EXECUTIVE SUMMARY

EXPANSION OF THE 2X300 MW (PHASE-I, OPERATIONAL) AND 2X660 MW (PHASE-II, UNDER CONSTRUCTION) PROPOSED WITH CAPACITY OF 2X800MW (1600 MW, UNDER PHASE-III ULTRA SUPER CRITICAL TPP) WITHIN THE EXISTING PLANT AREA AT VILLAGE SARAGBUNDIA, DHANDHANI, PALADI, KHORDAL, PAHANDA AND PATHADI, TEHSIL KARTALA, DISTRICT, KORBA, CHHATTISGARH

PROJECT PROPONENT

Korba Power Limited

ENVIRONMENTAL CONSULTANT

GAURANG ENVIRONMENTAL SOLUTIONS PVT. LTD.

(NABET/EIA/23-26/RA 0338)

DECEMBER' 2025

EXECUTIVE SUMMARY

1.1 INTRODUCTION

Adani Power Limited (APL), a part of the diversified Adani Group, is the largest private thermal power producer in India. We have a power generation capacity of 18,110 MW comprising thermal power plants in Gujarat, Maharashtra, Karnataka, Tamil Nadu, Rajasthan, Chhattisgarh, Madhya Pradesh, Jharkhand States of India.

Korba Power Limited (KPL) has proposed Expansion of the 2x300 MW (Phase-I, Operational) and 2x660 MW (Phase-II, under construction) Proposed with capacity of 2x800MW (1600 MW, under Phase-III Ultra Super Critical TPP) within the existing Plant area at Village Saragbundia, Dhandhani, Paladi, Khordal, Pahanda and Pathadi, Tehsil Kartala District, Korba, Chhattisgarh.

The proposal for obtaining Terms of Reference (ToR) was submitted to the Ministry of Environment, Forest & Climate Change (MoEFCC) on 07.10.2024 and consequently, the Proposal was accepted & considered in its 33rd Expert Appraisal Committee (Thermal Projects), MoEF&CC meeting held on 19.11.2025. The project was granted with Terms of Reference (ToR) vide File No: J-13011/3/2009-IA.II(T) dated 06.12.2025 by the MoEFCC, New Delhi.

1.1 DESCRIPTION OF THE PROJECT

The salient features of the project are given below: -

Table 1.1: Salient features of the project

S. No.	Particular	Details
1.	Nature of the Project	Expansion of the 2x300 MW (Phase-I, Operational) and 2x660 MW (Phase-II, under construction) Proposed with capacity of 2x800MW (1600 MW, under Phase-III Ultra Super Critical TPP) within the existing Plant area at Village Saragbundia, Dhandhani, Paladi, Khordal, Pahanda and Pathadi, Tehsil Kartala District, Korba, Chhattisgarh by Korba Power Limited.
2.	Size of Project	1600 (2x800) MW (Coal based)
3.	Project sector & category	: 1(d), Thermal Power Plants & Category "A"

			Existing	Proposed	Total
4.	Plant capacity	:	Phase I: 600 (2x300) MW (Operational) Phase II:1320 (2x660) MW(under construction)	**1600 MW (2x800 MW)**	3520 MW {1920 + 1600} MW
5.	Land requirement	:	505.58 Ha.	--	505.58 Ha.
6.	Greenbelt & Plantation	:	127.28 Ha.	**31.76 Ha.**	159.04 Ha.
7.	Technology	:	Sub & Super-Critical	**Ultra Super-critical**	Sub, Super-Critical & Ultra Super-critical
8.	Coal requirement in (Million MTPA)	:	8.54 million MTPA	**6.5 million MTPA [85 % PLF]**	About 15.04 million MTPA
9.	Source of fuel	:	Korba/Raigarh coal mines of SECL/CCL/NCL & E-auction		
10.	Coal transportation	:	Through Rail		
11.	Project Cost	:	Rs. 10,897 Crores	**Rs. 16,611 Crores**	Rs. 27,508 Crores
12.	Water requirement & status of permission	:	54 MCM/annum	**32 MCM/annum**	86 MCM/annum
			Water NOC/permission from WRD under progress vide no. vide Lr. No. 2241/Tech/Adani Power/2025 Dated 01.07.2025.		
13.	Water intake point	:	Hasdeo river (About 5.5 km w.r.t. intake point)		
14.	Manpower requirement	:	Operation phase: Permanent: 630 Contractual:3186	Construction phase: Permanent:230 Contractual: 5000 Operation phase: Permanent: 270 Contractual:1200	Total Operation phase- Permanent: 900 Contractual:4386

Table 1.2: Location details

S. No	Particulars	Details					
1.	Project Address	Village Saragbundia, Dhandhani, Paladi, Khordal, Pahanda and Pathadi, Tehsil Kartala District, Korba, Chhattisgarh.					
2.	Geographical Coordinates	**S.NO.**	**LATITUDE**	**LONGITUDE**	**S.NO**	**LATITUDE**	**LONGITUDE**
		1	22°15'6.33"N	82°43'7.97"E	38	22°13'50.92"N	82°43'18.79"E
		2	22°15'0.77"N	82°44'0.33"E	39	22°13'46.48"N	82°43'17.76"E
		3	22°14'43.07"N	82°44'0.14"E	40	22°13'45.49"N	82°43'19.90"E
		4	22°14'44.22"N	82°43'41.72"E	41	22°13'42.42"N	82°43'19.13"E
		5	22°14'23.52"N	82°43'36.86"E	42	22°13'42.18"N	82°43'21.70"E
		6	22°14'21.68"N	82°43'40.00"E	43	22°13'33.75"N	82°43'20.93"E
		7	22°14'20.87"N	82°43'36.47"E	44	22°13'33.89"N	82°43'22.89"E

