

**Application for Prior Environmental Clearance (EC)
FORM 1
(See Paragraph – 6 Notification dtd. 14th September 2006)**

(Resubmitted Proforma after Site Inspection by MOEF Committee)

(I) Basic Information

Serial Number	Item	Details
1.	Name of the Project	IND-BARATH ENERGY (UTKAL) LIMITED (IBEUL) Coal based Thermal Power Plant
2.	S. No. in the schedule	1(d)
3.	Proposed capacity/area/length/tonnage to be handled /command area/lease area/number of wells to be drilled	2x350 MW Coal based Power Plant
4.	New/ Expansion/ Modernization	New
5.	Existing Capacity/Area etc.	2x350 MW Coal based Power Plant
6.	Category of project i.e.' A' or 'B'	'A'
7.	Does it attract the specific condition? If	No
8.	Does it attract the specific condition? If yes, please specify	No
9.	Location	Sahajbahal
	Plot/Survey/Kharsa No.	240 hect
	Village	Sahajbahal
	Tehsil	Lakhanpur
	District	Jharsuguda
	State	Odisha
10	Nearest railway station/airport along with distance in kms	Belpahar (SEC Railway) - 25km Jharsuguda - 47 km
11.	Nearest Town, City, District Head quarters along with distance in kms	Town-Belpahar- 25kms City/ District head quarters- Jharsuguda- 47kms
12.	Village Panchayats, Zilla parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given.	Vill. Panchayat- Kumbharbandh G.P Zilla Parisad- Jharsuguda
13.	Name of the applicant	M. D. Mishra, President (Comm. & Admn.) IBEUL, 249, Kharvel Nagar, Bhubaneswar, 751001

14.	Registered Address	Plot No. 30-A, Road No.1, Film Nagar, Jubilee Hills, Hyderabad-500033
15.	Address of Correspondence:	
	Name	M. D. Mishra
	Designation (Owner/partner/CEO)	President (Comm. & Admn.)
	Address	249,Kharvelnagar, Bhubaneswar
	Pin Code	751001
	E-mail	muralidharmishra@rediffmail.com
	Telephone No.	0674 - 2532164
	Fax No.	0674 - 2532174
16.	Details of Alternative sites examined, if any. Location of these sites should be shown on a topo sheet	Village - Beheramal District - Jharsuguda State - Odisha
17.	Interlinked Projects	2 (Two) Mio TPA Cement Industry
18.	Whether separate application of interlinked project has been submitted?	Yes, submitted to Ministry of Commerce & Industry, Govt. of India
19.	If yes, date of submission	13.09.2010
20.	If no, reason	Does not arise
21.	Whether the proposal involves approval/clearance under: if yes, details of the same and their status to be given. (a) The Forest (Conservation) Act, 1980? (b) The Wildlife (Protection) Act, 1972? (c) The C.R.Z Notification, 1991?	Does not arise as it is a proposal for extension of our previous Environmental Clearance.
22.	Whether there is any Government order/ Policy relevant / relating to the site?	Factory License obtained from Director of Factories & Boilers, Odisha.
23.	Forest land involved (hectares)	NIL
24.	Whether there is any litigation pending against the project and / or land in which the project is proposed to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevant with the proposed project.	Does not arise as it is a proposal for extension of our previous Environmental Clearance.

“I hereby give undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any, stage, the project will be rejected and clearance given, if any to the project will be revoked at our risk and cost.

Date: 13.01.2016

Place: Bhubaneswar



Signature of the applicant
Muralidhar Mishra,
President (Comm. & Admn.)
249, Kharvel Nagar, Bhubaneswar
751001

