 and 94/1,94/2, 3X660 MW Expansion Project, Koradi, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 - Licence No. P/HQ/MH/15/6191 (P305883) - Renewal regarding.

महोदय /Sir(s),

कृपया आपके पत्र क्रमांक OIN1243169 दिनांक 21/12/2022 का अवलोकन करें।
Please refer to your letter No. OIN1243169, dated 21/12/2022

अनुज्ञप्ति संख्या P/HQ/MH/15/6191 (P305883) दिनांक 12/11/2014 को दिनांक 31/12/2027 तक नवीनीकृत कर मूल पत्र के साथ अग्रेषित की जा रही है।
Licence No. P/HQ/MH/15/6191 (P305883) dated 12/11/2014 is forwarded herewith duly renewed upto 31/12/2027.

कृपया पेट्रोलियम नियम 2002 के अधीन इनाए गए नियम 148 में दी गई प्रक्रिया का सख्ताई से पालन करें। अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की देयता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व Jt. Chief Controller of Explosives, West Circle, Mumbai कार्यालय को प्रेषित करें।
Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence to Jt. Chief Controller of Explosives, West Circle, Mumbai, so as to reach his office on or before the date on which Licence expires.

कृपया पावती दें।
Please acknowledge the receipt.

भवदीय /Yours faithfully,

(एच. पी. सांगोले)
(H P SANGOLE)
विस्फोटक निदेशक
Controller of Explosives
कृते उप मुख्य विस्फोटक निदेशक
For Dy. Chief Controller of Explosives
गोंडखैरी/Nagpur

Note:-This is system generated document does not require signature.
(अधिक जानकारी फीस आदेशन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : http://peso.gov.in देखें)
(For more information regarding status,fees and other details please visit our website: http://peso.gov.in)

प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(See Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/HQ/MH/15/6191(P305883) per year

M/s. The Chief Engineer,Maharashtra State Power Generation Company Limited, 3X660 MW Koradi Expansion Project,, Koradi Complex,Chhindwara Road,, Koradi, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम 6000.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/HQ/MH/15/6191(P305883) तारीख 12/11/2014 जो कि इससे उपाबद्ध है, में दिखाए गए स्थान पर भंडारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों का उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to M/s. The Chief Engineer,Maharashtra State Power Generation Company Limited, 3X660 MW Koradi Expansion Project,, Koradi Complex,Chhindwara Road,, Koradi, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 valid only for the importation and storage of 6000.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/HQ/MH/15/6191(P305883) dated 12/11/2014 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2027 तक प्रवृत्त रहेगी।
The Licence shall remain in force till the 31st day of December 2027

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	NIL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	6000.00 KL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C,otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	6000.00 KL

July 14, 2014

For Chief Controller of Explosives
HQ, Nagpur

1). Amendment dated - 12/11/2014

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास रीतियाँ अन्य विशिष्टियां संलग्न अनुमोदित नक्शे में दिखाई गई हैं Khasra No: 285,286,287 and 94/1,94/2, 3X660 MW Expansion Prohect , Koradi, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 स्थित है तथा उसमें निम्नलिखित 4 Above Ground tank(s) for CLASS C , समिलित हैं।

The licensed premises, the layout , boundaries and other particulars of which are shown in the attached approved plan are situated at Khasra No: 285,286,287 and 94/1,94/2, 3X660 MW Expansion Prohect , Koradi, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 and consists of 4 Above Ground tank(s) for CLASS C , together with connected facilities.

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फॉर्म XL 2

अनुज्ञप्ति संख्या/(Licence No.) P/HQ/MH/15/6191 (P305843)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या उसके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति बिना किसी फीस के दस वर्ष तक नवीकृत की जा सकेगी। This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.	नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry of licence	अनुज्ञापन प्राधिकारी के हस्ताक्षर और कार्यालय मुद्रांक Signature and office stamp of the licencing authority.
1).	17/12/2014	31/12/2019	Sd/- Anil Kumar Yadav Controller of Explosives For Jt. Chief Controller of Explosives Mumbai
2).	04/02/2015	31/12/2019	Sd/- S K Shukla Jt. Chief Controller of Explosives Mumbai
3).	09/12/2016	31/12/2017	Sd/- Kanak Singh Meena Dy. Controller of Explosives For Jt. Chief Controller of Explosives Mumbai
4).	01/11/2017	31/12/2022	Sd/- Kanak Singh Meena Dy. Controller of Explosives For Jt. Chief Controller of Explosives Mumbai
5).	22/12/2022	31/12/2027	H.P.SANGOLE Controller of Explosives For Dy. Chief Controller of Explosives Nagpur

यदि अनुज्ञप्ति परिसर इससे पृष्ठांकित नियमों और शर्तों के अनुरूप नहीं पाए जाते हैं और जिस नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी इसमें अन्तर्वलित किसी उपबन्ध के लिए प्रथमतः दण्डनीय है, जो एक मास तक की सादा कारावास से, या एक हजार रुपये तक के जुर्माने से, या दोनों से, और प्रत्येक पश्चात्वर्ती अपराध के लिए दण्डनीय है जो तीन मास तक की सादा कारावास से, या पांच हजार रुपये तक के जुर्माने से, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.

FO / LDO DAY TANK.

भारत सरकार
Government of India
वाणिज्य और उद्योग मंत्रालय
Ministry of Commerce & Industry
पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसो)
Petroleum & Explosives Safety Organisation (PESO)
विधानीय परीक्षण केन्द्र, 18 कि.मी. स्टोन, अमरावती रोड
गोंडखैरी- 440023
National Academy of Petroleum & Explosives Safety and Testing Station,
18 Km Stone, Amravati Road, Gondkhairi,
Nagpur - 440023

E-mail :dycconls@explosives.gov.in
Phone/Fax No : 07104 - 280374,280565

पेसो No. : P/HQ/MH/15/6192 (P327547)

दिनांक Dated : 22/12/2022

सेवा में
/To,

M/s. The Chief Engineer (Project) Maharashtra State Power Generation Company Limited,
3x660 MW Koradi Expansion Project.,
Koradi Complex,Chindwara Road,
KORADI,
Nagpur (Rural),
Taluka: Nagpur (Rural),
District: NAGPUR,
State: Maharashtra
PIN: 441111

विषय /Sub : Khasra No. 285,286,287 and 94/1,94/2, 3x660 MV Expansion Project, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 में स्थित विस्फोटक पेट्रोलियम वर्ग C प्रतिष्ठान के अनुज्ञप्ति सं P/HQ/MH/15/6192 (P327547) के नवीकरण के संदर्भ में ।

Existing Petroleum Class C installation at Khasra No. 285,286,287 and 94/1,94/2, 3x660 MV Expansion Project, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 - Licence No. P/HQ/MH/15/6192 (P327547) - Renewal regarding

महोदय /Sir(s),

कृपया आपके पत्र क्रमांक OIN1243203 दिनांक 22/12/2022 का अवलोकन करें ।

Please refer to your letter No.: OIN1243203, dated 22/12/2022

अनुज्ञप्ति संख्या P/HQ/MH/15/6192 (P327547) दिनांक 12/11/2014 को दिनांक 31/12/2027 तक नवीनीकृत कर इस पत्र के साथ अग्रेषित की जा रही है ।

Licence No. P/HQ/MH/15/6192 (P327547) dated 12/11/2014 is forwarded herewith duly renewed upto 31/12/2027.

कृपया पेट्रोलियम नियम 2002 के अधीन नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें । अनुज्ञप्ति के नवीकरण हेतु पूर्ण दस्तावेजों को अनुज्ञप्ति की देयता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व Jt. Chief Controller of Explosives, West Circle, Mumbai के कार्यालय में प्राप्त करें ।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence to Jt. Chief Controller of Explosives, West Circle, Mumbai, so as to reach his office on or before the date on which Licence expires.

कृपया पावती दें।
Please acknowledge the receipt.

भवदीय /Yours faithfully,

(एच. पी. संगोले)
(H P SANGOLE)
विस्फोटक नियंत्रक
Controller of Explosives
कृते उप मुख्य विस्फोटक नियंत्रक
For Dy. Chief Controller of Explosives
गोंडखैरी/Nagpur

Note:-This is system generated document does not require signature.
(अधिक जानकारी फीस आदेश की स्थिति, भुगतान तथा अन्य विवरण के लिए हमारी वेबसाइट : http://peso.gov.in देखें)
(For more information regarding status, fees and other details please visit our website: http://peso.gov.in)

फार्म XV
[नियम अनुसूची का अनुच्छेद 6 देखिए]
FORM XV
[See Article 6 of the First Schedule]

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No) PHQ/MH/156/192(P327547) वित्त वर्ष (वर्ष) for year

M/s. The Chief Engineer (Project),Maharashtra State Power Generation Company Limited, 3x660 MW Koradi Expansion Project,, Koradi Complex,Chindwara Road, KORADI, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 को केवल [illegible] 1900.00 KL भण्डार करने के लिए तेल अनुज्ञप्ति संख्या PHQ/MH/156/192(P327547) तारीख 12/12/2014 तक के लिए अनुज्ञप्त है जिसे पेट्रोलियम अधिनियम, 1934 के उपबंधों या इसके अधीन बनाए गए नियमों अनुज्ञप्ति की शर्तों के अधीन रहते हुए यह अनुज्ञप्ति अनुज्ञप्त की जाती है ।

Licence is hereby granted to M/s. The Chief Engineer (Project),Maharashtra State Power Generation Company Limited, 3x660 MW Koradi Expansion Project,, Koradi Complex,Chindwara Road, KORADI, Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 valid only for the storage of 1900.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described herein and shown on the approved plan No PHQ/MH/156/192(P327547) dated 12/12/2014 allowed hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2027 तक प्रवृत्त रहेगी ।
The Licence shall remain in force till the 31st day of December 2027

पेट्रोलियम का विवरण Description of Petroleum	अनुज्ञप्त मात्रा लिटरों में या किलोग्राम में Quantity licensed in KL
वर्ग क पेट्रोलियम थोक में Petroleum Class A in bulk	NIL
वर्ग क पेट्रोलियम डीजल से भिन्न Petroleum Class A otherwise than in bulk	NIL
वर्ग ख पेट्रोलियम थोक में Petroleum Class B in bulk	NIL
वर्ग ख पेट्रोलियम से भिन्न Petroleum Class B otherwise than in bulk	NIL
वर्ग ग पेट्रोलियम थोक में Petroleum Class C in bulk	1900.00 KL
वर्ग ग पेट्रोलियम से भिन्न Petroleum Class C otherwise than in bulk	NIL
कुल धारण Total Capacity	1900.00 KL

July 14, 2014

For Chief Controller of Explosives
HQ, Nagpur

(1) Amendment dated - 12/11/2014

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसमें टैंकेज, पैकेज और विविधता वाला अनुज्ञप्ति स्थान है जिसमें भूमि के खसरा नं. 3 Khasra No. 295,296,297 and 943,944, 3x660 MW Expansion Project , Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 स्थित है, का संक्षिप्त विवरण 3 Above Ground tank[s] for CLASS C ,

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at Khasra No. 295,296,297 and 943,944, 3x660 MW Expansion Project , Nagpur (Rural), Taluka: Nagpur (Rural), District: NAGPUR, State: Maharashtra, PIN: 441111 and consist of 3 Above Ground tank[s] for CLASS C , together with connected facilities.

Note:-This is system generated document does not require signature.

फेरम सं. 9

अनुज्ञप्ति संख्या-(License No.) P/HQ/MH/15/5192 (F327/547)

नवीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

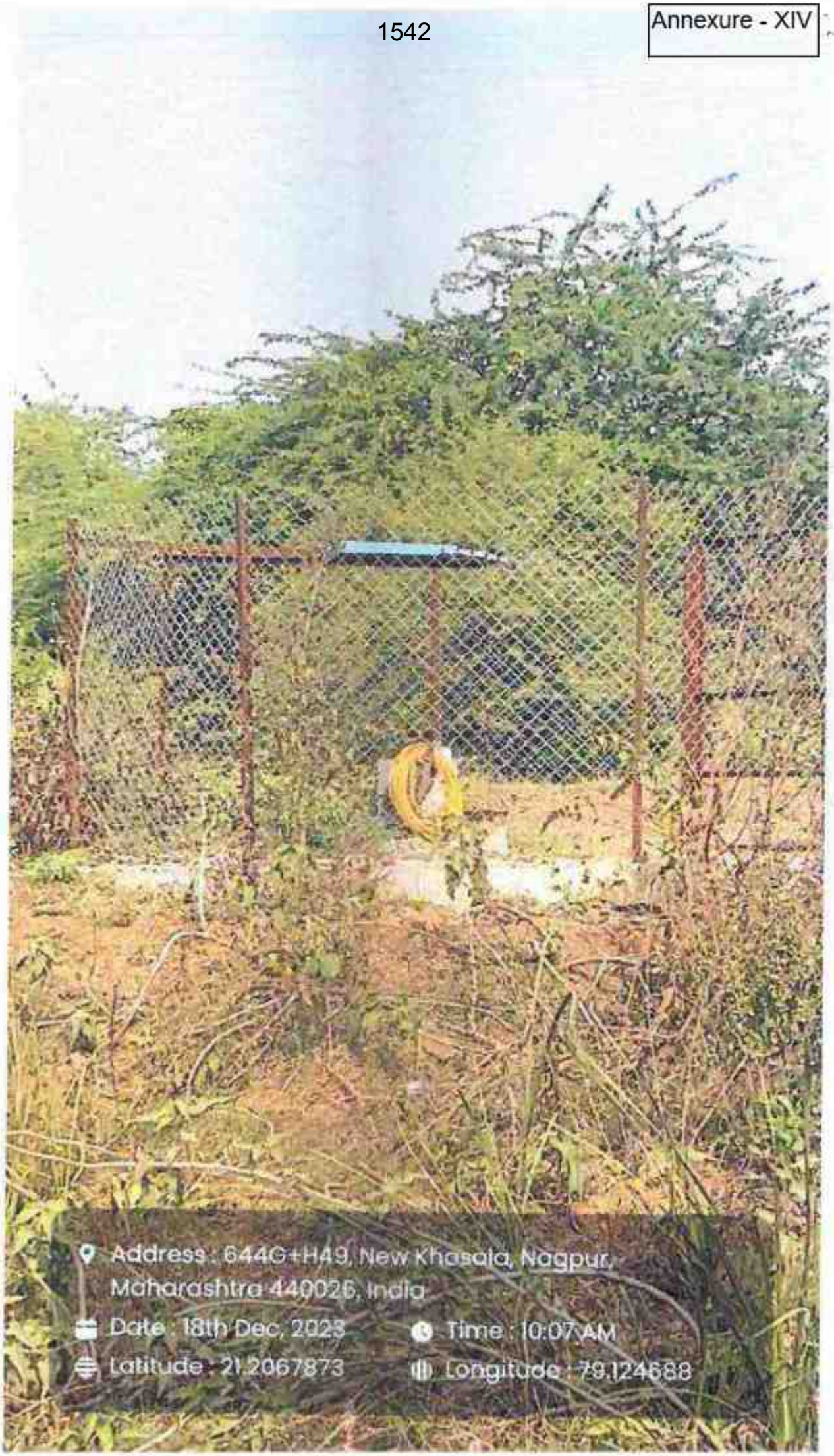
अनुज्ञप्ति को इस शर्त के अधीन कि उसके और उसके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने पर यह अनुज्ञप्ति दिनांक से तीन वर्ष तक के लिए नवीकृत की जा सकेगी। The licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.	नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry of licence	अनुज्ञापन अधिकारी के हस्ताक्षर और पदनाम Signature and office stamp of the licencing authority.
1).	17/12/2014	31/12/2016	Sd/- Anil Kumar Yadav Controller of Explosives For Jt. Chief Controller of Explosives Mumbai
2).	15/01/2016	31/12/2016	Sd/- S K Shukla Jt. Chief Controller of Explosives Mumbai
3).	07/12/2016	31/12/2017	Sd/- A.K.Srivastava Dy. Chief Controller of Explosives For Jt. Chief Controller of Explosives Mumbai
4).	01/11/2017	31/12/2022	Sd/- Kanak Singh Meena Dy. Controller of Explosives For Jt. Chief Controller of Explosives Mumbai
5).	23/12/2022	31/12/2027	SANGOLE Controller of Explosives For Dy. Chief Controller of Explosives Nagpur

यदि अनुज्ञप्ति धारित प्रांगण में उपबंधों के अनुसार नहीं रखा जाता है और जिस लिए लाइसेंस दिया गया है उसके अलावा किसी अन्य प्रयोजन के लिए संचालन किया जाता है तो यह अनुज्ञप्ति रद्द की जा सकेगी।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan whether facts and continuation of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.

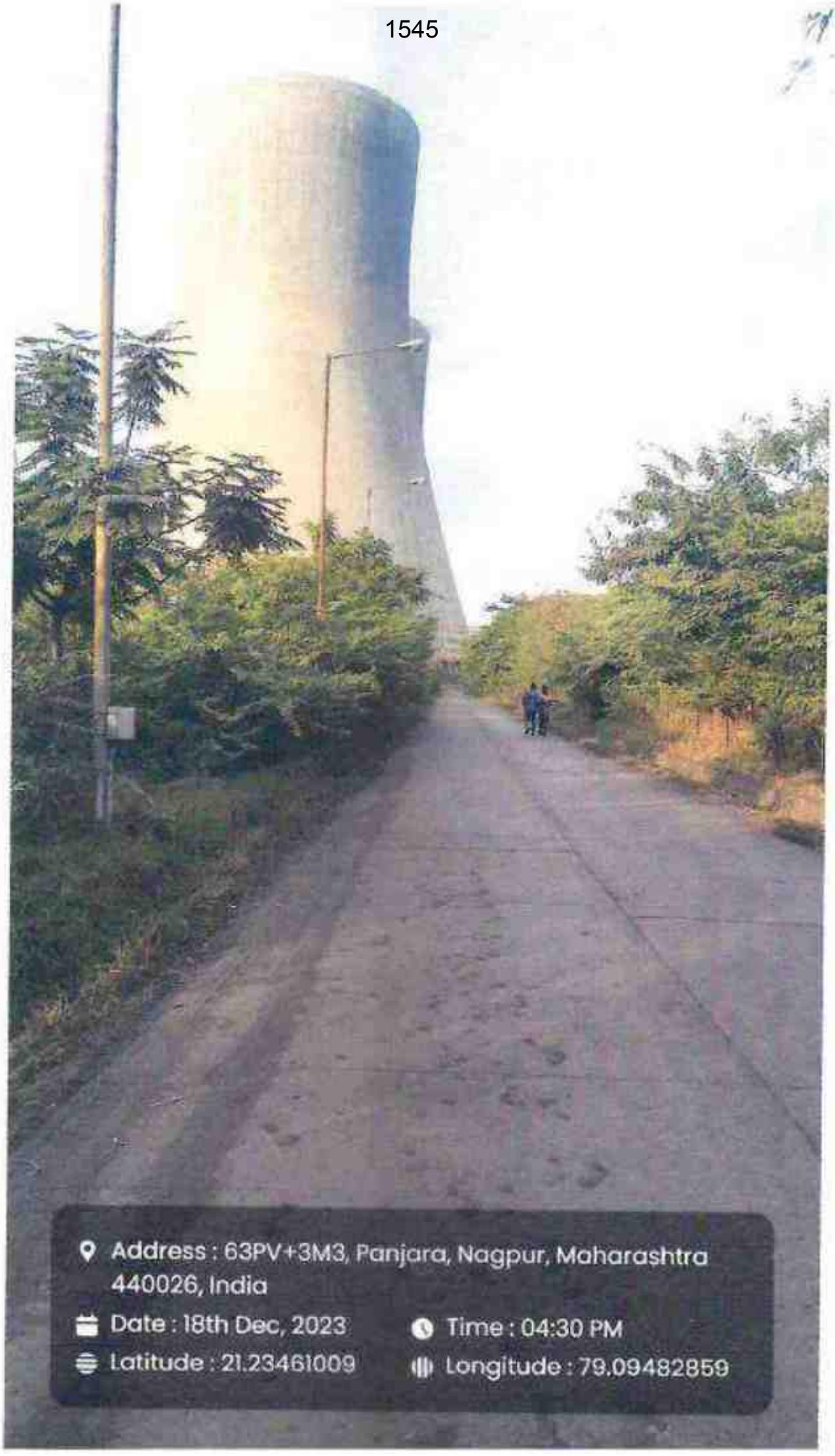
Annexure - XIV



Annexure - XV

Address : Unnamed Road, New Khasala, Maharashtra 440026, India
Date : 18th Dec, 2023
Time : 10:14 AM
Latitude : 21.21280667
Longitude : 79.12216013

Address : 63MV+2JJ, Nagpur, Panjara, Maharashtra 440026, India
Date : 18th Dec, 2023
Time : 04:28 PM
Latitude : 21.23115627
Longitude : 79.09410146


Address : 63PV+3M3, Panjara, Nagpur, Maharashtra 440026, India
Date : 18th Dec, 2023
Time : 04:30 PM
Latitude : 21.23461009
Longitude : 79.09482859

ANNEX-XVI

महाराष्ट्र राज्य वीज निर्मिती
(महाराष्ट्र शासनाचा उपक्रम)
कंपनी मर्यादित
कोराडी औष्णिक विद्युत केंद्र, कोराडी.
मुख्य अभियंता (सदस्य) कोराडी औष्णिक विद्युत केंद्र, कोराडी
तह: कामठी जि:नागपूर
फोन नं. : 07109-262106,262109,पी. 262146
फॉक्स नं सर्वसाधारण : 262127 इपा-1-262541 इपा-2-26286

MAHAGENCO
CIN: U40100MH2005SGC153

वैद्यकीय अधिक्षक/दवाखाना/नं. ३६

दिनांक:-06/09/2023.

प्रति,
कल्याण अधिकारी,
को.औ.वी.केंद्र,कोराडी.

विषय:- कारखान्यातील कामगारांची प्रमाणक वैद्यकीय तपासणी करून त्याबाबतची माहिती कळविण्याबाबतचे लेखी स्पष्टीकरण.
संदर्भ:- (1)कार्यालयीन टिपणी क्र-०४८१,दिनांक:- ०६/०९/२०२३.
(2)अप्पर संचालक,औद्योगिक सुरक्षा व आरोग्य संचालनालय,नागपुर यांचे पत्र क्र औ.सुरक्षा/ वैद्यकीय/२०२३/१४१६/स,दि.२४/०८/२०२३.

महोदय,

वरील उपरोक्त संदर्भिय विषयाच्या अनुषंगाने आपणास कळविण्यात करण्यात येते की, कारखान्यातील कामगारांची प्रमाणक वैद्यकीय तपासणी माहे नोवेंबर २०२२ आणि माहे मार्च २०२३ मध्ये आयोजित करण्यात आली. त्यादरम्यान ६९२ कर्मचारी व अधिकारी यांनी वैद्यकीय तपासणी केली आहे.
उर्वरित कर्मचारी व अधिकारी यांनी तपासणीला आलेले नसून २१० MW व ६६०MW संबंधित विभागाला फोन द्वारे मौखिक कळविण्यात आले असून सुद्धा कर्मचाऱ्यांचा प्रतिसाद मिळालेला नाही,त्यामुळे पुर्णपणे तपासणी होऊ शकली नाही.
संबंधित चिकित्सकाचा कार्यकाल संपल्यामुळे २०२३-२०२४ चा निविदा बनवून पुढील कारवाईस सादर करण्यात येत आहे.

अ.क्र	कारखान्याचा नाव,पत्ता,संपर्क क्र. व ईमेल आयडी	कामगारांची संख्या	वैद्यकीय तपासणी करणाऱ्या प्रमाणक शल्य चिकित्सकाचे नाव व नोंदणी क्र	वैद्यकीय अधिकाऱ्यांची शैक्षणिक अर्हता	वैद्यकीय तपासणी दिनांक	वैद्यकीय तपासणी केलेल्या कामगारांची संख्या
01	डॉ.देवतळे,बुट्टीबोरी,नागपुर संपर्क:- 8329288561.	692	डॉ.देवतळे,बुट्टीबोरी,नागपुर	MBBS,MD	NOV-22 TO MARCH-23	692

वैद्यकीय अधिक्षक,
दवाखाना,को.औ.वी.के कोराडी.

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT SOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-0627231108	Date: 16.11.2023
ULR No.	TC748723000018072F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)**	PO No : KTPS/4550019674/0851 PO Date: 17.08.2023
Sample Description / Type	Ambient Noise	
Date of Sampling	07.11.2023 to 08.11.2023	
Sampling Procedure	CPCB Protocol for Ambient level Noise Monitoring 2015	

Sr. No.	Location	Time in h (day)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response	Time in h (Night)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Ambient Noise)						
1.	Arya Nagar	06:00 to 22:00	53.2	-	22:00 to 06:00	42.6	-
2.	Sokhara	06:00 to 22:00	53.4	-	22:00 to 06:00	42.8	-
3.	Khasala	06:00 to 22:00	54.6	-	22:00 to 06:00	43.7	-

As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))			
Area Code	Area Type	Limits in dB (A) weighted scale	
		Day Time (5:00a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 5:00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

END OF REPORT

Note:
1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without the written approval of the laboratory.
3. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-1034231111	Date: 17.11.2023
ULR No.:	TC748723000018415F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)	PO No.: KTPS/4550019674/0881 PO Date: 17.08.2023
Sample Description / Type	Ambient Noise	
Date of Sampling	10.11.2023 to 11.11.2023	
Sampling Procedure	CPCB Protocol for Ambient level Noise Monitoring 2015	

Sr. No.	Location	Time in h (day)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response	Time in h (Night)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Ambient Noise)						
1.	Arya Nagar	06:00 to 22:00	53.6	-	22:00 to 06:00	42.4	-
2.	Bokhara	06:00 to 22:00	53.2	-	22:00 to 06:00	42.5	-
3.	Khasala	06:00 to 22:00	53.8	-	22:00 to 06:00	43.1	-

As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))			
Area Code	Area Type	Limits in dB (A) weighted scale	
		Day Time (6:00a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

END OF REPORT

Note:
1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without the written approval of the laboratory.
3. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 12,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.:	ME-1320231118	Date:22.11.2023
ULR No.:	TC748723000018871F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)	PO No.:	KTPS/4550019674/0861
		PO Date:	17.08.2023
Sample Description / Type	Ambient Noise		
Date of Sampling	17.11.2023 to 18.11.2023		
Sampling Procedure	CPCB Protocol for Ambient level Noise Monitoring 2015		

Sr. No.	Location	Time in h (day)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response	Time in h (Night)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Ambient Noise)						
1.	Arya Nagar	06:00 to 22:00	53.6	-	22:00 to 06:00	42.2	-
2.	Bokhara	06:00 to 22:00	53.8	-	22:00 to 06:00	42.5	-
3.	Khasala	06:00 to 22:00	53.8	-	22:00 to 06:00	43.7	-

As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))			
Area Code	Area Type	Limits in dB (A) weighted scale	
		Day Time (6:00a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

END OF REPORT

Note: 1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without the written approval of the laboratory.
3. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-1619231122	Date:24.11.2023
ULR No.	TC746723000018930F	

Name and Address of Customer	**THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660NW)**	PO No. KTPS/4550019674/0861 PO Date 17.08.2023
Sample Description / Type	Ambient Noise	
Date of Sampling	21.11.2023 to 22.11.2023	
Sampling Procedure	CPCB Protocol for Ambient level Noise Monitoring 2015	

Sr. No.	Location	Time in h (day)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response	Time in h (Night)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Ambient Noise)						
1.	Arya Nagar	06:00 to 22:00	53.8	-	22:00 to 06:00	42.4	-
2.	Bokhara	06:00 to 22:00	53.4	-	22:00 to 06:00	42.7	-
3.	Khasala	06:00 to 22:00	54.2	-	22:00 to 06:00	43.6	-

As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))			
Area Code	Area Type	Limits in dB (A) weighted scale	
		Day Time (6:00a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

END OF REPORT

Note:
1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without the written approval of the laboratory.
3. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mendhi
Technical Manager
Chemical Testing

Mahabal Enviro Engineers Pvt. Ltd.

PLOT NOS. 13,14,17,18, GRAMPANCHAYAT BOKHARA, CHHINDWARA ROAD, KORADI, NAGPUR, MAHARASHTRA, INDIA
Phone: 0712-2612162/2612212 email: nagpur@mahabal.com

TEST REPORT

Report No.	ME-1873231125	Date 27.11.2023
ULR No.	TC748723000019173F	

Name and Address of Customer	THE CHIEF ENGINEER, MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED, Koradi Thermal Power Station Koradi, Dist. Nagpur. (3X660MW)
PO No.:	KTPS/4550019674/0861
PO Date:	17.08.2023
Sample Description / Type	Ambient Noise
Date of Sampling	24.11.2023 to 25.11.2023
Sampling Procedure	CPCB Protocol for Ambient level Noise Monitoring 2015

Sr. No.	Location	Time in h (day)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response	Time in h (Night)	Sound Level L_{eq} dB (A) Fast Response	Sound Level L_{eq} dB (A) Slow Response
	Discipline: Chemical Testing; Product Group: Atmospheric Pollution (Ambient Noise)						
1.	Arya Nagar	06:00 to 22:00	53.2	-	22:00 to 06:00	42.4	-
2.	Bokhara	06:00 to 22:00	53.8	-	22:00 to 06:00	42.2	-
3.	Khasala	06:00 to 22:00	53.9	-	22:00 to 06:00	44.7	-

As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))

Area Code	Area Type	Limits in dB (A) weighted scale	
		Day Time (6:00a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

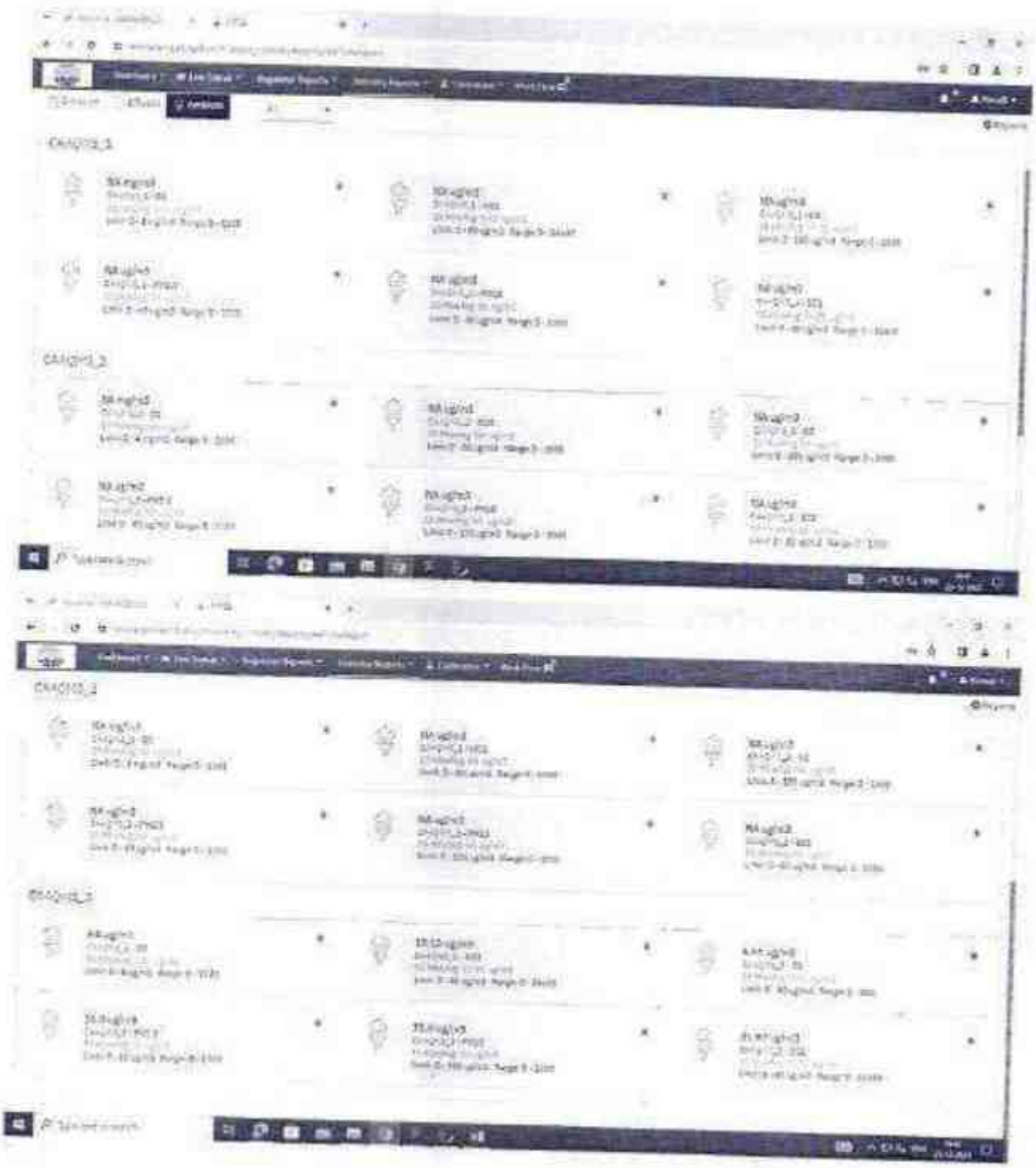
END OF REPORT

Note: 1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without the written approval of the laboratory.
3. Any complaint pertaining to the report can be addressed to mahabalreports@gmail.com

Reviewed and authorised by

Harish Mondhl
Technical Manager
Chemical Testing

Annexure - XVII



Annexure - XVIII-A

ABSTRACT OF WORKS UNDER
CORPORATE SOCIAL RESPONSIBILITY (C.S.R.) AS ON 02.08.2017.

Total amount shall be earmarked as one time capital cost for
CSR Programme = Rs. 2,000.00 Lakhs.

A] List of works completed as on 02.08.2017. : Rs. 2000.00 Lakhs.

Work under CSR.....Total... : Rs. 2000.00 Lakhs.

STATUS OF WORK UNDER CORPORATE SOCIAL RESPONSIBILITY (C.S.R.)

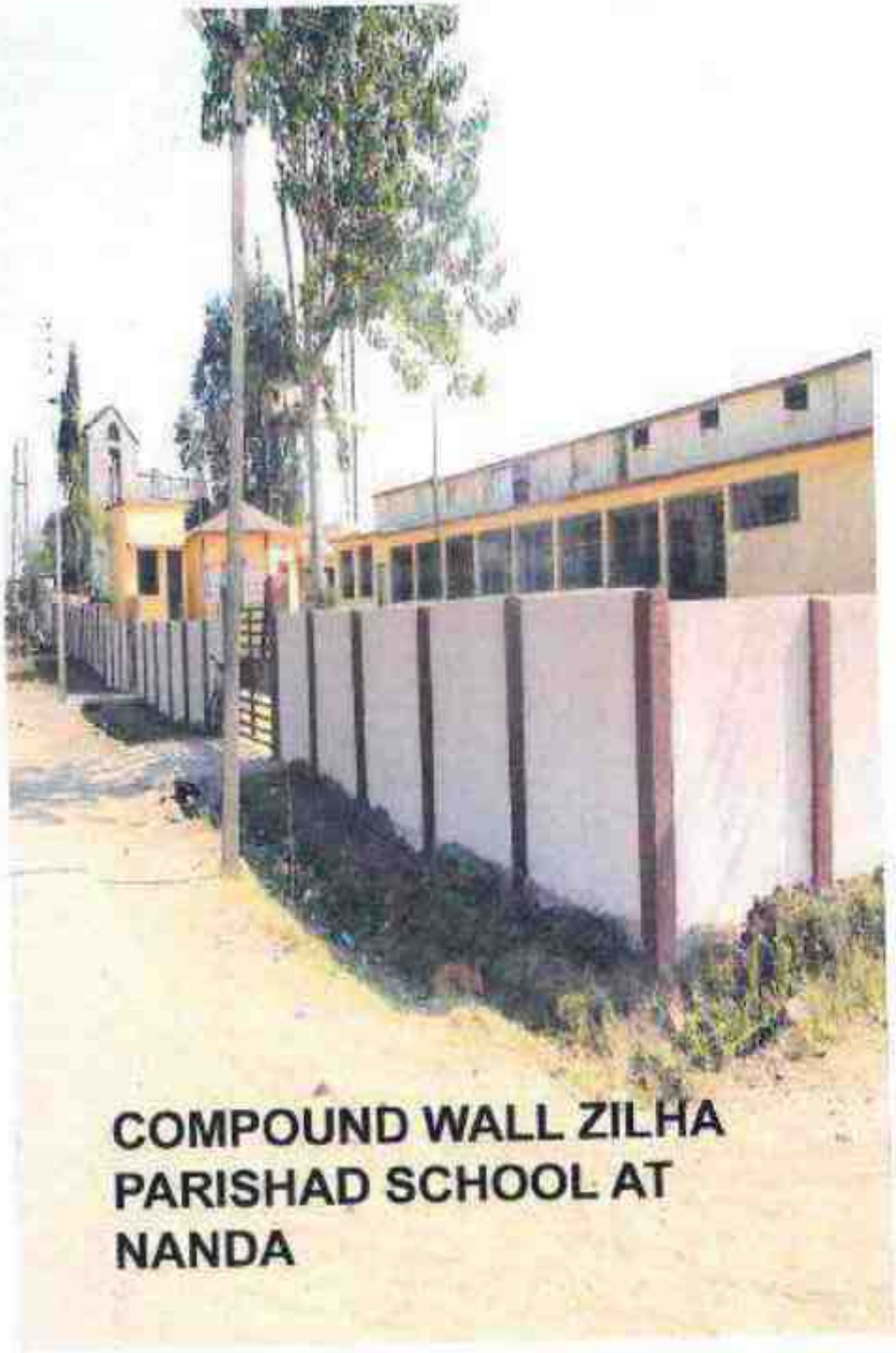
List of works completed as on 02.06.2017.

Sr. No.	Name of Work	Actual expenditure (Rs. In Lakhs)	Remarks.
1	**20 Bedded Hospital.** Renovation of existing school building for conversion into 20 bedded Hospital building at Koradi.	109.59	Work completed and Orange City Hospital, Nagpur has started the Hospital w.e.f. 03.02.2014.
2 A) ii)	**Drinking Water Supply.** Additional fund for Koradi & Nanda. (Deposit work to MJP)	112.00	Work completed.
B) i)	Panjara.	82.43	Work completed.
ii), v)	Waregaon, Suradevi & Bokhara.	392.10	Work completed.
iii)	Khairy.	97.66	Work completed.
iv)	Kaotha, Masala.	76.53	Work completed.
vi)	Mahadulla.	33.62	Work completed.
3	**Tree Plantation of 5000 trees with tree guards.**	44.65	Work completed. (New Koradi, Panjara, Nanda, Bokhara & Nara)
4	**Junior college.**	176.75	Work completed.
5 i)	**Approach Road and internal roads.** Strengthening and asphalting of balance road from Devi Mandir (Kaotha Village) to Canal and Khasara Village.	34.25	Work completed.
ii)	Strengthening and asphalting of balance road in Nanda and Koradi rehabilitated Villages.	35.30	Work completed.
iii)	Construction of WBM, road and asphalting of road from Dakhole field to Suradevi Pandhan.	87.72	Work completed.
iv)	Construction of WBM road from Khairy pandhan to Waregaon ash bund and Khairy in Kaotha village.	86.70	Work completed.

		Name of Work	Actual expenditure (Rs. In Lakhs)	Remarks.
		Construction of WBM road & strengthening and asphalting of road at Masala toll.	22.33	Work completed.
	vi)	Providing and filling pot holes and patch repair to road from Khasara ash recovery pump house to Masala Rly Crossing.	2.98	As per directives of Hon'ble Minister. Work is completed.
	vii)	Asphalting of road from Dakhole field to Suradevi Pandhan.	34.61	Work completed.
	viii)	Providing & laying asphalting to WBM road from Khairy Pandhan to Waregaon ash bund to Kaotha village junction.	32.08	Work completed.
6		**Crematorium.**		
	i)	Koradi & Nanda (Visarjan otta, condolence shed, burning shed including toilet, retaining wall & library room)	70.09	Work completed.
	ii)	Khasara (Internal road with development & cremation shed and compound wall)	26.81	Work completed.
	iii)	Koradi & Nanda Crematorium Compound wall.	12.50	As per directives of Hon'ble Minister. Work is completed.
7		High Mast Lighting at Koradi, Nanda and Khasara.	56.78	Work completed.
8		Sewage Disposal Scheme for Koradi, Nanda, Khasara, Panjara and Mahadulla. (Work executed for Mahadulla only)	50.00	Deposit work to PWD and work completed upto M.S.P.G.C.L. boundary wall.
9	a)	Shopping complex, Sports Complex & Community Hall at Koradi & Mahadulla (combined complex)	44.55	Work completed.
b)	i)	Samaj Bhawan at Nanda, Khasara, Panjara and Mahadulla	101.59	Work completed.
	ii)	Construction of Samaj Bhawan at Suradevi.	20.62	Work completed (The work is taken up against the provision of crematorium at Suradevi)

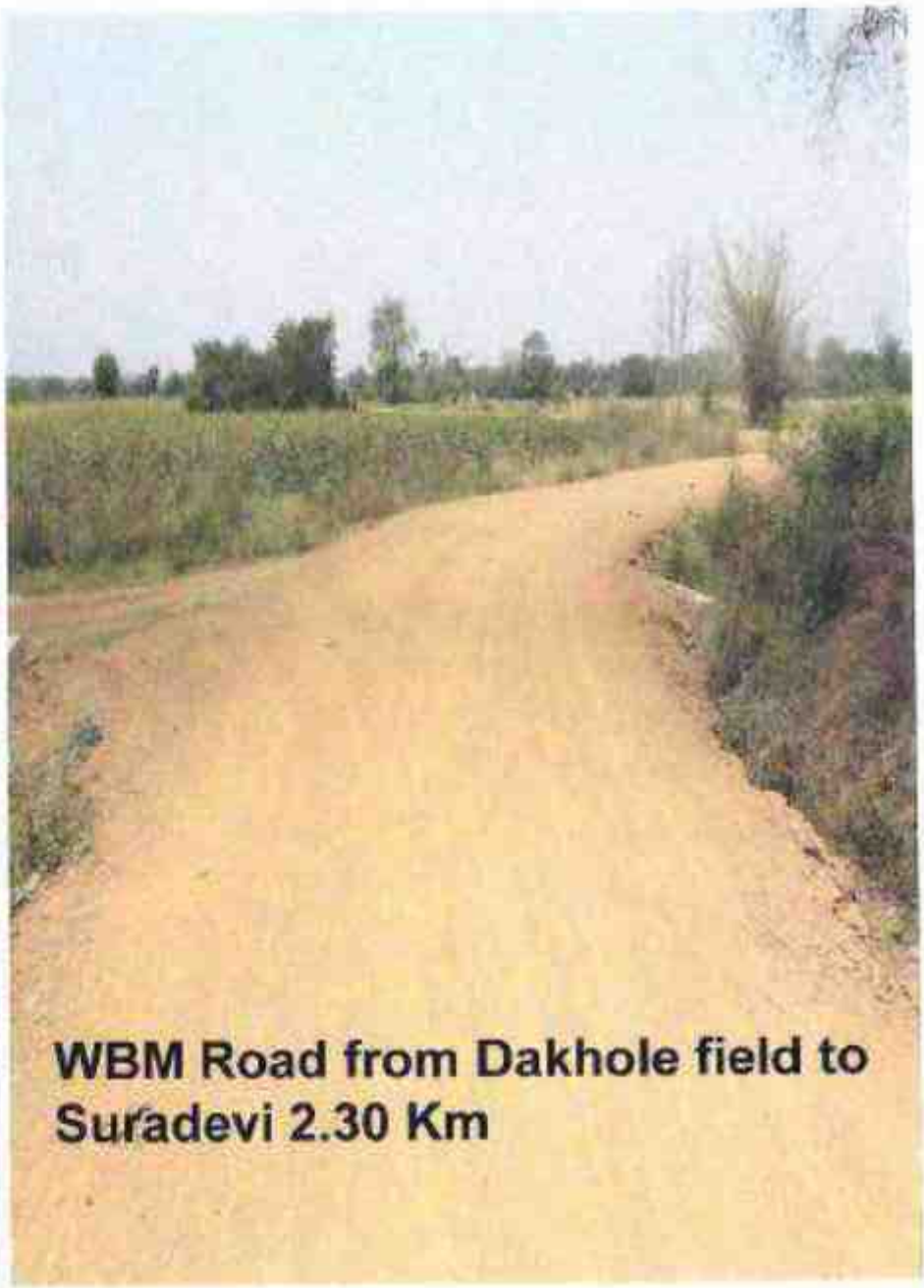
Sr. No.	Name of Work	Actual expenditure (Rs. in Lakhs)	Remarks.
10	Other works (Misc. in CSR).		
i)	Construction of compound wall around Z.P. School at Nanda village.	53.26	Work completed.
ii)	Construction of compound wall around Z.P. School at Khasara village.		
iii)	Providing & fixing RCC benches in the various villages.		
iv)	Supplying furniture for library room at buddha vihar Koradi.		
v)	Providing & fixing informatory board in various CSR work site.		
vi)	Work of construction of UCR masonry boundary wall for isolation of Bazar otla land at Mahadulla village is proposed.	37.63	Work completed.
vii)	Drinking water supply to Soradevi and Bokhara Village.	10.07	Work completed.
viii)	Providing water Proofing treatment to old terrace slab at Vidya Mandir School at Koradi Colony.	2.97	Work completed.
ix)	Miscellaneous works such as providing M.S. Gate at Z.P. School and Samaj Bhawan work at Nanda.	4.50	Work completed.
x)	Said fund is utilized for purchase of pavlan machine which is used for Jaiyukta Shivar Abhiyan / Pandhan road development scheme.	46.00	Work completed.
	Total (List-A)..... Rs.	2000.00	Lakhs.

Water Supply scheme Mahadulla

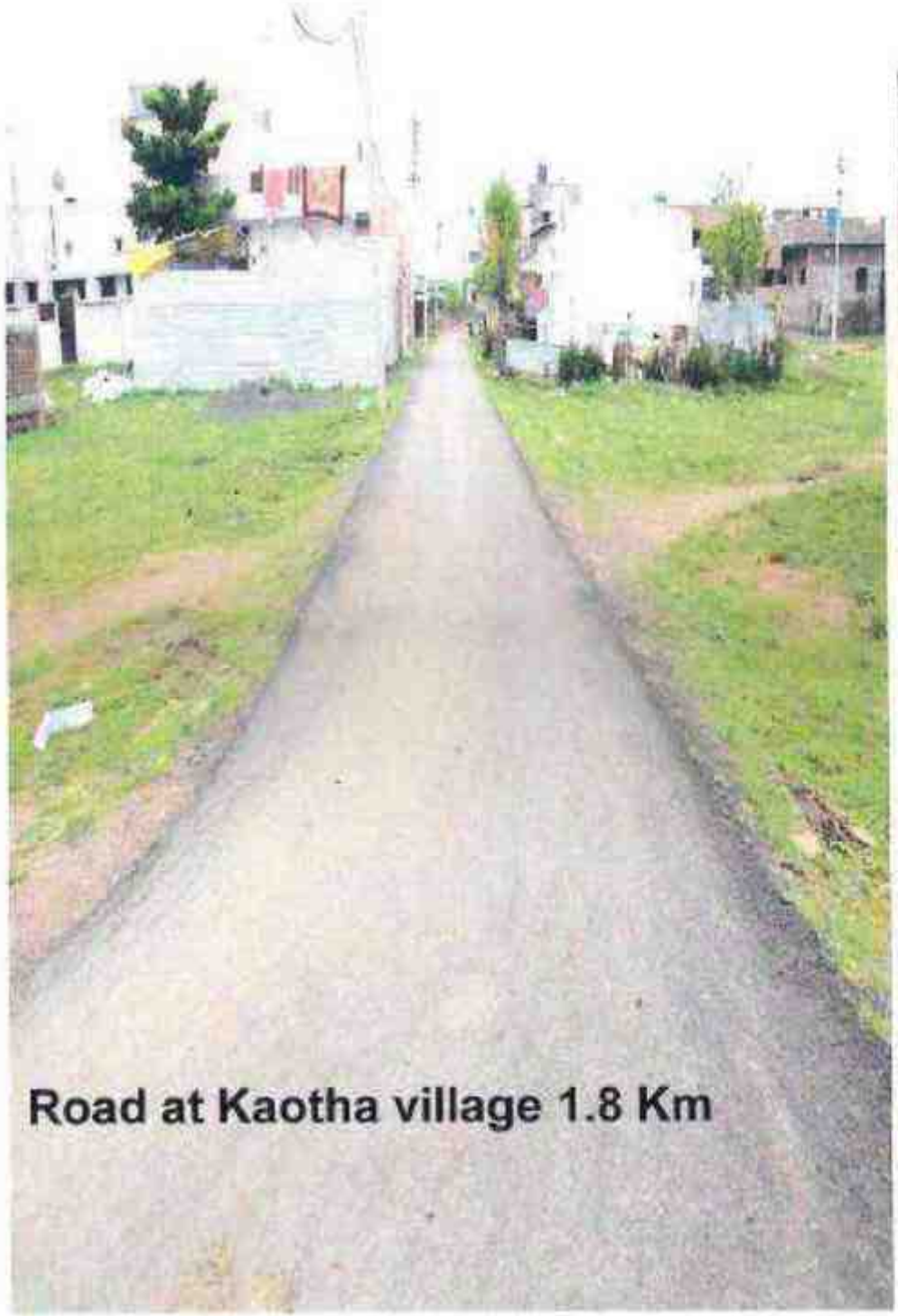


COMPOUND WALL ZILHA PARISHAD SCHOOL AT NANDA

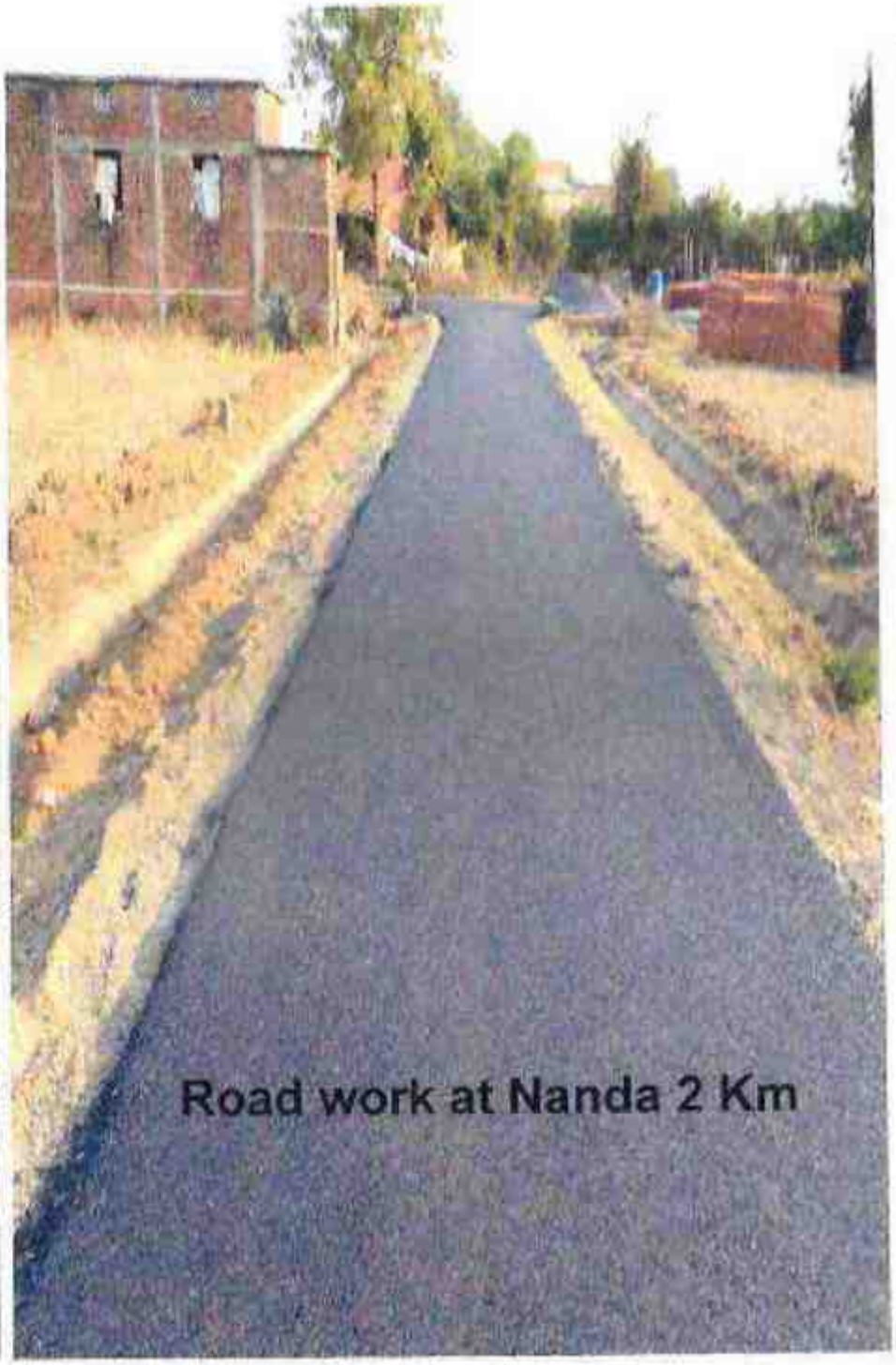
Tar Road Around Bazar Otta at Koradi 0.60 Km



WBM Road from Dakhole field to Suradevi 2.30 Km

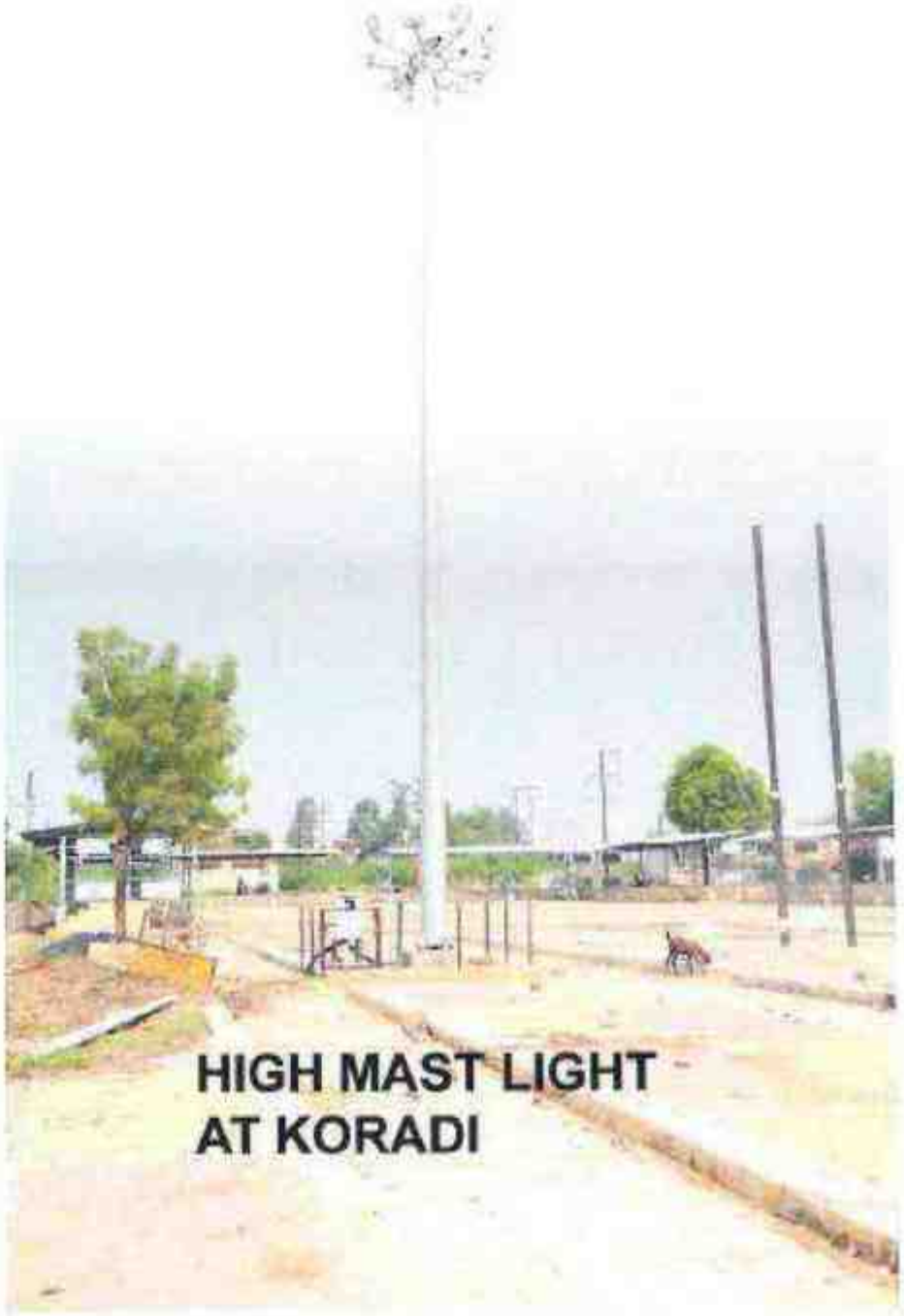


Road at Kaotha village 1.8 Km



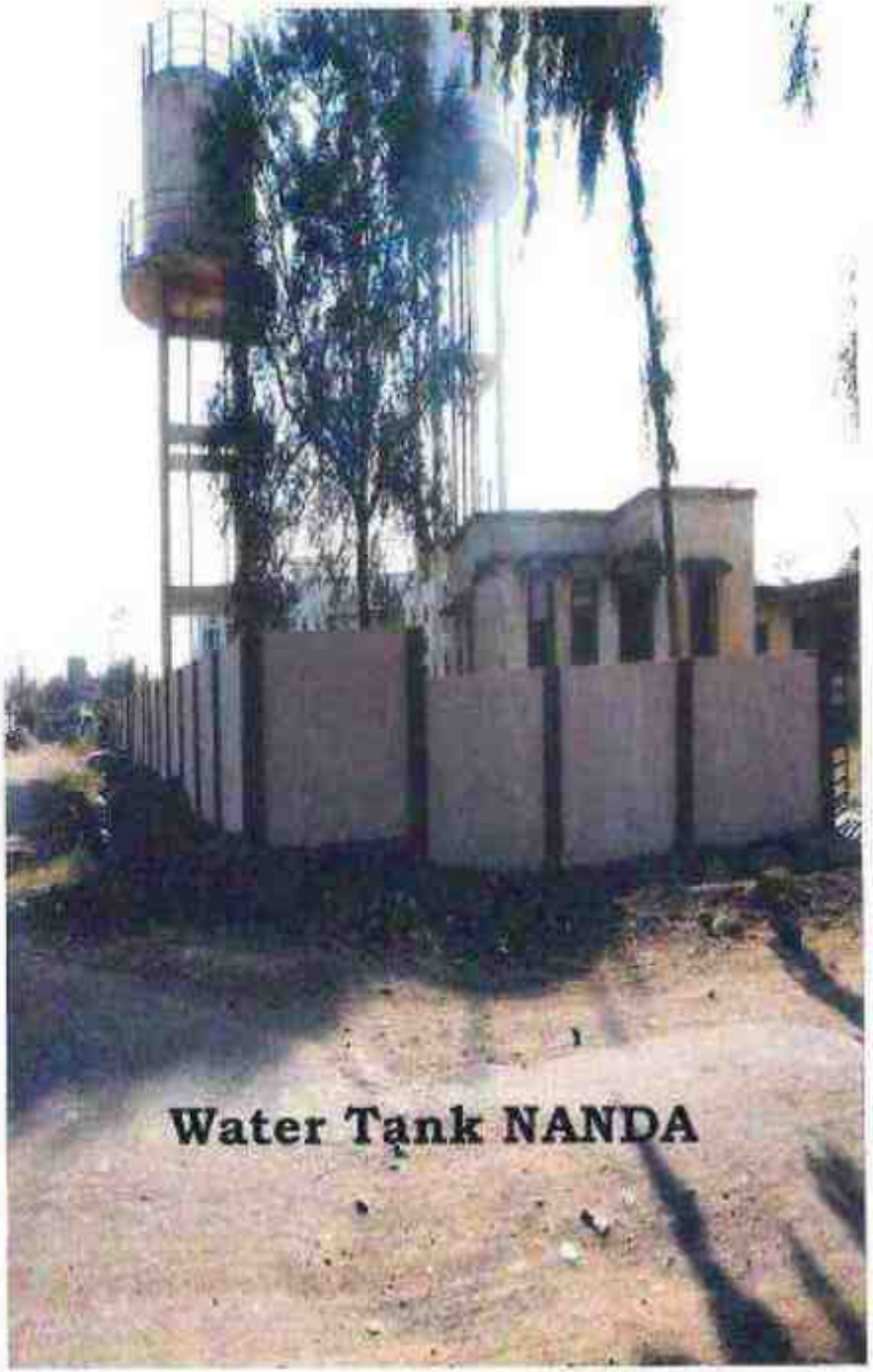
Road work at Nanda 2 Km

LIBRARY AT KORADI



Water Tank Waregaon
Capacity 50,000 Lit.

Water Tank Khasara



Water Tank NANDA

MOBILE AMBULANCE VAN
महानिर्मिती
स्वामी विवेकानंद

MAHA

स्वामी विवेकानंद
मल्टीस्पेशालिटी हॉस्पिटल, कोराडी

SUGAT VACHANALAYA SHED & DOME

Annexure - XIX

MAHAGENCO

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of: Chief Engineer (C & M), K.T.P.S., Koradi, Nagpur, PIN – 441111
Phone: (07109) 262141 to 262146,262106, 262170 FAX: 262127(Off)
Email – cegenkoradi@mahagenco.in

CIN: U40100MH2005SGC153648

Environmental Expenditure

Section: Civil Maintenance Section, 3x660MW, TPS, Koradi.

Sr. No	Particulars	PO No. & date	Order value (Rs.)	Total Env. Exp. for F.Y. 2022-23	Proposed Env. Exp. for F.Y. 2023-24
1	Work of maintaining Fodder farm for one year through Ekta Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124990 DT 31/03/2023	1380648.00	Nil	1380648.00
2	Work of maintaining Fodder farm for one year through Jyoti Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124997 DT.31/03/2023	1380648.00		1380648.00
3	Work of maintaining Fodder farm for one year through Mahalaxmi Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124987 DT-31/03/2023	1380648.00		1380648.00
4	Work of maintaining Fodder farm for one year through Sangam Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124991 DT-31/03/2023	1380648.00		1380648.00
5	Work of maintaining Fodder farm for one year through Tulsi Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124993 DT-31/03/2023	1380648.00		1380648.00
6	Work of maintaining Fodder farm for one year through Aaradhna Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124978 DT-31/03/2023	1380648.00		1380648.00
7	Work of maintaining Fodder farm for one year through Adhiraj Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124980 DT-31/03/2023	1380648.00		1380648.00

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of Chief Engineer (O & M), T.P.S., Koradi, Nagpur, PIN - 441111
Phone: (07109) 262241 to 262246,262106, 262107 FAX: 262127(O/S)
Email - nagpurkoradi@mahagenco.in
CIN: U40100MH2005SGC153648

8	Work of maintaining Fodder farm for one year through Jayshree Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124974 DT-31/03/2023	1380648.00		1380648.00
9	Work of maintaining Fodder farm for one year through Priyanka Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124983 DT-31/03/2023	1380648.00		1380648.00
10	Work of maintaining Fodder farm for one year through Mamta Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS Koradi.	4500124984 DT-31/03/2023	1380648.00		1380648.00
11	Work of maintaining Fodder farm for one year through Nivedita Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124982 DT-31/03/2023	1380648.00	Nil	1380648.00
12	Work of maintaining Fodder farm for one year through Sunita Swayam Sahayata Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS, Koradi.	4500124970 DT-31/03/2023	1380648.00		1380648.00
13	Work of maintaining Fodder farm for one year through Viraogana Mahila Bachat Gat of Mahila members with supervisor at Thermal Power Plant KTPS Koradi.	4500124968 DT-31/03/2023	1380648.00		1380648.00
14	Work of Tree plantation at & around various locations of khasala ash bund at 3 x 660MW plant area KTPS, Koradi.	4500122556 DT-22/11/2022	1732331.44		1732331.44
		4500121503 DT-18/10/2022	2291893.30		2291893.30
		Total Amount (Rs.)	2,19,72,648.74	Nil	2,19,72,648.74

Executive Engineer(C),
Section: Civil Maint., KTPS (660MW)

Annexure - XX

The Hitavada • SATURDAY • JANUARY 30 • 2010 • NAGPUR

MAHAGENCO

ENVIRONMENTAL PUBLIC NOTICE

Govt. of India, Ministry of Environment & Forest has accorded environmental clearance to Maharashtra State Power Generation Co. Ltd. to establish 3 x 660 MW Koradi Expansion Project vide letter No J-130-2/87/2007-IA-(I) dtd. 4th January, 2010. The copies of clearance letter are available with the following offices of State Pollution Control Board / Committee as well as Maharashtra State Power Generation Co. Ltd. and may also be seen at website of the Ministry of Environment & Forest at http://www.envfor.nic.in.

Office Contact Address :

1. Regional Office,
   Maharashtra State Pollution Control Board,
   5th Floor, Udyog Bhawan, Civil Lines, Nagpur.

2. Deputy Regional Office,
   Maharashtra State Pollution Control Board,
   5th Floor, Udyog Bhawan, Civil Lines, Nagpur.

3. General Manager (Project) / General Manager (Civil),
   Maharashtra State Power Generation Co. Ltd.,
   Chandrapur Road, Koradi Complex,
   Koradi - 441 111, Dist. Nagpur.

GENERAL MANAGER (PROJ.),
3x660 MW
Koradi Expansion Project
MSPGCL / KORADI

ANNEXURE - XXL

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of Chief Engineer (O & M), T.P.S., Koradi, Nagpur, PIN – 441111
Phone: (07109) 283141 to 262126, 262100, 262209 FAX: 262276(O)
Email – cegenkoradi@mahagenco.in
CIN: U40100MH2005SGC153648

Ref No: KTPS (O&M) / 660MW No 0 0 5 6 4 Date: 19 DEC 2023

CIRCULAR

Sub: Formation of Environment Management Cell for 3 x 660 MW KTPS Koradi.

Ref: MoEF Letter Ref. No. J-13012/87/2007-IA.II (T) dtd. 27.3.2015

Ministry of Environment, Forest & Climate Change GoI has issued Environment Clearance to 3 x 660 MW KTPS Koradi vide letter under reference. According to the condition No. 26 of the Environmental Clearance "A separate Environment Management Cell with qualified staff shall be set up for implementation of the stipulated Environmental safeguards".

In view of above, Environment Management Cell is formed at 3 x 660 MW KTPS Koradi comprising of following officers.

Sr. No.	Name	Designation
1	Shri R.V Sohoni	Dy. Chief Engineer (O&M) 3 X 660 MW
2	Shri S.K Degwekar	Supt. Engineer (Op) 3 X 660 MW
3	Shri S.R. Chandramani	Supt. Engineer (Civil) Koradi TPS
4	Shri Y.R Wakodikar	Exe. Engineer (AHP) 3 X 660 MW
5	Shri R.M Meshram	Exe. Engineer (B/M) 3 X 660 MW
6	Shri V.M Joshi	Exe. Engineer (C&I) 3 X 660 MW
7	Shri M.K Nanwatkar	Exe. Engineer (CHP) 3 X 660 MW
8	Smt B.G Ostwal	Exe. Engineer (MS) 3 X 660 MW
9	Shri S.R Dafade	Exe. Engineer (OS) 3 X 660 MW
10	Shri N.M Mohod	Exe. Engineer (Safety) 3 X 660 MW
11	Shri P.N Madavi	Exe. Engineer (FAU) Koradi TPS
12	Shri Gulam Mohsin	Exe. Chemist (Chem. Div.) 3 X 660 MW
13	Smt J.M Jirapure	Sr. Chemist (Env) 3 X 660 MW

For information to all concerned.

Chief Engineer (O&M)
3x660MW KTPS Koradi

Copy f. w. c. to:
1. Chief General Manager (E&S), 4th floor, HDIL Tower Bandra (E) Mumbai-51.

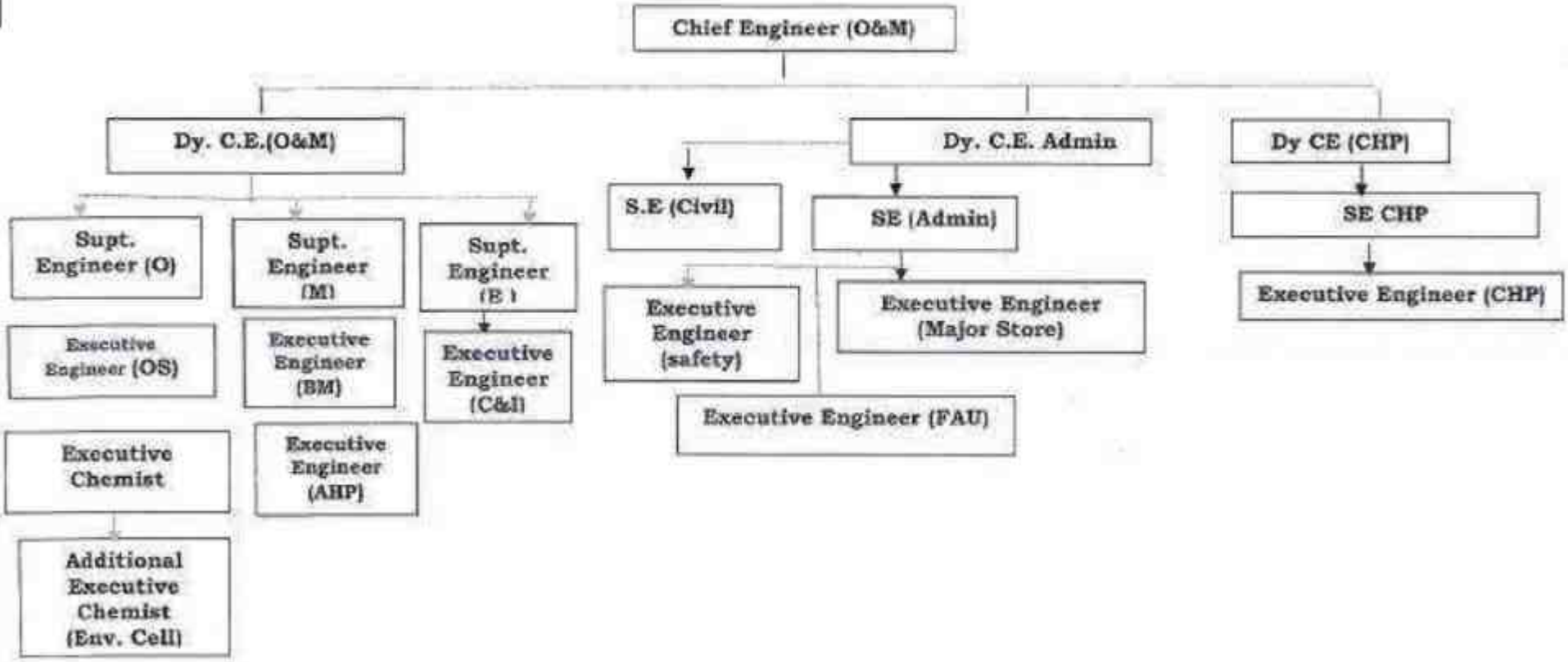
Copy to:
1. Dy. Chief Engineer (O&M / CHP/ Admin) 3 x 660 MW KTPS Koradi
2. Supt. Engineer (Op/ M / E / CHP/ Admin) 3 x 660 MW KTPS Koradi
3. Sr. No. 1 to 11
4. Sr. No. 12 through Section In charge.