S. No	Particulars	Details

		8	22°14'17.87"N	82°43'35.70"E	45	22°13'33.02"N	82°43'23.20"E
		9	22°14'17.30"N	82°43'35.83"E	46	22°13'32.19"N	82°43'21.02"E
		10	22°14'17.28"N	82°43'35.49"E	47	22°13'26.43"N	82°43'20.15"E
		11	22°14'16.24"N	82°43'35.17"E	48	22°13'27.99"N	82°42'47.90"E
		12	22°14'16.24"N	82°43'34.34"E	49	22°13'28.84"N	82°42'46.86"E
		13	22°14'13.38"N	82°43'32.92"E	50	22°13'31.54"N	82°42'43.97"E
		14	22°14'13.28"N	82°43'33.35"E	51	22°13'33.50"N	82°42'44.19"E
		15	22°14'11.99"N	82°43'33.15"E	52	22°13'34.79"N	82°42'44.79"E
		16	22°14'12.02"N	82°43'32.85"E	53	22°13'35.08"N	82°42'44.14"E
		17	22°14'10.26"N	82°43'32.39"E	54	22°13'38.78"N	82°42'45.17"E
		18	22°14'10.15"N	82°43'32.84"E	55	22°13'39.30"N	82°42'44.59"E
		19	22°14'8.52"N	82°43'32.50"E	56	22°13'43.63"N	82°42'44.36"E
		20	22°14'7.59"N	82°43'31.66"E	57	22°13'44.43"N	82°42'38.54"E
		21	22°14'7.72"N	82°43'30.45"E	58	22°13'38.75"N	82°42'38.32"E
		22	22°14'5.72"N	82°43'30.18"E	59	22°13'43.80"N	82°42'27.34"E
		23	22°14'5.88"N	82°43'28.86"E	60	22°13'48.92"N	82°42'24.12"E
		24	22°14'5.14"N	82°43'28.76"E	61	22°13'52.57"N	82°42'18.49"E
		25	22°14'5.18"N	82°43'27.02"E	62	22°13'52.51"N	82°42'16.70"E
		26	22°14'4.20"N	82°43'26.95"E	63	22°13'54.28"N	82°42'16.27"E
		27	22°14'4.25"N	82°43'25.51"E	64	22°13'54.58"N	82°42'17.48"E
		28	22°14'5.22"N	82°43'25.54"E	65	22°14'10.64"N	82°42'13.01"E
		29	22°14'5.11"N	82°43'23.62"E	66	22°14'21.59"N	82°42'24.39"E
		30	22°14'4.28"N	82°43'23.72"E	67	22°14'26.38"N	82°42'22.46"E
		31	22°14'4.23"N	82°43'23.18"E	68	22°14'31.34"N	82°42'34.44"E
		32	22°14'4.99"N	82°43'23.01"E	69	22°14'36.18"N	82°42'33.39"E
		33	22°14'4.43"N	82°43'20.01"E	70	22°14'35.96"N	82°42'37.31"E
		34	22°13'59.37"N	82°43'19.04"E	71	22°14'43.35"N	82°42'37.87"E
		35	22°13'59.18"N	82°43'21.21"E	72	22°14'41.49"N	82°43'6.09"E
		36	22°13'55.91"N	82°43'21.07"E			
		37	22°13'54.04"N	82°43'18.77"E			

3.	SOI Toposheet	• Core Zone: F44K12 (64J/12) • Buffer Zone: F44K7(64J/7), F44K11(64J/11), F44K15(64J/15), F44K8(64J/8), F44K16(64J/16), F44Q5(64K/5), F44Q9(64K/9), F44Q13(64K/13),
4.	Site elevation	Average site elevation - 296 AMSL

Table 1.3: Details of Environmental Settings & site connectivity

<table>
<tr><th>S. No.</th><th>Areas</th><th>Details</th></tr>
<tr><td>1.</td><td>Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value.</td><td>
<table>
<tr><th>S. No.</th><th>Particulars</th><th>Arial Distance (km)</th><th>Direction</th></tr>
<tr><td colspan="4">Reserve Forest (R.F), Protected Forest (P.F)</td></tr>
<tr><td>1.</td><td>Barpall R. F.</td><td>2.2</td><td>SW</td></tr>
<tr><td>2.</td><td>Kudri P.F.</td><td>6.5</td><td>NNE</td></tr>
<tr><td>3.</td><td>Tuman P.F.</td><td>7.3</td><td>SE</td></tr>
<tr><td>4.</td><td>Bathapara R. F.</td><td>7.6</td><td>ESE</td></tr>
<tr><td>5.</td><td>Pondibahar P.F.</td><td>7.8</td><td>NNE</td></tr>
<tr><td>6.</td><td>Ramapara P. F.</td><td>9.5</td><td>SE</td></tr>
</table>
</td></tr>
<tr><td>2.</td><td>Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests.</td><td>None in 10 km radius</td></tr>
<tr><td>3.</td><td>Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration.</td><td>None in 10 km radius</td></tr>
<tr><td>4.</td><td>Inland, coastal, marine or underground waters.</td><td>
<table>
<tr><th>S. No.</th><th>Particulars</th><th>Arial Distance (km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Gogi Nala</td><td colspan="2">Within the project site</td></tr>
<tr><td>2</td><td>Togi Nala</td><td>0.8</td><td>N</td></tr>
<tr><td>3</td><td>Hasdeo Left Bank Canal</td><td>0.9</td><td>W</td></tr>
<tr><td>4</td><td>Hasdeo river</td><td>2.35</td><td>NW</td></tr>
<tr><td>5</td><td>Son Nadi</td><td>3.8</td><td>SSE</td></tr>
<tr><td>6</td><td>Hasdo Right Bank Canal</td><td>4.3</td><td>WNW</td></tr>
<tr><td>7</td><td>Dom Nala</td><td>5.1</td><td>NE</td></tr>
<tr><td>8</td><td>Gandgei Nala</td><td>6.1</td><td>W</td></tr>
<tr><td>9</td><td>Karra Nala</td><td>6.2</td><td>NNW</td></tr>
<tr><td>10</td><td>Bendo Nala</td><td>7.3</td><td>SSE</td></tr>
</table>
**Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.*
</td></tr>
</table>

5.	State, National boundaries	None within 10 km radius

6.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	**Name**	**Distance & direction**
		N.H.149 B	0.02 Km towards East direction
		N.H. 130 A	~4.4 Km towards WNW direction
		**Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.*	