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data																																																																														
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	<ul style="list-style-type: none"> 240hect. (592acres) agriculture land and vacant government land identified for the proposed project; Permanent change confined to project area only which shall have the details as per given hereunder: <p>(To be provided)</p> <table border="1"> <thead> <tr> <th>Sn</th> <th>Particulars</th> <th>Area (hect.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Plant</td> <td>100.00</td> </tr> <tr> <td>2</td> <td>Coal Storage & handling</td> <td>13.00</td> </tr> <tr> <td>3</td> <td>Raw water Reservoir</td> <td>10.00</td> </tr> <tr> <td>4</td> <td>Ash pond</td> <td>20.00</td> </tr> <tr> <td>5</td> <td>Railway marshalling yard</td> <td>7.00</td> </tr> <tr> <td>6</td> <td>Green belt</td> <td>80.00</td> </tr> <tr> <td>7</td> <td>Township</td> <td>5.00</td> </tr> <tr> <td>8</td> <td>Yard for miscellaneous purpose</td> <td>5.00</td> </tr> <tr> <td colspan="2">Total</td> <td>240</td> </tr> </tbody> </table> <ul style="list-style-type: none"> 80.00 hect. (33%) out of total land of 240hect. is earmarked for greenbelt/plantation; Proposed land is flat land with 210m above mean sea level (MSL); Land mainly belongs to single crop cultivation with out any seasonal cash crops and Land classification as per revenue records are as per given hereunder: <table border="1"> <thead> <tr> <th rowspan="2">Sn</th> <th rowspan="2">Type of Land</th> <th colspan="2">Area (hect.)</th> </tr> <tr> <th>Govt.</th> <th>Private</th> </tr> </thead> <tbody> <tr> <td rowspan="3">1</td> <td>Agricultural</td> <td></td> <td></td> </tr> <tr> <td>Irrigated</td> <td></td> <td>0</td> </tr> <tr> <td>Unirrigated</td> <td></td> <td>198.75</td> </tr> <tr> <td>2</td> <td>Homestead</td> <td></td> <td>0.80</td> </tr> <tr> <td>3</td> <td>Jungle</td> <td></td> <td>0</td> </tr> <tr> <td>4</td> <td>Forest</td> <td></td> <td>0</td> </tr> <tr> <td>5</td> <td>Grazing</td> <td></td> <td>1.35</td> </tr> <tr> <td>6</td> <td>Fallow</td> <td></td> <td>39.10</td> </tr> <tr> <td>7</td> <td>Marshy</td> <td></td> <td>0</td> </tr> <tr> <td>8</td> <td>Others (specify)</td> <td></td> <td>0</td> </tr> <tr> <td colspan="2">Total</td> <td colspan="2">240</td> </tr> </tbody> </table>	Sn	Particulars	Area (hect.)	1	Plant	100.00	2	Coal Storage & handling	13.00	3	Raw water Reservoir	10.00	4	Ash pond	20.00	5	Railway marshalling yard	7.00	6	Green belt	80.00	7	Township	5.00	8	Yard for miscellaneous purpose	5.00	Total		240	Sn	Type of Land	Area (hect.)		Govt.	Private	1	Agricultural			Irrigated		0	Unirrigated		198.75	2	Homestead		0.80	3	Jungle		0	4	Forest		0	5	Grazing		1.35	6	Fallow		39.10	7	Marshy		0	8	Others (specify)		0	Total		240	
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1.2	Clearance of existing land, vegetation and buildings?	Yes	Vegetation clearance is confined to proposed project area Alienation of Govt. land of to an extent of 39.46 acres (15.96 hectares) has been done and balance land alienation is in process. 8 (22) displaced families have already been rehabilitated.																																																																														
1.3	Creation of new land uses?	Yes	Industrial use																																																																														

