RUNGTA MINES LIMITED

EXECUTIVE SUMMARY

OF DRAFT

ENVIRONMENTAL IMPACT ASSESSMENT

AND

ENVIRONMENTAL MANAGEMENT PLAN

OF

EXPANSION OF DHENKANAL STEEL PLANT

AT

VILLAGES: JHARBANDH, GALPADA & TARKABEDA, KOTHALU, BERUANPAL, KANKALU, BENIPATHAR, KADALA AND BADAMUNDA, DISTRICT DHENKANAL IN ODISHA

(3.0 MTPA TO 3.55 MTPA STEEL AND POWER PLANT FROM 385 MW TO 695 MW, AREA 674.765 TO 1769 ACRES)

OCTOBER, 2020

(Issue 01, Rev 00)

Prepared by:

Estb. 1983

MIN MEC CONSULTANCY PVT. LTD.

A-121, Paryavaran Complex, IGNOU Road, New Delhi – 110 030

Ph : 29532236, 29535891, Email : mining@minmec.com, minmec@gmail.com; Web site:http://www.minmec.com

An ISO 9001:2015 approved company

EXECUTIVE SUMMARY
FOR
EIA/EMP OF EXPANSION OF DHENKANAL STEEL PLANT

1. INTRODUCTION

1.1 General background

Rungta Mines Ltd. (R.M.L.) had received an environmental clearance for 3.0 million tonnes per annum steel (M.T.P.A.) and 385 mega watt power plant on 06.04.2020. Now R.M.L. proposes to enhance production capacity from 3.0 to 3.55 million tonnes per annum steel by enhancing capacity of its various sub-units such as D.R.I., M.B.F., S.M.S. (I.F., L.R.F., E.A.F., C.C.M.), rolling mill, strip mill, ductile pipe plant, captive power plant, pelletisation plant, coal washery, oxygen plant, sinter plant, coke oven plant, producer gas plant, and colony. There will be no change in beneficiation plant, lime plant and cement plant. The plant area will expand from 674.765 to 1769.0 acres. Cost of expansion project will be Rs. 13,386.9 crores.

1.2 Location and communication

The proposed plant, after expansion will fall in villages Jharbandh, Galpada, Tarkabeda Kothalu, Beruan Pal, Kankalu, Benipathar, Kadala and Badamunda of district Dhenkanal in Odisha. The location of plant is given in **Fig 1**. The outermost coordinaates of various parts of the proposed plant, based on google earth, are:

Plant area: 20° 45’ 05’’ to 20° 46’ 23’’ N, 85° 15’ 42’ to 85° 18’ 39’ E
Colony area: 20° 45’ 51’’ to 20° 46’ 03’’ N, 85° 18’ 39’to 85° 18’ 55’ E
Water Reservoir area: 20° 46’ 14’’ to 20° 46’ 33’’ N, 85° 18’ 58’ to 85° 19’ 13’ E

