

REVISED APPLICATION FOR PRIOR ENVIRONMENTAL CLEARANCE

FOR

**Jamadoba Colliery
(Raw Coal Production of 0.34 MTPA)
Under Modernisation**

At

Jharia Coal Field, Dhanbad District, Jharkhand

Submitted by:

**M/s. Tata Steel Limited,
Jamadoba, Dhanbad District, Jharkhand**

June 2019

APPENDIX I
FORM I

(I) Basic Information

| Sr. No. | Item | Details | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---|---|--------|----------|-----------|---|-----------------|-----------------|----|-----------------|-----------------|----|-----------------|-----------------|----|-----------------|-----------------|----|-----------------|-----------------|----|-----------------|-----------------|----|-----------------|-----------------|----|-----------------|-----------------|
| 1 | Name of the project/s | Modernization of Underground coal mining project - Jamadoba Colliery in Jharia coal field, Dhanbad district, Jharkhand State | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Sr. No. in the schedule | 1(a) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Proposed capacity/area/length/tonnage to be handled/ command area/lease area number of wells to be drilled | Capacity of the mine: 0.34 MTPA (raw coal production). There will not be any increase in production after modernization of the underground mine. Mine Lease Area: 927.17 ha | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | New/Expansion/Modernization | Modernization | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Existing Capacity / Area etc. | 0.34 MTPA of raw coal / Mine Lease Area: 927.17 ha | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Category of Project i.e. 'A' or 'B' | '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 | <p>Coordinates:</p> <table border="1"> <thead> <tr> <th>Points</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>23° 41' 53.3" N</td> <td>86° 22' 09.5" E</td> </tr> <tr> <td>12</td> <td>23° 43' 17.0" N</td> <td>86° 22' 08.9" E</td> </tr> <tr> <td>15</td> <td>23° 43' 35.9" N</td> <td>86° 22' 16.5" E</td> </tr> <tr> <td>55</td> <td>23° 42' 43.1" N</td> <td>86° 23' 58.8" E</td> </tr> <tr> <td>63</td> <td>23° 41' 04.6" N</td> <td>86° 24' 46.4" E</td> </tr> <tr> <td>66</td> <td>23° 41' 06.6" N</td> <td>86° 24' 30.4" E</td> </tr> <tr> <td>89</td> <td>23° 41' 22.0" N</td> <td>86° 23' 08.8" E</td> </tr> <tr> <td>90</td> <td>23° 41' 21.4" N</td> <td>86° 22' 58.1" E</td> </tr> </tbody> </table> | Points | Latitude | Longitude | 1 | 23° 41' 53.3" N | 86° 22' 09.5" E | 12 | 23° 43' 17.0" N | 86° 22' 08.9" E | 15 | 23° 43' 35.9" N | 86° 22' 16.5" E | 55 | 23° 42' 43.1" N | 86° 23' 58.8" E | 63 | 23° 41' 04.6" N | 86° 24' 46.4" E | 66 | 23° 41' 06.6" N | 86° 24' 30.4" E | 89 | 23° 41' 22.0" N | 86° 23' 08.8" E | 90 | 23° 41' 21.4" N | 86° 22' 58.1" E |
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| | Plot / Survey / Khasra No. | Survey of India Topo sheet No.73 I/5,73 I/6, 73 I/9, 73 I/10 (1:50,000) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Village | Jamadoba | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Tehsil | Jharia | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | District | Dhanbad | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | State | Jharkhand | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Nearest railway station/airport along with distance in kms. | Jamadoba RS - 0.4 km, E Bhaga railway station - 1.3 km, NNE Ranchi Airport - 116 km, WSW | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Nearest Town, City, District Headquarters along with distance in kms. | Jharia town - 3.2 km, NNE Sindri town - 6.6 km, SE Dhanbad - 9.0 km, NNE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Village Panchayats, Zilla Parishad, Municipal Corporation, local body (complete postal address with telephone nos. to be given) | Mauza: Jorapokhar, Puttiya Dungri Village Block: Jharia PO: Jamadoba, PS: Jorapokhar, District: Dhanbad, Jharkhand, PIN: 828112 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Name of the applicant | M/s. Tata Steel Limited | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Registered Address | Bombay House, 24, Homi Mody Street, Fort | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Sr. No. | Item | Details |
|---------|---|--|
| | | Mumbai - 400 001 (Maharashtra) |
| 15 | Address for correspondence : | |
| | Name | Mr. Sanjay Rajoria |
| | Designation (Owner/Partner/CEO) | General Manager Jharia Division |
| | Address | Jharia Division, Tata Steel Ltd, PO: Jamadoba, Dist: Dhanbad, Jharkhand |
| | Pin Code | 828112 |
| | E-mail | gmo.jharia@tatasteel.com |
| | Telephone No. | 0326-2320262 |
| | Fax No. | 0326-2320268 |
| 16 | Details of Alternatives Sites examined, if any. Location of these sites should be shown on a topo sheet. | Coal mining being site-specific, no other sites were examined. This is the modernization of the existing underground mining project. |
| 17 | Interlinked Projects | Nil. The Jamadoba colliery would just supplement coal supplies to steel plant at Jamshedpur, Kalinganagar etc. steel plants after it is washed at Jamadoba washery. The clean coal from the Jamadoba washery is dispatched to Jamshedpur steel plant through railway siding. |
| 18 | Whether separate application of interlinked project has been submitted? | No |
| 19 | If yes, date of submission | Not applicable |
| 20 | If no, reason | It is a captive coal mine of Tata Steel to cater the needs of its steel plant at Jamshedpur, Kalinganagar etc. |
| 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? | No |
| | (b) The Wildlife (Protection) Act 1972? | No |
| | (c) The CRZ Notification, 1991? | No |
| 22 | Whether there is any Government Order / Policy relevant / relating to the site? | No |
| 23 | Forest land involved (hectares) | No. There is no forest land in the ML area. |
| 24 | Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? | No |
| | (a) Name of the Court | N/A |
| | (b) Case No. | N/A |