Annexure - XXI

1572

Environmental Management Cell

3X660 MW Koradi TPS, Koradi Organization Chart



Annexure - XXII

Annexure - XXIII

MAHAGENCO

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of Chief Engineer (O & M), T.P.S., Koradi, Nagpur, PIN - 441111
Phone: (07109) 262141 to 262145, 262186, 262309 FAX: 262127(Off)
CIN: U40100MH2005SGC153648 Email – cegenkoradi@mahagenco.in

Ref No: CE (O&M)/KTPS/660MW/Env Cell. /FL-01 No 07416 Date:- 18 SEP 2023

To,
The Statistical Officer
Maharashtra Pollution Control Board,
Kalpataru Point, 2nd & 4th Floor
Opp. PVR Cinema
Near Sion Circle, Sion (E)
Mumbai- 400022

Sub: Submission of Environment statement for the Unit 8, 9 & 10 of 3X660 MW, KTPS, Koradi for the FY 2022-23.

Ref: Rule 14 of Environment protection rule 1986.

Dear Sir,

Please find enclosed herewith the Environment statement for the Unit 8, 9 & 10 of 3X660 MW, Koradi Thermal Power Station, Koradi for the FY 2022-23. Same is prepared in prescribed form V of EP rules 1986. Copy of online submitted Environment statement along with annexures is enclosed herewith.

Kindly acknowledge the receipt of the same.

Thanking you,

Encl: As Stated above.

Yours faithfully,

14/9/23

Chief Engineer (O&M)
3x660MW, KTPS, Koradi

Copy s.w.rs.to:

1) Member Secreatary, MPCB, Kalpataru Point, Sion, Mumbai 400022.
2) Executive Director, MSPGCL, Prakashgad, Bandra (E), Mumbai-400051
3) Scientist D, MoEFCC, Western Central Zone (WCZ), Regional office, Ground Floor, East wing, Civil lines Nagpur- 440001
4) Regional Officer/ Sub Regional Officer, MPCB, Udyog Bhavan, 5th floor, Civil Lines,Nagpur- 440001

FW: [EXTERNAL] - Application Receipt

Chief Engineer - Koradi TPS <cegenkoradi@mahagenco.in>
Sat 9/16/2023 4:42 PM
To:chemicaldivision660ktps <chemicaldivision660ktps@mahagenco.in>;wtp210ktps <wtp210ktps@mahagenco.in>;Chief Engineer - 210 MW KTPS <ce210ktps@mahagenco.in>

From: portalsupport@mpcb.gov.in <portalsupport@mpcb.gov.in>On Behalf OfMPCB Web Portal <portalsupport@mpcb.gov.in>
Sent: Saturday, September 16, 2023 4:42:07 PM (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
To: Chief Engineer - Koradi TPS <cegenkoradi@mahagenco.in>
Subject: [EXTERNAL] - Application Receipt

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

You don't often get email from portalsupport@mpcb.gov.in. Learn why this is important

---

Greeting MAHAGENCO, 3X660 MW, KTPS, KORADI.

Your application has been received.

Your Unique application number (UAN) **MPCB-ENVIRONMENT_STATEMENT-0000058036**

Please use the UAN in all your correspondence with respect to this application

You may view your application details on your Application dashboard

Thanks for your application.

Disclaimer

This is an auto generated mail which you are not a valid recipient please discard the same. This is not the spam [illegible] jurisdiction with regard to Maharashtra jurisdiction

Date: 16/09/2023

UNSUBSCRIBE

Annexure - XXIV

MAHARASHTRA STATE POWER GENERATION CO. LTD.

MAHAGENCO
Maharashtra State Power Generation Co. Ltd.

SOLAR POWER GENERATION DEPARTMENT
HDIL Tower, 'A'-Wing, 4th floor,
Bandra (East), Mumbai – 400051
Phone: 022- 26474211, 022-26472131 Extn. 2315 / 2326 / 3534
Fax: 022- 26476518
Web : www.mahagenco.in email: cespgd@mahagenco.in

Ref No: CE / SPGD-P / 52 MW EPC / Amendment-I/ No 0 0 2 3 4 Date: 09 MAR 2022

(Amendment – I to Contract Agreements)

To,

M/s. Refex Energy Ltd.,
202, Second Floor,
Jijibhoy Lane, Lalbaug,
Mumbai - 400012.

Kind Attention: Mr. Ramesh Dalvi (Manager-Project) / Mr. S. K. Lokesh (Senior Executive)

Sub: Development of 52 MW solar power project on Mahagenco's TPS lands.
- Amendment to the Contract Agreements thereof.

Ref: 1) LoA: CE/SPGD-P/52MW TPS Land/LoA/No.5966 Dtd.18/12/2020.
2) Contract Agreements signed for each site under 52 MW projects Dtd. 25/05/2021.
3) REL Letter: 202102-MSPGCL-030 Dtd.21/08/2021.
4) M/s REL email of consent for revised projects capacity Dtd. 27/08/2021

Dear Sir,

- Letter of award (LoA) u/r (1) has been placed to M/s. Refex Energy Ltd. for development of 52 MW solar power project on Mahagenco's TPS lands.
- Subsequently, Separate Contract Agreements has been signed for each site under 52 MW capacity.
- Vide letter u/r (3), REL has raised various obstacles observed during site development activity on each site & requested to provide encumbrance free land.
- In this regards, upon meeting on 23/08/2021, vide email u/r (4), M/s REL conveyed their consent for revised projects capacities proposed by Mahagenco.
- In this context, the following amendment in Contract Agreements is being issued to M/s REL for 52 MW TPS solar project:

S N	Contract for [Solar power project (SPP)]	Clause No.	Contract stipulation	Revised Stipulation	Remark
Applicable for all Contract Agreements (Umbrella, Supply, Civil & service and O&M):					
	Contracted Capacity				
	Nasik TPS		08 MW	07 MW	1. Amended old capacity with revised capacity wherever mentioned. 2. As Bhusawal project is cancelled, amended Bhusawal Project by Sakri-III project & Bhusawal Location by Sakri wherever mentioned.
	Koradi TPS		12 MW	05 MW	
	Parli TPS		12 MW	20 MW	
	Bhusawal TPS		20 MW	20 MW (Sakri-III)	
	20 MW solar power project at Bhusawal TPS will be called as 20 MW Sakri-III solar power project hereafter.				

8/3/2022

A.	**Umbrella Contract Agreements**				
1	Bhusawal TPS (Will be called as Sakri-III)	1	**Point of interconnection:** means the connection point at which the power produced by the solar power plant is injected into the 33 kV bus level of 132/33 kV Khedi Substation of MSETCL.	**Point of interconnection:** means the connection point at which the power produced by the solar power plant is injected into the 33 kV bus level **of 220/132/33 kV Shivajinagar** Substation of MSETCL.	As 20 MW Bhusawal TPS solar project is replaced by 20 MW Sakri-III project.
2	All SPP	3.4	For the detail technical specification EPC Contractor should refer the Section II clause -B, C, D, E and F of RFP document and published clarifications to pre-bid quires and EPC Contractor shall adhere to the same.	For the detail technical specification EPC Contractor should refer the Section II clause -B, C, D, E and F of RFP document **as per revised project capacity** and published clarifications to pre-bid quires and EPC Contractor shall adhere to the same.	
3		4.1	**Project sites (Area)**		
	Nasik TPS		15.30 Ha.	11.81 Ha.	- For development of 20 MW SPP at Parli TPS, total 30.36 Ha feasible land handed over which includes two adjacent land parcels out of which 22.67 Ha land parcel handed over on 11/003/2021 & 7.69 Ha land parcel handed over on 07/09/2021. - For development of 20 MW SPP at Sakri, total 29.89 Ha. Land handed over on 11/10/2021.
	Koradi TPS		23.97 Ha.	8.20 Ha.	
	Parli TPS		30.00 Ha.	30.36 Ha.	
	Bhusawal TPS (Will be called as Sakri-III)		40 Ha for Bhusawal site	29.89 Ha. Sakri site	
			Nearest Substation for Sakri-III: **220/132/33 kV** Shivajinagar, Sakri.		
4		7.1	**Contract Price (Inclusive of taxes)**		
	Nasik TPS		Rs. 27,91,99,984.00/-	Rs. 24,42,99,986.00/-	The contract price is amended as per revised project capacity.
	Koradi TPS		Rs. 41,87,99,976.00/-	Rs. 17,44,99,990.00/-	
	Parli TPS		Rs. 41,87,99,976.00/-	Rs. 69,79,99,960.00/-	
	Bhusawal TPS (Will be called as Sakri-III)		Rs. 69,79,99,960/-	Rs. 69,79,99,960.00/-	
5		15.1 (X)	**Guaranteed Electrical Energy Generation During Contract Period:**		
	Nasik TPS		13.28 Mus/yr	11.62 Mus/yr	The GEEC is amended as per revised project capacity.
	Koradi TPS		19.92 Mus/yr	8.30 Mus/yr	
	Parli TPS		19.92 Mus/yr	33.20 Mus/yr	
	Bhusawal TPS (Will be called as Sakri-III)		33.20 Mus/yr	33.20 Mus/yr	
6	All SPP	Appx-6	Bill of Material/Services	Revised Bill of Material/Services	BBU amended as per revised capacity
B.	**Supply Contract Agreement**				
1		2.1	**Supply Contract Price (Inclusive of taxes)**		
	Nasik TPS		Rs.18,75,08,090.03/-	Rs. 16,40,69,578.78/-	The contract price is amended for supply of equipment's as per revised capacity.
	Koradi TPS		Rs.28,12,62,135.34/-	Rs. 11,71,92,556.40/-	
	Parli TPS		Rs.28,12,62,135.34/-	Rs. 46,87,70,225.57/-	
	Bhusawal TPS (Will be called as Sakri-III)		Rs.46,87,70,225.56/-	Rs. 46,87,70,225.56/-	

2	Bhusawal TPS (Will be called as Sakri-III)	4	**Location of Delivery:** 20 MW Solar PV project at Bhusawal Thermal Power Station	**Location of Delivery:** 20 MW Solar PV project at Shivajinagar, Tal-Sakri, Dist. Dhule,	Only Bhusawal TPS Delivery location changed to Sakri all other remain unchanged.
3	All SPP	Annx-I	Detailed item wise billing breakup for Supply Contract.	Revised Detailed item wise billing breakup for Supply Contract.	As per amended BBU
C. Civil & services Contract Agreement					
1		2.b	**Civil & Services Contract Price (Inclusive of taxes)**		
	Nasik TPS		Rs.8,03,60,609.91/-	Rs. 7,03,15,533.67/-	The contract price is amended for Civil & Services as per revised contracted capacity.
	Koradi TPS		Rs.12,05,40,914.95/-	Rs. 5,02,25,381.23/-	
	Parli TPS		Rs.12,05,40,915.11/-	Rs. 20,09,01,525.18/-	
	Bhusawal TPS (Will be called as Sakri-III)		Rs.20,09,01,525.20/-	Rs. 20,09,01,525.20/-	
2	Bhusawal TPS (Will be called as Sakri-III)	4	**Location of Delivery:** 20 MW Solar PV project at Bhusawal thermal power station	**Location of Delivery:** 20 MW Solar PV project at Sakri, Dist. Dhule.	Only Bhusawal TPS Delivery location changed to Sakri all other remain unchanged.
3	All SPP	Annx-I	Detailed item wise billing breakup for Civil & services Contract.	Revised Detailed item wise billing breakup for Civil & services Contract.	As per amended BBU
D. Operation & Maintenance Contract Agreements					
1		2.1	**O&M Services Contract price (Inclusive of taxes)**		
	Nasik TPS		Rs.1,13,31,284.00/-	Rs. 99,14,873.50/-	The contract price is amended for O&M as per revised capacity.
	Koradi TPS		Rs.1,69,96,926.00/-	Rs. 70,82,052.50/-	
	Parli TPS		Rs.1,69,96,926.00/-	Rs. 2,83,28,210.00/-	
	Bhusawal TPS (Will be called as Sakri-III)		Rs.2,83,28,209.00/-	Rs. 2,83,28,209.00/-	
2	Bhusawal TPS (Will be called as Sakri-III)	4	**Location of Delivery:** 20 MW Solar PV project at Bhusawal thermal power station	**Location of Delivery:** 20 MW Solar PV project at Sakri, Dist. Dhule.	Only Bhusawal TPS Delivery location changed to Sakri all other remain unchanged.
3		9	**Guaranteed Electrical Energy Generation/penalties/Incentives**		
	Nasik TPS		13.28 Mus/yr	11.62 Mus/yr	The GEEG is amended as per revised project capacity.
	Koradi TPS		19.92 Mus/yr	8.30 Mus/yr	
	Parli TPS		19.92 Mus/yr	33.20 Mus/yr	
	Bhusawal TPS (Will be called as Sakri-III)		33.20 Mus/yr	33.20 Mus/yr	

- This amendment is issued without prejudice to right of Mahagenco mentioned in Contract Agreements and it is integral part of signed Contract Agreements dtd 25/05/2021.
- All other conditions stipulated in the Contract Agreements u/r (2). will remain unchanged.

It is requested to submit your acceptance to this Contract Agreements amendment within 07 days from the date of issue of this amendment.

Also, as the capacities of each site under 52 MW capacity has been revised, it is requested to submit amended Performance Bank Guarantee (PBG) and amended "Monthly Guaranteed Electric Energy Generation Output at Energy Meter" as per Annexure-17 of RFP for each site & signed amended BBU within 15 days from the issue of this letter.

Thanking You,

Yours Faithfully,

21/2/2022

Chief Engineer (SPGD-P)

Copy s.w.rs.to:

i. Director (Finance), Mahagenco
ii. Director (Projects), Mahagenco
iii. Director (Operation), Mahagenco
iv. The KfW office, New Delhi, 46, Paschimi Marg, Vasant Vihar, 110057 New Delhi
v. Executive Director (Solar and CP & C), Mahagenco
vi. Executive Director (O&M-I), Mahagenco
vii. Executive Director (O&M-II), Mahagenco

Copy s.w.cs.to:

i. Chief Engineer (O&M)- Bhusawal TPS / Nashik TPS / Koradi TPS / Parli TPS
ii. Chief Engineer (Renewable Energy), Mumbai.
iii. Chief General Manager (Finance), Mahagenco
iv. Chief General Manager (I&A), Mahagenco
v. Chief General Manager (Accounts), Mahagenco
vi. Chief Engineer (Civil-I), Dharavi office, Mumbai.
vii. Chief Engineer (Civil-II), Koradi – 441 111

Copy to:

i. Dy. Chief Engineer (Civil-CCC), Parli –Vaijnath, Dist-Beed-431515
ii. General Manager (HO-Accounts), Mahagenco
iii. General Manager (Solar), Mahagenco
iv. Sr. Manager (Loan), Mahagenco, Hongkong Bulding, Mumbai.

This has reference to I.A No. 28 Dtd. 14/02/2022

Annexure - XXV

भारत सरकार
परमाणु ऊर्जा विभाग
विकिरण एवं आइसोटोप प्रौद्योगिकी बोर्ड

Government of India
Department of Atomic Energy
Board of Radiation & Isotope Technology

Certificate Tracking ID / CTID : 2304957
Date of Issue / DOI : 03-Mar-2023
Certificate Serial No. / CSN : ULR-TC666523000003309P

RADIOACTIVITY TEST CERTIFICATE

Ref : BRIT/RAL/DOM/1120-1135/MISC/840-855/22-23

To :
KORADI THERMAL POWER STATION
O/o CHIEF ENGINEER (D&M),
T.P.S., KORADI, NAGPUR, PIN-441111.

This is regarding the sample of "COAL & ASH" sent for radioactivity analysis vide your letter NO.CE (O&M)/KTPS/66CNWIE-iv, CAVCIp FL-06/04377 dated 05.01.2023 which as per above letter is drawn from consignment with the following markings, as shown in Fig(s):

SAMPLE DESCRIPTION : ***ONE COAL SAMPLE AND THREE ASH SAMPLE***
SOURCE OF SAMPLE : ***KORADI THERMAL POWER STATION, 3 X 660 MW, KORADI***

DATE OF RECEIPT OF SAMPLE: 30.01.2023 **DATE OF COMPLETION OF TEST: 23.02.2023**

The samples were analysed for U-238, Ra-226 , Th-232 and K-40 radioactivity content by HPGe gamma spectrometry and the values obtained are as follows:

Sr. No.	NAME OF THE PRODUCT	U-238 (Bq/Kg)	Ra-226 (Bq/Kg)	Th-232 (Bq/Kg)	K-40 (Bq/Kg)
1	COAL SAMPLE	24.7 ± 1.6	17 ± 1.9	33.9 ± 4.6	20.3 ± 1.8
2	ASH-1	74 ± 2.8	66.2 ± 5.02	99.8 ± 10.1	192.7 ± 11.6
3	ASH-2	59.3 ± 2.0	61 ± 5.1	87.4 ± 9.0	164.8 ± 11.1
4	ASH-3	56.4 ± 2.3	44.7 ± 3.7	59.2 ± 6.6	151.3 ± 11.0

Opinion: The measurement values are below the clearance level for radionuclides of natural origin in bulk solid materials, as per AERB directive 01/2010 (table-3) dated 26/11/2010.

Note: (i) The report pertains to the given sample only. (ii) The sample will be retained in this laboratory for a period of 3 months from certificate date and thereafter it will be disposed off. (iii) This report shall not be reproduced except in full, without written approval of the laboratory. (iv) The sampling is not done by this laboratory.

Checked by:
SHEEBA S.M.
Assistant

Authorized Signatory:
AJAY NANA THAKKE
OIC, RAL

********** End of Report **********

1/1

The authenticity of this certificate is verifiable. Please scan the QR code using a QR scanning application on any mobile devices. Upon verification you must enter the necessary information in landing page https://nsdata.barc.gov.in. We will then revert you back with a digital copy of the certificate in your verified e-mail ID. In accordance to IT Act 2008 (21 of 2000), this document is generated electronically through a validated site and need no physical/ digital signature etc.

Annexure - XXVI

भारत सरकार
परमाणु ऊर्जा विभाग
विकिरण एवं आइसोटोप प्रौद्योगिकी बोर्ड

Government of India
Department of Atomic Energy
Board of Radiation & Isotope Technology

Certificate Tracking ID / CTID : 2304957
Date of Issue / DOI : 03-Mar-2023
Certificate Serial No. / CSN : ULR-TC666523000003309P

RADIOACTIVITY TEST CERTIFICATE

Ref : BRIT/RAL/DOM/1120-1135/MISC/840-855/22-23

To :
KORADI THERMAL POWER STATION
O/o CHIEF ENGINEER (D&M),
T.P.S., KORADI, NAGPUR, PIN-441111.

This is regarding the sample of "COAL & ASH" sent for radioactivity analysis vide your letter NO.CE (O&M)/KTPS/66CNWIE-iv, CAVCIp FL-06/04377 dated 05.01.2023 which as per above letter is drawn from consignment with the following markings, as shown in Rack:

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SOURCE OF SAMPLE : ***KORADI THERMAL POWER STATION, 3 X 660 MW, KORADI***

DATE OF RECEIPT OF SAMPLE: 30.01.2023 **DATE OF COMPLETION OF TEST: 23.02.2023**

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Sr. No.	NAME OF THE PRODUCT	U-238 (Bq/Kg)	Ra-226 (Bq/Kg)	Th-232 (Bq/Kg)	K-40 (Bq/Kg)
1	COAL SAMPLE	24.7 ± 1.6	17 ± 1.9	33.9 ± 4.6	20.3 ± 1.8
2	ASH-1	74 ± 2.8	66.2 ± 5.02	99.8 ± 10.1	192.7 ± 11.6
3	ASH-2	59.3 ± 2.0	61 ± 5.1	87.4 ± 9.0	164.8 ± 11.1
4	ASH-3	56.4 ± 2.3	44.7 ± 3.7	59.2 ± 6.6	151.3 ± 11.0

Opinion: The measurement values are below the clearance level for radionuclides of natural origin in bulk solid materials, as per AERB directive 01/2010 (table-3) dated 26/11/2010.

Note: (i) The report pertains to the given sample only. (ii) The sample will be retained in this laboratory for a period of 3 months from certificate date and thereafter it will be disposed off. (iii) This report shall not be reproduced except in full, without written approval of the laboratory. (iv) The sampling is not done by this laboratory.

Checked by:
SHEEBA S.M.
Assistant

Authorized Signatory:
AJAY NANA THAKKE
OIC, RAL

---------- End of Report ----------

1/1

The authenticity of this certificate is verifiable. Please scan the QR code using a QR scanning application on any mobile devices. Upon verification you must enter the necessary information in landing page https://crystal.barc.gov.in. We will then revert you back with a digital copy of the certificate in your verified e-mail ID. In accordance to IT Act 2008 (21 of 2000), this document is generated electronically through a validated site and need no physical/ digital signature etc.

Annexure - XXVI

Impact Assessment of Implementation of Corporate Social Responsibility Action Plan for Adjoining Villages of 3 X 660 MW Coal Based Thermal Power Plant; Koradi Dist. Nagpur.

Report Prepared For
MAHAGENCO Koradi Expansion Project; Nagpur

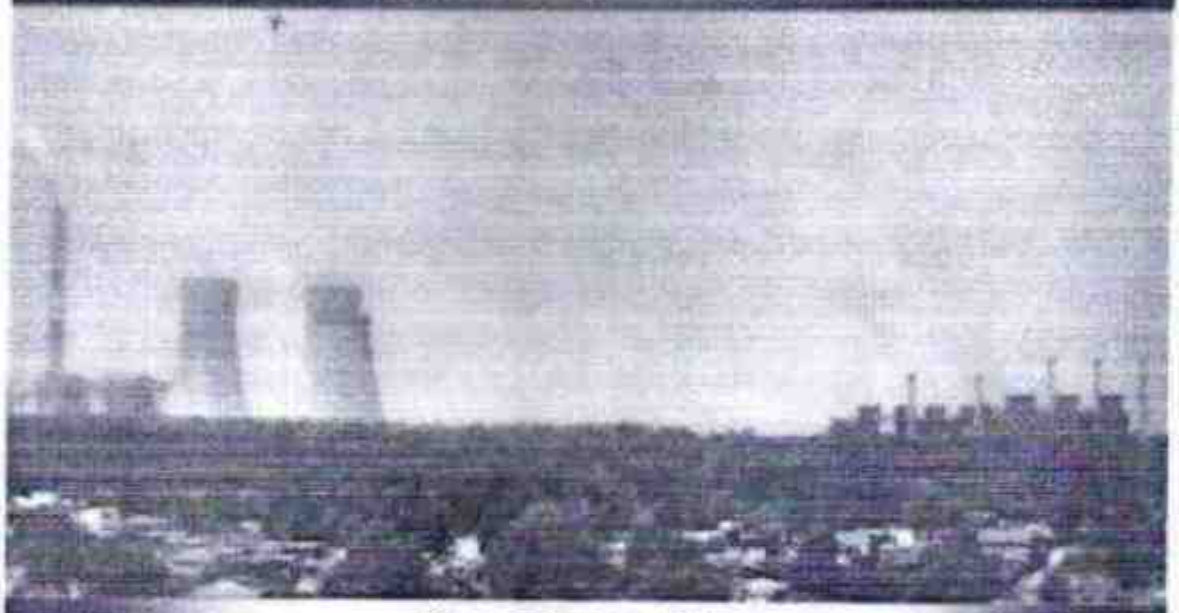
Report Prepared By

Surya Envirotech

237, Hanuman Nagar, Nagpur.

July 2016

Impact Assessment of Implementation of Corporate Social Responsibility Action Plan for Adjoining Villages of 3 X 660 MW Coal Based Thermal Power Plant; Koradi Dist. Nagpur.



Report Prepared For
MAHAGENCO Koradi Expansion Project; Nagpur

Report Prepared By

Surya Envirotech

237, Hanuman Nagar, Nagpur

July 2016

Executive Summary

1.1 Reconnaissance

Maharashtra State Power Generation Company Ltd. has expanded 3X660MW Thermal Power Plant, village Koradi, Taluka Kamptee, District Nagpur, Maharashtra State. The expanded project had been erected near the existing plant with investment of Rs. 1153.96 crores. This, about 18km away from Nagpur. The plant capacity is 3X660 MW. The expanded, site of MAHAGENCO is located in eastern side of Maharashtra state spread between Latitude 21 24' 09" N and Longitude 79 09' 99" E.

The study of socio economic status of the people in the area is an integral part of Corporate Social Responsibility (CSR). Demographic structure, infrastructure resource base, health status of the community and economic attributes such as employment, industrial development and sustainability of the project in financial terms has been incorporated to assess the impact of Corporate Social Responsibility (CSR) through study of Quality of Life of villages in study area.

1.2 Objectives of the study

- To prepare a demographic profile of the project affected villages
- To assesses Existing Socio-Economic status of Project Affected Persons (PAP)
- To identify and quantify nature of employment existing and future opportunities
- To assesses Quality of Life of Project Affected Persons in the study area
- To evaluate of Nature of Land use Pattern
- To evaluate infrastructure resource base, viz. medical, education, water resources, power supply
- To evaluate economic resource base, viz. agriculture, industries, forest, trade and commerce
- To evaluate health Status, viz. morbidity pattern with reference to prominent and endemic diseases (e.g. fluorosis, malaria, filaria)
- To evaluate cultural and aesthetic attributes in the study area including places of historical/ archaeological importance
- To evaluate occupational pattern, employment status and income category of Project Affected Persons
- Quantification of economic resources, Health status, Cultural and Aesthetic attributes etc.
- To carryout impact assessment of CSR plan of the project affected people

1.3 The study area

The expanded, site of MAHAGENCO is located in eastern side of Maharashtra state spread between Latitude 21 24' 09" N and Longitude 79 09' 99" E. The Average annual rain fall is 1166.3 mm/year and relative humidity is in the range of 80 % to 24 %. Entire study area predominantly depends upon primary or secondary employment from Thermal Power Plant of Koradi and Khaparkheda, MAHAGENCO.

The present study area of 5 Kms radial aerial distance around the expanded project site which comprises of twelve villages. The villages are from Kamptee Taluka of Nagpur District namely Koradi, Nanda, Khasala, Mahadula, Panjra, Mhasala, Kawtha, Khairi, Lonkhairi, Waregaon and Suradevi whereas Bokhara, is in Nagpur Taluka.

1.4 Corporate Social Responsibility (CSR) Policy

Our vision is – "To remain a responsible corporate entity mindful of its social responsibilities and actively contribute to the social and economic development of the communities in which we operate. In so doing build a better, sustainable way of life for the weaker sections of society and raise the country's human development index."

POLICY:

"Corporate Social Responsibilities Policy of MAHAGENCO is to integrate social and environmental concerns into the business operations in interaction with stakeholders (employee, customers, suppliers, shareholders, investors, local communities and government) on a voluntary basis".

ACTIVITIES UNDER CORPORATE SOCIAL RESPONSIBILITY OF MAHAGENCO

- Education
- Health care
- Community Development/Infrastructure Development
- Environment care
- Cultural Development
- Other activities

2.1 The Significant Demographic Features of Villages are:

Total population of the region as per 2011 census is 49,237 out of which 25,538 are male and 23,699 are female.

- Total number of households in the region about 11344
- Sex ratio (number of male per thousand female) in the region is 928 this shows that male population is higher in the region as compared to the female population
- Out of the total population Scheduled Caste and Scheduled Tribe population is about 26.41% and 6.62% respectively
- Total main worker population is about 32.70%, 5.68% comes under marginal worker category and 61.65% belongs to non-workers category
- Literacy rate of the population in the study area is about 78.31%

3.1 Socio-Economic Survey

The study areas consist of Twelve villages, adjacent to the expanded TPS activity, are identified for the survey: - Panjra, Koradi, Nanda, Mhasala, Kawtha, Khasala, Khairi, Suradevi, Waregaon, Lonkhairi, Mahadula, Bokhara. All these villages are within 5 Km from expanded TPS 3X660 MW project. As per the survey, the main language in the study area is Marathi.

The salient observations recorded during survey in the study area:

- Majority of the respondents are engaged in activities other than agriculture while near about ¼th of the population are engaged in agricultural and its allied activities. The main crop grown in the study area is soybean, cotton, bajra, wheat etc.
- Sanitation facilities in the study area were not proper. There are open drains from where the domestic waste water is disposed. People are not at all aware and careful about hygiene and cleanliness, this has resulted in increase of health problems in the area
- Power supply facility is available in all the villages and town in the study area mostly for domestic purpose and few for agriculture also
- Drinking water sources is mostly from overhead tanks constructed by MAHAGENCO. As regard to the drinking water facility people expressed that the quality of water is portable.
- A medical facility in terms of primary health center is available in Gumthi village, but it is far from

other villages. Doctors and nurses visits the villages for providing medical treatment as per their scheduled time

- Transportation facility was found satisfactory in the study area and road conditions are good. Frequency of public transport facility however remains deficient
- Almost all the people use LPG as a main source of fuel and very few people use kerosene and wood for cooking purpose
- Sufficient communication facility is available in the study area
- Educational facilities are available in the form of primary and middle schools. In some villages, it is extended up to high school. For higher studies people avail the facility from the nearest town.

3.2 The average Quality of Life index values in the study area are estimated as:

QoL (s)	=	0.59
QoL (o)	=	0.62
QoL (c)	=	0.60

3.3 Socio - Economic Impacts

Socio - Economic Impacts

Setting up of 3X660 MW Coal Based Thermal Power Plant within area would create certain impacts with beneficial as well as adverse effects on the socio-economic environment. Some of these impacts would be more effective for the immediate vicinity with short term effects whereas the others would be of higher order or of long term in nature.

It is necessary to identify the extent of these impacts for further planning of control measures leading to mitigation of the adverse impacts.

The impacts of TPS on parameters of human interest have been assessed in terms of:

- The impact due to acquisition of land needed to set up the plant buildings and other support facilities

- The potential impacts due to unavoidable releases fly ash as pollutants from the power plant reaching to the public domain.

Beneficial Impacts

The impacts identified as beneficial support for existing project activities. They are:

- Job opportunities for the local people as well as for those from the nearby surrounding area would increase due to operation and construction of 3X660 MW Coal Based Thermal Power Plant.
- Due to influx in population, the trade, business opportunity for the local people would increase, raising the economic status of the people around the study area.
- Establishment of township as well as the influx of working people within the study area would lead to favorable changes in the existing infrastructure facilities, which may further improve the quality of life of the study concerned area.
- There would be local participation in supply of materials and services for construction of township and other infrastructure such as access roads, fresh water pipeline and warehouses.
- The proposed 3X660 MW Coal Based Thermal Power Plant, Koradi would help partially in bridging the gap between the demand and inadequate supply of electricity within the country in general, and the region in particular.
- The electricity generated by 3X660 MW Coal Based Thermal Power Plant will result in electrification of villages, development of irrigation facilities, drinking water supply, development of industries etc.
- Due to proposed 3X660 MW Coal Based Thermal Power Plant there would be an overall development of the area and job opportunities, which may improve the quality of life of the area.

Adverse Impacts

The impact identified as adverse would go against the project activities. These impacts can be minimized by proper follow up of Corporate Social Responsibility Plan. These impacts are:

- Influx of workers during the project construction and operation phases would impose some strain on the existing basic amenities within the study area.
- The project activities may disturb the fishing activity, if appropriate measures for disposal of fly ash near the vicinity of river are not taken.

SURYA ENVIROTECH, NAGPUR

- For meeting various demands in the power plant, fresh water would be drawn from dam constructed on river Kolar, which may affect the drinking water & agricultural needs of the local population. However the impacts may be insignificant.
- Health problems can increase due to nearby industries
- It may increase environmental pollution and social hygiene.

It is anticipated that the adverse impacts on parameters of human interest could be mitigated by proper follow-up of the measures indicated in the Corporate Social Responsibility Plan.

4.1 Implemented Activities under Corporate Social Responsibility of MAHAGENCO, Koradi

i. Water Supply
ii. Tree Plantation
iii. Road
iv. Educational Facility
v. Highmast Light
vi. Community Hall
vii. Commertial complex
viii. Temple
ix. Sitting benches
x. Hospital
xi. Sanitation and Drainage
xii. Library
xiii. Cremation or Burial Ground.

5.1 Proposed Activities of CSR

Sr. No.	Name of Village	Proposed Activity
1	Koradi	Digging and renovation of pond No. 3, Renovation of school building, Guest houses renovation
2	Khairy	Drinking water supply scheme is in progress (Khairi)
3	Mahadula	Shopping complex, construction of playground, stadium and their compound wall,
		I.T.I Training for students of standard 8th and giving stipend to them
		Construction of Anganwadi building
		Provide funeral procession van
		Use of high pressure van for cleaning of Sanitation or waste material.
		Give the employment of I.T.I holders around the Koradi project area.
		Greenbelt of 20-50 m width shall also be developed around the ash pond over and above the green belt around the plant boundary. It is planned to plant 50,000 trees in the year 2016-17 in power house and nearby premises.
		Separate arrangement is made for drinking water nearby village
4	Nanda	Construction of playground, stadium and its compound wall
5	Loankhairi, Ghumthe, Chicholi	Compensation for agricultural products spoilage due to fly ash of MAHAGENCO

6.1 Existing Quality of Life of the Villages in Study Area Comparative Table (2005- 2015)

Sr. No.	Name of the villages	QoL(c) (2005)	QoL(c) (2015)
1	Panjra	0.57	0.69
2	Koradi	0.62	0.72
3	Nanda	0.57	0.65
4	Mhasala	0.50	0.52
5	Kawatha	0.50	0.53
6	Khasala	0.50	0.61
7	Khairy	0.50	0.56
8	Suradevi	0.57	0.61
9	Waregaon	0.52	0.56
10	Lonkhairy	0.52	0.61
11	Mahadula	0.62	0.70
12	Bokhara	0.50	0.52
	Total	**0.54**	**0.60**

QoL(s) = Subjective Quality of Life
QoL(o) = Objective Quality of Life
QoL(c) = Cumulative Quality of Life

Recommendations:

Project authority of MAHAGENCO may consider to implement following recommendations in second phase of Corporate Social Responsibility Action Plan,:

- Implementation of Scheme described in Annexure I for Poverty Elevation
- Tree plantation with tree guards and maintenance as per green belt development guideline – CPCB.
- Common sewage treatment plant for the study area.
- Rain water harvesting scheme with storm water drainage and ground water recharge structures
- Provide facility to study centre (Library Koradi) such as; Books, Internet, e- library and R.O for drinking water.
- Consideration of Youth development in the study area with the help of different schemes described in Annexure II
- School bus facility should be provide from the villages to Koradi colony schools
- Furniture facility for Z.P. school at Panjra and Nanda
- Computers for all Z. P. school so as to improve the educational level
- Mobile hospital for the study area.
- Provide Garbage disposal with ghanta-gadi for all the villages to improve the environment as well as health status
- Implementation of Different schemes for women empowerment in the study area (Refer Annexure III)
- Consideration for solar street lamps in villages.

4 ESRF for MSPGCL

Mahagenco has adapted this environmental safeguard policy to ensure compliance with government regulations with respect to environment. Environmental safeguard for various projects has to be ensured and incorporated from the initial stages of the project. The safeguards hereby adapted by the company ensures that the project undertaken is environment friendly and sustainable. Pollution mitigation and waste management also forms an integral part of the environment safeguard policy. The aim of the policy is to reduce the environment footprint of the project.

4.1 Corporate Environmental Policy

Corporate environmental policy is hereby adapted by MSPGCL to develop eco-friendly and sustainable power generating plants and their infrastructure. Corporate policy shall cater to the needs of policies and regulations besides promoting a healthy environment of growth and development. Environmental sustenance would be the crux of corporate environmental policy.

MSPGCL is focussed to adapt the following as a part of corporate policy -

- To generate sensitivity towards environmental issues and conduct the activities accordingly
- Follow an Integrated Environment Management and Practices
- To utilize natural resources efficiently
- Conservation of natural resources and developing green zones
- Pollution mitigation practices and its eco-friendly management
- Train and sensitize human resource of the company towards environmental issues
- Adapting policies for sustainable environmental practices within the organization
- Promoting vendors and stakeholders associated with the company to adapt sustainable practices for environmental protection

MSPGCL Environmental Policy (EP) is founded on the concept of Sustainable Development and thereby recognizes Environmental and Social (E&S) considerations in its business operations to add value, minimize impacts and risks to increase effectiveness of development projects for the benefit of the state.

MSPGCL is committed to comply with its Environment Policy, applicable environmental laws of the land and be responsive to existing and emerging global environmental concerns on a proactive basis.

4.2 MSPGCL Environmental Department

Mahagenco has a dedicated department for environment, health and safety namely as Corporate Environment Health & Safety Unit (CEHSU). This department is responsible for implementation and integration of various environment rules and regulations within different projects taken up by Mahagenco as a part of its work. CEHSU department also co-ordinates with various environment related authorities both at state and national level to maintain environment friendly project development and maintenance. This unit also ensures environment laws are strictly adhered to even during operation and maintenance of power plants, thus maintaining sustainable development. Environmental department are on their way to adapt an environmental safeguard policy for even better efficient mode of environment safeguard and protection.

Annexure - XXVIII

MAHAGENCO
Maharashtra State Power Generation Co.Ltd.

Maharashtra State Power Generation Co.Ltd.
(Formerly Maharashtra State Electricity Board)
O/o DY. CHIEF ENGINEER-III (FM),
Vidyut Bhavan, Kalmi Road, Nagpur - 440 013.
Ph. 2560374 (P) 2565623
Email:cefmnagpur@mahagenco.in ,ceotl@mahagenco.in

Dy.CE-III(FM)NGP/CO/TU/ No. 04656 Dt. 28 NOV 2023

To,
Executive Chemist,
Koradi 3x660MW
KTPS -441111

Sub: Test reports of coal samples for sulphur analysis.

Ref: Letter No.400 DT.25.09.2023

Dear Sir,

With reference to above, please find enclosed herewith the test reports of raw coal samples deposited vide letter cited under reference for Sulphur analysis at Central Coal & Oil Testing Laboratory.

Enclosure : Test Report no. 23/69.

Executive Chemist

Coal Office ,Nagpur

Scanned with OKEN Scanner

MAHA

Central Coal And Oil Testing Laboratory
Phone / Fax : 07712-2581717
Email :ccotl@mahagenco.in

TEST REPORT

MK 7 C 3 4 5 0 2 1 1 0 1 0 0 0 0 3 9 9

Test Report No.	23/03
Discipline	Chemical Testing
Group	Solid Fuels
Product	Coal
Name & Address of Customer	Executive Chemist, 3x660MW Koradi
Letter Ref. No	KTPS/660/CO/400/25.09.2023
Identification & Condition of Sample	Coal sample in powder form received in sealed Plastic Packet.
Date of Sampling	NA
Date of Receipt	25.09.2023
Date of Testing	01.11.2023
Method used for Testing	Sulphur on air dry basis - ASTM D 4239
Environmental Conditions	Temperature: 26.2°C Relative Humidity: 40%

Test Results

Sr. No.	Customer Sample ID/Details	CCOTL ID	Sulphur%(on ADB)
1	LTC/GXSG-46250/085/29.07.2023	230088	0.68
2	SDG/DR/28.08.2023	230089	0.62
3	GONDEGAON/26.08.2023	230090	0.88
4	INDER/30.08.2023	230091	1.01
5	BHANEGAON/29.08.2023	230092	1.04
6	SINGORI/07.09.2023	230093	1.02
7	GONDEGAON/12/9/2023	230094	0.52
8	INDER/07.09.2023	230095	0.79
9	BHANEGAON/1.09.2023	230096	0.64

Scanned with OKEN Scanner

NOTE

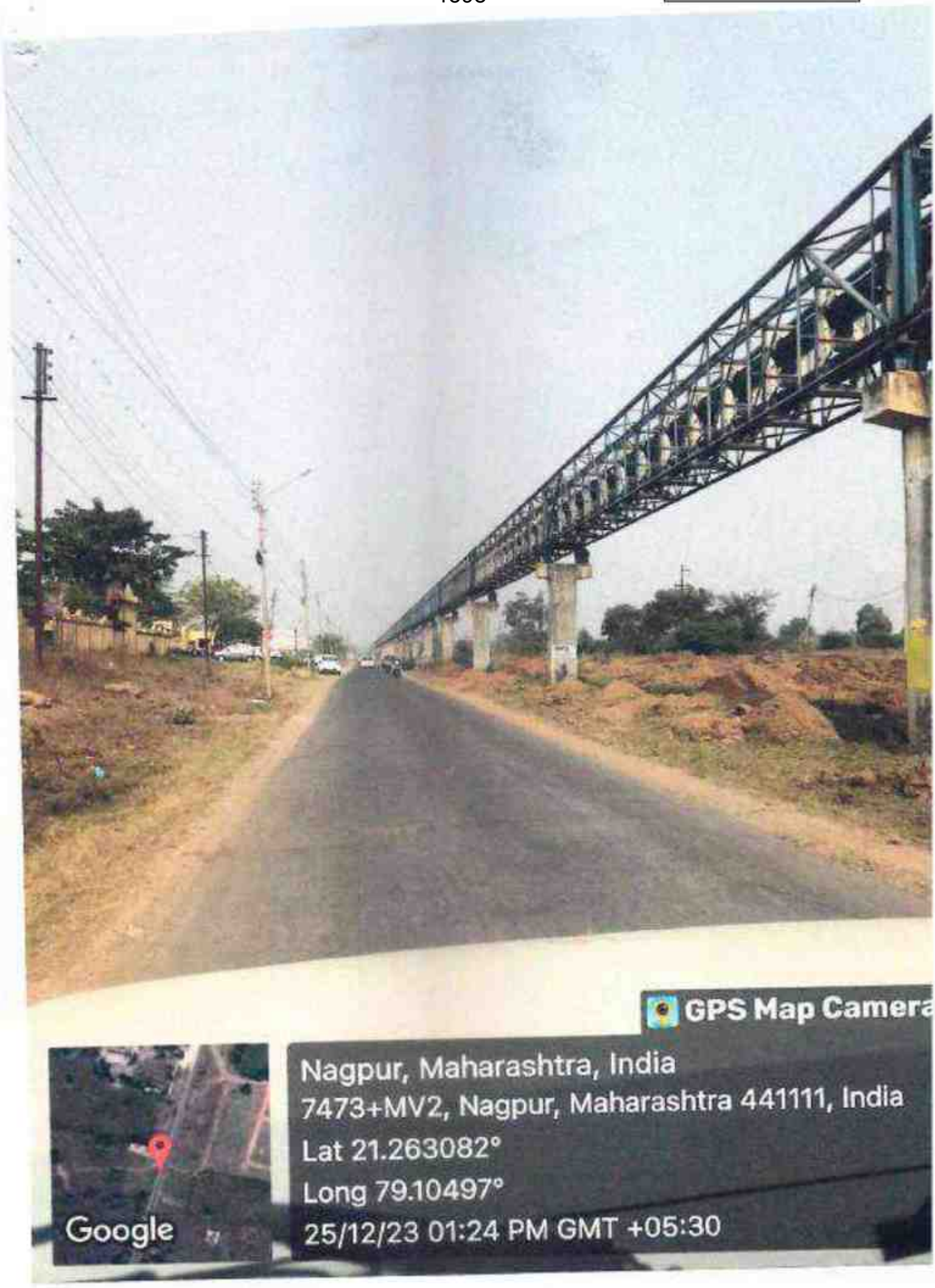
1. The above result relates only to the items tested. (ND= Not detected, NA= Not asked/Not applicable)
2. This report should be reproduced in full by permission from authorized person of CCOTI, Nagpur only.
3. Publication or reproduction of this report in any form other than by complete set of the whole report and in the language written, is not permitted without the written approval of MSPCB.
4. Any correction / erasing invalidate the test report.
5. Any anomalies /discrepancies in this test report should be brought to our notice within 45 days from the date of issue.
6. Sampling is not done by the CCOTI.

Authorized Signatory
N.S.Wanjari
Sr. Chemist Technical Manager

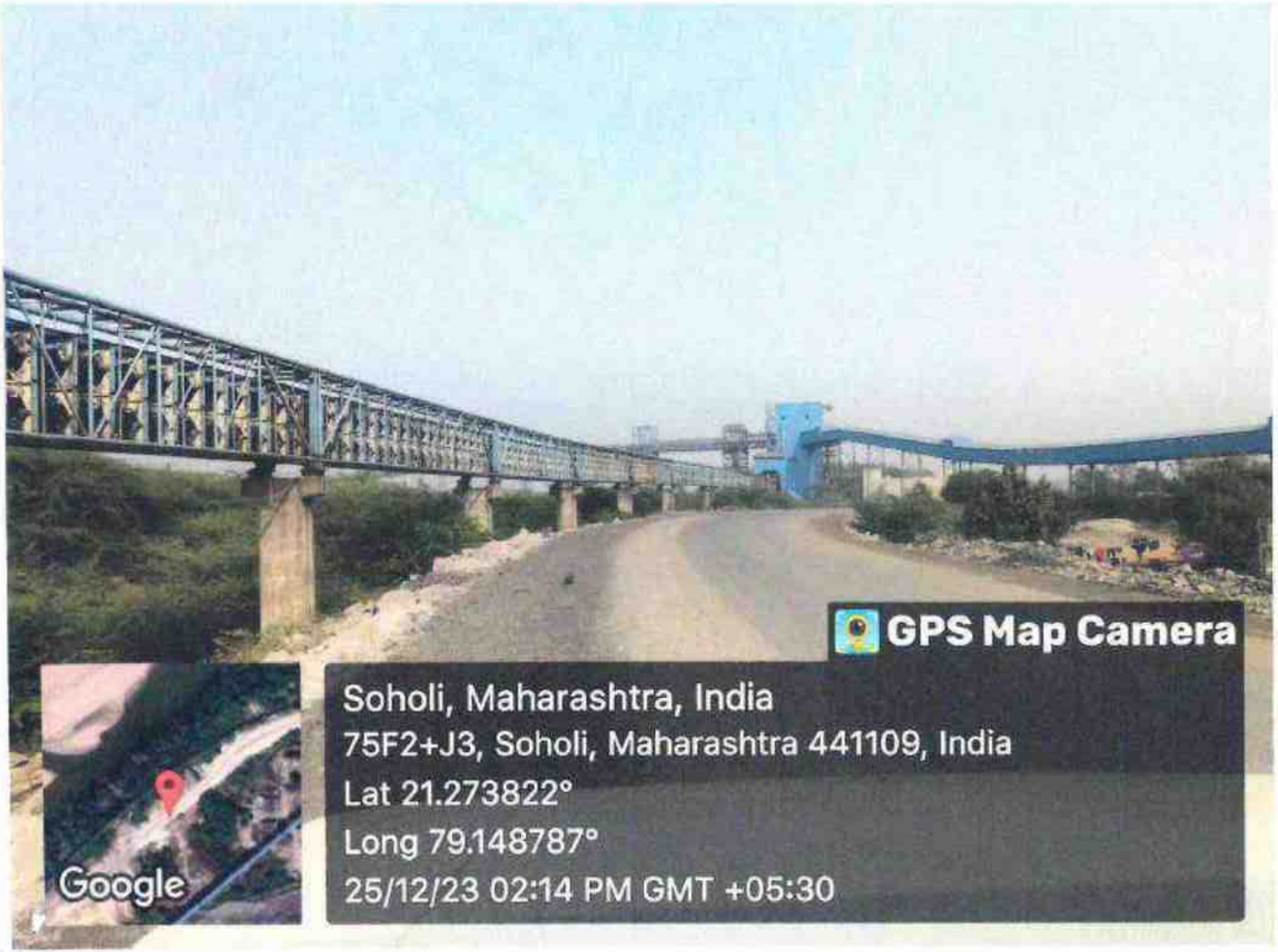
Date : 01.11.2023

Scanned with OKEN Scanner

Annexure - XXIX



1599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Lat 21.273822°
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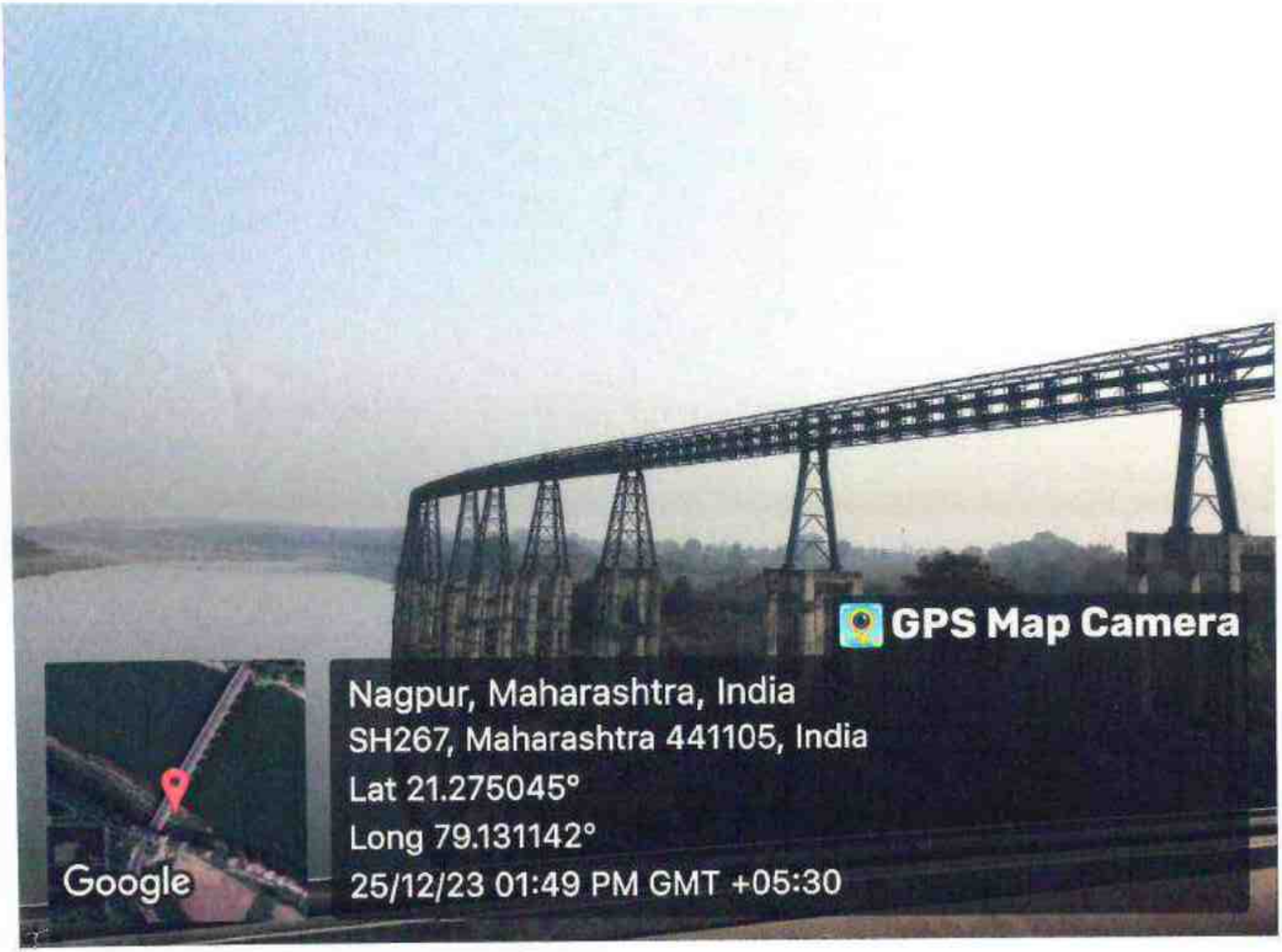
25/12/23 02:14 PM GMT +05:30
Google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SH267, Maharashtra 441105, India
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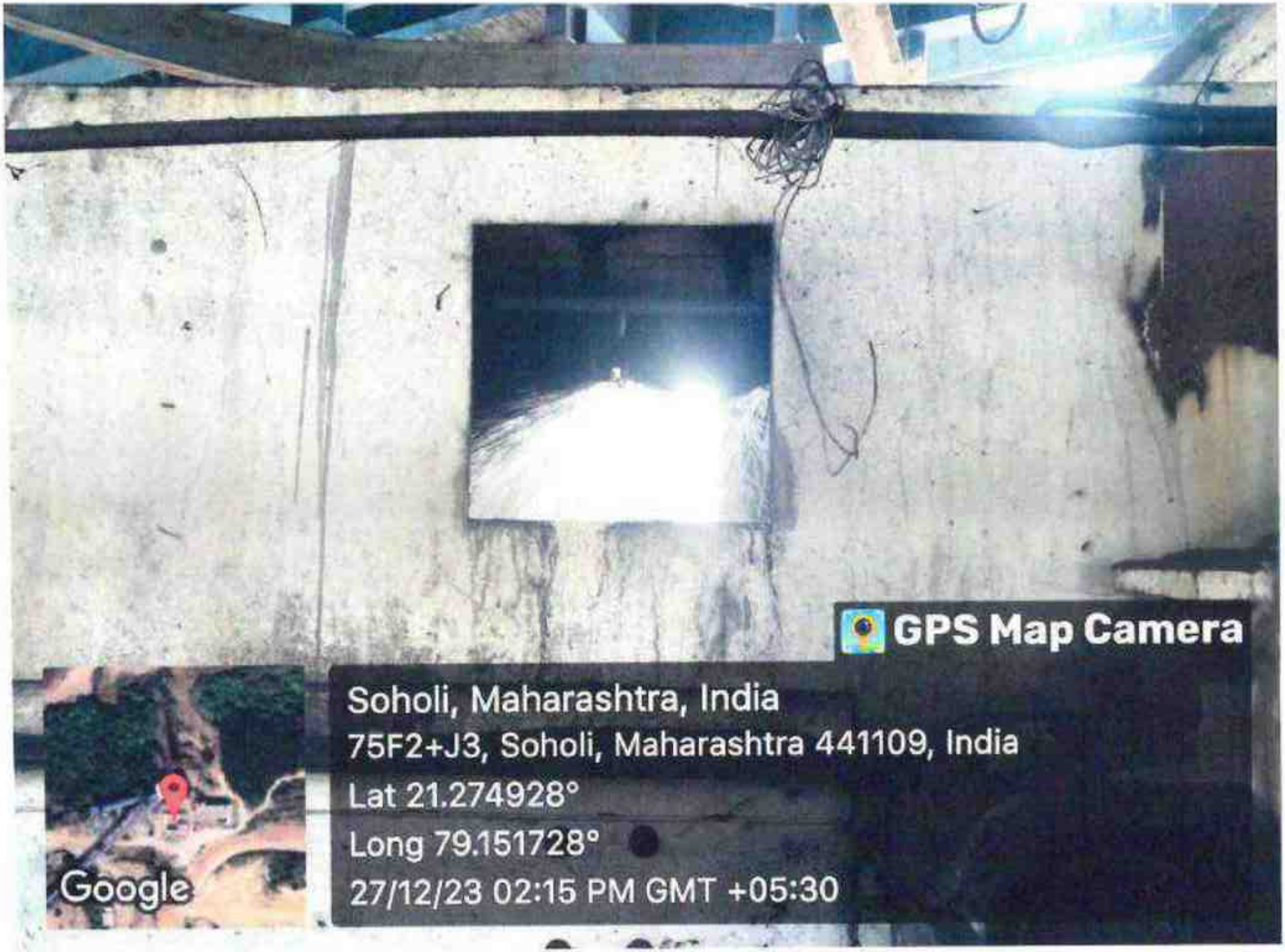
Long 79.131142°
25/12/23 01:49 PM GMT +05:30
Google

1600

Annexure - XXX

1601

ANNEXURE - XXX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75F2+J3, Soholi, Maharashtra 441109, India
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27/12/23 02:15 PM GMT +05:30
Google

1602

GPS Map Camera
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75F2+J3, Soholi, Maharashtra 441109, India
Lat 21.274928°
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27/12/23 02:16 PM GMT +05:30
Google

Annexure - XXXI

Noise monitoring report of Coal pipe conveyor system reg..

Chief Engineer - Koradi Projects <cgmkrdproj@mahagenco.in>
Thu 12/28/2023 5:08 PM
To:chemicaldivision660ktps <chemicaldivision660ktps@mahagenco.in>

1 attachments (262 KB)
Noise Monitoring Report 3x660 Koradi (Project) (1).pdf;

Please find attached herewith Noise monitoring report of Coal pipe conveyor system.

O/o The Chief Engineer (P),
3x660 MW Koradi Expansion Project,
MSPGCL, Koradi

Sadekar Enviro Engineers Pvt. Ltd.

B-305/307, Plot No. 61, Pearl Estate, Ram Mandir, Varem, Ahe. Old Belim Road, Bandar, Ponnem, Pandp Goa-403 101.
Goa State, India ✆ : (0832) 2411322 / 23 • Fax : (0832) 2411323 • E-mail : sterlabgoa@rediffmail.com

Certified By Ministry of Environment & Forest, GOVT. OF INDIA. S. O. 210(E), Valid upto 02.01.2015 & QCI/NABET Accredited EIA Consultancy

Lab. Accredited by NABL & Certified by ISO 9001 : 2008 & BS OHSAS 18001 : 2007

NOISE MONITORING REPORT			
Report No.	SEE/23/12/92	Report Date	28/12/2023
Name of Client	The Chief Engineer (Project) 3X660MW Koradi Thermal Power Station, Koradi, Project		
Address of Client	Koradi Thermal Power Station, Koradi, Project		
Sample Collected By	M/s Surya Envirotech (OPC) Pvt. Ltd., Nagpur		
Date of Sampling	27/12/2023		

POLLUTION PARAMETERS

Sr. No.	Location	Noise (dBA)	CPCB Stipulated Limit
		Average	
1	(1003 CCPC 01) Bhanegaon to KPKD TPS Coal Pipe Conveyor	74.3	75
2	Bhanegaon Belt Conveyor	65.4	75
3.	Singori Pipe Coveyor	74.5	75
4.	Singori Belt Conveyor	65.0	75
5.	Koradi Crusher	74.9	75

DL : Below Detectable Limit
Note: Test results related only to the sample tested.
: Test results relate only to the condition prevailing at the time of sampling
: This certificate may not be reproduced in part, without the permission of this laboratory.

Analysed by

Checked by

Annexure-R2/2

PROCEEDINGS

PERSONAL HEARING FOR THE PROJECT COAL BASED POWER UNIT M/s MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED (MSPGCL) LOCATED AT KORADI DISTRICT NAGPUR, MAHARASHTRA HELD ON 19.03.2024 AT 11:00 HRS

Personal hearing for the project "Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagpur (Maharashtra)" was held on 19.03.2024 at 11:00 hrs under the Chairmanship of Dr. Sujit Kumar Bajpayee, Joint Secretary, MOEF&CC at Godavari Meeting hall, Indira Paryavaran Bhawan. The list of the participants is at **Annexure I.**

2. Dr. Shruti Rai Bhardwaj, Director, MoEF&CC extended warm welcome to the participants and updated the background of the matter:

i. Environmental Clearance to M/s **MSPGCL** was issued by the Ministry vide letter No J-13012/87/2007-IA.II(T) dated 4.01.2010 and its extension of validity was granted vide letter No. J-13012/87/2007-IA-II(T) dated 27.03.2015. Further, amendments in EC was granted vide letter No. J-13012/87/2007-IA-II(T) dated 23.03.2017 & J-13012/87/2007-IA-II(T) dated 29.05.2018.

ii. The project was monitored by the Regional Office (RO) of MoEF&CC at Nagpur on 07.12.2021. The report was submitted to the Ministry vide letter No. 4-4/2010(ENV)/9076 dated 29.12.2021.

iii. The monitoring report was examined in the Ministry and based on the observed non-compliance, ATR was sought from the PP. On not receiving response to ATR from the PP, Show Cause Notice (SCN) was issued by the Ministry to the project vide letter dated 14.08.2023.

iv. PP vide letter dated 28.08.2023 submitted ATR as its response to the SCN. The ATR was examined in the Ministry and RO Nagpur was also requested to provide ATR review report.

v. Action Taken Review Report was submitted by RO Nagpur vide letter dated 27.12.2023 and 18.01.2024. The report was examined in the C&M Division of the Ministry and it was observed that there are outstanding issues in reference to the regulatory requirements of environmental compliance.

vi. It was also brought to the notice that as per the available news articles, there was collapse of fly ash bund of Koradi Thermal Power Station in 2022, which flooded three villages with toxic fly-ash slurry causing major environmental and livelihood impact.

vii. Considering the continued non-compliance of EC condition pertaining to fly ash utilization, HDPE lining of ash pond, installation of FGD, disposal of bottom ash, and the operations of the Environment Cell, personal hearing is called.

3. It was followed by a presentation made by M/s Maharashtra State Power Generation Company Limited (MSPGCL) **(Annexure II)** on the actions taken to

comply with the conditions. PP presented documentary and pictorial evidence of the ATR. The same was deliberated in detailed during the hearing.

4. Accordingly, condition-wise conclusion during the personal hearing in reference to submission of PP, taking into consideration the views of RO, and outcome of deliberation is as given below:

SI.No.	EC Conditions	Review report of RO Nagpur 18.01.2024	Submission of PP	Conclusion during the PH
Conditions as per EC dated 04.01.2010				
1.	FGD with one unit of 660 MW will be installed initially to begin with & the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO2. Provision for installation for FGD in all units shall be made. (Specific condition i).	**Not complied** Regarding installation of FGD MSPGCL has placed LoA vide no CE (P&P)/ 3X 660 MW/Koradi/FGD/1236 dated 16.11.2023 for design engineering, manufacture, assembly, testing at works, supply at site, civil, structural & architectural works and erection, testing & commissioning of FGD system for 3X 660 MW unit 8, 9 &10 at Koradi, TPS on Erection Procurement Commissioning (EPC) basis including O&M of installed FGD system for the span of three	Regarding installation of FGD, MSPGCL has placed LoA vide no CE (P&P)/ 3X 660MW/Koradi/FGD/1236 dated 16.11.2023 for design engineering, manufacture, assembly, testing at works, supply at site, civil, structural & architectural works and erection, testing & commissioning of FGD system for 3X 660 MW unit 8, 9 &10 at Koradi, TPS on Erection Procurement Commissioning (EPC) basis including O&M of installed FGD system for the span of three years. Work completion schedule as per LoA is 26 months for unit-8, 28 months for unit-9 & 30 months for unit-10 from zero date (16.11.2023). Initial meeting was conducted with the vendor & accordingly site clearance activity for land development is taken up and arrangement for construction p	As per the notification GSR 682(E) dated 05.09.2022 wherein PP falls in Category A, the timeline for meeting the obligation of FGD by PP is upto 31st December 2024. PP shall expedite the process of FGD installation and shall adhere to the timeline granted in the notification dated 05.09.22. **PP assured compliance within the timeline.**

		years. Work completion schedule as per LoA is 26 months for unit-8, 28 months for unit-9 & 30 months for unit-10 from zero date (16.11.2023). It was appraised by PP, that initial meeting was conducted with the vendor & accordingly site clearance activity for land development is taken up and arrangement for construction power supply is being made.	ower supply is being made. **The delay installation** is attributed to various procedural and administrative issues encountered during the bidding process which started in 2017. Since 2017, five tenders have been issued, which had to be cancelled due to various objections raised by the bidders or change in government policy. On the basis of 5th bidding, LoA has been now issued successfully on 16th Nov 2023 and procurement has started.	
2. 2.	Utilization of 100% fly ash generated shall be made from 4th year of operation of the proposed expansion. Status of implementation shall be reported to the Regional office of the Ministry from time to time. (Specific condition vii).	**Partially complied.** Considering four years from date of operation, the PP was supposed to achieve fly ash utilization target by Jan-2021. Efforts were made to encourage utilization of pond ash in various activities such as brick manufacturing, Ash bund dyke raising, construction of national highways etc. Apparently, the total ash utiliza	The delay in utilization had been due to lack of consumers in the vicinity of the plant and being a public sector entity, the policy doesn't allow sharing of transportation cost. Utilization status till now is as given below: 2022-20% 2023-35% 2024-50% MSPGCL is executing and planning for following various measures/ actions for achieving100% Fly ash utilization. Expected target of 100% Fly ash utiliza	MoEF&CC came out with the new notification vide no. SO 5481 (E) dated 31.12.2021 wherein as per section A(5) the applicability of notification has commenced from 01.04.2022 giving all Thermal power plant across India to dispose of the fly ash within the period of 3 years (i.e. March-2025). Similarly, w.r.t. legacy ash, the notifications states that the utilization of legacy ash has to be completed within 10 years from the date of publication of this notification

		tion % for FY 2020-21 for entire Koradi TPS stood to 80.96% Since most of the thermal power plant across India are facing the problem of target achievement regarding 100% use of fly ash, MoEF&CC came out with the new notification vide no. SO 5481 (E) dated 31.12.2021 wherein as per section A(5) the applicability of notification has commenced from 01.04.2022 giving all Thermal power plant across India to dispose off the fly ash within the period of 3 years (i.e. March-2025). Similarly, the new notification states for legacy ash that the utilization of legacy ash has to be completed within 10 years from the date of publication of this notification. Hence the timeline for 100% use of legacy ash shall be up to Dec	tion shall be achieved within 2-3 years. • LOA is placed to M/s. Ambuja Cement Ltd. & M/s. Ashtech India Pvt. Ltd. On dtd.16.02.2024 for approx. qty. of 10 Lakhs MT/ year for each agency for the period of 10 years. • Koradi TPS has constructed a platform on the land adjacent to Godhani siding for storage of fly ash in bulk or in Jumbo bags and its transportation by Railway. • Provision made for Railway platform for loading and transportation of pond ash .The platform is ready beside Railway shunting neck track in between Koradi/ Khasara ash bund. • M/s RITES ltd. has prepared a feasibility study report for development of d	. Hence the timeline for 100% use of legacy ash shall be up to Dec-2031. Monthly ash utilization reports of 210 MW & 660 MW units at Koradi are being sent to MPCB. The PP shall keep updating the details of utilization to RO as part of six monthly compliance report.

		-2031. Monthly ash utilization reports of 210 MW & 660 MW units at Koradi are being send to MPCB.	irect loading facility in railway wagon under Remote Silos of 3x660 MW. • Koradi TPS identified stone quarries are Pachgaon, Umri (Jungli- Khurd) area, and NOC received from Pachgaon for which proposal initiated to filling the pond ash in abandoned mines/ stone quarries. • MSPGCL has given approval for Work of lifting & transportation of fly ash from Remote Silo by railway and dry fly ash from ESP field through their installed Silo from Koradi TPS to M / s. Ultrafine Mineral (RDC Concrete Unit). • Proposal of pond ash utilisation for construction of Super Communication Expressway i.e. i) Nagpur to Gondia ii) Swarkheda to Gadegaoan & iii) Seldoh to Rajur	

			a of M/s MSRDC is under consideration. The total requirement of pond ash is @ 3-4 Crores MT. Long Term Action plan for ash utilization • To achieve 100 % Legacy ash utilization in 10 years, as per MOEF&CC notification, following long term measures are being taken- • Railway Platform no.1 is ready for transportation of dry fly ash beside Railway siding line of Railway chord cabin for loading of dry fly ash in Railway wagon at 3x660MW. The size of platform is 20x180 mtrs. • Railway Platform no.2 is ready for loading & transportation of pond ash beside Railway Shunting neck track in between Koradi/Khasara Ash Bund. The size of platfor	

			m is 20x650 m trs. • FSR, DPR & project management consultancy and construction of proposed BG railway siding & allied work for utilization of Dry Fly ash at 3x660MW, Koradi TPS. FSR is approved by Railway & DPR preparation is under process by M/s. RITES. Railway approval is awaited. After getting approval the said Railway track work will be start through remote silo site and it will be very helpful to maximize the dry fly ash utilization. PP has also informed that silos are now operational for legacy flyash.	
3. 3.	Ash pond shall be lined with HDP/LDP lining or any other suitable implementation media such that no leachate takes place at any point of time. Adequate safety shall	**Partially Complied.** Koradi TPS is using Khasara Ash Bund for ash disposal, Khasara Ash bund is live hence the work of HDPE &	Koradi TPS is using Khasara Ash Bund for ash disposal, Khasara Ash bund is live hence the work of HDPE & LDPE lining cannot be taken up in hand. Hence it was understood that any lining to the peripheral area of	Ash dyke details including height is to be furnished. The PP to explicitly clarify, how much height they are entitled to increase and how much they have increased.

	also be implemented to protect the ash dyke from getting breached. (Specific condition ix).	LDPE lining cannot be taken up in hand. Koradi TPS has submitted a letter requesting MoEF&CC to amend EC conditions for HDPE/LDPE lining to ash bund. Hence it was understood that any lining to the peripheral area of bund is not possible being a live bund. However, PP is taking measures to maintain the bund.	bund is not possible being a live bund. However, following measures are taken to maintain the bund: a) Stone pitching is done at dyke wall. b) Decanted water is being recycled and reutilized in plant. Bund water is recovered though available weir & drain wells. c) Proper maintenance of ash bund is done to avoid any breaching of bund. d) Lagoons are in place inside the ash bund & siphoning system is also in place. **PP informed that the collapse of bund in 2022 was due to very heavy rain fall.**	PP shall submit the following documents wrt construction and raising the bund: i. The approval copies for the construction of the bund should include detailed information about the bund height and its corresponding capacity. ii. Approval copies for the augmentation of bund height. These documents should encompass comprehensive details regarding the increment in height and elucidate how much the bund capacity was increased as a result.
4. 4.	For disposal of bottom ash in abandoned mines (if proposed to be undertaken) it shall be ensured that the bottom & sides of the mined out areas are adequately lined with clay before bottom ashis filled	**Partially Complied.** As per CPCB letter no. B-33014/07/2020/IPCll/TPP/7704 dtd 30.09.2020, CPCB forwarded list of abandoned mines for backfilling purpose identified by Taskforce of MoP to state PCB's o	The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is under consideration. The KTPS representative visited the nearby abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the aba	PP shall expedite the process of dumping in the abandoned mines and shall update about the same in half yearly compliance report. They shall ensure implementation of the CPCB guideline for dumping in the abandoned mine.

	up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity. (Specific condition x).	ut of which 3 mines are of WCL situated in Maharashtra i.e Talwasa OC, Dholwasa OC, Naveen Kunada OC are situated in Chandrapur district and not nearby Koradi TPS. The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is not feasible. The KTPS representative visited the nearby abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the abandoned mines is under consideration.	ndoned mines is under consideration. As submitted by the PP, abandoned mine for disposal of bottom ash has been identified. The same will be implemented with resolution of transportation policy, which is expected soon.	
EC letter no. J-13012/87/2007-IA.II(T) dated 27.03.2015				
5. 5.	An Environment cell comprising of at least one expert in Environment Science/Engineering, Ecology, Occupational Health and Social Science,	**Partially Complied.** There is no person from Environmental Science field being recruited.	At present Environment & Safety division of MSPGCL is headed by Exe. Director who has a Post graduate qualification and doctoral degree in the field of Environmental Engineering.	The condition may be treated as complied. However, PP shall ensure that the personnel of Environment & Safety division shall work in latter and spirit for implementation of the Environment condition.

	shall be created preferably at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the cell shall directly report to Head of the plant who would be accountable for implementation of Environmental regulations and social impact improvement/mitigation measures. (Specific Condition-xlii)			

4. **Observation of RO:**

Overall compliance status of the project has been submitted in the Monitoring report and various issues as pointed out needs immediate attention from PP.

