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File No: J-13012/69/2008-IA.I (T)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
****

Dated **15/03/2024**

To,

Shri Ajay Kumar Verma, Senior Manager
M/s SJVN THERMAL PVT LTD
CEO, BUXAR THERMAL POWER PROJECT, PLOT NO 192, WARD NO 02, CIRCLE- 06, TALPATRA LANE, BUDH MARG, PATNA, 800001
env.stpl@sjvn.nic.in

Subject: **Expansion of Buxar Thermal Power Project from 1320 MW to 1980 MW by installing 1x660 MW plant unit in an area of 620.43 Ha at Village Akhauripur, Banarpur, Kathtar and etc., Sub-District Chausa, District Buxar, Bihar by M/s SJVN Thermal Pvt. Ltd. – regarding Terms of References (TOR)**

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Proposed Expansion from 1320 MW to 1980 MW Buxar Thermal Power Project by installing 1x660 MW plant unit Near Chausa, district Buxar, Bihar submitted to Ministry vide proposal number IA/BR/THE/439566/2023 dated 10/10/2023.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO23A0601BR5368323N
(ii) File No.	J-13012/69/2008-IA.I (T)
(iii) Clearance Type	TOR
(iv) Category	A
(v) Project/Activity Included Schedule No.	1(d) Thermal Power Plants
(vi) Sector	Thermal Projects
(vii) Name of Project	Proposed Expansion from 1320 MW to 1980 MW Buxar Thermal Power Project by installing 1x660 MW plant unit Near Chausa, district Buxar, Bihar
(viii) Name of Company/Organization	SJVN THERMAL PVT LTD
(ix) Location of Project (District, State)	BUXAR, BIHAR
(x) Issuing Authority	MoEF&CC
(xii) Applicability of General Conditions	yes
(xiii) Applicability of Specific Conditions	no

3. **3.** Environmental Clearance was accorded by Ministry of Environment, Forest and Climate Change vide File No. J-13012/69/2008-IA.I(T), dated 28.02.2017 for the 2x660 MW (1320 MW-Stage I) Coal Based Super Critical Buxar thermal power project (BTPP). Stage - I is in under construction. The proposal is for grant of Terms of Reference to Expansion from 1320 MW to 1980 MW Buxar Thermal Power Project by installing 1x660 MW plant (Satge II) unit Near Chausa, district Buxar, Bihar by M/s SJVN Thermal Pvt. Ltd.

4. Project is covered under Category 'A' of Sector 1(d) - Thermal Power Plants - (≥ 500 MW (coal / lignite / naphtha & gas based) of EIA Notification, 2006 and as amended and require EC from the Central level.

5. Proposal was considered in the 3rd & 5th EAC meeting held on 31.10.2023 & 14.02.2024, respectively. The Project Proponent and the accredited Consultant M/s. Mantec Consultants Pvt. Ltd made the detailed presentation on the salient features of the project and apprised following:

(i) Project details:

Name of the Proposal	Proposed Expansion from 1320 MW to 1980 MW Coal Based Buxar Thermal Power Project by installing 1x660 MW Unit.
Proposal No.	IA/BR/THE/439566/2023
Location	Near Chausa, District Buxar, Bihar
Company's Name	M/s SJVN Thermal Power (P) Limited
Accredited Consultant and certificate no.	Accreditation No.: NABET/EIA/2326/RA 0305, Valid till 20.04.2026
Inter- state issue involved	Yes, Bihar - Uttar Pradesh ~ 1 km in NW
Seismic zone	Zone-III

(ii) Project Description:

Expansion / Green Field (new): (IPP / Merchant / Captive):	Expansion
Co-ordinates of all four corners of TPP Site:	**Pillar No.** / **Latitudes** / **Longitudes** A / 25°28'55.84"N / 83°52'31.18"E B / 25°28'59.65"N / 83°53'18.52"E C / 25°28'18.26"N / 83°53'21.78"E D / 25°27'21.61"N / 83°53'11.46"E E / 25°27'37.14"N / 83°52'19.06"E F / 25°28'25.76"N / 83°52'23.46"E
Average height of: (a) (a) TPP site, (b) Ash pond site etc. above MSL	Above means sea level (MSL) (a) 65.52 m (b) 56 m
Whether the project is in the Critically Polluted Area (CPA) or within 10 km of CPA. If so, the details thereof:	No,
CRZ Clearance	No,
Cost of the Project (As per EC and revised): Cost of the proposed activity in the amendment:	**Total Cost**: Rs. 16,909.30 Crores **Existing**: Rs. 10,520.48 Crores **Proposed:** Rs. 6,388.82 Crores
Employment Potential for entire project/ plant and employment potential for the proposed amendment (specify number of persons and quantitative information).	During Construction Phase :5550 Nos During Operation Phase: 4500 Nos.
Benefits of the project (specify quantitative	· Fulfill power demand of the country by 1980 MW power

information)	generation. · Employment generation of 4500 Nos. of employee.

(iii) Electricity generation capacity:

Capacity & Unit Configurations:	1320 MW + 660 MW
Generation of Electricity Annually	

(iv) Details of fuel and Ash disposal: Annual coal requirement for the plant shall be 4.97 MTPA (For Stage - I) & 3.10 MTPA (For Stage - II). Fuel Supply Agreement (FSA) was signed between STPL and CIL/CCL for Long-term coal linkage to Buxar TPP (2x660 MW) on 26.07.2023 for supplying of 4.976 Million MTPA of G-9 to G14 Grade coal. Meeting of Standing Linkage Committee (Long Term) of MoP, GoI was held on 16.06.2023. As per the minutes of meeting, the Standing Linkage Committee (Long Term) has recommended for Long Term Coal Linkage to Stage-2, BTPP.

Details of mode of transportation of coal from coal source to the plant premises along with distances	Proposed- The transportation of Coal for Buxar Stage-II (1X660 MW) is proposed through existing rail network. Existing - Imported and Domestic coal will be transported through rail. Eastern Central Railways provided in-principle approval for railway siding vide letter dated 29.09.2015
Fly Ash Disposal System Proposed	Pneumatic conveying system shall be employed for extraction of fly ash from the electrostatic precipitator hoppers in dry form. This dry ash shall be taken to buffer hoppers of unit located near to ESP. Dry ash from buffer hoppers shall be transported to main storage silos. The main ash storage silos shall be placed on the rail line for further utilization through rail wagons. There shall be two nos. of new ash silos in the existing silo area. The storage capacity of each silo shall be approx. 1800 m^3. The user industries shall take the dry fly ash from these silos in closed tankers/Rail wagons/Open trucks. For wet disposal of dry ash extracted from various ESP hoppers, the same shall be diverted through feeder ejector to ash slurry pump house.
Ash Pond/ Dyke (Area, Location & Co-ordinates) Average height of area above MSL (m)	**Existing -** Ash Pond Area - 282 acres 25°28'36.46"N to 25°28'48.73"N, & 83°52'39.77"E to 83°52'52.98"E MSL (m): 83 – 88 meter **Proposed** - Ash pond Area - 165 acres 25°27'8.00"N to 25°27'15.50"N & 83°52'57.77"E to 83°53'11.47"E MSL(m): 88 – 89 meter
Quantity of a. Fly Ash to be generated b. Bottom Ash to be generated:	a. 2.74 MTPA b. 1.614 MTPA
Fly Ash utilization (details)	EOI for fly ash utilization is obtained from Rural Work Development, Govt. of Bihar vide letter no. BRRDA (HQ) PMGSY-581/2015/65 dated 07.01.2016, Road Construction department, Bihar vide letter no. Sec-11/Vividth-03-41/2015-192 dated 08.01.2016 & other private companies like R. S. Mishra Enterprises, Lafarge, Dalmia Bharat Cement etc.
Stack Height (m) & Type of Flue	**Proposed-** Existing - Stack Height - 225.52 m (For stage - II) & 275

	m (For Stage - I) Type of flue - Flue Gas Desulphurization (FGD) and Selective Catalytic Reduction (SCR) shall be installed in the proposed Thermal Power Plant.