| Sr. No. | Item | Details |
|---------|---|---------|
| | (c) Orders/directions of the Court, if any and its relevance with the proposed project. | N/A |

(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.)

| S. 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 Jamadoba Colliery has a mine lease of 927.17 ha including beneficiation plant over 7.0 ha. Thus all operations are contained within this 927.17 ha. There is no forest land. Due to underground mining with stowing, no changes are anticipated from present to proposed land uses. |
| 1.2 | Clearance of existing land, vegetation and buildings? | No | It is an underground project. There is no forest land involved. There will not be any clearance of vegetation and buildings as part of modernization. |
| 1.3 | Creation of new land uses? | No | This is an existing underground coal mine. There will not be any creation of new land use as part of modernization. |
| 1.4 | Pre-construction investigations e.g. bore houses, soil testing? | Yes | The overall borehole density in Jamadoba Colliery (927.17 ha) comprising 182 boreholes is 19.6 Boreholes /Sq. Km. |
| 1.5 | Construction works? | No | Mine service buildings like office, stores, substation etc. exist. The existing colony will be sufficient to cater to the needs of the proposed modernisation. |
| 1.6 | Demolition works? | No | Not required. No R&R involved in this proposal |
| 1.7 | Temporary sites used for construction works or housing of construction workers? | No | Not required. Workmen will come from existing township and nearby villages. |
| 1.8 | Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations | Yes | Total land use includes the office building, bungalow, colony, villages, plantation and park, tank, drain, nallah, road network, railways and agricultural land. |
| 1.9 | Underground works including mining or tunneling? | Yes | An underground mine extracting coal through Bord & Pillar system. Pillar extraction is done with hydraulic sand stowing. Side Discharge Loader/Load Hand Dumper are used for loading of coal at coal |

| S. No. | Information/Checklist confirmation | Yes / No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data |
|--------|--|----------|---|
| | | | face and chain conveyor and belt conveyors for transport of coal to washery on surface. Two shafts are equipped with double deck cage. Shaft no.1 & 2 located East of Puttia jore have been sealed. Shaft no.2 located on the north-east of the property goes down to seam XIV. It is utilized as air intake shaft and also for winding of men and material. Pit no.3 is upto XVI seam and is fitted with main mechanical ventilator which serves as air upcast shaft. It is utilized as air intake shaft and also for winding of men and material. Shaft no.4 goes upto seam XVII only. It serves as air intake. |
| 1.10 | Reclamation works? | No | Not applicable since it is an existing underground mine seeking modernization. (Note: In order to protect the surface features and minimize the subsidence on the surface, after extraction of coal the voids created in underground are packed with sand through stowing) |
| 1.11 | Dredging? | No | Not applicable. |
| 1.12 | Offshore structures? | No | Not applicable. |
| 1.13 | Production and manufacturing processes? | Yes | Considering the geo-mining conditions, stripping ratio and surface constraints, underground method of mining has been chosen for excavation of coal at the rate of 0.34 MTPA. Based on this production rate, the mine life is expected to be 15 years. No manufacturing process is involved in producing coal. |
| 1.14 | Facilities for storage of goods or materials? | Yes | Facilities already existing will be utilized. Side Discharge Loader/Load Hand Dumper are used for loading of coal at coal face and chain conveyor and belt conveyors for transport of coal to washery on surface. Two shafts are equipped with double deck cage. One shaft is fitted with koepe winder. The washed coal from the washery is transported through dedicated railway to the steel plant at Jamshedpur. |
| 1.15 | Facilities for treatment or disposal of solid waste or liquid effluents? | Yes | The solid waste produced during drivage of tunnels is used for preparation bank head and filling of low lying areas. The water pumped-out will not have any pollutants added to it, except that of suspended particles/coal fines. This water is being treated for removal of suspended particles / coal fines. |

| S. No. | Information/Checklist confirmation | Yes / No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data |
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| | | | <p>Wastewater treatment plant situated at Jamadoba is provided with settling tanks and treatment facilities to produce drinking water. Apart from that mine water is being recycled for re-use in dust suppression and stowing.</p> <p>The sewage of residential houses are having septic tanks and soak pits for their treatment and disposal.</p> <p>One Sewage Treatment Plant (STP) of 200 KLD capacity has been installed at one of the residential colonies in JDC.</p> |
| 1.16 | Facilities for long term housing of operational workers? | Yes | 1156 houses/quarters of different types have been provided for employees and officers. There will not be any additional need of quarters. |
| 1.17 | New road, rail or sea traffic during construction or operation? | No | Not envisaged. |
| 1.18 | New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc? | No | Not envisaged. |
| 1.19 | Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements? | No | No existing transport routes are proposed for closure or diversion |
| 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 | Two small water channels, namely Puttiya Jore (Kari Jore) and Dungri Jore are flowing in the lease area. There will not be any diversion of streams. |
| 1.22 | Stream crossings? | Yes | Small water channels, namely Puttiya Jore (Kari Jore) and Dungri Jore, flow in the lease area. Puttiya comes to Jamadoba colliery (JDC) from north side and also forms part of northern boundary of JDC. It meets Damodar river with a western Course in mid portion of JDC. The Dungri Jore travels in the central east portion of lease from north to south and meets Damodar river at the southern tip of Jamadoba colliery lease against Bhowrah north colliery of Bharat Coking Coal Limited (BCCL). |