5. **Specific observation of Chairman on overall compliance status:**

Based on the findings of the RO report, it is apparent that there is gap on the part of PP in adhering to prescribed Environmental Conditions (EC). This lackadaisical approach towards compliance poses a tangible environmental risk if left unattended. There is a need for urgent and decisive measures by the PP to rectify the prevailing situation and ensure 100% compliance of EC conditions. This hold significance concerning the recent accident at the site impacting the local people and the surrounding environment including agricultural field.

4. On the basis of detailed deliberations, following was concluded:

iii. The PP is required to formulate a Standard Operating Procedure (SOP) in a time-bound manner to adhere to the primary environmental concerns, encompassing greenbelt development, fugitive emission control, fly ash management, monitoring among others. These SOPs should be mandated to

be applicable to all Thermal Power projects under its purview. It is imperative that the SOP remains resilient to any alterations in the organizational structure or advancements in activities, ensuring continuous compliance with Environmental Clearance (EC) conditions. A copy of the SoP should be submitted to Ministry's RO with a copy to C&MD, MoEFCC.

iv. The PP is required to provide the most recent stability report concerning the design, strength, and safety of the ash dyke. This report should detail the measures implemented to prevent breaches and mitigate risks such as leaching into groundwater, maintaining soil stability, and preventing airborne particles that may cause air pollution in the surrounding areas. Furthermore, this report must be prepared by an accredited institute known for its expertise and credibility in the field.

v. PP shall also submit the action taken report regarding the collapse of the fly ash bund at Koradi Thermal Power Station in 2022.

vi. PP shall submit Quantitative Risk Assessment (QRA) Management plan for any future accident in the plant and the area likely to be affected by any such future incident by conducting mathematical modelling.

vii. PP shall declare the legacy fly ash and shall submit the details of the fly ash utilized and disposed before and after the Ministry's Notification No. S.O. 5481(E) dated 31.12.2021.

viii. PP shall expedite the process of FGD installation and shall adhere to the timeline granted in MoEF&CC Notification dated 05.09.2022.

ix. PP shall submit copy of the affidavit filed by them in the Hon'ble NGT in the O.A. no. 62 of 2021 titled "Krishi Vigyan Arogya Sanstha & Ors. Vs Maharashtra State Power Generation Company Ltd. & Ors." pending before Hon'ble NGT(WZ), Pune.

x. PP shall apply for amendment of EC conditions on PARIVESH which are not applicable/feasible to the project at the earliest.

The meeting ended with the vote of thanks to the Chair.

****

Annexure-I

List of participants

PERSONAL HEARING FOR THE PROJECT COAL BASED POWER UNIT M/s MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED (MSPGCL) LOCATED AT KORADI DISTRICT NAGPUR, MAHARASHTRA HELD ON 19.03.2024 AT 11:00 HRS

Sr No.	Name	Designation
MOEFCC		
i.	Dr. Sujit Kumar Bajpayee	Joint Secretary
ii.	Dr. Shruti Rai Bhardwaj	Director, IA-Monitoring Cell
iii.	Dr. Y. P. Singh	Additional Director-Monitoring Cell
iv.	Dr. Adiraju Bhardwaj	Scientist-D,
v.	Shri. Vinay Rana	ASO
vi.	Mr. Ritin Raj	RA, IA-CMD
Representatives from M/s MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED (MSPGCL)		
vii.	Mr. Vilas Motghare	**MSPGCL**
viii.	Mr. Vivek P. Ghodmare	-do-
ix.	Mr. Atul Sonaje	-do-
x.	Mr. Shailesh Padol	-do-
xi.	Mr. Gulam Mohsin	-do-

**********End of Document**********

Annexure-R2/3

MAHARASHTRA STATE POWER GENERATION CO. LTD.
(Govt. of Maharashtra undertaking)
KORADI THERMAL POWER STATION, KORADI
O/o Chief Engineer (O&M), K.T.P.S.,Koradi, Dist. Nagpur, PIN – 441111
(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – cegenkoradi@mahagenco.in **CIN: U40100MH2005SGC153648**

Ref No: KTPS/ 660/CD/Env. Cell/ No 0 1 7 1 9 Date 2 2 MAY 2024

To,
Joint Secretary,
Ministry of Environment Forest & Climate Change,
Indira Paryavaran Bhawan,
Aliganj, Jorbagh Road, New Delhi-110003

DS(SKB) 14/5

Sub: Compliance to minutes of personal hearing held on 19.03.2024 at 11:00 hrs at Delhi.

Ref: Minutes of Personal hearing on 19.03.2024 received on 24.04.2024.

Dear Sir,

Personal hearing for the project "Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagpur (Maharashtra)" was held on 19.03.2024 at 11:00 hrs under the Chairmanship of Dr. Sujit Kumar Bajpayee, Joint Secretary, MOEF&CC at Godavari Meeting hall, Indira Paryavaran Bhawan.

Now this office is in receipt of Minutes of said personal hearing on dtd. 02.04.2024. Please find below point wise compliance of the issues mentioned in the minutes of personal hearing.

E-119480/2024/CR 6/6/2024

Sr. No.	E. C. condition (Conditions as per EC dated 04.01.2010)	Conclusion during the PH	Compliance
1	FGD with one unit of 660 MW will be installed initially to begin with & the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO2. Provision for installation for FGD in all units shall be made. (Specific condition i).	As per the notification GSR 682(E) dated 05.09.2022 wherein PP falls in Category A, the timeline for meeting the obligation of FGD by PP is upto 31st December 2024. PP shall expedite the process of FGD installation and shall adhere to the timeline granted in the notification dated 05.09.22. **PP assured compliance within the timeline**	As informed earlier LOA for installation of FGD at KTPS 3X660 MW has been issued. Work completion schedule as per LoA is 26 months for unit-8, 28 months for unit-9 & 30 months for unit-10 from zero date (16.11.2023).Initial meeting was conducted with the vendor & accordingly site clearance activity for land development is taken up and arrangement for construction power supply is being made. (Photographs attached **(Annexure No-01)**
2	Utilization of 100 % fly ash generated shall be made from 4th year of operation of the proposed expansion. Status of implementation shall be reported to the Regional office of the Ministry from time to time.(Specific condition vii).	MoEF&CC came out with the new notification vide no. SO 5481 (E) dated 31.12.2021 wherein as per section A(5) the applicability of notification has commenced from 01.04.2022 giving all Thermal power plant across India to dispose of the fly ash within the period of 3 years (i.e. March-2025). Similarly, w.r.t. legacy ash, the notifications states that the	Six monthly EC compliance reports regarding details of ash utilization of KTPS are being sent to RO MoEF & CC Nagpur regularly. Last EC compliance report vide No-00645 dtd 20.02.2024 has been sent in Feb-2024

O/o Joint Secretary (SKB)
Dy. No. 119480
Date 4/06/2024

JS (M)(SKB)/

14/6/24 AJO(VR)

MAHARASHTRA STATE POWER GENERATION CO. LTD.
(Govt. of Maharashtra undertaking)
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Email – cegenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

		utilization of legacy ash has to be completed within 10 years from the date of publication of this notification Hence the timeline for 100% use of legacy ash shall be up to Dec-2031. Monthly ash utilization reports of 210 MW & 660 MW units at Koradi are being sent to MPCB. The PP shall keep updating the details of utilization to RO as part of six monthly compliance report.	
3	Ash pond shall be lined with HDP/LDP lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety shall also be implemented to protect the ash dyke from getting breached.(specific condition ix).	Ash dyke details including height is to be furnished. The PP to explicitly clarify, how much height they are entitled to increase and how much they have increased. PP shall submit the following documents wrt construction and raising the bund: i. The approval copies for the construction of the bund should include detailed information about the bund height and its corresponding capacity. ii. Approval copies for the augmentation of bund height. These documents should encompass comprehensive details regarding the increment in height and elucidate how much the bund capacity was increased as a result.	Prior to grant of Environmental clearance, Environment Impact Assessment (EIA) report was submitted to the Ministry wherein under Chapter 5 for Environment Management plan section 5.7.3 for details regarding ash pond, impermeability etc., it was informed that a provision for raising the bund (Khasala) height is included from RL 305.2 to 312 ML in two stages. Similarly, under chapter 2 of "Project details" under the EIA it was submitted that the land for ash disposal will be in existing Khasala ash bund. As such it was mentioned that the ash disposal from 3 X 660 MW units shall be in Khasala ash bund accordingly bund height was raised from 305.2ML (ash holding capacity6.92 MM3) to 308.5ML (With addition of 10.36 MM3 capacity) during first raising and 308.5ML to 312ML (With addition of 11.0MM3) during second raising. Copy of page no -133&134 of EIA report including above details is attached.-**(Annexure No-02).**
4	For disposal of bottom ash in abandoned mines (if proposed to be undertaken) it shall be ensured that the bottom & sides of the mined out areas	PP shall expedite the process of dumping in the abandoned mines and shall update about the same in half yearly compliance report. They shall ensure implementation of the CPCB guideline for dumping in	The distance of the nearby abandoned mines from KTPS is about 45 km to 65 km. Hence, to & fro of transportation for ash filling in the abandoned mines is under consideration. The KTPS representative visited the nearby

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	are adequately Lined with clay before bottom ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.(Specific condition x).	the abandoned mine.	abandoned mines & the possibility checking for filling of ash. The transportation and filling of ash in the abandoned mines is under consideration. Whenever the disposal of bottom ash in abandoned mine will be taken up, matter will be informed to MPCB well in advance for further guidelines.
	EC letter no. J-13012/87/2007-IA.II(T) dated 27.03.2015		
5	An Environment cell comprising of at least one expert in Environment Science/Engineering, Ecology,Occupational Health and Social Science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the cell shall directly report to Head of the plant who would be accountable for implementation of Environmental regulations and social Impact improvement/mitigation Measures. (Specific Condition-xlii)	The condition may be treated as complied. However, PP shall ensure that the personnel of Environment & Safety division shall work in latter and spirit for implementation of the Environment condition.	Env. Cell is in place. Staff of Env. and safety monitoring cell of KTPS work vigilantly for the effective implementation of the Environment conditions at KTPS under the guidance of Hon. Executive director (Env and safety), H. O. Mumbai.
	Specific observation of Chairman on overall compliance status:		
4.	**Observation of RO**	Overall compliance status of the project has been submitted in the Monitoring report and various issues as pointed out needs immediate attention from PP.	Koradi TPS has taken serious note of all the issues mentioned in monitoring report (CCR) and compliance of the CCR have been submitted to IRO , MOEF & CC Nagpur vide letter no.00853 dtd.08.03.2024
4(iii)	The PP is required to formulate a Standard Operating Procedure (SOP) in a time-bound manner to adhere to the primary environmental concerns, encompassing greenbelt		KTPS has already formulated standard operating procedures (SOP). Copy of SOPs of

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Email – cegenkoradi@mahagenco.in **CIN: U40100MH2005SGC153648**

	development, fugitive emission control, fly ash management, monitoring among others. These SOPs should be mandated to be applicable to all Thermal Power projects under its purview. It is imperative that the SOP remains resilient to any alterations in the organizational structure or advancements in activities, ensuring continuous compliance with Environmental Clearance (EC) conditions. A copy of the SoP should be submitted to Ministry's RO with a copy to C&MD, MoEFCC.	1.Operation of pollution control devices **(Annexure No.3),** 2.Fly ash utilization- **(Annexure No.4)** 3.Ash bund operation-**(Annexure No.5)** are enclosed herewith. The total project area is 652.02 ha. 33 % of total project area is comes to be 215.16 ha. Out of total project area till dated 278.10 area has been developed as green belt (42.65%). 10,000 trees has been planted in FY-2023-24 around plant area including bund.
iv	The PP is required to provide the most recent stability report concerning the design, strength, and safety of the ash dyke. This report should detail the measures implemented to prevent breaches and mitigate risks such as leaching into groundwater, maintaining soil stability, and preventing airborne particles that may cause air pollution in the surrounding areas. Furthermore, this report must be prepared by an accredited institute known for its expertise and credibility in the field.	Copies of latest ash dyke stability report of Khasala and Koradi ash bund are enclosed as **(Annexure No-6 & 7)** respectively.
v	PP shall also submit the action taken report regarding the collapse of the fly ash bund at Koradi Thermal Power Station in 2022.	Copy of action taken report regarding the collapse of Khasala ash bund at Koradi thermal power station in 2022 is attached herewith as **(Annexure No-8)**
vi	PP shall submit Quantitative Risk Assessment (QRA) Management plan for any future accident in the plant and the area likely to be affected by any such future incident by conducting mathematical modelling.	Quantitative risk assessment (QRA) management plan by conducting mathematical modeling has been done for plant premises of 3x660 MW & QRA study will be done by Dec-24 for outside the plant area (Ash bund)
vii	PP shall declare the legacy fly ash and shall submit the details of the fly ash utilized and disposed before and after the Ministry's Notification No. S.O. 5481(E) dated 31.12.2021.	Details of Fly ash utilization at Koradi TPS. • Fly ash utilized at Koradi TPS before ministry notification no.S.O5481(E) 31.12.2021-**88849 MT** • Fly ash utilized at Koradi TPS after ministry notification no. S.O5481(E)31.12.2021-**357398MT** • Fly ash disposed in ash pond before ministry notification no. S.O5481(E) 31.12.2021-**14772981MT** • Fly ash disposed in ash pond after ministry notification no. S.O5481(E) 31.12.2021-**7410553 MT** **Hence *legacy fly ash* in Khasala ash pond as on date is 13424347 MT=11.19 MM3.**

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(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – cegenkoradi@mahagenco.in **CIN: U40100MH2005SGC153648**

viii	PP shall expedite the process of FGD installation and shall adhere to the timeline granted in MoEF&CC Notification dated 05.09.2022.	LoA has been placed for the installation of FGD at Unit-8, 9& 10 at Koradi TPS.Initial meeting was conducted with the vendor & accordingly site clearance activity for land development is taken up and arrangement for construction power supply is being made. It is requested for kind consideration of the efforts being made by MSPGCL for installation of FGD.
ix	PP shall submit copy of the affidavit filed by them in the Hon'ble NGT in the O.A. no. 62 of 2021 titled "Krishi Vigyan Arogya Sanstha & Ors. Vs Maharashtra State Power Generation Company Ltd. & Ors." pending before Hon'ble NGT(WZ), Pune.	Copy of affidavit filed in the Hon'ble NGT in the O.A. no.62 of 2021 titled "Krishi Vigyan Arogya Sanstha & Ors Vs. MSPGCL & Ors" is enclosed herewith as **(Annexure No-9).**

Submitted for kind consideration please

Yours Faithfully,

22/5/24

Chief Engineer
KTPS, 3X660MW, Koradi

Copy sub. w.r.to:

1) Director (O), MSPGCL, Prakash gad, 2nd, floor, Bandra (E) ,Mumbai **directorop@mahagenco.in**
2) Executive Director (O&M)-II, MSPGCL, TPS Koradi, Nagpur-**edom2@mahagenco.in**
3) Executive Director (E&S), 4th Floor, HDIL Tower, Bandra (E), Mumbai- 51- **edens@mahagenco.in**
4) Scientist 'E', MoEF&CC, Regional Office East wing Ground Floor Civil Lines Nagpur-440001- **apccfcentral-ngp-mef@gov.in**

Copy sub. w.cs. to-

1) O.S.D. to Hon. Chairman and Managing Director, MSPGCL, 2nd Floor, Prakashgad, HO, Mumbai-51- **cmd@mahagenco.in**
2) Chief General Manager (E&S), 4th floor, HDIL Tower, Bandra (E), Mumbai-51- **cgmenvsafe@mahagenco.in**

Copy to:

1) Supt Chemist-I Prakashgad MAHAGENCO Bandra (E) Mumbai-51- **supchemist@mahagenco.in**
2) Supt Chemist-II MAHAGENCO Vidyut Bhavan Katol Road Nagpur- **supchemngp@mahagenco.in**

Nagpur, MH
38 °C
Kamptee, Kamptee, Nagpur, MH, India, 441111, Kamptee, Kamptee, Nagpur, 441111, Ma...
313.84 m
45 µT
Lat: 21.2339, Long: 79.0946
08/05/2024, 05:05:04 PM
269° W
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Haze
5.54 km/h
39 %
Nagpu
Walani
Chic
Koradi

ANNEXURE-01

ANNEXURE-01

Walani
Koradi
Nagpur, MH
Kamptee, Kamptee, Nagpur, MH, India, 441111, Kamptee, Kamptee, Nagpur, 441111, Ma...
Lat: 21.2343, Long: 79.0947
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38 °C
310.60 m
46 µT
253° W
1005.0 hPa
Haze
5.54 km/h
39 %

Executive Chemist
WTP-II
MSPGCL, KTPS, Koradi

FINAL REPORT SENT TO MoEF DELHI.

ANNEXURE-02

ENVIRONMENTAL IMPACT ASSESSMENT FOR PROPOSED 3 X 660 MW THERMAL POWER PROJECT

AT
KORADI THERMAL POWER STATION, KORADI
OF
MAHARASHTRA STATE POWER GENERATION COMPANY LTD. MUMBAI

By

ENVIRO TECHNO CONSULT
51, EAST LENDRA PARK
RAMDASPETH
NAGPUR 440 010

APRIL 2009

Executive Chemist
WTP-II
MSPGCL, KTPS, Koradi

5.7.2 Construction of ash bund :

1. Disposal of ash is an activity which involves (i) construction of ash bund (ii) transportation of ash slurry (iii) management of wastewater flows from ash bund (iv) arresting dust emissions from surface of ash bund to prevent fugitive emissions and (v) utilization of ash.
2. It has been mentioned that KTPS has acquired land (238.12 ha) at Khasala and 341.5 ha at Koradi for ash disposal.
3. Ash bund construction is as per the directives of the [redacted] There is a provision for a stable embankment around ash bund area and also for raising dykes by a specified height to enhance storage capacity. Waste weirs are provided for overflow of supernatant. Delivery end and the point are regularly extended to facilitate equal filling of the ash bund.
4. Creation of ash bund and subsequent disposal of ash has two implications. First is the benefit of recharging ground water aquifer around ash bund area. After delivery of ash slurry water either seeks its level thereby raising water table around or evaporates off forming drier surface or is held in the voids of ash particles.
5. Recharge of a well by the side of ash bund area was found to be [redacted]
6. Heavy metals [redacted] because all the metal ions are present [redacted] **Annexure 10.**
7. Innocuous nature of this slurry / leachates / overflow is confirmed by luxuriant agricultural fields around ash bund. These ash bund areas also act as "rain water harvesting" structures. Even fishes are being nurtured in water from Koradi ash bunds as well as [redacted]

5.7.3 Details regarding ash pond, impermeability etc. (TOR xxi-xxiii)

[redacted]now Water Resources Deptt) Department of Maharashtra. Present ash bund has been constructed from [redacted] spillway location at RD 832.75 –RD 986.25 m. Design also includes provision for raising the bund from [redacted]

This design includes details of a) control levels, b) foundation, c) seepage control measures , depth of COT, its location , backfilling, d) internal drainage arrangement with i) chimney filter, ii) sand mat, iii) toe drains, for starter bund, raised section, iv) drainage wells.

- Soil will not be used for hearting and instead ash from power plant will be used
- Ash has been tested for its properties to provide impervious core
- Design parameters for checking ash bund – [redacted]
- All care has been taken to provide impervious bottom.
- Location, details of components and cross sections of ash bund are given in **Figures 37 & 38.**

Schedule for ash utilization – new units

Daily generation @ 10,700 TPD

1.	Bricks	@ 1600 TPD
2.	Cement	MOU with cement plants has been signed and be operational after plant is commissioned @ 2300 TPD
3.	Road construction	As per requirement - 1700 TPD
4.	Landfill	4000 TPD
5.	Soil amendment	1100 TPD
6.	Others (Please specify)	--

SOP FOR POLLUTION CONTROL DEVICE:

Note: Electrostatic Precipitator is the device used for reducing dust concentration in flue gas from 86.3 gm/Nm³ at ESP inlet to less than 50 mg/ Nm³ at ESP outlet and thus from Stack/ Chimney as per MPCB norms.

Following is the sequence for the ESP start – up.

- Switch ON hopper and support insulator heater at least 4 hrs. prior to plant start-up.
- Switch ON rapping system at least 4 hrs. prior to ESP charging.
- Switch ON dust-conveying system below ESP hoppers at least 4 hrs. prior to ESP charging.
- Check the healthiness of hopper level sensors / controllers.
- Charge the TR sets one by one. The TR sets should be charged only when the designed operating temperature is reached (i.e. between 120°C to 140°C) and is steady for minimum 2 hours of operation.
- ESP fields are not taken in service to avoid ESP field damages. ESP field are charged again when ratio comes below 10.
- Fine-tuning of TR sets to be done, starting from last field to first field TR set.
- Set the parameters for steady secondary current (in mA) setting with minimum spark. Maximum allowable sparks per minute is 10 in optimum operation.
- In last field of the ESP, sparking on charging to be contained.

While continuous operation of units:

- Continuously monitoring of secondary current of each field maintaining fields at optimum levels.
- Avoid excessive sparking/ arcing which can lead to failure of ESP field due to damage of electrical components.
- Round the clock monitoring of rappers healthiness and operation to maximize ESP performance.
- Maintaining ESP hoppers at minimum level with the help of ash evacuation system.
- If coal to oil ratio is more than 10 while plant is running, all ESP fields are withdrawn to avoid ESP field damages. ESP field are charged again when ratio comes below 10.
- Attending any defects of ash evacuation system at the earliest to avoid any leakages and delay in ash evacuation.
- **Maintenance of ESP field is carried out time to time and all fields are kept available for service.**
- **Planned outages are taken if any field maintenance is required to be carried out and are completed in least possible time.**
- **In every AOH/COH, thorough inspection and rectification is carried out to maintain ESP field healthiness.**

10/4/24

Executive Engineer (AHP)
3X660 MW, KTPS, Koradi

SOP FOR ASH BUND OPERATION

1. Dry fly ash & Wet ash Disposal

i) Ash generated in plant consists of 20% bottom ash & 80% fly ash of total coal consumption.

ii) 20% Bottom ash is disposed to Khasara ash bund through pipeline by 3 nos. of ash slurry pump series.

iii) 80% fly ash is transported through conveying pipeline from all units of ESP hopper to Intermediate silos where 3 nos. of HCSD pumps are installed to dispose ash at Khasara ash bund in the form of ash slurry.

iv) Also dry fly ash from intermediate silo is further conveyed to 3 nos. of Remote silos having storage capacity of 1125MT each for DFA utilisation purpose.

v) Each Remote silo has facility to provide dry fly ash through telescopic arrangements as well as wet ash through dust conditioner arrangement. At about 250 ash bulker can be loaded on daily basis.

2. Multi point discharge of ash slurry in ash bund is adopted in order to

(i) achieve more or less uniform ash filling within the lagoon.

(ii) Completely utilise the available storage capacity

3. Ash slurry disposal

The locations and arrangements of discharge points shall be decided by the disposal committee itself.

i) Ash slurry is to be discharged in a lagoon starting from the areas near the well and progressively shifting from the well area to the areas away from the well.

ii) No discharge shall be allowed on the slopes.

iii) A minimum of 50m shall be maintained from the kerb of the road.

iv) Water logging near dyke wall shall be avoided

v) Siphon system & Dewatering pump arrangement shall be adopted to drain excess rainfall water from ash bund

4. Ash water recovery

1. Recirculation of ash pond water, upto a maximum of 80% of the ash water quantity in the ultimate stage, shall be utilized. Ash water recovery pump house shall be provided by the side of the overflow/waste weir lagoon for pumping of ash water to plant.
2. Ash water shall be recovered with 3 nos. of VT pump having discharge flow of 650 m3/min from Khasara ash water recovery pump house.
3. Commissioning of additional 3 nos. of VT pumps are under progress to optimize ash water recovery.

10/4/24

Executive Engineer (AHP)
3X660 MW, KTPS, Koradi

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(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – cegenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

No.KTPS/CE(O&M)/AU/ No 01317 Date: 16 APR 2024

SOP

Standard Operating Procedure for Ash Utilization

1) Ash generated at KTPS Koradi are Dry fly ash, pond ash, Cenosphere (i.e.Floating Ash).
   - Utilization of dry fly ash should be carried out from remote silo through closed bulkers/ dust conditioner ash in open tipper.
   - Utilization of pond ash should be carried out from ash Bund. Ash lifting agencies lifts pond ash from ash bund and transport through Tarpaulin covered truck.
   - Cenosphere or floating ash is accumulated at Ash bund and deployed agencies should be extract and collect floating ash from ash bund by proper weighment from weigh bridge of MSPGCL to maintain the proper record for revenue collection.
2) As per guidelines given by CPCB and MPCB following measures should be taken for 100% ash utilization.
   - Two Railway platforms are ready for dry and pond ash utilization. Promote the prospective vendors to utilize this facility and maximize the ash utilization.
   - Follow up with ash lifting agencies to motivate maximum ash utilization.
   - Promote the Cement industries to take maximum dry ash from Remote silo and transport by Railway.
   - Regular promotional advertisement should be published in various Newspapers to maximum ash utilization.
   - Focus to set maximize dry fly ash utilization through bulkers.
   - Sale order should be issue to various agencies as per application received from agencies for Dry/ Pond ash requirement and it will be issue after approval of competent authority.
3) Regular correspondence with agencies to improve the ash utilization and set up to increase the networking of ash lifters.
   - For smooth working continuous follow up should be taken with agencies for lifting of ash.
   - To maintain ash lifting data of Dry/Pond Ash, continuous follow-up should be taken with agencies.
4) Formation of committee for proper evenly ash deposition in ash bund including members from Civil, AHP & Ash Utilization section. Regular meeting is organized as per issues.
5) Pre/post monsoon inspection should be carried out jointly with Civil, AHP & Ash Utilization section for the precautionary measures of ash bund.
6) To avoid overtopping of ash dyke of ash bund suggested to drain out the water by mechanical syphoning arrangement, tractor mounted diesel engine pump, drain out pipe etc.
7) To clean the peripheral nallha of ash bund and toe drain cleaning to drain out the water smoothly.

16/04/2024

Executive Engineer (AU & AHP)
MSPGCL, KTPS, Koradi.

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O/o Chief Engineer (O&M), K.T.P.S.,Koradi, Dist. Nagpur, PIN – 441111
(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – cesenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

Ref. No.: KTPS/3X660MW/CIVIL/ NO = 0271 Date:- 30 APR 2024

To,
Executive Chemist
3x660MW, TPS, Koradi.

Sub :- Compliance to Minutes of the personal hearing for the project "Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagpur (Maharashtra)"

Ref :- Your Office Mail Date. 23.04.2024

With ref. to above subject and ref. mail following compliance are submitted for your information.

Point	Description	Compliance
3.	Ash dyke details including height is to be furnished. The PP to explicitly clarify, how much height they are entitled to increases they have increased. PP shall submit the following documents WRT construction and raising the bund: i. The approval copies for the construction of the bund should include detailed information about the bund height and corresponding capacity. ii. Approval copies for the augmentation of bund height. These documents should encompass comprehensive details regarding the increment in height and elucidate how much the bund capacity was increased as a result.	Ash bund Height (TBL) details Starter bund :- 305.20 First raising :- 308.50 Second raising:- 312.00 1) Dyke wall work upto 2nd raising completed by O/o The Dy. Chief Engineer (C), CCC, MSPGCL, Koradi. Hence approval copies for completed upto 2nd raising works is not available to this office. For balance 3rd & 4th this office vide mail 28.02.2024 inform to your section about DPR & requested to take approval for 3rd & 4th raising. From Statutory Govt. bodies.

4 iii.	The PP is required to formulate a Standard Operating Procedure (SOP) in a time-bound manner to adhere to the primary environmental concerns, encompassing greenbelt development, fugitive emission control, fly ash management, monitoring among other. These SOPs should be mandated to be applicable to all Thermal Power Projects under its purview. It is imperative that the SOP remains resilient to any alterations in the organizational structure or advancements in activities, ensuring continuous compliance with Environmental Clearance (EC) conditions. A copy of the should be submitted to Ministry's RO with a copy to C & MD, MoEFCC.	SOP for Khasala Ash Bund submitted vide mail Dt: 20.04.2024 to your office.
4 iv.	The PP is required to provide the most recent stability report concerning the design, strength, and safety of the ash dyke. The report should detail the measures implement to prevent breaches and mitigate risks such as leaching into groundwater, maintain soil stability, and preventing airborne particles that may cause air pollution in the surrounding areas. Furthermore, this report must be prepared by an accredited institute known for its expertise and credibility in the field.	Khasala Ash Bund stability report by VNIT, Nagpur is submitted vide mail Dt: 27.03.2024.
4 v.	PP shall also submit the action taken report regarding the collapse of the fly ash bund at Koradi Thermal Power Station in 2022.	Action taken report after incident dt.16.07.2022 is attached herewith.
4 vi.	PP shall submit Quantitative Risk Assessment (QRA) Management plan for any future accident in the plant and the area likely to be affected by any such future incident by conducting mathematical modelling.	———

Submitted for your information please.

Encl: Compliance 4 v.

29/4/24

Executive Engineer (C),
3x660MW,TPS, Koradi.

ANNEXURE-6

VISVESVARAYA NATIONAL INSTITUTE OF TECHNO

Gram VISVENCOL, NAGPUR
Tel Director: 2235733
Registrar: 2276240
PBX 2223710, 2222828 (O)
Ext. 1371
Fax 0712-2223230/2223969

(Formerly V.R.C.E.) NAGPUR – 440

विश्वेश्वरय्या राष्ट्रीय प्रोध्योगिकी संस्थ
नागपुर (भारत)

DEPARTMENT OF CIVIL ENGINEERING

Dy. Chief Engineer
Civil Const.Circle Koradi
Date : 28 JUL 2023
In.No.
SE (O) - [illegible]
EE (C)-Adm/[illegible]/C.C./CSRCell
Sr.M. (F & A)/H.O.

SE (Civil) 27-7

28/07/23

Ref: CT-35
Date: 24/07.

To

The Dy. Chief Engineer (Civil),
Civil Construction Circle,
M.S. P.G.C.L, Koradi.

Subject: Review of report for Khasara Ash bund.

Ref: Dy CE(C)/CCC/KRD/Tech/ 00615 dated 26/05/2023 & 00758 dated 28/06/2023
CEC-39/TRE-1547/VSL/Dated 17/04/2023.
CE No 6444 /GT/AM+AP+SPW

1. INTRODUCTION

Maharashtra State Power Generation Company Limited, Koradi, Nagpur (M/ approaches VNIT Nagpur for the consultation work related to " Stability Analysis of 3.50 m high (RL 308.50 m to 312.00 m) Khasala Ash Bund at Koradi, Nagpur" vide al letter.

2. PRELIMINARY SITE OBSERVATIONS:

VNIT Nagpur had visited Khasala ash bund along with faculty members Dr. Y Dr. S. P Wanjari and Dr. A. H. Padade at the site. The site information was con Officials from MAHAGENCO. The site was carefully inspected along the lengt following points are noted:

a) The 1st raising of the ash bund was constructed nearly 10 to 12 years back from 308.50 m (3.50 m high). This raising consists of dense vegetation with large tre of the bund was remained with 4.00 m for this raising.

b) The 2nd raising was constructed in the recent past from RL 308.50 m to 312.00 high) where slope stability analysis is requested by the client. This raising cons fly ash at core section of the bund up to a height of 2.50 m over which the to placed for about 1.00 m.

c) The U/S side of the slope was protected with stone pitching over entire slope al bund. However, no protection was observed on the D/S side.

d) The slope was found to be intact on the day of visit.

e) The schematics of the Khasala ash bund is shown in Figure 1. The photograph attached therein.

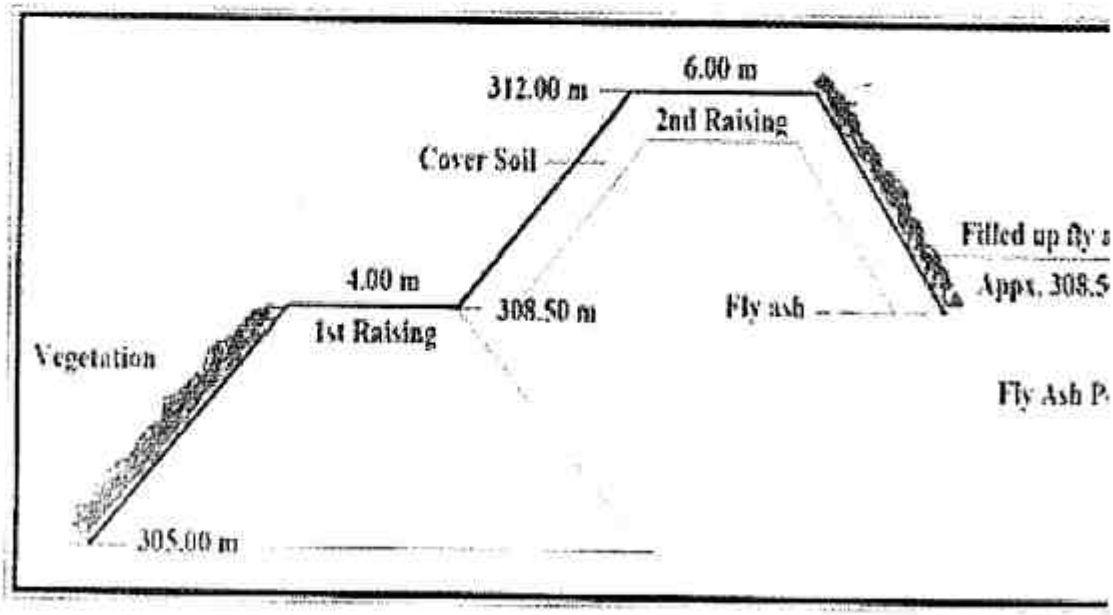
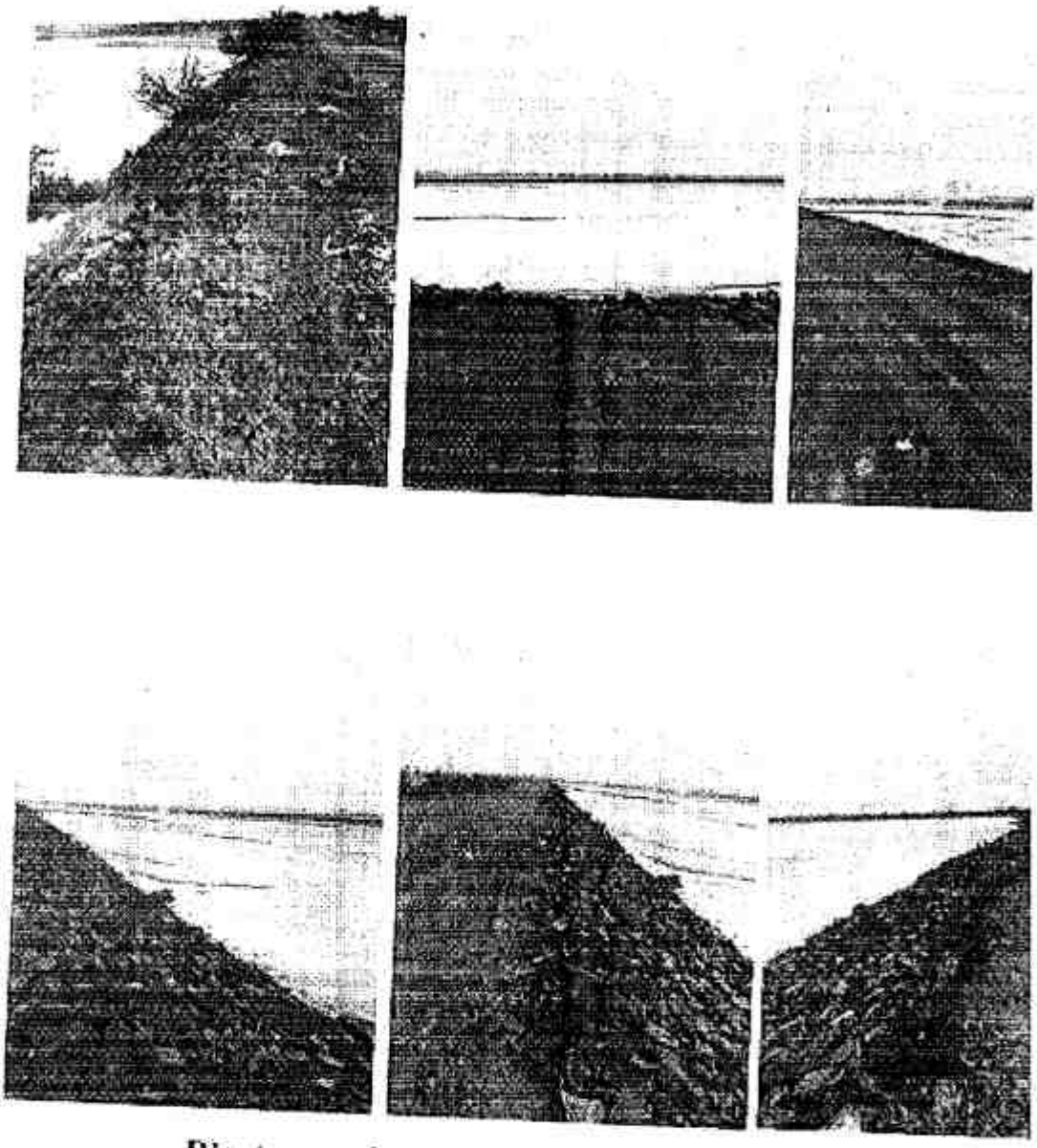


Figure 1: Schematics of the existing ash bund at Khasala



Photographs on the day of preliminary visit

3. MATERIAL CHARACTERIZATION:

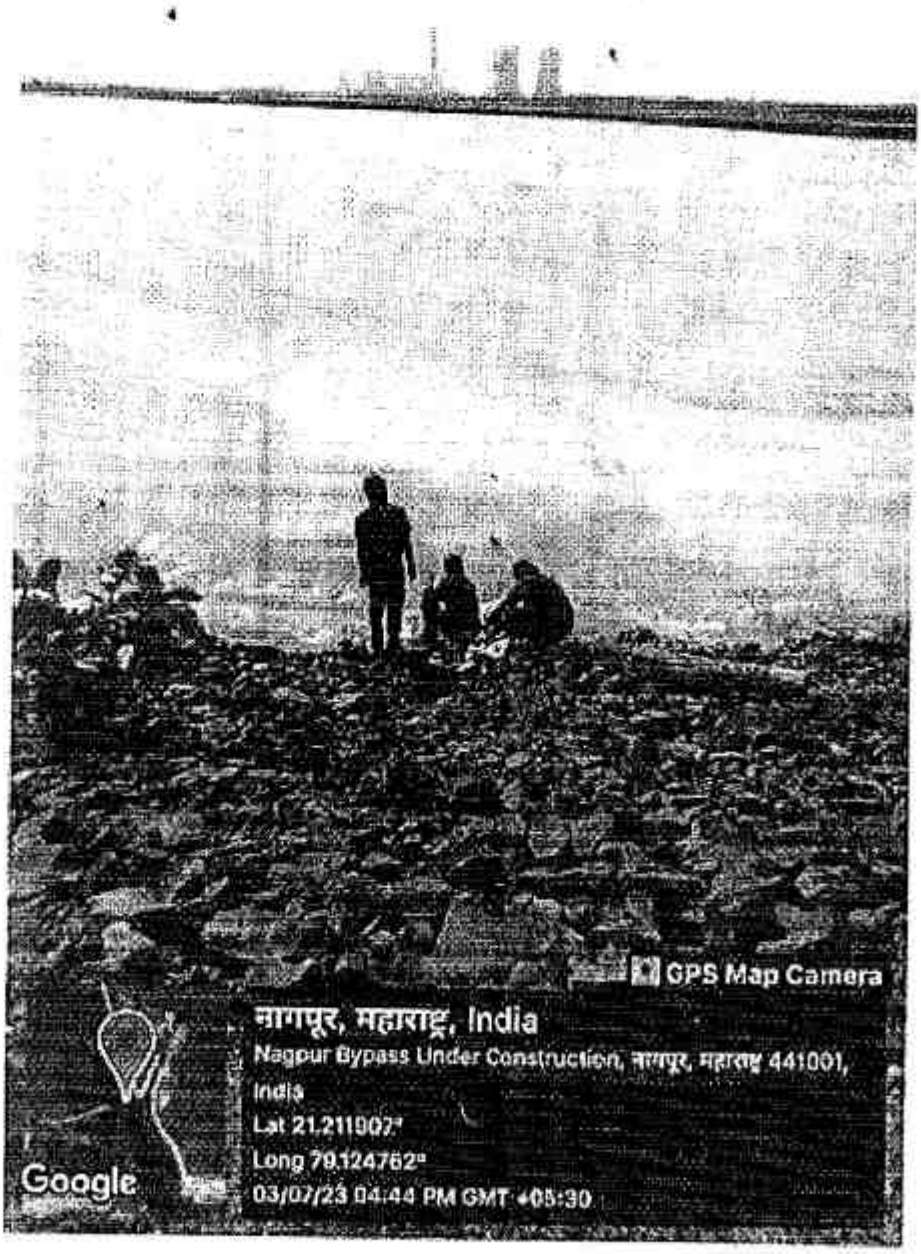
General

The slope stability analysis in the present case is required to be tackled i geotechnological approach involving fundamentals of engineering behaviour of mechanisms governing soil deformational response under relevant system of exter internal forces etc. The very first step in the entire exercise involves aspect of characteri of soil materials accomplished through interpretation of test results

Inspection and Sampling:

For laboratory tests, the fly ash and soil samples were collected on 03 July 2023. Dr. Padade along with PhD scholars Mr. Prashant Mali and Mr. Anurag Khadse, Tec Assistant Mr. Rahul Gajbhiye participated in site inspection and sampling.

After inspecting the ash bund, the sample of fly ash was collected from ash pond and top soil was collected from a curved section of the bund (Lat 21.211907°, Long 79.124762° photograph of fly ash sampling is depicted below.



On this day of inspection, the heavy rain was passed over the slope. However, the U/S the slope was seen to be unaffected. It is clear from the fact that the stone pitching prov the U/S side of the ash bund helps the slope to remain intact. The photographs of U/S the ash bund are shown in the photographs below.

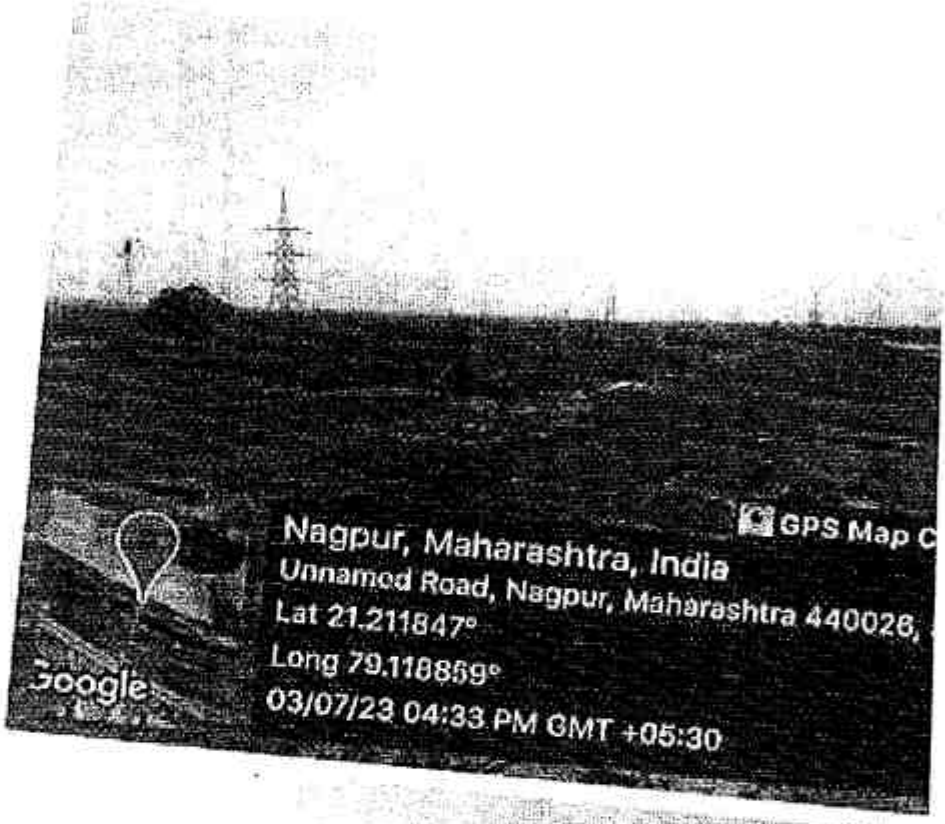
Photographs of U/S side of the ash bund

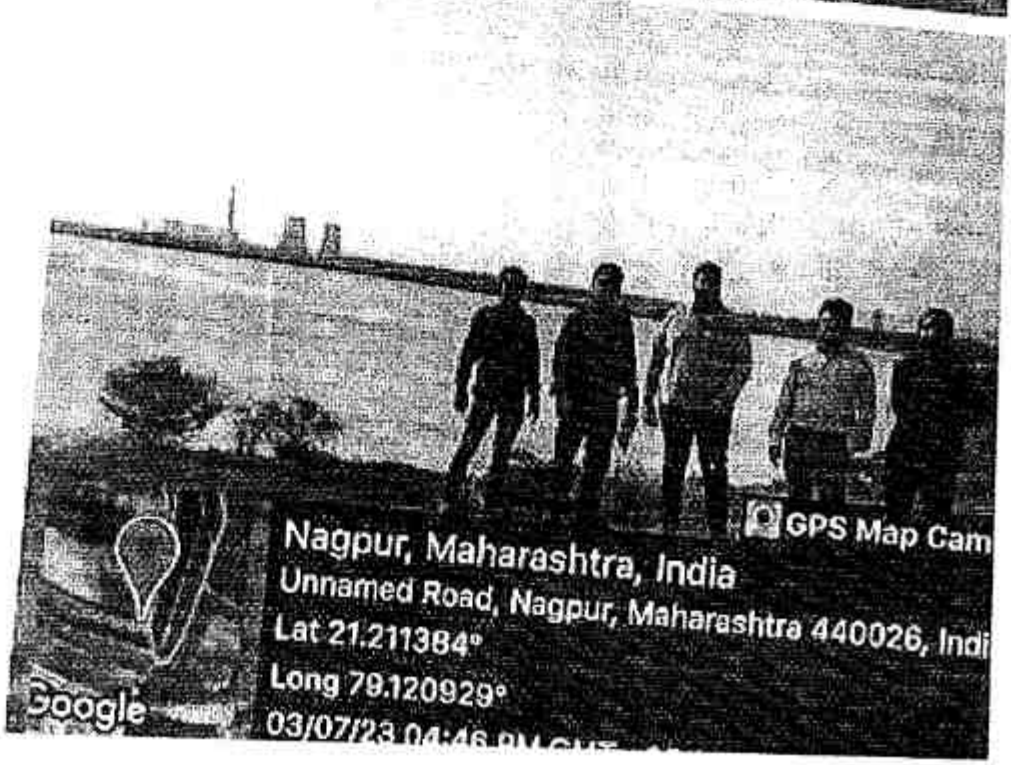
The D/S side of the slope was affected due to the rain around this area. The rain cut observed at many places. The growth of vegetation has also seen at some of the places, the slope was found to be unaffected. The photographs below show the condition of D of the slope.

Photographs of D/S side of the ash bund

...CT,

Most of the portion of the slope in the D/S side was found to be intact on this da... is suggested to provide the remedial measures to enhance the stability of this pa... considering the future raisings.





Laboratory Testing:

The following properties of the fly ash and cover soil were considered relev characterization of soils and stability analysis:

1. Grain size analysis
2. Atterberg limits and consistency indices.
3. Specific gravity
4. Proctor's Compaction Test for OMC and MDD
5. Shear strength under consolidated undrained (CU) condition

The above property parameters are supposed to be of direct application to the slope s analysis. As both the materials falls under the category of fine-grained soil, the cons properties are applicable to it. The tests were done with utmost care, perfection and specified standard procedures as given in Table 1.

Table 1

Sample Identification	As per sampling sheet	Fly ash	Cr
Grain Size Analysis IS 2720 (Part 4) 1985	Gravel (%)	0.00	
	Sand (%)	21.14	
	Silt & Clay (%)	78.86	
Atterberg's Limits IS 2720 (Part 5) 1985	Liquid Limit (%)	NP	
	Plastic Limit (%)	NP	
	Plasticity Index (%)	NP	
Shrinkage Limit IS 2720 (Part 6) 1972	Shrinkage Limit (%)	---	
	Shrinkage Index (%)	---	
Free Swell Index IS 2720 (Part XL) 1977	FSI (%)	0.00	
Soil Classification IS 1498 - 1970	-----	ML	
Shear Parameters (CU) IS 2720 (Part 13) 1985	Cohesion (kPa)	23	
	ϕ (°)	32	
Permeability IS 2720 (Part 17) 1986	k (cm/s)	8.67×10^{-4}	
Standard Proctor's Test IS 2720 (Part 7) 1980	OMC (%)	19.00	1
	MDD (g/cc)	1.372	1
Specific gravity IS 2720 (Part 3-1) 1980	G	2.06	

ML – Inorganic silts with very low plasticity, CH – Clay with high plasticity

* The permeability tests could not be conducted due to experimental limitations in the laboratory to saturate the soil samples. Based on index properties, the permeability value of the samples is expecte be less than 10^{-6} cm/s.

4. STABILITY ANALYSIS

Figure 2 is considered to evaluate the slope stability. For this case the values of slope an = 45° and height of slope H = 350 cm are used for analysis. The possible location of cr slip surface in this case is also indicated in the Figure below.

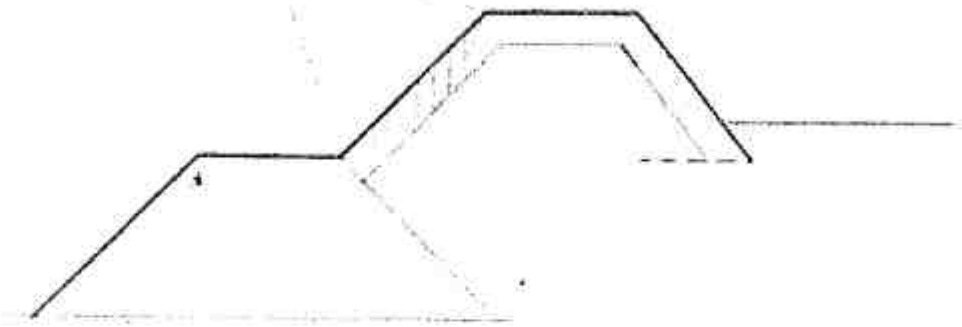


Figure 2: Location of critical slip circle of slope

A. ANALYSIS BY COUSINS CHART SOLUTION

Analysis is carried out for two conditions (a) $r_u = 0$ and (b) $r_u = 0.25$.

(a) $r_u = 0$ condition

Case I--- The input data is. .. H = 350 cm, $\beta = 45^0$

$c = 50$ gm/ cm^2, $\phi = 23^0$

$\gamma = 1.72$ g/cc

$$\lambda c\phi = \frac{\gamma * H * tan\emptyset}{c} = \frac{1.72 * 350 * \tan 23}{50} = 5.11$$

For $r_u = 0$, $\lambda_{c\phi} = 5.11$ & $\beta = 45^0$

Using Fig.4.1 a: Ns = 17.00, with D =1.0

Using Fig. 4.2 b: $N_s = 16.00$, with D = 1.0

Hence, minimum $N_s = 16.00$

Therefore, Factor of Safety, $F = Ns \frac{c}{\gamma * H} = 16 \frac{50}{1.72 \times 350} = 1.32$

(b) $r_u = 0.25$ condition

$\lambda_{c\phi} = 5.11$

[illegible]

Using Fig. 4.2a — N_s = 15.50, with D = 1.00
Hence, minimum N_s = 14.00
Therefore, Factor of Safety $F = 14.5 \frac{50}{1.72 \times 350} = 1.21$

B. ANALYSIS BY A. SINGH'S METHOD

For r_u = 0 condition

In this method, the values of slope ratio (cot β) is mentioned for 1.5 to 3.0. The value of s ratio for this case is 1.00, therefore, Alam Singh's method of slope stability analysis is no applicable for this case. Further, in this method, pore water pressure is assumed to be zer

C. ANALYSIS BY HUANG'S METHOD FOR LONG TERM STABILITY

For r_u 0 & r. 0.25 conditions

Data is : H 350 cm, β 45° (i.e., S 1.0)
Assuming c 120 gm/ cm², φ=15° (For long term analysis)
γ= 1.72 g/cc

Cohesion Factor, $CF = \frac{100 \cdot c}{\gamma \cdot H} = \frac{100 \cdot 120}{1.72 \times 350} = 19.93$

Using Fig. 4.4 and chart for S = 1.00, we get,
For r_u = 0. CF = 19.93 & φ= 15°, F = 1.72
For r_u = 0.25, CF = 19.93 & φ= 15°, F = 1.40

D. SLOPE STABILITY ANALYSIS USING GEOSTUDIO 2018 R2 (Slope/W)

The slope stability analysis was performed using GeoStudio 2018 R2 (Slope/W) s considers different methods of analysis. However, Bishop's simplified method of slice considered for the analysis. The model geometry of the existing ash bund considered i case is shown below.

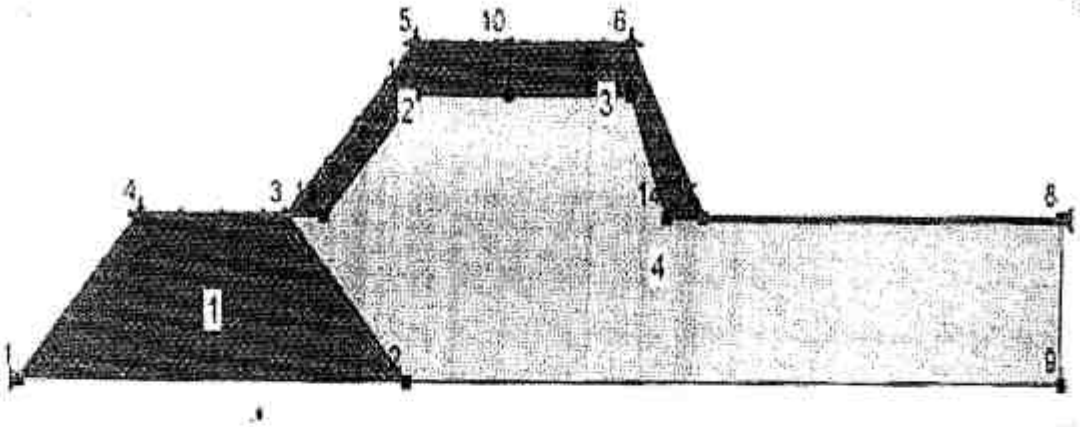


Figure 3: Model geometry of Khasala ash bund considered in the analysis

The limit equilibrium method is considered for analysing the slope of ash bund. The ma properties determined from laboratory investigation was assigned to respective sections slope. The output of this case has shown 139 results, in which the most critical slip surfa determined having factor of safety value as 1.525 as shown in Figure below.

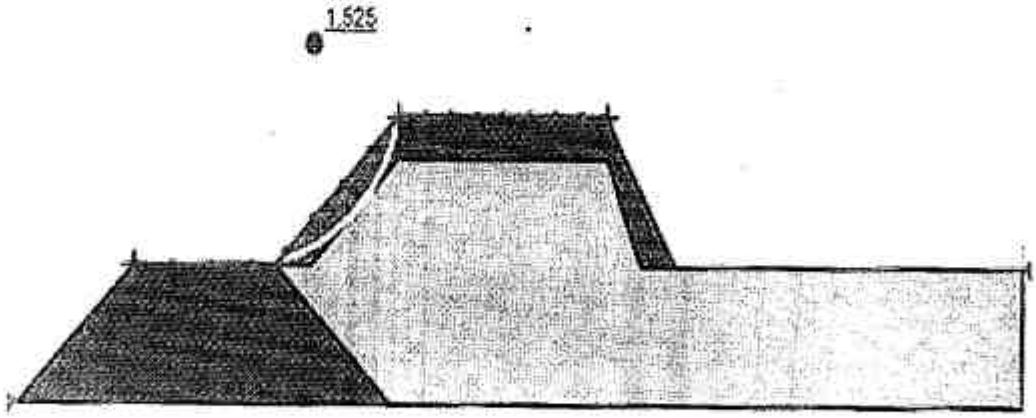


Figure: 4. Critical slip surface with minimum factor of safety using Bishop's simplif method of slices

The critical slip circle is seen to be passed from top of the slope through the toe. The region was found to be located within the cover soil placed over the compacted fly ash.

5. REMARK AND CONCLUSION:

1. The present slope stability analysis up to 2nd raising using design charts and Geo 2018 R2 (Slope/W) reveals that the slope of ash bund is stable.
2. Vehicular movement on berm of ash bund is generally damaging stability of ash b is proposed to provide geocell at the top of berm which is filled with fly-ash and c to harden surface which will be provided to the vehicular movement. This is th technology superseded earliest method proposed.
3. It is proposed to provide Geomembrane 1.5 mm thick HDPE liners as per the guideline 2002 for "Manual for Design Construction and quality control of line covers for Hazardous waste landfills".
4. It is also suggested to construct trial patch of 500 m length in association with Nagpur and to observe the results of stability of ash bund with the implementa geocell. Such type of works has been already implemented by NTPC Ltd and in I country.
5. The rain cut damaged portion on the face of the slope should be repaired and treate jute coir mattress to avoid soil erosion along with application of seeds for veg growth. This will further enhance the stability of the slope.
6. It is suggested to provide drainage well/Syphon arrangement at every 100 -150 m i along the perimeter of the ash bund for water discharge. It should be well connecte Hume Pipe/M.S. Pipe of diameter 0.9 m along the perimeter of bund.

Dr. A. H. Padade

Dr. S. P. Wanjari
Co-ordinators

Dr. Y. B. Katpata

Dr. Y. B. Katpatal
Professor & Head, CED

Dr. Smt. M. A. Chaudhari
Dean (R & C)

Terms and Conditions

1. Laboratories at VNIT Nagpur are not NABL accredited.
2. The tests are performed with the test facilities and resources available and accessil VNIT Nagpur.
3. The test report relates only to the samples supplied by the agency and VNIT will r responsible for any errors arising due to reasons beyond control of VNIT.
4. VNIT Nagpur is not responsible for any damage, in whatever manner, occurring t one because of the test results/certification.
5. VNIT Nagpur is not responsible for nonfunctioning of the equipment (fully or part the field for whatever reasons.
6. All the test reports/certificate are valid for a period one year from the date of issue otherwise specified and are exclusively for the internal use of the agency which has to carry out testing/certification.
7. Any dispute arising out of the contract between agency and VNIT is subject jurisdiction of Bombay High Court, Nagpur Bench.
8. VNIT, Nagpur is authorized to carry out testing/certification as per No.1088/(2512)/Udyog-6dated January 2, 1992.

ANNEXURE-7

VISVESVARAYA NATIONAL INSTITUTE OF TECHI

Gram : VISRENCOL, NAGPUR
Tel : Director: 2235733
Registrar: 2226240
PBX : 2223710, 2222828 (O)
Ext. 1371
Fax : 0712-2223230/2223969

(Formerly V.R.C.E.) NAGPUR –

विश्वेश्वरय्या राष्ट्रीय प्रोध्योगिकी संस्

नागपु

DEPARTMENT OF CIVIL ENGINEERING

Ref: CT -36

Date: 04/10/

To

The Chief Engineer
KTPS Koradi

Subject: Stability study of Koradi Ash Bund at KTPS Koradi

Ref: PO dated on KTPS /4500128659 dated on 13/09/2023

Sir,

With reference to above cited subject, please find the attached report for your kin

Thank You

Sincerely

Dr. S. P. Wanjari 4/10/23

Dr. Y. B. Katpatal 4.10.23

Dr. A. H. Padade 4/10/23

(Co-ordinotors)

1. INTRODUCTION

Maharashtra State Power Generation Company Limited, Koradi, Nagpur (MAHAGEN(PO vide letter KTPS /4500128659 dated on 13/09/2023 to VNIT Nagpur for the co "Stability Analysis of Koradi Ash Bund at KTPS Koradi, Nagpur". In response, VNIT ha stability analysis by Analytical Bisson Method, GeoStudio software and Drone Surveyir on above methods the following conclusions are drawn.

2. PRELIMINARY SITE OBSERVATIONS:

VNIT Nagpur visited Koradi ash bund dated 11/8/23 The faculty members Dr. Y. Dr. S. P Wanjari and Dr. A. H. Padade was present at the site. The site information was co by Officials from MAHAGENCO. The site was carefully inspected along the length (following points are noted:

1. The initial 6 raisings are already completed. These raisings consist of dense veg large trees almost around entire length of the ash bund.
2. The upstream (U/S) and downstream (D/S) side of the slope have slope angle ap 1:2.5 and 1:2 respectively. These sides are not seen to be protected by any means.
3. A seepage of water was seen from the D/S side of the ash bund from at some se recent borrow of ash for some project. The seepage water is due to water acct Northern corner of Ash bund.
4. U/S side of the ash bund was found to be excavated for lifting the fly ash. The se dam was also seen to be excavated along with the fly ash.
5. The slope was found to be intact on the day of visit.

The location of site of Koradi ash bund is shown in following Figure

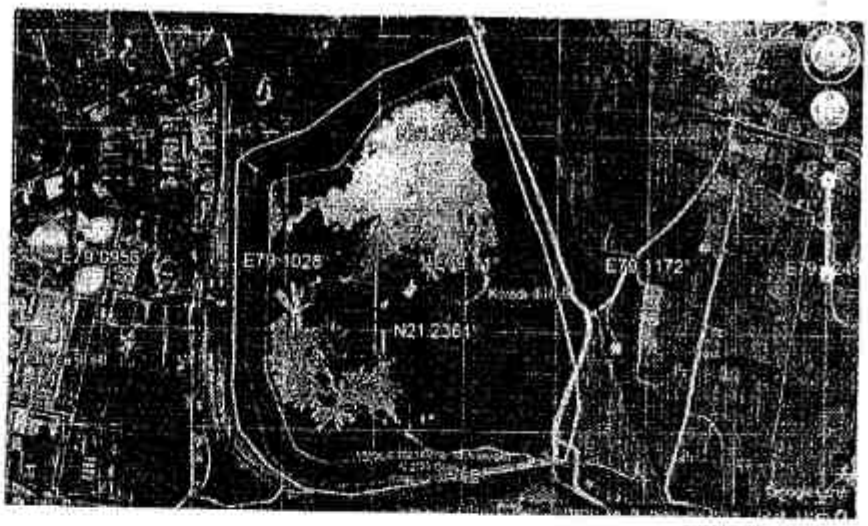
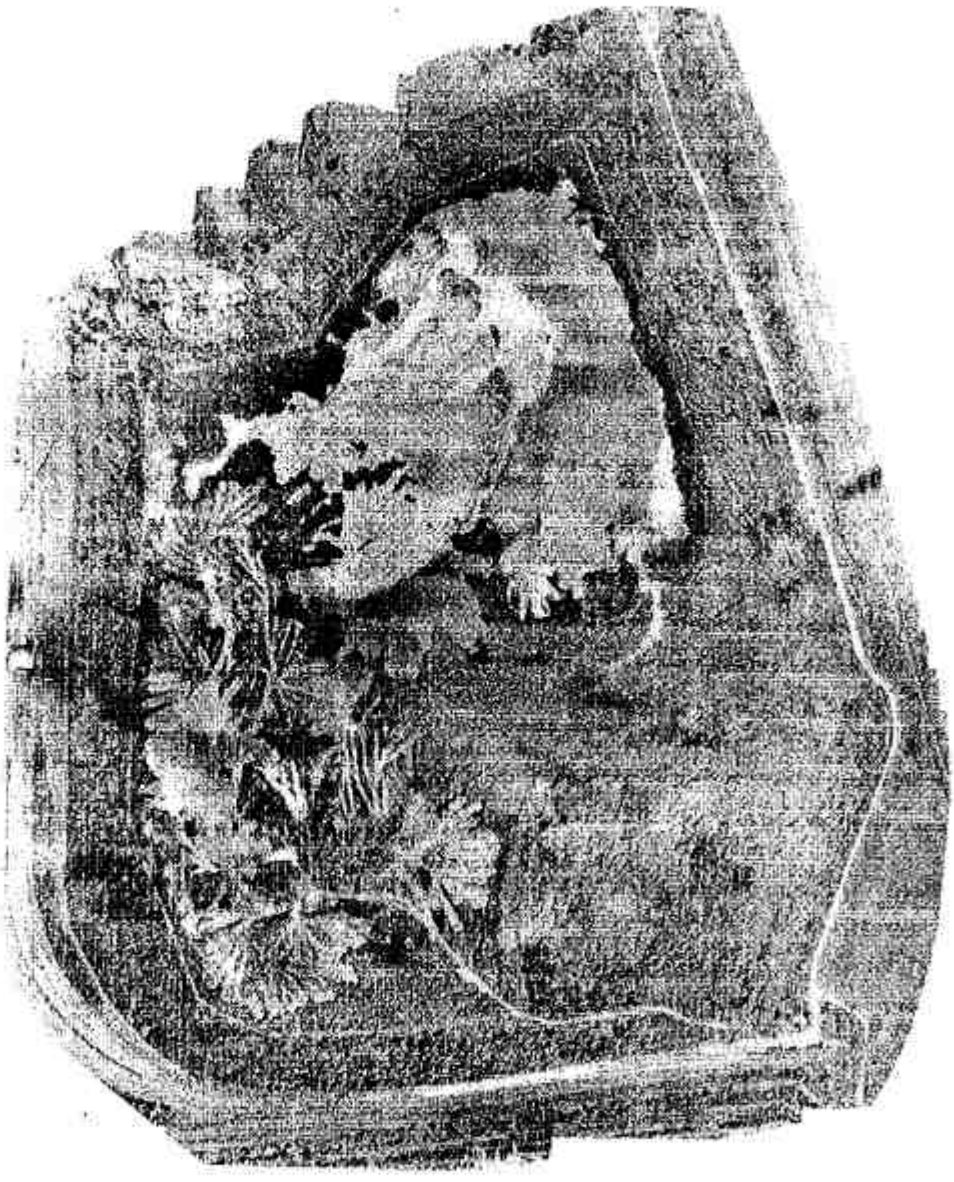


Figure: Location of Koradi ash bund, Nagpur

3. Drone Survey:

The drone survey was conducted to identify the damage in upstream and downstream side of th was carefully examined found in good condition.



4. Slope stability Analysis using GeoStudio 2018 R2 (Slope/W)

The slope stability analysis was performed using GeoStudio 2018 R2 (Slope/W). simplified method of slices was considered for the analysis. The model geometries of bund considered in this case is shown as Figures below.