(v) Water Requirement: Total water requirement during operation phase is 85 cusec, out of which 30 cusec is required for proposed expansion. The makeup water for the project is proposed to be drawn from River Ganga a distance of about 5kms. MoU for drawl of 55 Cusec water from river Ganga has been signed with Govt. of Bihar for Stage-I (1320 MW) and approval for Govt. of Bihar is to be obtained for additional 30 Cusec water for 1X660 MW.

(vi) Land Area Breakup:

Land Requirement:	**Description**	**Areas in Acres**		
a. TPP Site		**Existing**	**Proposed**	**Total**
b. Ash Pond	Main plant, BOP & CHP & Misc. facilities	130.76	0	130.76
c. Township				
d. Railway Siding & Others				
e. Raw Water Reservoir	Ash pond	114.17	67	181.17
f. Green Belt	Green Belt	171.25	34	205.25
g. others	Township	12.15	00	12.15
Total (if expansion state additional land requirement)	Land for miscellaneous facilities like roads, etc.	24.29	00	24.29
	Rail and water	66.80	00	66.80
	Total	**519.43**	**101**	**620.43**
Status of Land Acquisition:	Land for Stage-I is already acquired and land for Stage-2 is under identification.			
Status of the project: .	Stage - I is in under construction.			

6. The Sub-Committee of EAC has visited the Project site from 04.01.2024 to 06.01.2024. Details site visit report is attached herewith for strict compliance to safeguard the environment. The EAC deliberated on the subcommittee report including about quality of road leading towards SJVN office as it not easily approachable and plantation that will be carried out on upcoming months. In response, M/s SJVNL vide email dated 14.02.2024 submitted the following:

i. The road leading to office of SJVN will be completed by 31st March 2024.

ii. 15600 plants as target to be planted during Jan/Feb 2024 will be completed by planting saplings by 31st March, 2024.

Status/compliance report on *the observations of the Sub-committee including detailed action plan for the development of the Green Belt, which shall include the plantation implementation schedule, the name of the implementing agency, and budgetary provisions/allocations* and *above response submitted vide email dated 14.02.2024* shall be submitted along with EIA/EMP report for proposed expansion.

7. The EAC after detailed deliberation on *the information submitted by the M/s SJVNL and as presented during the meeting* and *observations of the sub-committee* , recommended for grant of Standard ToR for conducting EIA study with Public Consultation (Hearing& Written submission) to the project for construction of the Expansion from 1320 MW to 1980 MW Buxar Thermal Power Project by installing 1x660 MW plant unit Near Chausa, district Buxar, Bihar by M/s SJVN Thermal Pvt. Ltd.under the provisions of the EIA Notification, 2006, as amended along with the additional/specific ToR (Annexure 1).

8. The MoEF&CC has examined the proposal in accordance with the provisions contained in the Environment Impact

Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the EAC hereby **accords** Standard Terms of Reference alongwith Specific/additional ToR (Annexure 1) to M/s SJVNL for the proposed expansion from 1320 MW to 1980 MW Buxar Thermal Power Project by installing 1x660 MW plant unit near Chausa, district Buxar, Bihar.

9. The Ministry reserves the right to stipulate additional conditions, if found necessary.

10. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

11. This issues with the approval of the Competent Authority.

Copy To

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi-110001.
2. The chairman, CEA, Sewa Bhawan, R K Puram , New Delhi -110066.
3. Deputy Director General of Forests (C),Ministry of Environment, Forest and Climate Change, Regional Office, 2nd Floor, Headquarter- Jharkhand State Housing Board,Harmu Chowk, Ranchi, Jharkhand – 834002, Ranchi.
4. The Chairman, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi
5. The Chairman, Bihar State Pollution Control Board, Parivesh Bhawan, Patliputra Industrial Area, Patna-10.
6. The District Collector, Buxar**,** Government of (Bihar)
7. 7. PARIVESH Portal

Annexure 1

Specific Terms of Reference for (Thermal Power Plants)

1. Miscellaneous..

S. No	Terms of Reference
1.1	A credible document showing the intent of the land owners to sell the land for the proposed project needs to be submitted.
1.2	Certified compliance report of previous EC to be submitted certified by Regional office of the MoEF&CC. IRO shall provide. Specific observations on the status of OCMS, ash utilization, green cover and emission control equipment of all units of the plant shall be done. In case of any non-compliance the PP shall submit the ATR to concerned RO and get it closed before applying to the Ministry.
1.3	PP should provide in the EIA Report details of all the statutory clearances, permissions, no objection certificates, consents etc. required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC.
1.4	PP shall submit details of court cases and its status for the project.

S. No	Terms of Reference
1.5	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.
1.6	PP should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this PP should mention the number and designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.
1.7	PP should submit the year-wise, activity wise and time bound budget earmarked for EMP, occupational health surveillance, and activities proposed to address the issues raised during Public Hearing. The capital and recurring expenditure to be incurred needs to be submitted.
1.8	Arial view video of project site and transportation route proposed for this project shall be recorded through drone and be submitted.
1.9	In case of ground water abstraction/intersection. The PP shall comply with the Ministry's OM dated 23/05/2019. Compliance status needs to be presented before EAC at the time of appraisal.
1.10	All the certificates viz. Involvement of Forest land, distance from protected area, list of flora & fauna should be duly authenticated by Forest Department. The Certificate should bear the name, designation, official seal of the person signing the certificate and dispatch number.
1.11	PP shall address the recommendation of sub-committee while preparing EIA/EMP and submit its compliance.

2. Socio-economic Study

S. No	Terms of Reference
2.1	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local populace.
2.2	As per the Ministry's OM dated 30.09.2020, to address the concern raised during Public Hearing, Project Proponent is required to submit the detailed activities proposed with year wise budgetary provision (Capital and recurring). Activities proposed shall be part of EMP.Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
2.3	Demographic details in 10 km area shall be submitted.