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data						
1.4	Pre-construction investigations e.g. bore houses, soil testing?	Yes	Soil testing shall be carried out for design of civil structures at 8-10 locations within the proposed site. This shall be carried out at the time of detailed engineering on receipt of environment clearance.						
1.5	Construction works?	Yes	Construction works mainly involves the following activities: <ul style="list-style-type: none"> • Site clearance and excavation; • Transportation, storage and handling of construction materials; • Mobilization and demobilization of men and machinery; • Civil construction; • Mechanical works; • Power and water supply; • Waste water generation and its disposal; • Solid waste generation and its disposal; etc Estimated construction period shall be 9 months on receipt of extension of environment clearance.						
1.6	Demolition works?	No	A Minor hamlet of 8 houses (Mundapara) will be demolished after duly rehabilitating the families in the site earmarked for rehabilitation in the southern boundary of the site. Already demolished and rehabilitated.						
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	<ul style="list-style-type: none"> • Shall be provided within proposed project site with all facilities; and • Total manpower required during construction period shall be varied from 1000 to 1500. Most of the unskilled workers shall be from local area only. Temporary housing (varies between 100 and 200) at the project site shall be provided only for the skilled and semi skilled workers. 						
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Shall be confined to proposed project site only. Marginal cut & fill will be done for leveling.						
1.9	Underground works including mining or tunneling?	No	Not required						
1.10	Reclamation works?	No	Not required						
1.11	Dredging?	No	Not applicable						
1.12	Offshore structures?	No	Not applicable						
1.13	Production and manufacturing processes?	Yes	The proposed project is planned to install two units of 350 MW each. The main process steps involved are: <ul style="list-style-type: none"> • Steam generation by using coal fired boilers; and • Power generation by steam turbines. The thermodynamic cycle for each unit will consider sub-critical steam parameters comprising of boiler, steam turbine generator, condenser, condensate extraction and boiler feed systems along with all necessary equipment for single reheat-regenerative cycle.						
			<p>Steam Generators</p> The Steam Generator (boiler) will be natural circulation / assisted circulation, pulverized coal fired, single re-heat, balanced draft, outdoor type and membrane tube construction. The parameter envisaged for each unit is as per given hereunder:						
			<table border="1"> <thead> <tr> <th>Sn</th> <th>Parameter</th> <th>Values</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Steaming capacity</td> <td>975 tph at TMCR</td> </tr> </tbody> </table>	Sn	Parameter	Values	1	Steaming capacity	975 tph at TMCR
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Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data	
			2	Steam pressure 170-176 Kg/cm ² (abs.)
			3	Steam temperature 540-545 °C
			<p>The steam generator would be designed for high efficiency and reliable performance for coal (average ash content of 45% with sulphur content of 0.5%).-</p> <p>Moisture 12-18% Ash contain 40-45% Gross calorific value (GCV) 2350 - 4039 Carbon value 28.56- 42.08% Hydrogen 1.65- 2.81% Sulphur 0.45- 0.5% Nitrogen 0.44- 0.93% Oxygen 4.76- 6.45%</p> <p>Economizer shall be non-steaming type with provision for recirculation during start up, chemical cleaning etc. The superheater and reheater shall be convection and radiation type and would be designed so as to maintain rated steam temperature at superheater and reheater outlet. Regenerative air preheaters for primary air heating would be provided. The unit would be completed with the following:</p> <ul style="list-style-type: none"> • Coal preparation unit; • Fuel oil storage and firing unit; and • FD, ID & PA fans. <p>Electro Static Precipitators (ESP) and a single flue stack of 220 m height shall be also provided for dust control. ESP shall limit the outlet dust to 50 mg/Nm³ (max.).</p> <p>Steam Turbines</p> <p>The steam turbines would be standard multi stage 3000 rpm, tandem compound, single reheat, regenerative, condensing, multi-cylinder unit. The steam turbine will consist of three cylinders; one single flow high pressure turbine (HP), one double flow intermediate pressure turbine (IP); or combined HP-IP turbine and two double flow low pressure turbine (LP). The rotors of the whole shaft line will be provided with integral expansion sleeve couplings and rigidly interconnected.</p> <p>The unit would be completed with twin flow, double pass, horizontal, surface type, water cooled condenser, 2x100% vacuum pumps, vertical/horizontal shell and tube type high pressure feed water heaters with group bypass arrangement, 3 or 4 stage horizontal U tube type low pressure heaters, drain cooler, gland steam condenser, horizontal spray or spray cum tray type deaerator with integral vent condenser etc.</p>	

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data		
			<p>Each unit would also be equipped with three 100% capacity, centrifugal, multistage, horizontal, barrel casing construction boiler feed pumps.</p> <p>Coal will be transported from the Mahanadi Coal fields (MCFL) to the project site by rail. The existing facilities at MCFL Belpahar Coal fields will be used to load the Coal and the Wagons will be received using a private siding extended from the nearest railway line. Coal will be received on BOBR (bottom opening) Wagons through a Merry-Go-Round system and Track Hopper for unloading the coal. Till the Coal transportation system is stabilised, the Coal will be transported by road using trucks.</p> <p>Coal handling facility, which would comprise unloading by track hoppers with on-line bunkering and stacking by stacker-cum-reclaimer in coal yard.</p> <p>LDO (Calorific value – 10000 kcal/kg) and HFO (Calorific value – 10500 kcal/kg) would be used as start up and stabilization fuel.</p>		
1.14	Facilities for store of goods or materials?	Yes	Coal yard	1,30,000 m ²	
			Fuel oil storage	<ul style="list-style-type: none"> • HFO – --1460 kl • LDO- ---300 kl 	
			Water Reservoir	420000 m ³	
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Solid Waste		
			Source	Quantity	Disposal
			Bottom ash*	992 tpd @15%	Ash shall be disposed off as High Concentration Slurry in the ash pond. Present Area year of 20 hector is marked for ash disposal, It is proposed to dispose off the fly ash to the cement plant and utilized for road construction within the plant & in the surrounding area. There is also a proposal for establishing a cement grinding plant as an auxiliary unit by the company to utilize the fly ash.
			Fly ash*	5623 tpd @ 85%	
			Raw water treatment plant	7 tpd during non-monsoon period. 32 tpd during monsoon period.	Shall be used for landfill
			ETP	6 -12 kg/day.	Shall be disposed off for landfill after conforming its hazards as per Hazardous Wastes (Management & Handling) Amendment Rules, 2003
			STP	0.2 tpd (max)	Shall be used as manure for green belt development
			<ul style="list-style-type: none"> • considering 100% PLF and 45% ash content • Provide water quality of Ib river or Hirakud dam 		
			Waste Water		