| S. No. | Information/Checklist confirmation | Yes / No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data |
|--------|--|----------|--|
| 1.23 | Abstraction or transfers of water from ground or surface waters? | Yes | <p>The pumping system for Jamadoba colliery has been designed to take care of the inflow of surface water due to precipitation falling within the area during the monsoon season and also on account of perennial ground water seepage, to enable the mining activity to continue round the year.</p> <p>Water pumped out of the mine is collected in the surface reservoirs and used for stowing and domestic purpose after treatment.</p> |
| 1.24 | Changes in water bodies or the land surface affecting drainage or run-off? | No | <p>Not envisaged.</p> <p>Presently, depillaring of pillars in the colliery is being carried out and shall be carried out only with sand stowing. This is to ensure negligible movement of surface. Hence, the surface water courses like Damodar river or jores would not be affected by the underground workings.</p> <p>All depillaring is undertaken in the JDC in association with sand stowing of goaves. Therefore, the strata movement is minimal. There is no impact on the ground water table in the area, the ground water resource of the area is not getting affected due to mining.</p> |
| 1.25 | Transport of personnel or materials for construction, operation or decommissioning? | Yes | <p>Individual transport by workmen from township to the site.</p> <p>The access to the coal seams were made through inclines to start with and later 5 shafts were sunk.</p> <p>Two numbers of electric winders are provided to facilitate transport of men and material from the surface to the underground workings.</p> |
| 1.26 | Long-term dismantling or decommissioning or restoration works? | Yes | <p>Mining Plan including Mine Closure plan has been approved by Ministry of Coal on 3rd May 2019 vide Lr.no.13013/1/2014-PCA dated 3rd May 2019.(Annexure-5)</p> |
| 1.27 | Ongoing activity during decommissioning which could have an impact on the environment? | No | <p>After extraction of coal the voids created in underground are packed with sand through stowing.</p> |
| 1.28 | Influx of people to an area in either temporarily or permanently? | No | <p>Influx of people is mainly for establishing business in and around the mine site.</p> <p>Mine is being planned to reach a production level of 0.34 MTPA. Presently, it is</p> |

| S. No. | Information/Checklist confirmation | Yes / No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data |
|---------------|--|-----------------|---|
| | | | employing 1096 persons on underground roll including officers, staff & daily rated persons. |
| 1.29 | Introduction of alien species? | No | Not envisaged. |
| 1.30 | Loss of native species or genetic diversity? | No | No loss of native species or genetic diversity is involved as it is an underground mine. |
| 1.31 | Any other actions? | No | None |

2.0 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):

| S. 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 | There is no forest land in the lease area. Total lease is covered by non-forest land. Of the 927.17 ha of lease area, 90.86 ha is Govt. land, 732.48 ha is private land, 2.85 ha is railway land and balance 100.98 ha is TSL land. |
| 2.2 | Water (expected source & competing users) unit: KLD | Yes | The industrial water needs are met from the mine pumping, which is a continuous process to keep the underground workings water free for mining operation. Domestic water supplies are from MADA and TSL's own water treatment facilities. Part of mine water is retained in surface reservoirs. The total water used for the purpose of stowing amounts to 2700 m ³ /day. Mine water is used for domestic requirement including drinking, domestic uses etc. |
| 2.3 | Minerals (MT) | Yes | A maximum of 0.34 MTPA of raw coal will be continued to be produced from this mine and sent to the steel plant at Jamshedpur after beneficiation. For this purpose, only a moderate production range of 0.24 MTPA to 0.34 MTPA has been planned. |
| 2.4 | Construction material – stone, aggregates, sand/soil (expected source – MT) | Yes | From local suppliers as and when required. |
| 2.5 | Forests and timber (source – MT) | No | There is no forest in the lease hold area. Wooden props and cogging sleepers for support of underground workings |

| | | | |
|-----|---|-----|--|
| | | | procured from Jharkhand forest department as per requirement. |
| 2.6 | Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW) | Yes | All equipments for this colliery are electrically operated equipment. Power supply is from DVC. Present power consumption is 130-140 KWH/ ton of raw coal production, which will continue to remain same. |
| 2.7 | Any other natural resources (use appropriate standard units) | Yes | Sand from the river beds is used for backfilling/stowing of the underground mined out areas. The theoretical coal: sand ratio is 1:1.5 |

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.