3. Environmental Management And Biodiversity Conservation

S. No	Terms of Reference
3.1	Wildlife conservation plan shall be prepared, in consultation with State forest and wildlife department, with adequate fund for wildlife habitat management, preserving wildlife and its corridors and be submitted along with EIA/EMP report. Human-Wildlife Conflict issue shall be studied and such incidences reported in the study area during last 10 years shall be submitted. No provision for purchasing the vehicle shall be made in the wildlife conservation plan.
3.2	Cumulative Environmental Impact Assessment study of all the existing and proposed projects in the 15-km radius of the proposed project shall be conducted and same shall be included in EIA/EMP report.
3.3	Details of the existing rail, road networks and alignment of transmission lines along with quantity of coal being transported/to be transported for existing units and proposed expansion, its source and transportation mode shall be submitted.
3.4	Radioactivity studies along with coal analysis to be provided (sulphur, ash percentage and heavy metals including Pb, Cr, As and Hg). Details of auxiliary fuel, if any including its quantity, quality, storage, etc should also be given.
3.5	A comparative chart shall be prepared with changes observed from previous baseline study and present baseline study.
3.6	PP should submit the detailed plan in tabular format (year-wise for life of project) for afforestation and green belt development in and around the project site. The PP should submit the number of saplings to be planted, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this PP should show on a surface plan (5-year interval for life of project) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. Plantation plan should be prepared in such a way that 80% of the plantation to be carried out in first 5 years and for the remaining years the proposal for gap filling. The seedling of height not less than 2 meters to be selected and accordingly cost of plantation needs to be decided. In addition to this, plantation in the safety zone at project boundary the plantation should be planned in such a way that it should be completed within 2 years only.
3.7	Action plan for development of green belt (40% of total project cover area) along the periphery of the project boundary shall be provided with a video clip of existing green belt. Plan shall be dully approved by the DFO.
3.8	A detailed plan need to be submitted for undertaking extensive green plantation within 10 km radius of the plant focusing on water reservoir, school, hospital and other institutional area and same need to be incorporated in EIA/EMP report.
3.9	Detailed action plan shall be prepared for maintenance of air pollution control equipment for proposed and existing units and shall be incorporated in EIA/EMP report.
3.10	Details of Ash management of existing (last 5 years) and proposed project shall be submitted, along with 5-year plan for 100 % ash utilization.
3.11	Details of Dry Ash handling system along with supplementary coal handling system shall be

S. No	Terms of Reference
	submitted.
3.12	Proper protection measures like HDPE lining, appropriate height of bund and adequate distance between proposed Ash pond and water body (minimum 60 meter) etc. shall be planned so as to reduce the possibility of mixing of leachate with any fresh water body for under construction ash pond. High Density Slurry disposal plan shall be prepared.
3.13	Pond and ground water quality (10 locations within 2 km radius of the plant boundary) shall be studied and report be submitted along with EIA/EMP. Action plan for Ground water monitoring stations on all hotspots like schools/hospitals within 2 km radius of the plant boundary be submitted.
3.14	Baseline Study for Heavy metals in Ground water, Surface water and soil to be carried out and incorporated in EIA/EMP report.
3.15	Details pertaining to water source, treatment and discharge should be provided.
3.16	Zero Liquid Discharge plan shall be submitted.
3.17	PP shall submit action plan for using treated Sewage/Domestic wastewater for its operations.
3.18	Project Proponent to conduct Environmental Cost Benefit Analysis for the project in EIA/EMP Report.
3.19	An action plan shall be prepared for Water shed development within 10 km radius of the plant boundary in consultation with reputed government institution and incorporated in EIA/EMP report.
3.20	PP should clearly bring out that what is the specific diesel consumption ~ (Liters/Tonne of total material handled) and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted. PP shall also explore the possibility of using e-vehicles/LNG/CNG based machineries and trucks for operation and transportation of Coal and ash.

4. [B] Disaster Management

S. No	Terms of Reference
4.1	Disaster Management Plan shall be prepared and incorporated in EIA/EMP report.

Standard Terms of Reference for (Thermal Power Plants)

1. Statutory Compliance

S. No	Terms of Reference
1.1	The proposed project shall be given a unique name in consonance with the name submitted to other Government Departments etc. for its better identification and reference.

S. No	Terms of Reference
1.2	Vision document specifying prospective long term plan of the project shall be formulated and submitted.
1.3	Latest compliance report duly certified by the Regional Office of MoEF&CC for the conditions stipulated in the environmental and CRZ clearances of the previous phase(s) for the expansion projects shall be submitted.

2. Details Of The Project And Site

S. No	Terms of Reference
2.1	The project proponent needs to identify minimum three potential sites based on environmental, ecological and economic considerations, and choose one appropriate site having minimum impacts on ecology and environment. A detailed comparison of the sites in this regard shall be submitted.
2.2	Executive summary of the project indicating relevant details along with recent photographs of the proposed site (s) shall be provided. Response to the issues raised during Public Hearing and the written representations (if any), along with a time bound Action Plan and budgetary allocations to address the same, shall be provided in a tabular form, against each action proposed.
2.3	Harnessing solar power within the premises of the plant particularly at available roof tops and other available areas shall be formulated and for expansion projects, status of implementation shall also be submitted.
2.4	The geographical coordinates (WGS 84) of the proposed site (plant boundary), including location of ash pond along with topo sheet (1:50,000 scale) and IRS satellite map of the area, shall be submitted. Elevation of plant site and ash pond with respect to HFL of water body/nallah/River and high tide level from the sea shall be specified, if the site is located in proximity to them.
2.5	Layout plan indicating break-up of plant area, ash pond, green belt, infrastructure, roads etc. shall be provided.
2.6	Land requirement for the project shall be optimized and in any case not more than what has been specified by CEA from time to time. Item wise break up of land requirement shall be provided.
2.7	Present land use (including land class/kism) as per the revenue records and State Govt. records of the proposed site shall be furnished. Information on land to be acquired including coal transportation system, laying of pipeline, ROW, transmission lines etc. shall be specifically submitted. Status of land acquisition and litigation, if any, should be provided.
2.8	If the project involves forest land, details of application, including date of application, area applied for, and application registration number, for diversion under FCA and its status should be provided along with copies of relevant documents.
2.9	The land acquisition and R&R scheme with a time bound Action Plan should be formulated and addressed in the EIA report.
2.10	Satellite imagery and authenticated topo sheet indicating drainage, cropping pattern, water bodies (wetland, river system, stream, nallahs, ponds etc.), location of nearest habitations (villages), creeks,

S. No	Terms of Reference
	mangroves, rivers, reservoirs etc. in the study area shall be provided.
2.11	Topography of the study area supported by toposheet on 1:50,000 scale of Survey of India, along with a large scale map preferably of 1:25,000 scale and the specific information whether the site requires any filling shall be provided. In that case, details of filling, quantity of required fill material; its source, transportation etc. shall be submitted.

