

# RUNGTA MINES LIMITED

Rungta House, Chaibasa, District West Singhbhum,  
Jharkhand - 833 201

## EXECUTIVE SUMMARY

OF

DRAFT

ENVIRONMENTAL IMPACT ASSESSMENT  
AND  
ENVIRONMENTAL MANAGEMENT PLAN

OF

DHENKANAL STEEL PLANT

AT

VILLAGES: JHARBANDH, GALPADA & TARKABEDA  
DISTRICT: DHENKANAL IN ODISHA  
(PRODUCTION: 2.85 MTPA STEEL,  
AREA: 674.765 ACRES)

DECEMBER, 2018  
(Issue 1, Rev 0)

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An ISO 9001:2015  
approved company

## **1.0 INTRODUCTION**

### **1.1 General background**

Rungta Mines Ltd. (RML) is proposing to install a 2.85 million tonnes per annum steel plant (MTPA) at villages Jharbandh, Galpada and Tarkabeda, district Dhenkanal in Odisha. It will be established in two phases of 1.45 million tonnes per annum followed by 1.4 million tonnes per annum. Direct reduced iron (DRI) and hot metal by Mini Blast Furnace (MBF) will be manufactured. These will be inputs into steel melting shop. There steel production will be through induction furnace and electric arc furnace routes. Manufacturing facilities in proposed plant includes beneficiation, pelletization, coal washery, DRI kilns, mini blast furnace, sinter, coke oven and steel melting shop, producer gas plant and cement plant. Total cost of the project will be Rupees 7837.9 crores. The first phase will cost Rupees 3888.63 Crores while second phase will cost Rupees 3948.27 Crores. The entire project will be implemented in 84 months from date of receipt of environmental clearance. The first phase in 48 months followed by second phase of 36 months.

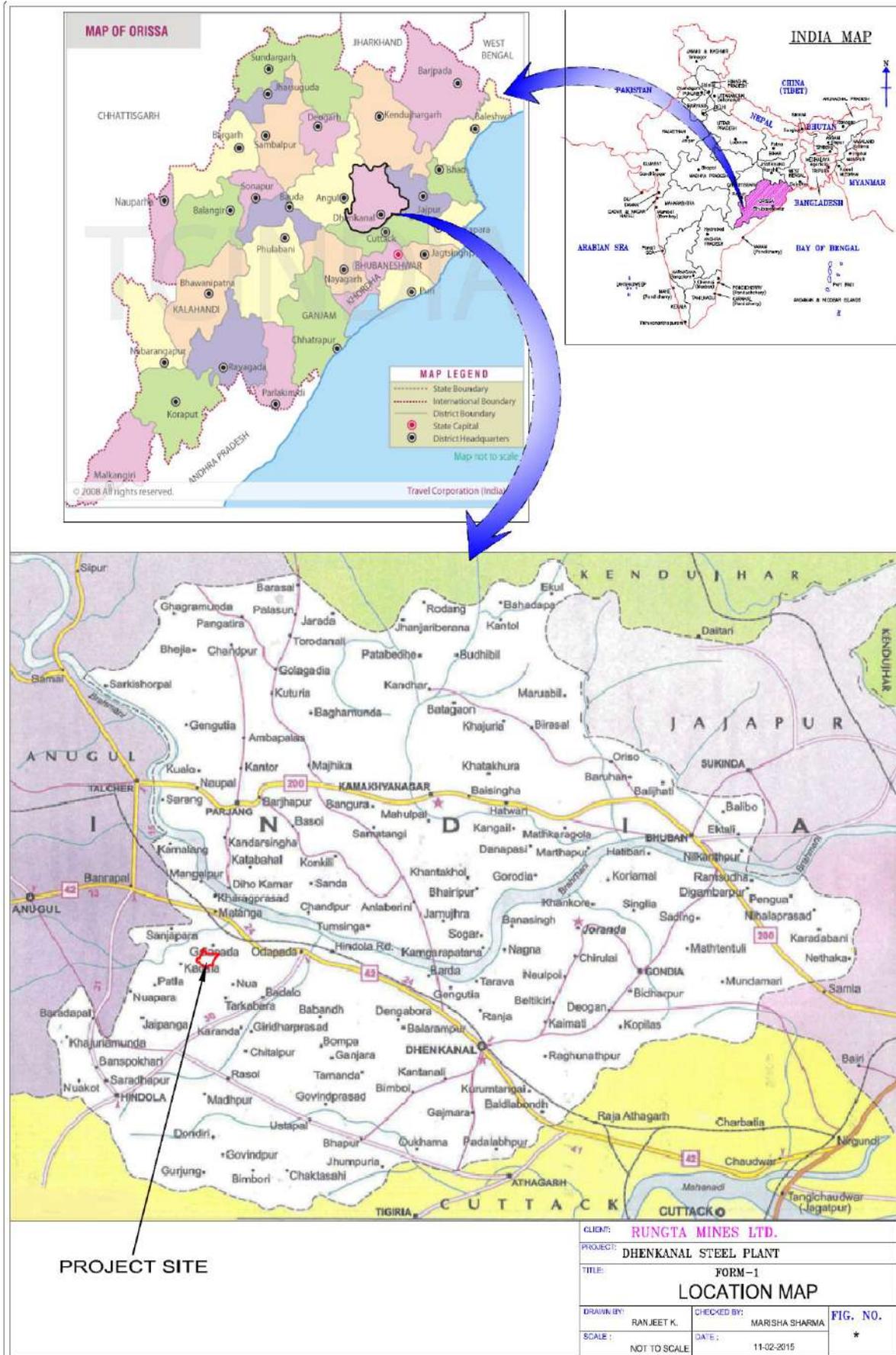
Within the same land parcel, the company had already received an environmental clearance no. J-11011/241/2009-IA.II(I) dated 02.08.2010 and its amendment dated 25.01.2011 and 20.09.2018. The environmental clearance was for a capacity of 1.9 MTPA steel. The plant construction was started in 2017 only with one DRI kiln of 1X500 TPD, 2X20 T IF with CCM and a 25 MW CPP. The extension of validity of the above mentioned environmental clearance was granted on 07.07.2017 & 20.09.2018. It was extended upto 01.08.2020. Since the under construction plant shall not get completed within the validity period of the environmental clearance, the Company applied to Ministry of Environment, Forest and Climate Change and obtained fresh Terms of Reference for a larger production of 2.85 MTPA steel. The plant configuration for 2.85 MTPA steel is such that it includes the under construction units.

