SUMMARY
OF
ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
OF
PROPOSED 1x5 MVA SUBMERGED ARC FURNACE
FOR
PRODUCTION OF FERRO ALLOYS
AT
PLOT NO. B-41/3, MIDC CHANDRAPUR, TEHSIL & DISTRICT CHANDRAPUR, MAHARASHTRA

[Production - Ferro Manganese (12000 TPA) or Silico Manganese (10000 TPA) or Ferro Silicon (5000 TPA); Land area: 1.2 ha]

Project Proponent:

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ToR granted: Letter no. J-11011/10/2022-IA.II(IND-I) dated 29.08.2022

Project Schedule as per EIA Notification 2006 : 3(a)

BASELINE DATA PERIOD: 1ST DECEMBER 2021 TO 28TH FEBRUARY 2022
COLLECTED BY: EARTHCARE LABS PRIVATE LIMITED, NAGPUR
(MOEF&CC Recognition vide Gazette No. S.O. 2131 (E) dated 01.06.2021, Sl. 101)

ISSUE 1 REV. 0 DECEMBER 2022, (UID No. 202212001)

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1.0 INTRODUCTION

1.1 General background

M/s Destino Minerals and Metals Private Ltd. (DMMPL) intends to come up with a 1X5 MVA submerged arc furnace based ferro alloy plant. The ferro alloy production will be 12000 TPA of Ferro Manganese or 10000 TPA of Silico Manganese or 5000 TPA of Ferro silicon. The project was accorded Consent to Establish vide letter no. ROCHANDRAPUR/CONSENT/ 1912000503 dated 09.12.2019.

The project falls under item no. 3(a) for metallurgical industries (ferrous & non -ferrous) as per Schedule to EIA Notification, 2006 & its amendments. It is a Category A project and it falls in the critically polluted area of MIDC Chandrapur.

1.2 Location and accessibility

The project is proposed on Plot No. B-41/3, MIDC Chandrapur, Tahsil & District Chandrapur of Maharashtra. The location of plant and study area can be seen in Toposheet No. 56 P/04, 56M/01, 56P/08 and 56M/05. The location of the project can be seen in Fig 1. The coordinates of the plant area based on Google Earth as on 08.06.2021 are:

Latitude : 19°58’54.35” to 19°58’49.96” N
Longitude : 79°14’20.95” to 79°14’14.90” E

The proposed plant is accessible by all weather roads from the DM office Chandrapur, which is located at a distance of 6.6 km in ESE. The national highway 930, Warora to Anandpur is at a distance of 2.2 km in NE. The nearest railway station is Paroli Chhoti Railway station at a distance of 2.5 km NNE and railway line is part of Warora to Chandrapur Central Railway Main Line. The nearest airport is at Nagpur which is about 123 km in North direction.

2.0 PROJECT DESCRIPTION

2.1 Plant layout

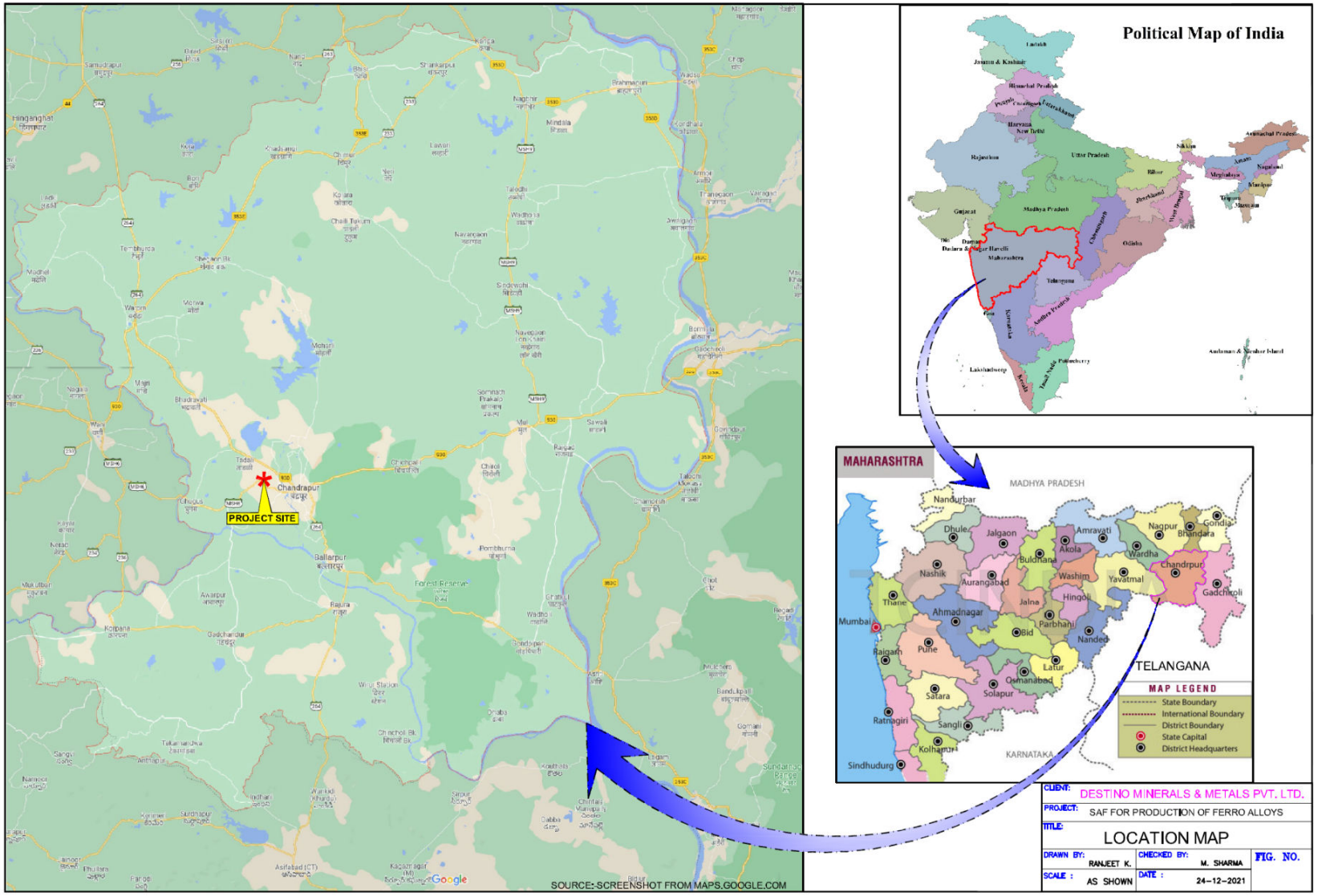
The area of the project is 1.2 ha and is in the possession of the company. It does not have any forest land.