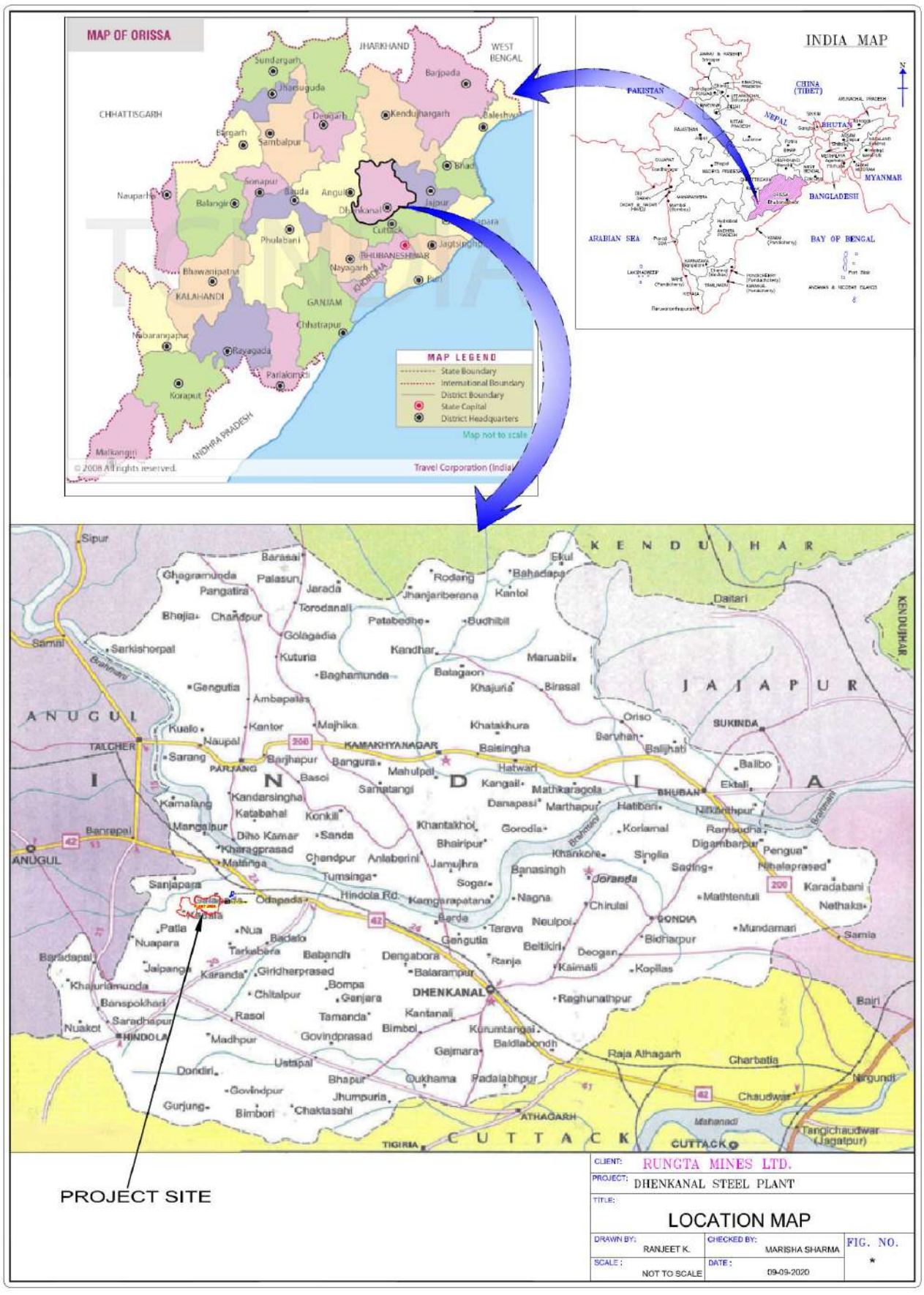
The proposed plant is accessible by all weather road from the district headquarter Dhenkanal (32 km) and town Angul (18.2 km). The site is located 1.33 km aerially from NH-55, which connects Bhubaneswar to Angul. The nearest railway station is Meramandali at a distance of 3.4 km. The nearest airport is at Bhubaneswar, which is approximately 77 km from the site.

2. PROJECT DESCRIPTION

2.1 Plant layout

The existing and proposed steel plant shall be constructed in 1769 acres. Out of this total land, 716.40 acres shall be under plant & facilities, 128 acres under stock yards & railway siding, 116 acres for solid waste management, 584 acres for green belt & plantation, 30 acres for administration & other buildings, 60 acres for water reservoir, 100.6 acres for roads and 34 acres for colony. Green belt will comprise 33% of the project area.

FIG 1: LOCATION MAP



2.2 Process Description

Iron ore beneficiation plant (2X2.69 M.T.P.A.): 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 temporary tailing storage area till further utilisation/ disposal.

Pelletization plant (2.948 to 28.75 M.T.P.A.): The pellet plant will produce oxide pellets suitable for use in D.R.I. and 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 (4.141 to 5.029 MTPA): 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 will be fed to the washery. Washed coal recovered will be 50%, middlings will be 42.5% and rejects will be 7.5%.