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data		
			Source	Quantity	Disposal
			Plant operation		The treated effluents conforming to the prescribed standards shall be re-circulated and reused within the plant.
			Blow downs	11018 m ³ /day	
			DM plant	154 m ³ /day	
			Regeneration & back wash	196 m ³ /day	
			Domestic including township	375 m ³ /day	Shall be treated in STP and treated water shall be used for greenbelt development/ plantation and dust suppression
			No treated wastewater shall be discharged outside the project premises.		
1.16	Facilities for long term housing of operational workers?	Yes	Township for operational workers and their families is envisaged within the same premises in an area of 5- hecter.		
1.17	New road, rail or sea traffic during construction or operation?	Yes	Coal will be received from MCL on BOBR (bottom opening) Wagons through a Merry-Go-Round system and Track Hopper for unloading the coal. Till the Coal transportation system is stabilised, the Coal will be transported by road using trucks. Length of Railway track will be about 16Km. The length of the railway track will be about 16 km. and the right-of-way for the MGR construction is in progress.		
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc.?	Yes	As per 1.17		
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not envisaged		
1.20	New or diverted transmission lines or pipelines?	Yes	Raw water pipeline through intake well from Hirakud dam/ Mahanadi river source which is approximately 4 Km from the project site is completed.		
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	Yes	For ash disposal, a pond is envisaged covering an area of - 32.86 hect. within the project premises for temporary storage. The fly ash will be utilized in the cement plant and road construction		
1.22	Stream crossings?	Yes	The construction of railway track is in progress and raw water pipeline is completed.		
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	<ul style="list-style-type: none"> • During construction phase, 75-100 m³/day water shall be required, which is being withdrawn from Mahanadi River Source, permitted by Govt. • During operational phase, 637000 m³/day water shall be required which shall be withdrawn through intake well from Hirakud dam /Mahanadi river source. 		
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	Yes	Only changes in surface land due to construction of buildings & structures confined to project site shall affect the drainage pattern		

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	<ul style="list-style-type: none"> Transportation of personnel and materials during construction and operation is continuing shall be through NH-200 and railway; During operational phase, 63700 m³/day water shall be required which shall be withdrawn through intake well from Hirakud dam. and Coal will be received from MCL on BOBR (bottom opening) Wagons through a Merry-Go-Round railway system of approximately 16 Km.
1.26	Long-term dismantling or decommissioning or restoration works?	No	Not applicable
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	Not Applicable
1.28	Influx of people to an area in either temporarily or permanently?	Yes	<p><u>During construction phase</u> Total manpower required during construction period shall be varied from 1000 to 1500. Most of the unskilled workers are from local area only. Temporary housing at site is provided only for the skilled and semi skilled workers and shall vary between 100-200.</p> <p><u>During Operation phase</u> Permanent manpower- 350 nos.</p>
1.29	Introduction of alien species?	No	Green belt development/plantation shall be mainly confined to project site and local species shall be given preference
1.30	Loss of native species or genetic diversity?	Yes	Confined to project site only
1.31	Any other actions?	No	NIL