### **1.2 Location and communication**

The proposed plant will be located in villages Jharbandh, Galpada and Tarkabeda of district Dhenkanal in Odisha. The location of plant is given in **Fig 1**. Based on coordinates from Google Earth Pro, the plant boundary lies between latitude 20° 45' 14" to 20° 46' 24" N and longitude 85° 17' 12" to 85° 18' 45" E.

The proposed plant is accessible by all weather road from the district headquarter Dhenkanal (36 km) and town Angul (22 km). The site is located on NH-55 (2.4 km aerially), which connects Bhubaneswar to Angul. The nearest railway station is Meramandali at a distance of 3.6 km. The nearest airport is at Bhubaneswar, which is approximately 150 km from the site.

FIG 1.1: LOCATION MAP



## 2.0 PROJECT DESCRIPTION

Manufacturing facilities of the proposed plant with capacities is given in table below:

Sl. No.	Plant facilities	Units	Phase 1	Phase 2	Total
1	Beneficiation Plant	MTPA	2.7	2.7	5.4
2	Pelletisation Plant	MTPA	1.47	1.47	2.948
3	Coal Washery	MTPA	2.616	1.524	4.141
4	DRI Plant	MTPA	1.001	0.546	1.547
5	Mini Blast Furnace	MTPA	0.567	0.992	1.559
6	Sinter Plant	MTPA	0.612	1.051	1.663
7	Coke Oven Plant	MTPA	0.420	0.70	1.12
8	Steel Melting Shop	MTPA	1.232	1.232	2.464
8.1	Steel Melting via Induction Furnace Route	MTPA	0.539	-	0.539
8.2	Steel Melting via Electric Arc Furnace-Vacuum Degassing-Argon Oxygen Decarburization Route	MTPA	0.693	1.232	1.925
8.3	Continuous Casting Machine (Billets/Bloom Caster/Slab)	MTPA	1.207	1.207	2.415
9	Finished Product Facilities	MTPA	1.450	1.400	2.850
9.1	Rolling Mill (TMT/ Flat/ Round/ Wire Rod/ Structural Mill/ others)	MTPA	0.800	0.800	1.600
9.2	Strip Mill/Sheet/Coil/ Wire & Bar Mill/Wire Rope	MTPA	0.450	0.400	0.8500
9.3	Ductile Pipe Plant	MTPA	0.200	0.200	0.400
10	Producer Gas Plant	Million Nm <sup>3</sup> /Annum	240	240	480
11	Oxygen Plant	MTPA	0.035	0.063	0.098
12	Lime Plant	MTPA	0.105	0.1995	0.3045
13	Cement Plant	MTPA	0.884	0.802	1.686
14	Captive Power Plant	MW	217	168	385
14.1	Waste Heat Recovery Boiler (WHRB) based	MW	67	68	135

Sl. No.	Plant facilities	Units	Phase 1	Phase 2	Total
	Captive Power Plant (CPP)				
a	DRI Kiln exit gas based	MW	44	24	68
b	MBF Gas based	MW	11	20	31
c	Coke Oven Gas based	MW	12	24	36
14.2	Circulating Fluidised Bed Combustion (CFBC) based CPP	MW	150	100	250

## 2.1 Plant layout

The proposed steel plant shall be constructed in a plot of land measuring 674.765 acres. Out of this total land, 273.685 acres shall be under plants, facilities & tailing pond, 51.81 acres under stock yards & railway siding, 55.2 acres for solid waste, 222.67 acres for green belt & plantation, 1.4 acres for administration & other buildings, 30 acres for water reservoir and 40 acres for roads. Green belt will comprise 33% of the project area.