Direct reduced iron (D.R.I.) plant (1.6132 to 2.247 M.T.P.A.): 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 D.R.I. or sponge iron and char by magnetic separation. In rotary cooler, product is cooled by indirect water spray.

Mini blast furnace (1.559 to 1.943 M.T.P.A.): 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 (W.H.R.B.) for power generation. Thereafter, the gas will be used as fuel in blast furnace stove and elsewhere after cleaning in Gas Cleaning Plant (G.C.P.). Unutilised gas will be flared.

Steel melting shop (2.618 TO 3.22 M.T.P.A.) : Steel melting shop will have (1) 15X20 tonne induction furnaces (I.F.) with 4X25 + 3X45 tonne ladle refining furnaces (L.R.F.) and (2) 1X90 + 1X110 tonne electric arc furnaces (E.A.F.) with 1X90 + 1X110 tonne L.R.F. in it. Induction furnace works on the principle of induction melting of scrap/ sponge iron with the help of electric power. In the electric arc furnace, 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 (C.C.M.) where semi-finished product is made.

Rolling mill (1.75 to 2.55 M.T.P.A.): Semi-finished product from the continuous casting machine of induction furnace and electric arc furnace 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 (0.85 to 0.5 M.T.P.A.): Semi finished product from the continuous casting machine of **e**lectric arc furnace 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 (0.4 to 0.5 M.T.P.A.): Ductile pipe plant will receive hot metal directly from the mini blast furnace and manufacture finished product comprising of ductile pipes. As a back up measure, provision of reheating furnace has also been made.

Sinter Plant (1.663 to 2.827 M.T.P.A.): 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 also be utilised as raw material for sinter. Thus, utilising maximum solid waste from within the plant. The sinter generated will be 100% utilised in mini blast furnace.

Coke oven plant (1.12 to 1.07 M.T.P.A.): 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 mini blast furnace and sinter plant. Balance leftover shall be sold in the market.

Captive Power Plant (C.P.P.): (1) Waste Heat Recovery Boiler: 235 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) AFBC/ CFBC:** 460 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 (1.686 M.T.P.A.): 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 (P.P.C.) using fly ash and Portland Blast Furnace Slag Cement (P.B.F.S.) 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 will be various grades of iron ore (from own mines/other private mines), non coking coal (domestic/Import) and coking coal (imported). Other raw material required is limestone, dolomite, bentonite, clay, silica component, flocculant, gypsum, quartz, silica, pig iron and semi finished products. Total raw material to be purchased from outside will be 51.37 million tonnes per annum.

Fuels required in various units will be coking and non coking coal, coke breeze & fines, low sulphur heavy stock diesel oil/ furnace oil, coke oven gas and MBF gas.

Total power requirement of the plant for operating different facilities is estimated as 694 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 3.55 million tonne per annum plant will be 3,752 m^3/hr. It shall be sourced from Brahmani River.

2.4 Manpower

The manpower requirement will be 4850 persons for various activities of the 3.55 million tonne plant like plant operation, loading, unloading, handling, transportation, general cleaning, horticulture and other miscellaneous works inside the plant. Three shifts working for 355 days is planned.