7.	Defense installations	None in 10 km radius	
8.	Densely populated or built-up area / Major Town	Korba	~10.7 km towards N

9. Nearest habitation

S. No.	Particulars	Arial Distance (km)	Direction
1	Pathadi	1.51	E
2	Pahanda	1.57	E
3	Khoddle	1.06	W
4	Saragbundia	1.54	SE
5	Dhandani	2.23	S
6	Sandail	3.13	SW
7	Baridih	2.89	W
8	Katbitla	3.21	W
9	Urga	3.85	NE
10	Bhaisma	5.0	NE
11	Tuman	6.7	SE
12	Jarahadih	6.1	NE
13	Rampur	8.6	SW
14	Rangel	6.7	NW

**Source: -All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.*

10. Major industries / manufacturing units

S.No.	Industry Name	Arial Distance (Km)	Direction
1.	Manikpur Coal Field, Korba	7.5	N
2.	Gevra Coal mines	10	WNW
3.	Kusmunda Mine	10	NW

10. Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*

S. No.	Name of School	Arial Distance from Stack (Km)	Direction
1	Govt. Middle School, Khoddal	1.09	N
2	Govt. Primary school, Darrabhata	1.4	N
3	Govt. High School Sandail	1.65	SW

		4	Govt. Hr. Sec. School Saragbundiya	2.0	SE
		5	Government Middle School, Saragbundia	2.1	SE
		6	Dhandhani Pratamik, Shala	2.20	S
		7	Govt High School, Sandail	2.82	SW
		8	Govt. School Urga	3.3	N
		9	Govt. High sec. School Barpali	3.6	S
		10	Govt Hr. Sec. School, Tilkeja	3.8	ESE
		11	Govt Primary School Karranara	4.4	N
		12	Govt. School Amapali	4.95	E
		13	Govt. H.S. School Bhaisma	5.0	NE
		14	Govt. School Dadar (Gidhori), Junwani	5.35	ESE
		15	Govt. Primary School Jhinka	5.5	SW
		16	Govt. Hr. Sec. School Kanki	6.0	WSW
		17	Govt School, Tuman	6.3	ESE
		18	Govt Primary School Bhilaikhurd	6.6	N
		19	Govt. Middle School Limdih	6.7	ESE
		20	Govt.Hr. Sec. School Pantora	8.3	W
		S. No.	**Health Care Facilities**	**Arial Distance from Stack (Km)**	**Direction**
		1	Communty Health centre, Patadhi	1.77	NE
		2	Sub Health centre, Khoddal	1.10	N
		3	Sub Health centre, Pahanda	2.44	NE
		4	Primary Health Centre, Saragbundia	1.74	E
		5	Primary Health Center, Tikeja	2.80	E
		6	Sub Health centre, Baridih	2.87	N
		7	Primary Health Centre, Bhaisma	4.7	ENE
		8	Primary Health Sub Center, Japeli	6.5	NW
		9	Govt. Hospital, Pantora	7.4	W
		10	Health and Wellness Center, Pandripani	8.0	NE
		11	Primary Health Center, Chiknipali	8.5	SE
		S. No.	**Places of worship**	**Arial Distance from Stack (Km)**	**Direction**
		1	Maa Madvaarani, Saragbundiya	0.7	SSE
		2	Radha Krishna Temple, Barpali	2.0	SSE

		3	Shiv temple, Akhrapali	2.2	WNW
		4	Hanuman Temple Bandhwabhantha	2.45	ESE
		5	Gaurasahun Dai Temple, Korba	2.8	E
		6	Ram Janki Mandir, Basti Road	3.0	E
		7	Mandir Talab, Jarve	4.6	SSE
		8	Ma Madwarani Mandir, Kharhari	5.9	S
		9	Shiv Mandir, Kharhari	7.65	SW
		10	Shiv mandir, Bhelvagudi	7.7	SSE
		11	Maa Durga devi shiv hanuman, Gumiya	7.75	WNW
		12	Durga mandir, Sonpuri, Pali	7.85	NNW
		13	Shiv Mandir Bhathikuda, Katsira,	8.0	WNW
		14	Ghogharesvar Mahadev Mandir, Sitamani	8.7	N
		**Source: - Google Earth*			
11.	Areas containing important, high quality or scarce resources.	• The project site falling in Korba block of Korba District & is declared 'Safe' by CGWA w.r.t ground water potential. • Minor minerals (Low grade limestone), Sandstone, River sand are also found in huge quantity in Korba block. (*Source: Aquifer mapping and management of ground water resources Raipur District Chhattisgarh by CGWB).* • The block is served by several rivers and streams, which provide essential water resources for agriculture and drinking purposes and supporting local communities.			
12.	Areas already subjected to pollution or environmental damage.	None within 10 km radius			
13.	Areas susceptible to natural hazard which could cause the project to present environmental problems.	The project falls in Korba district of Chhattisgarh. The entire Korba District of Chhattisgarh falls under Seismic Zone II, as per IS 1893 (low damage risk zone) as per Seismic Zone map.			

Site Connectivity

(aerial distance as per google earth imagery from project boundary and direction from centre of project)

S. No.	**Description**	**Details**		
1.	Nearest Highway / Major Road	**S. No.**	**Highway**	**Distance (Km) & Direction (From Project Boundary)**
		1.	N.H.149 B	~0.02 Km towards East direction.