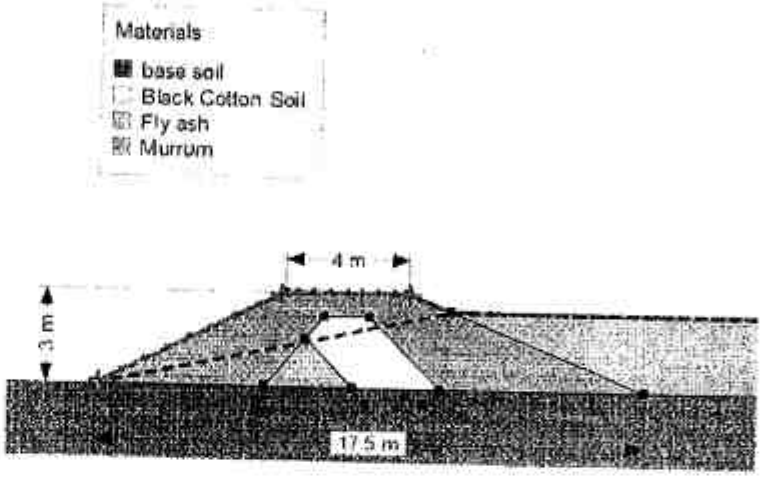


Figure 1: First raising

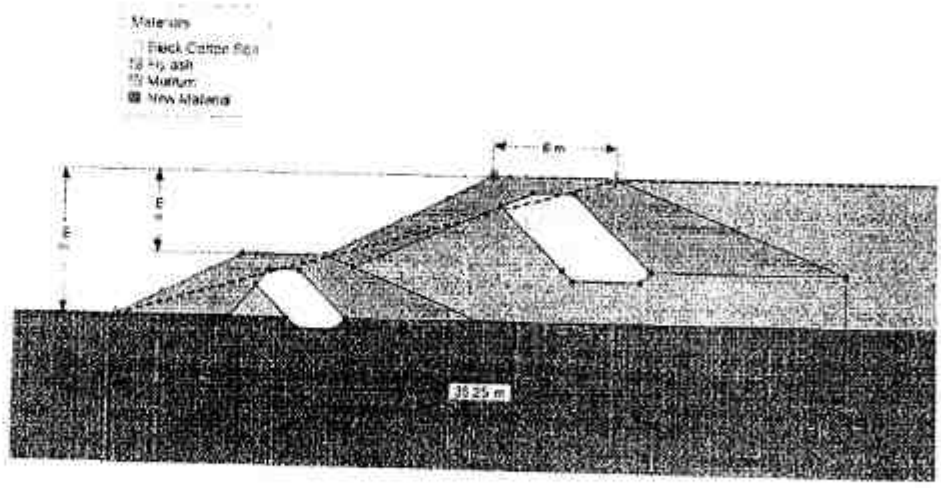


Figure 2: Second raising

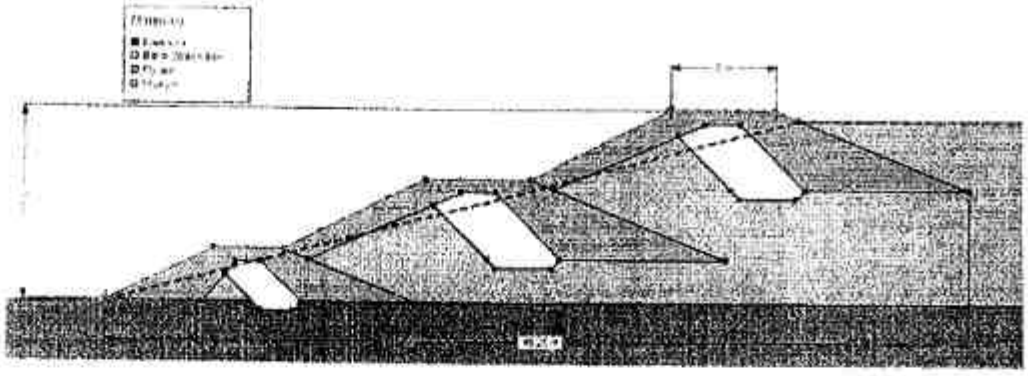


Figure 3: Third raising

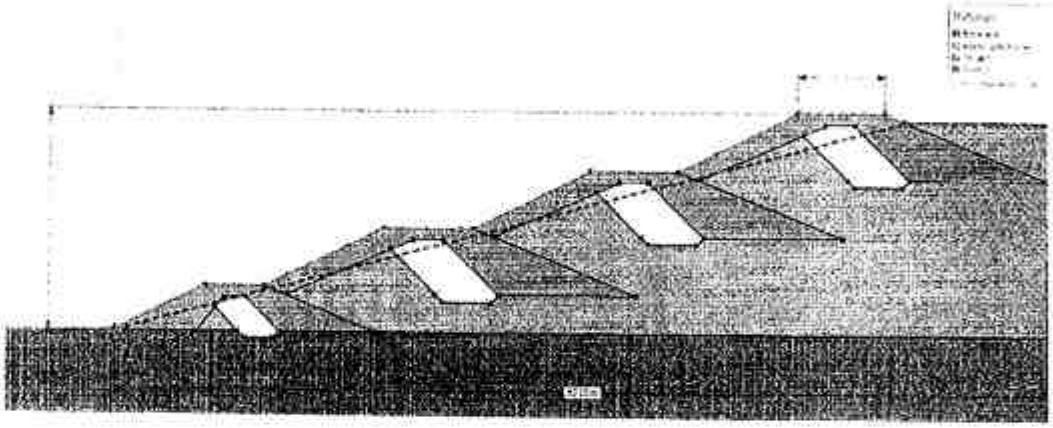


Figure 4: Fourth raising

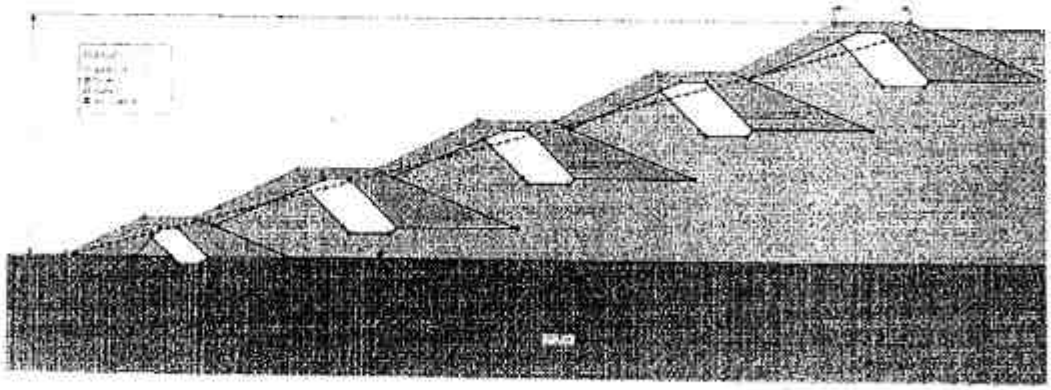


Figure 5: Fifth raising

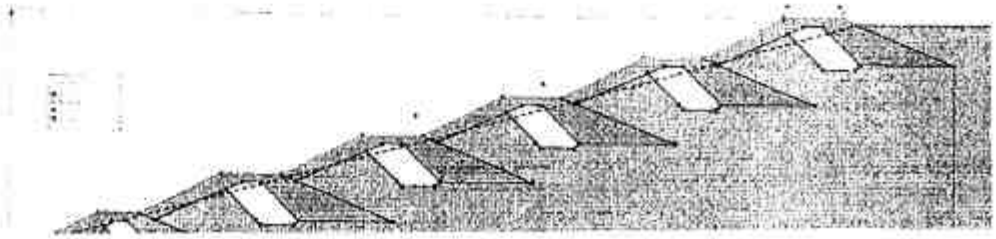


Figure 6: Sixth raising

Figures: Model geometries of Koradi ash bund considered in the analysis

The limit equilibrium method is considered for analysing the slope of ash bund and tmaterial assigned to respective sections of the slope. The analysis of slope was done as per the constr raising at the site. The output of this case has shown 139 results, in which the most critica determined having factor of safety value as 1.688 as shown in Figures below.

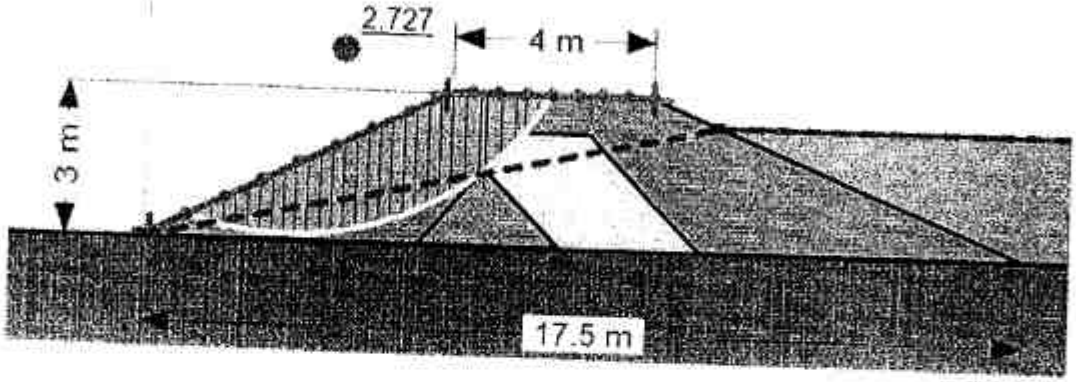


Figure 1: First raising (With fly ash filling)

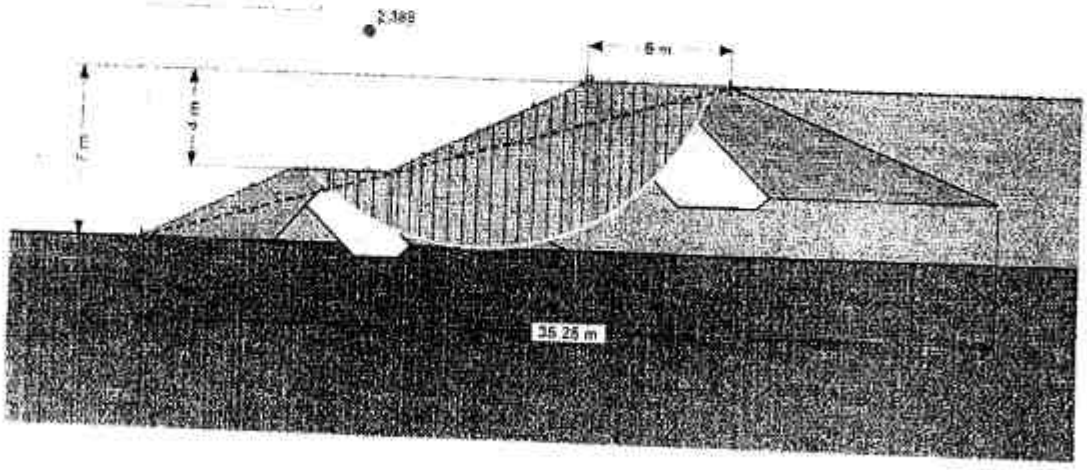


Figure 2: Second raising (With fly ash filling)

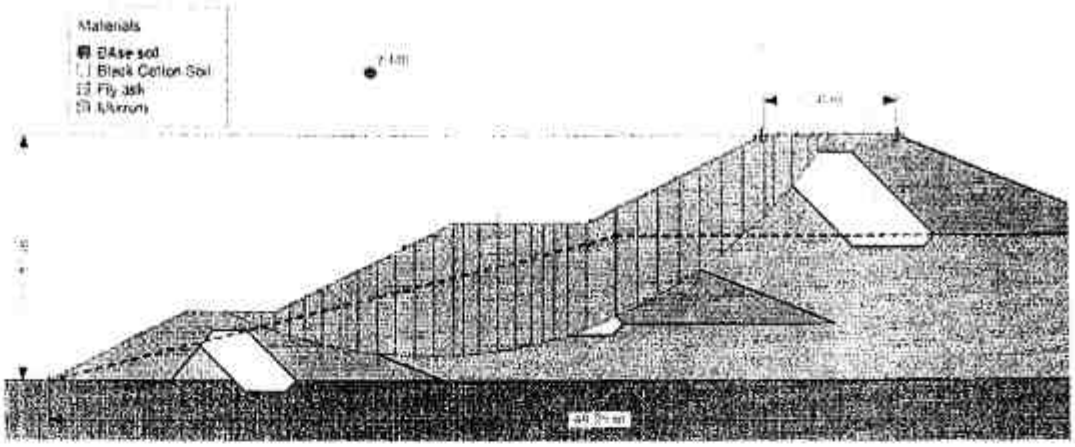


Figure 3 (a): Third raising (without fly ash filling)

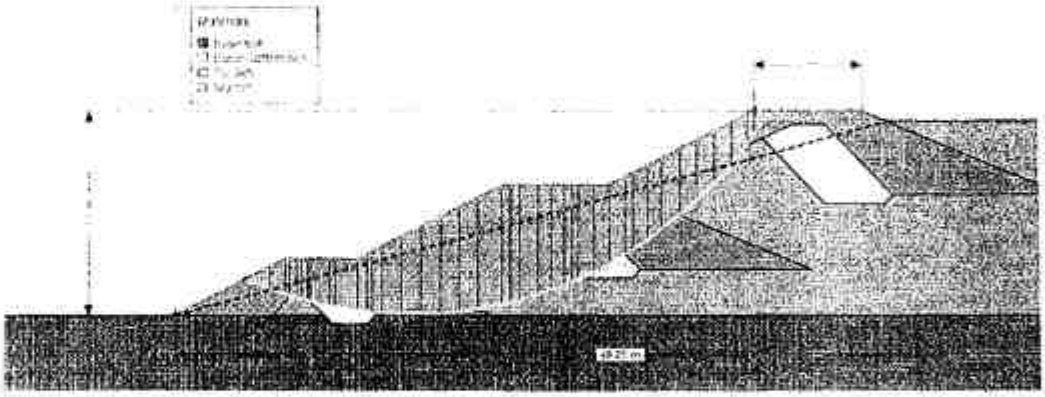


Figure 3 (b): Third raising (with fly ash filling)

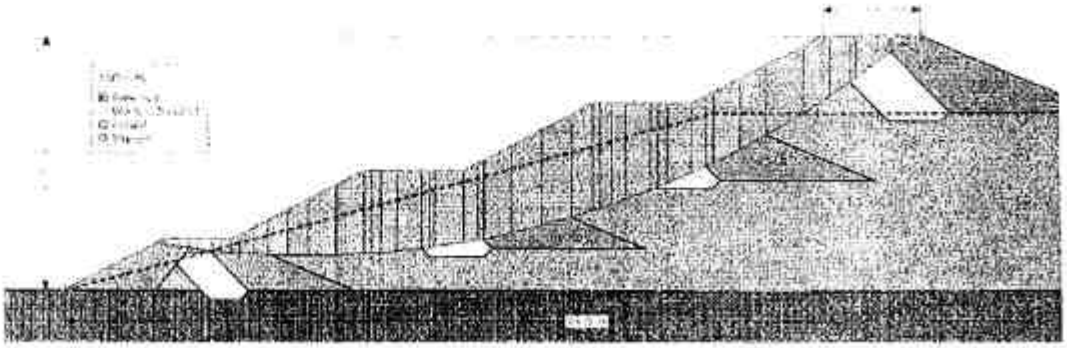


Figure 4 (a): Fourth raising (without fly ash filling)

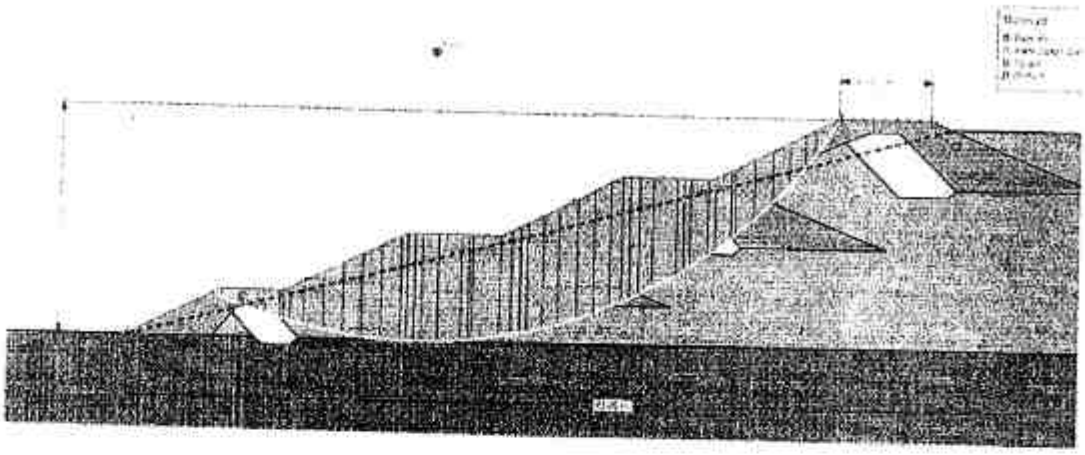


Figure 4 (b): Fourth raising (with fly ash filling)

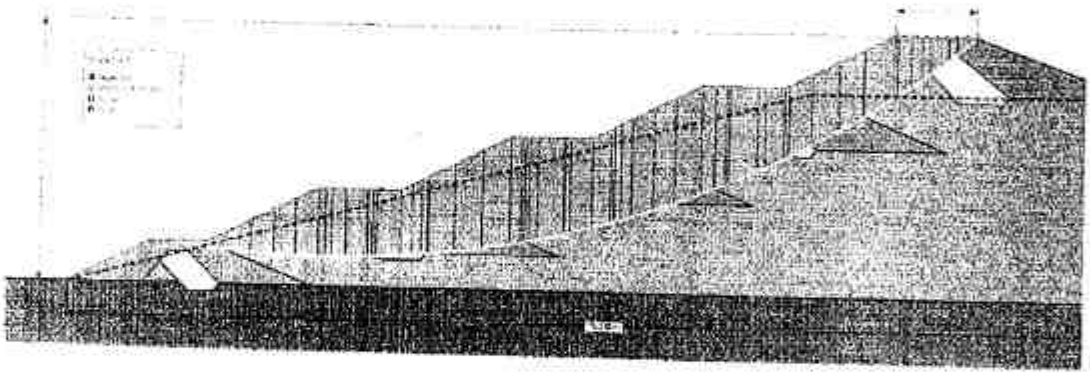
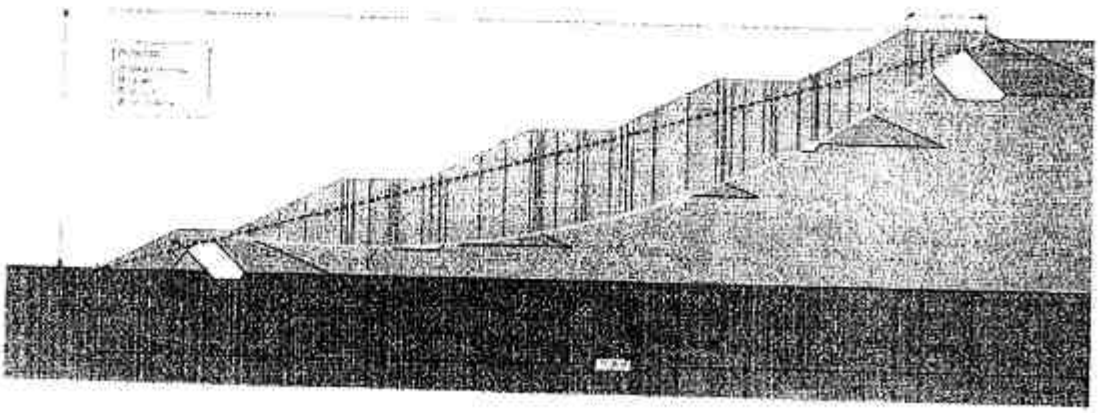


Figure 5 (a): Fifth raising (without fly ash filling)



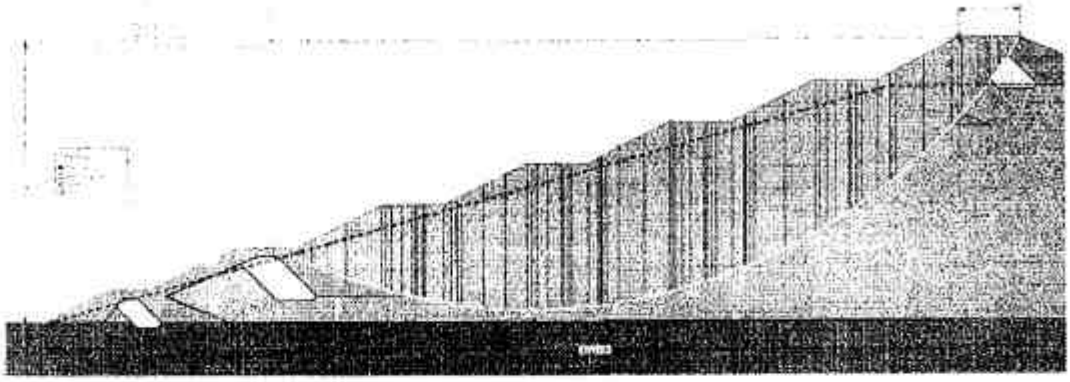


Figure 6 (a): Sixth raising (without fly ash filling)

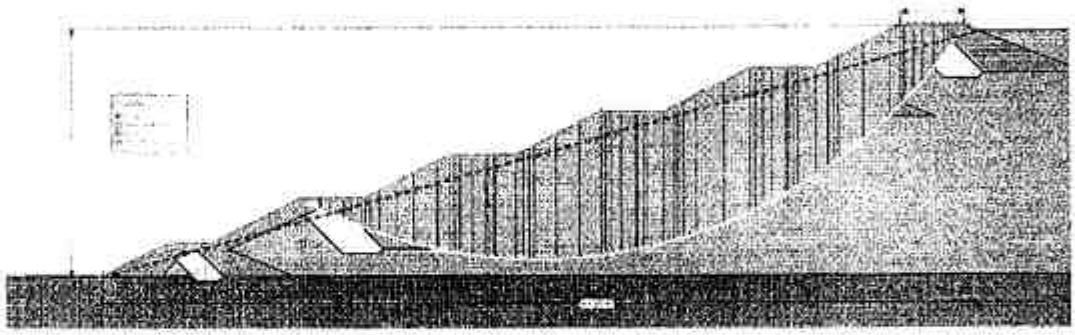


Figure 6 (b): Sixth raising (with fly ash filling)

The critical factor of safety obtained from the analysis for stepwise raising under emp ash conditions are summarized in the Table below. These factors of safeties are also see the form of bar chart below.

Table 1: Factor of safety

Raising	Conditions of ash bund	
	Empty	Full
1	---	2.727
2	2.767	2.389
3	2.44	2.229
4	2.253	2.095
5	2.031	1.957
6	1.844	1.688

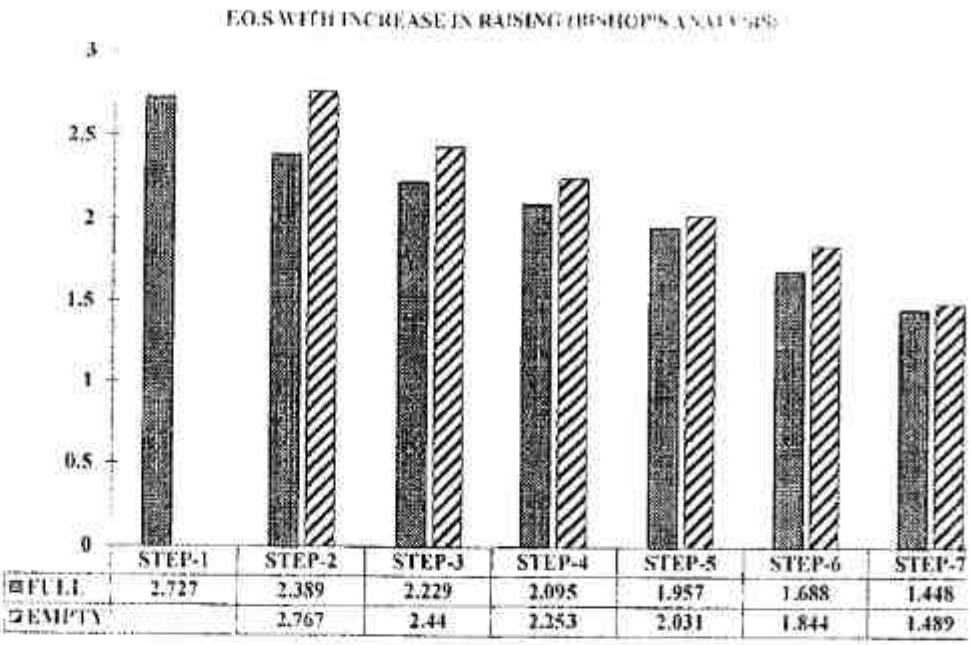


Figure: Factor of safety under different raisings without / with fly ash fill

From the above analysis, it is found that the geometry of the slope is well designed an critical factor of safety 1.688 as obtained in the GeoStudio. The geometry of the slope i the consulting team as per the design sheet provided by MAHAGENCO, Koradi. Al investigations of soil layers used in the ash bund is not done as it is very difficult to get th already construction core sections embedded in the bund layers. These values of so considered on the basis of previously obtained data and with broad understanding of the following properties of soils (Table 2) are considered for the analysis.

Table 2: Soil Properties considered for slope stability analysis

Test / Properties		Fly ash	Cover Soil	Black cotton soil
Shear Parameters (CU) IS 2720 (Part 13) 1985	Cohesion (kPa)	25	10	5
	ϕ (°)	32	25	15
Permeability IS 2720 (Part 17) 1986	k (cm/s)	8.67×10^{-4}	1.12×10^{-2}	2.87×10^{-6}
Standard Proctor's Test IS 2720 (Part 7) 1980	OMC (%)	19.12	18.23	24.25
	MDD (g/cc)	1.372	1.72	1.753

5. REMARK AND CONCLUSION:

1. The present slope stability analysis upto 6th raising using design charts and GeoStu (Slope/W) reveals that the slope of ash bund is found stable.
2. Vehicular movement on berm ash bund is generally damaging stability of ash bund. It to provide geosynthetic reinforced road section which will be provided to the vehicula
3. It is also suggested to construct trial patch of 500 m length in association with VNIT to observe the results of stability of ash bund with the implementation of geosynthet Such type of works has been already implemented by NTPC Ltd and also in Foreign
4. It is suggested to provide syphone pipe which is well connected to drainage location.
5. It is suggested to dewater Northen part of stagnant water which cause seepage in ash location.
6. A scientific study is recommended for the construction of next raising with proper d bund using different stability techniques considering the economy.
7. The fly ash in the upstream side of the bund was found to be excavated at the site wh gets accumulated in the desperation of the excavated area. This increases the flow of downstream side in the form of seepage.

6. Suggestion and Action Taken:

However, the following reasons can be considered responsible for the lowering the fact the ash bund resulting in the seepage through various sections of the dam.

1. Presence of large trees and dense vegetation all around the slope in the downstre ash bund. This may induce a piping effect in the slope. The seepage of water in th side is seen on the day of visit. It may result in further lowering of factor of safe raises to next level. However, the slope was intact. An arrangement for flow of w carried out.
2. Some of the area of the ash bund was seen excavated portion and damaging of flyash removing contractor which is harmful and need to be restore.

4/10/23 4.10.23 4/10/23

Dr. S. P. Wanjari **Dr. Y. B. Katpatal** **Dr. A. H. Padade**

4.10.23

Dr. Y. B. Katpatal

Professor & Head, CED

Chaudhari 5/10

Dr. Smt. M. A. Chau

Dean (R&D)

Terms and Conditions

1. Laboratories at VNIT Nagpur are not NABL accredited.
2. The tests are performed with the test facilities and resources available and accessible to VNIT N
3. The test report relates only to the samples supplied by the agency and VNIT will not be responsi any errors arising due to reasons beyond control of VNIT.
4. VNIT Nagpur is not responsible for any damage, in whatever manner, occurring to any one beca of the test results/certification.
5. VNIT Nagpur is not responsible for nonfunctioning of the equipment (fully or partly) on the fiel whatever reasons.
6. All the test reports/certificate are valid for a period one year from the date of issue unless otherw specified and are exclusively for the internal use of the agency which has asked to carry out. testing/certification.
7. Any dispute arising out of the contract between agency and VNIT is subject to the jurisdiction o Bombay High Court, Nagpur Bench.
8. VNIT, Nagpur is authorized to carry out testing/certification as per GFR. No.1088/(2512)/Udyo January 2, 1992.

ANNEXURE -8

Clarification of Khasara ash bund breach Incident Dtd 16.07.2022

Sub: Breach of Khsara Ash Pond of Koradi Thermal Power Station on 16th July 2022, Leakage of ash from Khaparkheda Power Station and subsequent Events-Clarifications.

It was very undue and unfortunate incidence which was cause of heavy rain during week before the incidence. Whereas, Koradi TPS has already completed the pre- monsoon works like toe drain cleaning along with deepening and cleaning of natural nalaha. However, incessant heavy rainfall, improper and specific rainfall data prediction from concerned departments, futuristic prediction was not conclusive. TPS management has taken immediate action to avoid further catastrophic situation. Koradi TPS management along with maintenance staff immediately reached at site, and informed about the incidence to nearby Village Sarpanch, MPCB, Police Department, Revenue Officer, Disaster Management, Irrigation Department, Agriculture Officer, Sub Divisional Officer, Block Development Officer. The restoration work of ash dyke wall is immediately started with filling of ash, soil, stone pitching with gunny bags for strengthening inner outer side of dyke wall by deploying the two JCB, four poklanes, tractors, adequate manpower and required material same is restored and flowing water is arrested by 06.00 am on 17.07.2022. Photographs after restoration work are enclosed herewith.

Mahagenco with its seven thermal power plants, one Gas based power plant, Nos. of Hydro power plant & with solar generating plant is in the sector of Power generation. With establishing the Koradi Thermal power station with three units of supercritical technology, Mahagenco is adopting the newer technologies for pollution control and Environmental safeguard. As it is known, all three units of Koradi TPS are installed with 99.9% efficiency ESPs, Low NOx burners, High concentrated slurry disposal system is operative for ash disposal, Installation of Ammonia Flue gas conditioning is in progress. Koradi TPS is pioneer in usage of tertiary treated water generated from Municipal waste water and using same at TPS end for cooling and ash handling purpose.

Koradi TPS has also referred the report published by Agencies viz; Centre for sustainable Development, Manthan & ASAR Group under title "Polluted Power How Koradi and Khaparkheda Power plants are impacting the Environment". Accordingly, joint visit has also been conducted on Dtd. 04.02.2022 for facts findings along with MoEF&CC officials, MPCB officials, NGO representatives and TPS representatives etc. During this visit, samples from six locations were collected and tested at MPCB lab. As per reports most of the parameters were found well within limits and meeting the norms. Koradi TPS has suitably submitted the compliance against the published report on dtd. 24.02.2022 to Scientist 'E'/ Additional Director, IRO, Nagpur.

Scientist 'E', IRO, MoEF&CC, Nagpur has given directions/ recommendations based on visit Dtd. 04.02.2022, wherein

- It was instructed to restrict all plant discharges within plant premises, no ash water should be let out of plant premises. Deweeding of Typha over the natural drains/ water bodies should be done on top priority.
- Excavation/ removal of fly ash observed under the bridge (near Koradi bund area), desilting of the trenches around the bund/ natural drains/ water bodies along with green belt.
- Study heavy metal concentration including mercury in ground .water and surface water around Koradi Thermal Power plant
- Bioaccumulation studies of different heavy metals in different environmental metrices ex. Soil, animal scats, water, agricultural crops and its products, sediments of lake and river should be carried out.
- Addition of different plant species in the greenbelt of Koradi Thermal power plant for balancing the diversity.

Koradi TPS has immediately initiated the action against directions received and completed the following work before monsoon which includes:

- TPS has arrested the all plant drains within premises by construction of tanks and diversion of trade effluents to ETP. Similarly, Khasara ash bund overflow has been arrested in the Month of March, afterwards request letters from Nearby village Sarpanch were received to TPS demanding bund overflowed water for various day to day activities.
- Secondly, desilting, removing of typha and cleaning of Khasara ash bund left side toe drain has been completed along with cleaning of sump. Deepening & Cleaning of Natural Nalaha from Khasara ash water recovery pump house to Khairi village was also completed. TPS has prepared the augmentation plan for enhancing the capacity of Khasara ash water recovery system, proposal for same is prepared and will be implemented by 31.12.2023.
- Koradi TPS is regularly monitoring the Ground and surface water samples from nearby villages from MoEF & CC approved laboratory.
- For bioaccumulation study, TPS has already approached to NEERI and waiting for proposal from NEERI.
- TPS has initiated proposal for tree plantation at bund area.
- TPS has also constituted a committee for regular monitoring of Environmental compliance from Koradi TPS along with nearby village Sarpanch and NGO representative.

With these actions taken, Koradi TPS has initiated the steps to comply with Directions received from statutory bodies and decisions made during Koradi surveillance Committee meeting. Koradi TPS has initiated the steps for fulfilment of villager's requirements such as requirement for sapling for plantation at villages. TPS will distribute the plants to village representatives for plantation within upcoming days.

Wherein TPS is complying the Notifications, Directions and notices received from State pollution Control Board timely and also implements the plans accordingly for

Environment Protection and mitigating the Environmental norms. MPCB has issued the prosecution Notice to TPS which are suitably complied and replied by TPS within 7 days period. Koradi TPS is taking all out efforts to achieve 100% ash utilisation, TPS has also prepared the action plan to meet the utilisation targets. As of now, the new notification published by MoEF&CC on Dtd. 31.12.2021 and TPS has tried to address all conditions and thus as apprehension about fly ash pollution caused due to dumping of ash in pond.

TPS has completed various works before monsoon as a part of monsoon preparedness. Further, it is to state that TPS has prepared short term and long term action plan to avoid the recurrence of incidence. However, your suggestions and recommendations in this regards are also been considered in a welcome gesture for immediate and specific measures as early as possible. TPS has taken immediate steps as appended inclusive of suggestions raised by complainant Ms. Leena Bhudhhe, Founder & Director, Centre for sustainable Development, & Shripad Dharmadhikari, Manthan covered below to mitigate and resolve the influence due to tragic incidence.

- Villages namely Khasala, Mhasala, Kawatha, Khairi, Yerkheda etc are affected. As per the prima facie reports, at Mhasala (Toli) 13 houses families are affected due to overflooding. TPS has provided immediate help by distributing Grains, Beddings, School Books/bags, complete essential food kit was provided on priority. Minor effect in drinking water supply observed at Khairi village & Khasala, Mhasala some farms, roads, etc. Thereby this office have supplied water tankers to Khairi village for four days till restoration of existing source and as a precautionary measures water supply from well was kept out of service for two days. Electric motor pump and pipe line (Kawatha and Khairi) has been repaired affected Canal repairing has been initiated and correspondence regarding same is made with concerned department.
- Work carried out on priority basis at Khasara Railway bridge underground sloppy area like ash cleaning, lifting, and shifting at suitable place along with road patching work for smoothly moving of traffic. Deposited ash from roads, Nallah and canal has been removed and proposal for work of road repairing in nearby villages is initiated. Necessary action has been taken to arrest the fouling.
- Enquiry committee has been formed for fixing accountability for this incident & which is in force.
- Assessment of damages including impact on agricultural land & livelihood options etc has been done by respective department(Tahsildar Office, BDO Office) and Sub Divisional Magistrate, Mauda has released order (CRPC case 01/2022 133/2022 Mauja Khasara Dtd. 28.07.2022) for compensation to Distressed people/Farmer's to KTPS, Koradi. As per instructions of Hon. District Collector, Soil sample of farmer's agricultural land sent for Soil Testing.
- Compensation payment has been provided to 12 families of Mhasala Toli village Rs. 2,97,000 and 25 Nos. Distress farmer's family of Rs. 4,42,035/- and also compensation for loss of Buffalo has been paid as per SDM mauda order CRPC case 01/2022 133/2022 Mauja Khasara Dtd. 28.07.2022.

- Following long term plans have been prepared for restoration of ash bund.
  a)2nd Raising work Like Hearting,work have been completed.
  b)Survey of peripheral area of Ash Bund to maintain uniform accumulation of ash and diversion of ash disposal pipelines accordingly.
  c)Formation of Lagoons inside bund area
  d)Construction of WBM Road along the periphery of ash bund.
  e) Ash bund Management committee has been formed to keep check on ash bund activities.
- On Dtd.02/09/2022 Central Design Office, Dam safety organization, Nashik Government of Maharashtra Officials Visited /Inspected the Khasara Ash Bund and corrective measures/report will be submitted by them soon.
- There is regular meeting with surveillance committee to follow up environment related issues & demands with site visit.

Further KTPS Koradi also carried out following immediate actions for Restoration of breach portion of ash Bund is as follows:

- The balance portion of 100m where cut was created In D-E limb completed with quality checks.
- Permanent arrangement for draining excess water at Waste Weir has been done.
- Diversion of HCSD Pipeline no.3 for filling of ash in low laying area of Khasara ash bund weir.
- Provision of Additional dewatering Pumps along with DG set to maintain minimum level of water in Khasara ash bund.
- Restoration of Drain Well for draining of Ash Bund Clear Water is completed.
- Provision of Syphoning system to drain excess clear water from low water zone of ash bund.
- Repairing of Dyke Wall deep cut is completed.

It is pertinent to mention here that Koradi TPS is serving the nation since 1974, TPS is investing sufficient corpus for adopting best available technologies for pollution control and meeting the generation targets.. TPS has implemented CSR activities for community development, local residential revenue sources, facilities for education, medical facilities for better health of residents are provided. With this, it is requested to consider the efforts made by Koradi TPS with the holistic approach and enhance your cooperation in this regards.

Submitted for information.

Chief Engineer (O&M)
3x660MW, TPS, Koradi.

MAHARASHTRA STATE POWER GENERATION CO. LTD.
(Govt. of Maharashtra undertaking)
KORADI THERMAL POWER STATION, KORADI
O/o Chief Engineer (O&M), K.T.P.S.,Koradi, Dist. Nagpur, PIN – 441111
(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – [illegible] CIN: U40100MH2005SGC153648

Ref. No.: KTPS/3X660MW/CIVIL/ 0330 **Date** 21 MAY 2024

To,
Executive Chemist,
Chemical Division,
3x660MW,KTPS, Koradi.

Sub:- Provision of standard Operating Procedures. For green belt development at Koradi, TPS.

Ref:- 1) Y.O. Letter CE(O&M)/KTPS/660MW/Env.Cell./FL 220/90 Dt. 03.05.2024

With ref. to above subject, please find enclosed herewith SOP for Green Belt development at Koradi, TPS.

Submitted for your information please.

Encl:- 1) SOP for Green Belt Development.

Executive Engineer (Civil)
3x660MW, KTPS, Koradi

Copy s.w.rs. to:
1) Dy.Chief Engineer (O&M), 3x660MW, TPS, Koradi.
2) Superintending Engineer (Op), 3x660MW, KTPS, Koradi

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Email – cegenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

SOP FOR GREENBELT DEVELOPMENT AT KORADI TPS.

Introduction:

Development of Green Belt is an important practice and will be continue to be one of the main activities of the Company. The company has social obligation to recreate the environmental status by providing thick canopy cover to suppress fugitive emission and provide aesthetic beauty. Trees form important part of the biosphere in the Eco-system. The ecological belt maintains the natural balance of the area.

Objective

Greenbelt is a set of rows of trees planted such a way that they form an effective barrier between the plant and the surroundings. The main purpose of green belt development is to contribute to the following factors:

I. To attenuate noise levels generated from the plant;

II. To improve the aesthetics of the plant area;

III To trap the fugitive dust emissions;

IV To maintain ecological homeostasis;

V. To prevent soil erosion and to protect the natural vegetation; and

VI. Provision of wide green belt around the plant has been foreseen to reduce any adverse impacts on the surrounding population due to emissions from the proposed expansion activity. Plantation of grass, flowers, bushes and trees is/will be taken up to reduce generation of dust from bare earth and to enhance the aesthetic/scenic value.

Requirements for Green Belt:

The following characteristics have been taken into consideration while selecting plant species for green belt development and tree plantation.

I. They should be fast growing and tall trees.

II. They should be perennial and evergreen.

III. They should have thick canopy cover.

IV. The planting should be in appropriate alternate rows around the site to prevent lateral pollution dispersion.

V. The trees should maintain regional ecological balance and conform to soil and hydrological conditions. Indigenous species should be preferred.

Greenbelt Plantation at Plant Site

Due care is/will be taken to ensure that a green belt is developed around the plant area. Areas having low density vegetation will be systematically and scientifically afforested. Apart from the green belt and aesthetic plantations for fugitive emissions and noise control, all other massive plantation efforts will be executed with the assistance and co- operation of the local community. The plantations of any of the above or their combinations will be decided in consultation with the CSIR- National Environment Engineering Research, Nagpur Institute

Bamboo Plantations(Through CSIR-NEERI, Nagpur).

Eco-Rejuvenation Technology (ERT) developed by CSIR NEERI is an eco friendly and cost-effective technology for the development of sustainable bamboo biodiversity in degraded or contaminated areas. Recently, ERT gained significant attention in the research community due to its greener nature. Degraded land covering with vegetation is a striking approach which helpful in maintaining the surrounding environments hospitable for living well-being. Covering degraded/contaminated land via plantation can effectively immobilize the contaminants/pollutants, uphold moisture, protect wildlife, and simultaneously restore and remediate the affected land. The depletion of land resources, soil erosion, livestock, and biodiversity may arise naturally as well as anthropogenic if the vegetation cover is under threat. Also, a contaminated or deteriorated landscape is more prone to destroy its microhabitats and becomes inhospitable to existing macro and micro-communities. The restored and rejuvenated habitats allow both indigenous and exogenous and flora and fauna to propagate. Therefore, the implementation of ERT is the best possible and greener approach to restoring degraded/contaminated land and landscapes.

Guidelines for Green Belt Development

Following guidelines is/will be followed for the Green Belt Development in the plant area.

I. All the barren areas are/will be vegetated and the expected growth rate will be more than 70%.

II. Trees growing to a height of 5m or more are/will be planted.

III. Plantation of trees is/will be undertaken in and around the area in alternating rows to prevent horizontal pollution dispersion.

IV. Trees are/will be planted along roadsides, to arrest auto exhaust and noise pollution, and in such a way that there is no direct line of sight to the installation when viewed from a point outside the foliage perimeter.

V. In order to facilitate the proper growth of vegetation, limited measures involving preparation of seedbed with suitable amount of fertilizers and treatment with mulches are/will be taken.

Superintending Engineer(C),
TPS, Koradi.

ANNEXURE-9

1

Sent

BEFORE HON'BLE
NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE

ENTRY NO. 93
DATE: 22/7/2022

ORIGINAL APPLICATION NO. 62/2021

BETWEEN

Krishi Arogya & Vigyan Sanstha & Ors. ..... **Applicant**

VERSUS

Maharashtra State Power Generation Company Ltd. & Ors ..... **Respondents**

AFFIDAVIT BY RESPONDENT NO. 1 (MAHARASHTRA STATE POWER GENERATION COMPANY LTD., KORADI, NAGPUR)

GOVT. OF INDIA

INDEX ON NEXT PAGE

Date: 21/07/2022
Place: Pune
FILED BY:

Raghunath Mahabal High Court Mumbai ADVOCATE

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Advocate National Green Tribunal
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ENTERED IN DIARY
ENTRY NO. 93
DATE: 22/7/2021

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NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE

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mahabal60@gmail.com 7400116222 / 022-21631573

circumstances on the ground.

D. Decide and direct the additional environmental features to be provided.

E. Any other order as deemed fit.

AND for this act of kindness, as duty bound shall ever pray.

x

Place: Pune
Date: 04/06/2022

58.

AFFIDAVIT & VERIFICATION

I, Mr Abhay A. Harane , aged about 53 years, authorized signatory of Chief Engineer, the herein, do hereby verify that the contents of paras above are believed to be true and correct and that I have not suppressed any material fact.

Place: Pune
Date: 21/07/2022

Identified by & before me:

Mr Abhay A Harane

22nd July

22-7-2022

58

AFFIDAVIT & VERIFICATION

I, Mr Abhay A. Harane , aged about 53 years, authorized signatory of Chief Engineer, the herein, do hereby verify that the contents of paras above are believed to be true and correct and that I have not suppressed any material fact.

Place: Pune
Date: 21/07/2022

Identified by & before me:

NOTARY VANDANA B. PISE DIST. NAGPUR (M.S.) INDIA Regn. No. 15149 GOVT. OF INDIA

SOLEMNLY AFFIRMED BY Mr. Abhay A. Harane
WHO IS PERSONALLY KNOWN
TO BE IDENTIFIED BY SELF / ADV
BEFORE ME THIS 22nd
DAY OF July 2022
22-7-2022
VANDANA B. PISE
NOTARY
GOVT. OF INDIA

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ABBREVIATIONS USED

Short	Full-form
MAHAGENCO	Maharashtra State Power Generation Company
EC	Environmental Clearance
FGD	Flue Gas Desulphurization
MPCB	Maharashtra Pollution Control Board
CAC	Consent Appraisal Committee
CPCB	Central Pollution Control Board
MW	Megawatt
MT	Metric Tons
KTPS	Koradi Thermal Power Station
AAQ	Ambient Air Quality
PM	Particulate Matter
mW	Milliwatt
MoEFCC	Ministry of Environment, Forests and Climate Change
ToR	Terms of Reference
STP	Sewage Treatment Plant
ESP	Electrostatic Precipitator
TPS	Thermal Power Station
TDS	Total Dissolved Solids
ETP	Effluent Treatment Plant
GoI	Government of India
GoM	Government of Maharashtra
DFA	Dry Fly Ash
WCL	Western Coalfield Limited
PCB	Pollution Control Board
DPR	Detailed Project Report
EIA	Environment Impact Assessment
HDPE	High-Density Polyethene
LDPE	Low-Density Polyethylene
NMC	Nagpur Municipal Corporation
BG	Bank Guarantee

CONTACT DETAILS OF PARTIES

BETWEEN

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VERSUS

Respondents

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3. **THE STATE OF MAHARASHTRA**
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E-mail:

4. **MAHARASHTRA POLLUTION CONTROL BOARD**
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SYNOPSIS

1. The Applicant, Krishi Vigyan Arogya Sanstha & Ors., filed the present case before Hon'ble NGT on 11/09/2021 against the Maharashtra State Power Generation Company & Ors. (Koradi Thermal Power Station - KTPS), the Respondent no. 1 (henceforth called as a Respondent), in this case, alleging non-compliance of the conditions of EC dated 04/01/2010 and EC amendment dated 23/03/2017.

2. The specific allegations made by the Applicant against the Respondent, along with the brief reply of the Respondent are given below:

Sr.	Allegation	Reply from Respondent
A	It has shifted its permitted location about 3 km towards Nagpur City.	This is an Expansion project. The plant is constructed on already acquired land which is in the possession of MAHAGENCO and mentioned in the EC.
B	It has failed to install a Flue Gas Desulphurization unit, failing to maintain ambient air quality standards.	The tenderization process has been completed & LOA is put up for board approval. GoM has sought clarification and further concurrence from GoM is awaited. The minimum time required for installation of Wet Limestone FGD is about 26-30 months. Considering the present status & Lockdown situation due date of Dec. 2022 (As per MoEF & CC Notification Dated 31.03.2021) is not achievable. Meanwhile, a feasibility study for the supply of limestone quantity is required and a Feasibility study for Gypsum storage and

		transportation is in progress. Tentative period 30 months i.e., July-2024.
C	It has not complied with mandatory 100% fly ash utilization as statutorily required.	To increase the dry fly ash utilization, regular advertisements are published in various Newspapers and the tenders from various agencies are being processed. All three remote silos are available. In addition to this, a separate weighbridge is under construction, and KTPS is also exploring various prospective users of fly ash as well as backfilling of mines and Bulk transportation of Fly ash through railway wagons. TPS is taking continuous follow up with bulk users for enhancing the ash utilization. Now the proposal for the lifting of ash for two NHAI projects & filling of stone quarries is initiated.
D	It has been dumping fly ash into the bunds without any HDPE / LDPE lining, in violation of the statutory requirement.	The ash bund is live, the work of HDPE / LDPE lining cannot be taken up in hand, but all precautionary measures are taken, and no incidents of breaching of bund or overflow of ash water over bund are observed. Three drain wells are maintained inside the bund and water is recovered through a waste

		weir. The decanted water is being recycled and utilized again in the plant. The bund height is raised from 305.2 ML to 312.0 ML. TPS has recently carried out deepening and desilting of the left side ash bund toe drain and a proposal for the right-hand side toe drain is in process, only 15 days of work is pending. Similarly, the work of deepening of Nalah is up to Khairi village is in progress. As a precautionary measure, the arrangement of Stone filters after bund overflow and toe drain overflow is done. MAHAGENCO has requested MoEFCC to amend the said condition as the bund is live and lining work can't be taken up, however, the proposal for lining to Koradi bund has been initiated.
E	It has failed to utilize sewage water and is instead utilizing freshwater for its operations.	Freshwater from the Pench dam is lifted for preparing DM water and domestic water only as per agreement with WRD, GoM. Tertiary treated water from Bhandewadi STP (Both 130 & 190 MLD) is utilized for cooling, ash handling, firefighting and as service water. The plant is commissioned in 2017 and tertiary water is utilized since then.

F	It has failed to develop the green belt as specified in the EC.	Out of the total open land, 66.98 % area is under plantation. A total of 5,84,927 trees have been planted. Respondent has engaged NEERI in developing a Bamboo green belt. 40,000 trees to be planted in next 3 years around plant and bund area.

3. Respondent No. 4 in this case- MPCB also submitted its affidavit on 10/02/2022 which lists actions taken by MPCB against KTPS. The KTPS has already challenged the actions, mainly the assessment and forfeiture of BG of Rs. 25 lakhs considering the compliances made by the KTPS before the Hon'ble Appellate Authority which is still pending.

4. In light of the compliances made by KTPS and the actions taken, the Respondent requests this Hon'ble NGT to quash and set aside this Application.

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DIARY OF EVENTS

Date	Events
2010/01/04	Environmental Clearance granted to KTPS
2010/01/29	Consent to Establish granted for Units 8,9 and 10
2017/03/23	Environmental Clearance amended
2017/07/13	KTPS applied for renewal of Consent to Operate for two years i.e., from 1/09/2017 to 31/08/2019
2018/03/27	MPCB CAC Minutes of meeting
2019/06/17	MPCB renewed the Consent to Operate of the Respondent No. 1 from 17/06/2019 to 31/08/2019
2019/07/16	Respondent No. 1 applied for renewal of Consent to Operate for one year i.e., from 1/09/2019 to 31/08/2020
2020/05/04	MPCB CAC Minutes of meeting
2020/06/16	KTPS submit compliance status of 2nd CAC meeting of 2020-2021 held on 04.05.2020 on conditional grant of Consent to Operate to MPCB
2020/07/08	MPCB renewed the Consent to Operate of the Respondent No. 1 issued on 08/07/2020 valid upto 31/05/2021
2020/07/14	KTPS requested a letter to Joint Director (APC) MPCB to review forfeited BG and not to impose additional BG's.
2020/07/28	KTPS made a representation to the Member Secretary- MPCB, regarding the compliance of Consent to Operate conditions

2020/10/12	KTPS filed an appeal before the Hon'ble Appellate Authority.
2021/09/11	O.A. No. 62/2021 filed by the Applicant before NGT WZ Pune
2021/12/03	Show Cause Notice by MPCB
2021/12/08	Personal Hearing before MPCB
2021/12/15	MPCB forfeited the Bank Guarantee of Rs 25 lakhs out of 70 lakhs towards non-compliance consent conditions for JVS exceedance and not using coal with ash content less than 34%.
2022/01/24	Minutes of the meeting held to review utilization of legacy ash of MAHAGENCO Thermal Plant in abandoned mine/quarries/low lying area communicated to the Respondent
2022/01/27	Prosecution Notice by MPCB
2022/01/28	Respondent submitted Action Plan for utilization of legacy ash of TPS in abandoned mine/ quarries/low lying area
2022/02/01	Respondent submitted its reply to the prosecution notice.
2022/03/02	MPCB Directions u/s 31A of the Air (Prevention and Control of Pollution) Act 1981 and Fly Ash Notification.
2022/03/23	MPCB Directions u/s 31A of the Air (Prevention and Control of Pollution) Act 1981
2022/03/31	Respondent submitted Compliance report to the MPCB Notices dated 2022/03/02 and 2022/03/23

AFFIDAVIT BY MAHARASHTRA STATE POWER GENERATION COMPANY LTD (KORADI TPS) RESPONDENT NO. 1

MOST RESPECTFULLY SUBMITTED

1. I am Mr Abhay A. Harane, working as Chief Engineer with Respondent No. 1 Maharashtra State Power Generation Company Ltd. having its registered office at Prakashgad, 2nd Floor, Plot No. G-9, Bandra (East), Mumbai-400051. I know the facts and have the authority to file this affidavit, for and on behalf of the Respondent, which I hereby do, on solemn affirmation and oath.

2. **List of abbreviations used** is given at the beginning of the application.

3. Industry has been impleaded by the Applicant as a party to the Original Application No. 62/2021 as Respondent No.1. **Industry hereby prays to allow for the submission of this Affidavit, as otherwise so far, Respondent No.1 was not heard in the matter by this Hon'ble Tribunal.** This shall be by the provision of ***Section 19 (i)*** of the NGTA and also by the principles of natural justice.

FACTS IN BRIEF

4. The Kisan Manch Krishi Vigyan Arogya Sanstha

and Kisan Manch, the Applicants 1 & 2 in this Original Application No. 62/2021 are social and environmental groups working for the welfare of the farmers, and local communities and creating awareness of social and environmental issues. Applicant 3, Shri Pradyumna Sahasrabhojanee is a public-spirited person having deep concern and interest in the issues of the environment in Vidarbha, Maharashtra.

5. Whereas, Respondent No.1, Koradi Thermal Power Station of Maharashtra State Power Generation Co. Ltd. is one of the Coal Based Power Plants of Maharashtra State Power Generation Co. Ltd (MAHAGENCO). There are 3 Operational Units i.e., Unit No. 8, 9, and 10, having a total capacity of 1980 MW. The 3 × 660 MW Unit No. 8, 9 & 10 of KTPS is located at Koradi, Nagpur-441111.

6. The KTPS was granted Consent to Operate for units No. 8,9, and 10 by the MPCB vide letter dated **17/06/2019** which was valid up to **31/08/2019**. The KTPS applied for renewal of Consent to Operate on **16/07/2019** and MPCB has granted the same on **08/07/2020** valid till **31/08/2021**. **[Ax. F □]**

7. In the present Application, the Applicants have alleged non-compliance of EC conditions by KTPS and state that KTPS was granted EC **[Ax. A ●]** by

MoEF&CC for Units 8,9, and 10 on 04/01/2010 after which the units 8,9, and 10 started operations on 16/12/2015, 22/11/2016, and 17/01/2017 respectively. The EC was amended on 23/03/2017 **[Ax. D ●]**.

8. The Applicant further states that the KTPS violated the provisions of EC which are serious and pose a substantial question relating to the environment.

9. The allegations are wrongfully made as most of the EC conditions are fulfilled & the remaining few conditions are under completion stage for which concreate action plan is submitted to MOEF&CC. Therefore, there comes no question to grant the prayer made by the Applicant.

10. Through this affidavit KTPS wants to submit a reply to the allegation made in this application and the affidavit filed by Respondent No.4 i.e., MPCB.

POINTWISE REPLY TO ALLEGATIONS

11. Here is a pointwise reply to the allegation made by the applicant:

→ Allegation Page No. 156, Point No. 1

MAHAGENCO had shifted its permitted location about 3 kilometres toward highly populated Nagpur

city.

REPLY: It is contended that the geographical location of the plant has been shifted to Latitude 210 14' 9" N and Longitude 790 05' 37" E from 210 14' 20" N and 790 06' 56" E. By quoting the single geographical coordinates the shifting of location cannot be determined. This is an expansion project; the plant is constructed on already acquired land and under the possession of MAHAGENCO.

→ Allegation Page No. 156, Point No. 2

It has failed to install flue gas desulphurisation units thereby failing to maintain Ambient Air quality standards.

REPLY: The tenderization process has been completed; LOA put up for board approval. The minimum time required for installation of Wet Limestone FGD is about 26 to 30 months. Considering the impact caused over the last two years as a result of the pandemic and resultant lockdown situation, the due date of December 2022 (As per MoEF&CC Notification Dated 31/03/2021) is not achievable and a delay of a few months is estimated. The tenderization process has been

completed, GoM has sought clarification and further concurrence from GoM is awaited. Meanwhile, a feasibility study for the supply of limestone quantity is required and a Feasibility study for Gypsum storage and transportation is in progress. The tentative period for the completion of it is 30 months.

The detailed chronology for installation of FGD is as follows:

a) Open tender No. 45876 for installation of FGD system for Unit 10 of 3×660 MW Koradi TPS was published on 30/05/2017 and it was cancelled to get a very competitive price by comprising all the three units (Unit 8,9 & 10) for the tender.

b) Afterwards Open tender No. 81943 for installation of FGD system for 3×660 MW units was published on 01/03/2019. The price bid was opened on 27/07/2019. One of the bidders has objected to alterations in the price bid formats. After scrutiny of the price bids, it was observed that all the bidders had made alterations in price bid formats. After reviewing the alteration by bidders in price bid format, the price bid of all the bidders was not

considered for evaluation. Hence, the tender was cancelled.

c) Open Tender RFx 3000005995 for installation of FGD system for Koradi TPS, 3×660MW units was published on 25/09/2019. The price bid was opened on 19/11/20019. MERC accorded approval for the Capital Expenditure scheme (DPR) of the FGD system for units 8, 9 & 10 on 31/05/2020. After MERC approval the proposal was put up to the MSPGCL Board. Meanwhile, the Ministry of Finance (MOF), Department of Expenditure has issued an order on 23/07/2020, under "Restriction under rule-144(xi) of the general financial rule (GFRs) 2017" The Guidelines state that,

> *"Any bidders including consortium/ JV partner from a country which shares a land border with India will be eligible to bid only if the bidder is registered with competent authority".*

The guidelines further stated that if the tendering process has crossed the first exclusionary stage and the bidder is from any such country mentioned in the guidelines, the entire process shall be scrapped and initiated

De novo and the De novo process should adhere to the conditions prescribed in the order.

One of the bidders to the tender was a Chinese company not registered with competent authority as notified by GoI, MoF at the time of bidding. Resultantly, MSPGCL Board resolved to cancel the tender and floated a new tender incorporating all the guidelines issued by GoI. Hence, the tender RFx 3000005995 was cancelled.

d) Open Tender RFx 3000013388 for installation of FGD for Koradi 3×660 MW units, was published on 04/11/2020. The price bid of all qualified bidders was opened on 19/04/2021. A reverse auction of the tender was conducted on 18/05/2021. One of the bidders has raised objections over the reverse auction process. The matter is with GoM and MAHAGENCO is awaiting directives from GoM.

→ Allegation Page No. 156, Point No. 3

It has not complied with mandatory 100% Fly ash utilisation as statutorily required.

REPLY: Koradi Thermal Power Station's geographic location, is such that they are surrounded by several Government and private sector power plants such as Khaparkheda Thermal Power Station, Chandrapur Super Thermal Power Station, NTPC (Mauda), Dhariwal TPP (Chandrapur Dist.), GMR Energy Ltd. (Warora), Wardha Power Co. Ltd. (Warora), Adani Power Ltd. (Tiroda), Ratan India Power Ltd. (Amravati). These plants are providing ash free of cost to the users along with value-added services such as bearing part of transportation costs. Koradi TPS being near Nagpur City, various restrictions are imposed by the Traffic department on ash vehicle movements in peak hours to avoid traffic congestion in the city.

Also, one of the most important reasons for low ash utilization is the absence of major ash-based industries in the nearby vicinity of the Nagpur area like cement plant industries, which are bulk consumers of fly ash. As major cement industries are located far away from Koradi TPS, transportation of fly ash to the area of the cement plant industry becomes uneconomical considering the distance and toll charges. However, the ash utilization status of Koradi TPS is gradually improving per details shown in the table below:

Station Ash Utilization (210 MW and 660 MW):

Sr	Year	Coal Consumed (MT)	Ash Generation (MT)	Total Ash Utilization (MT)	Ash Utilization (%)
1.	2018-19	6402586	2643276	775245	29.32
2.	2019-20	7100389	2857170	1215895	42.56
3.	2020-21	6709392	2811456	2276198	80.96
4.	2021-22	8187436	2957939	2399743	81.12

Due to Corona Pandemic, during the Monsoon season, ash utilization reduced drastically. A lot of efforts are being taken to achieve the 100% ash utilization target. An action plan for 100% ash utilization is formulated and steps are taken to implement the same: -

Dry Fly Ash Utilization

To increase the dry fly ash utilization, as a promotional activity, regular advertisements are published in various Newspapers for agencies under 80% quota (i.e., cement, bricks, blocks, tiles manufacturing industries, processing industries,

grinding units, EPS wall panel manufacturing industries, road construction agencies, etc.) and 20% quota (SSI Units such as the brick manufacturer) for DFA lifting at free of cost from Koradi TPS, 3×660 MW, as below:

Sr	Date of Advertisement in Newspapers	Name of the Newspapers
1.	30/05/2018	Navbharat, Lokmat, Hitvada
2.	16/06/2018	Lokmat, Hitvada, Navbharat
3.	03/02/2020	Lokmat, Hitvada, Navbharat
4.	13/03/2020	Lokmat, Sakal, Hitvada
5.	29/12/2020	Matrubhumi, Dainik Bhaskar, Navbharat, Bhandara Patrika
6.	15/01/2021	Hitvada, Lokmat
7.	23/08/2021	Navbharat, Hitvada

In response to the above advertisement, sale orders for dry fly ash free of cost were issued to various agencies (Such as Brick Manufacturing, Ash users for road embankments, RMC units, and Cement manufacturing) under an 80% quota for lifting dry fly ash from silos provided at 3×660 MW KTPS, Koradi as below:

Sr.	Name of Agency	Order No./Date	Period	Quantity Allotted	Quantity Lifted (MT)

1.	M/s Ambuja Cement Ltd., Thane	1664/26.05.2018	1 Month	400 MT/d	1062
2.	M/s ACC Ltd. Thane	1662/26.05.2018	1 Month	400 MT/d	
3.	M/s N.C.C. limited, Hyderabad	1446/13.06.2020	9 Months	500-1000 MT/m	7002
4.	M/s Nagpur improvement trust, Nagpur	1388/05.06.2020	3 Months	15000 MT	133
5.	M/s Technology Resource Partner, Paras	1447/13.06.2020	Up to 31 March 2021	60 MT/d	1563
6.	M/s. RCCPL Butibori, Nagpur	1387/05.06.2020	Up to 30 June 2020	300-400 MT/d	102
7.	M/s N.C.C. limited, Hyderabad	888/31.03.2021	Up to 31 Aug 2021	1000 MT/m	10717
8.	M/s Technology Resource Partner, Paras	2304/18.08.2020	Up to 31 March 2023	5000 MT/m	4775
9.	M/s N.C.C. limited, Hyderabad	2294/18.08.2021	Up to 31 Aug 2023	1000 MT/m	8219
10.	M/s Orient cement Ltd., Jalgaon	2249/16.09.2019	One year	500 MT/d	18808
11.	M/s Orient cement Ltd., Jalgaon	2299/18.08.2020	Up to 31 March 2023	500 MT/d	
12.	M/s. RCCPL Butibori, Nagpur	1784/05.06.2021	Up to 31 Aug 2021	10000 MT/m	60664
13.	M/s. RCCPL Butibori, Nagpur	2298/18.08.2021	Up to 31 Aug 2023	10000 MT/m	
14.	M/s Skylon Projects (India) Pvt Ltd, Nashik	228/23.01.2021	Up to 31 Aug 2021	150000 MT/m	Not started lifting

15.	M/s Skylon Projects (India) Pvt Ltd., Nashik	2303/18.08.2021	Up to 31 Aug 2023	150000 MT/m	
16.	M/s Mahi Buildcon	2585/10.09.2021	Up to 31 Aug 2023	40000 MT/m	Not started lifting
17.	M/s Ismail Infratech	2806/06.10.2021	Up to 31 Aug 2023	2500-3000 MT/d	Not started lifting
18.	M/s Birla Corporation Ltd., Kolkata	NO.2297 Dated. 18.08.2021	Up to 31 Aug 2023	15000 MT/m	Not started lifting

The Sale Order under the 20% Quota (SSI Units such as the brick manufacturer) issued to various agencies are as below: -

Sr	Name of Agency	Order No./Date	Period	Quantity Allotted (MT/m)	Quantity Lifted (MT)
1.	M/s Irshad Enterprises, Mankapur, Nagpur	2255/21.09.2020	Up to 31.03.2021	1500	2114
2.	M/s Satyam Bricks	168/26.05.2018	1 Month	2000	NIL
3.	M/s Bhoyar Bricks	167/16.01.2021	Up to Jan-2024	500	1118
4.	M/s Royal Uniforce Roofing Pvt. Ltd., Chinwada	169/16.01.2021	Up to Jan-2024	2000	246
5.	M/s Gaurav	444/18.02.2021	Up to Feb-	3000	175

	Bricks manufacturer, Nagpur		2024		
6.	M/s Irshad Enterprises, Mankapur, Nagpur	534/23.02.2021	01.04.2021 to 31.03.2024	3000	2872

Tender (eT-71980) against 80% quota was floated for sale/disposal of dry fly ash from Koradi TPS, 3×660 MW for fifteen years. Award of contract against through e-tender was issued to M/s Dristti Structural Engineering Pvt. Ltd. for lifting 75 MT/d DFA lifting.

Pond Ash Utilization

a) Ash Dyke Raising: Pond ash from Khasara ash bund is utilized for ash dyke raising from November-2019 till April - 2022 and 19, 31,273 MT of pond ash is utilized for ash dyke raising of Khasara ash bund.

b) Koradi Ash Pond: For ash utilization from the Koradi ash pond of 210 MW following sale orders are issued Free of Cost with the site using charges:

Sr	Name of Agency	Order No./Date	Period	Quantity Lifted (MT)
1.	M/s MEP Infrastructure ltd	479/28.02.2019	From 14.02.2018 to 13.02.2019	21,570
2.	M/s Sai Engineering & Works	3032/28.12.2019	From 29.12.2019 to 28.12.2020	21,93,817
3.	M/s Shri Sai construction	1478/21.11.2020	From 29.12.2020 to 28.12.2021	8,93,154
4.	M/s Shri Sai construction	1748/09.12.2021	From 29.12.2021 to 28.12.2022	8,30,319
			Total	**39,38,860**

c) Khasara Ash Pond:

For ash utilization from Khasara Ash Pond of 3X660 MW following sale order is issued Free of Cost with the site using charges per day:

Sr	Name of	Order No./ Date	Period	Quantity

	Agency			Lifted (MT)
1.	M/s MEP Infrastructure Ltd.	292 /14.02.2018	From 14.02.2018 to 13.02.2019	21,570
2.	M/s Vidarbha Kumbhar Samiti Samaaj	244/08.02.2018	From 08.02.2018 to 07.02.2019	7,515
3.	M/s Singh Metal Works	2489/04.09.2021	From 04.09.2021 to 03.09.2022	4,85,035
			Total	**5,14,120**

Remote Silo

At present, three remote silos with a separate approach road are provided. Koradi TPS has also made temporary arrangements from HSCD Silo No. 1 for the disbursement of Dry fly ash to a quantity of 2000 MT/d.

Separate Weighbridge

Due to the increase in coal truck traffic, there is a long queue at the CHP weighbridge hence, for the weighing of ash vehicles the time required is more

than two hours, due to which some fly ash users are reluctant to lift fly ash from Koradi TPS. Hence separate weighbridge construction is in progress and is under the commissioning stage to reduce the time required for bulker movement.

Cluster

To promote fly ash utilization as per the MSPGCL & State Ash Utilisation Policy, Maharashtra Govt. accorded approval to set up a fly ash-based industry at 23 hectares of occupied land of KTPS. For the setup of the industrial fly ash-based cluster, the Govt. of Maharashtra issued a G.R. for changing the purpose of land vide G.R. LAND-2018/P.S.161/URJA-4 dated 10th July 2018.

Expression of Interest was published by MAHAGAMS for inviting prospective Fly ash-based industries to the proposed cluster.

In response officers of M/s Shree Cement Ltd. Beawar, Dist. Ajmer (Rajasthan) India visited Koradi TPS on 13/10/2020 & 14/10/2020 for the feasibility study for setting up of cement plant of capacity 2.5 million Metric Ton per year in the vicinity of the Koradi fly ash cluster area. Their

tentative requirement of ash is 3000 to 3500 MT/d. Agency shall also use pond ash whenever required.

In response to this, follow-up letters were given to M/s Shree Cement Ltd. (Ref No. KTPS/3×660 MW/ FAU/FL-60/2586 dated 10/09/2021 & KTPS/3×660 MW/ FAU/FL-60/605 dated 27/02/2021)

As per letter no.173 dated 14/10/2021 from Director (Mining), 8.17 Hector land from this industrial cluster is proposed to be allotted to NIT, Nagpur for establishing ash-based industries and for rehabilitation of unauthorized & displaced licensed holders of bricks manufacturers under NIT Mauja, Bharatwada & Punapur at proposed Industrial Cluster-I near Koradi ash-bund of Koradi Thermal Power Station.

A consultancy contract is awarded to M/s Pentacle Consultants Pvt. Ltd. for a feasibility study to determine the best option for an integrated cement plant/ cement clinker grinder unit/ cement blending unit in adjacent / on land available at Koradi TPS to improve fly ash utilization.

Correspondence with Fly Ash based User

Correspondence is done with various prospective users of fly ash such as NHAI, and MSRDC vide

letter no. 1949 dated 14.08.2020 & letter no. 1863 dated 26.07.2019, respectively for their ongoing road projects. Recently, a letter was sent to NHAI communicating the availability of fly ash vide No. 345 Dtd. 02.02.2022. Also, correspondence is done with cement companies such as:

a) M/s Dalmia Cements (Bharat) Ltd, Yadwad vide letter no. KTPS/CE(O&M)/DFA/2020-21/1805 dated 29.07.2020

b) M/s Dalmia Cement Works, Chandrapur vide letter no. KTPS/3×660 MW/FAU/2634 dated 15.09.2021 and

c) M/s Wonder Cement Ltd. vide mail dated 23.08.2021.

In addition to the above correspondence is done with various RMC units and Brick Manufacturers. Also, it is requested to M/s RCCPL go for a long-term contract agreement with MSPGCL, request letter sent with Ref No. KTPS/CE(O&M)/DFA/RCCPL/2020-21/1386 dated 05/06/2020, Koradi TPS for ensuring utilization as a major customer.

In response, M/s Birla Corporation Ltd. & M/s RCCPL Pvt. Ltd. (Subsidiary of Birla Corporation

Ltd.) officials visited KTPS, 3×660 MW to Lifting Fly Ash for their Cement plant which will be operational from the end of December -21 at Mukutban (Capacity 3.6 L MT/year), Taluka - Zari Jamani, District – Yavatmal & RCCPL (0.8 L MT/year) Butibori, Nagpur already operational. The requirement of Fly Ash 1,10,000 MT/m for Mukutban plant & 30,000 MT/m for Butibori Plant.

To maximize utilization a one-to-one correspondence has been made with fly ash-based brick manufacturers within the area of Nagpur region as prospective users, however, their daily consolidated requirement is not constant and is very low i.e., below 1% as compared to the generation of ash.

Back Filling of Mines

KTPS is exploring possibilities of the use of fly ash for backfilling of abandoned mines as per the MOEF guidelines by coordinating with WCL.

Officials of KTPS visited WCL Office on 13/07/2020 & 17/07/2020. The main concern of WCL is that most of the mines are situated near riverbanks namely Pench, Kanhan, and Wardha rivers, and hence cannot be given for ash filling as per environmental norms due to fear of river water

contamination. As per CPCB letter no. B-33014/07/2020/IPC-II/TPP/7704 dated 30/09/2020. CPCB forwarded a list of abandoned mines for backfilling purposes identified by Taskforce of MoP to state PCBs. Out of which 3 mines are of WCL situated in Maharashtra i.e., Talwasa OC, Dholwasa OC, Naveen Kunada OC. These mines are situated in the Chandrapur district and are not nearby Koradi TPS.

