RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.
VIDYUT BHAWAN, JANPATH, JYOTI NAGAR, JAIPUR – 302 005.
TELE FAX NO. (0141-274006) FAX NO (0141 2740633)
Email: fuel.rvun@gmail.com

No. RVUN/ CE (Fuel)/ F. /D. 79 Dated: 15-1-14

Director
Ministry of Environment & Forests
Paryavaran Bhawan
C.G.O Complex,
New Delhi -110003

Sub:- Expansion of Parsa East and Kanta Basan Opencast coal mine and Pit Head coal Washery from 10 to 15 MTPA – TOR proposal.

Dear Sir,

It is intimated that Parsa East and Kanta Basan coal blocks in the state of Chhattisgarh has been allotted to Rajasthan Rajya Vidyut Utpadan Nigam Ltd(RVUN) vide letter no. 13016/74/2006-CA-1 dated 19th/25th June, 2007 by Ministry of Coal Govt. of India. Mining plan of Parsa East and Kanta Basan coal blocks (10 Mtpa) was approved by MoC vide letter No. 13013/74/2006-CA-I dated 16th July, 2009. Subsequently, Revised Mining Plan of Parsa East and Kanta Basan (15Mtpa) coal blocks was approved by Ministy of Coal vide letter No. 13016/74/2006-CA-I dated 19.11.2013. Ministry of Environment & Forests, Govt. of India vide letter no. J-11015/03/2008-IA-II (M) dated 21.12.11 had already granted 'Environment clearance' for 10MTPA in respect of Parsa East and Kanta Basan coal blocks .

In this regard, kindly find enclosed following documents in respect of Parsa East and Kanta Basan coal blocks allocated to M/s Rajasthan Rajya Vidyut Utpadan Nigam Ltd for prescribing TOR for undertaking EIA Study.

1) Filled Form -1
2) Pre-feasibility Report

Encl. - As above

Thanking You,

Yours Sincerely,

15.1.14

(Prakash Israni)
Superintending Engineer (Fuel)
RVUN, Jaipur

Superintending Engineer (Fuel)
RVUN, JAIPUR

APPLICATION FOR PRIOR ENVIRONMENTAL CLERANCE
FORM – 1

For

PROPOSED PRODCUTION ENHANCEMENT FROM
10.0 MTPA TO 15.0 MTPA
OF
OPENCAST COAL MINE AND PIT HEAD COAL WASHERY
WITHIN EXISITNG MINE LEASE AREA OF 2388.525 ha
AT
PARSA EAST and KANTA BASAN COAL BLOCK
UDAIPUR TEHSIL, SURGUJA DISTRICT, CHHATTISGARGH

Submitted by:

Rajasthan Rajya Vidyut Nigam Limited
Vidyut Bhawan, Janpath, Jyothi Nagar
Jaipur – 302005

JANUARY 2014

APPENDIX I
FORM 1

(I) Basic Information

Sr. No.	Item	Details
1	Name of the project/s	Expansion of Parsa East and Kanta Basin –Coal Mine and Washery by Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL)
2	S.No. in the schedule	Coal Mining – Activity 1(a) Coal Washery – Activity 2(a)
3	Proposed capacity/ area/ length/ tonnage to be handled/ command area/ lease area/ number of wells to be drilled	Existing and Proposed Details

Particulars	Existing Capacity (MTPA)	Capacity After Expansion (MTPA)
a) Coal Mine	10	15
b) Coal Washery	10	15

4	New/Expansion	Expansion
5	Existing Capacity/Area etc.	Existing Capacity: Coal Mining – 10 MTPA Coal Washery – 10 MTPA No change in either in ML area or Total Project Area: Mine Lease Area : 2388.525 ha External dump, Washery, Colony etc : 322.509 ha Total Project Area : 2711.034ha
6	Category of Project i.e. 'A' or 'B'	Category 'A'
7	Does it attract the general condition? If yes, please specify.	No
8	Does it attract the specific condition? If yes, please specify.	No
9	Location	The mine is located in north central part of Hasdeo-Arand Coalfields in Parsa village, Udaypur Tehsil, Sarguja District, Chhattisgarh. The Block is covered under the Survey of India toposheet No. 64 J/13. Latitude 22° 47' 39" N & 22° 51' 12" N and Longitude 82° 46' 38" E & 82° 50' 51" E. The location and study area maps are enclosed as **Annexure-I**
	Village	Salhi, Harihapur, Parsa, Kante, Ghatbara, Parogiya and Basan.
	Tehsil	Udaypur
	District	Surguja
	State	Chhattisgarh
10	Nearest Railway Station/ Airport (along with distance in km)	Nearest railway station-Bishrampur (4.3 km, NNE) Nearest major airport- Khajuraho (150 km, NW)
11	Nearest town, city, district headquarters along with distance in Km	Nearest major Town/City & District Headquarters – Ambikapur (50km, NE)
12	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (Complete postal addresses with telephone nos. to be given)	The core area falls in seven revenue villages, namely, Salhi, Harihapur, Parsa, Kante, Ghatbara, Parogiya and Basan in Udaypur Tehsil, Surguja District