		2. N.H. 130 A ~4.4 Km towards WNW direction **Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.*
2.	Nearest Railway Station	• Saragbundia Train station at 1.6 Km in SE • Korba Railway Station at 9.6 Km in N.
3.	Nearest Airport	• Korba Airstrip airport ~19 Km towards North direction • Bilasa Devi Kevat Airport (Bilaspur airport) ~ 67 Km towards WSW direction

1.1.1 Process & Methodology

The proposed expansion project of 2x800 MW capacity power plant is mooted to deploy the state-of-art technology and accordingly two units of 800 MW are being considered with supercritical steam parameters to attain high cycle efficiency

MAIN TECHNICAL FEATURES OF THE PROPOSAL

Power Generating Unit	:	Two units of 800 MW turbine generator sets fed by steam from coal fired P.F. boiler operating at Ultra Super-Critical range.
Cooling System	:	Closed recirculating condenser cooling system with induced draft cooling tower.
Coal Handling System	:	Coal handling facility, which comprises receipt of coal from Mines through Rail and with in-plant coal handling system through conveyor belts and finally feeding the bunker level conveyors.
Ash Disposal System	:	For each unit, Bottom ash will be collected in wet form; while fly ash will be collected in dry form to facilitate utilization. Fly ash and bottom ash shall be disposed via Medium Concentration Slurry disposal (MCSD) system to Ash dyke in case of exigencies. Ash extraction system is unitized basis and ash disposal systems will be common for Two (02) units. Provision for truck disposal of both bottom and fly ash is provided. Fly ash shall be transported in dry form through rail /bulkers truck for possible utilization. An MoU has been signed between KPL and ACC Limited (ACC) and Ambuja Cement Limited (ACL) India executed on 23rd October 2024 for utilization of Fly ash for the proposed 1600 (2x800) MW is enclosed as **Annexure IV.**
Power Evacuation	:	The power will be evacuated to nearby STU sub-station of CGPTCL at 400 kV level. The STU will be further informed to initiate study as power evacuation will be from KPL 400 kV ex-bus.
Environmental Aspects	:	Elaborate arrangements for Stack (bi-flue) of height 275 meters complying with emission norms as per MoEFCC guidelines and an adequately designed electrostatic precipitator (ESP) with more than 99.9 % efficiency, "SOFA" Separated Over-Fire Air are envisaged. Dust Suppression & extraction system comprising of bag filters with fuel handling system. Wastewater quality to be maintained as per MoEFCC notification.

		Zero Liquid Discharge (ZLD) facility shall be present since the cooling water, blow down water, wastewater and ash water would be recycled back to the system after suitable treatment for reuse.

1.1.1 Ash Handling System

For each unit, Bottom ash will be collected in wet form; while fly ash will be collected in dry form to facilitate utilization. Fly ash and bottom ash shall be disposed via Medium Concentration Slurry disposal (MCSD) system to Ash dyke in case of exigencies. Ash extraction system is unitized basis and ash disposal systems will be common for Two (02) units. Provision for truck disposal of both bottom and fly ash is provided. Fly ash shall be transported in dry form through rail /bulkers truck for possible utilization.

For the design of the Ash Handling System, the following data has been considered for each Unit. Necessary design margin shall be considered while selecting the equipment capacity.

Parameter	Korba (PH – III) 2x800MW
Hourly coal firing rate, per Unit (Approx.)	371 TPH
Total ash content	40%
Bottom ash (BA + Eco. Ash) generation @ 20% (T/day)	1,425
Fly ash (ESP + APH Ash) generation @ 80% (T/day)	5,698
Total Ash generation (T/day)	7,123
Annual ash generation @ 85% PLF (MMTPA)	**2.6**

1.1 DESCRIPTION OF THE ENVIRONMENT

The baseline environmental quality of air, water, soil, noise, socio-economic status, and ecology has been assessed during the period of October to December 2024 in the study area of project site.

1.1.1 Baseline data

Ambient air quality:

Eleven ambient air quality monitoring stations were selected in and around the project site. The results of the monitored data indicate that the ambient air quality were well within the prescribed limits by CPCB.

- PM_{10}: The maximum value for PM_{10} was observed at the Dhandhani (AAQ2) as 68.1 µg/m^3 and minimum value for PM_{10} was observed at Dhandhani (AAQ2) as 28.1 µg/m^3.
- $PM_{2.5}$: The maximum value for $PM_{2.5}$ observed at Saragbundia (AAQ3) as 52.0 µg/m^3 and minimum value for $PM_{2.5}$ at Project site (AAQ1) as 20.5 µg/m^3.
- SO_2: The maximum value for SO_2 observed at the Jarahadih (AAQ) as 19.6 µg/m^3 and minimum value for SO_2 at Rangel (AAQ11) as 1.5 µg/m^3.
- NOx: The maximum value for NOx observed at Bhaisma (AAQ5) as 19.2 µg/m^3 and minimum value for NOx at Project Site and Jarahadih (AAQ1 & 8) as 2.1µg/m^3.

Water quality:

Fifeteen groundwater samples were collected as grab samples and were analyzed for various parameters. The analyzed results were compared with the standards for drinking water as per IS: 10500.

Results

Ground Water

- The analysis results indicate that pH of the groundwater was found to be in range of 6.92 to 7.58 indicating a neutral to slightly alkaline nature of the groundwater. This is favorable for diverse applications, including drinking water.
- The TDS were found to be in the range of 338 mg/l – 1250 mg/l, The TDS levels are within the permissible limit.
- Other parameters like Total Hardness as $CaCO_3$ (136 mg/l –420 mg/l). The total hardness levels are within the permissible limits.
- Total Alkalinity (60–170 mg/ l): falls within prescribed limits, contributing to water stability and buffering capacity.
- Calcium as Ca (30.7–100 mg/ l) levels are within permissible limits, indicating a favorable mineral balance.
- Magnesium as Mg (13.7–41.2 mg/ l) levels are within permissible limits, contributing to overall mineral content.

- Chloride as Cl (18 – 138 mg/ l) levels are within recommended ranges for pleasant taste in drinking water.
- Sulphate as SO4 (9.6-34.8 mg/l) levels are within acceptable limits, posing no health concerns.
- Fluoride as F.(0.16-0.22)mg/ l.- found are within permissible limit.

Surface Water

Eight surface water samples were collected as grab samples and were analyzed for various parameters. The analyzed results were compared with the standards for surface water as per IS: 2296.

- pH of the surface water was found to be in range of 6.88 to 7.53, indicating a neutral to slightly alkaline nature of the water.
- BOD was found to be in the range 4 mg/l -6 mg/l. These BOD levels suggest a moderate to high organic pollution in the water, indicating the presence of biodegradable organic matter.
- COD was found to be in the range 6 mg/l – 29 mg/l. The COD levels indicate the amount of oxygen required for the oxidation of both organic and inorganic substances, with higher values suggesting increased pollution.
- DO was found to be in the range 5 mg/l – 6 mg/l, could potentially impact sensitive organisms.
- TSS were found in the below desired limit.