3. Ecology Biodiversity And Environment

S. No	Terms of Reference
3.1	A detailed study on land use pattern in the study area shall be carried out including identification of common property resources (such as grazing and community land, water resources etc.) available and Action Plan for its protection and management shall be formulated. If acquisition of grazing land is involved, it shall be ensured that an equal area of grazing land be acquired and developed and detailed plan submitted.
3.2	Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes / wildlife corridor, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden of the State or an officer authorized by him.
3.3	A mineralogical map of the proposed site (including soil type) and information (if available) that the site is not located on potentially mineable mineral deposit shall be submitted.
3.4	The water requirement shall be optimized (by adopting measures such as dry fly ash and dry bottom ash disposal system, air cooled condenser, concept of zero discharge) and in any case not more than that stipulated by CEA from time to time, to be submitted along with details of source of water and water balance diagram. Details of water balance calculated shall take into account reuse and re-circulation of effluents.
3.5	Water body/Nallah (if any) passing across the site should not be disturbed as far as possible. In case any Nallah / drain is proposed to be diverted, it shall be ensured that the diversion does not disturb the natural drainage pattern of the area. Details of proposed diversion shall be furnished duly approved by the concerned Department of the State.
3.6	It shall also be ensured that a minimum of 500 m distance of plant boundary is kept from the HFL of river system / streams etc. and the boundary of site should also be located 500 m away from railway track and National Highways.
3.7	Hydro-geological study of the area shall be carried out through an institute/ organization of repute to assess the impact on ground and surface water regimes. Specific mitigation measures shall be spelt out and time bound Action Plan for its implementation shall be submitted
3.8	Detailed Studies on the impacts of the ecology including fisheries of the River/Estuary/Sea due to the proposed withdrawal of water / discharge of treated wastewater into the River/Sea etc shall be carried out and submitted along with the EIA Report. In case of requirement of marine impact assessment study, the location of intake and outfall shall be clearly specified along with depth of water drawl and discharge into open sea.

S. No	Terms of Reference
3.9	Source of water and its sustainability even in lean season shall be provided along with details of ecological impacts arising out of withdrawal of water and taking into account inter-state shares (if any). Information on other competing sources downstream of the proposed project and commitment regarding availability of requisite quantity of water from the Competent Authority shall be provided along with letter / document stating firm allocation of water.
3.10	Detailed plan for rainwater harvesting and its proposed utilization in the plant shall be furnished.In addition, wherever ground water is drawn, PP shall submit detailed plan of Water charging activity to be undertaken.
3.11	Feasibility of near zero discharge concept shall be critically examined and its details submitted.
3.12	Optimization of Cycles of Concentration (COC) along with other water conservation measures in the project shall be specified.
3.13	Plan for recirculation of ash pond water and its implementation shall be submitted.
3.14	Detailed plan for conducting monitoring of water quality regularly with proper maintenance of records shall be formulated. Detail of methodology and identification of monitoring points (between the plant and drainage in the direction of flow of surface / ground water) shall be submitted. It shall be ensured that parameter to be monitored also include heavy metals. A provision for long-term monitoring of ground water table using Piezometer shall be incorporated in EIA, particularly from the study area.
3.15	Hazards Characterization: Past incidents of hazard events within 10km radius of project area with detailed analysis of causes and probability of reoccurrence

4. Environmental Baseline Study And Mitigation Measures

S. No	Terms of Reference
4.1	One complete season (critical season) site specific meteorological and AAQ data (except monsoon season) as per latest MoEF&CC Notification shall be collected along with past three year's meteorological data for that particular season for wins speed analysisand the dates of monitoring shall be recorded. The parameters to be covered for AAQ shall include PM10, PM2.5, SO2, NOx, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration the upwind direction, pre-dominant downwind direction, other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre - dominant downwind direction at a location where maximum ground level concentration is likely to occur.
4.2	In case of expansion project, air quality monitoring data of 104 observations a year for relevant parameters at air quality monitoring stations as identified/stipulated shall be submitted to assess for compliance of AAQ Standards (annual average as well as 24 hrs).
4.3	A list of industries existing and proposed in the study area shall be furnished.
4.4	Cumulative impacts of all sources of emissions including handling and transportation of existing and proposed projects on the environment of the area shall be assessed in detail. Details of the

S. No	Terms of Reference
	Model used and the input data used for modelling shall also be provided. The air quality contours should be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The windrose and isopleths should also be shown on the location map. The cumulative study should also include impacts on water, soil and socio-economics.
4.5	Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.
4.6	Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.
4.7	Quantity of fuel required, its source and characteristics and documentary evidence to substantiate confirmed fuel linkage shall be furnished. The Ministry's Notification dated 02.01.2014 regarding ash content in coal shall be complied. For the expansion projects, the compliance of the existing units to the said Notification shall also be submitted
4.8	Details of transportation of fuel from the source (including port handling) to the proposed plant and its impact on ambient AAQ shall be suitably assessed and submitted. If transportation entails a long distance it shall be ensured that rail transportation to the site shall be first assessed. Wagon loading at source shall preferably be through silo/conveyor belt.
4.9	For proposals based on imported coal, inland transportation and port handling and rail movement shall be examined and details furnished. The approval of the Port and Rail Authorities shall be submitted.
4.10	Details regarding infrastructure facilities such as sanitation, fuel, restrooms, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase should be adequately catered for and details furnished.

5. Environmental Management Plan

S. No	Terms of Reference
5.1	EMP to mitigate the adverse impacts due to the project along with item - wise cost of its implementation in a time bound manner shall be specified.
5.2	A Disaster Management Plan (DMP) along with risk assessment study including fire and explosion issues due to storage and use of fuel should be prepared. It should take into account the maximum inventory of storage at site at any point of time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be invariably provided. Provision for mock drills shall be suitably incorporated to check the efficiency of the plans drawn.
5.3	The DMP so formulated shall include measures against likely Fires/Tsunami/Cyclones/Storm Surges/ Earthquakes etc, as applicable. It shall be ensured that DMP consists of both On-site and Off-site plans, complete with details of containing likely disaster and shall specifically mention personnel identified for the task. Smaller version of the plan for different possible disasters shall be

S. No	Terms of Reference
	prepared both in English and local languages and circulated widely.
5.4	Details of fly ash utilization plan as per the latest fly ash Utilization Notification of GOI along with firm agreements / MoU with contracting parties including other usages etc. shall be submitted. The plan shall also include disposal method / mechanism of bottom ash along with monitoring mechanism.