| S. 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 | Only 125 tons of explosives and 2,50,000 detonators will be used during induced blasting and the same will be stored, transported, handled and used in accordance with Indian Explosive Act 1884, MSIHC Rules 2000, Mines Act, 1952 and regulations there under. |
| 3.2 | Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases) | No | This is an operating old mine since 1918 and as such the coal mining is a very old industry in and around Jharia coal field. As such, there will be no new disease pattern due to the modernization project. |
| 3.3 | Affect the welfare of people e.g. by changing living conditions? | Yes | The project is having positive impact on the socio-economic environment. It helps sustain the development of the area through development of infrastructural facilities, generation of direct and indirect employment opportunities, health services, schooling and drinking water facilities to employees and local people. The following measures are being practiced to improve quality of life of the people and will be further enhanced: <ul style="list-style-type: none"> • Tree plantation, development & maintenance of parks & gardens • Provision of recreational centre/community centre • Provision of clean drinking water • Personal hygiene and small dispensary |

| S. No. | Information/Checklist confirmation | Yes /No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data |
|---------------|--|----------------|---|
| | | | <ul style="list-style-type: none"> Well lighted internal roads Sewerage systems in the colonies Company is taking all necessary steps to help and create self-employment opportunities for nearby villagers, to create health awareness, technical guidance for agriculture, water conservation, promotion of sports activities, medical assistance through medical camps & mobile vans etc. Maintenance of primary schools & patronizing of high schools. Provision of facilities & coaching for the promotion of sports. Training of women in the near by villages for formation of self-help groups and generation of income. It has therefore enhanced the socio-economic environment of the area. |
| 3.4 | Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc., | No | Not envisaged. |
| 3.5 | Any other causes | No | Nil |

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

| S. 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 | No | Not applicable since it is an underground mine. |
| 4.2 | Municipal waste (domestic and or commercial wastes) | Yes | The domestic solid waste generated is being disposed through municipal corporation of Dhanbad. |
| 4.3 | Hazardous wastes (as per Hazardous Waste Management Rules) | Yes | <p>Hazardous wastes are disposed-off to registered recyclers as per Hazardous Wastes Rules, 2016.</p> <p>Details of Hazardous Wastes generated per annum:</p> <ol style="list-style-type: none"> Used Oil-4000 liters Oily Cotton Waste-50 kg. Cap lamp batteries - Nil (Buy back policy) |

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|------|---|-----|--|
| 4.4 | Other industrial process wastes | Yes | Steel Scraps are sold off to various vendors. |
| 4.5 | Surplus product | No | Not applicable. |
| 4.6 | Sewage sludge or other sludge from effluent treatment | Yes | Sewage sludge is used in plantation sites. |
| 4.7 | Construction or demolition wastes | Yes | Demolition at the end of the project will be carried out as per mine closure plan. |
| 4.8 | Redundant machinery or equipment | No | After Survey and inspection for subsequent disposal/ reuse of redundant machinery |
| 4.9 | Contaminated soils or other materials | No | Not envisaged |
| 4.10 | Agricultural wastes | No | Not applicable |
| 4.11 | Other solid wastes | No | Not envisaged |

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

| S. 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 | No | Diesel used in transportation vehicles will generate pollutants like CO ₂ , CO, SO ₂ , HC and NO _x . There is 1 DG set of 6 MVA, installed for operating winders and main mechanical ventilator in case of emergency. |
| 5.2 | Emissions from production processes | Yes | Since the mining activities are restricted to underground only, there will not be any significant impact on surface air quality. However, the mine exhaust contains minor % of methane and CO ₂ which are easily diffused in the ambient atmosphere. The mine is provided with online sensors for monitoring the concentrations of CO and methane within the mine. The return air analysis of the Jamadoba colliery is as follows: O ₂ - 20.4- 20.8 % CO ₂ -Nil CH ₄ -Nil CO -Nil |
| 5.3 | Emissions from materials handling including storage or transport | No | No major materials are involved in mining operations. Hence, emissions from materials handling including storage or transport are minimal. The raw coal is washed in the adjoin washery of TSL and the washed coal is being transported to |

| | | | |
|-----|--|----|--|
| | | | TSL-Jamshedpur, Kalinganagar etc. through railway. |
| 5.4 | Emissions from construction activities including plant and equipment | No | Very negligible during construction period. |
| 5.5 | Dust or odours from handling of materials including construction materials, sewage and waste | No | Not envisaged. |
| 5.6 | Emissions from incineration of waste | No | Not applicable. However, incinerator is installed at the central hospital, TSRDS for treatment of bio-medical waste. |
| 5.7 | Emissions from burning of waste in open air (e.g. slash materials, construction debris) | No | Not applicable. |
| 5.8 | Emissions from any other sources | No | Not envisaged. |

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

| S. 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 | In underground mining, there is no significant impact on the noise levels on ambient. The only increase in noise level is due to surface mine ventilation fan, pit head coal handling arrangements and vehicular movement. Greenbelt has been developed around the fan house to attenuate any increase in noise levels. |
| 6.2 | From industrial or similar processes | No | Not applicable. |
| 6.3 | From construction or demolition | No | Negligible |
| 6.4 | From blasting or piling | No | No blasting is being done on surface of the mine. Underground blasting causing noise and vibration is localized in nature and of very short duration. |
| 6.5 | From construction or operational traffic | Yes | Some noise is generated due to transport of sand for backfilling/stowing purpose and is minimized by regular upkeep and maintenance of the trucks/dumpers. |
| 6.6 | From lighting or cooling systems | No | Not applicable. |
| 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:

| S. 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 | Not applicable. |
| 7.2 | From discharge of sewage or other effluents to water or the land (expected mode and place of discharge) | Yes | Water pumped out of the mine is collected in the surface settling tank/reservoirs and used for domestic purpose and stowing. There is no industrial effluent discharge to land or water bodies. Domestic sewage is being handled through septic tank and soak pit arrangement. |
| 7.3 | By deposition of pollutants emitted to air into the land or into water | No | Not 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 envisaged |