## 2.2 Process Description

**Iron ore Beneficiation Plant (2X2.69 MTPA):** It mainly involves wet grinding of iron-ore fines and separation of gangue to improve the quality of iron ore. The product from the washery shall be fed into the pellet plant. The rejects will be sent to Tailing pond.

**Pelletization plant (2X1.2 MTPA):** The pellet plant will produce oxide pellets suitable for use in Blast furnace. Pellets are heat hardened balls produced from concentrates and natural iron ores of different mineralogical and chemical composition. The pellets have improved properties for iron making. Pelletization process involves feed preparation, green ball formation, pellet induration and product dispatch.

**Coal washery (1X400 TPH + 1X235 TPH):** The raw coal needs crushing and washing to reduce the ash content before it can be used in DRI kilns and producer gas plant. Therefore, a three product coal washery has been provided. It consists of a coal crusher, screening station and washing equipment. Raw coal fed to the washery. Washed coal recovered will be 50%, middlings will be 42.5% and rejects will be 7.5%.

**Direct reduced iron (DRI) plant (2X500 TPD + 4X600 TPD):** Main raw materials - iron ore, coal and dolomite are fed to the ground hoppers with the help of pay loaders and tippers. They are carried away by belt conveyors to the crusher house and thereafter fed to kiln. Iron Ore is reduced by heating with coal in the Rotary Kiln at a temperature of about 1000°C. After reduction, products are cooled in a drum type rotary cooler.

Product is then separated into DRI or Sponge Iron and Char by magnetic separation. In rotary cooler, product is cooled by indirect water spray.

**Blast Furnace (1X600 + 1X1050 CUM):** The purpose of a blast furnace is to chemically reduce and physically convert iron oxides into liquid iron called "hot metal". Iron ore, coke and limestone are fed into the top of the blast furnace. Preheated air is blown into the bottom. The raw materials descend to the bottom of the furnace where they become liquid iron (final product) and liquid slag (waste). These are drained from the furnace at regular intervals. The blast furnace flue gas will be passed through Waste heat Recovery Boilers for power generation. Thereafter, the gas will be used as fuel in blast furnace stove and elsewhere after cleaning in Gas Cleaning Plant. Unutilised gas will be flared.

**Steel melting shop:** Steel melting shop will have (1) 7X 20 T induction furnaces (IF) with 4X20 T ladle furnaces (LF) and (2) 1X90 T + 1X160 T electric arc furnaces (EAF) with 1X90 T + 1X160 T ladle furnaces in it. Induction furnace works on the principle of induction melting of scrap/sponge iron with the help of electric power. The electric arc furnace, the necessary heat is generated by electrical power. Electric arc is generated between electrodes which heats the metallic charge. In both furnaces, the melted contents separate into liquid metal and slag. The slag is removed and considered as waste. The liquid metal is sent to the continuous casting machine (CCM) where semi-finished product is made.

**Rolling mill (5X0.2+ 2X0.3 MTPA):** Semi-finished product from the CCMs of IF and EAFs as well as from outside purchase will be reheated and converted into finished products such as TMT, Flat, Round, Wire Rod, Structural and others products.

**Strip Mill (1X0.4 + 1X0.45 MTPA):** Semi finished product from the CCMs of EAF shall be sent to the strip mill where it will be converted into finished products such as Strip, Sheet, Coil, Wire, Bar and Wire Rope. Reheating furnace has also been provisioned at strip mill.

**Ductile Pipe Plant (2X0.2 MTPA):** Ductile pipe plant will receive hot metal directly from the MBF and manufacture finished product comprising of ductile pipes. However, as a back up measure, provision of reheating furnace has also been made.

**Sinter Plant (1X64+1X110 sq.m.):** Sintering is an agglomeration process of iron ore fines/ blue dust, coke breeze and fluxes. The iron ore dusts collected from other units and pollution control equipments will be utilised as raw material for sinter. Thus, utilising maximum solid waste from within the plant. The sinter generated will be 100% utilised in MBF.

**Coke oven plant (16 X 70,000 TPA):** Raw coal will be crushed in a crusher into powdered form and charged in the oven for carbonisation. The volatile matter in raw coal gets released in the form of gas and gets burnt in the oven as well as in the flues. After the completion of the carbonization

process, raw coal get converted to coke within 36 to 38 hours. The coke is then pushed out from the oven and quenched by water. Coke will be utilised in MBF and sinter plant. Balance leftover shall be sold in the market.

**Captive Power Plant (CPP): (1) WHRB:** 135 MW waste heat recovery boilers based power plant is proposed to utilize the heat from gases exiting DRI kilns, blast furnace and coke oven. **(2) CFBC:** 250 MW power plant based on coal fines, middlings from washery and char from DRI kilns has been proposed. The power generated from the CPP will meet the requirement of the steel plant.