Noise levels:

The observed noise levels adhere to CPCB standards, indicating acceptable noise pollution levels in the monitored locations. The statistical analysis is done to measure noise levels at **eleven** locations in the study area.

(a) Day Time Noise Levels (Leqday)

The day time (Leqday) noise levels are observed to be in the range of 44.9 – 48.7dB (A) which are within the prescribed limits* of Industrial area {75 dB (A)}.

b) Night time Noise Levels (Leqnight)

The night time (Leqnight) Noise levels are observed to be in the range of 36.3 – 39.3 dB (A) which are within the prescribed limits* of industrial area {70 dB (A)}.

Soil Quality:

Eleven samples were collected from the study area including from the project site. The samples were packed in polyethylene bags and assigned a number. The collected samples were air dried at room temperature in the laboratory and lightly crushed with mortar-pestle and passed through a 2 mm sieve.

- pH: Ranges from 7.45 to 7.65, suitable for most crops.
- Electrical Conductivity: Ranges from 280 to 350 mS/cm, indicating a low to moderate salt concentration.
- Water Holding Capacity: 17% to 24%, suggesting good moisture retention.
- Texture: Classified as Sandy Loam, offering balanced properties.
- The concentration of calcium and magnesium varies from 84 to 138 mg/kg and 38 to 62 mg/kg respectively.
- Organic Matter: Varies from 0.82% to 0.96%, contributing to soil fertility.
- The concentration of available Total Kjehdahl Nitrogen, Available Phosphorous and Potassium in the soil samples varies from 13 to 16.2 kg/hec; 11.6 to 14.1 kg/hec and 135 to 178 kg/hec respectively.
- Heavy metals like Arsenic and Mercury were found below limit of quantification 0.2 mg/kg.

Biological environment:

Core Zone: Flora:

14 Tree species recorded.

7 species of shrubs recorded

21 species of herbs & grasses.

Buffer zone:

Flora:

Buffer zone of the project area has been reported 112 species of trees, 46 species of shrubs, 44 species of herbs & 20 species of grasses, climbers- 28.

Fauna:

In the buffer zone 168 species of fauna were identified (Bird: 107; Mammals: 15; Reptiles: 10; Amphibians: 07; Fishes: 12; Moths: 24, Butterfly: 9). Schedule I: 25 No National Park, Wildlife Sanctuary exists within 10 km radius study area.

Socio-Economic Environment:

Total population

In the study area, there are 33,096 households. The total population falling in the project area is 1,38,703 in 10 km radius. The total male population consists of 50.20% and female population accounts to be 49.80% of the total population. The sex ratio of the 10.0 km study area is 990 females over thousand males. There are approx 4 to 5 members in a family. The 0-6 population comprises 16.22% of the total population of the study area. The sex ratio of 0-6 population is 970 females over thousand males.

Literacy

In the study area, the literate people are 84,347 which is 60.81% of the total population. The male literates are 71.19% of the total male population, and female literates are 50.34% of the total female population.

Working population

The main work participation is 23.98% and marginal work participation is 16.17% of the total working population. Further analysis of data has revealed that there exists total male dominancy of 37.58% in main work participation. Marginal work participation shows total female and total male dominancy which is 22.47% while marginal male work participation is 10.51%. The males are working in the nearby small industries, agriculturist, labourers, etc as main workers. Women on the other hand work as marginal workers due to their occupancy in household and domestic chores. Women work mostly as marginal cultivators in their fields.

1.2 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The summary of anticipated adverse environmental impacts due to the proposed expansion project and mitigation measures are given below.

Table 1.4 Identification of Impacts & its Mitigation Measures for Construction Phase

S. No.	Aspects	Impact identified	Mitigation Measures
A	**Land Environment**		
1.	•Excavated soil when stored in open surface in loose will lead to an increase in air borne dust. •Possibility of soil erosion	• Respiratory diseases • Decreased visibility. • Loss of fertility of land due to erosion • Higher run-off rate due to soil erosion resulting in increased sedimentation in water ways.	• Soil will be excavated in phased manner adopting cut and fill techniques. • Total cut will be backfilled within site & used for plantation. • Temporary stabilization of the top soil will be carried out to prevent the fertility loss
2	Change in land cover from vacant / open land to paved / built up land.	Decrease in aesthetics of the area	Planned development with green belt & plantation 159.04 Hectare of total land will improve the aesthetics of the area.
B	**Air Environment**		
1	• Civil works and plant erection / fabrication • Road laying • Vehicular movement for transportation of construction material & manpower to site • Running of DG set and operation of on-site construction machinery / equipment	Increased concentration of fugitive dust, SO_2, NOx, PM, CO and unburnt hydrocarbons in ambient air leading to: • respiratory illnesses, • reduced visibility, • Acidification of surface water affecting marine biodiversity and acidification of soil reducing soil micronutrients • Damage to trees as NO_X is a phytotoxin in elevated concentration. Sped up weathering of monuments /buildings /metal & concrete structures	• Unloading of construction material and stockpiling of the same at the earmarked site would be provided with water sprinkling to arrest fugitive dust emission. • Wind barrier screen would be provided around stockpiles to reduce the wind speed and consequently, reduce the fugitive dust emission. • Ensuring vehicles with valid PUC certificates are used. • Regular & preventive maintenance of construction vehicles & machinery • Water sprinkling shall be carried out at the construction sites at regular intervals • No use of asbestos fibre; and • Construction site shall be barricaded and dust screens shall be placed • HSD to be used as fuel for DG Sets