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

Sl. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data				
2.1	Land especially undeveloped or agricultural land (ha)	Yes	<ul style="list-style-type: none"> Land mainly belongs to single crop cultivation with seasonal cash crops; Land classification as per revenue records are as per given hereunder: <ol style="list-style-type: none"> Unirrigated agriculture land 198.75Hect. Fallow Land -39.1- Hect. Forest Land- 0 Homestead land-0.8 ha. Grazing land- 1.35 ha. 				
2.2	Water (expected source & competing users) unit : KLD	Yes	<p><u>Construction Phase</u> About 75 to 100 KLD water is required which is being withdrawn from Hirakud Reservoir.</p> <p><u>Operation Phase</u> 63700 m³/day water shall be required which shall be withdrawn through intake well from Hirakud dam.</p>				
2.3	Mineral (MT)	Yes	<table border="1"> <thead> <tr> <th>Mineral</th> <th>Tones per day</th> </tr> </thead> <tbody> <tr> <td>Coal</td> <td>14700 @ MCR.</td> </tr> </tbody> </table>	Mineral	Tones per day	Coal	14700 @ MCR.
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Coal	14700 @ MCR.						
2.4	Construction material – stone, aggregates, and/soil (expected source – MT)	Yes	Most of the area of proposed site is plain hence shall not require soil for leveling. Other civil construction materials like stone, cement, concrete, sand, iron rods etc				

			shall be estimated during the detailed engineering and shall be procured from local area through local vendors.
2.5	Forests and timber (source – MT)	Yes	Timber shall be used for wooden work in office and township which has been procured through local vendors
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	<ul style="list-style-type: none"> Total power consumption shall be 63 MW, which shall be made available from inhouse electricity production. Standby DG sets-2X1000 KVA.
2.7	Any other natural resources (use appropriate standard units)	No	None

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	Yes	Maximum storage capacity LDO-300 Kl HFO- 1460 Kl.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	Waste to be generated shall be mainly air emissions such as dust and gaseous pollutants (SO ₂ & NO _x), from combustion of coal and handling of coal & ash, which shall be emitted within the standards prescribed by Orissa Pollution Control Board (OPCB)/CPCB.
3.3	Affect the welfare of people e.g. by changing living conditions?	No	Same as 3.2
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	Yes	Same as per given in point 8 of section –III of the Form-1
3.5	Any other causes	No	NIL

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	Yes	<u>During Construction Phase only</u> Topsoil has been generated during excavation for foundations and roads. It has been stockpiled and about 20% has been reused and the rest has been disposed to the nearby low lying area.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	<u>During Construction Phase</u> <i>Non-Recyclable</i> <ul style="list-style-type: none"> Kitchen waste Recyclable Metal scrap and empty metal drums of non-hazardous materials Paper and wood scrap Empty plastic containers of non-hazardous materials etc.

			<p><u>During Operation Phase</u> <i>Non-Recyclable</i></p> <ul style="list-style-type: none"> • Kitchen waste Recyclable • Metal scrap and empty metal drums of non-hazardous materials • Paper and wood scrap • Empty plastic containers of non-hazardous materials etc.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	<p><u>During Construction Phase</u> <i>Non-Recyclable</i></p> <ul style="list-style-type: none"> • Waste paints • Waste chemicals and miscellaneous wastes <p><i>Recyclable</i></p> <ul style="list-style-type: none"> • Waste oils and oil sludge • Waste material from welding and coating • Dry cell batteries • Containers of hazardous materials (oil drums, paint drums, chemical drums etc.) <p><u>During Operation Phase</u> <i>Non-Recyclable</i></p> <ul style="list-style-type: none"> • Waste Chemicals <p><i>Recyclable</i></p> <ul style="list-style-type: none"> • Waste oils and oil sludge • Dry cell batteries • Waste material from welding • Containers of hazardous materials (oil drums, paint drums, chemical drums etc.)
4.4	Other industrial process wastes	Yes	<ul style="list-style-type: none"> • Bottom ash @ 992 tpd. • Fly ash @ 5623 tpd • Sludge from raw water treatment plant, @ 7-tpd during non-monsoon period and @ 32 tpd during monsoon period. • Sludge from effluent treatment plant, @ 6-12 kg/day
4.5	Surplus product	No	NIL
4.6	Sewage sludge or other sludge from effluent treatment	Yes	@ 0.2tpd (max)
4.7	Construction or demolition wastes	Yes	Refer 4.1 to 4.3
4.8	Redundant machinery or equipment	No	Can not be predicted
4.9	Contaminated soils or other materials	Yes	Can not be predicted as it shall be due to accidental leakage
4.10	Agricultural wastes	Yes	Confined to 240hec. only (Refer to 1.1)
4.11	Other solid wastes	No	NIL

5. Release of pollutants or any hazardous, toxic or noxious substances to air (kg/hr)

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions form combustion of fossil fuels from stationary or mobile sources	Yes	<p><u>Burning of Coal</u></p> <ul style="list-style-type: none"> ○ Dust <50 mg/Nm³ ○ SO₂ < 6120 kg/hr (considering sulphur content in coal as 0.5%. <ul style="list-style-type: none"> • Standby DG sets <ul style="list-style-type: none"> ○ Dust<75 mg/Nm³