**Cement Plant (1X2600 + 1X2300 TPD):** Limestone will be the primary raw material for clinker making. Along with coal, it will be fed into the clinker kiln and the manufactured clinker will be sent to cement mill. At cement mill, Portland Pozzolana Cement (PPC) using fly ash and Portland Blast Furnace Slag Cement (PBFS) using blast furnace slag shall be manufactured and sold in the market.

For material handling within plant premises a coal handling system, ash handling system, roads etc shall be provided. Water requirement in various locations within the plant will be supplied through a circulating water system with a cooling tower, make up water system and blow down system.

### 2.3 Raw material, power and water

Major raw material and fuel requirement for project are Iron Ore (5.4 MTPA from own mines/other private mines), BF Grade Iron Ore (0.657 MTPA from own mines/other private mines), non coking coal (5.94 MTPA domestic/Import) and Coking Coal (1.69 MTPA from South Africa). Other raw material required is limestone, dolomite, bentonite, clay, silica component, flocculant, gypsum, quartz, silica, pig iron and semi finished products.

Fuels required in various units will be coking and non coking coal, coke breeze & fines, Low Sulphur Heavy Stock (LSHS) oil, coke oven gas and MBF gas.

Total power requirement of the plant for operating different facilities is estimated as 385 MW. It shall be sourced from Captive Power Plant. For emergency backup total 24 MVA DG sets are proposed.

The total water requirement for the plant is estimated as 2950 m<sup>3</sup>/hr. Industrial water shall be sourced from Brahmani River.

### 2.4 Manpower

The manpower requirement is 2600 persons for various activities like plant operation, loading, unloading, handling, transportation, general cleaning, horticulture and other miscellaneous works inside the plant. Three shifts working for 350 days is planned.

## 2.5 Site services

Infrastructure facilities such as administrative office, rest rooms, canteen, first aid centre, etc. will be provided.

## 3.0 PRESENT ENVIRONMENTAL SCENARIO

The project area has been referred to as the “core zone” while the area upto 10 km radius of the project has been referred to as the “buffer zone”. Together they comprise the study area which can be seen **Fig 2**.

### 3.1 Topography and drainage

**Topography:** The project area is comparatively flat terrain and elevation is approximately 75-95 m AMSL. The study area represents a flat to gentle, undulating sloping topography with few scattered hillocks. The surface elevation in buffer zone varies from 60 m to about 312 m.

**Drainage:** The proposed project site is located 1.5 km east of Nigra (Lingra) Nala and 7.35 km south of Brahmani River. Two first order seasonal drains originate from within plant boundary and flow out from the north western and north boundaries. The drainage of the area is controlled by the south-easterly flowing Brahmani river situated in the north-eastern part of the study area. The river is fed by various seasonal sub-parallel nalas like Nigra, Kisinda Jhor, Kusumder Jhor, Bade Jhor etc.