Superintending Engineer (Fuel)
RVUN, JAIPUR

Sr. No.	Item	Details
13	Name of the applicant	Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUNL), Jaipur, Rajasthan
14	Registered Address	Chief Engineer (Fuel), M/s Rajasthan Rajya Vidyut Utpadan Nigam Limited, Room No. 130, Vidyut Bhawan, Jyoti Nagar, Janpath, Jaipur – 302005, Rajasthan Tel: 0141-2740006
15	Address for correspondence	
	Name	Rajasthan Rajya Vidyut Utpadan Nigam Limited,
	Designation	Chief Engineer (Fuel)
	Address	Rajasthan Rajya Vidyut Utpadan Nigam Limited, Room No. 130, Vidyut Bhawan, Jyoti Nagar, Janpath, Jaipur- 302 005, Rajasthan
	Pin Code	302 005
	E-mail	fuel.rvun@gmail.com
	Telephone No.	0141-274006
	Fax No.	0141-274006
16	Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet.	No alternate site considered as expansion and in within the existing project area.
17	Interlinked Projects	Chhabra TPP (Unit # 3&4 - 2X 250MW)), Jahawar (Kalisindh TPP Unit# 1&2, 2X600MW), Supercritical Suratgarh TPP (Units # 7 & 8- 2X660MW) and Supercritical Chhabra TPP (Units# 5 & 6- 2X660MW) of RVUNI
10	Whether separate application of interlinked project has been submitted	1. Chhabra TPP (Unit # 3&4 - 2X 250MW)), have granted environmental clearance by MoEF vide letter no. J-13011/8/2007-IA.II (T) dated 28.09.2007 & 19.05.2008. 2. Jahawar (Kalisindh TPP Unit# 1&2, 2X600MW) have granted environmental clearance by MoEF vide letter no. J-13012/80/2007-IA.II (T) dated 26.02.2009. 3. Supercritical Suratgarh TPP (Units # 7 & 8- 2X660MW) and Supercritical Chhabra TPP (Units# 5 -1X660MW).have granted environmental clearance by MoEF vide letter no. J-13012/14/2009-IA.II (T) dated 23.05.2012. 4. TOR for the reject based TPP has been prescribed by MOEF vide letter no. J-13012/111/2011-IA.II(T) dated 01.04.2013
19	If yes, date of submission	N/A
20	If no, reason	N/A
21	Whether the proposal involves approval/clearance under: (a) The Forest (Conservation) Act, 1980 (b) The Wildlife (Protection) Act, 1972 (c) The C.R.Z Notification, 1991	 The Stage-II forest clearance has been obtained vide letter no. 8-31/2010FC dated 15.03.2012 No No

Sr. No.	Item	Details
22	Whether there is any Government Order/Policy relevant/relating to the site	No
23	Forest land involved (hectares)	1898.328 ha. Forest clearances obtained vide letter no. 8-31/2010FC dated 06.07.2011 and 15.03.2012.
24	Whether there is any litigation pending against the project and/ or land in which the project is proposed to be set up • Name of the Court • Case No. • Orders/ directions of the Court, if any and its relevance with the proposed project.	No

(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.)

Sr. 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	The activity involves opencast mining and establishment of coal washery. Post-mining land use details: Plantation : 2329.232 ha Water Body : 260.970 ha Public Use : 113.852 ha Grass/ Green Belt : 6.980 ha Total : 2711.034 ha
1.2	Clearance of existing land, vegetation and buildings?	Yes	The proposed expansion is within the existing mine lease area. Only removal of vegetation is envisaged.
1.3	Creation of new land uses?	Yes	The land use of the lease area will be changed as 1. Mined out area will be back filled with overburden to the maximum possible extent as per mining plan. 2. There will be external OB dumps, which will be rehabilitated once it becomes inactive. 3. Remaining mine void will be converted into a water body. 4. Infrastructure like roads, railway siding etc.
1.4	Pre-construction investigations e.g. boreholes, soil testing?	No	Pre-construction activities have been partially completed for existing 10 MTPA mine

Sr. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.5	Construction works?	Yes	As the proposed project is an expansion of existing project, minor additional construction works with regard to the expansion are envisaged.
1.6	Demolition works?	No	Not envisaged
1.7	Temporary sites used for construction works or housing of construction workers?	No	Local labour/Construction workers will be hired.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	No	Not envisaged.
1.9	Underground works including mining or tunneling?	No	Not envisaged.
1.10	Reclamation works?	Yes	Reclamation will be commenced after 4th year of operation of existing 10 MTPA mine. The entire reclaimed area will be afforested.
1.11	Dredging?	No	Not Applicable
1.12	Offshore structures?	No	Not Applicable
1.13	Production and manufacturing processes?	Yes	Coal mine production will be increased from 10 MTPA to 15 MTPA. Coal washery capacity will be enhanced to 15 MTPA from 10 MTPA.
1.14	Facilities for storage of goods or materials?	Yes	Separate areas earmarked for explosive, topsoil and OB storage.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	2368.72 million m^3 OB will be generated. Of which 52.07 million m^3 will be dumped on non-coal bearing area as external dump and rest 2316.65 million m^3 will be backfilled as per approved Mine Plan. Concurrent backfilling will be carried out from 4th Year of operation.
1.16	Facilities for long term housing of operational workers?	Yes	The township to be constructed will be adequate to meet the requirement.
1.17	New road, rail or sea traffic during construction or operation?	No	No additional facilities are to be added for the proposed expansion.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	No new transport infrastructure is to be created.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	No closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements is envisaged.
1.20	New or diverted transmission lines or pipelines?	No	Not envisaged
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	Seasonal nallahs passing through the Mine Lease area will be diverted during the operation.