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

| S. 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 | Measures taken to avoid accidents due to blasting are as under: 1) Considering gassiness of the seam only permitted explosive are used. 2) Explosive are transported to underground in approved containers and kept in reserve stations only. 3) Preparation of charges and charging, stemming of holes is carried out under personal supervision of competent person. 4) Approved type of shot firing tools and apparatus is used. 5) Blasting with card system is practiced when two faces are within 10 m of each other. |

| S. No. | Information/Checklist confirmation | Yes/ No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data. |
|--------|------------------------------------|---------|--|
| | | | <p>6) The zone of influence of blasting is determined and it is ensured that no body remains in the blasting zone while blasting is going on.</p> <p>7) Checking for presence of methane is done before drilling of holes, charging and blasting.</p> <p>Blasting is carried out strictly as per the provisions of Coal Mines Regulations and as per the Circulars issued by the Directorate General of Mines Safety (DGMS).</p> |
| 8.2 | From any other causes | Yes | <p>Measures to prevent accidents due to roof fall and other causes :</p> <ol style="list-style-type: none"> 1) Systematic support rule is strictly implemented. 2) Freshly exposed roof is supported as soon as it is exposed by roof-bolts with cement and resin capsules. 3) No person is allowed to work under unsupported roof. 4) Geologically disturbed areas are taken care of by providing additional supports. 5) Proper house keeping is done to avoid fall of persons and thereby getting injured. 6) Provisions of safety belts for person working at height. 7) Proper care is taken to check fall of objects from height. 8) Basic training, refresher training and special training is provided to the employees as per MVT Rules and unsafe acts and practices are explained to them to prevent accident. <p>Mine Fire: - Panel systems of development of the seams are followed in all the seams. Facilities to deal with fire, as mandated by CMR, 1957 and DGMS circulars are maintained. Checking of isolation stoppings and ascertaining condition of atmosphere inside sealed off areas is done as required by the CMR, 1957 and DGMS circulars.</p> <p>Mine Subsidence: - Depillaring of panels is done strictly as per the conditions laid</p> |

| S. No. | Information/Checklist confirmation | Yes/ No | Details thereof (with approximate quantities/rates, wherever possible) with source of information data. |
|---------------|---|----------------|--|
| | | | down in the Permissions granted by DGMS. Backfilling/stowing of the worked out areas is done regularly and methodically. Regular monitoring of surface subsidence is done with the help of CIMFR, Dhanbad. |
| 8.3 | Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)? | Yes | Emergency Preparedness & Response Plan has already been made and being implemented as and when required. |

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

| S. 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 | Yes | Mining operations and associated activities do have socio-economic impacts of direct and indirect consequences. The mining and allied activities is causing increased job opportunity at local as well as regional levels, raising the economical status of the people and has consequently lead to overall development of the area. The existing mine is very old and operating and the socio-economic development has already been stabilized in the region. The project activities with provisions of various amenities and infrastructural facilities are improving the general socio-economic scenario of the region. Availability of coal in the area is having a beneficial impact on the ancillary industries leading to business employment opportunities and improved economic status of the region. The community health status and the sanitation facilities have improved with the improvement in medical facilities. |
| 9.2 | Lead to after-use of the site, which could have an impact on the environment | Yes | With the standard mining operation, the surface area will continue to support vegetation, commercial and infrastructure activities. |

| S. No. | Information/Checklist confirmation | Yes/No | Details thereof (with approximate quantities /rates, wherever possible) with source of information data |
|--------|---|--------|---|
| 9.3 | Set a precedent for later developments | Yes | Mine plan along with mine closure plan has already been prepared. The implementation of mine closure plan will be done at the end of mining. |
| 9.4 | Have cumulative effects due to proximity to other existing or planned projects with similar effects | Yes | The Jharia coal field is very old and established coal belt with many opencast and underground mining projects. In addition to TSL mines, Bharat Coking Coal Limited (BCCL) is operating many coal mines in the region. However, no new green field projects are envisaged. |

(III) Environmental Sensitivity

| S. No. | Information/Checklist confirmation | Yes/No | Details thereof (with approximate quantities /rates, wherever possible) with source of information data |
|--------|--|--------|---|
| 1 | Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value | No | No areas protected under international conventions, national or local legislation exist. |
| 2 | Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests | No | <p>No such areas which are important or sensitive for ecological reason exist.</p> <p>Forests</p> <p>Protected forests exist in the study area:</p> <ol style="list-style-type: none"> 1 PF near Parbatpur – 4.3 km, SW 2 PF near Simultanr– 5.6 km SSW 3 PF near Lagla – 6.9 km, S 4 PF near Chandaha – 7.6 km, SW 5 PF near Lututanr, 9.2 km. S 6 PF near Kusumkhundi, 9.5 km, SSW 7 PF near Sabaldih – 9.4 km SSW 8 PF near Baghale, 9.7 km, S <p>Rivers/Nalas</p> <ol style="list-style-type: none"> 1 Kariljhor - Within ML area 2 Dungri Jhor- Within ML area 3 Damodar River – Within ML area 4 Damohani nadi/Kashijora – 2.2 km, E 5 Jarian Nala – 4.5 km, WNW 6 Ijri Nadi – 5.4 km, S 7 Gobai nadi – 7.9 km, SE 8 Katri Nadi – 8.0 km, WNW 9 Khudia Nadi – 8.2 km, WNW <p>Port</p> <p>Haldia Port, WB – 251 km, SE</p> |