### 3.2 Climate and micro-meteorology

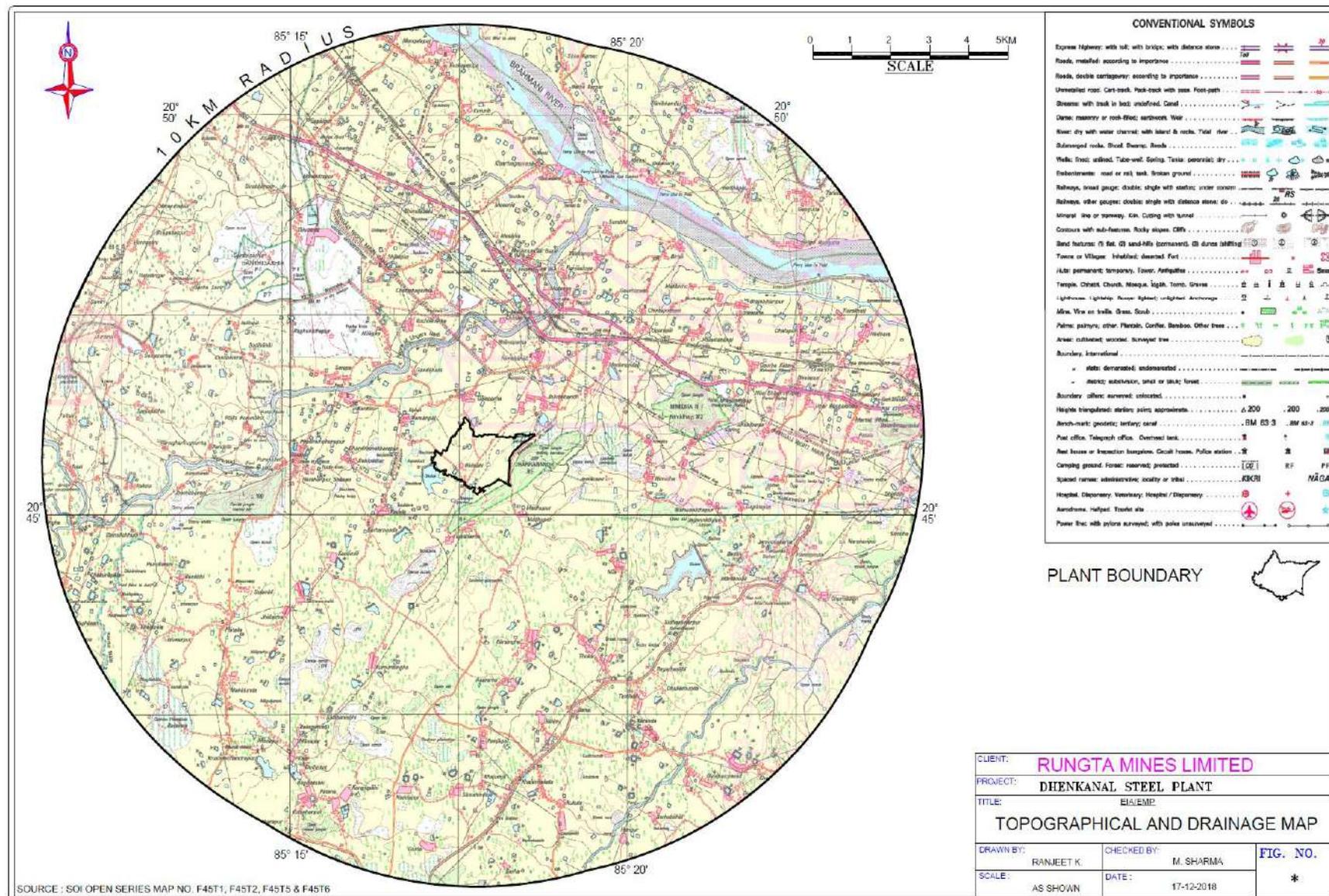
The climate of region is mainly tropical type. Monthly average of minimum temperatures recorded at IMD station Angul from 2001-2011, ranges from 13.02°C to 25.20°C and maximum temperature ranges from 28.32°C to 40.26°C, average annual rainfall is 1185.5 mm and average wind speed is 2 km/hr.

The micro meteorological data of the core zone has been recorded using an automatic weather station from 1<sup>st</sup> March to 31<sup>st</sup> May 2018. The temperature ranged between 19.8°C to 41.0°C and relative humidity ranged between 19.5% to 87.7 % during the monitoring period. The wind speed varied between calm to 38.10 km/hr and the predominant wind direction was observed from South with 11.87% of occurrences (including calm).

### 3.3 Ambient air quality

Ambient air quality study was monitored at 8 locations including one location in the core zone. Seven locations in the buffer zone are near village Nimidha, Mosonia, Galpada, Nimabahali, Tarkabeda, Kedala and Sibapur villages. Twenty four hour average PM<sub>10</sub> level was found to range from 39.6 to 71 µg/m<sup>3</sup>, PM 2.5 was found to vary from 22.8 to 42.7 µg/m<sup>3</sup>, SO<sub>2</sub> from 6.3 to 16.1 µg/m<sup>3</sup> and NO<sub>2</sub> from 9.0 to 21.7 µg/m<sup>3</sup>. The concentration of CO was found between 125-875 µg/m<sup>3</sup>.

FIG 2 : MAP SHOWING 10 KM RADIUS AROUND THE PROJECT



### **3.4 Water resource and quality**

The river Brahmani and its tributaries control the drainage of the study area. Brahmani is a perennial river. The drainage pattern is dendritic in nature. Brahmani River (7.3 km), Nigra Nala (1.5 km), Kisinda Jhor (4.7 km), Kantei nala (7.2 km), Metelia nala (9.6 km), Bauti Nala (9.4 km), Bade Jhor (7.4 km), Kusumder Jhor (3.6 km) and Agana nala (1.1 km) are present within study area in addition to various ponds in villages.

Water samples were collected from 10 ground water sources. These are core zone, Jharband, Tarkabeda, Kadala, Gandhijhara, Dhuliamunda, Nimidha, Kantimili, Benipathar and Kankalu villages. It is observed that the physico-chemical parameters present in ground water are within the permissible limits specified by IS: 10500:2012 for drinking purposes.

Water samples were collected from 11 surface water sources. These are (1) upstream and (2) downstream samples from Brahmani river near Khadagprasad Village, (3) upstream and (4) downstream samples from Lingra nala near plant & near Kankalu village, (5) Gandhijharan nala near Tarkabeda village, (6) Nala near Berunpal village, (7) Nala near Nimabahali village (8) Kusumjhor nala near Bishwanath village, (9) Barajhor nala near Karanda village, (10) Kanti nala near Gulihi village and (11) Kisinda nala near Khadagprasad Village. The analysis of surface water sample shows that all the parameters are within the desirable limits as per IS 10500:2012 except alkalinity, which is within permissible limits.