Sr. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.22	Stream crossings?	No	Not involved
1.23	Abstraction or transfers of water form ground or surface waters?	Yes	The source of drinking water will be ground water. Approval of Central Ground Water Authority has been obtained. Vide letter no. 21-4(44)NCCR/CGWA/2000/690 dated 23.09.2009
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	The network of seasonal nallahs draining the storm water will be diverted during the operation phase of existing 10 MTPA mine.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transportation of construction materials and personnel by road. It has been planned to bring coal from coal face to surface by belt conveyor. Another set of conveyors are provided to transport coal to washing plant and receiving stock yard. Belt conveyor will reduce fleet of dumper, air and noise pollution. Washed coal will be loaded to rail wagon by rapid loading system. Loaded coal wagon will move from washery head to Surajpur railway station for further transportation to Power Plants. Coal rejects will be used in reject based Power Plant.
1.26	Long-term dismantling or decommissioning or restoration works?	Yes	Mine will be systematically closed as per decommissioning plan to be prepared five years prior to the mine closure.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	None
1.28	Influx of people to an area in either temporarily or permanently?	Yes	Company employees and their families – about 500 persons during the construction phase mostly from the nearby villages / local people will be employed.
1.29	Introduction of alien species?	No	Not envisaged.
1.30	Loss of native species or genetic diversity?	No	Not envisaged.
1.31	Any other actions?	No	None

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):**

Sr. No.	Information/checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data

Sr. 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	No	No additional land is required.
2.2	Water (expected source & competing users) unit: KLD	Yes	Present water requirement is 9000 m^3/day (3600 m^3/day for mine + 5400 m^3/day for washery) Additional water requirement (Mine 1060M^3/per day and Washery 1590m^3/per day) will be 2650m^3/ day for expansion and will be sourced from mine dewatering.
2.3	Minerals (MT)	Yes	Mineable Coal reserves are 452.46 million tones.
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	Yes	Construction material such as sand, steel, aggregates etc will be sourced from the nearest markets.
2.5	Forests and timber (source – MT)	No	Not envisaged
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	The tentative electricity requirement of power will be in the range of 15-20 MVA at 33 kV which will be sourced from Ambikapur sub-station of CSEB.
2.7	Any other natural resources (use appropriate standard units)	No	Not envisaged

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.**

Sr. 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	Explosives for proposed mine expansion and production activities will be stored in existing magazine as per DGMS guidelines and approval.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	Not anticipated
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	About 1805 people will be benefited by way of regular employment.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	None
3.5	Any other causes	No	No other causes are envisaged

4. Production of solid wastes during construction or operation or decommissioning

Sr.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	Topsoil :14.50 Mm^3 OB :452.46 Mm^3
4.2	Municipal waste (domestic and or commercial wastes)	Yes	Mine & Washery : 0.5 Tonnes per day Township : 2.5 Tonnes per day
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Used oil & grease will be sold to authorized recyclers. Used batteries will be returned to the authorized dealers.
4.4	Other industrial process wastes	Yes	3.375 MTPA (30%) of coal rejects
4.5	Surplus product	No	Not envisaged.
4.6	Sewage sludge or other sludge from effluent treatment	Yes	STP Sludge will be used as manure.
4.7	Construction or demolition wastes	Yes	General type of construction waste materials.
4.8	Redundant machinery or equipment	Yes	Only at mine closure stage.
4.9	Contaminated soils or other materials	No	Not envisaged
4.10	Agricultural wastes	No	Not envisaged
4.11	Other solid wastes	Yes	Scrap from stores / workshop is envisaged during the operational phase of the plant.

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

Sr.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	Besides dust generation, emissions due to operation of diesel had driven HEMM, standby DG Sets etc. When there are in operation.
5.2	Emissions from production processes	Yes	Particulate Matter (PM)
5.3	Emissions from materials handling including storage or transport	Yes	Dust emissions during loading and unloading, storage and transportation of coal and waste materials.
5.4	Emissions from construction activities including plant and equipment	Yes	Dust and vehicular emissions, namely, Oxides of Nitrogen and Carbon Monoxide.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Dust
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	Not envisaged
5.8	Emissions from any other sources	No	Not envisaged

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

Sr. 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	Noise will be generated from shovels dumpers, drills, dozers, crushers and CHP and washery machinery (Crusher and truck loading). The noise level at source will range between 75 dB(A) to 110 dB(A). Installation of high noise absorbent padding between the foundation and base plate of vibrating equipment. Provision will be made with suitable lining of chutes by noise absorbing materials (HDPE / Hard rubber). Provision of ear muffs or plugs for the workmen will be done.
6.2	From industrial or similar processes	Yes	The noise levels during blasting operations are likely to be in the range of 121-138 dB(A) at 50-200-m distance from the blast site. The noise levels tend to decrease with distance. Blasting will be carried out maximum two times per week between 12.00 Noon to 2.00 PM. As the blasting is likely to last for very short duration depending on the charge, the noise levels over this time would be instantaneous and short in duration.
6.3	From construction or demolition	Yes	During construction and decommissioning phases, there will be temporary noise generation.
6.4	From blasting or piling	Yes	Noise will be generated during blasting operation which will be instantaneous in nature.
6.5	From construction or operational traffic	Yes	During construction: temporary. During operation: less to moderate. Noise will be from the HEMM and coal transportation. The noise levels within the project site are expected to be in the range of about 70-75 dB(A).
6.6	From lighting or cooling systems	Yes	Heat in close vicinity of light sources.
6.7	From any other sources	No	Not envisaged

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:**

Sr. 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 of hazardous materials	No	-

Sr. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	Treated domestic wastewater will be used for greenbelt development Treated mine discharge will be recycled/re-used for mining operations, water sprinkling and greenbelt development. Wastewater from washery will be recycled back for coal washing. The washery will be designed to ensure zero discharge. No contamination of ground water is envisaged.
7.3	By deposition of pollutants emitted to air into the land or into water	No	The incremental ground level concentrations of air pollutants (dust) are likely to be well within the permissible limits. Hence, no impact on air is envisaged. Hence, no risk of contamination of air, land or water is envisaged.
7.4	From any other sources	No	Not envisaged
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Not anticipated

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

Sr. 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	No	Explosive magazines for the existing mining project will meet the requirement. Fire hazard may be due to storage of Diesel and spontaneous coal heating.
8.2	From any other causes	No	Not envisaged
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	There is no record of occurrence of floods, landslides, cloud bursts etc. The proposed site comes under Seismic Zone-II as per IS 1893 (Part-I):2002 classification. Hence, seismically it is a stable zone.