2.5 Site services

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

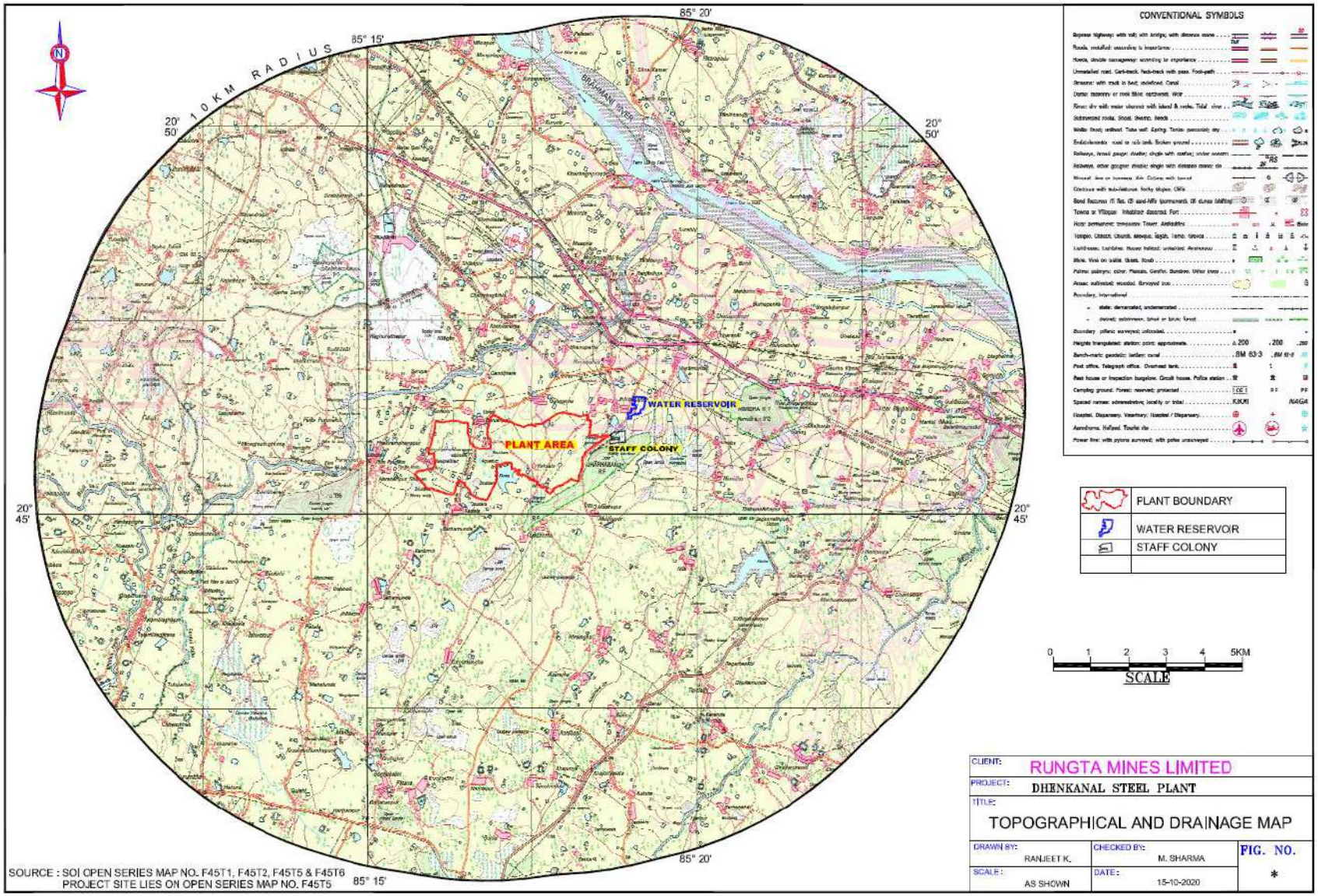
3. PRESENT ENVIRONMENTAL SCENARIO

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 existing project area has a comparatively flat terrain and elevation is approximately 75-95 m above mean sea level. The proposed expansion area has an elevation of 65-100 m in majority area of main plant. The study area has a flat to gentle, undulating sloping topography with few scattered hillocks. The surface elevation in buffer zone varies from 60-312m.