			<ul style="list-style-type: none"> o SO₂ < 120 mg/Nm³ o NO_x <200 mg/Nm³
5.2	Emissions from production processes	Yes	<u>During Grinding</u> <ul style="list-style-type: none"> • SPM - <50 mg/Nm³
5.3	Emissions from materials handling including storage or transport	Yes	<u>Storage and handling</u> SPM - <50 mg/Nm ³
5.4	Emissions from construction activities including plant and equipment	Yes	<ul style="list-style-type: none"> • Dust from all construction activities other than diesel driven equipment/machinery is less than 1.2 tonnes /acre/month of activity (as per USEPA) • Diesel driven equipment/machinery <ul style="list-style-type: none"> o Dust <75 mg/Nm³ o SO₂ < 120 mg/Nm³ o NO_x <200 mg/Nm³
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Refer 5.4
5.6	Emissions from incineration of waste	No	Not applicable
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Construction debris and others has been collected and segregated and disposed off as per standard practices
5.8	Emissions from any other sources	No	Not applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	<ul style="list-style-type: none"> • Cumulative noise shall be <75 dB(A) at the boundary of the plant; and • Heat shall be emitted through the boilers, steam pipelines and stacks
6.2	From industrial or similar processes	Yes	Cumulative noise shall be <75 dB(A) at the boundary of the plant
6.3	From construction or demolition	Yes	Maximum cumulative noise shall be varied from 85 to 100 dB(A) at the construction site
6.4	From blasting or piling	Yes	<ul style="list-style-type: none"> • Can be predicted only after soil testing. • In case of blasting, anticipated noise level shall be about 100 dB(A)
6.5	From construction or operational traffic	Yes	Leq average – 75 - 80 dB(A)
6.6	From lighting or cooling systems	Yes	Cooling tower is envisaged
6.7	From any other sources	No	Not applicable

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage or hazardous materials	Yes	Shall be confined to plant site only (also refer 3.1 for details)
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	Treated effluent shall be mainly used for slurry making, dust suppression, green belt development/plantation etc. No effluent shall be discharged outside the premises.

7.3	By deposition of pollutants emitted to air into the land or into water	Yes	Air emissions shall be well within the standard stipulated by OPCB/CPCB
7.4	From any other sources	No	NIL
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	Yes	All shall be well within the standard stipulated by CECB/CPCB

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment.

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc. from storage, handling, use or production of hazardous substances	Yes	<ul style="list-style-type: none"> Storage of HSD/LDO/HFO during construction and operation phase; Storage of coal during operation phase; and Explosion of boilers.
8.2	From any other causes	Yes	Due to mishandling of machinery/equipment and falling from height during construction and operation phase.
8.3	Could be project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc.)?	No	<ul style="list-style-type: none"> HFL of Hirakud dam is 192 Metres. There shall be remote probability to be affected by earthquake as study area belongs to Zone-III (as per Seismic Classification);and Others are almost not applicable.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality.

Sl. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: <ul style="list-style-type: none"> Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) Housing development Extractive industries Supply industries Other 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>Yes</p>	<p>Shall be carried out to fulfill the requirement of project and facilities shall be extended to public to the possible extent</p> <p>Proposed project shall provide direct and indirect employment and business opportunities to locals. This in turn shall increase per capita income hence housing development</p> <p>Proposed project shall attract more coal excavation</p> <p>Not applicable</p> <ul style="list-style-type: none"> Power to be made available shall support the other industrial development in the region. Proposed project shall provide direct and indirect employment and business opportunities to locals.
9.2	Lead to after-use of the site, which could have an impact on the environment	No	It is long lasting project
9.3	Set a precedent for later developments	Yes	Contribute to the maximum possible extent

9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	Yes	1b thermal power plant at a distance of 8km and cluster of operative coal mines of MCL.
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(III) Environmental Sensitivity