6. Green Belt Development

S. No	Terms of Reference
6.1	Detailed scheme for raising green belt of native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary not less than 2000 tree per ha with survival rate of more than 85%shall be submitted. Photographic evidence must be created and submitted periodically including NRSA reports in case of expansion projects. A shrub layer beneath tree layer would serve as an effective sieve for dust and sink for CO2 and other gaseous pollutants and hence a stratified green belt should be developed.
6.2	Over and above the green belt, as carbon sink, plan for additional plantation shall be drawn by identifying blocks of degraded forests, in close consultation with the District Forests Department. In pursuance to this the project proponent shall formulate time bound Action Plans along with financial allocation and shall submit status of implementation to the Ministry every six months

7. Socio-economic Activities

S. No	Terms of Reference
7.1	Socio-economic study of the study area comprising of 10 km from the plant site shall be carried out through a reputed institute / agency which shall consist of detail assessment of the impact on livelihood of the local communities.
7.2	Action Plan for identification of local employable youth for training in skills, relevant to the project, for eventual employment in the project itself shall be formulated and numbers specified during construction & operation phases of the Project.
7.3	If the area has tribal population, it shall be ensured that the rights of tribals are well protected. The project proponent shall accordingly identify tribal issues under various provisions of the law of the land.
7.4	A detailed CER plan along with activities wise break up of financial commitment shall be prepared in terms of the provisions OM No. 22-65/2017-IA.III dated 30.09.2020.CER component shall be identified considering need based assessment study and Public Hearing issues. Sustainable income generating measures which can help in upliftment of affected section of society, which is consistent with the traditional skills of the people shall be identified.
7.5	While formulating CER schemes it shall be ensured that an in-built monitoring mechanism for the schemes identified are in place and mechanism for conducting annual social audit from the nearest government institute of repute in the region shall be prepared. The project proponent shall also provide Action Plan for the status of implementation of the scheme from time to time and dovetail

S. No	Terms of Reference
	the same with any Govt. scheme(s). CERdetails done in the past should be clearly spelt out in case of expansion projects.
7.6	R&R plan, as applicable, shall be formulated wherein mechanism for protecting the rights and livelihood of the people in the region who are likely to be impacted, is taken into consideration. R&R plan shall be formulated after a detailed census of population based on socio economic surveys who were dependant on land falling in the project, as well as, population who were dependant on land not owned by them.
7.7	Assessment of occupational health and endemic diseases of environmental origin in the study area shall be carried out and Action Plan to mitigate the same shall be prepared.
7.8	Occupational health and safety measures for the workers including identification of work related health hazards shall be formulated. The company shall engage full time qualified doctors who are trained in occupational health. Health monitoring of the workers shall be conducted at periodic intervals and health records maintained. Awareness programme for workers due to likely adverse impact on their health due to working in non-conducive environment shall be carried out and precautionary measures like use of personal equipments etc. shall be provided. Review of impact of various health measures undertaken at intervals of two to three years shall be conducted with an excellent follow up plan of action wherever required.

8. Corporate Environment Policy

S. No	Terms of Reference
8.1	Does the company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
8.2	Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
8.3	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions. Details of this system may be given.
8.4	Does the company has compliance management system in place wherein compliance status along with compliances / violations of environmental norms are reported to the CMD and the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report.

9. Miscellaneous

S. No	Terms of Reference
9.1	All the above details should be adequately brought out in the EIA report and in the presentation to the Committee.
9.2	Details of litigation pending or otherwise with respect to project in any Court, Tribunal etc. shall

S. No	Terms of Reference
	invariably be furnished.
9.3	In case any dismantling of old plants are envisaged, the planned land use & land reclamation of dismantled area to be furnished.

10. Additional Tor For Coastal Based Thermal Power Plants Projects (Tpps)

S. No	Terms of Reference
10.1	Low lying areas fulfilling the definition wetland as per Ramsar Convention shall be identified and clearly demarcated w.r.t the proposed site.
10.2	If the site includes or is located close to marshy areas and backwaters, these areas must be excluded from the site and the project boundary should be away from the CRZ line. Authenticated CRZ map from any of the authorized agencies shall be submitted.
10.3	The soil levelling should be minimum with no or minimal disturbance to the natural drainage of the area. If the minor canals (if any) have to be diverted, the design for diversion should be such that the diverted canals not only drains the plant area but also collect the volume of flood water from the surrounding areas and discharge into marshy areas/major canals that enter into creek. Major canals should not be altered but their embankments should be strengthened and desilted.
10.4	Additional soil required for levelling of the sites should as far as possible be generated within the site itself in such a manner that the natural drainage system of the area is protected and improved.
10.5	Marshy areas which hold large quantities of flood water to be identified and shall not be disturbed.
10.6	No waste should be discharged into Creek, Canal systems, Backwaters, Marshy areas and seas without appropriate treatment. Wherever feasible, the outfall should be first treated in a Guard Pond and then only discharged into deep sea (10 to 15 m depth). Similarly, the Intake should be from deep sea to avoid aggregation of fish and in no case shall be from the estuarine zone. The brine that comes out from Desalinization Plants (if any) should not be discharged into sea without adequate dilution.
10.7	Mangrove conservation and regeneration plan shall be formulated and Action Plan with details of time bound implementation shall be specified, if mangroves are present in Study Area.
10.8	A common Green Endowment Fund should be created by the project proponents out of EMP budgets. The interest earned out of it should be used for the development and management of green cover of the area.
10.9	Impact on fisheries at various socio economic level shall be assessed.
10.10	An endowment Fishermen Welfare Fund should be created out of CER grants not only to enhance their quality of life by creation of facilities for Fish Landing Platforms / Fishing Harbour / cold storage, but also to provide relief in case of emergency situations such as missing of fishermen on duty due to rough seas, tropical cyclones and storms etc.
10.11	Tsunami Emergency Management Plan shall be prepared wherever applicable and Plan submitted

S. No	Terms of Reference
	prior to the commencement of construction work.
10.12	There should not be any contamination of soil, ground and surface waters (canals & village pond) with sea water in and around the project sites. In other words necessary preventive measures for spillage from pipelines, such as lining of Guard Pond used for the treatment of outfall before discharging into the sea and surface RCC channels along the pipelines of outfall and intake should be adopted. This is just because the areas around the projects boundaries could be fertile agricultural land used for paddy cultivation.

Additional Terms of Reference

(a) Status/compliance report on *the observations of the Sub-committee including detailed action plan for the development of the Green Belt, which shall include the plantation implementation schedule, the name of the implementing agency, and budgetary provisions/allocations* and *response submitted to Ministry vide email dated 14.02.2024* shall be submitted along with EIA/EMP report for proposed expansion.

(b) *NOC for additional 30 cusec surface water consumption from State WRD shall be submitted.*

Report of the Site Visit from 04.01.2024 - 06.01.2024 (3 days) to Buxar Thermal Power Project Near Chausa, district Buxar, Bihar by M/s SJVN Thermal Pvt. Ltd.

Background Information:

Regarding the Terms of Reference (TOR) proposal received by the MoEFCC for the expansion of the Buxar Thermal Power Project from 1320 MW to 1980 MW through the installation of one x 660 MW plant unit near Chausa, district Buxar, Bihar, submitted by M/s SJVN Thermal Pvt. Ltd., the EAC decided at its 2nd meeting on October 31st and November 1st, 2023 to conduct a site visit in order to obtain the following additional information prior to rendering any recommendations on the proposal:

1. PP must resubmit in HA the ash pond area in accordance with the most recent MoEF&CC notification. The land use pattern and environmental sensitivity of each alternative area considered for the placement of the ash reservoir must be provided.
2. Impact assessment of existing and proposed environmentally sensitive areas, including schools, hospitals, and other facilities, within a 10-kilometer radius of the project boundary.
3. Strategy for the implementation of a three-tiered peripheral greenbelt.
4. A scientific rationale for the placement of online monitoring stations installed in accordance with precise air modelling.