| S. No. | Information/Checklist confirmation | Yes /No | Details thereof (with approximate quantities /rates, wherever possible) with source of information data |
|--------|---|---------|---|
| 3 | Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration | No | No such areas exist. |
| 4 | Inland, coastal, marine or underground waters | No | Not applicable |
| 5 | State, National boundaries | No | State boundary of Jharkhand- West Bengal is at around 10 km of aerial distance from Jamadoba site. |
| 6 | Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas | No | SH-12 – 0.3 km, E NH-32, 4.0 km, NNW No such areas which are important or sensitive for ecological reason exist. |
| 7 | Defense installations | No | No defense installations exist |
| 8 | Densely populated or built-up area | Yes | Jharia town – 3.2 km, NNE Sindri town – 6.6 km, SE |
| 9 | Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities) | Yes | Sindri Hospital 17 km, Tata Central Hospital, Jamadoba 1 km, BIT Sindri (Engineering college) 13 km, Carmel School/Denobili School/ DAV School 5 km. |
| 10 | Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals) | Yes | The Jharia coalfield has reserves of Coking-coal. Forests Protected forests exist in the study area: 1 PF near Parbatpur – 4.3 km, SW 2 PF near Simultanr – 5.6 km, SSW 3 PF near Lagla – 6.9 km, S 4 PF near Chandaha – 7.6 km, SW 5 PF near Lututanr, 9.2 km. S 6 PF near Kusumkhundi, 9.5 km, SSW 7 PF near Sabaldih – 9.4 km SSW 8 PF near Baghale - 9.7 km, S Rivers/Nalas 1 Kariljhor - Within ML area 2 Dungri Jhor- Within ML area 3 Damodar River – Within ML area 4 Damohani nadi/Kashijora – 2.2 km, E 5 Jarian Nala – 4.5 km, WNW 6 Ijri Nadi – 5.4 km, S 7 Gobai Nadi – 7.9 km, SE 8 Katri Nadi – 8.0 km, WNW |

| S. No. | Information/Checklist confirmation | Yes /No | Details thereof (with approximate quantities /rates, wherever possible) with source of information data |
|--------|---|---------|---|
| | | | 9 Khudia Nadi – 8.2 km, WNW |
| 11 | Areas already subjected to pollution or environmental damage. <i>(those where existing legal environmental standards are exceeded)</i> | No | No such areas already subjected to pollution or environmental damage exists. |
| 12 | Areas susceptible to natural hazard which could cause the project to present environmental problems <i>(earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)</i> | No | No such area susceptible to natural hazard exists |

*** Note :** Details are provided on the basis of reconnaissance, data and preliminary plan.

"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 any part of the data and information submitted is going 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 : 27.06.2019

Place : DHANBAD



Signature of the applicant

NOTE:

1. The projects involving clearance under coastal Regulation zone Notification, 1991 shall submit with the application a C.R.Z map 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 CRZ.

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-a-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC)."