### **3.5 Land use pattern and soil quality**

Total land required for the project is 674.765 acres. The company has acquired 608.495 acres of land. Out of this 540.705 acres is private land and 67.790 acres is government land. Balance is pending with Tehsildar, Hindol. The entire land use will change to industrial use.

The study area has 161 villages. Land 6.56% of total area is forest land, 14.96% is area under non-agricultural uses, 54.84 % is net area sown, 3.96% is permanent pastures and other grazing land, 2.28% is current fallows, 10.90% is barren and un-cultivable land, 3.33% is fallows land, 1.49% is culturable waste land and 1.67% land under miscellaneous tree crops.

Top soil samples were collected and analyzed from the proposed plant area and from Jharband village. The results indicate that both the soil samples are medium grained sand and have pH of 6.20 and 7.16, respectively.

### **3.6 Noise and traffic density**

Noise levels at ten stations (1 within the core area and nine within buffer area) were observed. Leq values observed during day time varied from 48.12 to 52.16 dB (A) and at night time varies from 39.12 to 42.51 dB (A). A traffic density survey was conducted round the clock on 09-10/05/2018 at

Nimabahali Chowk (NH-55). Total number of vehicles were found as 12525 including cycles.

### **3.7 Ecology**

7.8 acres (3.156 ha) of forest land is present within the project area. Stage-II forest clearance for the same was received on 02.07.2015 from Ministry of Environment, Forest & Climate Change vide letter No. 5-ORB207/2014-BHU. Forests of the study area are Northern Tropical Semi-evergreen forests based on classification by Champion and Seth. Forest present in the study area are Jharbandh RF (0.5 km), Ghanthigarhia PF (5.4 km) and Nimidra RF (3.2 km). No wildlife park or sanctuary or eco-sensitive zone exists within 10 km radius.

Flora in the study area comprises 43 tree species, 2 bamboo species, 16 shrubs, 8 herbs, 2 climbers and 4 grass species. Fauna in the study area comprises 25 species comprising 9 species of mammals, 6 species of reptiles and 10 species of birds.

### **3.8 Socio-economic conditions**

As on Dec 2018 there is no habitation within project area. There were 54 families previously who have been resettled in village Nimabahali and paid compensation. As per Census 2011, total population within the study area is 1,83,621 persons that include 95,316 males and 88,305 females. The SC population is 23.61% and ST population is 5.17%. The average literacy rate is 70%.

The literacy amongst women is poorer at 30.13%. 24% of the total population are main workers, while 10.4% are marginal workers and the rest 65.60% are non workers.

### **3.9 Places of archaeological/ historical/ tourist/ religious importance**

There is no important archaeological (ASI)/ historical place or other place of tourist or religious importance within the study area except village temples and mosques.

## **4.0 ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION**

### **4.1 Topography and drainage**

**Impact:** Change in topography will occur in core zone due to cutting, filling, construction of the buildings such as walls, buildings, stock yards, etc. The ground will be levelled, where required. One DRI, IF, CCM and CPP is under construction as per environmental clearance dated 02.08.2010. The construction once achieved will not be reversed. There will be no impact on topography of the buffer zone.

Two first order seasonal streams, six ponds and the sheet flow of rain water shall get affected within the core zone due to installation of buildings. Impact on the drainage in the buffer zone is not anticipated as no construction will be taking place outside plant boundary. However, the volume of water from the plant area going outside the plant will reduce during rainfall as the rainwater will be stored in raw water reservoir / rain water harvesting ponds.

**Mitigation:** Storm water drains shall have to be constructed to tackle the rainwater within the plant. The two first order streams will have to be realigned such the the water flows into the storm water water drains along internal roads. All the storm water drains will eventually flow into the reservoir on north western side or any intermediate rainwater harvesting reservoirs.

#### 4.2 Air quality

**Impact:** During construction phase, sources of air pollution will be due to vehicle exhausts, excavation work, construction material handling (cement, sand and gravel), vehicle movement on unpaved roads and exhaust from non-mobile construction equipment like compressors. Primary impact will be high dust generation which can lead to secondary impacts on health. During operation phase the air quality impact will be due to emissions from the stacks attached to various units, from stock yards and from transportation. Each of these has been evaluated for potential impact using mathematical models.

**Mitigation:** During construction, dust is anticipated due to levelling, construction and transportation activities will be controlled by sprinkling of water. Construction equipment and transport vehicle will be maintained periodically as per manufacturers norms. All trucks that will be used for transportation of construction material, raw material and finished product will be covered with tarpaulin, kept maintained, be optimally loaded, be spill proof and have Pollution-Under-Check (PUC) certificates. Various pollution control equipment like electrostatic precipitators, bag filters, dust extraction systems, dry fog systems, gas cleaning plant, scrubber and sprinklers shall be installed as per the requirement of every unit. The air quality prediction exercise was carried out for stack emissions and fugitive dust from stock yards. The incremental ground level concentrations calculated are 28.48  $\mu\text{g}/\text{m}^3$  for PM<sub>10</sub>, 16.37  $\mu\text{g}/\text{m}^3$  for PM<sub>2.5</sub>, 54.96  $\mu\text{g}/\text{m}^3$  for SO<sub>2</sub> and 23.23  $\mu\text{g}/\text{m}^3$  for NO<sub>2</sub>.