Recently, Correspondence with NHAI, MRIDC, and PMGSY, for Ash requirement for road construction projects is done. Stone quarries nearby Koradi TPS are identified and correspondence with the Stone quarry owner and District Mining Officer for backfilling/stowing of mine and stone quarry voids is done. Now, TPS Proposal is sent to HO for approval of loading, unloading & transportation of ash from Khasara Ash Pond to the stone quarry (M/s Pawanputra Buildcon Pvt). A meeting was conducted on 23/03/22 with Hon. District Collector, Nagpur regarding the issue of a closure certificate for abandoned stone quarries and for backfilling stone quarry voids with ash. As per the discussion in the meeting all present stone quarry owners are ready to submit requisite documents for obtaining a closure certificate & MPCB NOC. With this, the

TPS is in the process of identifying the possibilities for 100% ash utilization.

Bulk transportation of Fly ash through railway wagons

Feasibility survey carried out by M/s RITES. DPR for bulk transportation of fly ash by railway prepared by civil & proposal for same FSR, DPR & project management consultancy & construction of proposed BG railway siding & allied work for utilization of Fly ash at 3x660MW, TPS, Koradi. Sent to H.O. for Approval.

Also, a proposal was initiated for the Provision of a platform beside the railway siding line at the backside of the chord cabin for loading of fly ash in railway wagon for ash utilization at 3x660MW, TPS, Koradi & Work Order placed for by O/o CE(C)-III, MSPGCL, Mumbai.

Erection of platform along the railway track for loading of fly ash by loaders in open wagons are prepared by civil section and proposal for infrastructure development of railway line is submitted to HO for approval. Draft PO for Provision of Platform for ash utilisation besides the

railway shunting neck track near Koradi ash bund at 3x660 MW, TPS, Koradi is in progress.

100% Use of washed coal with less ash content is started from Nov-2021 and use of 10 % imported coal is also started.

Use of washed coal with less ash content

24 x 7 ash loading facility

KTPS is providing 24×7 hrs service for ash lifting vehicles for maximizing ash utilization.

Continuous efforts will be taken to achieve the target of dry fly ash utilization. **Ash utilisation Notification Dtd. 31.12.2021 [Ax. H ●]** wherein as per section A (5) **the applicability of notification shall be from 01/04/2022** and as per section B (3), it shall be obligatory on all mines located within 300 kilometres radius of a thermal power plant to undertake backfilling of ash in mine voids or mixing of ash with external overburden dumps under extended producer responsibility. The thermal power plant has to utilize 100 percent of ash generated during that year; however, in no case shall utilization fall below 80 percent in any year and the thermal power plant shall achieve average ash utilization of 100 percent in a **three-year cycle**. Considering this the TPS has a period

of three years from April 2022 to achieve the utilization target.

→ Allegation Page No. 156, Point No. 4

It has been dumping fly ash into the bunds without any HDPE/LDPE lining, in violation of the statutory requirement.

REPLY:

1. As mentioned in EIA Koradi TPS, 3×660 MW is using the already existing bund for ash disposal. No new bund has been constructed.

2. The ash bund was live when we started using it, hence, the work of HDPE/LDPE lining cannot be taken up in hand, but all precautionary measures are taken.

3. No breaching of bund or overflow of ash water over bund was observed.

4. To avoid the percolation of any leachates, the dyke walls of both the bunds are protected by carrying out stone pitching.

5. Also, efforts are taken to maintain uniform distribution of water. Three drain wells are

maintained inside the bund and water is recovered through a waste weir.

6. Waste weirs are constructed across the periphery of the ash bund to collect the supernatant water downstream for recycling and reuse.

7. **Accordingly, this office has requested MoEF&CC to amend the EC condition** for HDP lining to Khasara bund AND so also the condition of 'Consent to Operate via letter dated 16/02/2022 **[Ax. I ●]**. Whereas, TPS MAHAGENCO has initiated the proposal for HDP lining to Koradi Bund.

→ Allegation Page No. 156, Point No. 5

It has failed to utilize sewage water and is instead utilizing freshwater for its operations.

REPLY:

1. MAHAGENCO agreed with NMC for 30 years for utilization of provided sewage water and thereafter it is using treated sewage water for cooling purposes. The plant is commissioned in 2017 and tertiary water is utilized since that date. The operation and maintenance of the

Bhandewadi STP are being carried out by Koradi TPS, 3×660MW.

2. As per agreement Clause No. 2 'Quantity', sub-clause 'Supply' it is obligatory on part of NMC to provide a guarantee to MAHAGENCO for the availability of a minimum 110 MLD + 10% sewage at the proposed treatment plant. Also, as per Clause No. 22 A) 'Obligations of NMC', Subclause iv) 'NMC shall deliver to MAHAGENCO at the point-of-delivery the daily amount of sewage water'.

3. As per the clause, NMC is providing the sewage water to MAHAGENCO for further treatment. As per the agreement terms and conditions, Bhandewadi STP is in service and Koradi TPS is using the sewage water provided.

4. The monthly inlet quantity received at the raw sewage pumping station for the year 2020-21 is as follows:

Month	**Qty (MLD)**
April-2020	981.79
May-2020	1358.65
June-2020	1268.42
July-2020	1624.96
August-2020	1480.89

September-2020	2147.94
October-2020	2550.48
November-2020	1558.99
December-2020	1192.45
January-2021	1921.46
February-2021	1688.14
March-2021	1794.51
Total	**19568.68**

5. Similarly, MAHAGENCO has entered into a tri-party agreement with Nagpur Municipal Corporation and Nagpur wastewater Management Pvt. Ltd. for the supply of 90 MLD treated sewage water at Koradi TPS. Out of which approx. 50 MLD treated sewage water is daily received at Koradi TPS, 3×660MW.

   Koradi TPS is using freshwater from Pench dam as per agreement with WRD, GoM for preparing DM water and domestic water which is only 6-8% of the total water requirement of Koradi TPS, 3×660MW.

→ Allegation Page No. 156, Point No. 6

It has failed to develop the green belt as specified in the EC

REPLY:

1. During the construction of Units, Koradi TPS has taken massive tree plantations as a social obligation.

2. Available open land for plantation is 400.44 Hectares, and the total area covered under plantation is 270.40 Hectares. The percentage of area covered under plantations is 67.52 %. The total progressive no. of trees planted up to 31.03.2021 is 5,93,927.

3. Respondent has engaged M/s National Environmental Engineering Research Institute, Nagpur (NEERI) since February-2018 for the development of a Bamboo green belt for dust suppression at TPS premises using eco-rejuvenation technology. 3 tier plantations at Koradi TPS are not feasible as no land is acquired for TPS activities and the available land was having established structures at the place already.

4. 10,000 Nos. Tree plantation at ash bund area is proposed for compliance of EC condition of 3 tier tree plantation. 40,000 trees to be planted in next 3 years around plant area including bund.

12. The Respondent also submits that in addition to the above compliances, MAHAGENCO has also carried out various activities during the COVID Pandemic some of them are as follows:

i) In this context, it is also to inform that MAHAGENCO has carried out social activities during the period of the COVID Pandemic such as Koradi TPS has decided to help needy persons through local administration and handed over-contribution on 20/04/2020 of Rs. 6,18,835/- (Rs. Six Lakhs Eighteen Thousand Eight Hundred Thirty-Five Only) through cheque no. 781064 dated. 20/04/2020 to The Hon'ble Collector & District Magistrate, Nagpur to fight against COVID-19.

ii) MAHAGENCO had decided to contribute one day's salary for the COVID-19 pandemic to the CM relief fund, accordingly one day's salary of employees working at KTPS is deducted, and Rs. 26,38,617/- deposited in CM relief fund.

iii) The registered vendors association working with Koradi TPS had organized a blood donation camp on 14/04/2020 and 01/05/2020 during these camps about 80

nos. and 63 nos. of labourers donated blood respectively.

iv) Vendors Association also distributed 225 food Kit (to cater to around 15 days requirements), Soap & sanitisers to the needy within nearby residential areas.

v) Vendors Association also distributed daily approximately 100 meal kits from the first day of the first lockdown to needy persons in the vicinity of Koradi & Mahadulla village. Approximately 5000 nos. of kits were distributed.

vi) Moreover, some migrated labourers from Madhya Pradesh were stranded in the Koradi area. Koradi TPS had provided Bus arrangements for such labourers so that they can reach their native place in Madhya Pradesh.

13. Thus, in light of the above compliances, the allegations made by the Applicant do not stand true

REPLY TO AFFIDAVIT SUBMITTED BY RESPONDENT NO. 4 (MPCB)

14. The MPCB through its affidavit dated **09/11/2021** and additional affidavit dated **10/02/2022** has stated the various actions taken

against the KTPS for the alleged violations and the forfeiture of the BG of Rs 25 Lakhs via letter dated 15/12/2021 for JVS exceedance **[Ax. G ●]**. This action of the MPCB has been challenged by KTPS before the Appellate Authority as per the provision of statutory appeal and is still pending.

15. At this juncture, Respondent No. 1 humbly submits that these actions of MPCB too were taken without considering the compliances made by the KTPS and the facts on the ground.

16. Respondent No. 1 humbly submits that they were diligently doing the environmental monitoring through the third party, NABL Accredited, ISO 9001, 14001, 18001, IMS Certified, and MoEF&CC Recognized environmental laboratory at all times. Respondent No. 1 has been unscrupulously doing this monitoring all around the year, as per conditions of the 'Consent to Operate' and also as per CPCB / MoEF&CC Guidelines and requirements of 'Environmental Clearance'.

17. Moreso, the condition of using raw or blended, or beneficiated coal with ash content less than 34% was extracted from **Notification No. G.S.R 02(E) of MoEF&CC dated 02/01/2014 [Ax. C ●]**. However, this notification was replaced by a new revised **Notification of MoEF&CC S.O 1561 (E)**

dated 21/05/2020 [Ax. E ●]. As per this new notification, the use of coal by thermal power plants, without stipulation as regards ash content or distance, shall be permitted subject to the following conditions:

i) **Setting of technology solution for emission norms** which included compliance of specified emission norms of particulate matter, as per extant notification and instruction of CPCB issued from time to time.

ii) **Management of ash ponds** that mention Thermal Power Plants shall comply with conditions as notified in the fly ash notification issued from time to time, without being entitled to additional capacity of fly ash pond (for existing power generation capacity) on the ground of switching from washed coal to unwashed coal

iii) Appropriate technology solutions shall be applied to optimize water consumption for ash management.

iv) The segregation of ash may be done at the electrostatic precipitator stage, if required, based on site-specific conditions, to ensure maximum utilization of fly ash.

v) The thermal power plants to dispose of fly ash in abandoned or working mines (to be facilitated by mine owners) with environmental safeguards.

vi) **Coal transportation** may be undertaken by covered railway wagons and or covered conveyors beyond the mine area. However, till such time enabling rail transport/conveyor infrastructure is not available, road transportation may be undertaken in trucks, covered by tarpaulin or other means.

vii) It shall be ensured by thermal power plants that a rail siding facility or conveyor facility is set up at or near the power plant for transportation by rail or conveyor.

viii) If transportation by rail or conveyor facility is not available, ensure that the coal is transported out from the delivery point of the respective mine in covered trucks (by tarpaulin or other means) or any mechanized closed trucks, by road.

18. The notification further stated that:

"This shall also be deemed to be additional conditions of the relevant Environmental

Clearances for respective projects for the financial year 2020-21 and onwards. **The existing environmental clearances shall stand modified to make the above conditions operative for relevant sectors. The consent to operate shall be issued by respective state pollution control boards accordingly."**

Thus, the MPCB needed to take cognizance of this notification while renewing the KTPS's consent to operate. This would have avoided the further process of forfeiture of Bank Guarantee as to the earlier condition of using raw or blended or beneficiated coal with ash content less than 34% which was extracted from the notification of MoEFCC dated 02/01/2014 was superseded by the additional conditions mentioned in the notification dated 21/05/2020. Thus, the unreasonable conditions stipulated in the 2014 notification are substituted by the provisions of the 2020 MoEF&CC notification dated 21/05/2020 which states that:

"use of coal by thermal power plant without stipulations as regards ash contents or distance shall be permitted subject to compliance with conditions laid down in Notification No. S.O. 1561 (E) DT: 21/05/2020 of the MoEFCC."

19. In this context, Respondent No. 1 states that they are taking all the required efforts under the notification and therefore there is no reason to forfeit the bank guarantee of Rs. 25.0 lakhs towards non-compliance of consent conditions, for JVS exceedance & for not using the coal with ash content less than 34%.

20. Respondent No. 1 further submits that they have incurred huge expenses to install, maintain and run the pollution control equipment. For the year April 2021 to March 2022 total expenditure incurred by the Respondent No. 1 for ESP maintenance and procurements of its spare parts, bag filter maintenance at ash silo and ash handling, AMC for OCEMS, AMC for CEMS analyzers for remote calibration and online connectivity, AMC of knowledge lens software data transmission support of ETP/STP to CPCB/MPCB server and other environmental expenditure of Koradi TPS was **Rs 2329.28 Lakhs**. This indeed shows the commitment of Respondent No. 1 to comply and actively follow the pollution control norms.

21. Respondent No.1 humbly submits that this imposition of BG by the MPCB is also against the law stated by the Hon'ble NGT (SZ) in **CCL products (India) Ltd. vs. Andhra Pradesh Pollution**

Control Board where the Hon'ble NGT (SZ) interpreted the need to invoke BG even after the compliances are made by the PP. In this case, relying on the **State Pollution Control Board, Odisha represented by its Member-Secretary against M/S. Swastik Ispat Pvt Ltd and M/S. Patnaik Steel and Alloys Ltd.** and **Haryana State Pollution Control Board VS M/s. Haryana Organics, the** Hon'ble NGT (SZ) led down the legal position on the imposition of BG. It held that:

> *"1. Furnishing of Bank Guarantee by Project Proponent in favour of the Pollution Board as a security for due compliance is permissible.*
>
> *2.* Invocation of Bank Guarantee for noncompliance will not amount to penal but is only compensatory for environmental loss caused.
>
> *3.* The nature of the Bank Guarantee obtained from any industry for compliance is environmental norms and it stands only as a security for the said **compliance when once the compliance is carried out, the purpose of the bank guarantee is accomplished and there is no question of forfeiture.**
>
> *4.* Even in case of forfeiture, the same has

to be by due procedure contemplated under Water (Prevention and Control of Pollution) Rules 1975 which envisage opportunity of hearing."

The NGT further held that:

"Considering the purpose for which the Bank Guarantee was obtained from the appellant by the Board, which cannot be termed as commercial or contractual or industrial and it is only for due compliance of directions regarding environmental norms, before resorting to the extreme extent of invoking bank Guarantee, it is incumbent on the part of the Board to give proper notice or personal hearing since the principle of natural justice is inbuilt in any such legal proceedings. Invocation of Bank guarantee for due compliance of the directions given by the Board, certainly arises out of the legal obligation and not contractual and therefore, in our considered view ***before invoking the Bank Guarantee, due notice ought to have been given by the Board."***

22. Thus, considering this law, once the compliances are made by the industry, the purpose of the Bank Guarantee is treated as accomplished

and there is no question of forfeiture. Thus, the forfeiture of BG of Rs. 25 Lakhs is not only against the law laid down by this Hon'ble NGT but is arbitrary, unreasonable, and purely unnecessary, especially when the Respondent No. 1 is leaving no stone unturned in adopting all possible measures to strictly adhere to the existing pollution control norms & compliance thereof and should be set aside.

PRELIMINARY OBJECTIONS ON MAINTAINABILITY

23. Respondent No.1 has serious objections to the maintainability of this present application on the following grounds, without prejudice to each other. Respondent urges that the same should be first heard and decided before entertaining the application and/or before exercising the original jurisdiction under s.14, 15 by the following procedure as per s.17 and 18 of the Act.

24. The application to stand the test of maintainability must be within the period of the limitation stated in the act, and must fall under the original jurisdiction of the NGTA, i.e., action should violate the provisions of acts listed categorically in Schedule-I of the NGT A and fall under the definition of 'substantial question related to environment' u/s.2(m) which states"

2(m) "substantial question relating to environment" shall include an instance where, -

(i) "there is a direct violation of a specific statutory environment obligation by a person by which, —

(A) the community at large other than an individual or group of individuals is affected or likely to be affected by the environmental consequences; or

(B) the gravity of damage to the environment or property is substantial; or

(C) the damage to public health is broadly measurable;

(ii) the environmental consequences related to a specific activity or a point source of pollution:"

25. Respondent No.1 humbly submits that the allegations made by the Applicant are not based on the facts on the ground. If the compliances made by the KTPS are looked into, this application does not stand the test of s.2(m) of the NGT Act, 2010.

26. The application has mentioned many facts, which are not the causes giving rise to any *'substantial question related to the environment'*. This is categorically defined as u/s. 2(m) and is the precondition for invoking either of the s.14 or 15.

27. There is no *'substantial question related to the environment* when the KTPS carried out the expansion of its plant on the already acquired land and under the possession of MAHAGENCO or where it has initiated the installation of FDG which is stalled as a result of COVID 19 Pandemic and consequent lockdowns or when KTPS has taken adequate steps for disposal of fly ash voluntarily or when the KTPS is using STP's and repurposing the treated water or when it has ensured that total 67.52 % area is covered under plantations and total no. of trees planted up to 31/03/2021 is 5,93,927.

LIMITATION

28. Respondent No.1 states that the entire application and the causes stated in it are barred by limitation. The present application was filed by the Applicant on 11/09/2021 against non-compliance with the conditions of EC dated 04/01/2010 and 23/03/2017. The NGT Act, 2010 u/s 14 mentions that:

*"No application for adjudication of a dispute under this section shall be entertained by the Tribunal unless it is made within **six months** from the date on which the **cause of action first arose**"*

29. The phrase 'cause of action first arose' has been interpreted by this Hon'ble bench in multiple cases. In **Bijay Krishna Sarkar Ors. Vs. Inland Waterways Authority of India Ors.** (National Green Tribunal, Principal Bench, Original Application No. 03 Of 2015)

*"8. We are of the considered opinion that the cause of action in this application should have arisen when these **projects were first approved and executed, which the applicant admitted were much before and in some cases almost 25 years before**, the promulgation of the NGT Act in 2010. Moreover, under sub-Section 3 of Section 14 of the NGT 2010, it has been provided that no application for the adjudication shall be entertained by the Tribunal unless it is made within six months from the date on which the cause of action for such dispute first arose, in other words, the intention of the said act namely National Green Tribunal, 2010 is that the aggrieved person should promptly approach the Tribunal for its redressal. In that respect also it has been made clear that*

the Tribunal should be approached as soon as the cause of action first arose. In the instant case, the applicant has approached the tribunal after so many years whereas the fact regarding the construction of dams, barrages etc. had taken place at least 20-25 years ago and their intention is known to all including the applicant and, therefore, on this count also there is no reason for the Tribunal to entertain the applicant and grant any relief to the applicant."

30. Relying on this, the cause of action in this case first arose when the EC was granted to the KTPS i.e., on 04/01/2010, is way beyond the period of limitation. However, the Applicants have tricked this Hon'ble NGT to believe that the application is within the period of limitation by mentioning the date of amended EC which is 23/03/2017. Even if this date is considered to be the date of cause of action that first arose, the application has surpassed the period of limitation as well as the period permitted to condone the delay. The Applicant knowing this took the help of the umbrella principle of "recurring cause of action", with a false hope that somehow his application will get accepted. However, if one looks objectively, it will be clear that the Applicant has tried to create confusion as regards facts, cause of action, remedies, and prayers sought and has led the Hon'ble Tribunal astray by these incoherent details.

31. Respondent No.1 submits that the applicant has unnecessarily invoked the principle of the "recurring cause of action" only to take advantage of the limitation period. The principle of the "recurring cause of action" does not apply to this case as the grievance is not of continuing nature, especially in light of the compliances made by the KTPS.

PLURAL CAUSES PROHIBITED

32. Respondent No.1 states that the application is full of causes. The averments or the bundle of averments can't make one single cause. Moreover, the terminology and words used in NGTA are very clear. Rule 14 of the NGT Rules states that:

> *The National Green Tribunal (Practices and Procedure) Rules, 2011*
>
> *14. Plural remedies: - An application or appeal, as the case may be, shall be based upon a single cause of action and may seek one or more reliefs provided that they are consequential to one another.*

33. Thus, there is no provision to allow a bundle of facts as one single cause. Thus, the application can be considered only after the irrelevant portion is trimmed and only one single cause may be taken up for further adjudication.

34. Respondent states and submits that the combined reading, therefore, limits, trims, and curtails the ambit of the application, by the various categorical restrictions provided in the Act itself, that is:

a. There has to be a single cause of action.

b. which should give rise to 'substantial question related to the environment.

c. the application has to be filed within the period of limitation of **SIX months from the date of cause, that first arose.**

d. there can be one relief sought, OR even more, reliefs provided that they are consequential to each other.

e. obviously, the relief has to be to provide the relief, compensation, and restoration, from pollution/damage to the environment that has raised 'substantial question related to the environment.

f. the relief and compensation can be claimed under original jurisdiction within five years, in respect of the cause of action; but the restitution or restoration has to be claimed within six months only.

35. Respondent submits that therefore unless all these important preliminary objections are heard, deliberated, argued, and adjudicated, the application can't be admitted and adjudicated further by this Hon'ble Tribunal, without satisfying itself on the limitation, jurisdiction, and ambit of the multiple causes raised in the application.

PRAYERS

36. In light of the facts, and circumstances as stated hereinabove, Respondent prays that this Hon'ble Tribunal be pleased to:

A. Quash and set aside the Application in light of actions taken by the Respondent that in no way violate the terms of EC thus invalidating all the allegations made by the Applicant.

B. Hear and decide this matter in light of the preliminary objections raised, on the issue of maintainability, including but not limited to the points of the period of limitation, trimming the ambit of the plural cause of actions, and multiple causes raised in one single application.

C. Adjudicate the matter on merit on whether the Respondent had violated the environmental conditions in light of compliances made and the

circumstances on the ground.

D. Decide and direct the additional environmental features to be provided.

E. Any other order as deemed fit.

AND for this act of kindness, as duty bound shall ever pray.

×

Place: Pune
Date: 04/06/2022

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AFFIDAVIT & VERIFICATION

I, Mr Abhay A. Harane , aged about 53 years, authorized signatory of Chief Engineer, the herein, do hereby verify that the contents of paras above are believed to be true and correct and that I have not suppressed any material fact.

×

Place: Pune
Date: 21/07/2022

Identified by & before me:

5959

BEFORE THE HON'BLE NATIONAL GREEN TRIBNAL
WESTERN ZONE, PUNE

V A K A L A T N A M A

Original Application No. 62/2021 (WZ)

BETWEEN

Krishi Vigyan Arogya Sanstha & Ors. Applicant(s) ..... **Applicant**

VERSUS

Maharashtra State Power Generation Company Ltd. & Ors. ..... **Respondent/s**

We have appointed Advocate Raghunath Mahabal to represent us in the above matter and to submit any formal legal documents (Applications, Affidavit in Reply, Rejoinder, Interlocutory and Miscellaneous Applications) and sign as lawfully necessary, wherever required for and on our behalf.

R.B.Mahabal रघुनाथ भालचंद्र महाबळ
BE (Mechanical), ME (Industrial Management) VJTI-Mumbai, LLM (Mumbai)
Chartered Engineer, Fellow of Indian Institution of Engineers, IIE Arbitrator
ex-Govt. Environmental Laboratory Analyst, NABET Accredited EIA Consultant
ADVOCATE NATIONAL GREEN TRIBUNAL
Bombay High Court [Roll No.MAH/349/2012]
B - 202, Chandravijay Society, Opposite Bansuri Hotel,
Phule Road, Mulund East, Mumbai 400081, Maharashtra
mahabal60@gmail.com 7400116222 / 022-21631573

Date: 05/11/2021
Place: Mumbai

Raghunath Mahabal High Court Mumbai ADVOCATE

Accepted, ADVOCATE

Chief Engineer
3x660 MW Koradi (O & M)
MSPGCL, Koradi

RESPONDENT No. 1
Maharashtra State Power Generation Company Ltd.

Anx. A

60

BY SPEED POST

J-13012/87/2007-IA.II (T)
Government of India
Ministry of Environment & Forests

Telephone: 011-24368526
Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi-110 003
Dated: 4th January, 2010

To

M/s Maharashtra State Power Generation Co. Ltd.
Prakashgad, 3rd Floor, Plot No. G-9
Bandra (E)
Mumbai – 4000 51

Sub: 3x660 MW Expansion of Coal Based Power units at Koradi TPP in Nagpur District, in Maharashtra - reg. Environmental Clearance.

Sir,

The undersigned is directed to refer to letters dated 30.07.2009, 03.10.2009 and 01.12.2009 on the subject mentioned above. The Ministry of Environment & Forests has examined the application.

2. It has been noted that the proposal is for replacement of existing 4 units of 120 MW each by 1x660 MW unit and addition of 2x660 MW units. Additional fresh water will be required for this proposed expansion project will be met from the sewage collected by Nagpur Municipal Corporation after treatment. MoU with Nagpur Municipal Corporation is in place. No additional fresh water will be drwn, since only the allotted water from Pench River (through a canal) will be utilized. It is proposed to install a tri-flue stack of 275 m height. Coal requirement will be 30,638 TPD, which will be sourced from Machhakuta Coal fied in Orissa. Washed coal will be used for the project. Ash content of the coal will be 44.b5 % (maximum). Sulphur content will be 0.8 % (maximum). The slurry disposal method proposed will be based on high concentration slurry. NOC from AAI for 275 m stack height has been accorded. NOC from Gram Panchayat has also been obtained. Kolar river is at a distance of 1.0 km from the site. No R&R is involved. Proposed units will be installed with 99.9 % efficiency ESP. FGD with one unit of 660 MW will be installed initially and the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO_2. There are no national parks, wildlife sanctuaries, biosphere/elephant/tiger reserves, heritage sites etc within 10 km of the site. Public hearing was conducted on 25.03.2009. Cost of the project will be Rs. 11,880.0 Crores.

3. The project has been considered in accordance with the provisions of the EIA notification issued by the Ministry of Environment & Forests vide S.O. 1533 (E), dated September 14, 2006.

4. Based on the information submitted by you, as at Para 2 above and others, the Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA notification dated September 14, 2006, subject to the compliance of the following conditions.

T.C.

(i) FGD with one unit of 660 MW will be installed initially to begin with and the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO_2. Provision for installation for FGD in all units shall be made.

(ii) Hydro-geological study of the area shall be reviewed annually and results submitted to the Ministry and concerned agency in the State Govt. In case adverse impact on ground water quantity and quality is observed, immediate mitigating steps to contain any adverse impact on ground water shall be undertaken.

(iii) Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel/ Rivers even in lean season. It shall be ensured that natural drainage in the region is not disturbed due to activities associated with operation of the plant.

(iv) A Tri-Flue stacks of 275 m height each shall be provided with continuous online monitoring equipments for SOx, NOx and PM. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.

(v) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3.

(vi) Adequate dust extraction system such as cyclones/ bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.

(vii) Utilisation of 100% Fly Ash generated shall be made from 4th year of operation of the proposed expansion. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.

(viii) Fly ash shall be collected in dry form and storage facility (silos) shall be provided. 100% fly ash utilization shall be ensured from 4th year onwards. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry form. Mercury and other heavy metals (As,Hg, Cr, Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.

(ix) Ash pond shall be lined with HDP/LDP lining or any other suitable impermeable media suh that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.

(x) For disposal of Bottom Ash in abandoned mines (if proposed to be undertaken) it shall be ensured that the bottom and sides of the mined out areas are adequately lined with clay before Bottom Ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.

(xi) Closed cycle cooling system with natural draft cooling towers shall be provided. The Effluents shall be treated as per the prescribed norms.

(xii) The treated effluents conforming to the prescribed standards only shall be re-circulated and reused within the plant. There shall be no discharge outside the plant boundary except during monsoon. Arrangements shall be made that effluents and storm water do not do not get mixed.

A sewage treatment plant shall be provided and the treated sewage shall be used for greening & pond/lake/irrigation.

(xiv) Rainwater harvesting should be adopted. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology within a period of three months from the date of clearance and details shall be furnished.

(xv) Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.

(xvi) Storage facilities for auxiliary liquid fuel such as LDO and/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.

(xvii) Regular monitoring of ground water level shall be carried out by establishing a network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg,Cr,As,Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.

(xviii) Green Belt consisting of 3 tiers of plantations of native species around plant and at least 100 m width shall be raised. Wherever 100 m width is not feasible a 50 m width shall be raised and adequate justification shall be submitted to the Ministry. Tree density shall not less than 2500 per ha with survival rate not less than 70 %.

(xix) First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.

(xx) Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non noisy/less noisy areas.

(xxi) Regular monitoring of ground level concentration of SO_2, NOx, RSPM (PM_{10}& $PM_{2.5}$) and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.

(xxii) A good action plan for R&R (if applicable) with package for the project affected persons be submitted and implemented as per prevalent R&R policy within three months form the date of issue of this letter.

(xxiii) An amount of Rs 20.0 Crores shall be earmarked as one time capital cost for CSR programme. Subsequently a recurring expenditure of Rs 4.0 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to

be undertaken shall be submitted within one month along with road map for implementation.

(xxiv) As part of CSR programme the company shall conduct need based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self employment and jobs.

(xxv) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

(xxvi) The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in.

(xxvii) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.

(xxviii) A separate Environment Management Cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.

(xxix) The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely, RSPM (PM_{10} & $PM_{2.5}$), SO_2, NO_x (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.

(xxx) The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well by e- mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB.

(xxxi) The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.

(xxxii) The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of

Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of Environment and Forests.

(xxxiii) Regional Office of the Ministry of Environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up-date the same from time to time at least six monthly basis. **Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.**

(xxxiv) Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.

(xxxv) The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.

(xxxvi) Full cooperation shall be extended to the Scientists/Officers from the Ministry / Regional Office of the Ministry at Bangalore / CPCB/ SPCB who would be monitoring the compliance of environmental status.

4 The Ministry of Environment and Forests reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the Ministry. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.

5 **The environmental clearance accorded shall be valid for a period of 5 years to start operations by the power plant.**

6. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

7 In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition(s) imposed and to add additional environmental protection measures required, if any.

8 The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1989 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.

9. Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred, within 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.

(LALIT KAPUR)
DIRECTOR

Copy to:-

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary (Environment), Forests and Environment Department Government of Maharashtra.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, Maharashtra Pradesh State Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. Cine Planet, Sion Circle, Sion (E), Mumbai – 400 022
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
6. The Chief Conservator of Forests, Regional Office (WZ), E-5, Kendriya Paryavaran Bhawan, Arera Colony, Ravishankar Nagar, Bhopal - 462016.
7. The District Collector, Nagpur District, Govt. of Maharashtra.
8. The Director (EI), MOEF.
9. Guard file.
10. Monitoring file.

(LALIT KAPUR)
DIRECTOR

T.C.

Anx. B

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ANNEXURE 17

MAHARASHTRA POLLUTION CONTROL BOARD

ES

DA

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c. **Boiler Blow down:**

1)	Suspended Solids	Not to exceed	100	mg/l
2)	Oil & Grease	Not to exceed	20	mg/l
3)	Copper (Total)	Not to exceed	1	mg/l
4)	Iron (Total)	Not to exceed	1	mg/l

d. **Cooling Tower Blow down:**

1)	Free available Chlorine	Not to exceed	0.5	mg/l
2)	Zinc	Not to exceed	1	mg/l
3)	Copper (Total)	Not to exceed	0.2	mg/l
4)	Phosphate	Not to exceed	5	mg/l

e) **Ash Pond Effluent:**

1)	pH	Between 5.5 to 8		
2)	Suspended Solids	Not to exceed	100	mg/l
3)	Oil & Grease	Not to exceed	20	mg/l

f. **D.M. Plant Effluent.**

1)	PH	Between	5.5 to 9
2)	BOD 3 days 27 Deg. C	Not to exceed	30 mg/l
3)	C.O.D.	Not to exceed	250 mg/l
4)	Suspended Solids	Not to exceed	100 mg/l
5)	Oil & Grease	Not to exceed	10 mg/l
6)	TDS	Not to exceed	2100 mg/l

(iv) **Trade Effluent Disposal:** The treated effluent shall be maximum recycled/reused for dust suppression for cooling tower, sprinkling on road, ash handling etc. and remaining shall be used for over land for gardening.

(v) **Sewage Effluent Treatment:** The applicant shall provide comprehensive treatment system as is warranted with reference to influent quality and operate and maintain the same consecutively so as to achieve the quality of treated effluent to the following standards.

(1)	Suspended Solids	Not to exceed	100	mg/l
(2)	BOD 3 days 27 C	Not to exceed	100	mg/l

(vi) **Sewage Effluent Disposal:** The treated domestic effluent shall be used for gardening purpose. In no case, effluent shall find its way to any water body even during rainy season.

(vii) **Non-Hazardous Solid Wastes:**

Type of waste	Quantity	Treatment	Disposal
1) Fly Ash	5833 MT/D	---	Shall be sent to Cement Manufacturer & disposed as per Govt. of India Guidelines / Notification vide no. SO 763(E) dtd 14-09-1999
2) Bottom Ash & Waste Ash	2100 MT/D		

(viii) **Other conditions:**

a) The industry should monitor effluent quality regularly.

b) The firm shall provide continuous flow meter for the measurement of the flow of the effluent.

c) Industry shall adopt clean technology like recirculation for cooling water treatment.

d) Industry shall provide dry fly ash handling & collection system and utilize the fly ash as per the fly ash notification of the Govt. of India.

e) Transportation of coal & fly ash shall be by closed system. Conveyer system wherever possible.

f) Fly ash shall be 100% utilized within 5 years as per fly ash Notification vide No. SO 763(E) dtd 14-09-1999.

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3. The Applicant should make efforts to bring down noise level due to DG Set inside the premises with ambient noise level requirements by proper setting control measures.
4. Installation of DG Set must be strictly in compliance with recommendations of the manufacturer.
5. A proper routine and preventive maintenance procedure for DG Set shall be set and followed in consultation with the DG manufacturers which would help to vent noise levels of DG Sets from deteriorating with use.
6. The DG set shall be operated only in case of power failure. The operation shall not be interrupted for regular testing.
7. The Applicant shall not cause any nuisance in the surrounding area due to operation of DG set.
8. In case of problems, the DG set shall not be operated and it is to be set back to satisfactory position.

(VI) **Other Conditions:**

1. The coal handling system shall be covered with proper decking and exhaust arrangements are provided to limit coal dust so as not to allow any fugitive emissions.
2. A separate environment monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.
3. The cooling tower blowdown shall be discharged to evaporation pond.
4. The industry shall install three numbers of Automatic Ambient Air & Meteorological monitoring stations at locations specified by the State Pollution Control Board to be set up & operate at its own cost to measure SO_2, NO_x and particulate matter. These CAAQMS shall also have necessary provision of online transfer of data to MPCB. The air quality observed shall be displayed for public information at the factory gate through the specialized display Board.
5. The industry shall install online stack monitoring system for the prescribed parameter & provision to transfer the data on line to MPCB.
6. If due to any factor, change in provisions or circumstance this Board is of opinion that any of the conditions referred above require variation including the change of any control equipment either in whole or in part, this Board shall after giving the applicant an opportunity of being heard vary any of such conditions and thereupon the applicant shall be bound to comply with the conditions so varied.
7. The applicant shall provide open platforms and facilities such as ladder, platforms etc for monitoring the air emissions and the same shall be open for inspection round the use of the Board's staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2 etc. and these shall be painted / displayed to facilitate easier identification.
8. The industry shall have adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB(A) during day time and 70 dB(A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.

5. **CONDITIONS UNDER HW (M &H) RULES, 1989 & AMENDMENT RULES, 2003:**

(i) The applicant shall handle hazardous wastes as specified below:

Sr. No.	Item No. of Process generating waste as per Schedule-I	Type of Waste	Quantity	Disposal
1	5.1	Spent oil	75 KL/Y	Sale to MPCB/ CPCB authorized re-processor
2	5.2	Residue Oil	60 T/Y	
3		Used Batteries	60 Nos./Y	
4	34.3	ETP Sludge	500 T/Y	CHWTSDF

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12. This Board reserves the right to amend or add any conditions in this consent and the same shall be binding on the Applicant.

13. This Consent is issued pursuant to the decision of Consent Appraisal Committee meeting held on 07.03.2009

14. The capital investment of the said project is Rs. 132.54 Crores & the cost of project as per CA letter, proposed project is Rs. 132.54 Crores.

To,
M/s. Maharashtra State Power Generation Co. Ltd
Koradi Thermal Power Station at Koradi
Dist Nagpur

(Mahesh Pathak)
Member Secretary

Copy to
1) Regional Officer, MPC Board, Nagpur
2) Sub-Regional Officer, MPC Board, Nagpur
3) Chief Accounts Officer, MPC Board, Mumbai

Received Consent fee of -

Amount	D. D. No.	Date	Drawn on
Rs. 42[illegible]	052371	28.01.2009	Bank of Maharashtra
Rs. [illegible]	[illegible]	[illegible]	Bank of Maharashtra

4) Secretary, MPC Board, Mumbai 5) Master file

T.C.

Anx. C 72

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
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पर्यावरण और वन मंत्रालय

अधिसूचना

नई दिल्ली, 2 जनवरी, 2014

सा.का.नि. 02(अ).—केन्द्रीय सरकार ने, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के साथ पठित पर्यावरण संरक्षण अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (2) और धारा 25 का प्रयोग करते हुए, पर्यावरण (संरक्षण) नियम, 1986 का और संशोधन करने के लिए भारत के राजपत्र, असाधारण में सं. सा.का.नि. 552(अ), तारीख 11 जुलाई, 2012 द्वारा सभी व्यक्तियों तथा संगठनों की जानकारी के लिए जिनके उनसे प्रभावित होने की संभावना थी, प्रारूप नियम प्रकाशित किए थे और यह सूचना दी थी कि उक्त प्रारूप नियमों पर उस तारीख से जिसको राजपत्र की प्रतियां, जिसमें सूचना प्रकाशित की जाती है, जनता को उपलब्ध करा दी जाती हैं, साठ दिनों की अवधि की समाप्ति के पश्चात् विचार किया जाएगा;

और जनता को उक्त राजपत्र की प्रतियां 31 जुलाई, 2012 को उपलब्ध करा दी गई थी;

और केन्द्रीय सरकार द्वारा उपर वर्णित प्रारूप नियमों पर प्राप्त सुझावों या आक्षेपों पर सम्यक्तः विचार किया गया है;

अतः अब केन्द्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के साथ पठित पर्यावरण संरक्षण अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (2), धारा 6 और धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, पर्यावरण (संरक्षण) नियम, 1986 का और संशोधन करने के लिए निम्नलिखित नियम बनाती है, अर्थात् :—

1. (1) इन नियमों का संक्षिप्त नाम पर्यावरण (संरक्षण) संशोधन नियम, 2014 है ।

(2) ये राजपत्र में प्रकाशन की तारीख को प्रवृत्त होंगे ।

2. पर्यावरण (संरक्षण) अधिनियम, 1986 में, नियम 3 के उप-नियम (8) के स्थान पर निम्नलिखित उप-नियम रखा जाएगा, अर्थात् :—

T.C.

"(8) इसमें नीचे विनिर्दिष्ट तारीख से निम्नलिखित कोयला आधारित ताप ऊर्जा संयंत्र त्रैमासिक औसत आधार पर कच्चा अथवा मिश्रित अथवा सज्जीकृत कोयले का जिसमें भष्म अंतर्वस्तु 34% से अनधिक हो, उपयोग करेंगे, अर्थात् : —

(क) एकल ताप विद्युत संयंत्र (किसी भी क्षमता का) या 100 मेगावाट या अधिक प्रतिष्ठापित क्षमता का या उससे अधिक क्षमता का प्रतिष्ठापित कैप्टिव ताप विद्युत संयंत्र जो गर्तमुख से 1000 किलोमीटर से अधिक दूरी पर या किसी शहरी क्षेत्र या किसी पारिस्थितिकीय रूप से संवेदनशील क्षेत्र में या गंभीर रूप से प्रदूषित औद्योगिक क्षेत्र में अवस्थित है, गर्तमुख से उसकी दूरी पर ध्यान दिए बिना सिवाय किसी गर्तमुख विद्युत संयंत्र के, तुरंत प्रभाव से,;

(ख) एकल ताप विद्युत संयंत्र (किसी भी क्षमता का) या 100 मेगावाट या उससे अधिक प्रतिष्ठापित क्षमता का कैप्टिव ताप विद्युत संयंत्र जो गर्तमुख से 750-1000 किलोमीटर के बीच की दूरी पर अवस्थित है, 1 जनवरी, 2015 से;

(ग) एकल ताप ऊर्जा संयंत्र (किसी भी क्षमता का) या 100 मेगावाट या उससे अधिक प्रतिष्ठापित क्षमता का कैप्टिव ताप विद्युत संयंत्र जो गर्तमुख से 500-749 किलोमीटर के बीच की दूरी पर अवस्थित है, 5 जून, 2016 से;

परंतु यह कि ऐसे किसी ताप ऊर्जा संयंत्र के संबंध में, जो परिसंचारी तरल-तर दहन या वायुमंडलीय तरल-तर दहन या संपीड़ित द्रवित तरल-तर दहन या समाकलित गैसीकरण संयुक्त आवर्तन चक्र प्रौद्योगिकियों का या ऐसी कोई स्वच्छ प्रौद्योगिकियों का, जो केन्द्रीय सरकार द्वारा राजपत्र में अधिसूचित की जाएं, प्रयोग कर रहा है, खंड (क), (ख) और (ग) लागू नहीं होंगे ।

स्पष्टीकरण : — इस नियम के प्रयोजन के लिए, —

(i) 'सज्जीकृत कोयला' से ऐसा कोयला अभिप्रेत है जिसमें उच्चतर कैलोरी मान अंतर्विष्ट है किंतु भौतिक पृथक्करण या धोवन प्रक्रिया के माध्यम से अभिप्राप्त कच्चे कोयले में अंतर्विष्ट मूल भष्म से निम्नतर भष्म अंतर्विष्ट है;

(ii) 'कैप्टिव ताप ऊर्जा संयंत्र' से ऐसा ताप ऊर्जा संयंत्र अभिप्रेत है जो किसी उद्योग द्वारा उसके अनन्य उपयोग के लिए विद्युत सृजन के लिए स्थापित किया गया है;

(iii) 'अत्यधिक प्रदूषित औद्योगिक क्षेत्र' से ऐसा औद्योगिक समूह या क्षेत्र अभिप्रेत है, जहां प्रदूषण गंभीर स्तर पर पहुंच चुका है या पहुंच जाने की संभावना है और जिसकी केन्द्रीय सरकार या राज्य सरकार या केन्द्रीय प्रदूषण नियंत्रण बोर्ड या राज्य प्रदूषण नियंत्रण बोर्ड द्वारा ऐसे क्षेत्र के रूप में पहचान की जा चुकी है;

(iv) 'पारिस्थितिकीय रूप से संवेदनशील क्षेत्र' से, ऐसा क्षेत्र अभिप्रेत है, जहां पारिस्थितिकीय संतुलन आसानी से विक्षुब्ध होने की संभावना है और जिसकी केन्द्रीय सरकार द्वारा पहचान की गई है और उसे अधिसूचित किया गया है;

(v) 'प्रतिष्ठापित क्षमता' की संगणना किसी सीमा के भीतर सभी इकाईयों की व्यष्टिक क्षमता को जोड़कर की जाएगी;

(vi) 'गर्तमुख विद्युत संयंत्र' से कोई केपटिव या एकल विद्युत केन्द्र अभिप्रेत है जिसका खनन क्षेत्र से लदाई बिन्दु तक विद्युत केन्द्र में सामान्य लोक परिवहन प्रणाली का उपयोग किए बिना विद्युत केन्द्र में कोयले के परिवहन के लिए उसके अनन्य उपयोग के लिए केपटिव परिवहन प्रणाली है;

(vii) 'एकल ताप विद्युत संयंत्र' से ऐसा विद्युत संयंत्र अभिप्रेत है जिसकी स्थापना विद्युत ग्रिड में विद्युत आपूर्ति के लिए विद्युत के सृजन के लिए या उन अवस्थानों पर जिन्हें विद्युत वितरण प्रणाली के साथ सुसज्जित नहीं किया गया है, विद्युत आपूर्ति के लिए की गई है; और

(viii) 'शहरी क्षेत्र' से ऐसे शहर की क्षेत्र सीमा अभिप्रेत जिसकी जनसंख्या नवीनतम जनगणना के अनुसार दस लाख से अधिक हो ।"।

[फा. सं. क्यू-15017/11/2011-सी.पी.डब्ल्यू.]

सुशील कुमार, अपर सचिव

टिप्पण.—मूल नियम भारत के राजपत्र में सं. का. आ. 844(अ), तारीख 19 नवम्बर, 1986 द्वारा प्रकाशित किए गए थे और पश्चात्वर्ती संशोधन सं. का.आ. 82(अ), तारीख 16 फरवरी, 1987; का.आ. 64(अ), तारीख 18 जनवरी, 1988;

सा.का.नि., 931(अ), तारीख 27 अक्तूबर, 1989; का.आ. 23 (अ), तारीख 16 जनवरी, 1991; सा.का.नि. 95(अ), तारीख 12 फरवरी, 1992; सा.का.नि. 329(अ), तारीख 13 मार्च, 1992; सा.का.नि. 562(अ), तारीख 27 मई, 1992; सा.का. नि. 884(अ), तारीख 20 नवम्बर 1992; सा.का.नि. 386(अ), तारीख 22 अप्रैल, 1993; सा.का.नि. 422(अ), तारीख 19 मई, 1993; सा.का.नि. 801(अ), तारीख 31 दिसंबर, 1993; सा.का.नि. 320(अ), तारीख 16 मार्च, 1994; सा.का.नि. 560(अ), तारीख 19 सितंबर, 1997; सा.का.नि. 378(अ), तारीख 30 जून, 1998; सा.का.नि. 07(अ), तारीख 22 दिसंबर, 1998; सा.का.नि. 407(अ), तारीख 31 मई, 2001; और सा.का.नि. 826(अ), तारीख 16 नवंबर, 2009 और सा.का.नि. 513(अ), तारीख 28 जून, 2012 द्वारा किए गए ।

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 2nd January, 2014

G.S.R. 02(E).—Whereas the Central Government had, in exercise of its powers under sub-section (2) of Section 3 and Section 25 of the Environment (Protection) Act, 1986 (29 of 1986), read with rule 5 of the Environment (Protection) Rules, 1986, published draft rules further to amend the Environment (Protection) Rules, 1986, in the Gazette of India, Extraordinary, *vide* number G.S.R. 552(E), dated 11th July, 2012 for information of all persons and organizations likely to be affected thereby, and notice was given that the said draft rules would be taken into consideration by the Central Government on or after the expiry of a period of sixty days from the date on which copies of the Gazette containing this notification are made available to the public;

And whereas, the copies of the said Gazette notification were made available to the public on the 31st July, 2012;

And whereas, the suggestions or objections received in response to the above mentioned draft rules have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by Section 3, Section 6 and Section 25 of the Environment (Protection) Act, 1986 (29 of 1986) read with rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely :—

1. (1) These rules may be called the Environment (Protection) Amendment Rules, 2014.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986, in rule 3, for sub-rule (8), the following sub-rule shall be substituted, namely :—

"(8) With effect from the date specified hereunder, the following coal based thermal power plants shall be supplied with, and shall use, raw or blended or beneficiated coal with ash content not exceeding thirty-four per cent, on quarterly average basis, namely :—

(a) a stand-alone thermal power plant (of any capacity), or a captive thermal power plant of installed capacity of 100 MW or above, located beyond 1000 kilometres from the pit-head or, in an urban area or an ecologically sensitive area or a critically polluted industrial area, irrespective of its distance from the pit-head, except a pit-head power plant, with immediate effect;

(b) a stand-alone thermal power plant (of any capacity), or a captive thermal power plant of installed capacity of 100 MW or above, located between 750 – 1000 kilometres from the pit-head, with effect from the 1st day of January, 2015;

(c) a stand-alone thermal power plant (of any capacity), or a captive thermal power plant of installed capacity of 100 MW or above, located between 500-749 kilometres from the pit-head, with effect from the 5th day of June, 2016:

Provided that in respect of a thermal power plant using Circulating Fluidised Bed Combustion or Atmosphere Fluidised Bed Combustion or Pressurized Fluidised Bed Combustion or Integrated Gasification Combined Cycle technologies or any other clean technologies as may be notified by the Central Government in the Official Gazette, the provisions of clauses (a), (b) and (c) shall not be applicable.

Explanation: For the purpose of this rule,—

(i) 'beneficiated coal' means coal containing higher calorific value but lower ash than the original ash content in the raw coal obtained through physical separation or washing process;

(ii) 'captive thermal power plant' means a power plant which is set up by an industry to generate electricity for its exclusive use;

(iii) 'critically polluted industrial area' means an industrial cluster or area where pollution levels have reached or likely to reach critical level, and has been identified as such by the Central Government or the State Government or the Central Pollution Control Board or a State Pollution Control Board;

(iv) 'ecologically sensitive area' means an area whose ecological balance is prone to be easily disturbed and has been identified and notified by the Central Government;

(v) 'installed capacity' shall be calculated by adding, individual capacity of all units within a boundary;

(vi) 'pit-head power plant' means any captive or stand-alone power station having captive transportation system for its exclusive use for transportation of coal from the loading point at the mining end, up to the uploading point at the power station without using the normal public transportation system;

(vii) 'stand-alone thermal power plant' means a power plant which is set up to generate electricity for feeding to electricity grid or for locations that are not fitted with an electricity distribution system; and

(viii) 'urban area' means an area limit of a city having a population of more than one million according to the last census. ".

[F. No. Q-15017/11/2011-CPW]

SUSHEEL KUMAR, Addl. Secy.

Note:—The Principal rules were published in the Gazette of India *vide* number S.O. 844(E), dated the 19th November, 1986 and subsequently amended *vide* numbers S.O. 82(E), dated 16th February, 1987; S.O. 64(E), dated 18th January, 1988; G.S.R. 931(E), dated 27th October, 1989; S.O. 23(E), dated 16th January, 1991; G.S.R. 95(E), dated 12th February, 1992; G.S.R. 329(E), dated 13th March, 1992; G.S.R. 562(E), dated 27th May, 1992; G.S.R. 884(E), dated 20th November, 1992; G.S.R. 386(E), dated 22nd April, 1993; G.S.R. 422(E), dated 19th May, 1993; G.S.R. 801(E), dated 31st December, 1993; G.S.R. 320(E), dated 16th March, 1994; G.S.R. 560(E), dated 19th September, 1997; G.S.R. 378(E), dated 30th June, 1998; G.S.R. 7(E), dated 22nd December, 1998; G.S.R. 407(E), dated 31st May, 2001; G.S.R. 826(E), dated 16th November, 2009 and G.S.R. 513(E), dated 28th June, 2012.

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T.C.

Anx. D

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No. J-13012/87/2007-IA.II (T)
Government of India
Ministry of Environment, Forests and Climate Change

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan, Jor Bagh Road,
Aliganj, New Delhi-110003

Dated: 23.03.2017

To

M/s Maharashtra State Power Generation Co. Ltd.
(Formerly known as M.S.E.B)
Corporate Environment Health & Safety Unit
HDIL Towers, "A" Wing, 3rd Floor,
Prof. A.K. Marg,
Bandra (E), Mumbai- 400 051

Ph: 022-26583421/26584225; Fax: 022-26477273

Sub: 3x660 MW Expansion of coal based power units at Koradi TPP, Distt. Nagpur, Maharashtra by M/s. Maharashtra State Power Generation Company Ltd.- reg. amendment of EC.

Sir,

This has reference to your letters dated 20.08.2016 on the above subject. It is noted that EC was accorded for the above project on 04.01.2010. Subsequently, the validity of the EC has been extended till 30.06.2016 on 27.03.2015.

2. The matter was placed before the Re-constituted EAC (Thermal Power) in its 1st Meeting held 28.12.2016. In acceptance of the recommendation of the EAC and in view of the information/clarification furnished by you with respect to implementation of the above mentioned power project, EAC recommended for the amendment of the Environmental Clearance with respect to installation of FGD and change in coal source. The Ministry accepts the recommendations of the EAC and hereby amends the following conditions of the said Environmental Clearance.

i. Specific condition 4(i) to be amended as *"Ministry's Notification SO 3305(E) E(P) Amendment Rules, 2015 dated 07.12.2015 regarding revised emission standards for PM, SO2, NO2 and Hg shall be complied with and the same shall be achieved within two years from the date of publication of the notification for all Units-8, 9 & 10 (3x660 MW) i.e. on or before 07.12.2017."*

ii. Change in coal source from Machhakuta Coal Mines to Gare Palma Coal Sector II Block, Mand Raigarh Coalfields, Raigarh District, Chhattisgarh is permitted.

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iii. Ministry's notification no.GSR 02(E) dated 02.01.2014 regarding supply of raw or blended or beneficiated coal with ash not exceeding thirty-four percent shall be implemented, as applicable.

iv. The compliance of EC conditions shall be reviewed on quarterly basis. In this regard, a compliance mechanism shall be set up through Plant Head who is responsible for implementing the conditions stipulated in the Environmental Clearance, non-compliances and violations. Budget to implement various environmental pollution control measures as proposed in the EMP shall be kept in a separate account and shall not be diverted for any other purposes. Compliance reports shall be uploaded on company's website.

4. All other conditions mentioned in this Ministry's letter of even no. dated 04.01.2010 and 27.03.2015 shall remain the same, as applicable.

This issues with the approval of the Competent Authority.

Yours faithfully,

(Dr. S. Kerketta)
Director

Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Secretary, Department of Environment, Govt. of Maharashtra.
3. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
4. The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3rd & 4th Floors, Sion Matunga Scheme Road No. 6, Opp. cine Planet, Sion Circle, Sion (E), Mumbai – 400 022.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
6. The Addl. Principal Chief Conservator of Forests (C), Ministry of Env., Forest and Climate Change, Regional Office (WCZ), Ground Floor, East Wing, New Secretariat Building, Civil Lines, Nagpur- 440001.
7. The District Collector, Nagpur District, Maharashtra.
8. Guard file.

(Dr. S. Kerketta)
Director

T.C.

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Anx. E

रजिस्ट्री सं. डी.एल.- 33004/99

REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 21 मई, 2020

का.आ. 1561(अ).—जबकि केन्द्रीय सरकार ने पर्यावरण (संरक्षण) नियमावली, 1986 के नियम 5 के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3, धारा 6 और धारा 25 के तहत अपनी शक्तियों का प्रयोग करते हुए, ऐश सामग्री (ऐश कंटेंट) को 34% तक की सीमा सहित कोयले का उपयोग करने के लिए ताप विद्युत संयंत्रों की कतिपय श्रेणियों को अधिदेशित करते हुए भारत के राजपत्र, असाधारण में सा.का.नि. 02 (अ), तारीख 2 जनवरी, 2014 द्वारा पर्यावरण (संरक्षण) नियमावली, 1986 के नियम 3 के उपनियम 8 का संशोधन प्रकाशित किया।

और जबकि सा.का.नि. 02 (अ), तारीख 2 जनवरी, 2014 द्वारा उक्त अधिसूचना द्वारा निम्नलिखित समय-सीमा तक कच्चे अथवा मिश्रित अथवा लाभकारी कोयले (बेनिफिसिएटिड कोल), जिसमें ऐश सामग्री चौंतीस प्रतिशत (34%) से अधिक ना हो, का उपयोग करने के लिए त्रैमासिक आधार पर कोयला आधारित ताप विद्युत संयंत्रों को अधिदेशित किया गया है :

क्रम सं.	विद्युत संयंत्र की श्रेणी	गर्तमुख(पिट-हैड)/कोयला खान से ताप विद्युत संयंत्र के अवस्थान की दूरी	समय-सीमा
(क)	एकल ताप विद्युत संयंत्र (किसी भी क्षमता के) और कैप्टिव ताप विद्युत संयंत्र (100 मेगावाट और अधिक क्षमता सहित)	गर्तमुख विद्युत संयंत्रों को छोड़कर गर्तमुख से दूरी पर ध्यान दिए बिना शहरी क्षेत्रों,या परिस्थितिकीय रूप से संवेदनशील क्षेत्रों या अत्यधिक प्रदूषित क्षेत्रों में अवस्थित	2 जून, 2014 से प्रभावी।
(ख)		1000 किमी से अधिक दूर	2 जून, 2014 से प्रभावी।
(ग)		750-1000 किमी के बीच	1 जनवरी, 2015 से प्रभावी।
(घ)		500-749 किमी के बीच	5 जून, 2016 से प्रभावी।

और जबकि, केंद्रीय सरकार ने पर्यावरण (संरक्षण) नियमावली के नियम 5 के उप-नियम (3) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 6 और धारा 25 के अधीन अपनी शक्तियों का प्रयोग करते हुए भारत के राजपत्र, असाधारण में स.का.आ. 3305 (अ), तारीख 7 दिसंबर, 2015 और सा.का.नि.593 (अ), तारीख 28 जून, 2018 द्वारा विद्युत उत्पादन की क्षमता और विद्युत संयंत्र की संस्थापना की तारीख और समय-बद्ध रीति से प्राप्त किए जाने के आधार पर ताप विद्युत संयंत्रों की विभिन्न श्रेणियों के लिए उत्सर्जन मानकों और विनिर्दिष्ट जल उपभोग को प्रकाशित किया था।

और जबकि, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ने विद्युत मंत्रालय द्वारा दिनांक 13 अक्तूबर, 2017 को प्रस्तुत की गई यथा संशोधित योजना के अनुसार विभिन्न ताप विद्युत संयंत्रों को वर्ष 2022 तक प्रदूषण नियंत्रण उपकरण संस्थापित करने के लिए पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 5 के तहत निर्देश जारी करने के लिए केंद्रीय प्रदूषण नियंत्रण बोर्ड को दिनांक 7 दिसंबर, 2017 के फा.सं. क्यू-15017/40/2007-सीपीडब्ल्यू द्वारा निदेश दिए।

और जबकि, विद्युत मंत्रालय ने अन्य बातों के साथ-साथ यह अभ्यावेदन किया है कि प्रदूषण नियंत्रण प्रौद्योगिकियों के उन्नत होने के साथ ही ताप विद्युत संयंत्र दहन प्रक्रिया से उत्पन्न फ्लाई-ऐश का पता लगाने में बेहतर उपकरणों से सुसज्जित हुए हैं और बिना धुला कोयला अधिक कुशलता और मितव्ययता से प्रयोग किया जा सकता है; ताप विद्युत संयंत्रों को राख अवयवों की विभिन्न किस्मों के साथ कोयले के लिए डिजाइन किया गया है और इनमें सूखी राख (ड्राई ऐश) निकालने, उसका रखरखाव करने और राख के उपयोग के लिए आपूर्ति प्रणालियों को उपलब्ध कराया गया है; धुले कोयले के उपयोग से बिजली उत्पादन महंगा हो जाता है; ताप विद्युत संयंत्रों में उत्पन्न फ्लाई-ऐश सीमेंट निर्माण, ईंटें बनाने, सड़क बिछाने, खनन के उपरांत रिक्त हुए स्थलों और निचले क्षेत्रों को भरने के लिए बैक-फिल सामग्री जैसे कई लाभकारी उपयोगों के लिए प्रयोग की जा रही है; औसतन ऐश की मात्रा 34% तक बनाए रखने की आवश्यकता उद्योगों को कोयले का आयात करने के लिए प्रेरित करती है जिसमें विदेशी मुद्रा इत्यादि का बहिर्वाह (आऊटफ्लो) होता है।

और जबकि, कोयला मंत्रालय ने अन्य बातों के साथ-साथ अभ्यावेदन किया है कि कोयला खानें वर्षों से कच्चे कोयले की गुणवत्ता, आकार और बाहरी सामग्री में सुधार के लिए निरंतर कड़े प्रयास कर रही हैं जिससे सभी संबंधित उपकरणों की टूट-फूट में उल्लेखनीय कमी आई है, कोयला धुलाई प्रक्रिया में कई प्रकार का रखरखाव होता है और कोयला खानों से धुलाई-स्थलों (वाशरीज़) तक कोयले की बड़ी मात्रा को सड़क द्वारा ले जाने और फिर आगे

विद्युत संयंत्रों तक ले जाने के लिए रेल साइडिंग्ज़ तक ले जाने से बचना; धुलाई की प्रक्रिया केवल कोयले को धुले हुए कोयले और वाशरी अवशिष्ट में बाँटती है जबकि खनित कोयले की राख की मात्रा वही रहती है; निम्न श्रेणी कोयला वाशरी अवशिष्ट कई छोटे उपयोगकर्ता उद्योगों में, अधिक प्रदूषण आदि सृजित करते हैं।

और जबकि, कोयला मंत्रालय और विद्युत मंत्रालय ने इसलिए अनुरोध किया है कि दिनांक 2 जनवरी, 2014 की अधिसूचना पर पुन: विचार द्वारा, विद्युत संयंत्रों को धुले हुए कोयले के प्रयोग के लिए अधिदेशित करने पर गौर किया जाना अपेक्षित है जिससे पर्यावरण पर प्रतिकूल प्रभाव डाले बिना कोयले की लंबी दूरी की ढुलाई के लिए बिजली के उत्पादन में आसानी होगी।

और जबकि, नीति आयोग ने अपनी रिपोर्ट में वाशरीज़, कोयला खनन, परिवहन और विद्युत संयंत्रों में कोयले की खपत की दृष्टि से इस विषय का विश्लेषण करने के बाद अन्य बातों के साथ-साथ संक्षिप्त में यह अभ्यावेदन किया है कि समीपवर्ती उद्योगों में वाशरी अवशिष्ट का इस्तेमाल अधिक प्रदूषण पैदा करता है; चूंकि वाशरी अवशिष्ट अनेक छोटे उद्योगों में वितरित होते हैं, इसलिए विद्युत संयंत्र पर उत्पन्न प्रदूषण की तुलना में अनेक स्थलों पर उत्पन्न प्रदूषण को नियंत्रित करना अधिक कठिन होता है; धुलाई प्रक्रिया में उत्पन्न राख (ऐश) कोयला कणों के साथ-साथ पानी को भी प्रदूषित करती है और इसका लाभकारी उपयोग नहीं किया जा सकता, कोयला धुलाई प्रक्रिया में पानी का अधिक प्रयोग होता है, अपशिष्ट सृजन होता है; वाशरी अवशिष्ट के निपटान का पर्यावरण पर प्रतिकूल प्रभाव होता है क्योंकि इसमें बड़ी मात्रा में निम्न श्रेणी कोयला अवशिष्ट, तरल अपशिष्ट प्रवाह, कोयला भण्डारण, कोयला मिट्टी का रखरखाव, अपवाह और उड़ने वाली धूल का रखरखाव और निपटान करना होता है, कोयला धुलाई का स्थलाकृति, जल निकास स्वरूप और गुणवत्ता, जल निकायों, बड़े पैमाने पर प्रतिवेशी वायु गुणवत्ता पर भी प्रतिकूल प्रभाव पड़ता है; धुलाई प्रक्रिया से विद्युत उत्पादन की लागत में भी वृद्धि होती है जिसका कोई पर्यावरणीय लाभ इत्यादि भी नहीं होता।

और जबकि, नीति आयोग ने इसलिए सिफारिश की है कि पर्यावरणीय और प्रदूषण मानकों का निर्धारण करना और उन्हें लागू करना विवेकपूर्ण होगा, जिन्हें कोयले में ऐश की मात्रा प्रतिबंधित किए जाने के बजाए, परिवहन दूरी के आधार पर विद्युत उत्पादकों के साथ जोड़ा जाना चाहिए।

और जबकि, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ऊर्जा मंत्रालय, कोयला मंत्रालय के अभ्यावेदनों, नीति आयोग और कई हितधारकों की रिपोर्ट पर विवेचन करने तथा सावधानीपूर्वक विचार करने के बाद एवं जनहित में निम्नलिखित निष्कर्ष पर पहुंचा है—

i) खनित कोयले में ऐश सामग्री की मात्रा समान रहती है। वाशरी में ऐश सामग्री दो स्थानों (वाशरी और विद्युत संयंत्र) में विभाजित हो जाती है जबकि बिना धुला कोयला विद्युत संयंत्र में प्रयोग किया जाता है, ऐश सामग्री का निपटान केवल एक स्थान अर्थात विद्युत संयंत्र में किया जाता है;

ii) ताप विद्युत संयंत्र प्रदूषण नियंत्रण, ऐश प्रबंधन के लिए तकनीकी रूप से सुसज्जित होते हैं क्योंकि उनमें फ्लाई-ऐश का निराकरण करने के लिए उच्च क्षमता वाले उपकरण होते हैं, ड्राई ऐश निष्क्रमण और हैंडलिंग सिस्टम, ऐश उपयोग के लिए सप्लाई सिस्टम और फ्लू गैसों को तितर-बितर करने के लिए बड़े टाल (स्टैक) होते हैं;

iii) पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ने उत्सर्जन मानक अधिसूचित किए हैं जिनमें क्रमश: ताप विद्युत संयंत्रों को समयबद्ध रीति से इन मानकों का पालन करने के लिए अधिदेशित किया गया है;

और जबकि, फ्लाई ऐश प्रबंधन और विभिन्न स्तरों पर बिना धुले कोयले के संसाधन के दौरान उत्पन्न अन्य संबंधित पर्यावरणीय पहलुओं सहित बिना धुले कोयले की हैंडलिंग के लिए यथासंभव उत्कृष्ट कार्यढांचे को अपनाना समयोचित है।

और जबकि, कोयला मंत्रालय ने अभ्यावेदन किया है कि मौजूदा अप्रत्याशित कोविड-19 महामारी और इसके फलस्वरूप देश में ऊर्जा उत्पादन के लिए कोयला क्षेत्र की मांग को प्रोत्साहित कर धरेलू कोयले के उपयोग की तत्काल आवश्यकता को देखते हुए यह वांछनीय है कि तत्काल अधिसूचना जारी की जाए।

अब, इसलिए, केंद्रीय सरकार पर्यावरण (संरक्षण) नियमावली, 1986 के नियम 5 के उपनियम (4) के साथ पठित पर्यावरण संरक्षण अधिनियम, 1986 (1986 का 29) की धारा 3, धारा 6 और धारा 25 के तहत अपनी शक्तियों का प्रयोग करते हुए, उक्त नियमावली के नियम 5 के उपनियम (3) के भाग (अ) के तहत सूचना देने की अनिवार्यता को हटा देने के उपरांत जनहित में पर्यावरण (संरक्षण) नियमावली, 1986 को आगे संशोधित करते हुए एतद्वारा निम्नलिखित नियम बनाती है, अर्थात्:

1. (1) इन नियमों को पर्यावरण (संरक्षण) संशोधन नियमावली, 2020 कहा जाएगा।

(2) ये सरकारी गज़ट में प्रकाशित होने की तारीख से लागू होंगे।

2. पर्यावरण (संरक्षण) नियमावली, 1986 में, नियम 3 में, उपनियम (8) के लिए निम्नलिखित उपनियम प्रतिस्थापित होगा, अर्थात् :-

"(8) ताप विद्युत संयंत्रों को, ऐश सामग्री अथवा दूरी संबंधी अनुबंधों के बिना, निम्नलिखित शर्तों के अध्याधीन कोयले के प्रयोग की अनुमति होगी:

(1) उत्सर्जन मानदण्डों के लिए प्रौद्योगिकीय समाधान निर्धारित करना:

i. वर्तमान अधिसूचनाओं और केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा समय-समय पर जारी अनुदेशों के अनुसार विविक्त सामग्री के लिए विनिर्दिष्ट मानदंडों का अनुपालन करना।

ii. बाशरी के मामले में मिडलिंग और अवशिष्टों का एफबीसी(तरलीकृत तल दहन) प्रौद्योगिकी आधारित विद्युत संयंत्रों में उपयोग किया जाए। एफबीसी संयंत्रों में मिडलिंग और अवशिष्टों के लिए बाशरी में संयोजन (लिंकेज) होना चाहिए।

2. ऐश पॉन्ड का प्रबंधन:

i. ताप विद्युत संयंत्र धुले हुए कोयले से बिना धुले हुए कोयले पर स्विच करने के कारण फ्लाई-ऐश पॉन्ड(मौजूदा विद्युत उत्पादन क्षमता) की अतिरिक्त क्षमता की पात्रता प्राप्त किए बिना, समय-समय पर जारी की गई अधिसूचनाओं में यथा-अधिसूचित शर्तों का पालन करें।

ii. ऐश प्रबंधन के लिए जल की खपत को अनुकूल करने हेतु समुचित प्रौद्योगिकी समाधान लागू हों;

iii. यदि आवश्यक हो तो फ्लाई-ऐश का अधिकतम उपयोग सुनिश्चित करने के लिए स्थल विशिष्ट स्थितियों के आधार पर ऐश का पृथक्करण इलैक्ट्रो-स्टेटिक अवक्षेपक (प्रेसीपिटेटर) स्तर पर किया जाए।

iv. ताप विद्युत संयंत्र उपर्युक्त 2(i) के अध्याधीन, छोड़ी हुई अथवा चालू खानों (वर्किंग माइन्स) में (खान मालिकों द्वारा सुविधाजनक बनाया जाए) पर्यावरणीय सुरक्षा उपायों के साथ फ्लाई-ऐश का निपटान करें।

3. परिवहन:

2nd January, 2014 mandating certain categories of thermal power plants to use coal with ash content restricted to 34%.

And whereas, the said Notification *vide* number G.S.R. 02(E) dated the 2nd January, 2014, mandated coal based thermal power plants to use raw or blended or beneficiated coal with ash content not exceeding thirty-four percent (34%), on quarterly basis, by the time lines given below:

Sl. No.	Category of Power Plant	Distance of location of Thermal Power Plant from pit-head/coal mine	Time lines
(a)	Stand-alone Thermal Power Plants (any capacity), and Captive Thermal Power Plants (with capacity of 100 MW and above)	Located in urban areas, or ecologically sensitive areas or critically polluted areas, irrespective of distance from pit-head, except pit-head power plants.	With effect from 2nd June, 2014.
(b)		beyond 1000 km	With effect from 2nd June, 2014.
(c)		between 750-1000 km	With effect from 1st January, 2015.
(d)		between 500-749 km	With effect from 5th June, 2016.

And whereas, the Central Government had, in exercise of its powers under sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986) read with sub-rule (3) of rule 5 of the Environment (Protection) Rules, in the Gazette of India, Extraordinary, *vide* number S.O. 3305 (E), dated the 7th December, 2015 and G.S.R. 593 (E), dated the 28th June, 2018 published the emission standards and specific water consumption for various category of thermal power plants, based on capacity of power generation and date of installation of power plant and to be achieved in time bound manner.

And whereas, the Ministry of Environment, Forest and Climate Change directed the Central Pollution Control Board vide F.No.Q-15017/40/2007-CPW dated the 7th December, 2017 to issue Directions under Section 5 of Environment (Protection) Act, 1986, to various Thermal Power Plants to install pollution control equipment as per the revised plan submitted by the Ministry of Power dated the 13th October, 2017 by 2022.