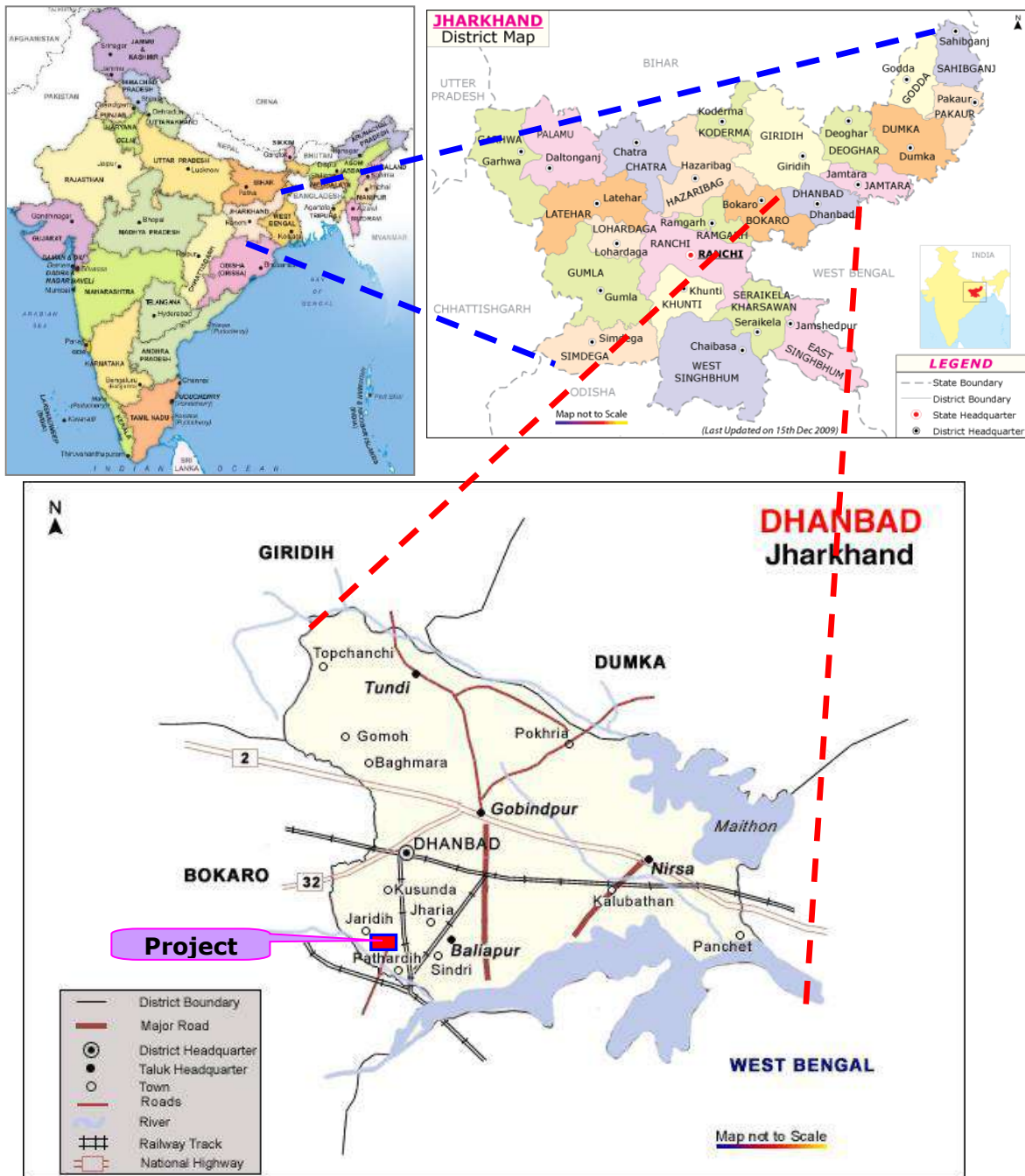
3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory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

(IV) Proposed Terms of Reference for EIA studies

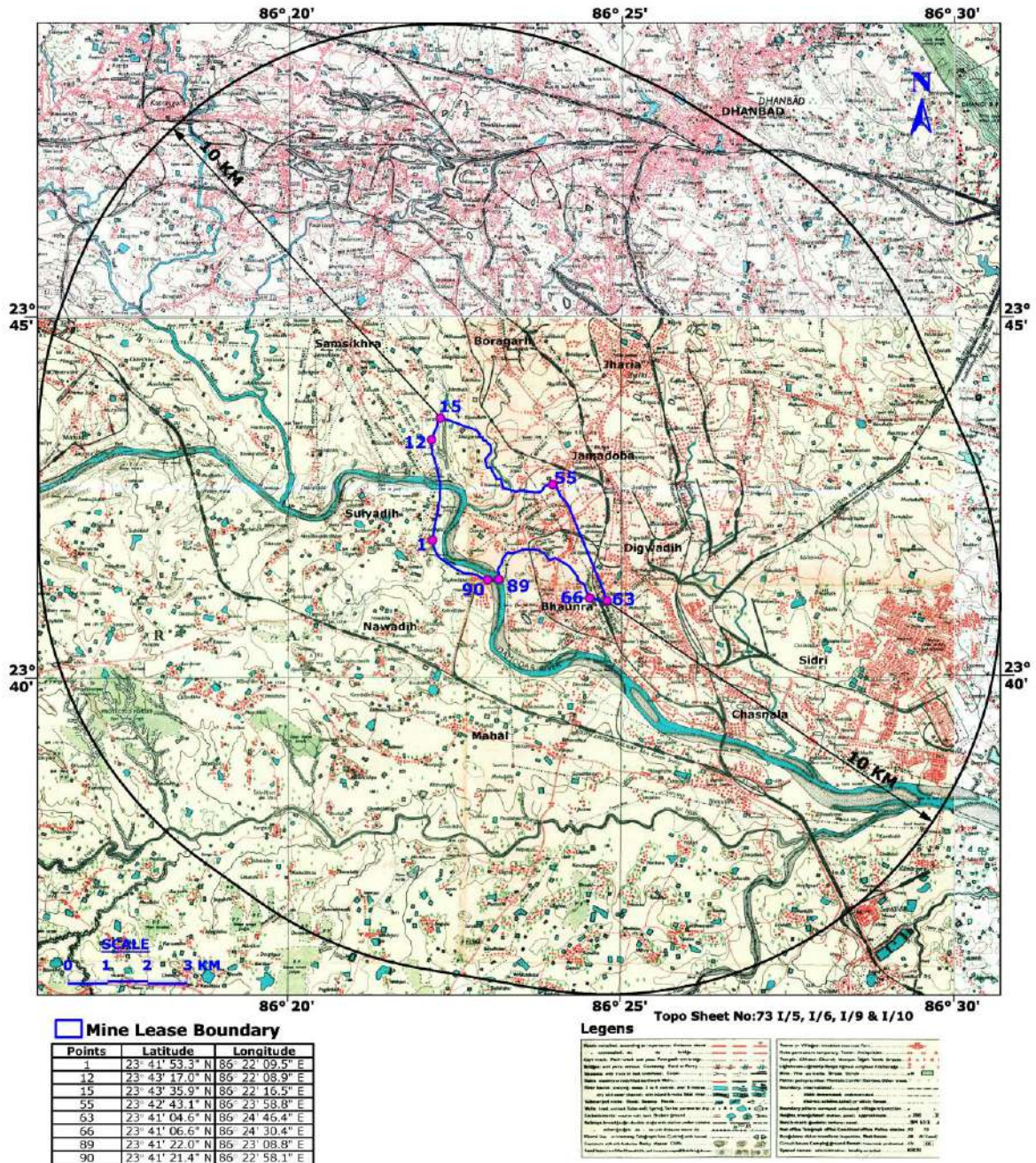
EIA/EMP report will be prepared on the basis of the standard guidelines of Ministry of Environment and Forests Gazette Notification No. S.O. 1533 dated 14th September 2006 and its subsequent amendments.