#### 4.3 Noise and traffic density

**Impact:** The noise level during construction will be due to construction machinery and be temporary and reversible in nature. The noise level at sources like plant machinery are anticipated to go as high as 90 dB(A).

**Mitigation:** The equipments shall be provided with acoustic shields or enclosures to limit the sound level within the plant boundary. Vibration dampners shall be used during erection of machinery. Maintenance of

machinery and vehicles will be done regularly. The proposed green belt will also help to prevent noise generated within the plant from spreading beyond the plant boundary. Ear muffs or plugs will be provided to the workers in close vicinity of noise source.

#### 4.4 Water environment

**Impact:** During construction phase, water will be required for concrete mixing, curing, cooling water for various machineries, sprinkling for dust suppression, irrigation for green belt and lawns. Sewage will be generated from site office and labour camp.

During operation phase, 545.38 cum/hr waste water will be generated from DM unit regeneration; water pre-treatment; discharges from various units like CPP, kilns, furnaces, etc.; plant washings; leakages and sewage from buildings. During monsoon there will be run off from stock yard, solid waste storage area, roads, open areas and roof tops.

The withdrawal of water from Bramhani River can also have an impact in absence of mitigation measures.

**Mitigation:** During construction phase, the sewage from site office and labour camps will be treated in septic tank- soak pit system. During operation, waste water streams from various units, processes and services of the plant will be collected in neutralisation tank (if needed) and common monitoring basin (CMB). From CMB, it will be utilized for dust suppression, sprinkling, ash quenching, fly ash brick plant and green belt watering. The sewage from toilets, washrooms and canteen shall be treated in de-centralised septic tanks.

The rainwater falling within the entire project area will be routed to the raw water reservoir and/or intermediate rainwater harvesting ponds through storm water drains. This will reduce water demand from the Bramhani river. Rooftop rainwater will be recharged to the ground. The run off from stock yards and solid waste storage areas will be guided to settling chambers prior to discharge into rainwater harvesting ponds or raw water reservoir.

#### 4.5 Land use

**Impact:** The total plant area of proposed steel plant will be spread over 674.765 acres. The the proposed land use break up for the plant has been given in section 2.1 earlier. The storage of solid wastes on land can also impact the soil quality in absence of control measures.

**Mitigation:** The topsoil generated during construction will be preserved and shall be spread over the area where plantation is proposed. Plantation will be carried out at earliest to minimise soil erosion. To prevent contamination of water and soil, the finished product stock yards will be covered. Raw material stock yard and solid waste storage areas will have impervious flooring to seepage of leaching due to rains. Runoff will be collected in a

garland drain around the stock yard & solid waste storage areas, settled in settling pond and directed to rain water harvesting ponds or raw water reservoir.

#### 4.6 Solid waste

**Impact:** During construction phase, the labour and other work force will generate garbage (municipal solid waste). During operation phase, solid waste will be generated from ash, Bag Filter Dust, BF slag, char, kiln accretion, slag from SMS, middlings, mill scale, washery rejects, rejects from rolling mill, grinder waste, sludge from GCP, sinter return fines and tailings. Additionally waste from sweepings and other biodegradable wastes from the canteen shall be there.

**Mitigation:** The tailings from the beneficiation plant will be stored in the tailings pond where recovery of water shall be done for recycling. IF and EAF slag will be given for metal recovery, converted to aggregates (special balls) and used in road making. Mill scales will be reused in the proposed cement plant within the premises, sold to other cement manufacturers and can also be sent to the proposed Ferro Alloys plant of the company at Kamanda, District Sundargarh, Odisha. Dusts from pollution control equipment and generated during handling from units such as Pellet plant, DRI kilns, MBF, Coke oven plant and SMS shall be sent to sintering plant for making sinter and subsequently use it in MBF. Steel scraps and rejects will be recycled by melting in SMS. Grinder waste is recycled to SMS. Solid waste storage area will be required only for kiln accretion and rejects from washery. These storage areas will be provided with stable liner to avoid leaching to ground water. Runoff will be collected in a garland drain around the solid waste storage areas, settled in settling pond and directed to rain water harvesting ponds or raw water reservoir.

#### 4.7 Ecology

**Impact:** During construction and operation phase, negligible impact is anticipated on the flora in the plant area. There is 3.156 ha forest land in the plant area. Stage II forest clearance has been obtained from MOEF&CC for the same on 02.07.2015. No adverse impact of proposed project is anticipated on the fauna as the density is low in the area immediately surrounding the proposed project. The air quality modelling shows that negligible impact will be caused on the forests of the study area.