As per office order number F. No. J-13012/69/2008-IA.I (T) dated 02.01.2024, the Ministry has formed a subcommittee consisting of four (4) members to conduct a site visit from January 4th to January 6th, 2024.

1. Shri Mahi Pal Singh, Member EAC
2. Prof. Shyam Shanker Singh, Member EAC
3. Prof. Vinod Agrawal, Member EAC
4. Shri M. Rajeshwar Prasad, Representative of IRO Ranchi

Site Visit Details and Observations by Sub-committee:

1. In compliance of Ministry's office order, Sub-committee visited the project site during 4th to 6th January 2024.

2. The Sub-Committee reviewed and discussed on the concerns brought forth during its earlier meeting by EAC with CEO, CFO, and other executive members. The Sub-Committee also directed to submit additional information as required. In addition, Sub-Committee members conducted site visits to the facility and its environs in order to observe the conditions in practice.

3. The PP's reply on the desired additional information is as under:

S.No.	Additional Information desired by EAC	Reply from PP
1	Re-submit the ash pond area in Ha in terms of MoEF&CC latest notification. Environmental sensitivity and land use pattern of all	The ash – pond area for under construction 1320 MW BTPP is 114 Ha. while that for proposed

<table>
<tr><td></td><td>alternative areas for location of ash pond area shall be submitted.</td><td>expansion unit of 1 x 660 MW is 67 Ha. Total area for ash-pond is 181 Ha for 1980 MW, which is less than the maximum area allowed for ash dyke i.e. 0.1 Ha per MW.

Total 3 no. alternative locations for ash pond area of 1 x 660 MW expansion unit has been identified as per KML. As per environment sensitive analysis, the alternative – 2 land area is proposed to be finalized as it is located at a distance of 1.82 km from National Highway, 3.16 km from nearby Karamnasa River, 6.5 km from Ganga River and 790 m from nearest habitation.</td></tr>
<tr><td>2</td><td>Impact assessment of existing as well as proposed location school, hospital, and other environmental sensitive area within 10 km radius of the project boundary.</td><td>Detailed impact assessment of existing as well as proposed locations like school, hospital, and other environmental sensitive areas will be carried out during EIA study and the same will be incorporated in EIA/EMP report of the proposed expansion project.</td></tr>
<tr><td>3</td><td>Action plan for development of 3 layer peripheral greenbelt.</td><td>The total land acquired for BTPP is 519.43 Ha which includes 171.41 Ha of greenbelt area (as per 33% norms). Out of this 171.41 Ha of greenbelt area, 147 Ha shall be developed within the plant boundary as depicted in “Greenbelt Map”. Further, plantation is proposed in more than the requisite requirement of 24 Ha area along the rail and water corridor.

The proposed plantation schedule for the development of greenbelt over 171.41 Ha (considering the ongoing construction activities) is as under:
<table>
<tr><th>Area</th><th>No. of Saplings</th><th>Time Line for Plantation</th></tr>
<tr><td>6.24 Ha</td><td>15600</td><td>Plantation will be done by Jan/Feb., 2024</td></tr>
</table>
</td></tr>
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		8.00 Ha	20000	Plantation will be done during Q3 (Monsoon season) 2024
		64.35 Ha	160875	Plantation in MGR area shall be done after the completion of rail infra arrangement.
		92.82 Ha	232050	Plantation will be done after the completion of all plant activities.
		171.41 Ha	**428525**	
4	Scientific reasoning for location of Installed Online Monitoring Stations as per accurate air modelling.	Online continuous Monitoring Station for accurate air modelling will be established during the operational phase of the project. However, as suggested by EAC, 2 (Two) Nos. additional AAQMS have been established in the predominant wind direction and Ambient Air Quality monitoring started from 10th November 2023, in addition to existing 8 Nos. of Ambient Air Quality monitoring locations. The collection of baseline data of Air, Water and Noise was started from 15.09.2023 and stand completed on 15.12.2023.		

4. During the site visit, following observations have been made by the sub-committee members:

(i)The EC was granted on February 28, 2017 for the 2 x 660 MW (1320 MW) Thermal Power Plant; however, the project is still in the construction phase and will require at least 10 to 12 months to complete and become functional.

(ii) Plantation efforts thus far have been insufficient and dispersed in the plant area and its environs. Roadside areas situated within the plant location are also devoid of vegetation. The Subcommittee members have conveyed their profound apprehension regarding this matter and have instructed the PP to expedite the plantation work in accordance with the specified

schedule, in addition to allocating sufficient funds for the plantation programme. The PP has guaranteed the planting of over 15,000 plants within the allotted time of two months.

(iii) The members also visited the suggested ash – pond site and found it suitable.

(iv) Additionally, the members paid a visit to the hospital and school, both of which are in close proximity to the plant site's perimeter. The school, situated in close proximity to the village of Sikraur, is observed to be approximately 300 metres from the plant's boundary and over 1 kilometre from the main plant. Furthermore, the education department has not granted recognition to the school, which is currently housed in a shed structure. There were no students present during school time. The aforementioned medical facility, situated in the village of Akhauipur Gola, is merely a "Clinic for Medical Consultation" and not a comprehensive hospital. This facility is approximately 400 metres from the plant's boundary.

(v) Members also visited the Skill Development Training Site for women. For this centre the SJVN has given Rs. 30.00 lakh for skill development of the local people.

Remark of Sub-committee:

(A) Remarks related to earlier EC granted for 2 x 660 MW (1320 MW) TPP:

(i) Additionally, the Committee noted that environmental clearance was granted for the project in 2017. Subsequent developments have been observed concerning the acquisition and connection of coal to the thermal facility, its storage and transportation, the construction of a railway siding, and the integration of a Merry-go-Round (MGR) Railway within the facility. It is viewed that the Project Proponent may appraise to the Ministry on all these points where such changes are contemplated in the project, and which are not mentioned in the environment clearance granted to the project earlier.

(ii) In addition, the Sub-Committee directed that the project proponent should submit to the Ministry an Action Plan for the development of the Green Belt, which would include the plantation implementation schedule, the name of the implementing agency, and budgetary provisions/allocations.

(iii) The Sub-Committee reaffirmed the importance of strictly enforcing all environmental safety measures in the ash pond, including the installation of HDPE lining and the reinforcement of civil structures to strengthen the ash pond's bunding and detect any potential breaches or seepage.

(iv) Committee also made observation on Buddha nala passing through the project area. It was observed by the Committee that Buddha nala passes through the project area. The project proponent has taken measures to divert the nala flowing through the plant premises. The Sub-committee made following observations which project proponent must follow.

(1) The water of the Buddha Naala shall not be utilised under any circumstances, and it shall be permitted to flow freely without obstruction or storage within the facility.

(2) The Project Proponent shall monitor the nala water flow as following ways.
   (a) The monthly volume of water flowing through the Buddha Nala, as measured by a flow metre.
   (b) Monthly water quality should be taken at both the entry and exit locations of thermal power plant area.