The TOR was granted vide Lr.No.J11015/91/2017-IA.II(M) dated: 30th November, 2017 **(Annexure-4)**.

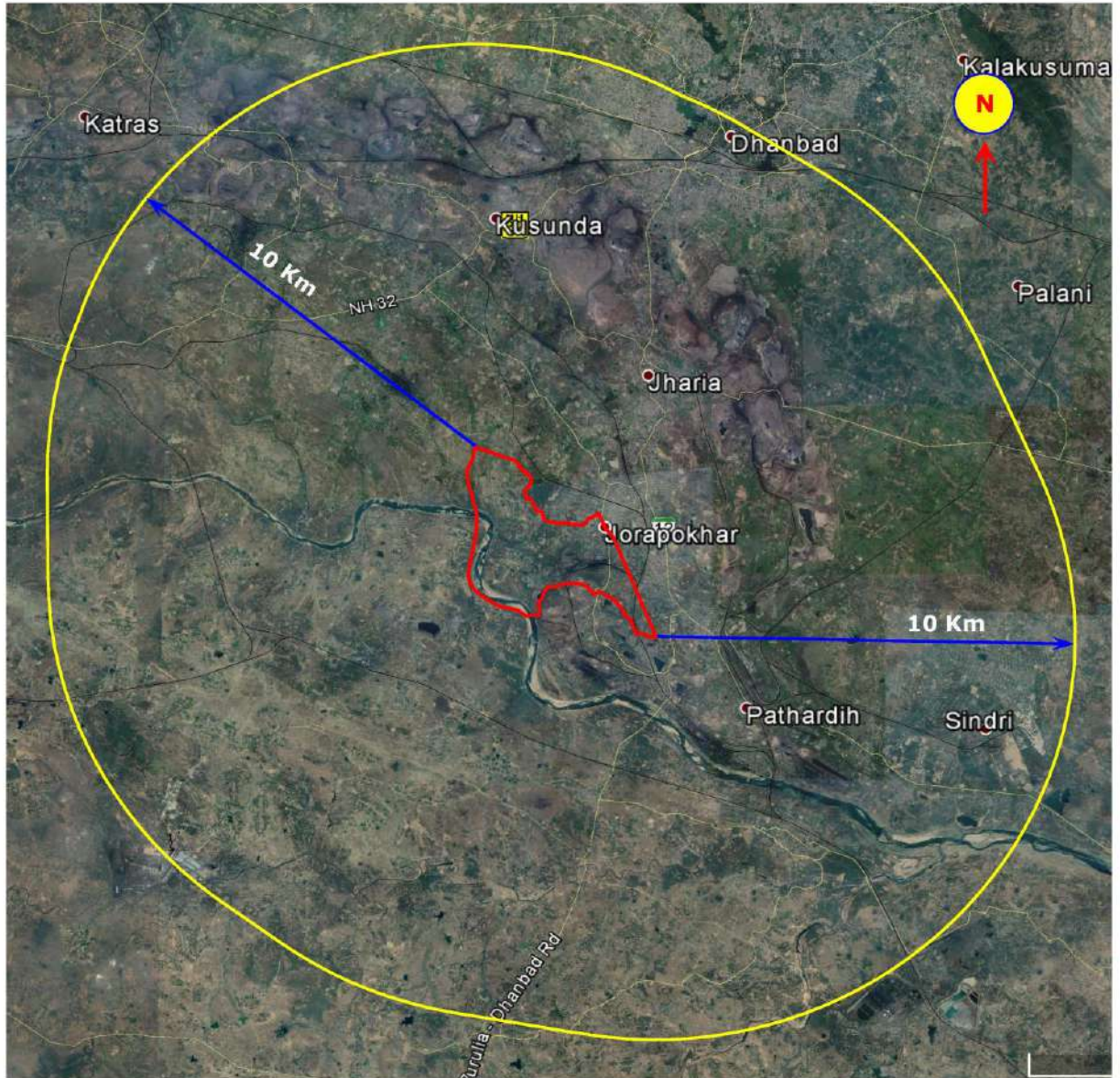
ANNEXURE-I
INDEX MAP



ANNEXURE-II STUDY AREA MAP



ANNEXURE-III
GOOGLE MAP



Legend
— Mine Lease Boundary