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**

			Details thereof (with approximate

Sr.No.	Information/Checklist confirmation	Yes/No	quantities/ rates, wherever possible) with source of information data
9.1	Lead to development of supporting utilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:	Yes	Execution of the project will kick start a number of developmental activities in the area like additional roads, power supply, and communication facilities. Development of integrated coal block will increase direct and indirect employment opportunities resulting in better living standards of local people which subsequently will increase overall development of the area like housing, supportive facilities.
	• Supporting infrastructure (roads, power supply, waste, or waste water treatment, etc.)	No	No additional support infrastructure envisaged.
	• Housing development	No	Township to be constructed for the existing project will cater the expansion project requirement.
	• Extractive industries	No	No major extractive industries are envisaged in the area.
	• Supply industries	No	No installation/creation of new supply industries envisaged for the project.
	• Other	No	Not envisaged
9.2	Lead to after-use of the site, which could have an impact on the environment	No	Mine will be systematically and scientifically closed as per decommissioning plan. Massive afforestation planned will improve the green cover. No major impacts are envisaged.
9.3	Set a precedent for later developments	No	At the end of the mine life, the infrastructures like housing colony, buildings, roads etc. developed for project will be available for the benefit of the local community.
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects.	No	Not envisaged

(III) Environmental Sensitivity

Sr. No.	Areas	Name/ Identity	Aerial distance (within 15 km) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None	N.A.
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies,	Phatepur, P.F. Matringa, P.F. Pidiya, P.F.	Within M.L. area Within M.L. area 1.6 km, W

Sr. No.	Areas	Name/ Identity	Aerial distance (within 15 km) Proposed project location boundary
	coastal zone, biospheres, mountains, forests	Janardhanpur, P.F. Tara East, P.F. Shivnagar,P.F. Paturiya, P.F. Putter, P.F. Chakeri, P.F. Murgaon, P.F. Dhajag, P.F. Kotmi, P.F. Pendrakhi, P.F. Ramgarh, P.F. Chandenagar, P.F. Chirwan, P.F. Bhandargaon, P.F. Brindaban, P.F. Parwatipur, P.F.	2.3 km, NW 2.8 km, W 3.7 km, N 4.0 km, SSW 4.5 km, ENE 5.1 km, ENE 6.0 km, N 7.4 km, W 7.8 km,, NNE 8.1 km,SE 8.2 km, SE 8.9 km, NNW 9.2 km, N 9.9 km, NNE 11.7 km,N 12.6 km, NNE
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	None	N.A.
4	Inland, coastal, marine or underground waters	Atem nadi	2.7 km, N
5	State, National boundaries	-	-
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	-	-
7	Defense installations	None	N.A.
8	Densely populated or built-up area	Ambikapur	50 km, NE
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Primary schools, middle school and high schools	In surrounding villages.
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	None	N.A.
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None	N.A.
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (*earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions*)	None	There is no record of occurrence of floods, landslides, cloud bursts etc. The project site comes under Seismic Zone-II as per IS 1893 (Part-

Sr. No.	Areas	Name/ Identity	Aerial distance (within 15 km) Proposed project location boundary
			I):2002 classification.

IV]Proposed terms of Reference for EIA studies.

This is given as Annexure-II.

I hereby give an 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 nay 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;

(Prakash Israni)
Superintending Engineer (Fuel)
Rajasthan Rajya Vidyut Utpadan Nigam Limited
Room No. 130, Vidyut Bhawan,
Jyoti Nagar, Janpath
Jaipur – 302005, Rajasthan

Superintending Engineer (Fuel)
RVUN, JAIPUR

Date: 15.1.2014

Place: JAIPUR

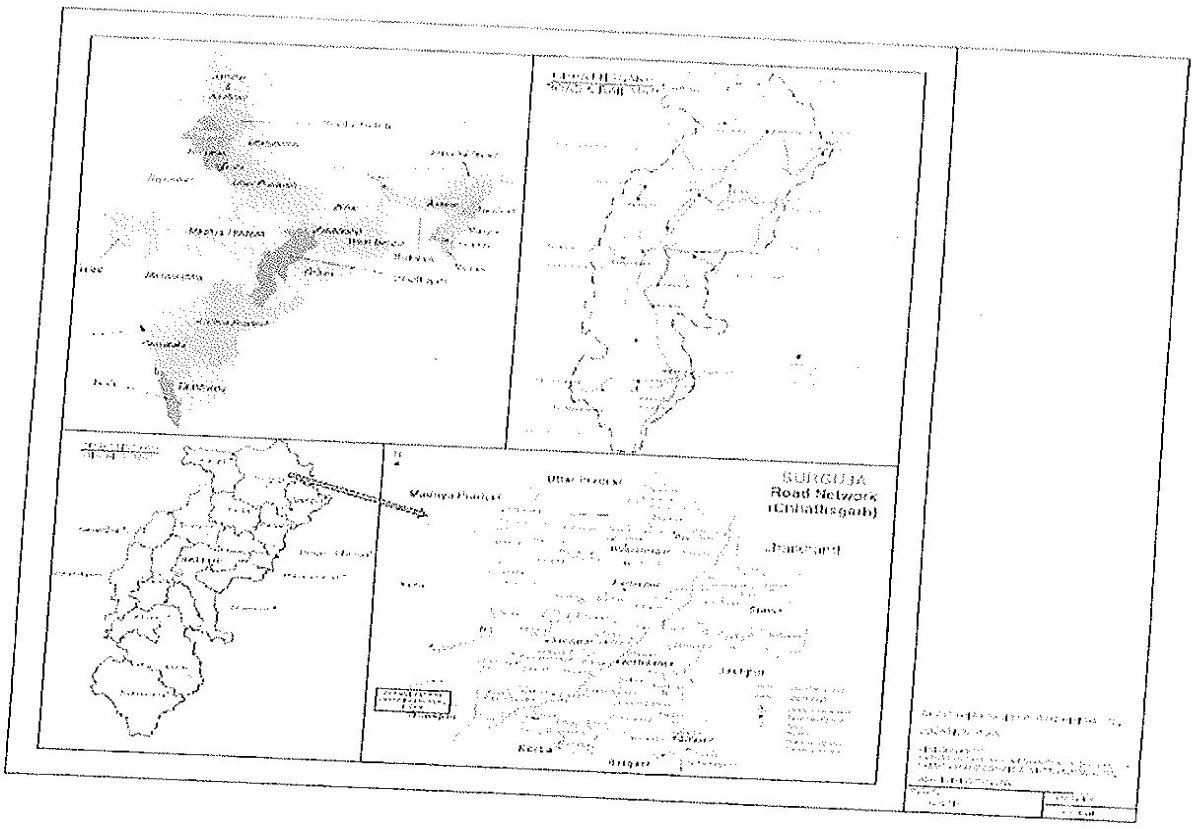
NOTE:

1. The projects involving clearance under coastal Regulation zone Notification, 1991 shall submit with the application a C.R.Z map with duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the Stage of EC). Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z notification, 1991 for the activities to be located in the C.R.Z

2. The projects to be located within 10 km or the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief wildlife Warden thereon (at the stage of EC)."

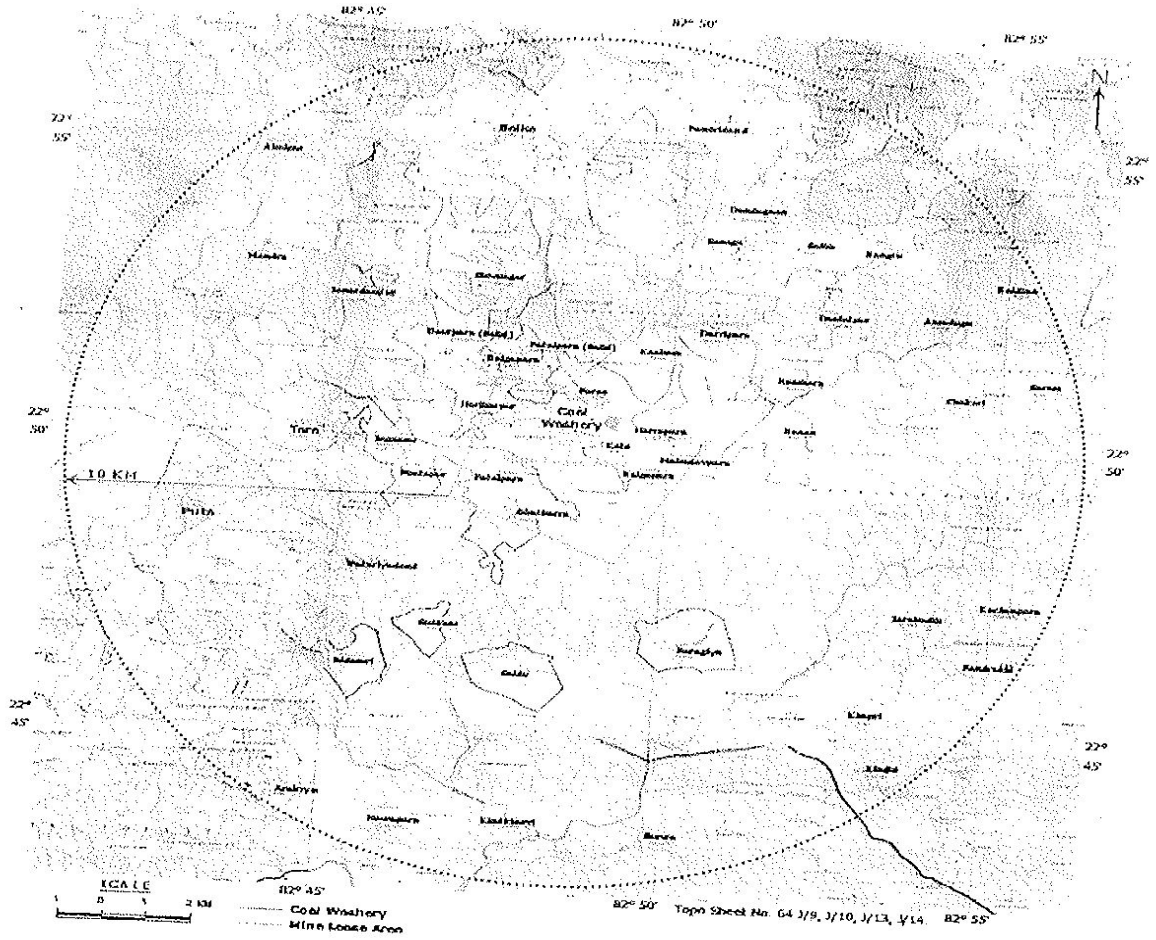
3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environment Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for specific project."