Sl. No.	Areas	Name/ Identity	Aerial distance (within 15km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None	Not applicable
2	Areas which are important or sensitive for ecological reasons – Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	<p><u>Reserve Forest (R.F.)</u></p> <ul style="list-style-type: none"> • Lakshmidungri R.F (MSL-297m) • Gandhinagar R.F. (MSL-278m) • Guja pahari R.F.(MSL-386m) • DESAR R.F (MSL-202m) • Sunari R.F (MSL-474m) • Remenda R.F (MSL-220m) • Arhaparha R.F (MSL-200m) • R.F.west of Khandisa (MSL-215m) • R.F. west of Telenpali (MSL-220m) • Patrapali R.F. (MSL-286m) • Malad R.F. (MSL-262m) • Rampur R.F. (MSL-240m) • Khait R.F. (MSL-262m) • Maulabhanja R.F. (MSL-428m) • Junan R.F. (MSL-208m) • Kalisama R.F. (MSL-306m) • Baighara R.F. (MSL-325m) • Jharghati Garapati R.F. (MSL-380m) • Lamdunguri R.F. (MSL-180m) <p><u>Water Bodies</u></p> <ul style="list-style-type: none"> • Hirakud Reservoir • Lilari Nala • IB River • Bhedan River <p><u>Mountain</u></p> <ul style="list-style-type: none"> • Guja Pahar (MSL-386m) 	<ul style="list-style-type: none"> • 14.5 km, S • 11.4km, SSW • 4.8km, SSW • 6.5 km, SW • 12.1 Km, W • 10.0km, WNW • 4.4 km, NW • 8.9 km, NW • 6.4 km, NW • 9.5 km, NNE • 11.8 km, NNE • 12 km, NE • 13.1 km, NE • 4.6 km, E • 10.4 km, SE • 12.2 km, SE • 8.5 km, SE • 13 km, SE • 13.5 km, • 0.5 km, W • 10.6 km, N • 10 km, N • 10.3 km, NE • 5.0 km, SSW
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	None	Not applicable
4	Inland, coastal, marine or underground waters	Refer point 2.0 of the table	

5	State, National boundaries	None	Not applicable
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas.	<ul style="list-style-type: none"> • S.E. Railway • SH 10 	<ul style="list-style-type: none"> • 12.8 km, E • 10.5 km, E
7	Defense installations	None	Not applicable
8	Densely populated or built-up area (Population Greater than equal to 1000 AS PER Census- 2001)	<ul style="list-style-type: none"> • Barpali • Malda • Rampur • Ubuda • Tarekela • Kumbharbandh • Pandri • Jharmunda • Rampela • Rengali • Katar-baga • Jangala • Talab • Lapanga • Nuatihura • Talabira • Nishanbhanga • Salad • Garmunda • Tilaimal • Kudalpali • Basupali • Babuchakuli • Patrapali • Nuadihi • Balbas-pur • Pandoi 	<ul style="list-style-type: none"> • 0.7 km, E • 12.5 km, ENE • 11.6 km, NNE • 11.6km, NNW • 12.4 km, NNE • 2.75km , N • 11.6 km , W • 9.9 km ,E • 12.3 km, SE • 11.7km ,SE • 13.7 km, NNE • 14.4 km , E • 13.4km , SSE • 10km , NE • 1.2 km , S • 8 km, NE • 11.2 km, E • 10 km, SE • 13.4 km, SSE • 12.2 km , S • 12.6 km, N • 6.8 km, N • 9 km, ENE • 9.9 km, NE • 13.5 km, S • 10.6 km, SSE • 11.8km, ENE
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	<ol style="list-style-type: none"> 1. Barpali , Primary School 2. Malda Homeopathic Dispensary, Primary School 3. Rampur, Primary School, Middle School 4. Ubuda, Primary School, Middle School 5. Tarekela, Primary School 6. Kumbharbandh, Middle School, Secondary School, College, Primary Health Center, Primary Health Sub-Center 7. Pandri, Primary School, Middle School, Secondary School, Ayurvedic Dispensary, Primary Health Sub-Center, 8. Jharmunda, Middle School 9. Rampela, Middle School, Secondary School, Primary 	<ol style="list-style-type: none"> 1. 0.7 km, E 2. 12.5 km, ENE 3. 11.6 km, NNE 4. 11.6km, NNW 5. 12.4 km, NNE 6. 2.75km , N 7. 11.6 km , W 8. 9.9 km ,E 9. 12.3 km, SE 10. 11.7km ,SE