(B) Remarks related to proposed TOR for expansion proposal of 1 x 660 MW TPP:

The Sub-committee members are in opinion that the TOR may be considered by the EAC with the special emphasis on:

1. Green belt development in time bound manner should be completed.
2. Adequate budgetary provision for plantation work should be allotted.
3. Disaster Management Plan should be prepared in detail as the area is falling under Seismic Zone IV
4. Systematic EIA/EMP and appropriate control measures specially focussing on environmentally sensitive locations (school, college, hospitals etc.) should be done.

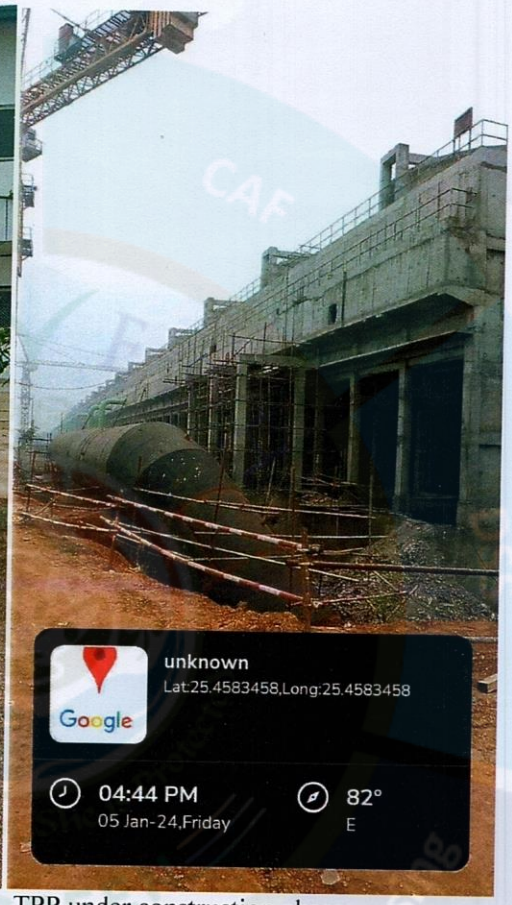
(M. P. Singh) (Prof. S. S. Singh) (Prof. Vinod Agrawal) (M. Rajeshwar Prasad)

Site Visit Photographs

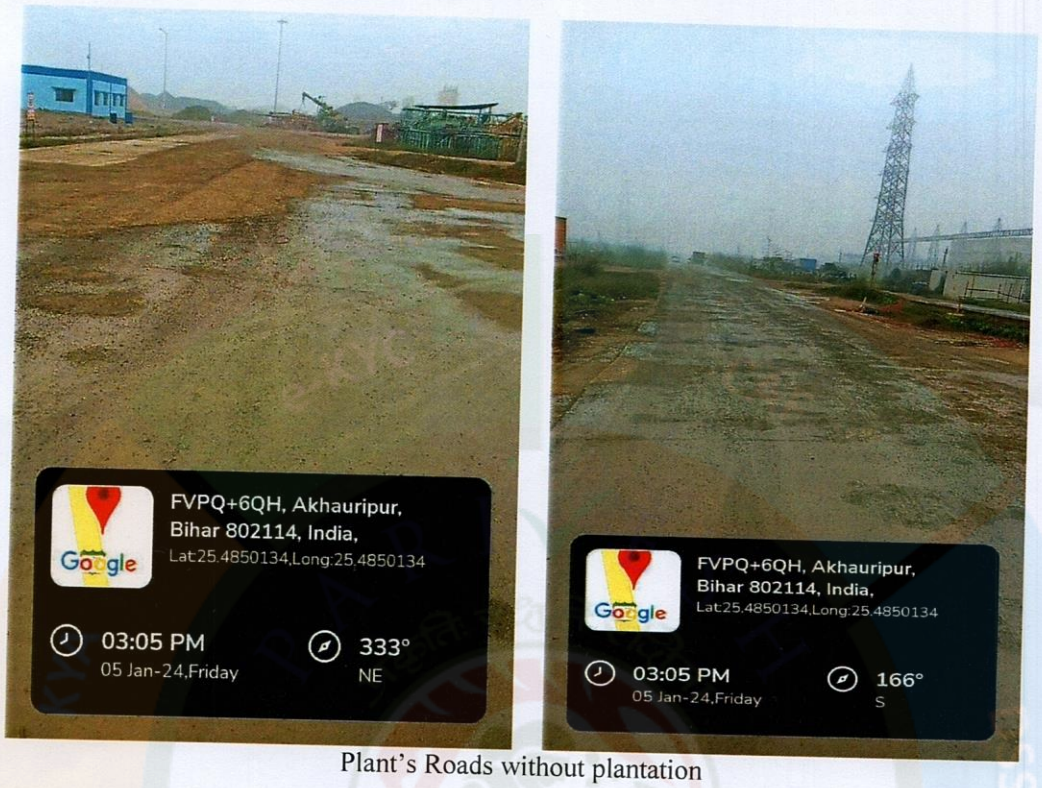
Sub-committee members having discussion with CEO