ANNEXURE-I
LOCATION MAP OF THE PROJECT SITE



1

ANNEXURE-I
10-KM RADIUS MAP OF THE PROJECT SITE



ANNEXURE-II
PROPOSED TERMS OF REFERENCE

1.0 INTRODUCTION

Rajya Vidyut Utpadan Nigam Ltd (RRVUNL) proposes expansion of integrated mechanized opencast coal mine having a pit head washery of raw coal input of capacity from 10 MTPA to 15 MTPA, at the pit head to wash coal of Parsa East and Kente Basan block in Udaipur tehsil, Sarguja district of Chhattisgarh in order to meet the requirement of its thermal power projects i.e. Chhabra TPP (Unit # 3&4 - 2X 250MW)), Jahawar (Kalisindh TPP Unit# 1&2, 2X600MW), Supercritical Suratgarh TPP (Units # 7 & 8- 2X660MW) and Supercritical Chhabra TPP (Units# 5 & 6- 2X660MW) of RVUNL. The target production capacity of both the mine and coal washery is 15 Million Tonnes Per Annum (MTPA) each. The proposed expansion of coal washery with a raw coal input capacity of 15.0 MTPA. The washery will produce approximate 11.625 MTPA of clean coal with an ash content of 30% and 3.375 MTPA of rejects with an ash content of about 60% approximately.

The EIA study includes determination of baseline conditions within 10 km radius study area from the center of the plant site, assessment of the Impacts on the environment due to the construction and operation of the proposed project and making recommendations on the preventive measures to be taken, to minimize the impact on the environment to acceptable levels. A suitable post-study monitoring programme will also be outlined. Preparation of Environment Management Plan will also be done.

2.0 METHODOLOGY FOR DATA GENERATION

2.1 Land Use

The existing land use pattern in the study area of 10 km radius around the project site will be established through the literature review of published Census records. Based on this review, the land use pattern will be categorized into the following five categories:

1. Forest;
2. Irrigated and agricultural Land;
3. Un-irrigated agricultural land;
4. Culturable wasteland; and
5. Land not available for cultivation, which includes built-up areas.

Further, land use pattern of the study area will be assessed by interpreting the recent IRS satellite imagery within 10 km radius study area.

2.2 Demography and Socio-Economic Aspects

The existing status of demography and socio-economic factors will be established covering 10-km radial distance around the project site based on the literature review and secondary sources such as the District Census Statistics. The demographic and socio-economic characteristics such as distribution and density of population, age-sex structure, sex ratio, social structure, literacy rates and occupational structure of people etc. will be established. There will not be any primary studies under this aspect.

2.3 Soil Characteristics

It is proposed to collect soil samples at about eight locations in the project study area from a depth of 0-90 cm from the ground. The locations will be selected to represent various land use conditions including proposed project site. The parameters will be analyzed with respect to agricultural importance and plantation purposes.

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2.4 Water Quality

For assessing the water quality in the study area, water samples will be collected from about eight locations once during the study period. The locations will cover important water bodies in 10 km radius area based on the reconnaissance survey of the area. Both surface and ground water sources will be covered under water quality assessment. Methods specified in "Standard Methods for Examination of Water and Wastewater" published by American Public Health Association (APHA) will be adopted.

2.5 Meteorology

Meteorological observations will be carried out at the proposed project site for 3 months covering one full season for developing the Rapid Environment Impact Assessment (REIA) report. The monitoring will be carried out on regular basis for the following parameters on hourly basis:

- Wind speed and direction;
- Temperature (dry and wet bulb);
- Relative humidity;
- Atmospheric pressure;
- Cloud cover; and
- Rainfall.

Micro-meteorological data generation will be carried out considering the IS-8829 (1978)-"Guidelines for Micro-Meteorological Techniques in Air Pollution Studies" and as per CPCB guidelines for modeling.

For establishing the historical trend, past 5 year meteorological data will be collected from the nearest observatory of India Meteorological Department (IMD) located at Ambikapur will be analyzed for probable wind directions, wind speeds, temperature, humidity, etc. Accordingly, the wind roses will be prepared. A critical comparison between long-term meteorological data collected from IMD and the data measured at the project site will be done to finalize the input for mathematical modeling.

2.6 Ambient Air Quality Monitoring (AAQ)

Ambient Air Quality monitoring will be carried out at ten locations covering the proposed project site and its surrounding including sensitive locations.

The frequency of AAQ monitoring will be twice in a week for 13-weeks during the REIA study period. Samples will be collected for PM_{10}, $PM_{2.5}$, NOx, SO_2, CO etc. for 24-hours. Carbon Monoxide monitored for every eight hours continuously for 24-hour AAQ monitoring. The frequency will allow comparison of the baseline concentrations with those specified by CPCB through their Notification of May 1994.

The locations of the AAQ monitoring stations will be fixed by reviewing the meteorological data of Ambikapur IMD station. This will ensure collection of data upwind and downwind of each project sites for establishing the baseline air quality at critical locations. The samples will be collected and analyzed as per IS-5182 guidelines.

2.7 Terrestrial and Aquatic Ecology

a) Terrestrial Ecology

Field surveys will be conducted at appropriate locations covering important vegetative areas for which vegetation analysis will be carried out. The vegetation density, diversity, frequency, relative abundance, cover etc. will be studied. In addition, wildlife including avifauna of the study area will also be determined. The vegetation will be sampled by using list-count-quadrant method.

A checklist of flora, wild animals and avifauna will be prepared. Abundance of wild animals and birds will also be estimated. A list of endangered species, both for flora and fauna of the study area will be prepared based upon the Red Book of BSI and Wildlife (Protection) Act 1972. Presence of wetlands and other ecologically sensitive areas like national parks/sanctuaries will be identified.