		<p>Health Sub-Center, 10. Rengali, College, Allopathic Hospital, Maternity & Child welfare Center, Primary Health Sub-Center, Primary Health Sub-Center, 11. Katar-baga, Secondary School, Ayurvedic Dispensary, Primary Health Sub-Center, Primary Health Center 12. Talab, Primary School, Middle School, Secondary School. 13. Lapanga, Middle School, Secondary School, Primary Health Sub-Center, 14. Talabira, Primary School, Middle School 15. Nishanbhanga, Middle School, Secondary School, 16. Salad, Middle School 17. Garmunda, Middle School, Secondary School, Primary School 18. Tilaimal, Primary School 19. Kudalpali, Primary School 20. Basupali, Middle School 21. Babuchakuli, Primary School Middle School 22. Patrapali, Primary School, Middle School 23. Nuadihi, Primary School, Middle School, Secondary School, Primary Health Sub-Center 24. Balbas-pur, Primary School, Middle School, Secondary School, Primary Health Sub-Center 25. Pandoi, Primary School</p>	<p>11. 13.7 km, NNE 12. 13.4km, SSE 13. 10km , NE 14. 8 km, NE 15. 11.2 km, E 16. 10 km, SE 17. 13.4 km, SSE 18. 12.2 km , S 19. 12.6 km, N 20. 6.8 km, N 21. 9 km, ENE 22. 9.9 km, NE 23. 13.5 km, S 24. 10.6 km, SSE 25. 11.8km, ENE</p>
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	None	Not applicable
11	Areas already subjected to pollution or environmental damage (those where existing legal environmental standards are exceeded)	None	Not applicable
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	None	Not applicable

Note:

- Source: Topo sheet of Survey of India, Census 2001 and Primarily survey of the study area

(IV) Proposed Terms of Reference for EIA studies

The following are the terms of reference for EIA studies:

1. Baseline data collection shall be collected as per the stipulated guidelines in EIA manual prescribed by MoEF in the study area of 10 km radius around the proposed site for the following;

Ambient Air Quality
Ambient air quality monitoring has been carried out at 8-10 stations representing the study area as per guidelines of MOEF. Each station shall be monitored twice a week for 12 weeks during the first season for parameters like SPM, RSPM, SO ₂ , NO _x and CO
Meteorology
Meteorological parameters such as wind speed, wind direction, temperature, relative humidity, cloud cover and rainfall has been collected at one station on hourly basis for 24 hours during the study period.
Dust Fall Rate
Dust fall rate shall be collected at or near plant site during study period on monthly basis and has been analyzed for chemical parameter such as pH, Free Silica, Mercury, Lead etc
Noise level
Measurement of noise levels within the study has been carried out at six (06) locations at regular intervals for 24 hours during the study period.
Traffic Volume Counts
Traffic volume counts has been carried out at 4 to 6 locations within the study area on hourly basis for 24 hours, once in each month during the monitoring period.
Water Quality
6-8 water samples (surface water and ground water) has been collected as per standard guidelines. The samples has been analyzed for essential parameters for drinking water as per IS: 10500.
Soil Quality
Testing of soil samples has been carried out from four (04) locations within the study area for physical and chemical parameters.
Flora & Fauna
Survey has been carried out in the study area as per the guidelines of MOEF. Species of flora has been listed as agricultural crops, commercial crops, plantation, natural vegetation, grasses, endangered, endemic and others. No faunal species identified as per the Wildlife Protection Act, 1972 and as amended subsequently.
Remote Sensing Study
This study has been carried out based on the satellite imageries of the study area to assess the geology, geomorphology, drainage pattern/ watersheds, land use pattern, etc.
Hydrological
Survey has been carried out in the study area to assess the potential of surface water. Water balance of the study area has been made and impacts shall be assessed with respect to the requirement of all the users in the study area. Also impacts shall be assessed due to the leachate from ash pond, if any.
Socio-economic Survey
Socio-economic survey in the study area has been carried out to assess the status of demographic pattern, cropping pattern and general amenities available based on the Census 2001, secondary information available with different government agencies and survey. The area covered is equivalent to 25 km radius.

2. Impact Assessment

Impacts has been identified based on the actual and foreseeable events, including operational events and typical events of the proposed project activities. Processes that may create risks to the natural environment and socio economic environment has been considered in terms of key potential environmental impacts. ISCST3 model has been used for air dispersion modeling.

3. Environment Management Plan

A mitigation measure has been adopted under EMP for all specified significant environmental impacts likely to result out during the construction stage. During operation shall be also a part of the EIA/EMP report. The likely identified impacts and recommended mitigation measures shall be based on the following:

- Various applicable environment laws/acts/standards/guidelines;
- Project information provided by project proponent;
- Baseline information and reconnaissance survey of the study area;
- Past experience in similar type of projects; and
- Standard National/ International environmental management guidelines/practices