Sub-committee members having conversation with officers of SVNL

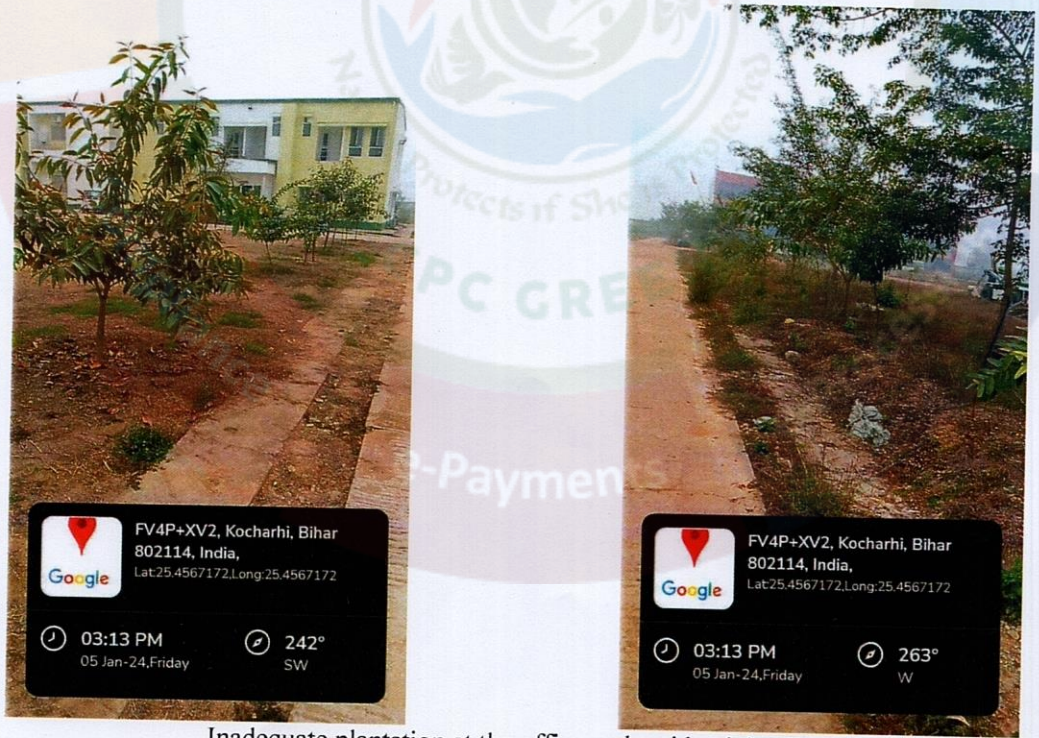
Site Visit by Members



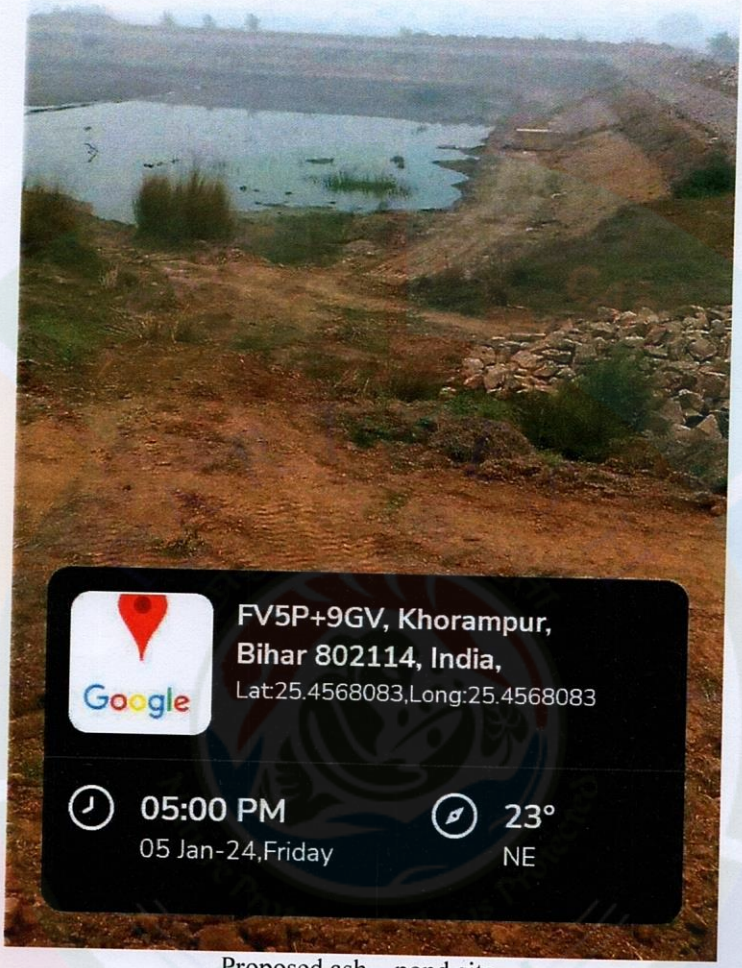
TPP under construction phase



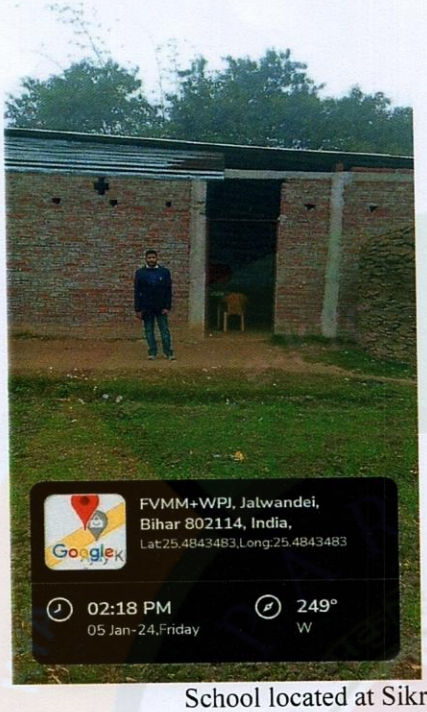
Plant's Roads without plantation



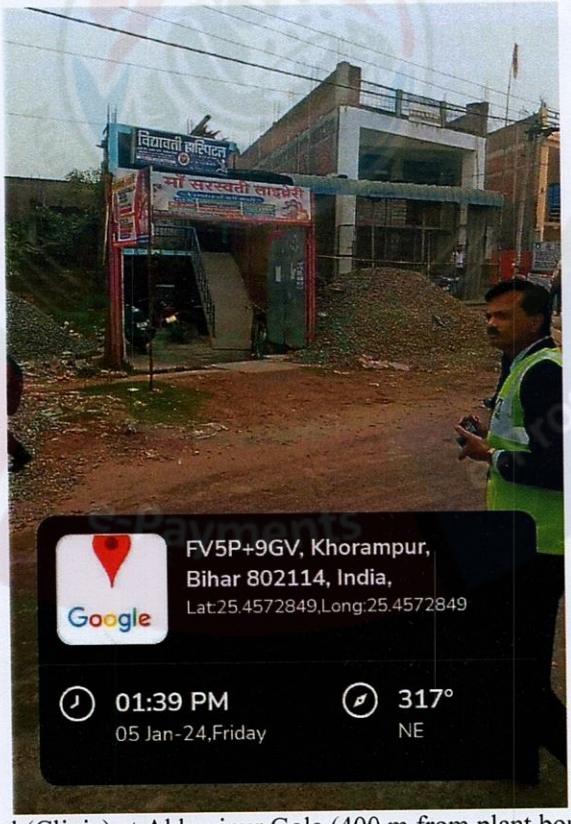
Inadequate plantation at the office and residential colony



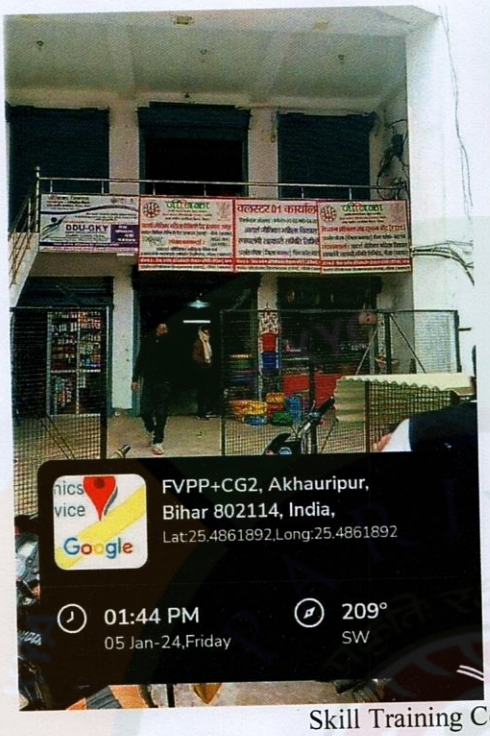
Proposed ash – pond site



School located at Sikraur village (300 m from plant boundary)



Hospital (Clinic) at Akhauipur Gola (400 m from plant boundary)



Skill Training Centre (Funded by SVNL)

Signed by
Amit Vashishtha
Date: 15-03-2024 15:35:33
Reason: Verified and signed