FIG 2: MAP SHOWING 10 KM RADIUS AROUND THE PROJECT



Drainage: The proposed project site is located 0.7 km south of Nigra Nadi (or Lingra Nadi) and 4.9 km south west of Brahmani River. As seen on toposheet, five first order seasonal drains and one aquaduct originate from within plant boundary or from its immediate vicinity and flow out from the northern boundary. These drains originate from and connect multiple seasonal ponds before flowing into Nigra Nala. The drainage of the area is controlled by the south-easterly flowing Brahmani river, which is situated in the north-eastern part of the study area. The river is fed by various seasonal sub-parallel nalas like Nigra, Kisinda Jhor, Kusumdor 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, total of average monthly rainfall is 1216.4 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 1st March to 31st May 2019. The temperature ranged between 20.0°C to 42.0°C and relative humidity ranged between 18.2% to 86.5 % during the monitoring period. The wind speed varied between calm to 39.2 km/hr and the predominant wind direction was observed from South with 12.23% 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 (expansion area). Seven locations in the buffer zone are near village Nimidha, Mosonia, Thokar, Nimabahali, Tarkabera, Kadala and Beruanpal. Twenty four hour average PM10 level was found to range from 40.7 to 70.9 µg/m^3, PM 2.5 was found to vary from 22.0 to 42.3 µg/m^3, SO_2 from 6.6 to 16.9 µg/m^3 and NO_2 from 8.2 to 21.5 µg/m^3. The concentration of carbon monoxide, nickel, arsenic, lead, B(a)P and benzene were also measured.

3.4 Water resource and quality

Brahmani river and it's tributaries control the drainage of the study area. Brahmani is a perennial river. The drainage pattern is dendritic in nature. Brahamani River (4.9 km), Nigra Nadi (0.7 km), Kisinda Jhor (5.0 km), Kantei nala (4.8 km), Matilia Nadi (7.0 km), Bauli Nadi (6.9 km), Barha Jor (7.8 km), Kusumdor Jor (3.6 km), Agana Nadi (9.3 km), Bangurasingha Nala (8.6 km), Parjang branch canal (7.9 km), Ria Jor (5.9 km), Rengali right main canal (0.7 km), etc. are present within study area in addition to various ponds in villages.

Ground water monitoring during 2019 showed that the ground water level below ground level varied from 8.30-2.0 m (in April-September) at Jharbandh. At Galapada, it varied from 8.90-2.20 m (in April-August). In 18

other locations in buffer zone, it varied from 8.55-0.62 m (in April-August). The ground water estimation of the study area shows that the stage of ground water development is within safe category.

Water samples were collected from 10 ground water sources. These are Nimidha, Tarkabera, Kadala, Beruanpal, Jharbandh, Dhuliamunda, Taltali, Benipathar and Kankalu villages along with a hand pump in existing plant area. 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 in absence of alternate source.

Water samples were collected from 11 surface water sources. These are (1) Brahmani river near Kharhagaprasad village (up stream) (2) Lingra Nadi near plant (up stream), (3) Gandhijharan nala near Tarkabeda village, (4) Brahmani river near Pani Gengutia village (down stream),(5) Lingra nadi near Kankalu village (down stream),(6) Nala Near Beruanpal village, (7) Nala near Nimabahali village, (8) Kusumador Jor near Bishwanath village, (9) Reservoir near Minor irrigation project near boundary, (10) Kantel nala near Gulehi village and (11) Kisinda Jor near Narendrapur village. The analysis of surface water sample shows that all the parameters are within the permissible limits as per IS 10500:2012.

3.5 Land use pattern and soil quality

Total land required for the project is 1769 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 1160.505 acres is has been recommended for allotment and is under acquisition through Odisha Industrial Infrastructure Development Corporation (IDCO).

The study area has 195 villages 2 census towns. Of total study area land, 5.91% is forest land, 14.96% is area under non-agricultural uses, 56.22 % is net area sown, 4.19% is permanent pastures and other grazing land, 2.39% is current fallows, 10.41% is barren and un-cultivable land, 2.94% is fallows land, 1.40% is culturable waste land and 1.58% is land under miscellaneous tree crops, etc.

Top soil samples were collected and analyzed from 9 locations in and around plant premises. The results indicate that all the soil samples are medium grained sand and have pH between 6.6-7.8. They are deficient in organic carbon except Kadala and Beruanpal.