2	• Vehicular movement; • Civil works such as trenching, foundation casting, steel fabrication work, mechanical works • Construction equipment operation like cranes, generators, pumps, compressors, rock drills, pneumatic tools, saws, vibrators etc.	• Constant loud noise can adversely affect human & animal health • Physical impact on health: tinnitus or deafness, Respiratory agitation, high blood pressure, headaches • Psychological impact: stress, fatigue, depression, anxiety and hysteria. • Behavioural disorder: aggressiveness & irritability • Memory and concentration: affects people's ability to focus, which can lead to low performance over time	• Provision of silencers on noise generating machinery; • Major Construction/installation work will be carried out works during day hours only. • Ensuring use of PPEs like ear muffs/ear plugs by workers. • Regular & preventive maintenance of Vehicles and construction machinery. • Ensuring that DG sets are provided with acoustic enclosures and exhaust mufflers and provision of silencers on noise generating machinery; • noise barriers will be considered • Greenbelt development & plantation to be undertaken from the construction stage itself.
C	**Water Environment**		
1	• Injudicious abstraction of ground water to meet domestic consumption demand & water requirement for civil works. • Discharge of untreated sewage generated from labour camp on land, surface water bodies. • Land clearance (the silt and soil can erode and increase sediment load in waterways), open storage of construction material, excavated earth construction waste can increase sediment load in water ways due to	• Decrease in ground water level due injudicious abstraction of water. • Risk of contamination of ground or surface water due to discharge of waste water resulting in odour nuisance and water borne diseases in animals and humans and phytotoxicity in plants / crops • Increased sediment load can affect aquatic biodiversity by making the waterway turbid and restricting the amount of sunlight entering the waterway in surface water bodies and water ways. • Risk of contamination of soil, ground water, surface water bodies, toxic substance accumulation by crops / plants, rendering ground water unfit for	• Domestic consumption demand & water requirement for civil works during construction phase will be met through water tankers. • Excavation during dry season only and proper management of excavated soil through stabilized and covered stockpiling of excavated earth to be used for plantation. • 100% excavated earth will be backfilled within project premises for site levelling and grading. • The stockpiles of construction material will be protected with toe wall of adequate height along with garland drain & sedimentation traps to prevent uncontrolled discharge of runoffs during monsoon and reuse the collected wastewater for construction purpose after primary settling. • Provision of storm water drains with oil & grease traps and sedimentation traps as per contour & drainage pattern. • Storm water diversion channels to divert storm run-off from flowing over

	run-off from construction site, excavated soil pile etc. from project premises • Storage of hazardous waste like used oil, discarded containers etc. in open on unpaved area resulting in spillage and leaching to sub-soil, water table / aquifer. • Improper collection & storage of MSW, plastic waste etc. generated from labour camp	human / animal consumption and adversely impacting on human and animal health. • Contaminated ground water is extremely difficult to treat. • Odour nuisance from open storage of MSW, increase in disease vectors affecting human and animal health.	the construction areas. • Removal & proper disposal of all the debris from site, as soon as construction is over. • Domestic sewage generated will treated in well-designed STP and treated wastewater will be reused in Greenbelt /plantation purpose. • Storage of hazardous chemical & hazardous waste in covered room with impervious flooring. • Wash offs containing these chemicals will be drained into impervious trays / barrels for disposal as hazardous wastes.
Ecology			
	Impact on Flora	• Loss of Vegetation • Disruption of Forest Structure • Alteration of Plant Communities • Decreased Biodiversity • Increased Invasive Species • Soil Degradation	• Greenbelt Development • Selective Logging and Sustainable Harvesting • Restoration of Degraded Areas
	Impact on Fauna	• Loss of Habitat • Disruption of Food Sources • Loss of Biodiversity	• Habitat Conservation: • Reforestation and Habitat Restoration • Species Monitoring and Research
E	**Demography & Socio-economics**	The social impact during the construction stage is expected to be positive. Local residents are likely to find employment opportunities, as the construction work is labor-intensive. Contractors may prefer hiring local	Positive impacts

		individuals for secondary employment based on their skills and experience. The influx of labor during construction is anticipated to boost economic activities in the surrounding areas. Additionally, the procurement of construction materials locally, such as stone chips and sand, could lead to the generation of local trading opportunities for a limited period.	
F	**Local Infrastructure**	**<u>Influx of Construction Workers</u>** While the labourers may be from nearby villages, some skilled staff like Site Supervisor and his team will be hired during the construction period to oversee and supervise the construction activities onsite, which may be from other states or other district. Sudden and relatively short-lived influxes of construction skilled workers to communities near the project site may have the potential to 'skew' certain demographic variables and the traditional social coherence	• Preference will be given to locals for direct and indirect employment opportunity; • Local suppliers for construction machinery and construction material will be given preference; • Local transporters will be preferred for transportation of machinery / earth / materials; • To train unskilled local work, short-term skill development course will be organized in the area.
TRAFFIC			
		Existing Road infrastructure will be used for movement of men & material during construction phase. Project site development identifies	• Route of vehicles inside project site shall be kept shorter to the extent possible.

		several transportation activities during the construction as: • Transportation of construction workers. • Transportation of construction aggregates/excavated material. • Transportation of solid and liquid hazardous and non-hazardous wastes.	• Signage plan shall be demarcated throughout the road for guidance of the driver. • Speed limits shall be imposed throughout site. • Pedestrian access at worksite and route shall be marked throughout the site for ensuring safety. • As far as possible, transportation of construction materials will be scheduled for off peak traffic hours. This will reduce the risk of traffic congestion and of road accidents on the access roads to the site. • Traffic control and construction activities shall co-ordinate to provide for safe and efficient flow of traffic together with efficient, safe, and rapid progress of the construction activity. • All site roads, parking areas, pedestrian crossings, and other areas accessed by vehicles and pedestrians, shall be appropriately lit and designed to avoid extremes of light variation (i.e., moving from a brightly lit area to a dark one). Parking area, pedestrian walkways and Roads will have a minimum level of lighting as per National Lighting Code 2010.

Description of environmental impacts and mitigation measures during operational phase are given below.

1.2.1 Air Environment

To control PM from TPP Stacks, Electrostatic Precipitator (ESP) is proposed. Bi-flue stack/ Chimney of 275 meter has been proposed. MOEFCC Notification dated 11.07.2025

shall be followed. To control NOx emission, supercritical boilers having advanced SCR SOFA/low NOx generation system will be installed.