And whereas, the Ministry of Power has, *inter alia*, represented that with advancement in pollution control technologies, thermal power plants are better equipped to capture fly-ash generated in combustion process and unwashed coal can be used more efficiently and economically; thermal power plants are designed for coal with wide variety of ash content and are equipped with dry ash evacuation, handling and supply systems for ash utilisation; using washed coal makes power generation costlier, fly ash generated in thermal power plants is being used in several beneficial uses like cement manufacturing, brick making, road laying, back-fill material for reclamation of mine voids and low lying areas; requirement of maintaining average ash content to 34% prompts industries to undertake import of coal, resulting in outflow of foreign exchange etc.

And Whereas, the Ministry of Coal has, *inter alia*, represented that the coal mines are constantly striving to improve raw coal in terms of quality, size and extraneous material over the years which has considerably reduced wear and tear of all related equipment, coal washing process involves multiple handling and avoidable road transportation of huge quantities of coal from coal mines to washeries and then to rail sidings for onward transport to power plants; the washing process only divides the coal into washed coal and washery rejects while the ash content of mined coal remains the same; use of low grade coal washery rejects, in the multiple small user industries, generates more pollution etc.

And Whereas, the Ministry of Coal and Ministry of Power have, therefore, represented that the mandating power plants to use washed coal requires to be revisited by reconsidering the notification dated the 2nd January, 2014 which will help ease power generation for long distance haulage of coal without adverse impact on the environment.

And Whereas, the **NITI Aayog**, in its report after analysing the issue from the perspective of washeries, Coal mining, transportation and consumption of coal at power plants has, *inter alia*, summed up that use of washery rejects in nearby industries generates more pollution; since washery rejects are distributed in number of smaller industries, the pollution control at numerous points is more difficult than controlling the

i. ढके हुए रेलवे वैगन (तिरपाल अथवा किसी अन्य माध्यम से ढके हुए रेलवे वैगन) और/अथवा खान-क्षेत्र से परे ढके हुए वाहक (कन्वेयर) द्वारा ही कोयले का परिवहन किया जाए। तथापि, जब तक रेल परिवहन/वाहक इन्फ्रास्ट्रक्चर उपलब्ध नहीं हो जाता, सड़क परिवहन ट्रकों द्वारा किया जाए जो तिरपाल अथवा किसी अन्य माध्यम से ढके हुए हों।

ii. ताप विद्युत संयंत्र द्वारा सुनिश्चित किया जाए कि

(क) रेल अथवा कन्वेयर द्वारा परिवहन के लिए विद्युत संयंत्र में अथवा इसके समीप रेल साइडिंग सुविधा अथवा कन्वेयर सुविधा स्थापित हो; और

(ख) यदि रेल अथवा कन्वेयर सुविधा की अनुपलब्धता के कारण परिवहन न हो पाए, तो यह सुनिश्चित किया जाए कि संबंधित खान के डिलीवरी स्थान से कोयले का परिवहन ढके हुए ट्रकों (तिरपाल अथवा किसी अन्य माध्यम द्वारा), अथवा किसी अन्य यंत्रीकृत बंद ट्रक से सड़क द्वारा हो।

(4) इसे वित्तीय वर्ष 2020-21 और उसके बाद के लिए संबंधित परियोजनाओं हेतु संगत पर्यावरणीय स्वीकृति की अतिरिक्त शर्तें भी समझा जाएगा। मौजूदा पर्यावरणीय स्वीकृतियों को संशोधित किया जाएगा ताकि संगत क्षेत्रों के लिए उपरोक्त शर्तों को प्रवर्तनशील बनाया जा सके। तदनुसार संबंधित राज्य प्रदूषण नियंत्रण बोर्ड द्वारा प्रचालन की अनुमति जारी की जाएगी।

[फा.सं. 13014/01/2020–आईए-I(टी)]

गीता मेनन, संयुक्त सचिव

टिप्पण—मूल नियम भारत के राजपत्र में सं.का.आ. 844(अ), तारीख 19 नवंबर 1986 द्वारा प्रकाशित किए गए थे और पश्चातवर्ती संशोधन सं.का.आ. 82(अ), तारीख 16 फरवरी, 1987; का.आ. 64(अ), तारीख 18 जनवरी, 1988; सा.का.नि. 931(अ), तारीख 27 अक्तूबर,1989; का.आ. 23(अ), तारीख 16 जनवरी, 1991; सा.का.नि. 95(अ), तारीख 12 फरवरी, 1992; सा.का.नि. 329(अ), तारीख 13 मार्च, 1992; सा.का.नि. 562(अ), तारीख 27 मई, 1992; सा.का.नि. 884(अ), तारीख 20 नवंबर, 1992; सा.का.नि. 386 (अ), तारीख 22 अप्रैल, 1993; सा.का.नि. 422 (अ), तारीख 19 मई, 1993; सा.का.नि. 801 (अ), तारीख 31 दिसंबर, 1993; सा.का.नि. 320 (अ), तारीख 16 मार्च, 1994; सा.का.नि. 560 (अ), तारीख 19 सितंबर, 1997; सा.का.नि. 378 (अ), तारीख 30 जून, 1998; सा.का.नि. 07 (अ), तारीख 22 दिसंबर, 1998; सा.का.नि. 407 (अ), तारीख 31 मई, 2001; सा.का.नि. 826 (अ), तारीख 16 नवंबर, 2009; सा.का.नि. 513 (अ), तारीख 28 जून, 2012; सा.का.नि. 02 (अ), तारीख 02 जनवरी, 2014; का.आ. 3305 (अ), तारीख 07 दिसंबर, 2015; सा.का.नि. 593 (अ), तारीख 28 जून, 2018; और का.आ. 236 (अ), तारीख 16 जनवरी, 2020 द्वारा किए गए।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 21st May, 2020

S.O. 1561(E).—Whereas the Central Government had, in exercise of its powers under Section 3, Section 6 and Section 25 of Environment (Protection) Act, 1986 (29 of 1986) read with rule 5 of Environment (Protection) Rules, 1986, published draft rules further to amend sub-rule (8) of rule 3 of Environment (Protection) Rules, 1986, in the Gazette of India, Extraordinary, *vide* number G.S.R. 02(E), dated the

pollution at power plant end. Ash generated in the washing process pollutes water along with coal particles and cannot be gainfully utilised; Coal washing process involves increased water use, effluent generation; Disposal of washery rejects has negative environmental impact as it has to handle and dispose huge quantity of low grade coal washery rejects, liquid effluent streams, coal storage, handling coal dust, runoff and fugitive dust; Coal washing also adversely impacts topography, water drainage pattern and quality, water bodies, surrounding air quality at large scale; Washing process increases the cost of power generation with no commensurate environmental advantages etc.

And Whereas, NITI Aayog has, therefore, recommended that it may be prudent to determine and enforce the environmental and pollution norms, to be complied with by the power generators, rather than restricting the ash content in coal, based on distance of transportation.

And Whereas, the Ministry of Environment, Forest and Climate Change, after deliberating the representations from Ministry of Power, Ministry of Coal, report of NITI Aayog and various stakeholders and after careful considerations & in larger public interest, arrived at the following:

(i) The extent of ash content in mined coal remains the same. With washeries, the ash content gets divided at two places (washeries and the power plant), whereas if unwashed coal is used in power plant, the ash content is handled at only one place viz. the power plant;

(ii) Thermal power plants are technologically equipped to address pollution control, ash management as they have high efficiency equipment to capture fly ash, dry ash evacuation and handling systems, ash supply systems for ash utilisation and tall stacks for wider dispersal of flue gases;

(iii) The Ministry of Environment, Forest and Climate Change has notified emission norms, mandating respective thermal power plants to adhere to such norms in a time bound manner;

And Whereas, it is expedient to adopt best possible framework towards handling of unwashed coal including management of fly ash and other associated environmental aspects arising out of processing of unwashed coal at different stages.

And Whereas, the Ministry of Coal has represented that in view of the existing unprecedented COVID-19 pandemic and the resultant immediate requirement of utilization of domestic coal by stimulating coal sector demand for power generation in the country, it is desirable to issue the notification at the earliest.

Now, therefore, in exercise of the powers conferred by Section 3, Section 6 and Section 25 of the Environment Protection Act, 1986 (29 of 1986) read with sub-rule (4) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government, after having dispensed with the requirement of notice under clause (a) of sub-rule (3) of rule 5 of the said rules, in public interest, hereby makes the following rules to further amend the Environment (Protection) Rules, 1986, namely :-

1. (1) These rules may be called the Environment (Protection) Amendment Rules, 2020

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986, in rule 3, for sub-rule (5), the following sub-rule shall be substituted, namely :-

"(8) Use of coal by Thermal Power Plants, without stipulations as regards ash content or distance, shall be permitted subject to following conditions:

(1) **Setting Up Technology Solution for emission norms:**

(i) Compliance of specified emission norms for Particulate Matter, as per extant notifications and instructions of Central Pollution Control Board, issued from time to time.

(ii) In case of washeries, Middling and rejects to be utilized in FBC (Fluidised Bed Combustion) technology based thermal power plants. Washery to have linkage for middling and rejects in Fluidised Bed Combustion plants.

(2) **Management of Ash Ponds:**

(i) The thermal powers plants shall comply with conditions, as notified in the Fly Ash notification issued from time to time, without being entitled to additional capacity of fly ash pond (for existing power generation capacity) on ground of switching from washed coal to unwashed coal.

(ii) Appropriate Technology solutions shall be applied to optimise water consumption for Ash management;

(iii) The segregation of ash may be done at the Electro-Static Precipitator stage, if required, based on site specific conditions, to ensure maximum utilization of fly ash;

(iv) Subject to 2(i) above, the thermal power plants to dispose flyash in abandoned or working mines (to be facilitated by mine owner) with environmental safeguards.

(3) **Transportation:**

(i) Coal transportation may be undertaken by covered Railway wagon (railway wagons covered by tarpaulin or other means) and/or covered conveyer beyond the mine area. However, till such time enabling Rail transport/conveyer infrastructure is not available, road transportation may be undertaken in trucks, covered by tarpaulin or other means.

(ii) It shall be ensured by the thermal power plant that

a. Rail siding facility or conveyor facility is set up at or near the power plant, for transportation by rail or conveyor; and

b. If transportation by rail or conveyor facility is not available, ensure that the coal is transported out from the Delivery Point of the respective mine in covered trucks (by tarpaulin or other means), or any mechanized closed trucks by road.

(4) This shall also be deemed to be additional conditions of the relevant Environmental Clearances for respective projects for financial year 2020-21 and onwards. The existing Environmental Clearances shall stand modified so as to make the above conditions operative for relevant sectors. The Consent to Operate shall be issued by respective State Pollution Control Boards accordingly."

[F.No.13014/01/2020-IA.I(T)]

GEETA MENON, Jt. Secy.

Note:-The principal rules were published in the Gazette of India *vide* number S.O. 844(E), dated the 19th November,1986 and subsequently amended *vide* numbers S.O. 82(E), dated 16th February, 1987; S.O. 64(E), dated18th January, 1988; G.S.R. 931(E), dated 27th October, 1989; S.O. 23(E), dated 16th January, 1991; G.S.R. 95(E), dated 12th February, 1992; G.S.R.329(E), dated 13th March, 1992; G.S.R. 562(E), dated 27th May, 1992; G.S.R. 884(E), dated 20th November, 1992; G.S.R. 386(E), dated 22nd April, 1993; G.S.R. 422(E), dated 19th May, 1993; G.S.R. 801(E), dated 31st December, 1993; G.S.R. 320(E), dated 16th March, 1994; G.S.R. 560(E), dated 19th September, 1997; G.S.R. 378(E), dated 30th June, 1998;G.S.R. 7(E), dated 22nd December, 1998; G.S.R. 407(E), dated 31st May, 2001; G.S.R. 826(E), dated 16th November, 2009; G.S.R. 513(E), dated 28th June, 2012; G.S.R. 02(E) dated 2nd January, 2014; S.O. 3305 (E), dated 7th December, 2015; G.S.R. 593(E), dated 28th June, 2018 and S.O. 236 (E), dated 16th January, 2020.

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T.C.

MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007)
Office of: Chief Engineer (O & M), K.T.P.S., Koradi, Nagpur, PIN - 441111
CIN: U40100MH2005SGC153648

(iii) the segregation of ash may be done at the Electro-Static Precipitator stage, if required, based on site specific conditions, to ensure maximum utilization of fly ash;

(iv) Subject to 2(i) above, the thermal power plants to dispose flyash in abandoned or working mines only after restoration of mine with environmental safeguards.

(3) **Transportation:**

(i) Coal transportation may be undertaken by covered Railway wagon (railway wagons covered by tarpaulin or other means) and/or covered conveyer beyond the mine area. However, till such time enabling Rail transport/conveyor infrastructure is not available, road transportation may be undertaken in trucks, covered by tarpaulin or other means.

(ii) It shall be ensured by the thermal power plant that –

a. Rail siding facility or conveyor facility is set up at or near the power plants for transportation by rail or conveyor; and

b. If transportation by rail or conveyor facility is not available, ensure that the coal is transported out from the Delivery Point of the respective mine, in covered trucks (by tarpaulin or other means), or fully mechanized closed trucks by road.

(4) This shall also be deemed to be additional conditions of the relevant Environmental Clearances for respective projects for financial year 2020-21 and onwards. The existing Environmental Clearances shall stand modified so as to make the above conditions applicable for coal projects. The Consent to Operate shall be issued by respective State Pollution Control Boards accordingly."

[F.No.13014/07/2020-IA.I(T)]

GEETA MENON, Secy.

Note: The principal rules were published in the Gazette of India *vide* number S.O. 844(E), dated the 19th November, 1986 and subsequently amended *vide* numbers S.O. 82(E), dated 16th February, 1987; S.O. 64(E), dated 18th January, 1988; G.S.R. 931(E), dated 27th October, 1989; S.O. 23(E), dated 16th January, 1991; G.S.R. 95(E), dated 12th February, 1992; G.S.R.329(E), dated 13th March, 1992; G.S.R. 562(E), dated 27th May, 1992; G.S.R. 884(E), dated 20th November, 1992; G.S.R. 386(E), dated 22nd April, 1993; G.S.R. 422(E), dated 19th May, 1993; G.S.R. 801(E), dated 31st December, 1993; G.S.R. 320(E), dated 16th March, 1994; G.S.R. 550(E), dated 19th September, 1997; G.S.R. 378(E), dated 30th June, 1998; G.S.R. 546(E), dated 22nd December, 1998; G.S.R. 407(E), dated 31st May, 2001; G.S.R. 826(E), dated 16th November, 2009; G.S.R. 513(E), dated 28th June, 2012; G.S.R. 02(E), dated 2nd January, 2014; S.O. 2905 (E), dated 7th December, 2015; G.S.R. 593(E), dated 28th June, 2018 and S.O. 248 (E), dated 16th January, 2020.

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T.C.

Maharashtra Pollution Control Board
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Anx. F

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
Fax: 24023516
Website: http://mpcb.gov.in
Email: cac-cell@mpcb.gov.in

Kalpataru Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

Date: 08/07/2020

RED/L.S.I (R48)
No:- Format1.0/CAC/UAN No.0000076926/CR - 2007000590

To,
Koradi Thermal Power Plant. MAHAGENCO,
3X660 MW, Unit No.8,9 & 10 (Coal Based Thermal Power Plant)
KHASARA NO 188-189,Koradi,
Tal-Kamptee,Dist-Nagpur.

Sub: Renewal of consent with increase in CI under RED category

Ref:
1. Earlier Consent granted by Board vide No.BO/CAC-CELL/UAN NO.30152/CAC1906000774 dated 17.06.2019 Valid up to 31.08.2019.
2. Minutes of Consent Appraisal Committee Meeting held on 04.05.2020.

Your application No.MPCB-CONSENT-0000076926 Dated 16.07.2019

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The consent to renewal is granted for a period up to 31/08/2021**
2. **The capital investment of the project is Rs.14276.5872 Crs. (As per C.A Certificate submitted by industry Existing-Rs. 14042.64 Cr + Increase in C.I. - Rs. 233.94 Cr= Total CI-Rs. 14276.5872 Cr.)**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
Products			
1	Electricity Generation (3x660 MW) Unit No.8,9 & 10 (Coal Based Thermal Power Plant)	1980	MW

4. **Conditions under Water (P&CP), 1974 Act for discharge of effluent:**

Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	10739	As per Schedule-I	100% recyle/reused for dust suppression,cooling tower,Ash Handling Plant etc.
2.	Domestic effluent	283	As per Schedule-I	100% recyle/reused for dust suppression,cooling tower,Ash Handling Plant etc.

T.C.

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5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr No.	Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	3	BOILER	3	As per Schedule -II

6. **Non-Hazardous Wastes:**

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	FLY ASH	10000	MT/Day	Recycle	Shall be sent to Cement Manufacturing Plant, Brick Manufacturing Plant and dispose as per MoEF-CC,GoI Notification No.SO-763(E) dated 14.09.1999 and as amended time to time thereof.
2	BOTTOM ASH	2400	MT/Day	Recycle	Shall be sent to Cement Manufacturing Plant, Brick Manufacturing Plant and dispose as per MoEF-CC,GoI Notification No.SO-763(E) dated 14.09.1999 and as amended time to time thereof.

7. **Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for treatment and disposal of hazardous waste:**

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
1	5.1 Used or spent oil	10	MT/M	Recycle	Send to Authorised Recycler/Re-processor
2	5.2 Wastes or residues containing oil	6	MT/M	Incineration	CHWTSDF
3	Glass Wool	8	MT/M	Landfill	CHWTSDF
4	Waste Resin	2	MT/M	Landfill	CHWTSDF

8 The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding on the industry.

9 This consent should not be construed as exemption from obtaining necessary NOC/ permission from any other Government authorities.

10 The applicant shall comply with the conditions of the Environmental Clearance granted by MoEF-CC, GoI vide letter No. J-13012/87/2007. IA.II (T) dtd. 04.01.2010.

11 Industry shall install online continuous monitoring system as per CPCB guidelines & data to be transmitted directly from Data Logger to Board server .

12 The Energy source for lighting purpose shall preferably be LED based

13 The PP shall harvest rainwater from roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different Industrial applications within the plant.

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14 Industry shall promote adoption of clean coal (with ash content less than 34%) and clean power generation technologies and comply with notifications issued by MoEF for utilization of fly ash from coal or lignite based thermal power plant dated 14th September, 1999 and as amended on 3rd November, 2009 & amendment dtd 2nd January 2014

15 The applicant shall comply with the recommendations of the task force for implementation of CREP recommendation for Thermal Power Plants.

16 The industry shall comply the standards stipulated by the Ministry of Environment, Forest and Climate Change vide Notification dtd 25.02.2016.

17 The sulphur and ash content in the coal to be used in the project shall not exceed 0.5% and 34% respectively

18 Industry shall comply MoEF office memorandum dated 26.08.2015 by protocol for sampling, analysis of coal and reporting of compliance in respect of implementation of the Gazette Notification on use & supply of raw or blended of beneficiated coal with ash content not exceeding 34% on quaterly average basis

19 Industry shall either make the agreement with coal washeries or shall provide own washeries to get the blended/ beneficiated coal with ash content less than 34% and submit the BG of Rs.10 lakhs towards compliance of the same

20 Industry shall install the Automatic real time monitoring system for coal ash analysis within six month period.

21 PP shall submit revised time bound program towards completion of ETP, up-gradation of air pollution control system so as to meet the revised standards dtd, 07.12.2015, Provision of FGD & provision of online real time coal ash analyzer within a month.

22 PP shall ensure usage of low ash content coal. PP shall comply with fly Ash Notification.

23 PP shall ensure the OCEM & CAAQMS connectivity to the Board server within a month.

24 The applicant shall make an application for renewal of consent 60 days prior to date of expiry of the consent.

For and on behalf of the
Maharashtra Pollution Control Board,

(E. Ravendiran IAS),
Member Secretary

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date	Transaction Type
1	28780045.00	5452316	21/08/2019	RTGS
2	28794185.00	MPCB-DR-0573	24/06/2020	RTGS

Copy to:

1. Regional Officer, MPCB, Nagpur and Sub-Regional Officer, MPCB, Nagpur I
   - They are directed to ensure the compliance of the consent conditions.
   - They are directed to forfeit the bank guarantee of Rs.25.0 Lakh towards non compliance of consent conditions, for JVS exceedance & for not using the coal with ash content less than 34% and obtain top up BG of Rs.50.0 Lakh from the industry.
2. Chief Accounts Officer, MPCB,Sion, Mumbai
3. CAC desk-for records and website updation purpose.

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SCHEDULE-I

Terms & conditions for compliance of Water Pollution Control:

1. A] As per your application, you have provided the Effluent Treatment Plant (ETP) with the design capacity of 12000 m3/day.

B] The Applicant shall operate the effluent treatment plant (ETP) to treat the trade effluent so as to achieve the following standards prescribed by the Board or under EP Act, 1986 and Rules made there under from time to time, whichever is stringent:

Sr.No	Parameters	Limiting concentration not to exceed in mg/l, except for pH
For Condenser Cooling Water		
(1)	pH	Between 6.5 to 8.5
(2)	Temperature	Not to exceed 5°C than that of intake water temp.
(3)	Free available chlorine	Not to exceed 0.5 mg/l
(4)	pH	Between 6.5 to 8.5
(5)	Temperature	Not to exceed 5°C than that of intake water temp.
(6)	Free available chlorine	Not to exceed 0.5 mg/l
Boiler Blow Down		
(1)	Suspended Solids	Not to exceed 100 mg/l
(2)	Oil & Grease	Not to exceed 10 mg/l
(3)	Copper (Total)	Not to exceed 1 mg/l
(4)	Iron (Total)	Not to exceed 1 mg/l
Cooling Tower Blow Down		
(1)	Free available chlorine	Not to exceed 0.5 mg/l
(2)	Zinc	Not to exceed 1 mg/l
(3)	Chromium (Total)	Not to exceed 0.2 mg/l
(4)	Phosphate	Not to exceed 5 mg/l
(5)	Phosphate	Not to exceed 5 mg/l
D.M. Plant Effluent		
(1)	pH	5.5 to 9
(2)	Suspended Solids	Not to exceed 100 mg/l
(3)	Oil & Grease	Not to exceed 10 mg/l
(4)	BOD 3 days	Not to exceed 30 mg/l
(5)	COD	Not to exceed 250 mg/l
(6)	TDS	Not to exceed 2100 mg/l

C] The Industry shall ensure connectivity online monitoring system to the MPCB server including separate energy meter for pollution control system.

D] The treated effluent shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise. In no case, effluent shall find its way to outside factory premises.

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2. A] As per your application, you have provided Sewage Treatment Plant of designed capacity 35 CMD for the treatment of 283 CMD of sewage.

   B] The Applicant shall operate the sewage treatment system to treat the sewage so as to achieve the following standards.

1	Suspended Solids	Not to exceed	50 mg/l
2	BOD 3 days 27oC	Not to exceed	30 mg/l
3	COD	Not to exceed	100 mg/l

   C] The treated sewage shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise. In no case, sewage shall find its way to outside factory premises.

3. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification there of & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.

4. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

5. The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and as amended, by installing water meters and other provisions as contained in the said act:

Sr. No.	Purpose for water consumed	Water consumption quantity (CMD)
1.	Industrial Cooling, spraying in mine pits or boiler feed	92501.00
2.	Domestic purpose	942.59
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	0.00
4.	Processing whereby water gets polluted & pollutants are not easily biodegradable and are toxic	0.00
5.	Gardening	90

6. The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance/ CREP guidelines.

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SCHEDULE-II

Terms & conditions for compliance of Air Pollution Control:

1. As per your application, you have provided the Air pollution control (APC) system and erected following stack (s) to observe the following fuel pattern:

Stack No.	Stack Attached To	APC System	Height in Mtrs.	Type of Fuel	Quantity & UoM	S%	SO_2 (kg/day)
1	BOILER of unit No.8	ESP	275	COAL	10000 MT/Day	0.50	100000.00
2	BOILER of unit No.9	ESP	275	COAL	10000 MT/Day	0.50	100000.00
3	BOILER of unit No.10	ESP	275	COAL	10000 MT/Day	0.50	100000.00

2. The Applicant shall provide Specific Air Pollution control equipments as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance / CREP guidelines.
3. The applicant shall operate and maintain above mentioned air pollution control system, so as to achieve the level of pollutants to the following standards:

Parameters		Standards
Total Particulate Matter	Not to exceed	50 mg/ Nm3
Sulphur Dioxide(SO2)	Not to exceed	200 mg/ Nm3 (For the unit having 500 MW and above)
Oxides of Nitrogen(NOx)	Not to exceed	300 mg/ Nm3
Mercury	Not to exceed	0.03 mg/ Nm3

4. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
5. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
6. The applicant shall operate four continuous automatic ambient air and micrometeorological monitoring station at location indicated by MPC Board to be setup and operate at its own cost for measurement of SO2,NOX and particulate matter. These CAAQMS shall also have necessary provisions of networking to the Air Quality Monitoring network of MPCB.
7. Control Equipment.
   a) Electrostatic Precipitator (ESP) of sufficiet capacity provided to Boiler and any other sources of particulate matter shall be Operate and maintain so as to ensure that TPM emission doesnot exceed 100 mg/Nm3.
   b) Dust collecting system and automatic water sprinkler system provided to Coal Handling Plants shall be operate and maintain continuously.
   c) Dust collector of sufficient capacity provided to coal crusher and any other source of SPM shall operate and maintain continuously.
   d) There shall not be any fugutive emission from coal storage yard.
   e) The industry shall make necessary provisions for installing FGD with 90% efficiency in its design and layout ad sufficient floor space so that it can be installed in future, as & when directed by Board.

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SCHEDULE-III
Details of Bank Guarantees:

Sr. No.	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
1	C2R	Rs. 70 Lakh	15 days	Towards Operation and Maintenance of Air Pollution Control Devices to achieve emission standards.	Continuous	31.12.2022
2	C2R	Rs. 10 Lakh	15 days	Installation of Real Coal Ash Analyser	6 months	31.12.2022
3	C2R	Rs. 5 Lakh	15 days	To switch over to 100 % usable dry fly ash collection and storage	6 months	31.12.2022
4	C2R	Rs. 1 Lakh	15 days	Towards utilization of fly ash as per fly ash notification 1999.	Continuous	31.12.2022
5	C2R	Rs. 1 Lakh	15 days	Towards Mitigation of seepages from wet fly ash conveying system	3 months	31.12.2022
6	C2R	Rs. 1 Lakh	15 days	Towards Scientific operation of ash pond i.e. uniform distribution of wet slurry in the pond so as to have minimum depth of water	Continuous	31.12.2022
7	C2R	Rs. 1 Lakh	15 days	Towards providing arrangement for reuse of 100% seepage water, arising from ash pond, for ash slurry	3 months	31.12.2022
8	C2R	Rs. 5 Lakh	15 days	Towards Scientific closure of abandoned ash pond with soil cover and plantation over it	6 months	31.12.2022
9	C2R	Rs. 5 Lakh	15 days	Towards Operation & maintenance of the Effluent Treatment Plant to achieve disposal standards	Continuous	31.12.2022

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Sr. No	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
10	C2R	Rs. 25 Lakh	15 days	Towards installation of FGD to unit No.9	6 months	31.12.2022
11	C2R	Rs. 10 Lakh	15 days	Towards installation of STP of adequate capacity	6 months	31.12.2022

BG Forfeiture History

Srno.	Consent (C2E/C2O/C2R)	Amount of BG Imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture
NA						

BG Return details

Srno.	Consent (C2E/C2O/C2R)	BG Imposed	Purpose of BG	Amount of BG Returned
NA				

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SCHEDULE-IV
General Conditions:

1. Conditions for D.G. Set
   a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.
   b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.
   c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper siting and control measures.
   d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.
   e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use.
   f) D.G. Set shall be operated only in case of power failure.
   g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.
   h) The applicant shall comply with the notification of MoEFCC, India on Environment (Protection) second Amendment Rules vide GSR 371(E) dated 17.05.2002 and its amendments regarding noise limit for generator sets run with diesel.
2. The applicant shall maintain good housekeeping.
3. The non-hazardous solid waste arising in the factory premises, sweepings, etc. be disposed of scientifically so as not to cause any nuisance / pollution. The applicant shall take necessary permissions from civic authorities for disposal of solid waste.
4. The applicant shall not change or alter the quantity, quality, the rate of discharge, temperature or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board. The industry will not carry out any activity, for which this consent has not been granted/without prior consent of the Board.
5. The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.
6. The industry shall submit quarterly statement in respect of industries obligation towards consent and pollution control compliance's duly supported with documentary evidences (format can downloaded from MPCB official site).
7. The industry shall submit official e-mail address and any change will be duly informed to the MPCB.
8. The industry shall achieve the National Ambient Air Quality standards prescribed vide Government of India, Notification No. B-29016/20/90/PCI-I, dated. 18.11.2009 as amended.
9. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.
10. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

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11. The PP shall provide personal protection equipment as per norms of Factory Act
12. Industry should monitor effluent quality, stack emissions and ambient air quality monthly/quarterly.
13. Whenever due to any accident or other unforeseen act or even, such emissions occur or is apprehended to occur in excess of standards laid down, such information shall be forthwith Reported to Board, concerned Police Station, office of Directorate of Health Services, Department of Explosives, Inspectorate of Factories and Local Body. In case of failure of pollution control equipments, the production process connected to it shall be stopped.
14. The applicant shall provide an alternate electric power source sufficient to operate all pollution control facilities installed to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise, control production to abide by terms and conditions of this consent.
15. The industry shall recycle/reprocess/reuse/recover Hazardous Waste as per the provision contain in the Hazardous and Other Wastes (M & TM) Rules 2016, which can be recycled /processed /reused /recovered and only waste which has to be incinerated shall go to incineration and waste which can be used for land filling and cannot be recycled/reprocessed etc. should go for that purpose, in order to reduce load on incineration and landfill site/environment.
16. An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.
17. Industry shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act, 1981 and Environmental Protection Act, 1986 and Industry specific standard under EP Rules 1986 which are available on MPCB website (www.mpcb.gov.in).
18. Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers downstream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system.
19. Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.
20. The Industry should not cause any nuisance in surrounding area.
21. The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB (A) during day time and 70 dB (A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.
22. The industry shall create the Environmental Cell by appointing an Environmental Engineer, Chemist and Agriculture expert for looking after day to day activities related to Environment and irrigation field where treated effluent is used for irrigation.
23. The applicant shall provide ports in the chimney/(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to/and for use of the Board's Staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
24. The industry should comply with the Hazardous and Other Wastes (M & TM) Rules, 2016 and submit the Annual Returns as per Rule 6(5) & 20(2) of Hazardous and Other Wastes (M & TM) Rules, 2016 for the preceding year April to March in Form-IV by 30th June of every year.

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25. The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained.
26. The applicant shall bring minimum 33% of the available open land under green coverage/ plantation. The applicant shall submit a yearly statement by 30th September every year on available open plot area, number of trees surviving as on 31st March of the year and number of trees planted by September end.
27. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions.
28. The firm shall submit to this office, the 30th day of September every year, the Environment Statement Report for the financial year ending 31st March in the prescribed FORM-V as per the provisions of Rule 14 of the Environment (Protection) (second Amendment) Rules, 1992.
29. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
30. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
31. The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.

T.C.

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Anx. G

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MAHARASHTRA POLLUTION CONTROL BOARD
Regional Office, Nagpur

Website : mpcb.gov.in
e-mail : ronagpur@mpcb.gov.in
Fax : 2560851
Phone : 2565308, 2560139

Regional Office,
5th Floor, Udyog
Bhawan, Civil lines,
Nagpur – 440001.

RP/Ad

No. MPC/NRO/BG/ 1444 /2021 Date: 15/12/2021

To,
Branch Manager.,
State Bank of India.,
Industrial Finance Branch,
Plot No C-38 & C-39, BKC, Bandra (E),
G Block B-202, Parinee Crescenzo, Mumbai 400051.

Sub :- Regarding forfeiture of Bank Guarantee Rs. 25,00,000/- Out of Rs. 70,00,000/- issued to M/s. Koradi Thermal Power Plant MAHAGENCO, 3 x 660 MW, Unit No. 8,9 & 10 (Coal Based Thermal Power Plant), Kh No 188-189, Koradi, Tq. Kamptee Dist. Nagpur.

Ref :- 1. Consent vide no CAC/UAN No. 0000076926/CR-2007000590 dtd 08/07/2020.
2. Bank Guarantee No. 0896521BG0000372 dtd 26/11/2021,Rs. 70.0 Lacs.

Sir,

As per above reference no. 01 Board has granted renewal of consent to operate to industry subject to impose Bank Guarantee towards compliance of consent conditions and directed to forfeit of Bank Guarantee towards non-compliance of consent conditions for JVS exceedance and not using coal with ash contain less than 34%. Hence forfeit of Bank Guarantee of Rs. 25.0 Lacs out of Rs. 70.0 Lacs.

In view of above, you are requested to forfeit the above industry Bank Guarantee of Rs. 25,00,000/- Out of Rs. 70,00,000/- issued by your Bank BG. No. 0896521BG0000372 dtd 26/11/2021 valid upto 31/12/2022. You are further requested to send D.D. of amounting of Rs. 25,00,000/- drawn in favour of **Regional Officer M.P.C. Board, Nagpur**, at the earliest.

The original Bank Guarantee obtained by Regional Officer, M.P.C. Board Nagpur is enclosed herewith for necessary action.

Yours faithfully,

(A.M. Kare)
Regional Officer, Nagpur

D.A.:- Original Bank Gurantee.
(B.G. 0896521BG0000372 dtd 26/11/2021)

T.C.

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(2)

Copy submitted for favour of information to:-
The Joint Director (APC), MPC Board, Sion, Mumbai.

Copy to :- 1. Sub- Regional Officer, M. P.C. Board, Nagpur-II - for your information.

2. M/s. Koradi Thermal Power Plant MAHAGENCO, 3 x 660 MW, Unit No. 8,9 & 10 (Coal Based Thermal Power Plant), Kh No 188-189, Koradi, Tq. Kamptee Dist. Nagpur.
- You are hereby directed to submit top up Bank Guarantee of Rs 50.0 Lacs within 15 days, positively.

(A.M. Kare)
Regional Officer, Nagpur

T.C.

Anx. H

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राजस्ट्री स. डी.एल.- 33004/99

REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 31 दिसम्बर, 2021

का.आ. 5481(अ).—केन्द्रीय सरकार ने भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना सं. का.आ. 763 (अ) तारीख 14 सितम्बर, 1999 द्वारा कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों से तीन सौ किलोमीटर के विनिर्दिष्ट व्यास के भीतर ईंटों के विनिर्माण के लिए उपजाऊ मिट्टी के उत्खनन को प्रतिबंधित करने के लिए और भवन निर्माण सामग्री के विनिर्माण में और संनिर्माण क्रियाकलाप में फ्लाई-राख के उपयोग को बढ़ावा देने के लिए निदेश जारी किए हैं;

और, प्रदूषणकर्ता भुगतान सिद्धांत (पीपीपी) के आधार पर, ऐसा करके कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों द्वारा फ्लाई-राख का 100 प्रतिशत उपयोग सुनिश्चित करते हुए और फ्लाई-राख प्रबंधन प्रणाली की संधारणीयता के लिए पूर्वोक्त अधिसूचना को और अधिक प्रभावकारी ढंग से कार्यान्वित करने हेतु, केंद्रीय सरकार ने मौजूदा अधिसूचना की समीक्षा की;

और प्रदूषणकर्ता भुगतान सिद्धांत के आधार पर पर्यावरणीय प्रतिकर निर्धारित किए जाने की आवश्यकता है;

और, विनिर्माण को बढ़ावा देकर तथा निर्माण कार्य के क्षेत्र में राख आधारित उत्पादों तथा भवन निर्माण सामग्रियों के प्रयोग को अनिवार्य करके उपजाऊ मिट्टी को संरक्षित करने की आवश्यकता है;

T.C.

और, सड़क बनाने, सड़क एवं फ्लाई ओवर के रेलिंग बनाने, तटरेखा की सुरक्षा का उपाय करने, अनुमोदित परियोजनाओं के निचले क्षेत्रों को भरने, खनित स्थलों को फिर से भरने में मिट्टी की सामग्रियों से भरने के विकल्प के रूप में राख उपयोग को बढ़ावा देकर उपजाऊ मिट्टी और प्राकृतिक संसाधनों को संरक्षित करने की आवश्यकता है;

और, पर्यावरण को सुरक्षित करना तथा कोयला अथवा लिग्नाइट आधारित ताप विद्युत संयंत्रों से सृजित फ्लाई राख के निक्षेपण तथा निपटान की रोकथाम करना आवश्यक है;

और, उक्त अधिसूचना में जो 'राख' शब्द का प्रयोग किया गया है उसमें कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों से सृजित फ्लाई-राख और बॉटम-राख दोनों शामिल हैं;

और, केंद्रीय सरकार प्रदूषणकर्ता भुगतान सिद्धांत के आधार पर, पर्यावरणीय प्रतिकर की प्रणाली सहित राख के उपयोग के लिए एक व्यापक ढांचा लाना चाहती है;

अतः पर्यावरण (संरक्षण) नियम, 1986 के नियम (5) के उप-नियम (3) के खंड (घ) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, भारत सरकार के पर्यावरण एवं वन मंत्रालय की अधिसूचना जो का.आ. 763 (अ) तारीख 14 सितम्बर, 1999 द्वारा भारत के राजपत्र, असाधारण भाग II, खंड 3, उप खंड (i) में प्रकाशित का अधिक्रमण करते हुए, कोयला या लिग्नाईट आधारित ताप विद्युत संयंत्रों द्वारा राख के उपयोग के संबंध में प्रारूप अधिसूचना जो सा.का.नि. 285 (अ) तारीख 22 अप्रैल, 2021 द्वारा भारत के राजपत्र, असाधारण, भाग-2, धारा 3, उप धारा (i) में प्रकाशित की गई थी जिसमें इस सभी व्यक्तियों से जिनका इससे प्रभावित होना सामान्य है उस तारीख से, जिसको उक्त प्रारूप उपबंधों की शासकीय राजपत्र में अंतर्विष्ट प्रतियां जनता को उपलब्ध करा दी गई थी, साठ दिनों के अवसान से पूर्व आक्षेप और सुझाव आमंत्रित किए गए थे;

और उक्त प्रारूप अधिसूचना के संबंध में उससे संभावित तौर पर प्रभावित होने वाले सभी व्यक्तियों से प्राप्त आक्षेपों और सुझावों पर केंद्रीय सरकार द्वारा सम्यक रूप से विचार कर लिया गया है;

अतः पर्यावरण (संरक्षण) नियम, 1986 के नियम (5) के उप-नियम (3) के खंड (घ) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए और अधिसूचना का.आ. 763 (अ) तारीख 14 सितम्बर, 1999 का उन बातों के सिवाय अधिक्रांत करते हुए जिन्हें ऐसे अधिक्रमण से पूर्व किया गया है या करने का लोप किया गया है, केन्द्रीय सरकार कोयलों या लिग्नाईट आधारित ताप विद्युत संयंत्रों से राख के उपयोग के संबंध में निम्नलिखित अधिसूचना जारी करती है, जो इस अधिसूचना के प्रकाशन की तिथि से प्रवृत्त होगी, अर्थात्

क. **फ्लाई-राख और बॉटम-राख का निपटान करने हेतु ताप विद्युत संयंत्रों (टीपीपी) के उत्तरदायित्व.-**

(1) प्रत्येक कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्र (जिनमें कैप्टिव और/या सह-उत्पादन केंद्र शामिल हैं या दोनों) की यह प्राथमिक जिम्मेदारी होगी कि वह अपने द्वारा सृजित राख (फ्लाई-राख और बॉटम-राख) का उप पैरा (2) में दिए गए पारि-अनुकूल तरीके से 100 प्रतिशत उपयोग सुनिश्चित करे;

(2) कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों से सृजित राख का उपयोग केवल निम्नलिखित पारि-अनुकूल प्रयोजनों के लिए किया जाएगा, अर्थात्:-

(i) फ्लाई राख पर आधारित उत्पाद अर्थात्: ईंट ब्लॉक टाइल, फाइबर सीमेंट शीट, पाइप, बोर्ड, पैनल का विनिर्माण;

(ii) सीमेंट विनिर्माण, रेडी-मिक्स कंक्रीट;

(iii) सड़क निर्माण और फ्लाई-ओवर के रेलिंग का निर्माण, राख और जिओ-पॉलीमर आधारित निर्माण सामग्री;

(iv) बांध का निर्माण;

(v) निचले क्षेत्र को भरना;

(vi) खनन कार्य से रिक्त हुए स्थान को भरना;

(vii) सिंटर्ड या शीत-बद्ध राख संचय का विनिर्माण;

(viii) मृदा परीक्षण के आधार पर नियंत्रित तरीके से कृषि;

(ix) तटीय जिलों में तटरेखा संरक्षण संरचनाओं का निर्माण;

(x) अन्य देशों को राख का निर्यात;

(xi) समय-समय पर यथाधिसूचित किसी अन्य पारि-अनुकूल प्रयोजन के लिए।

(3) अध्यक्ष, केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) की अध्यक्षता में एक समिति गठित की जाएगी जिसमें पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (एमओईएफसीसी), विद्युत मंत्रालय, खान मंत्रालय, कोयला मंत्रालय, सड़क परिवहन और राजमार्ग मंत्रालय, कृषि अनुसंधान एवं शिक्षा विभाग, सड़क कांग्रेस संस्थान तथा राष्ट्रीय सीमेंट एवं भवन सामग्री परिषद के प्रतिनिधियों को सदस्यों के रूप में शामिल किया जाएगा, जिसका प्रयोजन राख के उपयोग के पारि-अनुकूल तौर-तरीकों की जांच करना, उनकी समीक्षा एवं अनुशंसा करना तथा प्रौद्योगिकीय विकासों तथा पणधारी से प्राप्त अनुरोधों के आधार पर उप-पैरा (2) में यथोल्लिखित ऐसे तौर-तरीकों की सूची में समिति द्वारा सुझाए गए तौर-तरीकों को शामिल करना या किसी तौर-तरीके को सूची से हटाना या उसमें संशोधन करना है। जब भी इस प्रयोजन के लिए अपेक्षित हो, यह समिति राज्य प्रदूषण नियंत्रण बोर्ड या प्रदूषण नियंत्रण समिति, ताप विद्युत संयंत्र और खानों के प्रचालकों को आमंत्रित कर सकती है। इस समिति सिफारिश के आधार पर, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ऐसे पारि-अनुकूल प्रयोजन प्रकाशित करेगा।

(4) प्रत्येक कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्र उस वर्ष के दौरान सृजित राख (फ्लाई-राख और बॉटम-राख) का 100 प्रतिशत उपयोग करने हेतु उत्तरदायी होगा; तथापि, किसी भी स्थिति में, किसी वर्ष में राख का उपयोग 80 प्रतिशत से नीचे नहीं होगा और साथ ही, उस ताप विद्युत संयंत्र को तीन वर्ष की अवधि में 100 प्रतिशत औसत राख के उपयोग का लक्ष्य प्राप्त करना होगा :

परंतु, यह और कि पहली बार के लिए लागू तीन वर्ष के चक्र को ऐसे ताप विद्युत संयंत्रों, जहां राख का उपयोग 60-80 प्रतिशत के बीच होता है, एक वर्ष के लिए और ऐसे संयंत्रों, जहां राख का उपयोग 60 प्रतिशत से कम है, दो वर्ष के लिए बढ़ाया जा सकता है, और राख के उपयोग की प्रतिशतता की गणना के प्रयोजन के लिए वर्ष 2021-2022 में उपयोग की प्रतिशत प्रमात्रा को नीचे दी गई तालिका के अनुसार ध्यान में रखा जाएगा:

तापीय विद्युत संयंत्रों के उपयोग की प्रतिशतता	100 प्रतिशत उपयोगिता प्राप्त करने के लिए प्रथम अनुपालन चक्र	100 प्रतिशत उपयोगिता प्राप्त करने के लिए द्वितीय अनुपालन चक्र
>80 प्रतिशत	3 वर्ष	3 वर्ष
60-80 प्रतिशत	4 वर्ष	3 वर्ष
<60 प्रतिशत	5 वर्ष	3 वर्ष

परन्तु, ताप विद्युत संयंत्रों के लिए 80 प्रतिशत न्यूनतम उपयोग प्रतिशतता, क्रमशः 60-80 प्रतिशत और <60 प्रतिशत की उपयोगिता की श्रेणी के तहत आने वाले ताप विद्युत संयंत्रों के लिए प्रथम अनुपालन चक्र के पहले वर्ष और पहले दो वर्षों पर लागू नहीं होगी।

परन्तु, अनुपालन चक्र के अंतिम वर्ष में सृजित 20 प्रतिशत राख को अगले चक्र में भी ले जाया जाएगा जिसका उपयोग इस अनुपालन चक्र के दौरान सृजित राख के साथ अगले तीन वर्षों में किया जाएगा।

(5) अप्रयुक्त संचित राख अर्थात् लीगेसी राख, जिसका इस अधिसूचना के प्रकाशन से पहले भंडारण किया गया है, को ताप विद्युत संयंत्र (टीपीपी) द्वारा इस रीति से क्रमिक रूप से उपयोग में लाया जाएगा, कि लीगेसी राख को इस अधिसूचना के प्रकाशन की तिथि से दस वर्षों के भीतर पूरी तरह उपयोग कर लिया जाएगा और यह उस विशिष्ट वर्ष के चालू संचालनों के माध्यम से राख उत्सर्जन के लिए निर्धारित उपयोग लक्ष्यों से अतिरिक्त होगा।

परन्तु, निम्नलिखित प्रतिशतताओं में यथा उल्लिखित लीगेसी राख की न्यूनतम मात्रा का उपयोग तात्स्थानी वर्ष के दौरान कर लिया जाएगा और लीगेसी राख की न्यूनतम मात्रा की ताप विद्युत संयंत्र की संस्थापित क्षमता के अनुसार वार्षिक राख उत्सर्जन के आधार पर की जानी है।

प्रकाशन की तिथि से वर्ष	पहला	दूसरा	तीसरा-दसवां
लीगेसी राख का उपयोग (वार्षिक राख की प्रतिशतता)	कम से कम 20 प्रतिशत	कम से कम 35 प्रतिशत	कम से कम 50 प्रतिशत

परन्तु, यह और कि लीगेसी राख का उपयोग वहां अपेक्षित नहीं है, जहां राख के तालाब या डाइक स्थिर हो गए हैं और हरित पट्टी के निर्माण या पौध रोपण से पुनरूद्धार किया गया है और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड इस संबंध में प्रमाणित करेगा। किसी राख तालाब या डाइक के स्थिरीकरण और भूमि-उद्धार का कार्य, जिसमें केन्द्रीय प्रदूषण नियंत्रण बोर्ड या राज्य प्रदूषण नियंत्रण बोर्ड द्वारा प्रमाणन शामिल है, इस अधिसूचना के प्रकाशन की तारीख से एक वर्ष के भीतर किया जाएगा। अन्य सभी राख के कुंड या डाइक में शेष बचे राख का उपयोग ऊपर उल्लिखित समय-सीमाओं के अनुसार क्रमिक रूप से किया जाएगा।

टिप्पण: राख के उपयोग के लक्ष्यों को हासिल करने के लिए उप पैरा (4) और (5) के अधीन दायित्व 01 अप्रैल, 2022 की तारीख से लागू होंगे।

(6) किसी भी नए तापीय विद्युत संयंत्र (टीपीपी) में 0.1 हेक्टेयर प्रति मेगावाट (एमडब्ल्यू) क्षेत्रफल के साथ आपातकालीन या अस्थायी राख कुंड की अनुमति दी जा सकती है। राख के तालाब या डाइकों का तकनीकी विनिर्देश, केन्द्रीय विद्युत प्राधिकरण (सीईए) के परामर्श से केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा बनाए गए दिशानिर्देशों के अनुसार होगा और ये दिशानिर्देश राख के कुंड या डाइक के संबंध में इसकी सुरक्षा, पर्यावरणीय प्रदूषण, उपलब्ध प्रमात्रा, निपटान का तरीका, निपटान में जल की खपत या संरक्षण, राख जल पुनर्चक्रण और ग्रीन बेल्ट आदि के वार्षिक प्रमाणन के लिए कार्यविधि भी निर्धारित करेंगे और इस अधिसूचना के प्रकाशन की तारीख से तीन महीनों के भीतर प्रस्तुत किए जाएंगे।

(7) प्रत्येक कोयला या लिग्नाईट आधारित ताप विद्युत संयंत्र यह सुनिश्चित करेगा कि राख की लदाई, उतराई, ढुलाई, भंडारण और निपटान पर्यावरणीय दृष्टि से अनुकूल रीति से किया गया है और वायु और जल प्रदूषण की रोकथाम के लिए सभी ऐहतियात किए गए हैं और इस संबंध में स्थिति की सूचना इस अधिसूचना में संलग्न अनुबंध में संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) को दी जाएगी।

(8) प्रत्येक कोयला या लिग्नाइट आधारित तापीय विद्युत संयंत्र, संस्थापित क्षमता पर आधारित राख के कम से कम 16 घंटों के भंडारण के लिए समर्पित शुष्क फ्लाई राख साइलोस प्रतिष्ठापित करेगा, जिनके पास पृथक पहुंच मार्ग होंगे, जिससे कि राख पहुंचाने के कार्य को सुगम बनाया जा सके। इसकी सूचना संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) को उपबंध में दी जाएगी और केन्द्रीय प्रदूषण नियंत्रण

बोर्ड (सीपीसीबी) या राज्य केन्द्रीय प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति द्वारा समय-समय पर निरीक्षण किया जाएगा।

(9) प्रत्येक कोयला या लिग्नाईट आधारित तापीय विद्युत संयंत्र (जिसके अंतर्गत कैप्टिव या सह उत्पादन केन्द्र भी है या दोनों), वास्तविक उपयोगकर्ता (उपयोगकर्ताओं) के हित के लिए केन्द्रीय प्रदूषण नियंत्रण बोर्ड के वेब पोर्टल या मोबाईल फोन एप्प का लिंक उपलब्ध कराकर ताप विद्युत संयंत्र के पास राख की उपलब्धता के वास्तविक आंकड़े प्रदान करेगा।

(10) राख के 100 प्रतिशत उपयोग का वैधानिक दायित्व, जहां भी लागू हो, विधि में बदलाव के रूप में माना जाएगा।

ख. राख के उपयोग के प्रयोजनार्थ, उत्तरवर्ती उप पैराग्राफ लागू होंगे .-

(1) ऐसे सभी अभिकरण (सरकारी, अर्द्धसरकारी और निजी), जो सड़क बिछाने, सड़क और फ्लाई ओवर के किनारों, तटीय जिलों में तटरेखा की सुरक्षा संरचनाओं और लिग्नाईट या कोयला आधारित ताप विद्युत संयंत्र से 300 किमी के भीतर बांधों जैसे निर्माण संबंधी कार्यकलापों में लगे हुए हैं, इन कार्यकलापों में अनिवार्य रूप से राख का उपयोग करेंगे :

परंतु इसको परियोजना स्थल पर निशुल्क पहुंचाया जाए और परिवहन लागत, ऐसे कोयला या लिग्नाईट आधारित ताप विद्युत संयंत्रों द्वारा वहन की जाए।

परंतु यह और कि ताप विद्युत संयंत्र पारस्परिक सहमत हुई शर्तों के अनुसार राख की लागत और परिवहन के लिए शुल्क ले सकता है उस मामले में जहां ताप विद्युत संयंत्र अन्य माध्यम से राख का निपटान करने में समर्थ है और ये अभिकरण इसके लिए प्रर्थना कर सकते हैं और बिना लागत और बिना परिवहन शुल्क के राख उपलब्ध कराने के प्रावधान तभी लागू होंगे यदि उसके लिए ताप विद्युत संयंत्र उस निर्माण अभिकरण को नोटिस जारी करता है।

(2) उक्त कार्यकलापों में राख का उपयोग भारतीय मानक ब्यूरो, भारतीय रोड कांग्रेस, केन्द्रीय भवन अनुसंधान संस्थान, रूड़की, केन्द्रीय सड़क अनुसंधान संस्थान, दिल्ली, केन्द्रीय लोक निर्माण विभाग, राज्य लोक निर्माण विभागों और अन्य केन्द्रीय और राज्य सरकार के अभिकरणों द्वारा निर्धारित किए गए विनिर्देशों और दिशानिर्देशों के अनुसार किया जाएगा।

(3) तापीय विद्युत संयंत्र की 300 किलोमीटर की परिधि के भीतर अवस्थित सभी खानों के लिए विस्तारित उत्पादक उत्तरदायित्व (ईपीआर) के तहत खुली आवर्त खानों में राख का पृष्ठ भंडारण करना या अधिक भार के ढेरों के साथ राख का मिश्रण करना बाध्यकारी होगा। सभी खान के स्वामी या प्रचालक (चाहे सरकारी, सार्वजनिक और निजी क्षेत्र के हो) कोयला या लिग्नाईट आधारित तापीय विद्युत संयंत्रों से तीन सौ किलोमीटर (सड़क द्वारा) के भीतर, महानिदेशक, खान सुरक्षा (डीजीएमएस) के दिशानिर्देशों के अनुसार ओवर बर्डन के बाह्य निक्षेप खान की बैकफिलिंग अथवा स्टोविंग (प्रचालित या छोड़ी गई खानों, जैसा भी मामला हो) के लिए उपयोग की गई सामग्रियों के भार-दर-भार के आधार पर कम से कम 25 प्रतिशत राख को मिश्रित करने के लिए उपाय करेंगे :

परंतु ऐसे तापीय विद्युत केन्द्र निःशुल्क राख प्रदान करके और परिवहन की लागत को वहन करके या पारस्परिक सहमत हुई शर्तों पर लिए गए निर्णय के अनुसार लागत या परिवहन व्यवस्था करके राख की अपेक्षित मात्रा की उपलब्धता को सुकर बनायेंगे और खानों के खाली स्थानों और ढेरों में अधिकभार के साथ राख को मिश्रित करना, सृजित अधिभार के लिए इस अधिसूचना के प्रकाशन की तिथि से लागू होगा और उक्त कार्यकलापों में राख का उपयोग, केंद्रीय प्रदूषण नियंत्रण बोर्ड, महानिदेशक खान सुरक्षा और भारतीय खदान ब्यूरो द्वारा निर्धारित दिशा-निर्देशों के अनुसार किया जाएगा।

स्पष्टीकरण .- इस उप-पैरा के प्रयोजन के लिए यह भी स्पष्ट किया जाता है कि लागत मुक्त राख और निःशुल्क परिवहन के उपबंध केवल तभी लागू होंगे यदि ताप विद्युत संयंत्र इसके लिए खान मालिक को नोटिस देते हैं और अधिभार वाले ढेर के साथ मिश्रित करने और खान में खाली स्थान को भरने के लिए राख के 25 प्रतिशत हिस्से के उपयोग का अधिदेश तब तक लागू नहीं होगा जब तक कि ताप विद्युत संयंत्र द्वारा खान मालिक को नोटिस न दिया गया हो।

(5) (i) सभी खान मालिकों को खान में खाली स्थानों में राख को समायोजित करने के लिए खान बंद योजना (प्रगामी और अंतिम) तैयार करनी होगी और खान में खाली स्थान में राख के निपटान और अधिभार वाले ढेर के साथ राख को मिश्रित करने के लिए खान योजनाओं को संबंधित प्राधिकारी अनुमोदित करेगा। पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा ताप विद्युत संयंत्रों और कोयला खदानों की पर्यावरणीय मंजूरी की अपेक्षा से छूट देने के साथ-साथ ऐसे निपटान के लिए अपनाए जाने वाले दिशानिर्देशों के संबंध में तारीख 28 अगस्त, 2019 को दिशानिर्देश जारी किए गए।

(ii) मंत्रालय, केन्द्रीय प्रदूषण नियंत्रण बोर्ड, महानिदेशक, खान सुरक्षा (डीजीएमएस) और भारतीय खान ब्यूरो (आईबीएम) के साथ परामर्श करके, खानों में खाली स्थानों में राख के निपटान करने तथा अधिभार वाले ढेरों में इसे मिश्रित करना सुगम बनाने के लिए समय-समय पर आगे भी दिशानिर्देश जारी कर सकता है और यह खान मालिकों की जिम्मेदारी होगी कि वे ऐसी खानों को अभिज्ञात करने की तिथि से एक वर्ष के भीतर विभिन्न विनियामक प्राधिकरणों द्वारा जारी की गई अनुमतियों में आवश्यक संशोधन या परिवर्तन प्राप्त करेंगे।

(6) (i) पर्यावरणीय प्रदूषण के संदर्भ में सुरक्षा, व्यवहार्यता (आर्थिक व्यवहार्यता नहीं) और पहलुओं की जांच सहित राख से खान में खाली स्थान को वापस भरने/अधिभार वाले ढेर के साथ राख को मिश्रित करने के लिए खानों की पहचान करने के लिए पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, विद्युत मंत्रालय, खान मंत्रालय, कोयला मंत्रालय, महानिदेशक खान सुरक्षा और भारतीय खान ब्यूरो से प्रतिनिधियों को शामिल करते हुए अध्यक्ष, केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) की अध्यक्षता में एक समिति का गठन किया जाएगा और यह समिति पणधारी मंत्रालयों या विभागों के लिए अभिज्ञान खानों (भूमिगत और खुली, दोनों) के संबंध में तैयार की गई तिमाही रिपोर्टों को अद्यतन करेगी और यह समिति, इस अधिसूचना के प्रकाशन के तुरंत पश्चात उपयुक्त खानों की पहचान करना आरंभ करेगी।

(ii) ताप विद्युत संयंत्र या खानें, उपरोक्त अनुसार अधिदेशित उपयोग लक्ष्यों को पूरा करने के लिए उपर्युक्त समिति द्वारा पहचान किए जाने तक राख के निपटान हेतु प्रतीक्षा नहीं करेंगी।

(7) राख से निचले क्षेत्र को भरने का कार्य, अनुमोदित परियोजनाओं के लिए राज्य प्रदूषण नियंत्रण बोर्ड की पूर्व अनुमति से और केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा निर्धारित दिशा-निर्देशों के अनुसार किया जाएगा और राज्य प्रदूषण नियंत्रण बोर्ड या प्रदूषण नियंत्रण समिति द्वारा अनुमोदित स्थलों, अवस्थान, क्षेत्र और अनुमत मात्रा को अपनी वेबसाइट पर प्रतिवर्ष प्रकाशित किया जाएगा।

(8) केन्द्रीय प्रदूषण नियंत्रण बोर्ड, संगत पणधारी के साथ मिलकर, राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा अनुमति प्रदान करने के लिए समयबद्ध ऑनलाइन आवेदन प्रक्रिया प्रस्तुत करने के साथ-साथ इस अधिसूचना के अधीन परिकल्पित सभी प्रकार के कार्यकलापों के लिए एक वर्ष के भीतर दिशानिर्देश प्रस्तुत करेगा।

(9) कोयला या लिग्नाइट आधारित तापीय ऊर्जा संयंत्र से तीन सौ किलोमीटर के दायरे में स्थित सभी भवन निर्माण परियोजनाएं (केंद्रीय, राज्य और स्थानीय प्राधिकरणों सरकारी उपक्रमों, अन्य सरकारी अभिकरणों तथा सभी निजी अभिकरणों) राख की ईंटों, टाईल्स, धातुमल राख अथवा अन्य राख आधारित उत्पादों का उपयोग करेंगी बशर्ते कि वे वैकल्पिक उत्पादों की कीमत से अधिक कीमत पर उपलब्ध न हों।

(10) राख आधारित उत्पादों के विनिर्माण और ऐसे उत्पादों में राख के उपयोग में भारतीय मानक ब्यूरो, भारतीय सड़क कांग्रेस और केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा निर्धारित विनिर्देशों और दिशानिर्देशों की अनुपालना होगी।

ग. **गैर-अनुपालन के लिए पर्यावरणीय प्रतिकर :-**

(1) तीन वर्ष के चक्र के प्रथम दो वर्षों में, यदि कोयला या लिग्नाइट आधारित तापीय ऊर्जा संयंत्र (कैप्टिव और/ या सह-उत्पादक स्टेशनों या दोनों सहित) ने कम-से-कम 80 प्रतिशत राख (फ्लाई-राख और बॉटम-राख) उपयोग नहीं की है तो ऐसे गैर-अनुपालन ताप विद्युत संयंत्रों पर प्रस्तुत की गई वार्षिक रिपोर्टों के आधार पर वित्तीय वर्ष के

अंत में अप्रयुक्त राख पर 1000 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगाया जाएगा और यदि यह तीन वर्ष के चक्र के तीसरे वर्ष में 100 प्रतिशत राख का उपयोग करने में असमर्थ रहता है, तो वह अप्रयुक्त मात्रा पर 1000 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर के भुगतान का पात्र होगा, जिस पर पहले पर्यावरणीय प्रतिकर नहीं लगायी गयी है।

परंतु पर्यावरणीय प्रतिकर को पैरा क के उप-पैरा (4) में उल्लिखित विभिन्न उपयोगी श्रेणियों के अनुसार प्रथम अनुपालन चक्र के अंतिम वर्ष के अंत में अनुमान लगाया जाएगा और अधिरोपित किया जाएगा।

(2) अधिकारियों द्वारा एकत्रित पर्यावरणीय प्रतिकर को केन्द्रीय प्रदूषण नियंत्रण बोर्ड के निर्दिष्ट खाते में जमा किया जाएगा।

(3) लैगेसी राख के मामले में, यदि कोयला या लिग्नाइट आधारित तापीय ऊर्जा संयंत्र (कैप्टिव या सह-उत्पादक स्टेशनों या दोनों सहित) ने स्थापित क्षमता पर आधारित उत्पन्न राख का कम-से-कम 20 प्रतिशत (प्रथम वर्ष के लिए), 35 प्रतिशत (द्वितीय वर्ष के लिए), 50 प्रतिशत (तीसरे से दसवें वर्ष तक) उपयोग के बराबर लक्ष्य प्राप्त नहीं किया है तो उस वित्तीय वर्ष के दौरान अप्रयुक्त लैगेसी राख पर 1000 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगाया जाएगा और यदि 10 वर्ष के अंत में लैगेसी राख का उपयोग नहीं किया जाता है तो 1000 रुपए प्रति टन की दर से शेष अप्रयुक्त मात्रा पर पर्यावरणीय प्रतिकर लगाया जाएगा जिस पर पहले पर्यावरणीय प्रतिकर नहीं लगाया गया है।

(4) अधिकृत खरीददारों या उपभोक्ता अभिकरणों तक राख भेजने की जिम्मेदारी परिवाहकों या वाहन मालिक की जिम्मेदारी है और यदि इसका अनुपालन नहीं किया जाता है, तो अनधिकृत उपयोगकर्ताओं अथवा गैर-अधिकृत उपयोगर्ताओं को ऐसी मात्रा गलत तरीके से वितरित करने पर 1500 रूपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगायी, इसके अतिरिक्त राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा गैर अनुपालनकर्ता परिवाहकों पर अभियोजन लागू होगा।

(5) इस अधिसूचना के पैरा ख में विहित पर्यावरण अनुकूल तरीके में राख के उपयोग की जिम्मेदारी खरीददार या उपभोगकर्ता एजेंसियों की है और ऐसा नहीं करने पर केन्द्रीय प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा 1500 रूपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगाया जाएगा।

(6) यदि उपयोगकर्ता अधिकरण पैरा ख के अधीन निर्धारित सीमा तक अथवा पैरा घ के उप-पैरा (1) के अधीन, दिए गए नोटिस के माध्यम से सूचित की गई सीमा, इनमें से जो भी कम हो, तक राख का उपयोग नहीं करती है, वे अतिरिक्त राख की मात्रा का 1500 रूपए प्रति टन की दर से भुगतान करने के लिए उत्तरदायी होंगी।

परंतु भवन निर्माण के संबंध में पर्यावरणीय प्रतिकर निर्मित क्षेत्र के 75 रूपये प्रति वर्ग फीट की दर से वसूल किया जाएगा।

(7) (i) ताप विद्युत संयंत्रों अन्य बकायादारों से केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा लगायी गई का पर्यावरणीय प्रतिकर उपयोग अप्रयुक्त राख के सुरक्षित निपटान हेतु किया जाएगा और राख आधारित उत्पादों सहित राख के उपयोग के संबंध में और अधिक अनुसंधान करने के लिए भी निधि का उपयोग किया जा सकता है।

(ii) अप्रयुक्त मात्रा पर लगाए गए पर्यावरणीय प्रतिकर के पश्चात भी राख के उपयोग का उत्तरदायित्व ताप विद्युत संयंत्रों की होगी और यदि पश्चातवती चक्रों में पर्यावरणीय प्रतिकर लगाने के पश्चात ताप विद्युत संयंत्र, किसी विशेष चक्र की राख के उपयोग के लक्ष्य को प्राप्त करता है तो अगले चक्र के दौरान अप्रयुक्त मात्रा पर एकत्र की गई पर्यावरणीय प्रतिकर में 10 प्रतिशत कटौती के पश्चात उक्त रकम ताप विद्युत संयंत्र को वापस कर दी जाएगी और पश्चातवती चक्रों में राख के उपयोग के मामले में एकत्र की गई पर्यावरणीय प्रतिकर की 20 प्रतिशत, 30 प्रतिशत और उसी क्रम में कटौती की जानी है।

घ. राख या राख आधारित उत्पादों की आपूर्ति हेतु प्रक्रिया .–

(1) ताप विद्युत संयंत्रों के स्वामी अथवा राख की ईंटों या टाईल्स या धातुमल आधारित राख के विनिर्माता उन व्यक्तियों या अभिकरणों को लिखित सूचना देंगे जो बिक्री या परिवहन या दोनों के लिए प्रस्तुत राख या राख आधारित उत्पादों के उपयोग के लिए उत्तरदायी हैं।

(2) ऐसे व्यक्ति या उपयोगकर्ता अभिकरणों जिन्हें ताप विद्युत संयंत्रों के स्वामी द्वारा या राख की ईंटों या टाईल्स या धातुमल आधारित राख के उत्पादकों द्वारा सूचना दी गई है, यदि वे पहले ही राख या राख उत्पादों के उपयोग के प्रयोजन से अन्य अभिकरणों के साथ जुड़े हुए हैं, यदि वे किसी भी राख/राख उत्पादों का उपयोग नहीं कर सकते हैं अथवा कम मात्रा का उपयोग कर सकते हैं, तदनुसार ताप विद्युत संयंत्र को सूचित करेंगे।

ङ. प्रवर्तन, निगरानी, लेखा परीक्षा और प्रतिवेदन करना

(1) केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी), उपबंधों के अनुपालना सुनिश्चित करने के लिए प्रवर्तन और निगरानी प्राधिकरण होंगे। सीपीसीबी या एसपीसीबी या पीसीसी तिमाही आधार पर राख के उपयोग की निगरानी करेंगे और सीपीसीबी इस प्रयोजन के लिए अधिसूचना की प्रकाशन की तारीख से छः माह के भीतर एक पोर्टल विकसित करेगा। संबंधित जिला अधिकारी के पास इस अधिसूचना के उपबंधों को लागू करने और निगरानी करने के लिए समवर्ती अधिकारिता होगी।

(2) (i) ताप विद्युत संयंत्र, राख उत्सर्जन और उपयोग से संबंधित मासिक सूचना वेब पोर्टल पर अगले महीने की 5 तारीख तक अपलोड करेगा। कोयला या लिग्नाइट आधारित ताप ऊर्जा संयंत्रों द्वारा केंद्रीय प्रदूषण नियंत्रण बोर्ड, संबंधित राज्य प्रदूषण नियंत्रण बोर्ड या प्रदूषण नियंत्रण समिति (पीसीसी), केंद्रीय विद्युत प्राधिकरण (सीईए) और पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय के संबंधित एकीकृत क्षेत्रीय कार्यालयों को इस अधिसूचना के उपबंधों के अनुपालन संबंधी सूचना उपलब्ध कराते हुए वार्षिक कार्यान्वयन रिपोर्ट प्रत्येक वर्ष (1 अप्रैल से 31 मार्च तक की अवधि के लिए) अप्रैल माह के 30वें दिन तक प्रस्तुत की जाएगी। सीपीसीबी और सीईए द्वारा सभी ताप विद्युत संयंत्रों द्वारा प्रस्तुत वार्षिक रिपोर्टों का समेकन किया जाएगा और उसे पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय को 31 मई तक प्रस्तुत किया जाएगा।

(ii) सभी अन्य उपयोगकर्ता अधिकरण पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय या राज्य स्तरीय पर्यावरण प्रभाव आकलन प्राधिकरण (एसईआईएए) द्वारा जारी पर्यावरणीय मंजूरी (ईसी) अथवा राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा जारी संचालन की सहमति (सीटीओ), जो भी लागू हो, की अनुपालना रिपोर्ट में इस अधिसूचना में आज्ञापकता के अनुसार राख के उपभोग या उपयोग या निस्तारण तथा राख आधारित उत्पादों के उपयोग संबंधी सूचना प्रस्तुत करेंगे। केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) या राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) अधिसूचना के उपबंधों के प्रभावी कार्यान्वयन की समीक्षा करने हेतु ताप विद्युत संयंत्रों के अतिरिक्त अन्य सभी अधिकरणों की राख उपयोग की वार्षिक रिपोर्ट प्रकाशित करेंगे।

(3) इस अधिसूचना के उपबंधों की निगरानी और कार्यान्वयन के प्रयोजन के लिए केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) की अध्यक्षता में एक समिति का गठन किया जाएगा जिसके सदस्य विद्युत मंत्रालय, कोयला मंत्रालय, खनन मंत्रालय, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, सड़क परिवहन और राजमार्ग मंत्रालय और भारी उद्यम विभाग से होने के साथ-साथ समिति के अध्यक्ष द्वारा नामित किए जाने वाले कोई संबंधित पणधारी होंगे। यह समिति संगत पणधारी को आमंत्रित कर सकती है। यह समिति इस अधिसूचना के उपबंधों के प्रभावी और दक्ष कार्यान्वयन के लिए सिफारिशें कर सकती है। यह समिति छः माह में कम से कम एक बार एक बैठक करेगी और वार्षिक कार्यान्वयन रिपोर्टों की समीक्षा करेगी और यह समिति, इस अधिसूचना द्वारा आज्ञापक किए गए अनुसार छः महीनों में कम से कम एक बार संगत पणधारी (को) को आमंत्रित करके राख के उपयोग की निगरानी करने के लिए पणधारी से साथ परामर्शदात्री बैठकें आयोजित करेगी। यह समिति पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (एमओईएफसीसी) को छः मासिक रिपोर्ट प्रस्तुत करेगी।