3.6 Noise and traffic volume survey

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 48.46 to 51.52 dB (A) and at night time varied from 39.8 to 42.1 dB (A). Traffic volume survey was conducted round the clock during 16-18/04/2019 at Nimabahali Chowk (on NH-55) and on Nimbahali to Jharbandh road.

Total number of motorised vehicles and cycles were found as 13,409 and 459, respectively.

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, as per toposheet, are Jharbandh RF (adjoining), Ghanthigarhia PF (3.3 km) and Nimidra RF (2.0 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 proposed expansion area. There were 54 families previously in the existing plant area who have been resettled in village Nimabahali and paid compensation. As per Census 2011, total population within the study area is 219652 persons that include 113644 males and 105918 females.

The SC population is 23.10% and ST population is 5.18%. The average literacy rate is 70.18%.

The literacy amongst women is poorer at 30.38%. 24.02% of the total population are main workers, while 10.39% are marginal workers and the rest 65.58% 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. However, the toposheet shows monuments near Garha Santri- Arahata village road, Pirhhasahi-Taltali road, Pirhhasahi-Ganthigarhia PF road, Kankinali-Barasingha road and near Kalandapal village, all at distance of 7.5 km and beyond.

4. ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION

4.1 Topography and drainage

Impact: Change in topography is occurring in core zone due to cutting, filling, construction activities such as walls, buildings, stock yards, etc. For the plant sanctioned vide environmental clearances dated 04.06.2020 &

before. The ground is being levelled, where required, due to ongoing construction. One D.R.I., induction furnace, caster and power plant unit is under construction within 674.765 acres. Similarly, in additional 1094.235 acres expansion area, the topography will change permanently due to leveling and establishment of additional buildings. The construction once achieved will not be reversed. There will be no impact on topography of the buffer zone since no construction is proposed except widening and strengthening.

Six first order seasonal streams, seventeen 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: The change in topography in the core zone will be permanent and irreversible. Excavated soil will be used in leveling, filling and landscaping to minimise the impact of change in topography. Changes in the sheet flow pattern of rain water will be managed through storm water drains. The impact of the new construction will, therefore, be managed through mitigation measures.

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 resulting into increased suspended particulate matter levels in the surrounding areas. The secondary impacts of air emissions, dust as well as other emission may affect the health of the labour force working in close vicinity and nearby villagers. 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. It will be controlled by sprinkling of water and using covers & wind breaks. 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 (E.S.P.), 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 on expansion from 3.0 to 3.55 M.T.P.A. has been calculated as 0.125 µg/m^3 for PM10, 0.072 µg/m^3 for PM2.5, 6.347 µg/m^3 for SO_2 and 0.033 µg/m^3 for NO_2. The impact of the plant will remain within permissible limits

4.3 Noise and traffic density

Impact: The noise level during construction will be due to construction machinery. It will be temporary and reversible in nature. The noise level at sources like plant machinery are anticipated to go as high as 90 dB(A). During operation, noise will be generated due to operation of various equipment, machinery, pumps, turbo generators, etc.

Mitigation: The equipment 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, the requirement of water will be for process and sourced from Brahmani river. The withdrawal of water from Bramhani River can also have an impact in absence of mitigation measures. 764 m^3/hour waste water will be generated after expansion 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.

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. From common monitoring basin, 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 of plant and colony sewage shall be treated in de-centralised septic tanks and sewage treatment plant.

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 3.55 million tonne steel plant will be spread over 1769 acres. The construction and development in the existing project area has or is taking place. It comprises of internal roads, water reservoir, buildings, green belt and plantation, etc. During expansion, additional buildings and sheds of the new units will come up along with facilities. The temporary storage of solid wastes like char, ESP & bag filter dusts, sludges, FES dust, various slags from various sub-units, fly ash and other solid wastes on land would also impact the land.