Necessary dust suppression arrangement and bag filters will be used in railway siding and coal handling plant. Ash Silo will be provided for collection of fly ash in dry form for further transportation and utilization. To control fugitive dust, Bag Filters shall be provided at the top of Silo. The top surface of coal wagons will be adequately sprinkled to reduce fugitive emissions during transportation. Hence its impact will be for a limited time period. The fly ash silos will be provided with bag filters to control emission. Regular housekeeping will be done at plant roads, platforms, and storage area.

1.2.2 Water Conservation Measures & Optimization Plan

The Water conservation measures and optimization adopted are listed below:

- Recirculating type of cooling water (CW) system with mechanical draft cooling towers (CT) is being adopted. The cooling water system is designed considering Cycles of Concentration (COC) of 5.0 (five). During plant operation, all the measures will be taken to operate the plant above 5 COC which will help further reduce in water consumption. Moreover, drift loss in cooling tower will be maintained less than 0.02% by using multi-layer drift eliminators.
- Recycling and reutilization of cooling tower blow down water is considered by adopting CW Blow down recycle scheme. The balance CW blowdown water will be recycled to Ash handling system for makeup. No fresh water will be utilized for Makeup of Ash handling system.
- In the water pre-treatment (PT) plant, thickener will be installed to recover underflow water of the PT plant clarifiers. Appx. 75% water is recovered from the thickener.
- Effluent collected from various sources will be utilized in the Coal Handling Plant dust suppression system after necessary treatment.
- In Sewage treatment plant (STP) of capacity 30 KLD, the sewage generated is treated and utilized in Horticulture.

- High/Medium Concentration Slurry Disposal System will be adopted for ash disposal which will reduce the water requirement substantially.

1.2.3 Noise Environment

The following measures are being adopted:

- Acoustic enclosure shall be provided with TG set
- Compressor shall be housed in a separate room with acoustic wall panelling.
- Noise proof cabins will be provided for operators wherever possible
- Inlet and outlet mufflers shall be provided wherever required.
- Suitable isolators will be provided at required locations to avoid rattling due to vibration
- Process air blower, pneumatic valves etc., shall be provided with Silencers
- Noise shall be reduced by preventing leakages from compressed air lines and steam lines
- The high noise zones are demarcated and provided with enclosures & barriers.
- The risks of exposure to high noise levels and the appropriate control measures will be displayed at various places in the workplace.
- Design/installation will be taken as specified by the manufacturers with respect to noise control and will be strictly adhered.
- Sound attenuation panels will be installed wherever required around noise generating equipment.
- All rotating equipment / parts will be well lubricated and provided with enclosures as far as possible to reduce noise transmission.
- Regular maintenance of all the machinery and equipment shall be done
- Regular ambient noise level checks shall be carried out at the site
- Greenbelt development inside the plant premises shall be done which will serve as a buffer between the periphery and the industry, there by controlling noise level.
- In addition to this, effective ear plugs will be provided and their use will be made mandatory in specified areas where noise level is high.

1.2.4 Socio-Economic Environment

Action Plan to avoid Leaching

- All the yards will have RCC flooring after hard surface rolling and compacting.
- Along with that, all the yards will have proper drainage system with garland drains & guard ponds.

1.2.5 Solid & Hazardous Waste

- Fly ash and bottom ash will be main solid waste to be generated from the plant. The details of the ash generated from the proposed power plant are given in Table 4.14. 100% utilization of fly ash as per MoEF&CC guidelines is proposed.
- The bottom ash will be collected in wet form and fly ash in dry form. Fly ash will be collected in dry form to facilitate utilization.
- KPL proposed to use existing Ash Pond for unutilised ash which is in 49.31 Ha area, less than 0.1 Ha./MW (i.e. 292 Ha. for 2920 MW) allowed as per Fly Ash Notification dated 31.12.2021.
- Unutilized Fly ash and bottom ash shall be disposed via Medium Concentration Slurry disposal (MCSD) system to Ash dyke in case of exigencies.
- Bottom ash generated shall be supplied to the Road Mix Concrete (RMC) / brick producers / filling of low lying area / filling of mine voids as per the statutory guidelines thereby eliminating the need for separate area shall be explored.

Table 1.5 : Ash generation from the Proposed Plant

S. No.	Description	Ash quantity in Million TPA	Management & disposal
1.	Fly ash	2.08	Stored in Silos and sent to Cement and bricks manufacturing industries. Unused fly ash, if any, will be stored in ash dyke.
2.	Bottom ash	0.52	Send to ash dyke for further gainful utilization in construction purpose, mine voids filling, etc.
Unutilized Fly ash and bottom ash shall be disposed via Medium Concentration Slurry disposal (MCSD) system to Ash dyke in case of exigencies.			

IMPACT

- Improper storage, handling and disposal of solid & hazardous waste leads to contamination of soil, ground water and surface water.

- Contamination may also be caused by spillage of hazardous waste, run-off from hazardous waste storage area etc.
- Plants may take up contaminants from soil and accumulate toxic substances ultimately adversely affecting human / animal health due to ingestion.
- Hazardous waste and some industrial wastes as well by virtue of their quantity may alter soil profile affecting soil fertility and soil microbiology.
- Soaking through soil, the toxic substances may reach and contaminate ground water table / aquifer rendering it unfit for human / animal consumption.

Hazardous Waste Generation, Storage & Disposal

Table 1.6 : Hazardous waste details

S. No	Type of waste	Source of generation	Schedule as per HWM Rules, 2016	Quantity	Handling & disposal
1	Used or spent oil	DG set operation & Machine operation	Schedule I, Category 5.1	60 TPA	Handed over to CPCB/SPCB approved recycler
2	Waste or residues containing oil	Plant operation	Schedule I Category 5.2	3 TPA	Handed over to CPCB/SPCB approved recycler
3	Empty barrels/containers/liners contaminated with hazardous chemicals /wastes	Handling of hazardous chemicals and wastes	Schedule I Category 33.1	11 TPA	Collection, Storage, Transportation and disposal to authorized recycler

- Hazardous waste will be handled, stored & disposed off in line with Hazardous & Other waster (management & transboundary movement) Rules 2016, amended till date.
- Separate covered storage area with impervious flooring and catch drains connecting to WTP will be provided with Hazardous waste storage area.
- E-Waste (about 3.1 TPA), Battery waste (about 6.1 TPA), Bio-medical waste (about 0.1 TPA) will be handled, stored & disposed of as per applicable rules & guidelines.
- Used batteries will be given back to the supplier under buy back agreement with supplier.