The woody vegetation i.e. tree and shrubs will be sampled by random sampling and by taking quadrates of 10 m^2 or 100 m^2. For trees, basal area estimations will be done by taking Girth at Breast Height (GBH i.e. 132-cm from ground) or above buttresses. Herbaceous flora will be studied by taking quadrates of 1-m^2.

b) Aquatic Ecology

Reconnaissance survey of the study area will address identification of water bodies like rivers/nallahs/ponds etc. The existing status of major water bodies will be thoroughly investigated for the flora and fauna including phytoplankton, zooplankton, fish and macrophytes.

Aquatic ecology of the study area will be studied based on the literature survey and also investigated through limited primary surveys, if required.

The water bodies will be studied during field studies for phyto and zooplankton density and diversity. Based on the primary and secondary surveys, a list of flora and fauna will be prepared. The water bodies will be studied for characterization for tropic status, areas of chemical and thermal pollution, primary productivity, density and diversity of phytoplankton, zooplankton, benthic micro invertebrates, fish and micro-phyto. Diversity indices of ecological groups will also be calculated.

For the estimation of plankton, 5 liters of composite water samples will be collected from various depths. Water samples from mid-depth and bottom will be collected, by using Nansen reversible water sampler. Samples will be concentrated to 100 ml and fixed with 4% formaldehyde and Lugol's Iodine. The samples will be analyzed in the laboratory by simple drop method.

The available literature and collect data from government agencies like the Botanical / Zoological Survey of India etc. will be reviewed for listing the species and verifying if there are any rare or endangered species in this area.

2.8 Noise Levels

Noise Level Monitoring will be conducted at about 8 locations of project area covering various categories such as industrial, residential, commercial and sensitive mentioned in the Environment Protection Rules and as per the specifications of the MoEF/CPCB. The survey will be carried out once during EIA study period. Readings will be taken over 24 hours period at each location depending on the level of activity. The equivalent continuous noise levels (Leq) will be monitored using an integrating sound level meter manufactured by Hi-Tech Instruments Limited. Attenuation model will be used to predict noise level during operation of project in the surrounding areas.

3.0 IDENTIFICATION OF SOURCES OF POLLUTION

3.1 Data Generation

This includes the following:

- Identifying the sources of pollution of air, water, land, noise and solid wastes;
- Quantifying the emissions from the pollution generating sources; and
- Quantification of solid wastes and likely disposal methods will be suggested.

3.2 Sources of Pollution in the Project Area

- The likely sources of air and water pollution will be identified and quantified;
- The proposed pollution control measures envisaged in project area for fugitive dust, noise pollution and other environmental effects of each project activities will be assessed for their adequacy;
- The present and proposed changes in land use pattern will be identified; and
- Suitable green belt development plan will be prepared.

Based on various project activities, the likely impact on the environment attributes in project area will be identified by:

- Estimating the air pollution levels for PM, SO_2 and NOx in the study area during construction and operational activities;
- Estimating the source emissions for each project specific pollutants;
- Monitoring the source noise levels for all the noise generating sources;
- Predicting the impact of wastewater discharges;
- Determining the impact of construction activities (movement of construction material); and
- Studying the short-term and long-term affects on sensitive targets like endangered species, crops and historically/archaeologically important sites (if any).

4.0 ENVIRONMENTAL IMPACT ASSESSMENT

The proposed project may have some impacts on the environment. The parameters likely to be affected are air quality, water quality, soil quality; noise levels, etc. on account of gaseous emissions, liquid effluent discharges, resultant particulates, generation of solid wastes, etc will be discussed.

The baseline data generated from the above studies will be analyzed and will be compared with applicable standards prescribed by the CPCB. By this means, the impact whether positive or negative will be assessed and the environmental attributes requiring special attention for mitigating the negative impact, if any, will be identified. Also the areas, which fulfill the prescribed environmental norms and not requiring further improvements, will be specified. Both short-term and long term impacts particularly on sensitive targets such as habitat of endangered species of wildlife or mines, crops, historically / culturally important sites / monuments, centers with concentrated population in the study area will be established. Impact of the stack emissions on terrestrial flora will be scientifically documented based upon species composition of the area and their air pollution tolerance levels.

The impacts of project on various components of environment and the possible mitigation measures for mitigating the negative impacts were described in the following sections.

4.1 Impact on Land Use

- *Impact Assessment*

The land use impacts due to proposed project will be identified in terms of local land use planning efforts. The change in land use pattern of project site will also be identified. This includes visual impact, impact on forest, impact due to industrial growth and growth due to socio-economic factors.

- *Mitigation Measures*

The mitigation measures will be addressed towards restoration of land disturbed by the proposed project activities to the extent possible.

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4.2 Impact on Water Use

- *Impact Assessment*

The impacts of the proposed project due to water usage and wastewater discharges will be addressed covering the following:

- Ground water quality degradation due to likely solid waste disposal and sewage disposal;
- Agricultural productivity;
- Habitat conditions; and
- Recreation resources and aesthetics.

- *Mitigation Measures*

The mitigation measures will be addressed ensuring the present and anticipated future water requirements for various purposes. The measures also address the need to maintain or improve the existing Class of Water (as per IS: 2296) to ensure that the current/proposed uses are not impaired due to deterioration of the water quality.

4.3 Impact on Demography and Socio-Economics

- *Impact Assessment*

On the basis of the compiled information and the proposed employment and other benefits to the people of the study area as well as others, the likely socio-economic impacts of proposed project in post-project scenarios for demography, facilities and services, agricultural sector, civic infrastructure and basic amenities, industrial sector, economic status and health status of people, etc will be assessed.

- *Mitigation Measures*

Strategies to mitigate the negative impacts of the project will be developed for areas where negative impacts are projected to occur. The potential actions considered will include both policy and planning actions. The roles of different bodies in mitigation measures will be identified.