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 prevent 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, due to work force deployed for construction, there will be development of temporary establishment of residential and commercial nature. These will generate garbage. In the integrated steel plant operation dust collected from dust collectors, empty barrels (metal and plastic), bags, fly ash, bed ash, dust from air pollution control equipment, dolochar, E.A.F. & I.F. slag, mill scale, scrap, rejected billets, coal fines & rejects, M.B.F. slag, iron ore fines, sinter returns, effluent treatment sludges, sweepings and other biodegradable wastes from the canteen are the solid wastes generated.

Mitigation: Sponge iron kilns ESP dust and dolochar will be used as fuel in power plant. The E.A.F. and I.F. slag will be given for metal recovery, converted into aggregates and used for road making. M.B.F. slag will be used for cement manufacturing. Mill scales, coke fines, iron ore fines, sinter returns and various E.S.P. & bagfilter dusts will be used for sinter. Steel scraps and rejects will be recycled by melting. Fly and bottom ash from existing & proposed expansion of power plant shall be used for brick making in house and balance given to cement plants, brick plants, road projects & other users. All stock piles will be laid on top of a stable liner to avoid leaching of materials to ground water.

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 existing plant area of 674.765 acres. Stage II forest clearance has been obtained from MOEF&CC for the same on 02.07.2015. There is no forest land in the expansion area of 442.82. Negligible 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 modeling shows that negligible impact will be caused on the surrounding forests.

Mitigation: Under the proposed green belt and plantation programme after expansion, 584 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 boundary also. The expenditure for plantation and wildlife conservation plan shall be met through the fund earmarked for Corporate Environment Responsibility (C.E.R.).

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. Hence, there are no displacees for expansion of steel plant. However, there will be land losers and land will be acquired through IDCO.

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, 4850 people will be employed at full capacity of 3.55 million tonne.

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 (C.S.R.) and Corporate Environment Responsibility (C.E.R.) activities of the company.

5. ANALYSIS OF ALTERNATIVES

Dhenkanal Steel Plant already has an environmental clearance of 3.0 million tonne finished steel dated 04.06.2020. Its construction is underway. Therefore, no alternative site has been selected. It is intended to expand the plant into adjoining or nearby areas and share the resources and facilities of the sanctioned plant. For steel making, the Induction Furnace (I.F.) and Electric Arc Furnace (E.A.F.) technologies have been selected. The Non Recovery type Coke Oven plant has been proposed for use.

For the captive power plant, waste heat recovery boiler & AFBC/ CFBC boiler is proposed. Based on the techno-economic analysis and operating experience of existing pellet plants, straight kiln process has been selected in which drying, preheating, induration & cooling of pellets take place on the same strand.

6. ENVIRONMENTAL CONTROL AND MONITORING ORGANISATION

Rungta Mines Ltd. already has an Environment Management Department at the headquarter. It will also be responsible for ensuring 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 at plant level. An environment officer will be appointed at the plant. He will be responsible for the aforementioned plant level monitoring, 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. 4702.69 Lakhs and recurring expenditure during operation will be Rs. 168.99 Lakhs/year.

7. DISASTER MANAGEMENT PLAN

All types of industries face certain types of hazards which can disrupt normal activities abruptly. They can lead to disasters 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 established 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, who will be the plant manager.

8. PROJECT BENEFIT

During operation phase, around 4850 persons will be under direct employment of the company, at full capacity. 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 through proposed Corporate Social Responsibility (CSR) and Corporate Environment Responsibility (CER) programs. Company will spend 2% of the average annual profit of the previous three years on CSR. For CER, Ministry of Environment, Forest and Climate Changes circular dated 01.05.2018 shall be followed and 0.25% of the total investment shall be spent over ten years. This works out as Rs. 13.75 Crores.

9. 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. In 1994, Min Mec established a modern R&D Laboratory. Min Mec is ISO 9001: 2015 certified under ANZ-JAS. In June 2006, the laboratory received accreditation from NABL (latest certificate no. TC-6337), which has been renewed as per procedure since. In 2012, lab had been accredited under Environment Protection Act (EPA) by Ministry of Environment, Forest & Climate Change, Government of India and has been renewed till 2024. 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 in W.P.(C) 3665/2016.