(4) ताप विद्युत संयंत्रों और राख के उपयोगकर्ताओं या राख आधारित उत्पादों के विनिर्माताओं के बीच के विवाद का समाधान करने के प्रयोजन से राज्य सरकारें या संघ राज्यक्षेत्र की सरकारें इस अधिसूचना के प्रकाशन की तारीख से तीन माह के भीतर राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) की अध्यक्षता में एक समिति का गठन करेंगी जिसमें विद्युत विभाग के प्रतिनिधि और एक प्रतिनिधि उस विभाग का होगा, जो विवाद वाले संबंधित अभिकरण का कार्य देख रहे हैं।

(5) केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) द्वारा प्राधिकृत लेखा परीक्षकों द्वारा ताप विद्युत संयंत्रों और उपयोगकर्ता अभिकरणों द्वारा किए गए राख के निपटान की अनुपालन लेखा परीक्षा संचालित की जाएगी और लेखा परीक्षा की रिपोर्ट प्रत्येक वर्ष 30 नवम्बर तक केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) को प्रस्तुत की जाएगी। केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) लेखा परीक्षा की रिपोर्ट प्राप्त होने के पंद्रह दिनों के भीतर अनुपालन न करने वाले ताप विद्युत संयंत्रों के विरुद्ध कार्रवाई प्रारंभ करेंगे।

[फा. सं. एचएमएम-9/1/2019-एचएमएम]

नरेश पाल गंगवार, संयुक्त सचिव

उपाबंध

31 मई तक अथवा उससे पहले प्रस्तुत की जाने वाली राख संबंधी उपबंधों की अनुपालन रिपोर्ट (01 अप्रैल से 31 मार्च की अवधि के लिए)।

क्र.सं.	ब्यौरा	
1.	विद्युत संयंत्र का नाम	
2.	कंपनी का नाम	
3.	जिला	
4.	राज्य	
5.	पत्राचार के लिए डाक का पता :	
6.	ई-मेल :	
7.	विद्युत संयंत्र की संस्थापित क्षमता (मेगा वॉट) :	
8.	संयंत्र लोड फैक्टर (पीएलएफ) :	
9.	उत्पादित यूनिटों की संख्या (एमडब्ल्यूएच) :	
10.	विद्युत संयंत्र के अंतर्गत कुल क्षेत्र (हेक्टेयर) (राख कुंडों के अधीन क्षेत्र सहित) :	
11.	रिपोर्टिंग की अवधि के दौरान कोयला खपत की मात्रा (प्रति वर्ष मीट्रिक टन) :	
12.	औसत राख सामग्री प्रतिशतता में (%) :	
13.	रिपोर्टिंग की अवधि के दौरान वर्तमान में उत्पादित राख की मात्रा (प्रति वर्ष मीट्रिक टन) : फ्लाई राख (प्रति वर्ष मीट्रिक टन) : बॉटम राख (प्रति वर्ष मीट्रिक टन) :	
14.	ड्राई फ्लाई राख भंडारण गड्ढा (गड्ढों) की क्षमता (मीट्रिक टन) :	
15.	**रिपोर्टिंग की अवधि के दौरान वर्तमान में उत्पादित राख के उपयोग का ब्यौरा:** (क) रिपोर्टिंग की अवधि के दौरान वर्तमान में उपयोग की गई राख की	

	कुल मात्रा (एमटीपीए) : (ख) उपयोग की गई फ्लाई राख की मात्रा (एमटीपीए) : i. फ्लाई-एश आधारित उत्पाद (ईंट या ब्लॉक या टाइल्स या फाइबर सीमेंट शीट या पाइप या बोर्ड/पैनल) : ii. सीमेंट विनिर्माण : iii. रेडी मिक्स कंक्रीट : iv. राख और जीओ-पॉलिमर आधारित निर्माण सामग्री : v. सिंटर्ड या कोल्ड बॉन्डेड राख एग्रीगेट का निर्माण : vi. सड़कों, सड़क और फ्लाई ओवर के पुश्तों का निर्माण : vii. बांधों का निर्माण : viii. निम्न भू-क्षेत्र का भराव : ix. खनिज क्षेत्रों का भराव : x. अधिभार वाले डम्पों में उपयोग : xi. कृषि : xii. तटीय जिलों में तटरेखा सुरक्षा संरचनाओं का निर्माण : xiii. अन्य देशों को राख का निर्यात : xiv. अन्य (कृपया विनिर्दिष्ट करें) : (ग) उपयोग किए गए तल के राख की मात्रा (एमटीपीए) : i. फ्लाई-एश आधारित उत्पाद (ईंट या ब्लॉक या टाइल्स या फाइबर सीमेंट शीट या पाइप या बोर्ड या पैनल) : ii. सीमेंट विनिर्माण : iii. रेडी मिक्स कंक्रीट : iv. राख और जीओ-पॉलिमर आधारित निर्माण सामग्री : v. सिंटर्ड या कोल्ड बॉन्डेड राख एग्रीगेट का निर्माण : vi. सड़कों, सड़क और फ्लाईओवर के पुश्तों का निर्माण : vii. बांधों का निर्माण : viii. निम्न भू-क्षेत्र का भराव : ix. खनिज क्षेत्रों का भराव : x. अधिभार वाले डम्पों में उपयोग : xi. कृषि : xii. तटीय जिलों में तटरेखा सुरक्षा संरचनाओं का निर्माण : xiii. अन्य देशों को राख का निर्यात : xiv. अन्य (कृपया विनिर्दिष्ट करें) : रिपोर्टिंग की अवधि के दौरान वर्तमान में अप्रयुक्त राख की कुल मात्रा (एमटीपीए) :	
16.	रिपोर्टिंग की अवधि के दौरान वर्तमान में उत्पादित राख का प्रतिशतता उपयोग (%) :	
17.	**राख कुंडों में राख के निपटान का ब्यौरा** क) तारीख 31 मार्च तक (रिपोर्टिंग की अवधि को छोड़कर) राख कुण्ड (कुण्डों) में निपटान किए गए राख की कुल मात्रा (मीट्रिक टन):	

	ख) रिपोर्टिंग की अवधि के दौरान राख कुण्ड (कुण्डों) में निपटान किए गए राख की मात्रा (मीट्रिक टन): ग) रिपोर्टिंग की अवधि के दौरान राख कुण्डों में गारा निस्सरण हेतु खपत हुए जल की कुल मात्रा (मी³): घ) राख कुण्डों की कुल संख्या: (i) सक्रिय: (ii) खाली किए गए (पुन: भरा जाना है) (iii) पुन: भरे गए: ङ.) राख कुण्डों के अधीन कुल क्षेत्र (हेक्टेयर):	
18.	**अलग-अलग राख कुण्ड का ब्यौरा** *राख कुण्ड 1,2 आदि (यदि राख कुण्डों की संख्या एक से अधिक हो, तो कृपया निम्नलिखित ब्यौरा अलग से उपलब्ध कराएं)* क) स्थिति: निर्माणाधीन या सक्रिय या खाली किया गया या पुन: भरा गया ख) राख कुण्ड में राख का निपटान शुरू करने की तारीख/महीना/वर्ष या महीना/वर्ष): ग) राख कुण्ड की क्षमता पूर्ण किए जाने के पश्चात् उसमें राख निपटान रोकने की तारीख (तारीख/महीना/वर्ष या महीना/वर्ष): (सक्रिय राख कुण्डों के लिए लागू नहीं) ग) क्षेत्र (हेक्टेयर): घ) डाइक की ऊंचाई (मी.): ङ) आयतन (मी³): ङ.) तारीख 31 मार्च तक निपटान किए गए राख की मात्रा (मीट्रिक टन): च) उपलब्ध आयतन का प्रतिशत (%) और आगे निपटान किए जा सकने वाले राख की मात्रा (मीट्रिक टन): छ) राख कुण्ड के भरे जाने की अनुमानित अवधि (वर्षों और महीनों की संख्या): ङ.) निर्देशांक (अक्षांश और देशान्तर): (कृपया न्यूनतम 4 निर्देशांकों को विनिर्दिष्ट करें) ज) राख कुण्ड में की गई लाइनिंग का प्रकार: एचडीपीई लाइनिंग या एलडीपीई लाइनिंग या क्ले लाइनिंग या कोई लाइनिंग नहीं झ) निपटान की विधि: शुष्क निपटान या नम गारा (नम गारा के मामले में कृपया विनिर्दिष्ट करें कि क्या एचसीएसडी या एमसीएसडी या एलसीएसडी है) ज) राख का अनुपात: गारा मिश्रण में जल (1:____): झ) संस्थापित और कार्यशील राख जल पुनर्चक्रण प्रणाली (एडब्ल्यूआरएस): हां या नहीं ञ) जमीन के अंदर या जल निकाय में राख कुण्ड से निस्सरित अपशिष्ट जल की मात्रा (मी³): ट) डाइक की स्थिरता का अध्ययन कराए जाने की पिछली तारीख और उस संगठन का नाम जिसने अध्ययन किया: ठ) लेखा-परीक्षा किए जाने की पिछली तारीख और उस संगठन का नाम जिसने लेखा-परीक्षा की:	
19.	उपयोग किए गए पुराने राख की मात्रा (एमटीपीए): i. फ्लाई-एश आधारित उत्पाद (ईंट या ब्लॉक या टाइल्स या फाइबर	

	सीमेंट शीट या पाइप या बोर्ड या पैनल): ii. सीमेंट विनिर्माण: iii. रेडी मिक्स कंक्रीट: iv. राख और जीओ-पॉलिमर आधारित निर्माण सामग्री: v. सिंटर्ड या कोल्ड बॉन्डेड राख एग्रीगेट का निर्माण: vi. सड़कों, सड़क और फ्लाई ओवर के पुश्तों का निर्माण: vii. बांधों का निर्माण: viii. निम्न भू-क्षेत्र का भराव: ix. खनिज क्षेत्रों का भराव: x. अधिभार वाले डम्पों में उपयोग: xi. कृषि: xii. तटीय जिलों में तटरेखा सुरक्षा संरचनाओं का निर्माण: xiii. अन्य देशों को राख का निर्यात xiv. अन्य (कृपया विनिर्दिष्ट करें):	

20.	सार :			
	व्यौरा	सृजित मात्रा (एमटीपी)	उपयोग की गई मात्रा (एमटीपी) और (%)	शेष मात्रा (एमटीपी)
	रिपोर्टिंग की अवधि के दौरान राख			
	पुरानी राख			
	कुल			
21.	कोई अन्य सूचना : वार्षिक अनुपालन रिपोर्ट, और विद्युत संयंत्रों और राख कुण्डों की शेष फाइलों की सॉफ्ट कॉपी ई-मेल:- moefcc-coalash@gov.in पर भेजी जाए।			
22.	प्राधिकृत हस्ताक्षरकर्ता के हस्ताक्षर			

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 31st December, 2021

S.O. 5481(E).—Whereas by notification of the Government of India in the erstwhile Ministry of Environment and Forests *vide* S.O.763 (E), dated the 14th September, 1999, as amended from time to time, the Central Government, issued directions for restricting the excavation of top soil for manufacturing of bricks and promoting the utilisation of fly ash in the manufacturing of building materials and in construction activity within a specified radius of three hundred kilometres from the coal or lignite based thermal power plants;

And whereas, to implement the aforesaid notification more effectively based on the polluter pays principle (PPP) thereby ensuring 100 per cent utilisation of fly ash by the coal or lignite based thermal power plants and for the sustainability of the fly ash management system, the Central Government reviewed the existing notification; and whereas environmental compensation needs to be introduced based on the polluter pays principle;

And whereas, there is a need to conserve top soil by promoting manufacture and mandating use of ash based products and building materials in the construction sector;

And whereas, there is a need to conserve top soil and natural resources by promoting utilisation of ash in road laying, road and flyover embankments, shoreline protection measures, low lying areas of approved projects, backfilling of mines, as an alternative for filling of earthen materials;

And whereas, it is necessary to protect the environment and prevent the dumping and disposal of fly ash discharged from coal or lignite based thermal power plants on land;

And whereas, in the said notification the phrase 'ash', has been used which includes both fly ash as well as bottom ash generated from the Coal or Lignite based thermal power plants;

And whereas, the Central Government intends to bring out a comprehensive framework for ash utilisation including system of environmental compensation based on polluter pays principle;

And whereas, a draft notification on ash utilisation by coal or lignite thermal power plants in supersession of the notification of the Government of India, Ministry of Environment and Forests published in the Gazette of India, Extra Ordinary part II, section 3, sub-section (i) *vide* S.O.763 (E), dated the 14th September, 1999, by notification in exercise of the powers conferred under sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, was published in the Gazette of India, Extraordinary, Part II, section 3, sub-section (i), *vide* G.S.R. 285(E), dated the 22nd April, 2021 inviting objections and suggestions from all persons likely to be affected thereby before the expiry of sixty days from the date on which copies of the Gazette containing the said draft provisions were made available to the public;

And, whereas all the objections and suggestions received from all persons likely to be affected thereby in respect of the said draft notification have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, and in supersession of the Notification S.O.763 (E), dated the 14th September, 1999 except as respect things done or omitted to be done before such supersession, the Central Government hereby issues the following notification on ash utilisation from coal or lignite thermal power plants which shall come into force on the date of the publication of this notification, namely:-

A. Responsibilities of thermal power plants to dispose fly ash and bottom ash.—

(1) Every coal or lignite based thermal power plant (including captive or co-generating stations or both) shall be primarily responsible to ensure 100 per cent utilisation of ash (fly ash, and bottom ash) generated by it in an eco-friendly manner as given in sub-paragraph (2);

(2) The ash generated from coal or lignite based thermal power plants shall be utilised only for the following eco-friendly purposes, namely:-

(i) Fly ash based products viz. bricks, blocks, tiles, fibre cement sheets, pipes, boards, panels;

(ii) Cement manufacturing, ready mix concrete;

(iii) Construction of road and fly over embankment, Ash and Geo-polymer based construction material;

(iv) Construction of dam;

(v) Filling up of low lying area;

(vi) Filling of mine voids;

(vii) Manufacturing of sintered or cold bonded ash aggregate;

(viii) Agriculture in a controlled manner based on soil testing;

(ix) Construction of shoreline protection structures in coastal districts;

(x) Export of ash to other countries;

(xi) Any other eco-friendly purpose as notified from time to time.

(3) A committee shall be constituted under the chairmanship of Chairman, Central Pollution Control Board (CPCB) and having representatives from Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Power, Ministry of Mines, Ministry of Coal, Ministry of Road Transport and Highways, Department of Agricultural Research and Education, Institute of Road Congress, National Council for Cement and Building Materials, to examine and review and recommend the eco-friendly ways of utilisation of ash and make inclusion or exclusion or modification in the list of such ways as mentioned in Sub-paragraph (2) based on technological developments and requests received from stakeholders. The committee may invite State Pollution Control Board or Pollution Control Committee, operators of thermal power plants and mines, cement plants and other stakeholders as and when required for this purpose. Based on the recommendations of the Committee, Ministry of Environment, Forest and Climate Change (MoEFCC) may publish such eco-friendly purpose.

(4) Every coal or lignite based thermal power plant shall be responsible to utilise 100 per cent ash (fly ash and bottom ash) generated during that year, however, in no case shall utilisation fall below 80 per cent in any year, and the thermal power plant shall achieve average ash utilisation of 100 per cent in a three years cycle:

Provided that the three years cycle applicable for the first time is extendable by one year for the thermal power plants where ash utilisation is in the range of 60-80 per cent, and two years where ash utilisation is below 60 per cent and for the purpose of calculation of percentage of ash utilisation, the percentage quantity of utilisation in the year 2021-2022 shall be taken into account as per the table below:

Utilisation percentages of thermal power plants	First compliance Cycle to meet 100 per cent utilisation	Second compliance cycle onwards, to meet 100 per cent utilisation
>80 per cent	3 years	3 years
60-80 per cent	4 years	3 years
<60 per cent	5 years	3 years

Provided further that the minimum utilisation percentage of 80 per cent shall not be applicable to the first year and first two years of the first compliance cycle for the thermal power plants under the utilisation category of 60-80 per cent and <60 per cent, respectively.

Provided also that 20per cent of ash generated in the final year of compliance cycle may be carried forward to the next cycle which shall be utilised in the next three years cycle along with the ash generated during that cycle.

(5) The unutilised accumulated ash i.e. legacy ash, which is stored before the publication of this notification, shall be utilised progressively by the thermal power plants in such a manner that the utilization of legacy ash shall be completed fully within ten years from the date of publication of this notification and this will be over and above the utilisation targets prescribed for ash generation through current operations of that particular year:

Provided that the minimum quantity of legacy ash in percentages as mentioned below shall be utilised during the corresponding year and the minimum quantity of legacy ash is to be calculated based on the annual ash generation as per installed capacity of thermal power plant.

Year from date of publication	1st	2nd	3rd -10th
Utilisation of legacy ash (in percentage of Annual ash)	At least 20 per cent	At least 35 per cent	At least 50 per cent

Provided further that the legacy ash utilisation shall not be required where ash pond or dyke has stabilised and the reclamation has taken place with greenbelt or plantation and the concerned State Pollution Control Board shall certify in this regard. Stabilisation and reclamation of an ash pond or dyke including certification by the Central Pollution Control Board (CPCB) or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall be carried out within a year from the date of publication of this notification. The ash remaining in all other ash ponds or dykes shall be utilised in progressive manner as per the above mentioned timelines.

Note: The obligations under sub-paragraph (4) and (5) above for achieving the ash utilisation targets shall be applicable from 1st April, 2022.

(6) Any new as well as operational thermal power plant may be permitted an emergency or temporary ash pond with an area of 0.1 hectare per Mega Watt (MW). Technical specifications of ash ponds or dykes shall be as per the guidelines of Central Pollution Control Board (CPCB) made in consultation with Central Electricity Authority (CEA) and these guidelines shall also lay down a procedure for annual certification of the ash pond or dyke on its safety, environmental pollution, available volume, mode of disposal, water consumption or conservation in disposal, ash water recycling and greenbelt, etc., and shall be put in place within three months from the date of publication of this notification.

(7) Every coal or lignite based thermal power plant shall ensure that loading, unloading, transport, storage and disposal of ash is done in an environmentally sound manner and that all precautions to prevent air and water pollution are taken and status in this regard shall be reported to the concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) in Annexure attached to this notification.

(8) Every coal or lignite based thermal power plant shall install dedicated silos for storage of dry fly ash silos for at least sixteen hours of ash based on installed capacity and it shall be reported upon to the concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) in the Annexure and shall be inspected by Central Pollution Control Board (CPCB) or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) from time to time.

(9) Every coal or lignite based thermal power plant (including captive or co-generating stations or both) shall provide real time data on daily basis of availability of ash with Thermal Power Plant (TPP), by providing link to Central Pollution Control Board's web portal or mobile phone App for the benefit of actual user(s).

(10) Statutory obligation of 100 per cent utilisation of ash shall be treated as a change in law, wherever applicable.

B. **For the purpose of utilisation of ash, the subsequent sub-paras shall apply.**—

(1) All agencies (Government, Semi-government and Private) engaged in construction activities such as road laying, road and flyover embankments, shoreline protection structures in coastal districts and dams within 300 kms from the lignite or coal based thermal power plants shall mandatorily utilise ash in these activities:

Provided that it is delivered at the project site free of cost and transportation cost is borne by such coal or lignite based thermal power plants.

Provided further that thermal power plant may charge for ash cost and transportation as per mutually agreed terms, in case thermal power plant is able to dispose the ash through other means and those agencies makes a request for it and the provisions of ash free of cost and free transportation shall be applicable, if thermal power plant serves a notice on the construction agency for the same.

(2) The utilisation of ash in the said activities shall be carried out in accordance with specifications and guidelines laid down by the Bureau of Indian Standards, Indian Road Congress, Central Building Research Institute, Roorkee, Central Road Research Institute, Delhi, Central Public Works Department, State Public Works Departments and other Central and State Government Agencies.

(3) It shall be obligatory on all mines located within 300 kilometres radius of thermal power plant, to undertake backfilling of ash in mine voids or mixing of ash with external Overburden dumps, under Extended Producer Responsibility (EPR). All mine owners or operators (Government, Public and Private Sector) within three hundred kilometres (by road) from coal or lignite based thermal power plants, shall undertake measures to mix at least 25 per cent of ash on weight to weight basis of the materials used for external dump of overburden, backfilling or stowing of mine (running or abandoned as the case may be) as per the guidelines of the Director General of Mines Safety (DGMS):

Provided that such thermal power stations shall facilitate the availability of required quantity of ash by delivering ash free of cost and bearing the cost of transportation or cost or transportation arrangement decided on mutually agreed terms and mixing of ash with overburden in mine voids and dumps shall be applicable for the overburden generated from the date of publication of this notification and the utilisation of ash in the said activities shall be carried out in accordance with guidelines laid down by the Central Pollution Control Board, Director General of Mines Safety and Indian Bureau of Mines.

Explanation.- For the purpose of this sub-paragraph, it is also clarified that the provisions of ash free of cost and free transportation shall be applicable, if thermal power plants serve a notice on the mine owner for the same and the mandate of using 25 per cent of ash for mixing with overburden dump and filling up of mine voids shall not be applicable unless a notice is served on the mine owner by thermal power plant.

(4) (i) All mine owners shall get mine closure plans (progressive and final) to accommodate ash in the mine voids and the concerned authority shall approve mine plans for disposal of ash in mine voids and mixing of ash with overburden dumps. The Ministry of Environment, Forest and Climate Change (MoEFCC) has issued guidelines on 28th August, 2019 regarding exemption of requirement of Environmental Clearance of thermal power plants and coal mines along with the guidelines to be followed for such disposal.

(ii) The Ministry in consultation with Central Pollution Control Board (CPCB), Director General of Mine Safety (DGMS) and Indian Bureau of Mines (IBM) may issue further guidelines time to time to facilitate ash disposal in mine voids and mixing with overburden dumps and it shall be the responsibility of mine owners to get the necessary amendments or modifications in the permissions issued by various regulatory authorities within one year from the date of identification of such mines.

(5) (i) There shall be a committee headed by Chairperson, Central Pollution Control Board (CPCB) with representatives from Ministry of Environment, Forest and Climate Change, Ministry of Power, Ministry of Mines, Ministry of Coal, Director General of Mine Safety and Indian Bureau of Mines for identification of mines for backfilling of mine voids with ash or mixing of ash with overburden dump including examination of safety, feasibility (not economic feasibility) and aspects of environmental contamination and the committee shall get updated quarterly reports prepared regarding identified mines (both underground and opencast) for the stakeholder Ministries or Departments and the committee shall start identifying the suitable mines immediately after the publication of this notification.

(ii) Thermal power plants or mines shall not wait for disposal of ash till the identification is done by the above mentioned committee, to meet the utilisation targets mandated as above.

(6) Filling of low lying areas with ash shall be carried out with prior permission of the State Pollution Control Board or Pollution Control Committee for approved projects, and in accordance with guidelines laid down by Central Pollution Control Board (CPCB) and the State Pollution Control Board or Pollution Control Committee (PCC) shall publish approved sites, location, area and permitted quantity annually on its website.

(7) Central Pollution Control Board after engaging relevant stakeholders, shall put in place the guidelines within one year for all types of activities envisaged under this notification including putting in place time bound online application process for the grant permission by State Pollution Control Boards (SPCBs) or Pollution Control Committees (PCCs).

(8) All building construction projects (Central, State and Local authorities, Govt. undertakings, other Govt. agencies and all private agencies) located within a radius of three hundred kilometres from a coal or lignite based thermal power plant shall use ash bricks, tiles, sintered ash aggregate or other ash based products, provided these are made available at prices not higher than the price of alternative products.

(9) Manufacturing of ash based products and use of ash in such products shall be in accordance with specifications and guidelines laid down by the Bureau of Indian Standards, Indian Road Congress, and Central Pollution Control Board.

C. Environmental compensation for non-compliance.—

(1) In the first two years of a three years cycle, if the coal or lignite based thermal power plant (including captive or co-generating stations or both) has not achieved at least 80 per cent ash (fly ash and bottom ash) utilisation, then such non-compliant thermal power plants shall be imposed with an environmental compensation of Rs. 1000 per ton on unutilised ash during the end of financial year based on the annual reports submitted and if it is unable to utilise 100 per cent of ash in the third year of the three years cycle, it shall be liable to pay an environmental compensation of Rs. 1000 per ton on the unutilised quantity on which environmental compensation has not been imposed earlier:

Provided that the environmental compensation shall be estimated and imposed at the end of last year of the first compliance cycle as per the various utilisation categories as mentioned in sub-paragraph (4) of Para A.

(2) Environmental compensation collected by the authorities shall be deposited in the designated account of Central Pollution Control Board.

(3) In case of legacy ash, if the coal or lignite based thermal power plant (including captive or co-generating stations or both) has not achieved utilisation equivalent to at least 20 per cent (for the first year), 35 per cent (for the second year), 50 per cent (for third to tenth year) of ash generated based on installed capacity, an environmental compensation of Rs. 1000 per ton of unutilised legacy ash during that financial year shall be imposed and if the utilization of legacy ash is not completed at the end of 10 years, an environmental compensation of Rs.1000 per ton shall be imposed on the remaining unutilised quantity which has not been imposed earlier.

(4) It shall be the responsibility of the transporters or vehicle owner to deliver ash to authorised purchaser or user agency and if it is not complied, then an environmental compensation of Rs. 1500 per ton on such quantity as mis-delivered to unauthorised users or non- delivered to authorised users will be imposed besides prosecution of such non-compliant transporters by State Pollution Control Board (SPCB) or Pollution Control Committee (PCC).

(5) It is the responsibility of the purchasers or user agencies to utilise ash in an eco-friendly manner as laid down at para B of this notification and if it is not complied, then an environmental compensation of Rs. 1500 or per ton shall be imposed by State Pollution Control Board (SPCB) or Pollution Control Committee (PCC).

(6) If the user agencies do not utilise ash to the extent obligated under para B or the extent to which they have been intimated through Notice(s) served under sub-paragraph (1) of para D, whichever is lower, they shall be liable to pay Rs. 1500 per ton of ash for the quantity they fall short off:

Provided that the environmental compensation on building constructions shall be levied at Rs.75/- per square feet of built up area of construction.

(7) (i) The environmental compensation collected by Central Pollution Control Board from the thermal power plants and other defaulters shall be used towards the safe disposal of the unutilised ash and the fund may also be utilised for advancing research on use of ash including ash based products.

(ii) The liability of ash utilisation shall be with thermal power plants even after imposition of environmental compensation on unutilised quantities and in case thermal power plant achieves the ash utilisation of any

particular cycle after imposition of environmental compensation in subsequent cycles, the said amount shall be returned to thermal power plant after deducting 10 per cent of the environmental compensation collected on the unutilised quantity during the next cycle and deduction of 20 per cent, 30 per cent, and so on, of the environmental compensation collected is to be made in case of utilisation of ash in subsequent cycles.

D. Procedure for supply of ash or ash based products.—

(1) The owner of thermal power plants or manufacturers of ash bricks or tiles or sintered ash aggregate shall serve written notice to persons or agencies who are liable to utilise ash or ash based products, offering for sale, or transport or both.

(2) Persons or user agencies who have been served notices by owner of thermal power plants or manufacturers of ash bricks or tiles or sintered ash aggregate, if they have already tied up with other agencies for the purpose of utilisation of ash or ash products, shall inform the thermal power plant accordingly, if they cannot use any ash or ash products or use reduced quantity.

E. Enforcement, Monitoring, Audit and Reporting.—

(1) The Central Pollution Control Board (CPCB) and the concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall be the enforcing and monitoring authority for ensuring compliance of the provisions and shall monitor the utilisation of ash on quarterly basis. Central Pollution Control Board shall develop a portal for the purpose within six months of date of publication of the notification. The concerned District Magistrate shall have concurrent jurisdiction for enforcement and monitoring of the provisions of this notification.

(2) (i) Thermal power plants shall upload monthly information regarding ash generation and utilisation by 5th of the next month on the web portal. Annual implementation report (for the period 1st April to 31st March) providing information about the compliance of provisions in this notification shall be submitted by the 30th day of April, every year to the Central Pollution Control Board, concerned State Pollution Control Board or Pollution Control Committee (PCC), Central Electricity Authority (CEA), and concerned Integrated Regional Office of Ministry of Environment, Forest and Climate Change by the coal or lignite based thermal power plants. Central Pollution Control Board and Central Electricity Authority shall compile the annual reports submitted by all the thermal power plants and submit to Ministry of Environment, Forest and Climate Change by 31st May.

(ii) All other user agencies shall submit consumption or utilisation or disposal of ash and use of ash based products as mandated in this notification in the compliance report of Environmental Clearance (EC) issued by Ministry of Environment, Forest and Climate Change or State Level Environment Impact Assessment Authority (SEIAA) or Consent to Operate (CTO) issued by State Pollution Control Board (SPCB) or Pollution Control Committee (PCC), whichever is applicable. The Central Pollution Control Board (CPCB) or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall publish annual report of ash utilisation of all other agencies except thermal power plants to review the effective implementation of the provisions of the notification.

(3) For the purpose of monitoring the implementation of the provisions of this notification, a committee shall be constituted under the Chairperson, Central Pollution Control Board (CPCB), with members from Ministry of Power, Ministry of Coal, Ministry of Mines, Ministry of Environment, Forest and Climate Change, Ministry Road Transportation and Highways, Department of Heavy Industry as well as any concerned stakeholder(s), to be nominated by the Chairman of the committee. The committee may make recommendations for effective and efficient implementation of the provisions of the notification. The committee shall meet at least once in six months and review annual implementation reports and the committee shall also hold stakeholder consultations for monitoring of ash utilisation as mandated by this notification by inviting relevant stakeholder(s) at least once in six months. The committee shall submit the six monthly report to Ministry of Environment, Forest and Climate Change (MoEFCC).

(4) For the purpose of resolving disputes between thermal power plants and users of ash or manufacturer of ash based products, the State Governments or Union territory administration constitute a Committee within three months from the date of publication of this notification under the Chairman, State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) with representatives from Department of Power, and one representative from the Department which deals with the subject of concerned agency with which dispute is made.

(5) The compliance audit for ash disposal by the thermal power plants and the user agency shall be conducted by auditors, authorised by Central Pollution Control Board (CPCB) and audit report shall be submitted to Central Pollution Control Board (CPCB) and concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) by 30th November every year. Central Pollution Control Board (CPCB) and concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall initiate action against non-compliant thermal power plants within fifteen days of receipt of audit report.

[F. No. HSM-9/1/2019-HSM]

NARESH PAL GANGWAR, Jt. Secy.

Annexure

Ash Compliance Report (for the period 1st April-31st March) to be submitted on or before 31st May.

Sl. No.	Details	
1.	Name of Power Plant	
2.	Name of the company	
3.	District	
4.	State	
5.	Postal address for communication:	
6.	E-mail:	
7.	Power Plant installed capacity (MW):	
8.	Plant Load Factor (PLF):	
9.	No. of units generated (MWh):	
10.	Total area under power plant (ha): (including area under ash ponds)	
11.	Quantity of coal consumption during reporting period (Metric Tons per Annum):	
12	Average ash content in percentage (per cent):	
13.	Quantity of current ash generation during reporting period (Metric Tons per Annum): Fly ash (Metric Tons per Annum): Bottom ash (Metric Tons per Annum):	
14.	Capacity of dry fly ash storage silo(s) (Metric Tons) :	
15	Details of utilisation of current ash generated during reporting period (a) Total quantity of current ash utilised (MTPA) during reporting period: (b) Quantity of fly ash utilised (MTPA): (i) Fly ash based products (bricks or blocks or tiles or fibre cement sheets or pipes or boards or panels) (ii) Cement manufacturing:	

	(iii) Ready mix concrete: (iv) Ash and Geo-polymer based construction material: (v) Manufacturing of sintered or cold bonded ash aggregate: (vi) Construction of roads, road and fly over embankment: (vii) Construction of dams: (viii) Filling up of low lying area: (ix) Filling of mine voids: (x) Use in overburden dumps: (xi) Agriculture: (xii) Construction of shoreline protection structures in coastal districts; (xiii) Export of ash to other countries: (xiv) Others (please specify): (c) Quantity of bottom ash utilised (MTPA): (i) Fly ash based products (bricks or blocks or tiles or fibre cement sheets or pipes or boards or panels): (ii) Cement manufacturing: (iii) Ready mix concrete: (iv) Ash and Geo-polymer based construction material: (v) Manufacturing of sintered or cold bonded ash aggregate: (vi) Construction of roads, road and flyover embankment: (vii) Construction of dams: (viii) Filling up of low lying area: (ix) Filling of mine voids: (x) Use in overburden dumps: (xi) Agriculture: (xii) Construction of shoreline protection structures in coastal districts: (xiii) Export of ash to other countries: (xiv) Others (please specify): Total quantity of current ash unutilised (MTPA) during reporting period:	
16.	Percentage utilisation of current ash generated during reporting period (per cent):	
17.	Details of disposal of ash in ash ponds (a) Total quantity of ash disposed in ash pond(s) (Metric Tons) as on 31st March (excluding reporting period): (b) Quantity of ash disposed in ash pond(s) during reporting period (Metric Tons): (c) Total quantity of water consumption for slurry discharge into ash ponds during reporting period (m^3): (d) Total number of ash ponds: (i) Active: (ii) Exhausted (yet to be reclaimed): (iii) Reclaimed: (e) total area under ash ponds (ha):	
18.	Individual ash pond details *Ash pond-1,2, etc (please provide below mentioned details separately, if number of ash ponds is more than one)* (a) Status: Under construction or Active or Exhausted or	

	Reclaimed (b) Date of start of ash disposal in ash pond (DD/MM/YYYY or MMYYYY): (c) Date of stoppage of ash disposal in ash pond after completing its capacity (DD/MM/YYYY or MM/YYYY): (Not applicable for active ash ponds) (c) area (hectares): (d) dyke height (m): (d) volume (m^3): (e) quantity of ash disposed as on 31st March (Metric Tons): (f) available volume in percentage (per cent) and quantity of ash can be further disposed (Metric Tons): (g) expected life of ash pond (number of years and months): (e) co-ordinates (Lat and Long): (please specify minimum 4 co-ordinates) (f) type of lining carried in ash pond: HDPE lining or LDPE lining or clay lining or No lining g) mode of disposal: Dry disposal or wet slurry (in case of wet slurry please specify whether HCSD or MCSD or LCSD) (h) Ratio of ash: water in slurry mix (1:___): (i) Ash water recycling system (AWRS) installed and functioning: Yes or No (j) Quantity of wastewater from ash pond discharged into land or water body (m3): (k) Last date when the dyke stability study was conducted and name of the organisation who conducted the study: (l) Last date when the audit was conducted and name of the organisation who conducted the audit:	
19.	Quantity of legacy ash utilised (MTPA): i. Fly ash based products (bricks or blocks or tiles or fibre cement sheets or pipes or boards or panels): ii. Cement manufacturing: iii. Ready mix concrete: iv. Ash and Geo-polymer based construction material: v. Manufacturing of sintered or cold bonded ash aggregate: vi. Construction of roads, road and flyover embankment: vii. Construction of dams: viii. Filling up of low lying area: ix. Filling of mine voids: x. Use in overburden dumps: xi. Agriculture: xii. Construction of shoreline protection structures in coastal districts; xiii. Export of ash to other countries: xiv. Others (please specify):	
20.	Summary:	

Details	Quantity generated (MTP)	Quantity utilised (MTP) and (per cent)	Balance quantity (MTP)

	Current ash during reporting period			
	Legacy ash			
	Total			
21.	Any other information: Soft copy of the annual compliance report, and shape files of power plant and ash ponds may be e-mailed to:- moefcc-coalash@gov.in			
22.	Signature of Authorised Signatory			

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T.C.

Anx. I

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MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
(ISO 9001:2008, ISO 14001:2004 & ISO 18001:2007)
Office of: Chief Engineer (O & M), T.P.S., Koradi, Nagpur, PIN – 441111
Phone: (07109) 262141 to 262146,262106, 262109 FAX: 262127(Off)
CIN: U40100MH2005SGC153648 Email – cegenkoradi@mahagenco.in

Ref No: CE (O&M)/KTPS/660MW/CD/Env. Cell/FL-03/ № 0 0 6 0 7 Date: 16 FEB 2022

To,
The Director
GoI, Ministry of Environment Forest and Climate Change
3rd Floor, Indira Paryavaran Bhavan,
Jor Bagh Road
Aliganj New Delhi- 110003.

Sub: Amendment in E.C granted to 3 x 660 MW KTPS Koradi for condition related to HDP/LDP lining to ash bund and utilization of Fly ash shall not be used for agriculture purpose and approval for additional condition of raising of dyke wall of ash bund-reg

Ref.: EC No. J-13012/87/2007-IA.II (T) dtd. 04/01/2010

Dear Madam / Sir,

This has reference to the Environmental Clearance (E.C) Granted vide reference to 3 x 660 MW KTPS Koradi Project with certain conditions which need to be complied in view of Compliance reporting mechanism. Whereas 3 x 660 MW KTPS Koradi has been complying with the conditions mentioned under E.C granted and submitting the monthly report to MoEF & CC in this regard. Also it is to inform that, prior to obtaining the E.C. 3 X 660 MW Koradi Project had submitted and EIA as part of the standard procedure wherein it was informed to the Ministry about presence of active ash bund viz' Koradi & Khasara and that the P.P after commissioning of the new project (3 x 660 MW) shall dispose of the ash in these active ash bunds. As such there would not be any additional requirement for fresh land to be made available for any new bund. Hence it was given to understand that since both the existing ash bunds are active, any lining to the peripheral area of the bund was not possible on technical grounds. In view of the submissions made thereof, it was apprehended that the condition of HDP/LDP lining would not be incorporated in the E.C condition being granted to 3 x 660 MW Koradi Project. However the condition was incorporated and eventually need to be complied. In lieu of the status of ash bund as elaborated, it is requested to reconsider the condition of HDP/LDP Lining and delimit it to "apply any other suitable implementation media to ash bund such that no leachates take place at any point of time". (Condition No: ix of EC dated 04.01.2010). Here it is worthwhile to mention that stone pitching and compacting is carried out on the outer surface of Dyke wall to prevent dyke wall from breaching and avoiding percolation.

Further, another condition regarding non-use of fly ash in agriculture activities (condition no: xl of amended EC DT: 27/03/2015), it is to bring to the kind notice that recently the ministry has published Notification no: S.O 5481 (E) DT: 31/12/2021, wherein it is permitted to use fly ash as soil conditioner after scientific testing of soil in control mode. Hence this office proposes herewith to amend the said condition in view of the guidelines as per new notification no: 5481 (E) DT: 31/12/021.

Apparently the Project Proponent would like to draw your kind attention to the fact that till date the disposal of ash from 3 x 660 MW KTPS Koradi is to Khasara ash bund. At present the bund is in active stage and disposal of ash is done by ash slurry lines. The bund is in operation since 01/01/2020 and the capacity was exhausted for first instance in 2007. Subsequently the bund height was raised from 305 to 308.50 ML from Feb 2007 to May 2010. This was prior to granting of Environmental Clearance to proposed units of 660 MW at Koradi. Also during the submission of EIA, it was mentioned that the ash from new 660 MW Koradi units shall be disposed of to Khasara ash bund.

Accordingly as the necessity arised due to the operation of new three units of 660 MW Khasara ash bund height was subsequently increased to accommodate the ash generated from new units.

T.C.

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MAHARASHTRA STATE POWER GENERATION CO. LTD.
KORADI THERMAL POWER STATION
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Phone (07109) 262143 to 262146,262300, 262109 FAX: 262123(ON)
CIN: U65200MH2005SGC153648 Email - cegenkoradi@mahagenco.in

At this juncture since the E.C was granted and the project was in construction phase, the approval for raising bund height was not envisaged as the process for increase in capacity of bund was carried out earlier also, ie during operation of 120 & 210 MW units of Koradi TPS & before issuance of E.C to new units of 660 MW. Subsequently four units of 120 MW each and two units of 210 MW each are decommissioned till date.

Now as mentioned above, since the Khasara ash bund remains active till date and further it has been accorded approval by CDO Nashik for enhancing the capacity, activity of raising of dyke wall of Khasara bund is taken up to accommodate the ash released from 3 x 660 MW units. The existing raising of dyke wall of Khasara bund shall accommodate ash disposed of up to 2026. The work is in progress and shall be completed in next three months. In view of this, it is requested to accord approval for raising work of dyke wall which is continued till date and expected to be completed by June 2022.

Submitted for your kind consideration and with a request to amend the E.C conditions accordingly and issue No Objection for work of raising of Dyke wall of Khasara ash bund for the capacity up to 2026.

Thanking You.

Yours faithfully,

Chief Engineer
Koradi TPS, 3X660 MW

Copy s.w.rs.to:
Executive Director (E&S), 4th floor, HDIL Tower, Bandra (E), Mumbai-51
Copy f.w.c to:
1. Chief Engineer (C)-I MAHAGENCO Dharavi Mumbai
2. Chief Engineer (C) 2 X 660 MW Koradi Exp Project Koradi

T.C.

Annexure-R2/4

SOP FOR POLLUTION CONTROL DEVICE:

Note: Electrostatic Precipitator is the device used for reducing dust concentration in flue gas from 86.3 gm/Nm³ at ESP inlet to less than 50 mg/ Nm³ at ESP outlet and thus from Stack/ Chimney as per MPCB norms.

Following is the sequence for the ESP start – up.

- Switch ON hopper and support insulator heater at least 4 hrs. prior to plant start-up.
- Switch ON rapping system at least 4 hrs. prior to ESP charging.
- Switch ON dust-conveying system below ESP hoppers at least 4 hrs. prior to ESP charging.
- Check the healthiness of hopper level sensors / controllers.
- Charge the TR sets one by one. The TR sets should be charged only when the designed operating temperature is reached (i.e. between 120°C to 140°C) and is steady for minimum 2 hours of operation.
- ESP fields are not taken in service to avoid ESP field damages. ESP field are charged again when ratio comes below 10.
- Fine-tuning of TR sets to be done, starting from last field to first field TR set.
- Set the parameters for steady secondary current (in mA) setting with minimum spark. Maximum allowable sparks per minute is 10 in optimum operation.
- In last field of the ESP, sparking on charging to be contained.

While continuous operation of units:

- Continuously monitoring of secondary current of each field maintaining fields at optimum levels.
- Avoid excessive sparking/ arcing which can lead to failure of ESP field due to damage of electrical components.
- Round the clock monitoring of rappers healthiness and operation to maximize ESP performance.
- Maintaining ESP hoppers at minimum level with the help of ash evacuation system.
- If coal to oil ratio is more than 10 while plant is running, all ESP fields are withdrawn to avoid ESP field damages. ESP field are charged again when ratio comes below 10.
- Attending any defects of ash evacuation system at the earliest to avoid any leakages and delay in ash evacuation.
- **Maintenance of ESP field is carried out time to time and all fields are kept available for service.**
- **Planned outages are taken if any field maintenance is required to be carried out and are completed in least possible time.**
- **In every AOH/COH, thorough inspection and rectification is carried out to maintain ESP field healthiness.**

10/4/24

Executive Engineer (AHP)
3X660 MW, KTPS, Koradi

SOP FOR ASH BUND OPERATION

1. Dry fly ash & Wet ash Disposal

i) Ash generated in plant consists of 20% bottom ash & 80% fly ash of total coal consumption.
ii) 20% Bottom ash is disposed to Khasara ash bund through pipeline by 3 nos. of ash slurry pump series.
iii) 80% fly ash is transported through conveying pipeline from all units of ESP hopper to Intermediate silos where 3 nos. of HCSD pumps are installed to dispose ash at Khasara ash bund in the form of ash slurry.
iv) Also dry fly ash from intermediate silo is further conveyed to 3 nos. of Remote silos having storage capacity of 1125MT each for DFA utilisation purpose.
v) Each Remote silo has facility to provide dry fly ash through telescopic arrangements as well as wet ash through dust conditioner arrangement. At about 250 ash bulker can be loaded on daily basis.

2. Multi point discharge of ash slurry in ash bund is adopted in order to

(i) achieve more or less uniform ash filling within the lagoon.
(ii) Completely utilise the available storage capacity

3. Ash slurry disposal

The locations and arrangements of discharge points shall be decided by the disposal committee itself.
i) Ash slurry is to be discharged in a lagoon starting from the areas near the well and progressively shifting from the well area to the areas away from the well.
ii) No discharge shall be allowed on the slopes.
iii) A minimum of 50m shall be maintained from the kerb of the road.
iv) Water logging near dyke wall shall be avoided
v) Siphon system & Dewatering pump arrangement shall be adopted to drain excess rainfall water from ash bund

4. Ash water recovery

1. Recirculation of ash pond water, upto a maximum of 80% of the ash water quantity in the ultimate stage, shall be utilized. Ash water recovery pump house shall be provided by the side of the overflow/waste weir lagoon for pumping of ash water to plant.
2. Ash water shall be recovered with 3 nos. of VT pump having discharge flow of 650 m3/min from Khasara ash water recovery pump house.
3. Commissioning of additional 3 nos. of VT pumps are under progress to optimize ash water recovery.

10/4/24

Executive Engineer (AHP)
3X660 MW, KTPS, Koradi

ANNEXURE-4

Annexure-R2/5

MAHARASHTRA STATE POWER GENERATION CO. LTD.
(Govt. of Maharashtra undertaking)
KORADI THERMAL POWER STATION, KORADI
O/o Chief Engineer (O&M), K.T.P.S.,Koradi, Dist. Nagpur, PIN – 441111
(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – cegenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

No.KTPS/CE(O&M)/AU/ No 01317 Date: 16 APR 2024

SOP

Standard Operating Procedure for Ash Utilization

1) Ash generated at KTPS Koradi are Dry fly ash, pond ash, Cenosphere (i.e.Floating Ash).
   - Utilization of dry fly ash should be carried out from remote silo through closed bulkers/ dust conditioner ash in open tipper.
   - Utilization of pond ash should be carried out from ash Bund. Ash lifting agencies lifts pond ash from ash bund and transport through Tarpaulin covered truck.
   - Cenosphere or floating ash is accumulated at Ash bund and deployed agencies should be extract and collect floating ash from ash bund by proper weighment from weigh bridge of MSPGCL to maintain the proper record for revenue collection.
2) As per guidelines given by CPCB and MPCB following measures should be taken for 100% ash utilization.
   - Two Railway platforms are ready for dry and pond ash utilization. Promote the prospective vendors to utilize this facility and maximize the ash utilization.
   - Follow up with ash lifting agencies to motivate maximum ash utilization.
   - Promote the Cement industries to take maximum dry ash from Remote silo and transport by Railway.
   - Regular promotional advertisement should be published in various Newspapers to maximum ash utilization.
   - Focus to set maximize dry fly ash utilization through bulkers.
   - Sale order should be issue to various agencies as per application received from agencies for Dry/ Pond ash requirement and it will be issue after approval of competent authority.
3) Regular correspondence with agencies to improve the ash utilization and set up to increase the networking of ash lifters.
   - For smooth working continuous follow up should be taken with agencies for lifting of ash.
   - To maintain ash lifting data of Dry/Pond Ash, continuous follow-up should be taken with agencies.
4) Formation of committee for proper evenly ash deposition in ash bund including members from Civil, AHP & Ash Utilization section. Regular meeting is organized as per issues.
5) Pre/post monsoon inspection should be carried out jointly with Civil, AHP & Ash Utilization section for the precautionary measures of ash bund.
6) To avoid overtopping of ash dyke of ash bund suggested to drain out the water by mechanical syphoning arrangement, tractor mounted diesel engine pump, drain out pipe etc.
7) To clean the peripheral nallha of ash bund and toe drain cleaning to drain out the water smoothly.

16/04/2024

Executive Engineer (AU & AHP)
MSPGCL, KTPS, Koradi.

ANNEXURE-5

Annexure-R2/6

MAHARASHTRA STATE POWER GENERATION CO. LTD.
(Govt. of Maharashtra undertaking)
KORADI THERMAL POWER STATION, KORADI
O/o Chief Engineer (O&M), K.T.P.S.,Koradi, Dist. Nagpur, PIN – 441111
(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email - cegenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

Ref. No.: KTPS/3X660MW/CIVIL/ No = 0271 Date:- 30 APR 2024

To,
Executive Chemist
3x660MW, TPS, Koradi.

Sub :- Compliance to Minutes of the personal hearing for the project "Coal Based Power Unit M/s Maharashtra State Power Generation Company Limited (MSPGCL) located at Koradi District Nagpur (Maharashtra)"

Ref :- Your Office Mail Date. 23.04.2024

With ref. to above subject and ref. mail following compliance are submitted for your information.

Point	Description	Compliance
3.	Ash dyke details including height is to be furnished. The PP to explicitly clarify, how much height they are entitled to increases they have increased. PP shall submit the following documents WRT construction and raising the bund: i. The approval copies for the construction of the bund should include detailed information about the bund height and corresponding capacity. ii. Approval copies for the augmentation of bund height. These documents should encompass comprehensive details regarding the increment in height and elucidate how much the bund capacity was increased as a result.	Ash bund Height (TBL) details Starter bund :- 305.20 First raising :- 308.50 Second raising:- 312.00 1) Dyke wall work upto 2nd raising completed by O/o The Dy. Chief Engineer (C), CCC, MSPGCL, Koradi. Hence approval copies for completed upto 2nd raising works is not available to this office. For balance 3rd & 4th this office vide mail 28.02.2024.inform to your section about DPR & requested to take approval for 3rd & 4th raising. From Statutory Govt. bodies.

4 iii.	The PP is required to formulate a Standard Operating Procedure (SOP) in a time-bound manner to adhere to the primary environmental concerns, encompassing greenbelt development, fugitive emission control, fly ash management, monitoring among other. These SOPs should be mandated to be applicable to all Thermal Power Projects under its purview. It is imperative that the SOP remains resilient to any alterations in the organizational structure or advancements in activities, ensuring continuous compliance with Environmental Clearance (EC) conditions. A copy of the should be submitted to Ministry's RO with a copy to C & MD, MoEFCC.	SOP for Khasala Ash Bund submitted vide mail Dt: 20.04.2024 to your office.
4 iv.	The PP is required to provide the most recent stability report concerning the design, strength, and safety of the ash dyke. The report should detail the measures implement to prevent breaches and mitigate risks such as leaching into groundwater, maintain soil stability, and preventing airborne particles that may cause air pollution in the surrounding areas. Furthermore, this report must be prepared by an accredited institute known for its expertise and credibility in the field.	Khasala Ash Bund stability report by VNIT, Nagpur is submitted vide mail Dt: 27.03.2024.
4 v.	PP shall also submit the action taken report regarding the collapse of the fly ash bund at Koradi Thermal Power Station in 2022.	Action taken report after incident dt.16.07.2022 is attached herewith.
4 vi.	PP shall submit Quantitative Risk Assessment (QRA) Management plan for any future accident in the plant and the area likely to be affected by any such future incident by conducting mathematical modelling.	———

Submitted for your information please.

Encl: Compliance 4 v.

29/4/24

Executive Engineer (C),
3x660MW,TPS, Koradi.

ANNEXURE-6

Annexure-R2/7

VISVESVARAYA NATIONAL INSTITUTE OF TECHNO

Grams : VISRENCOL, NAGPUR
Tel : Director: 2235733
Registrar : 2226240
PBX : 2223710, 2222828 (O)
Ext. 1371
Fax : 0712-2223230/2223969

(Formerly V.R.C.E.) NAGPUR – 440

विश्वेश्वरय्या राष्ट्रीय प्रोध्योगिकी संस्थ
नागपुर (भारत)

Dy. Chief Engineer
Civil Const.Circle-Koradi
Date : 28 JUL 2023
In.No :
SE (O) - I/II
EE(C)-Adm/IT/UIT/D.C./CSRCell
Sr.M. (F & A)/H.G.

DEPARTMENT OF CIVIL ENGINEERING

SE (Civil) 28/07/23

Ref: CT-35
Date: 24/07

To

The Dy. Chief Engineer (Civil),
Civil Construction Circle,
M.S. P.G.C.L, Koradi.

Subject: Review of report for Khasara Ash bund.

Ref: Dy CE(C)/CCCC/KRD/Tech/ 00615 dated 26/05/2023 & 00758 dated 28/06/2023
CEC-39/TRE-1547/VSL/Dated 17/04/2023.
CE No 6444 /GT/AM+AP+SPW

1. INTRODUCTION

Maharashtra State Power Generation Company Limited, Koradi, Nagpur (M/ approaches VNIT Nagpur for the consultation work related to " Stability Analysis of 3.50 m high (RL 308.50 m to 312.00 m) Khasala Ash Bund at Koradi, Nagpur" vide al letter.

2. PRELIMINARY SITE OBSERVATIONS:

VNIT Nagpur had visited Khasala ash bund along with faculty members Dr. Y Dr. S. P Wanjari and Dr. A. H. Padade at the site. The site information was con Officials from MAHAGENCO. The site was carefully inspected along the lengt following points are noted:

a) The 1st raising of the ash bund was constructed nearly 10 to 12 years back fron 308.50 m (3.50 m high). This raising consists of dense vegetation with large tre of the bund was remained with 4.00 m for this raising.

b) The 2nd raising was constructed in the recent past from RL 308.50 m to 312.00 high) where slope stability analysis is requested by the client. This raising cons fly ash at core section of the bund up to a height of 2.50 m over which the to placed for about 1.00 m.

c) The U/S side of the slope was protected with stone pitching over entire slope al bund. However, no protection was observed on the D/S side.

d) The slope was found to be intact on the day of visit.

e) The schematics of the Khasala ash bund is shown in Figure 1. The photograph attached therein.

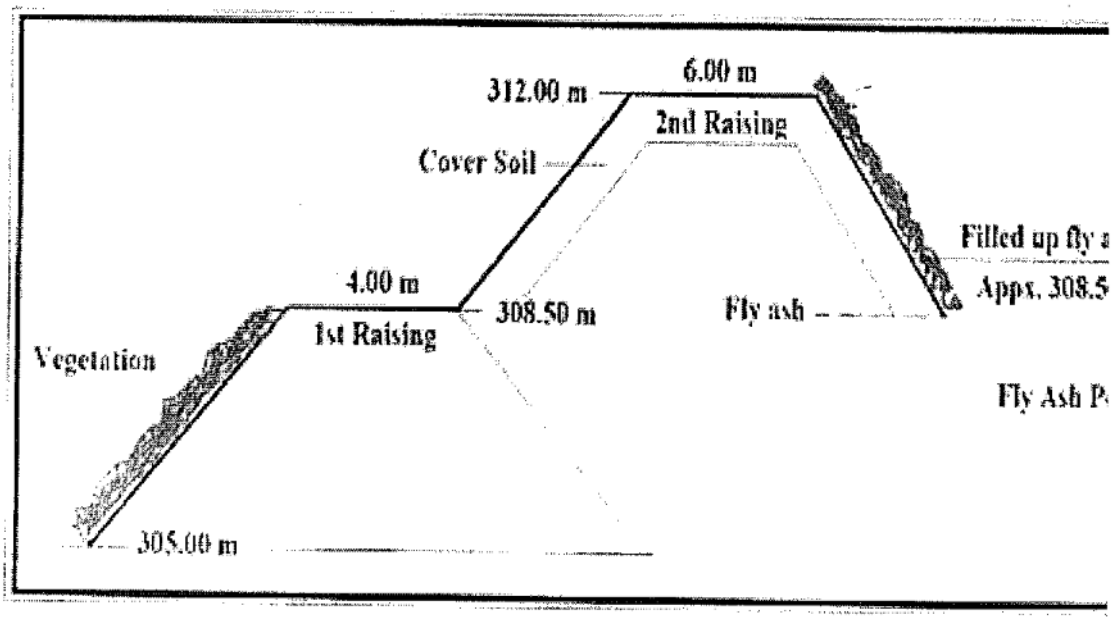
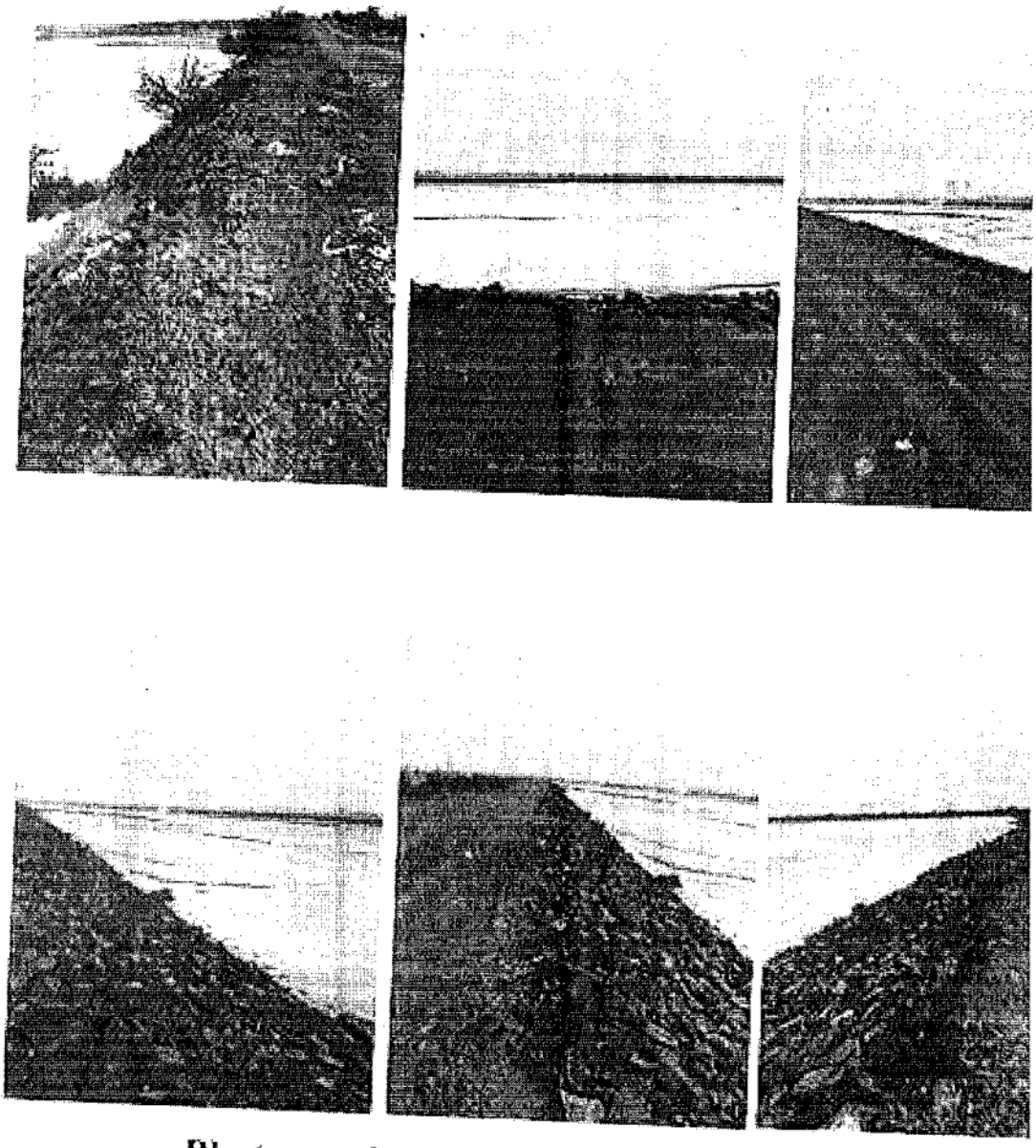


Figure 1: Schematics of the existing ash bund at Khasala



Photographs on the day of preliminary visit

3. MATERIAL CHARACTERIZATION:

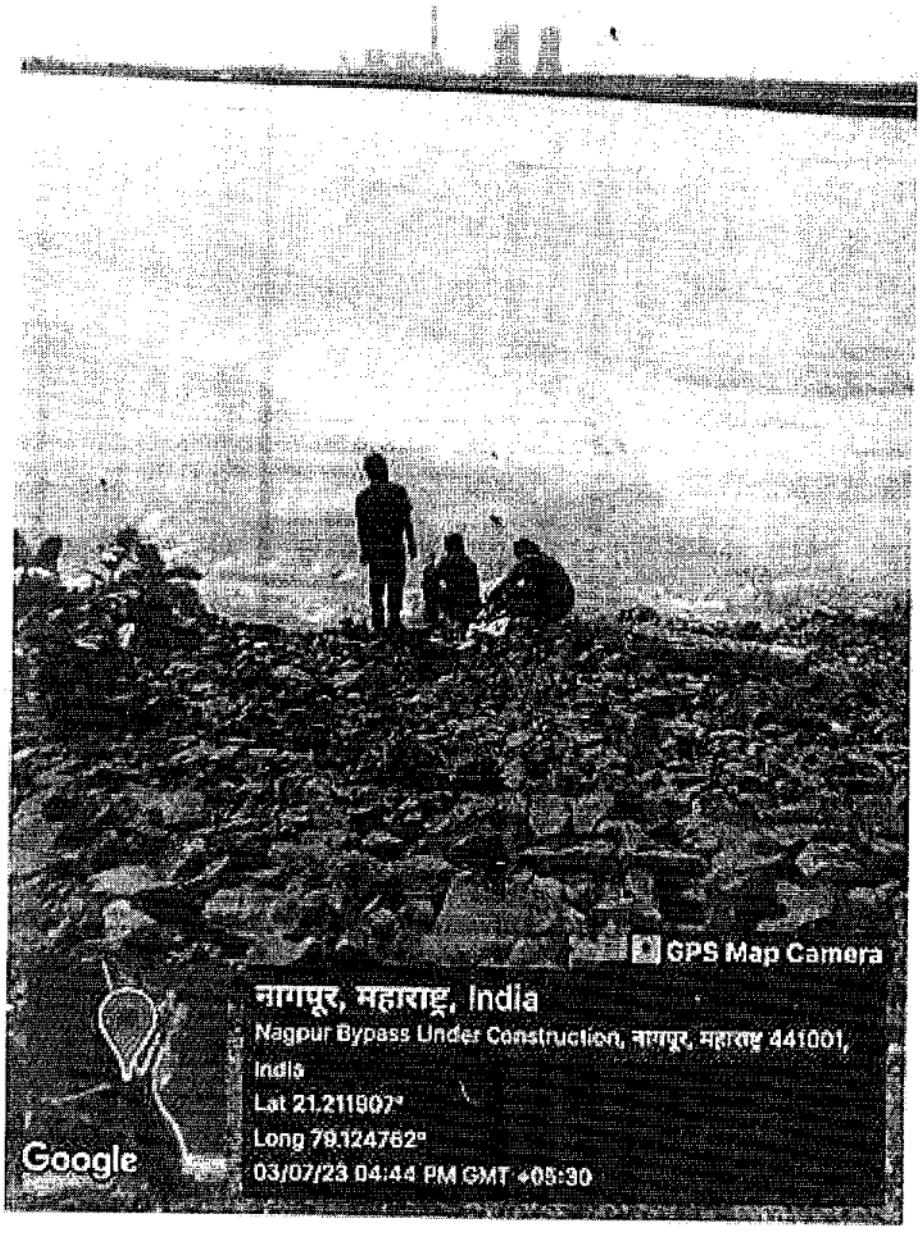
General

The slope stability analysis in the present case is required to be tackled i geotechnological approach involving fundamentals of engineering behaviour of mechanisms governing soil deformational response under relevant system of exter internal forces etc. The very first step in the entire exercise involves aspect of characteri of soil materials accomplished through interpretation of test results

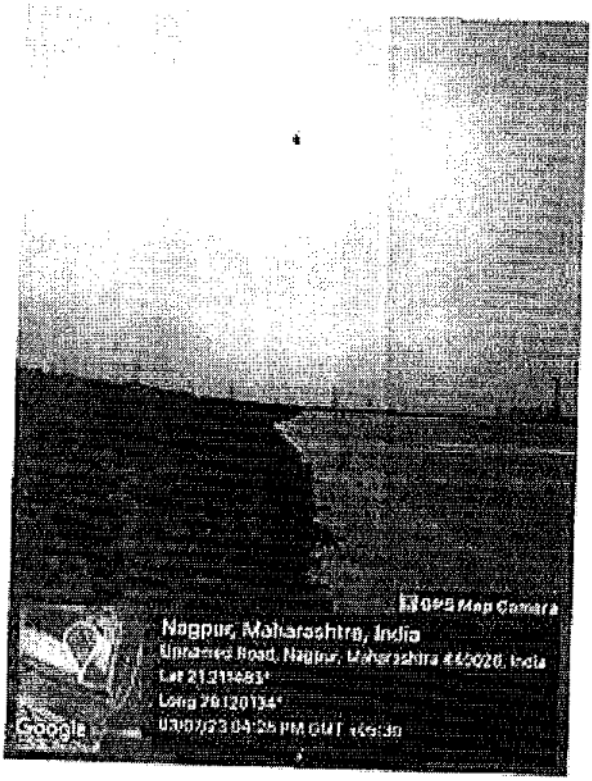
Inspection and Sampling:

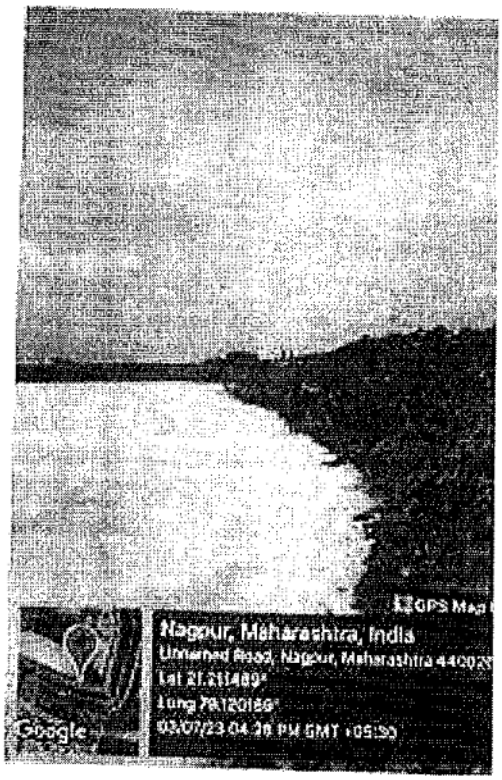
For laboratory tests, the fly ash and soil samples were collected on 03 July 2023. Dr. Padade along with PhD scholars Mr. Prashant Mali and Mr. Anurag Khadse, Tec Assistant Mr. Rahul Gajbhiye participated in site inspection and sampling.

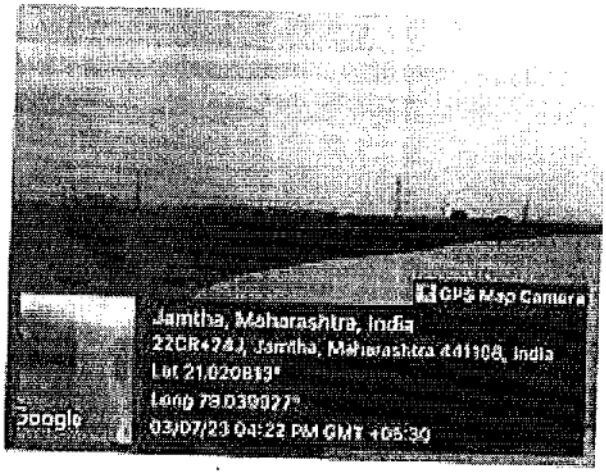
After inspecting the ash bund, the sample of fly ash was collected from ash pond and top soil was collected from a curved section of the bund (Lat 21.211907°, Long 79.124762° photograph of fly ash sampling is depicted below.

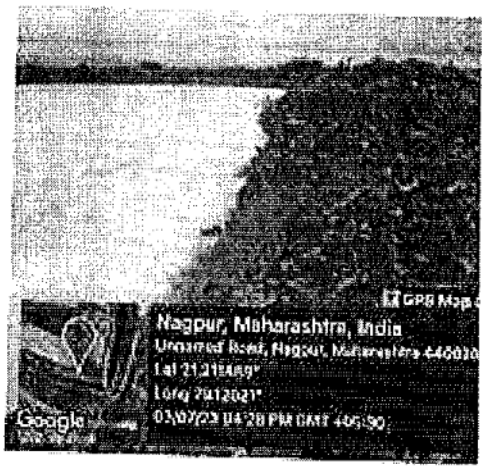


On this day of inspection, the heavy rain was passed over the slope. However, the U/S the slope was seen to be unaffected. It is clear from the fact that the stone pitching prov the U/S side of the ash bund helps the slope to remain intact. The photographs of U/S the ash bund are shown in the photographs below.









Photographs of U/S side of the ash bund

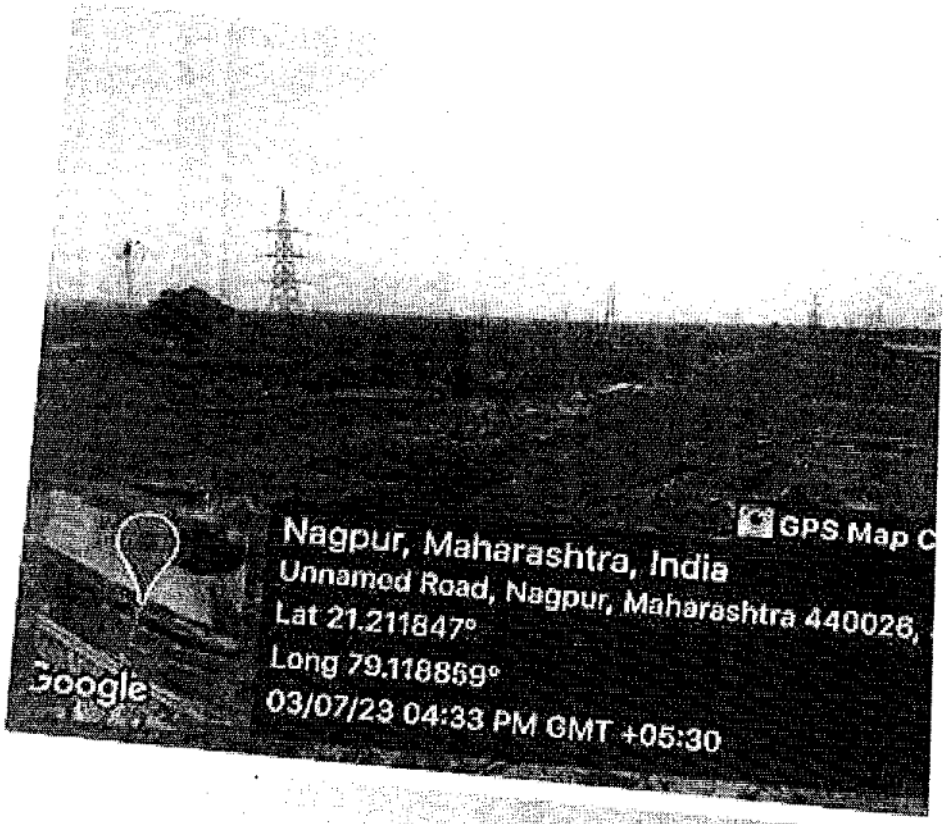
The D/S side of the slope was affected due to the rain around this area. The rain cut observed at many places. The growth of vegetation has also seen at some of the places, the slope was found to be unaffected. The photographs below show the condition of D of the slope.