4.4 Impact on Soil

- *Impact Assessment*

Impacts on soil characteristics include destruction of soil profile, changes in soil productivity, increased erosion and subsequent loss of agricultural soils and land use changes. The impact assessment includes an analysis of susceptibility of the area to loss of agricultural production, change in crop pattern etc. Details on solid wastes from the proposed activity will be estimated. Impact assessment of disposal of solid waste will be addressed to the effect on human settlement, vegetation, ground water contamination etc.

- *Mitigation Measures*

Based on analysis of soil data, mitigation measures will be proposed which will avoid, minimize or compensate for significant adverse impact on soil characteristics.

4.5 Impact on Water Quality

- *Impact Assessment*

The assessment of potential impacts of the project will be carried out with respect to:

- ✓ Ground water quality degradation;
- ✓ Surface and river water quality degradation
- ✓ Agricultural productivity;

- ✓ Habitat conditions; and
- ✓ Recreation resources and aesthetics.

- *Mitigation Measures*

Considering the dependence of the people in the area on surface or ground water as sources for drinking purposes, the prevailing quality and extent of contamination due to the proposed project activities, the mitigation measures will include and the treatment required for meeting the effluent discharge standards specified under the Environment Protection Rules will be addressed. The disposal arrangements will be conceptually indicated.

4.6 Impact on Meteorology

- *Impact Assessment*

The climatological factors, which play an important role in the environmental analysis of the process of transportation, dilution and dispersion of pollutants, will be analyzed. Meteorological data will be collected to ascertain wind roses, atmospheric stability conditions and prevalence of inversion levels around the project site. This will enable to define the atmospheric conditions likely to prevail in the study area and use it as a basis for air quality modeling studies.

4.7 Impact on Ambient air Quality

- *Impact Assessment*

Emission inventory will be carried in the study area. A computer based internationally recognized mathematical air quality model (ISCST3) suitable for the region will be used to predict the concentration of SO_2, NOx & SPM due to the operation of the proposed plant. The results will be presented for short-term (24-hourly) concentrations in and around the project site. The dispersion model results will be included in the report using isopleths or other graphical methods, over laying a land use map of the surrounding area. The predicted air quality results will be compared with existing regulations.

- *Mitigation Measures*

Potential mitigation measures include the control measures at the source level and providing adequate stack heights. The measures to control the fugitive dust emissions such green belt development and sprinkling will be suggested.

4.8 Impact on Noise

- *Impact Assessment*

Sources of noise and its impact on the environment will be addressed. The noise level at varying distances for multi-sources will be predicted using Noise model. A comparison of measured noise (Leq) at monitoring locations to that of predicted noise levels (Leq) will be made and mitigatory measures will be recommended to conform to regulatory ambient air noise standards.

Baseline noise levels in different zones like industrial, residential and sensitive areas like hospitals, wild life habitation etc will be monitored. The potential noise level exposure will be determined and evaluate for acceptable limits of exposure.

- *Mitigation Measures*

The potential mitigation measures will be addressed to reduce noise levels by control at source, provision of greenery to absorb noise during its propagation, isolation of high noise generating sources, use of protective measures especially in high noise areas.

4.9 Impact on Ecology

Impacts on aquatic species especially during dry season will be assessed particularly those which are endangered. The parameters, which are of concern, are TSS, TDS, heavy metals, oil and grease, pH and temperature. The assessment will also include impacts of chlorinated organic chemicals. The impact of site preparation activities involving site clearing, excavation, earth moving, dewatering or impounding water bodies and developing burrow and fill areas will be assessed. Recommendations will be made to mitigate such adverse impacts as soil erosion and habitat loss. In addition, impact of fugitive and stack emissions will be assessed on the surrounding species of economic/genetic/biological importance.

5.0 ENVIRONMENT MANAGEMENT PLAN

A Rapid EIA Report based on three months field data generation will be prepared for the purpose of getting clearance from CECB and MoEF. EIA/EMP will be prepared based on one season data.

The Environment Management Plan (EMP) will include all the mitigatory measures proposed under each significant environmental attribute. Further, a suitable green belt development plan for the project site will be included in the EMP report.

6.0 RISK ASSESMENT & DISASTER MANAGEMENT PLAN AND OCCUPATIONAL HEALTH & SAFETY

Risk Assessment studies comprising sub-activities such as hazard identification, assessment and qualification of risk for suggesting risk mitigation measures based on Maximum Credible Accident (MCA) Analysis to be carried out for the proposed project. Preparation of the Risk Assessment Report will be followed by Disaster Management Plan (DMP) and Emergency Preparedness Plan (EPP) based on the quantitative Risk Assessment of the proposed activity and associated infrastructure for the project.

The study includes identification of process hazards, preliminary assessment of hazardous sections of the project and that of storage with recourse to fire and explosion index for these units, analysis of major inventories in process and storage and identification of major hazardous locations of the plant with recourse to GoI Rules, 1989.

The safety management and occupational health surveillance system in the existing and proposed mining activity will be reviewed and further appropriate measures will be recommended.

Occupational risk involved during construction and operation of the project will be assessed and necessary safety and protective measures were spelt out. The DMP include both onsite and off site emergency preparedness plans.

7.0 POST STUDY MONITORING PLAN

The Post Project Monitoring (PPM) plan will be prepared considering the following:

i. The proposed pollution control measures for air, wastewater and solid waste (hazardous/non-hazardous) disposal;

ii. Waste minimization, wastewater management, waste reuse and resource recovery, waste segregation to make the treatment and disposal cost-effective;

iii. The monitoring requirements for ensuring the statutory as well as process data is collected; and

iv. The organizational / institutional set-up required for effective environment management plan implementation and post-project monitoring will be suggested along with the budgetary requirements.