- Bio-medical waste generated from medical unit will be handed over to nearest CBWTF &/or hospital having BMW disposal agreement with CBWTF.

Municipal Solid waste generation & management

Improper disposal of MSW may cause contamination of soil, ground water and surface water over time. It may lead to odour nuisance as well as increased disease vectors in the area.

Table : 1.7 Municipal Solid waste generation & disposal

S. No.	Particular	Source	Quantity generated (TPA)	Mode of Treatment	Disposal
1	Municipal Solid Waste	Plant Canteen	49.2	Collected; segregated using color coded waste bin, Organic waste converters (OWC)	Inorganic will be disposed via local municipal authorized vendor & Organic/Biodegradable waste by OWC.

- MSW generated to the tune of 49.2 TPA will be collected, segregated at source itself using color coded bin collection system placed strategically in the plant premises. The organic component of MSW will be segregated and composted in Organic waste converters proposed at site. The remaining waste will be handed over to contractor for final disposal to municipal waste dump site.

1.3 ANALYSIS OF ALTERNATE SITE & TECHNOLOGY

The proposed expansion project is for Expansion of the 2x300 MW (Phase-I, Operational) and 2x660 MW (Phase-II, under construction) Proposed with capacity of 2x800MW (1600 MW, under Phase-III Ultra Super Critical TPP) within the existing Plant area at Village Saragbundia, Dhandhani, Paladi, Khordal, Pahanda and Pathadi, Tehsil Kartala District, Korba, Chhattisgarh. The total land area of Korba TPP is 505.58 Ha. The proposed expansion will be seamlessly integrated within the existing project premises, requiring no additional land. Leveraging the established infrastructure, logistics, water sources, and proximity to coal mines, the project capitalizes on the available resources. All necessary facilities for the enhanced capacity will be developed within the same location, utilizing the existing plant's infrastructure. Therefore, the exploration of alternative sites was deemed unnecessary.

1.4 ENVIRONMENTAL MONITORING PROGRAMME

Environmental Management Division

Monitoring is as important as that of control of pollution since the efficiency of control measures can only be determined by monitoring. The following routine monitoring program will be implemented under the post-project monitoring as per CECB/CPCB guidelines. The major environmental considerations involved in the construction and operation of the thermal power station will be taken up by a full-fledged multi-disciplinary Environmental Management Division (EMD) with key functions of environmental, safety and occupational health for management of the entire plant and surrounding environment. It is predicted that socio-economic impact due to the proposed expansion project will positively increase the employment opportunities for local inhabitants. There are no resettlement and rehabilitation issues involved in this project. The project infrastructure will be of use to the people of the area. The contribution to the revenue of the State Govt. will be put in public welfare and augmented growth. The entire project area is devoid of any endangered flora and fauna. Thus, the proposed expansion project is not likely to affect the environment or adjacent staff etc. This EMD will take up additional responsibility of environmental functions related to proposed mega power plant.

Green Belt

The greenbelt will have plantation as per the CPCB guidelines. Green belt Development and Plantation with suitable indigenous Local Fast-Growing species & High Carbon Sequestration Potential will be considered.

EMP costing

The EMP comprised of: Electrostatic Precipitator, Chimney, Cooling Tower including civil works, Ash Handling including ash water recirculation, Ash disposal civil work, Dust extraction & suppression system, DM Plant Waste Treatment System, Sewerage collection, treatment & disposal, Green Belt & landscaping, Low Nox burners, Rainwater harvesting, Solar power harnessing, Enhancing Environmental Laboratory & Environmental Monitoring, CEMS, CAAQMS, EQMS monitoring system & Main gate

display board and Wind Breaking Wall, Dry Fog System & RCC Flooring in Coal Storage Area.

A cost provision of Rs. 1384.41 Crore and recurring cost of Rs 22 Crore per annum has been earmarked towards environmental protection measures.

1.7 ADDITIONAL STUDIES

Risk Assessment, Hazard Analysis: Risk associated with process and raw materials (LDO/HSD) was anticipated and proper mitigation measures provided.

Hazard due to toxic release of Chlorine and Aqueous Ammonia has been assessed with the help of PHAST v8.71 software of DNV and the threat zone marked on google earth.

Within the plant: Personnel working in the plant during the operational phase.

Outside the plant: There are no major habitation within 1.0 km of project site.

However, by implementing all the possible risk mitigation measures the same could be minimized

Disaster Management Plan: On Site & Offsite Emergency Plan with level I, II and III emergency has been prepared and detailed in chapter 7 of this EIA/ EMP report.

1.8 PROJECT BENEFITS

A separate budget Rs 33.7 Crores towards CER activities (as per Ministry's OM dated 01.05.2018) is allocated for Social EMP (CER) activities considering Issues/opinion raised (Public Needs) during PH for previous EC.

1.9 ENVIRONMENT MANAGEMENT PLAN

In order to comply with the environmental protection measures as suggested in the above sections, the project management has made budgetary provision for environmental protection and safety measures. The total capital cost towards EMP is Rs. 1384.41 Crore.

1.10 CONCLUSIONS

It is predicted that socio-economic impact due to the proposed expansion project will positively increase the employment opportunities for local inhabitants. The proposed

expansion project will be within the existing plant premises. There are no resettlement and rehabilitation issues involved in this project. The project infrastructure will be of use to the people of the area. The contribution to the revenue of the State Govt. will be put in public welfare and augmented growth. The entire project area is devoid of any endangered flora and fauna. Thus, the proposed expansion project is not likely to affect the environment or adjacent ecosystem adversely.

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