**Mitigation:** Under the proposed green belt and plantation programme, 222.67 acres of land within premises (33% of total area) shall be provided with green cover. The greenbelt will act as a micro-habitat for small sized mammals and birds. Mitigation measures as suggested in the Wild Life Conservation Plan shall be taken. The plan has been approved by Principal Chief Conservator of Forest (Wildlife), Odisha on 07.04.2015. Company proposes extensive plantation outside plant also. The expenditure for plantation and wildlife conservation plan shall be met through the fund earmarked for Corporate Environment Responsibility (CER).

#### **4.8 Socio-economics**

**Impact:** There were 54 families within the project boundary at the time the project was conceived prior to the year 2010. After the environmental clearance on 02.08.2010, these families have been resettled & rehabilitated in village Nimabahali at an aerial distance of 2.4 km. As per the directions of Land Acquisition Officer, District Office, Dhenkanal a compensation of Rs. 7 lakhs per family has also been paid. As in Dec 2018, there are no inhabitants within the plant boundary.

Most of the work force required for construction and operation of the proposed project will be drawn from the surrounding areas. Once the plant will commence operation, amenities like education, school, health, medical, entertainment, canteen, etc. will get developed in and around the plant. These facilities will inevitably be available to local people also in addition to those directly associated with the plant. During operation phase, 2600 people will be employed.

**Mitigation:** It is proposed to hire the manpower locally in the proposed plant, to the extent possible in order to have a positive socio-economic impact. For the purpose, training for capacity building shall be undertaken by the company. Land owners from whom land has been bought, will be given preference in employment. Other than direct and indirect employment leading to economic growth, the major benefit to the community will be through Corporate Social Responsibility (CSR) activities of the company.

#### **5.0 ANALYSIS OF ALTERNATIVES**

The proposed Steel Plant shall be located in Jharbandh, Galpada and Tarkabeda villages, Dhenkanal, Odisha. Since it is an existing site where construction is already ongoing as per the environmental clearance dated 02.08.2010 for 1.9 MTPA, the Company plans to establish a higher capacity plant of 2.85 MTPA within the same area. The under construction units will be incorporated in the proposed configuration. The site has many advantages such as about 90% land is in possession of the company, water requirement from Brahmani river is located nearby (7.3 kms), source of power will be captive power plant of the company and railway siding can be constructed. The technology for various processes have been selected based on minimum environment pollution.

#### **6.0 ENVIRONMENTAL CONTROL AND MONITORING ORGANISATION**

Rungta Mines Ltd. already has an Environment Management Department (EMD) at the headquarter. They will also be responsible for the environmental monitoring of the proposed plant. Monitoring of stack emissions, ambient air quality, water quality, water levels, noise levels, soil quality, tree count, etc. shall be carried out periodically. An environment officer appointed at the plant. He will be responsible for developing greenbelt, ensuring good housekeeping, ensuring statutory compliances as well as imparting environmental training to work force. The total capital

investment on environmental protection work is envisaged as Rs 274.10 Lakhs and recurring expenditure during the Steel production will be Rs. 81.7 Lakhs/year.

## **7.0 DISASTER MANAGEMENT PLAN**

All types of industries face certain types of hazards which can disrupt normal activities abruptly. They can lead to disaster like fires, inundation, failure of machinery, explosion, oil spillage, acid spillage, electrocution and hazardous waste spillage/ exposure, etc. Disaster management plan is formulated with an aim of taking precautions to control hazard propagation and avert disaster. It also instructs to take action after the disaster to limit the damage to minimum. To tackle the situation, a disaster control room will be having links with all control rooms of the plant. An up-to-date communication facility will be provided to control rooms. The disaster control room shall be headed by emergency leader called Site Main Controller (SMC). The plant manager shall be the SMC.

## **8.0 PROJECT BENEFIT**

During operation phase, around 2600 persons for both phases will be under direct employment of the company. Many more persons will be indirectly engaged either on contract basis or in transportation of materials or in provision of different services associated with the project. As majority of unskilled and semi-skilled persons will be from the surrounding villages, social & infrastructural benefits will extend to the local population. Improvement is expected in education facilities, health care services, road infrastructure and drinking water facilities. The budget for such corporate social responsibility (CSR) activities is subject to 2% of average profit of previous three years as per Companies Act 2013. Since this is a proposed plant, for initial years the budget will be based on the discussion with villagers and District administration.

## **9.0 DISCLOSURE OF CONSULTANTS**

The consultants engaged for the preparation of the EIA/EMP of the project are Min Mec Consultancy Pvt. Ltd. Company. It was registered in July 1983 with the Registrar of Companies, Delhi & Haryana, India. It has been preparing EIA/EMPs since the year 1986. Min Mec is ISO 9001:2015 certified under ANZ-JAS. In 1994, Min Mec established a modern R&D Laboratory. In June 2006, the laboratory received accreditation from NABL, which has been renewed as per procedure since. Min Mec has prepared the EIA/EMP based on the permission granted from Delhi High Court vide LPA 110/2014 and CM No. 2175/2014 (stay) and order under W.P.(C) 3665/2016.