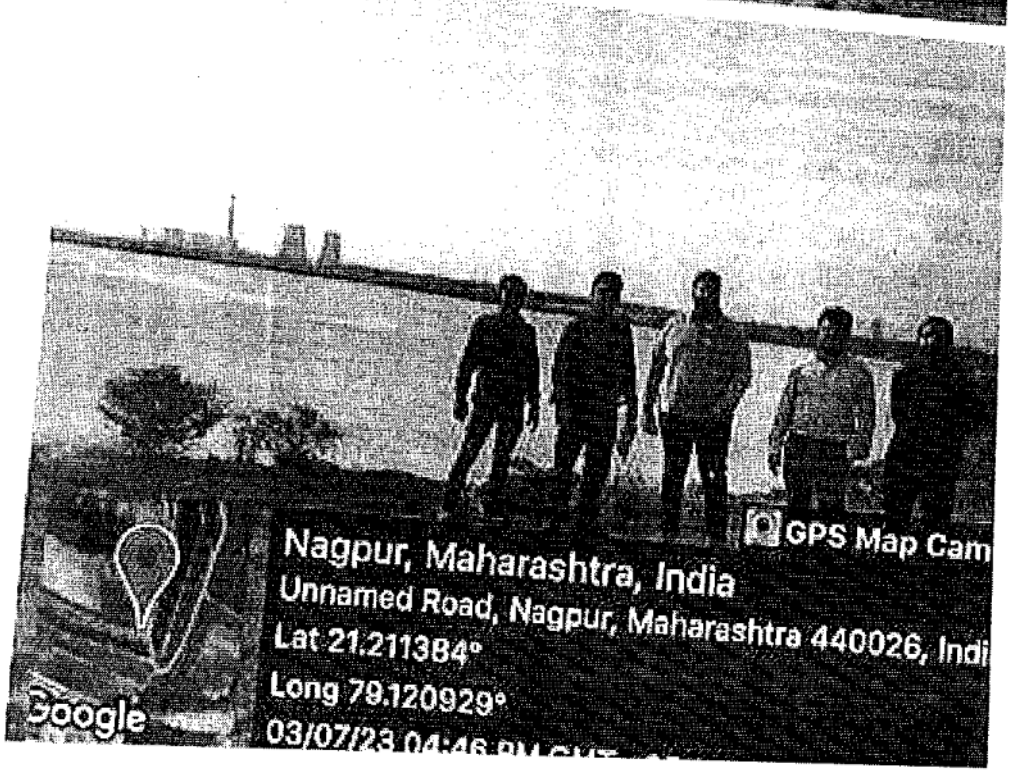
Photographs of D/S side of the ash bund

ngineering Department (VNIT, Nagpur)

CT.

Most of the portion of the slope in the D/S side was found to be intact on this da is suggested to provide the remedial measures to enhance the stability of this pa considering the future raisings.





Laboratory Testing:

The following properties of the fly ash and cover soil were considered relev characterization of soils and stability analysis:

1. Grain size analysis
2. Atterberg limits and consisteney indices.
3. Specific gravity
4. Proctor's Compaction Test for OMC and MDD
5. Shear strength under consolidated undrained (CU) condition

The above property parameters are supposed to be of direct application to the slope s analysis. As both the materials falls under the category of fine-grained soil, the cons properties are applicable to it. The tests were done with utmost care, perfection and specified standard procedures as given in Table 1.

Table 1

Sample Identification	As per sampling sheet	Fly ash	Co
Grain Size Analysis IS 2720 (Part 4) 1985	Gravel (%)	0.00	
	Sand (%)	21.14	
	Silt & Clay (%)	78.86	
Atterberg's Limits IS 2720 (Part 5) 1985	Liquid Limit (%)	NP	
	Plastic Limit (%)	NP	
	Plasticity Index (%)	NP	
Shrinkage Limit IS 2720 (Part 6) 1972	Shrinkage Limit (%)	---	
	Shrinkage Index (%)	---	
Free Swell Index IS 2720 (Part XL) 1977	FSI (%)	0.00	
Soil Classification IS 1498 - 1970	-----	ML	
Shear Parameters (CU) IS 2720 (Part 13) 1985	Cohesion (kPa)	23	
	ϕ (°)	32	
Permeability IS 2720 (Part 17) 1986	k (cm/s)	8.67×10^{-4}	
Standard Proctor's Test IS 2720 (Part 7) 1980	OMC (%)	19.00	1
	MDD (g/cc)	1.372	1
Specific gravity IS 2720 (Part 3-1) 1980	G	2.06	

ML – Inorganic silts with very low plasticity, CH – Clay with high plasticity
*** The permeability tests could not be conducted due to experimental limitations in the laboratory to saturate the soil samples. Based on index properties, the permeability value of the samples is expecte be less than 10^{-6} cm/s.**

4. STABILITY ANALYSIS

Figure 2 is considered to evaluate the slope stability. For this case the values of slope an = 45° and height of slope H = 350 cm are used for analysis. The possible location of cr slip surface in this case is also indicated in the Figure below.

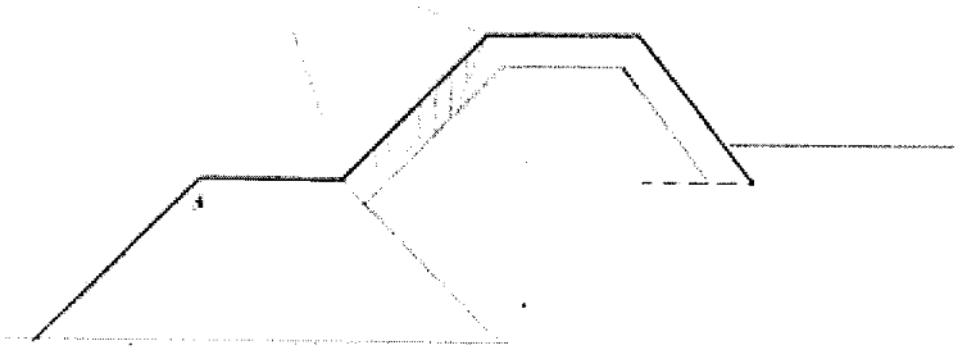


Figure 2: Location of critical slip circle of slope

A. ANALYSIS BY COUSINS CHART SOLUTION

Analysis is carried out for two conditions (a) $r_u = 0$ and (b) $r_u = 0.25$.

(a) $r_u = 0$ condition

Case I--- The input data is. .. H = 350 cm, $\beta = 45^0$

$c = 50$ gm/ cm^2, $\varphi = 23^0$

$\gamma = 1.72$ g/cc

$$\lambda c\varphi = \frac{\gamma * H * tan\emptyset}{c} = \frac{1.72 * 350 * \tan 23}{50} = 5.11$$

For $r_u = 0$, $\lambda_{c\varphi} = 5.11$ & $\beta = 45^0$

Using Fig.4.1 a: Ns = 17.00, with D =1.0

Using Fig. 4.2 b: $N_s = 16.00$, with D = 1.0

Hence, minimum $N_s = 16.00$

Therefore, Factor of Safety, $F = Ns \frac{c}{\gamma * H} = 16 \frac{50}{1.72 \times 350} = 1.32$

(b) $r_u = 0.25$ condition

$\lambda_{c\varphi} = 5.11$

For $r_u = 0.25$, $\lambda_{c\varphi} = 5.11$ & $\beta = 23.69^0$

Using Fig. 4.2a — N_s = 15.50, with D = 1.00
Hence, minimum N_s = 14.00
Therefore, Factor of Safety $F = 14.5 \frac{50}{1.72 \cdot 350} = 1.21$

B. ANALYSIS BY A. SINGH'S METHOD

For r_u = 0 condition

In this method, the values of slope ratio (cot β) is mentioned for 1.5 to 3.0. The value of s ratio for this case is 1.00, therefore, Alam Singh's method of slope stability analysis is no applicable for this case. Further, in this method, pore water pressure is assumed to be zer

C. ANALYSIS BY HUANG'S METHOD FOR LONG TERM STABILITY

For r_u 0 & r_u = 0.25 conditions

Data :- H = 350 cm, β= 45° (i.e., S= 1.0)
Assuming c = 120 gm/ cm^2, φ=15° (For long term analysis)
γ= 1.72 g/cc

Cohesion Factor, $CF = \frac{100 \cdot c}{\gamma \cdot H} = \frac{100 \cdot 120}{1.72 \times 350} = 19.93$

Using Fig. 4.4 and chart for S = 1.00, we get,
For r_u = 0. CF = 19.93 & φ= 15°, F = 1.72
For r_u = 0.25, CF = 19.93 & φ= 15°, F = 1.40

D. SLOPE STABILITY ANALYSIS USING GEOSTUDIO 2018 R2 (Slope/W)

The slope stability analysis was performed using GeoStudio 2018 R2 (Slope/W) s considers different methods of analysis. However, Bishop's simplified method of slice considered for the analysis. The model geometry of the existing ash bund considered i case is shown below.

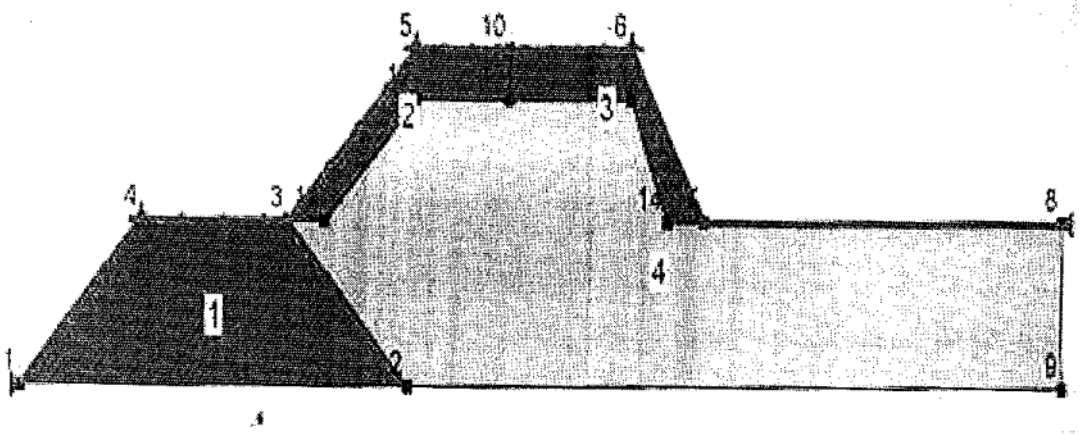


Figure 3: Model geometry of Khasala ash bund considered in the analysis

The limit equilibrium method is considered for analysing the slope of ash bund. The ma properties determined from laboratory investigation was assigned to respective sections slope. The output of this case has shown 139 results, in which the most critical slip surf determined having factor of safety value as 1.525 as shown in Figure below.

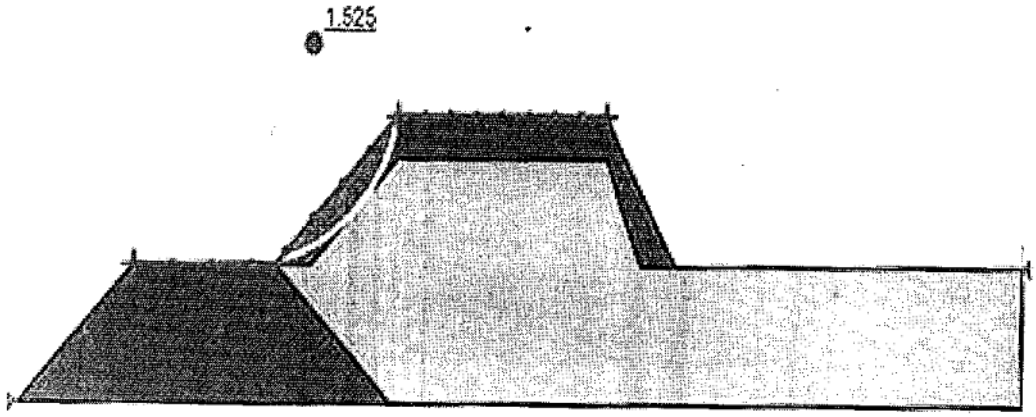


Figure: 4. Critical slip surface with minimum factor of safety using Bishop's simplif method of slices

The critical slip circle is seen to be passed from top of the slope through the toe. The region was found to be located within the cover soil placed over the compacted fly ash.

5. REMARK AND CONCLUSION:

1. The present slope stability analysis up to 2nd raising using design charts and Geo 2018 R2 (Slope/W) reveals that the slope of ash bund is stable.
2. Vehicular movement on berm of ash bund is generally damaging stability of ash b is proposed to provide geocell at the top of berm which is filled with fly-ash and c to harden surface which will be provided to the vehicular movement. This is th technology superseded earliest method proposed.
3. It is proposed to provide Geomembrane 1.5 mm thick HDPE liners as per the guideline 2002 for "Manual for Design Construction and quality control of line covers for Hazardous waste landfills".
4. It is also suggested to construct trial patch of 500 m length in association with Nagpur and to observe the results of stability of ash bund with the implementa geocell. Such type of works has been already implemented by NTPC Ltd and in t country.
5. The rain cut damaged portion on the face of the slope should be repaired and treate jute coir mattress to avoid soil erosion along with application of seeds for veg growth. This will further enhance the stability of the slope.
6. It is suggested to provide drainage well/Syphon arrangement at every 100 - 150 m i along the perimeter of the ash bund for water discharge. It should be well connecte Hume Pipe/M.S. Pipe of diameter 0.9 m along the perimeter of bund.

Dr. A. H. Padade

Dr. S. P. Wanjari
Co-ordinators

Dr. Y. B. Katpata

Dr. Y. B. Katpatal
Professor & Head, CED

Dr. Smt. M. A. Chaudhari
Dean (R & C)

Terms and Conditions

1. Laboratories at VNIT Nagpur are not NABL accredited.
2. The tests are performed with the test facilities and resources available and accessil VNIT Nagpur.
3. The test report relates only to the samples supplied by the agency and VNIT will r responsible for any errors arising due to reasons beyond control of VNIT.
4. VNIT Nagpur is not responsible for any damage, in whatever manner, occurring t one because of the test results/certification.
5. VNIT Nagpur is not responsible for nonfunctioning of the equipment (fully or part the field for whatever reasons.
6. All the test reports/certificate are valid for a period one year from the date of issue otherwise specified and are exclusively for the internal use of the agency which has to carry out testing/certification.
7. Any dispute arising out of the contract between agency and VNIT is subject jurisdiction of Bombay High Court, Nagpur Bench.
8. VNIT, Nagpur is authorized to carry out testing/certification as per No.1088/(2512)/Udyog-6dated January 2, 1992.

ANNEXURE-7

VNIT, NAGPUR

Annexure-R2/8 CT

VISVESVARAYA NATIONAL INSTITUTE OF TECHI

Gram : VISRENCOL, NAGPUR
Tel : Director: 2235733
Registrar: 2226240
PBX : 2223710, 2222828 (O)
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Fax : 0712-2223230/2223969

(Formerly V.R.C.E.) NAGPUR –

विश्वेश्वरय्या राष्ट्रीय प्रोध्योगिकी संस

नागपु

DEPARTMENT OF CIVIL ENGINEERING

Ref: CT -36

Date: 04/10/

To

The Chief Engineer
KTPS Koradi

Subject: Stability study of Koradi Ash Bund at KTPS Koradi

Ref: PO dated on KTPS /4500128659 dated on 13/09/2023

Sir,

With reference to above cited subject, please find the attached report for your kin

Thank You

Sincerely

Dr. S. P. Wanjari 4/10/23

Dr. Y. B. Katpatal 4.10.23

Dr. A. H. Padade 4/10/23

(Co-ordinotors)

1. INTRODUCTION

Maharashtra State Power Generation Company Limited, Koradi, Nagpur (MAHAGEN(PO vide letter KTPS /4500128659 dated on 13/09/2023 to VNIT Nagpur for the co "Stability Analysis of Koradi Ash Bund at KTPS Koradi, Nagpur". In response, VNIT ha stability analysis by Analytical Bisson Method, GeoStudio software and Drone Surveyin on above methods the following conclusions are drawn.

2. PRELIMINARY SITE OBSERVATIONS:

VNIT Nagpur visited Koradi ash bund dated 11/8/23 The faculty members Dr. Y. Dr. S. P Wanjari and Dr. A. H. Padade was present at the site. The site information was co by Officials from MAHAGENCO. The site was carefully inspected along the length o following points are noted:

1. The initial 6 raisings are already completed. These raisings consist of dense veg large trees almost around entire length of the ash bund.
2. The upstream (U/S) and downstream (D/S) side of the slope have slope angle ap 1:2.5 and 1:2 respectively. These sides are not seen to be protected by any means.
3. A seepage of water was seen from the D/S side of the ash bund from at some se recent borrow of ash for some project. The seepage water is due to water accu Northern corner of Ash bund.
4. U/S side of the ash bund was found to be excavated for lifting the fly ash. The se dam was also seen to be excavated along with the fly ash.
5. The slope was found to be intact on the day of visit.

The location of site of Koradi ash bund is shown in following Figure

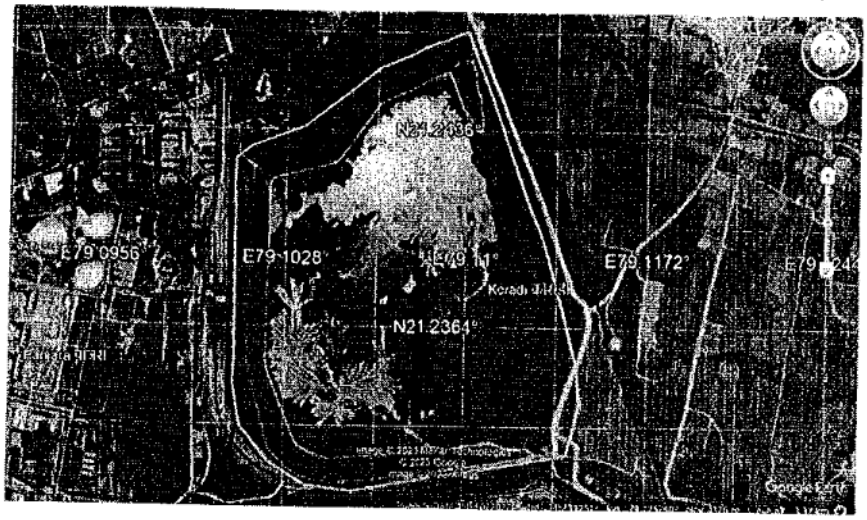


Figure: Location of Koradi ash bund, Nagpur

3. Drone Survey:

The drone survey was conducted to identify the damage in upstream and downstream side of th was carefully examined found in good condition.

4. Slope stability Analysis using GeoStudio 2018 R2 (Slope/W)

The slope stability analysis was performed using GeoStudio 2018 R2 (Slope/W). simplified method of slices was considered for the analysis. The model geometries of bund considered in this case is shown as Figures below.

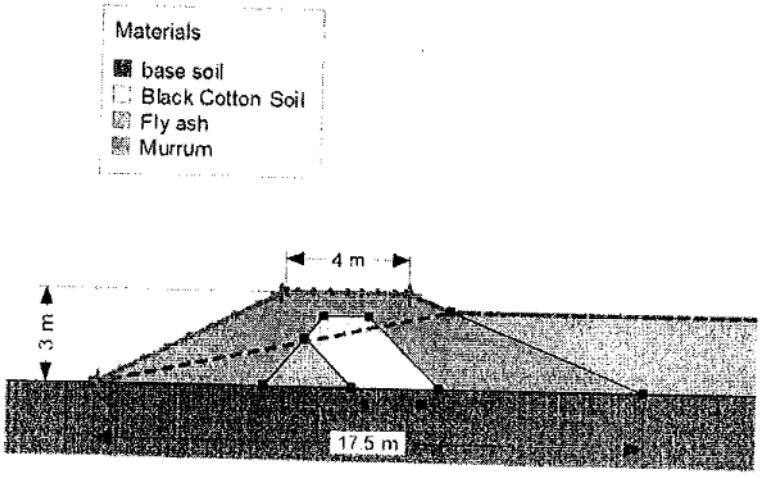


Figure 1: First raising

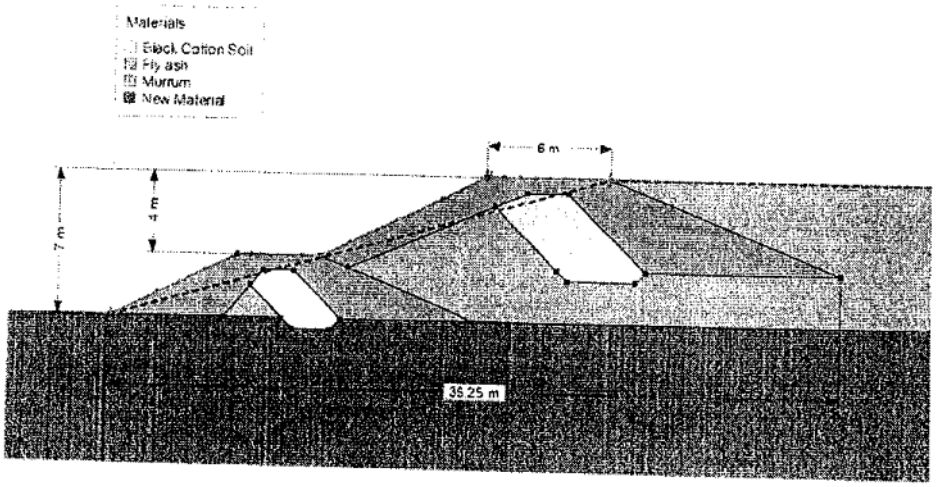


Figure 2: Second raising

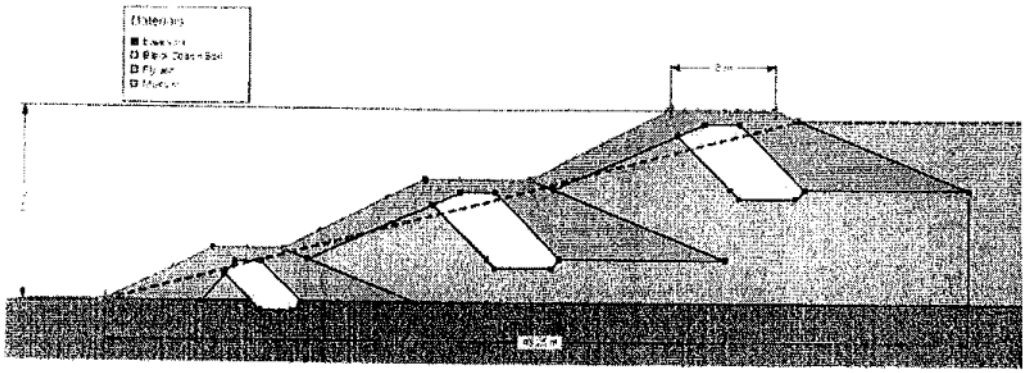


Figure 3: Third raising

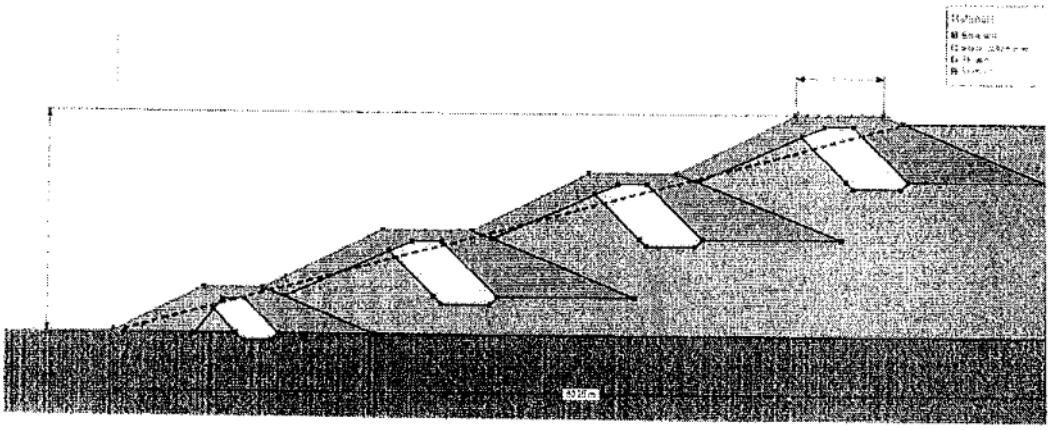


Figure 4: Fourth raising

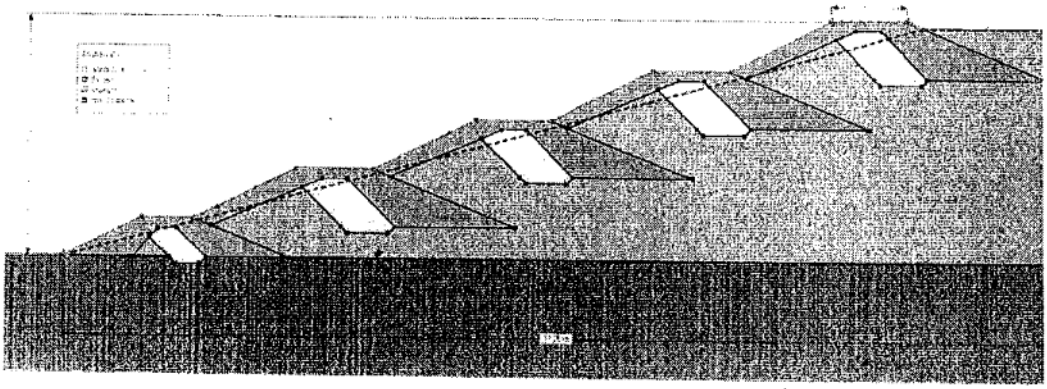


Figure 5: Fifth raising

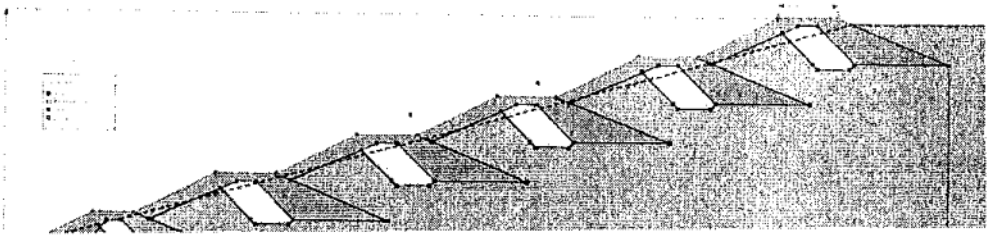


Figure 6: Sixth raising

Figures: Model geometries of Koradi ash bund considered in the analysis

The limit equilibrium method is considered for analysing the slope of ash bund and tmaterial assigned to respective sections of the slope. The analysis of slope was done as per the constr raising at the site. The output of this case has shown 139 results, in which the most critica determined having factor of safety value as 1.688 as shown in Figures below.

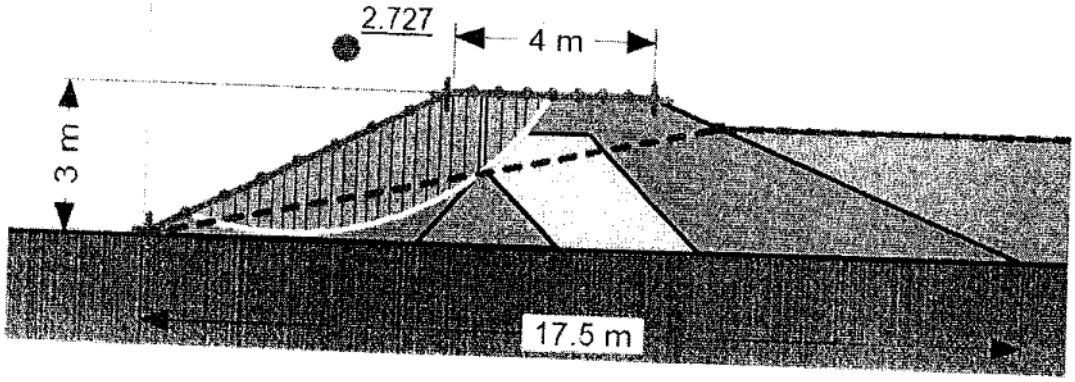


Figure 1: First raising (With fly ash filling)

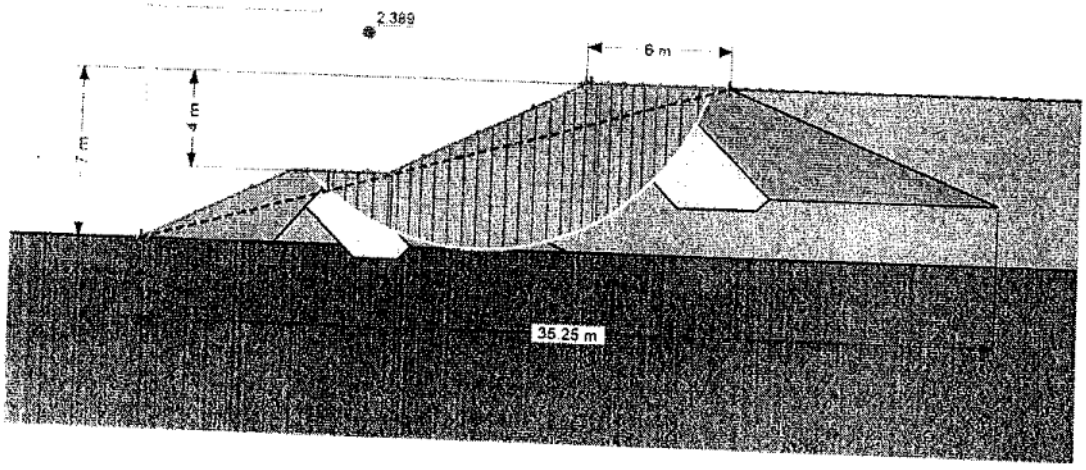


Figure 2: Second raising (With fly ash filling)

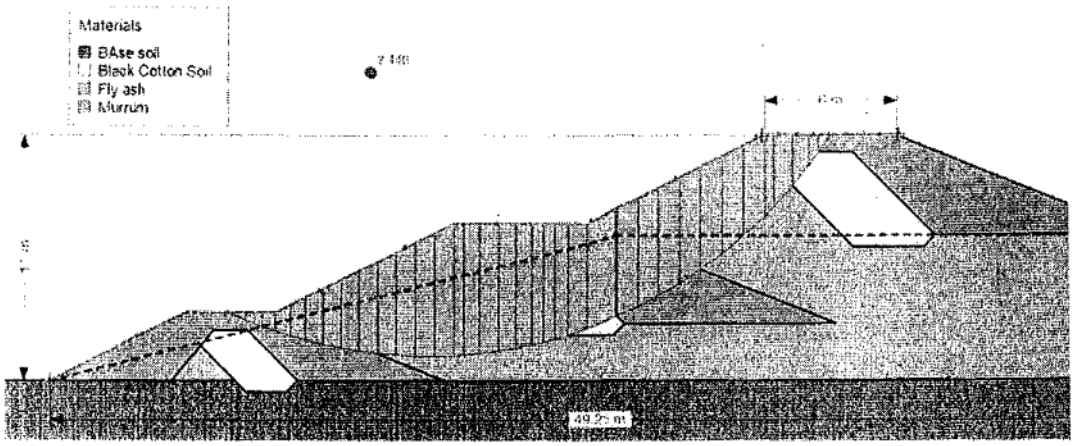


Figure 3 (a): Third raising (without fly ash filling)

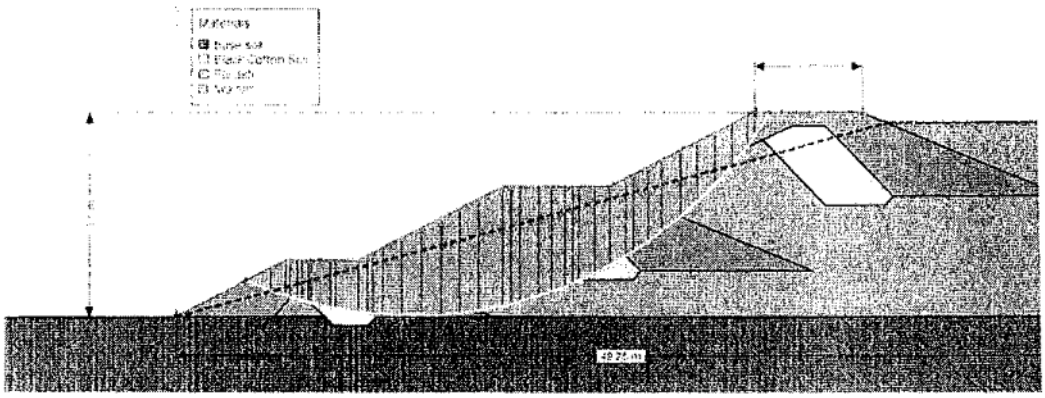


Figure 3 (b): Third raising (with fly ash filling)

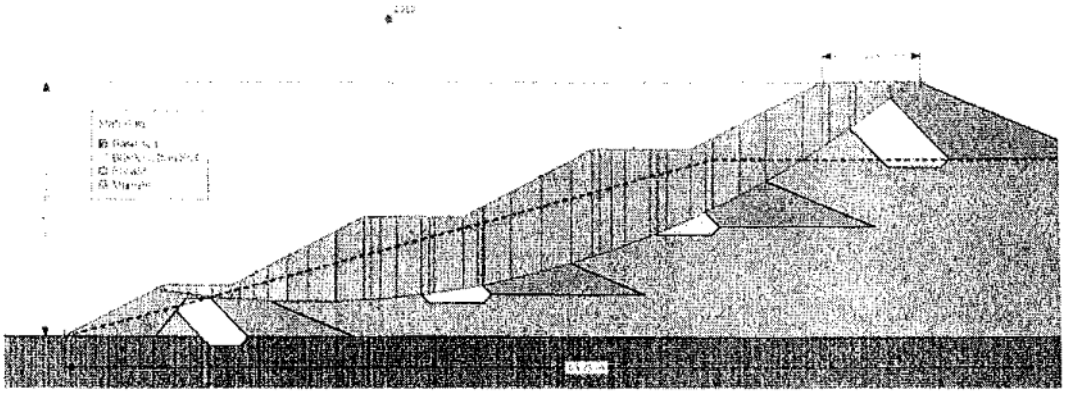


Figure 4 (a): Fourth raising (without fly ash filling)

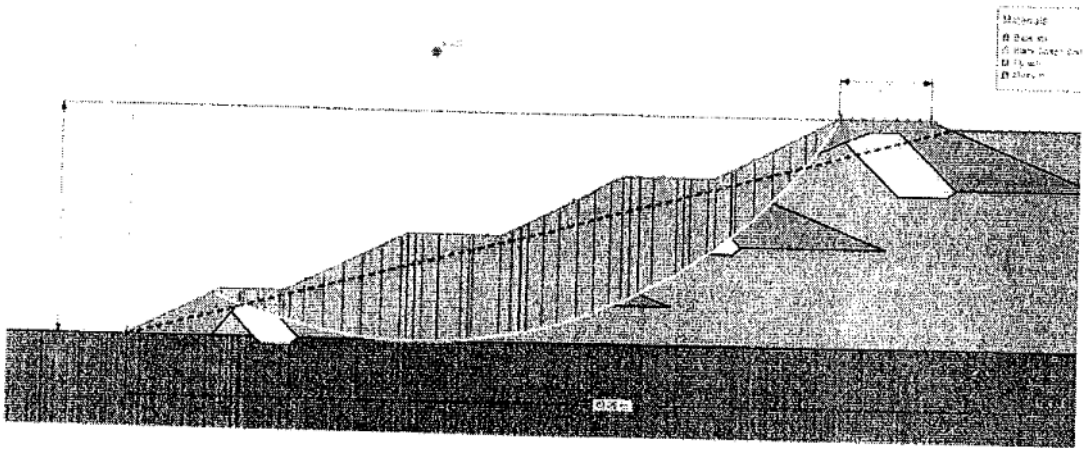


Figure 4 (b): Fourth raising (with fly ash filling)

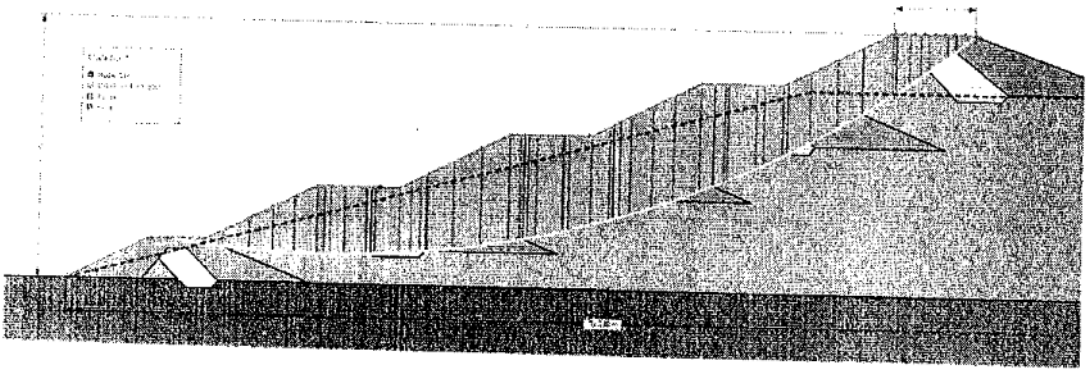
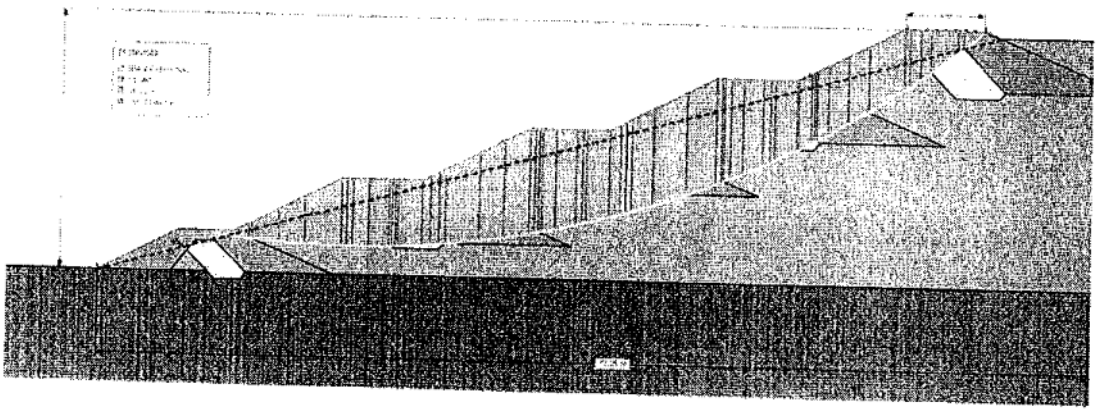


Figure 5 (a): Fifth raising (without fly ash filling)



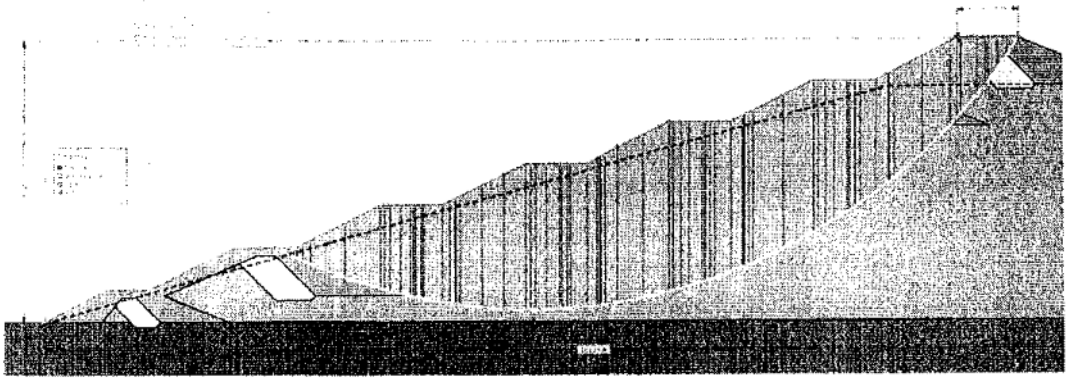


Figure 6 (a): Sixth raising (without fly ash filling)

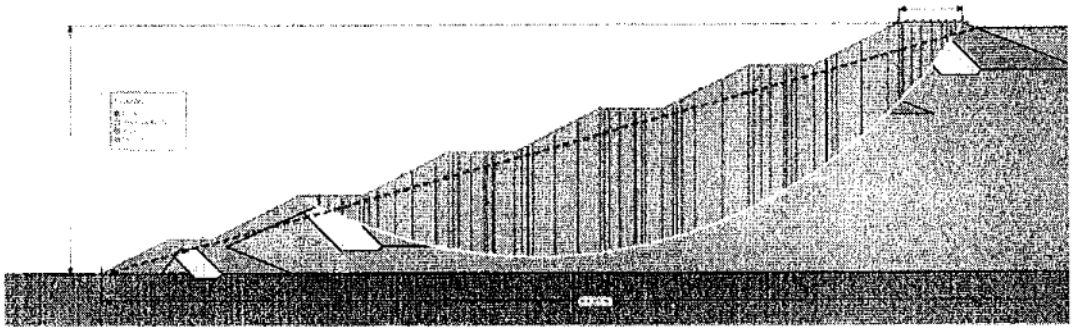


Figure 6 (b): Sixth raising (with fly ash filling)

The critical factor of safety obtained from the analysis for stepwise raising under emp ash conditions are summarized in the Table below. These factors of safeties are also see the form of bar chart below.

Table 1: Factor of safety

Raising	Conditions of ash bund	
	Empty	Full
1	---	2.727
2	2.767	2.389
3	2.44	2.229
4	2.253	2.095
5	2.031	1.957
6	1.844	1.688

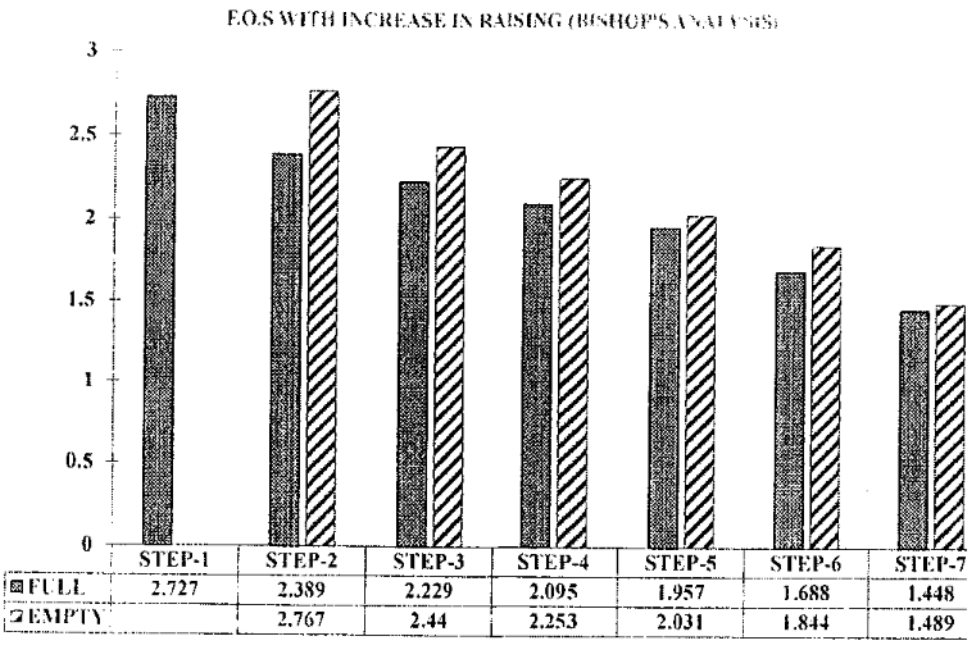


Figure: Factor of safety under different raisings without / with fly ash fill

From the above analysis, it is found that the geometry of the slope is well designed an critical factor of safety 1.688 as obtained in the GeoStudio. The geometry of the slope i the consulting team as per the design sheet provided by MAHAGENCO, Koradi. Al investigations of soil layers used in the ash bund is not done as it is very difficult to get the already construction core sections embedded in the bund layers. These values of so considered on the basis of previously obtained data and with broad understanding of the following properties of soils (Table 2) are considered for the analysis.

Table 2: Soil Properties considered for slope stability analysis

Test / Properties		Fly ash	Cover Soil	Black cotton soil
Shear Parameters (CU) IS 2720 (Part 13) 1985	Cohesion (kPa)	25	10	5
	ϕ (°)	32	25	15
Permeability IS 2720 (Part 17) 1986	k (cm/s)	8.67×10^{-4}	1.12×10^{-2}	2.87×10^{-6}
Standard Proctor's Test IS 2720 (Part 7) 1980	OMC (%)	19.12	18.23	24.25
	MDD (g/cc)	1.372	1.72	1.753

5. REMARK AND CONCLUSION:

1. The present slope stability analysis upto 6th raising using design charts and GeoStu (Slope/W) reveals that the slope of ash bund is found stable.
2. Vehicular movement on berm ash bund is generally damaging stability of ash bund. It to provide geosynthetic reinforced road section which will be provided to the vehicula
3. It is also suggested to construct trial patch of 500 m length in association with VNIT to observe the results of stability of ash bund with the implementation of geosynthet Such type of works has been already implemented by NTPC Ltd and also in Foreign
4. It is suggested to provide syphone pipe which is well connected to drainage location.
5. It is suggested to dewater Northen part of stagnant water which cause seepage in ash location.
6. A scientific study is recommended for the construction of next raising with proper d bund using different stability techniques considering the economy.
7. The fly ash in the upstream side of the bund was found to be excavated at the site wh gets accumulated in the desperation of the excavated area. This increases the flow of downstream side in the form of seepage.

6. Suggestion and Action Taken:

However, the following reasons can be considered responsible for the lowering the fact the ash bund resulting in the seepage through various sections of the dam.

1. Presence of large trees and dense vegetation all around the slope in the downstre ash bund. This may induce a piping effect in the slope. The seepage of water in th side is seen on the day of visit. It may result in further lowering of factor of safe raises to next level. However, the slope was intact. An arrangement for flow of w carried out.
2. Some of the area of the ash bund was seen excavated portion and damaging of flyash removing contractor which is harmful and need to be restore.

4/10/23 4.10.23 4/10/23

Dr. S. P. Wanjari **Dr. Y. B. Katpatal** **Dr. A. H. Padade**

4.10.23 5.10.

Dr. Y. B. Katpatal **Dr. Smt. M. A. Chau**

Professor & Head, CED Dean (R&D)

Terms and Conditions

1. Laboratories at VNIT Nagpur are not NABL accredited.
2. The tests are performed with the test facilities and resources available and accessible to VNIT N
3. The test report relates only to the samples supplied by the agency and VNIT will not be responsi any errors arising due to reasons beyond control of VNIT.
4. VNIT Nagpur is not responsible for any damage, in whatever manner, occurring to any one beca of the test results/certification.
5. VNIT Nagpur is not responsible for nonfunctioning of the equipment (fully or partly) on the fiel whatever reasons.
6. All the test reports/certificate are valid for a period one year from the date of issue unless otherw specified and are exclusively for the internal use of the agency which has asked to carry out. testing/certification.
7. Any dispute arising out of the contract between agency and VNIT is subject to the jurisdiction o Bombay High Court. Nagpur Bench.
8. VNIT, Nagpur is authorized to carry out testing/certification as per GFR. No.1088/(2512)/Udyo January 2. 1992.

ANNEXURE - 8

Clarification of Khasara ash bund breach Incident Dtd 16.07.2022

Sub: Breach of Khsara Ash Pond of Koradi Thermal Power Station on 16th July 2022, Leakage of ash from Khaparkheda Power Station and subsequent Events-Clarifications.

It was very undue and unfortunate incidence which was cause of heavy rain during week before the incidence. Whereas, Koradi TPS has already completed the pre- monsoon works like toe drain cleaning along with deepening and cleaning of natural nalaha. However, incessant heavy rainfall, improper and specific rainfall data prediction from concerned departments, futuristic prediction was not conclusive. TPS management has taken immediate action to avoid further catastrophic situation. Koradi TPS management along with maintenance staff immediately reached at site, and informed about the incidence to nearby Village Sarpanch, MPCB, Police Department, Revenue Officer, Disaster Management, Irrigation Department, Agriculture Officer, Sub Divisional Officer, Block Development Officer. The restoration work of ash dyke wall is immediately started with filling of ash, soil, stone pitching with gunny bags for strengthening inner outer side of dyke wall by deploying the two JCB, four poklanes, tractors, adequate manpower and required material same is restored and flowing water is arrested by 06.00 am on 17.07.2022. Photographs after restoration work are enclosed herewith.

Mahagenco with its seven thermal power plants, one Gas based power plant, Nos. of Hydro power plant & with solar generating plant is in the sector of Power generation. With establishing the Koradi Thermal power station with three units of supercritical technology, Mahagenco is adopting the newer technologies for pollution control and Environmental safeguard. As it is known, all three units of Koradi TPS are installed with 99.9% efficiency ESPs, Low NOx burners, High concentrated slurry disposal system is operative for ash disposal, Installation of Ammonia Flue gas conditioning is in progress. Koradi TPS is pioneer in usage of tertiary treated water generated from Municipal waste water and using same at TPS end for cooling and ash handling purpose.

Koradi TPS has also referred the report published by Agencies viz; Centre for sustainable Development, Manthan & ASAR Group under title "Polluted Power How Koradi and Khaparkheda Power plants are impacting the Environment". Accordingly, joint visit has also been conducted on Dtd. 04.02.2022 for facts findings along with MoEF&CC officials, MPCB officials, NGO representatives and TPS representatives etc. During this visit, samples from six locations were collected and tested at MPCB lab. As per reports most of the parameters were found well within limits and meeting the norms. Koradi TPS has suitably submitted the compliance against the published report on dtd. 24.02.2022 to Scientist 'E'/ Additional Director, IRO, Nagpur.

Scientist 'E', IRO, MoEF&CC, Nagpur has given directions/ recommendations based on visit Dtd. 04.02.2022, wherein

- It was instructed to restrict all plant discharges within plant premises, no ash water should be let out of plant premises. Deweeding of Typha over the natural drains/ water bodies should be done on top priority.
- Excavation/ removal of fly ash observed under the bridge (near Koradi bund area), desilting of the trenches around the bund/ natural drains/ water bodies along with green belt.
- Study heavy metal concentration including mercury in ground water and surface water around Koradi Thermal Power plant
- Bioaccumulation studies of different heavy metals in different environmental metrices ex. Soil, animal scats, water, agricultural crops and its products, sediments of lake and river should be carried out.
- Addition of different plant species in the greenbelt of Koradi Thermal power plant for balancing the diversity.

Koradi TPS has immediately initiated the action against directions received and completed the following work before monsoon which includes:

- TPS has arrested the all plant drains within premises by construction of tanks and diversion of trade effluents to ETP. Similarly, Khasara ash bund overflow has been arrested in the Month of March, afterwards request letters from Nearby village Sarpanch were received to TPS demanding bund overflowed water for various day to day activities.
- Secondly, desilting, removing of typha and cleaning of Khasara ash bund left side toe drain has been completed along with cleaning of sump. Deepening & Cleaning of Natural Nalaha from Khasara ash water recovery pump house to Khairi village was also completed. TPS has prepared the augmentation plan for enhancing the capacity of Khasara ash water recovery system, proposal for same is prepared and will be implemented by 31.12.2023.
- Koradi TPS is regularly monitoring the Ground and surface water samples from nearby villages from MoEF & CC approved laboratory.
- For bioaccumulation study, TPS has already approached to NEERI and waiting for proposal from NEERI.
- TPS has initiated proposal for tree plantation at bund area.
- TPS has also constituted a committee for regular monitoring of Environmental compliance from Koradi TPS along with nearby village Sarpanch and NGO representative.

With these actions taken, Koradi TPS has initiated the steps to comply with Directions received from statutory bodies and decisions made during Koradi surveillance Committee meeting. Koradi TPS has initiated the steps for fulfilment of villager's requirements such as requirement for sapling for plantation at villages. TPS will distribute the plants to village representatives for plantation within upcoming days.

Wherein TPS is complying the Notifications, Directions and notices received from State pollution Control Board timely and also implements the plans accordingly for

Environment Protection and mitigating the Environmental norms. MPCB has issued the prosecution Notice to TPS which are suitably complied and replied by TPS within 7 days period. Koradi TPS is taking all out efforts to achieve 100% ash utilisation, TPS has also prepared the action plan to meet the utilisation targets. As of now, the new notification published by MoEF&CC on Dtd. 31.12.2021 and TPS has tried to address all conditions and thus as apprehension about fly ash pollution caused due to dumping of ash in pond.

TPS has completed various works before monsoon as a part of monsoon preparedness. Further, it is to state that TPS has prepared short term and long term action plan to avoid the recurrence of incidence. However, your suggestions and recommendations in this regards are also been considered in a welcome gesture for immediate and specific measures as early as possible. TPS has taken immediate steps as appended inclusive of suggestions raised by complainant Ms. Leena Bhudhhe, Founder & Director, Centre for sustainable Development, & Shripad Dharmadhikari, Manthan covered below to mitigate and resolve the influence due to tragic incidence.

- Villages namely Khasala, Mhasala, Kawatha, Khairi, Yerkheda etc are affected. As per the prima facie reports, at Mhasala (Toli) 13 houses families are affected due to overflooding. TPS has provided immediate help by distributing Grains, Beddings, School Books/bags, complete essential food kit was provided on priority. Minor effect in drinking water supply observed at Khairi village & Khasala, Mhasala some farms, roads, etc. Thereby this office have supplied water tankers to Khairi village for four days till restoration of existing source and as a precautionary measures water supply from well was kept out of service for two days. Electric motor pump and pipe line (Kawatha and Khairi) has been repaired affected Canal repairing has been initiated and correspondence regarding same is made with concerned department.
- Work carried out on priority basis at Khasara Railway bridge underground sloppy area like ash cleaning, lifting, and shifting at suitable place along with road patching work for smoothly moving of traffic. Deposited ash from roads, Nallah and canal has been removed and proposal for work of road repairing in nearby villages is initiated. Necessary action has been taken to arrest the fouling.
- Enquiry committee has been formed for fixing accountability for this incident & which is in force.
- Assessment of damages including impact on agricultural land & livelihood options etc has been done by respective department(Tahsildar Office, BDO Office) and Sub Divisional Magistrate, Mauda has released order (CRPC case 01/2022 133/2022 Mauja Khasara Dtd. 28.07.2022) for compensation to Distressed people/Farmer's to KTPS, Koradi. As per instructions of Hon. District Collector, Soil sample of farmer's agricultural land sent for Soil Testing.
- Compensation payment has been provided to 12 families of Mhasala Toli village Rs. 2,97,000 and 25 Nos. Distress farmer's family of Rs. 4,42,035/- and also compensation for loss of Buffalo has been paid as per SDM mauda order CRPC case 01/2022 133/2022 Mauja Khasara Dtd. 28.07.2022.

- Following long term plans have been prepared for restoration of ash bund.
  a)2nd Raising work Like Hearting,work have been completed.
  b)Survey of peripheral area of Ash Bund to maintain uniform accumulation of ash and diversion of ash disposal pipelines accordingly.
  c)Formation of Lagoons inside bund area
  d)Construction of WBM Road along the periphery of ash bund.
  e) Ash bund Management committee has been formed to keep check on ash bund activities.
- On Dtd.02/09/2022 Central Design Office, Dam safety organization, Nashik Government of Maharashtra Officials Visited /Inspected the Khasara Ash Bund and corrective measures/report will be submitted by them soon.
- There is regular meeting with surveillance committee to follow up environment related issues & demands with site visit.

Further KTPS Koradi also carried out following immediate actions for Restoration of breach portion of ash Bund is as follows:

- The balance portion of 100m where cut was created in D-E limb completed with quality checks.
- Permanent arrangement for draining excess water at Waste Weir has been done.
- Diversion of HCSD Pipeline no.3 for filling of ash in low laying area of Khasara ash bund weir.
- Provision of Additional dewatering Pumps along with DG set to maintain minimum level of water in Khasara ash bund.
- Restoration of Drain Well for draining of Ash Bund Clear Water is completed.
- Provision of Syphoning system to drain excess clear water from low water zone of ash bund.
- Repairing of Dyke Wall deep cut is completed.

It is pertinent to mention here that Koradi TPS is serving the nation since 1974, TPS is investing sufficient corpus for adopting best available technologies for pollution control and meeting the generation targets.. TPS has implemented CSR activities for community development, local residential revenue sources, facilities for education, medical facilities for better health of residents are provided. With this, it is requested to consider the efforts made by Koradi TPS with the holistic approach and enhance your cooperation in this regards.

Submitted for information.

Chief Engineer (O&M)
3x660MW, TPS, Koradi.

ANNEXURE - 8

Annexure-R2/9

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Koradi TPS has immediately initiated the action against directions received and completed the following work before monsoon which includes:

- TPS has arrested the all plant drains within premises by construction of tanks and diversion of trade effluents to ETP. Similarly, Khasara ash bund overflow has been arrested in the Month of March, afterwards request letters from Nearby village Sarpanch were received to TPS demanding bund overflowed water for various day to day activities.
- Secondly, desilting, removing of typha and cleaning of Khasara ash bund left side toe drain has been completed along with cleaning of sump. Deepening & Cleaning of Natural Nalaha from Khasara ash water recovery pump house to Khairi village was also completed. TPS has prepared the augmentation plan for enhancing the capacity of Khasara ash water recovery system, proposal for same is prepared and will be implemented by 31.12.2023.
- Koradi TPS is regularly monitoring the Ground and surface water samples from nearby villages from MoEF & CC approved laboratory.
- For bioaccumulation study, TPS has already approached to NEERI and waiting for proposal from NEERI.
- TPS has initiated proposal for tree plantation at bund area.
- TPS has also constituted a committee for regular monitoring of Environmental compliance from Koradi TPS along with nearby village Sarpanch and NGO representative.

With these actions taken, Koradi TPS has initiated the steps to comply with Directions received from statutory bodies and decisions made during Koradi surveillance Committee meeting. Koradi TPS has initiated the steps for fulfilment of villager's requirements such as requirement for sapling for plantation at villages. TPS will distribute the plants to village representatives for plantation within upcoming days.

Wherein TPS is complying the Notifications, Directions and notices received from State pollution Control Board timely and also implements the plans accordingly for

Environment Protection and mitigating the Environmental norms. MPCB has issued the prosecution Notice to TPS which are suitably complied and replied by TPS within 7 days period. Koradi TPS is taking all out efforts to achieve 100% ash utilisation, TPS has also prepared the action plan to meet the utilisation targets. As of now, the new notification published by MoEF&CC on Dtd. 31.12.2021 and TPS has tried to address all conditions and thus as apprehension about fly ash pollution caused due to dumping of ash in pond.

TPS has completed various works before monsoon as a part of monsoon preparedness. Further, it is to state that TPS has prepared short term and long term action plan to avoid the recurrence of incidence. However, your suggestions and recommendations in this regards are also been considered in a welcome gesture for immediate and specific measures as early as possible. TPS has taken immediate steps as appended inclusive of suggestions raised by complainant Ms. Leena Bhudhhe, Founder & Director, Centre for sustainable Development, & Shripad Dharmadhikari, Manthan covered below to mitigate and resolve the influence due to tragic incidence.

- Villages namely Khasala, Mhasala, Kawatha, Khairi, Yerkheda etc are affected. As per the prima facie reports, at Mhasala (Toli) 13 houses families are affected due to overflooding. TPS has provided immediate help by distributing Grains, Beddings, School Books/bags, complete essential food kit was provided on priority. Minor effect in drinking water supply observed at Khairi village & Khasala, Mhasala some farms, roads, etc. Thereby this office have supplied water tankers to Khairi village for four days till restoration of existing source and as a precautionary measures water supply from well was kept out of service for two days. Electric motor pump and pipe line (Kawatha and Khairi) has been repaired affected Canal repairing has been initiated and correspondence regarding same is made with concerned department.
- Work carried out on priority basis at Khasara Railway bridge underground sloppy area like ash cleaning, lifting, and shifting at suitable place along with road patching work for smoothly moving of traffic. Deposited ash from roads, Nallah and canal has been removed and proposal for work of road repairing in nearby villages is initiated. Necessary action has been taken to arrest the fouling.
- Enquiry committee has been formed for fixing accountability for this incident & which is in force.
- Assessment of damages including impact on agricultural land & livelihood options etc has been done by respective department(Tahsildar Office, BDO Office) and Sub Divisional Magistrate, Mauda has released order (CRPC case 01/2022 133/2022 Mauja Khasara Dtd. 28.07.2022) for compensation to Distressed people/Farmer's to KTPS, Koradi. As per instructions of Hon. District Collector, Soil sample of farmer's agricultural land sent for Soil Testing.
- Compensation payment has been provided to 12 families of Mhasala Toli village Rs. 2,97,000 and 25 Nos. Distress farmer's family of Rs. 4,42,035/- and also compensation for loss of Buffalo has been paid as per SDM mauda order CRPC case 01/2022 133/2022 Mauja Khasara Dtd. 28.07.2022.

- Following long term plans have been prepared for restoration of ash bund.
  a)2nd Raising work Like Hearting,work have been completed.
  b)Survey of peripheral area of Ash Bund to maintain uniform accumulation of ash and diversion of ash disposal pipelines accordingly.
  c)Formation of Lagoons inside bund area
  d)Construction of WBM Road along the periphery of ash bund.
  e) Ash bund Management committee has been formed to keep check on ash bund activities.
- On Dtd.02/09/2022 Central Design Office, Dam safety organization, Nashik Government of Maharashtra Officials Visited /Inspected the Khasara Ash Bund and corrective measures/report will be submitted by them soon.
- There is regular meeting with surveillance committee to follow up environment related issues & demands with site visit.

Further KTPS Koradi also carried out following immediate actions for Restoration of breach portion of ash Bund is as follows:

- The balance portion of 100m where cut was created in D-E limb completed with quality checks.
- Permanent arrangement for draining excess water at Waste Weir has been done.
- Diversion of HCSD Pipeline no.3 for filling of ash in low laying area of Khasara ash bund weir.
- Provision of Additional dewatering Pumps along with DG set to maintain minimum level of water in Khasara ash bund.
- Restoration of Drain Well for draining of Ash Bund Clear Water is completed.
- Provision of Syphoning system to drain excess clear water from low water zone of ash bund.
- Repairing of Dyke Wall deep cut is completed.

It is pertinent to mention here that Koradi TPS is serving the nation since 1974, TPS is investing sufficient corpus for adopting best available technologies for pollution control and meeting the generation targets.. TPS has implemented CSR activities for community development, local residential revenue sources, facilities for education, medical facilities for better health of residents are provided. With this, it is requested to consider the efforts made by Koradi TPS with the holistic approach and enhance your cooperation in this regards.

Submitted for information.

Chief Engineer (O&M)
3x660MW, TPS, Koradi.

MAHARASHTRA STATE POWER GENERATION CO. LTD.
(Govt. of Maharashtra undertaking)
KORADI THERMAL POWER STATION, KORADI
O/o Chief Engineer (O&M), K.T.P.S.,Koradi, Dist. Nagpur, PIN – 441111
(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – ce.ktpskoradi@mahagenco.in CIN: U40100MH2005SGC153648

Ref. No.: KTPS/3X660MW/CIVIL/ 0330 **Date** 21 MAY 2024

To,
Executive Chemist,
Chemical Division,
3x660MW,KTPS, Koradi.

Sub:- Provision of standard Operating Procedures. For green belt development at Koradi, TPS.

Ref:- 1) Y.O. Letter CE(O&M)/KTPS/660MW/Env.Cell./FL.220/90 Dt. 03.05.2024

With ref. to above subject, please find enclosed herewith SOP for Green Belt development at Koradi, TPS.

Submitted for your information please.

Encl:- 1) SOP for Green Belt Development.

Executive Engineer (Civil),
3x660MW, KTPS, Koradi

Copy s.w.rs. to:
1) Dy.Chief Engineer (O&M), 3x660MW, TPS, Koradi.
2) Superintending Engineer (Op), 3x660MW. KTPS, Koradi

MAHARASHTRA STATE POWER GENERATION CO. LTD.
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(ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 & ISO 50001:2018)
Email – cegenkoradi@mahagenco.in CIN: U40100MH2005SGC153648

SOP FOR GREENBELT DEVELOPMENT AT KORADI TPS.

Introduction:

Development of Green Belt is an important practice and will be continue to be one of the main activities of the Company. The company has social obligation to recreate the environmental status by providing thick canopy cover to suppress fugitive emission and provide aesthetic beauty. Trees form important part of the biosphere in the Eco-system. The ecological belt maintains the natural balance of the area.

Objective

Greenbelt is a set of rows of trees planted such a way that they form an effective barrier between the plant and the surroundings. The main purpose of green belt development is to contribute to the following factors:

I. To attenuate noise levels generated from the plant;

II. To improve the aesthetics of the plant area;

III. To trap the fugitive dust emissions;

IV. To maintain ecological homeostasis;

V. To prevent soil erosion and to protect the natural vegetation; and

VI. Provision of wide green belt around the plant has been foreseen to reduce any adverse impacts on the surrounding population due to emissions from the proposed expansion activity. Plantation of grass, flowers, bushes and trees is/will be taken-up to reduce generation of dust from bare earth and to enhance the aesthetic/scenic value.

Requirements for Green Belt:

The following characteristics have been taken into consideration while selecting plant species for green belt development and tree plantation.

I. They should be fast growing and tall trees.

II. They should be perennial and evergreen.

III. They should have thick canopy cover.

IV. The planting should be in appropriate alternate rows around the site to prevent lateral pollution dispersion.

V. The trees should maintain regional ecological balance and conform to soil and hydrological conditions. Indigenous species should be preferred.

Greenbelt Plantation at Plant Site

Due care is/will be taken to ensure that a green belt is developed around the plant area. Areas having low density vegetation will be systematically and scientifically afforested. Apart from the green belt and aesthetic plantations for fugitive emissions and noise control, all other massive plantation efforts will be executed with the assistance and co- operation of the local community. The plantations of any of the above or their combinations will be decided in consultation with the CSIR- National Environment Engineering Research, Nagpur Institute.

Bamboo Plantations(Through CSIR-NEERI, Nagpur).

Eco-Rejuvenation Technology (ERT) developed by CSIR-NEERI is an eco-friendly and cost-effective technology for the development of sustainable bamboo biodiversity in degraded or contaminated areas. Recently, ERT gained significant attention in the research community due to its greener nature. Degraded land covering with vegetation is a striking approach which helpful in maintaining the surrounding environments hospitable for living well-being. Covering degraded/contaminated land via plantation can effectively immobilize the contaminants/pollutants, uphold moisture, protect wildlife, and simultaneously restore and remediate the affected land. The depletion of land resources, soil erosion, livestock, and biodiversity may arise naturally as well as anthropogenic if the vegetation cover is under threat. Also, a contaminated or deteriorated landscape is more prone to destroy its microhabitats and becomes inhospitable to existing macro and micro-communities. The restored and rejuvenated habitats allow both indigenous and exogenous and flora and fauna to propagate. Therefore, the implementation of ERT is the best possible and greener approach to restoring degraded/contaminated land and landscapes.

Guidelines for Green Belt Development

Following guidelines is/will be followed for the Green Belt Development in the plant area.

I. All the barren areas are/will be vegetated and the expected growth rate will be more than 70%.

II. Trees growing to a height of 5m or more are/will be planted.

III. Plantation of trees is/will be undertaken in and around the area in alternating rows to prevent horizontal pollution dispersion.

IV. Trees are/will be planted along roadsides, to arrest auto exhaust and noise pollution, and in such a way that there is no direct line of sight to the installation when viewed from a point outside the foliage perimeter.

V. In order to facilitate the proper growth of vegetation, limited measures involving preparation of seedbed with suitable amount of fertilizers and treatment with mulches are/will be taken.

Superintending Engineer(C),
TPS, Koradi.

Annexure-R2/10

URGENT
Speed Post/Online

F. No. IA-L-11011/112/2021-IA-I
Government of India
Ministry of Environment, Forest and Climate Change
(I.A. Compliance and Monitoring Division)
*****

Indira Paryavaran Bhavan
Jor Bagh Road, Aliganj
New Delhi-110 003
Email: bhardwaj.adiraju@gov.in
Dated: 26th November, 2024

To,

M/s Maharashtra State Power Generation Company Limited,
3x660 MW Koradi Thermal Power Station,
District Nagpur, Maharashtra-441111
Email: cegenkoradi@mahagenco.in

Sub: Original Application No. 62/2021 in the matter titled Krishi Vigyan Arogya Sanstha and Ors. versus Maharashtra State Power Generation Company & ORs., before the NGT (WZ), Pune - reg.

Ref:
i. Personal Hearing dated 19.03.2024 and MoM communication dated 24.04.2024.
ii. Compliance to Minutes of Personal Hearing submitted by PP vide letter no. KTPS/660/CD/Env.Cell dated 22.05.2024.

Sir,

This refers to the response submitted by you in compliance to the directions issued during the personal hearing for the project titled "Coal-Based Power Unit of M/s Maharashtra State Power Generation Company Limited (MSPGCL), located at Koradi, District Nagpur, Maharashtra." The hearing was held on March 19, 2024, at 11:00 AM under the Chairmanship of Dr. Sujit Kumar Bajpayee, Joint Secretary, MOEF&CC, at Indira Paryavaran Bhawan, New Delhi.

2. The response was reviewed by the Ministry, and it was noted that the Quantitative Risk Assessment (QRA) Management Plan, intended to address potential future accidents at the plant, has not yet been submitted. Further, Action Taken Report (ATR) in response to the observations and conclusions outlined in the dyke stability assessment report dated 25.07.2023 and 04.10.2023 concerning the Khasala Ash Pond and Koradi Ash Pond respectively is also not available.

3. In view of the foregoing, you are hereby requested to submit (i) an updated compliance status w.r.t. ash dyke stability report along with (ii) the pending QRA management plan.

4. Being a court matter, the reports may be furnished to the Ministry at the earliest.

This issues with the approval of the competent Authority.

(Dr. Bhardwaj Adiraju)
Joint Director/Scientist 'D'