2.2 Process Description

The project will comprise of 1X5 MVA Ferro Alloy Plant.

Ferro Alloy Plant (1X5 MVA): Ferro alloys are also commonly used for de-oxidation and refining of quality steel. Three types of ferro alloys are proposed - (1) ferro manganese or (2) silico manganese or (3) ferro silicon.

FIG 1: LOCATION MAP OF THE PROJECT



They will be produced in a Submerged Arc Furnace. Electric power heats the raw materials and provides the energy to reduce the ore to a metallic state. The ore materials, the reducing agent and any fluxes are mixed outside the furnace and then periodically fed into the furnace. Reduction chemical reactions and metal production proceed continuously. The metal is allowed to accumulate and tapped at appropriate intervals or continuously.

For **ferro manganese production**, high carbon ferro manganese is smelted by a continuous process. This is done by submerging electrodes deep into the material input into the furnace. After pre heating of material, drying of moisture and removal of volatiles occurs. Charge also gets heated by heat of burning gases. Oxides undergo reduction chemical reaction and the metal melts. Formation and melting of slag takes place. The slag containing impurities is removed. Molten metal is removed into ladles or casting pans.

For **silico manganese production**, high carbon silico manganes is smelted. The remaining process remains same as described above at higher temperature of 1500 degree Celsius. In this method, successful reduction chemical reaction of silicon requires higher concentration of silica in the slag.

For **ferro silicon production,** high carbon ferro silicon is made by reducing quartzite with a carbonaceous reductant in a submerged arc furnace. The process is similar to above processes. It is conducted at 1500 degree Celsius. These furnaces are lined with graphite. Ferro silicon smelting is essentially a slag-less process. Still some slag formation takes place because of the presence of impurities in raw materials.

2.3 Resource requirements

Raw material: The fuel & raw materials consumption will be mainly manganese ore fines, coke breeze & fines, dolomite, ferro manganese slag, iron scrap, metallurgical coke, quartz, etc. The transportation shall be done by trucks.

Power: The power requirement for the ferro alloy plant will be 5 MVA (40,000 MWh/annum). The power will be sourced from MSEB electricity supply connection available at MIDC at 33 KV level. One DG set is proposed with capacity 100 KVA located at utility room at west of furnace building.

Water: The total water requirement for the project is 30 KLD. Out of which 2 KLD will be used for the domestic purposes and 28 KLD water will be used for plant processing. The water will be sourced from MIDC water supply scheme.

Manpower: The manpower requirement for the plant will be 40 persons. Some skilled manpower may be required from outside the area while

remaining unskilled/ semi- skilled manpower will be sourced from the local villages.

Site services: The plot area is vacant except for four sheds along with one room. The sheds are comprising of pillars and roof only. Partial foundation has been constructed outside the shed area also. New supporting infrastructure like office building, roads, rest room, slag yard, raw material handling area, etc. are proposed when the plant will be constructed.

2.4 Key pollution concerns

The project is located in MIDC Chandrapur, which is a critically polluted area. Additional environmental safeguards will be taken in line with the "Revised Action Plan for Industrial Cluster in Critically Polluted Area, Chandrapur" by Maharashtra Pollution Control Board, July 2020.

3.0 PRESENT ENVIRONMENTAL SCENARIO

For the description of baseline environmental scenario, the plant area has been considered as the "core zone". The area falling within a distance of 10 km from the boundary of the core zone has been considered as the "buffer zone". Together they comprise the "study area" which can be seen in Fig 2.

3.1 Topography and drainage

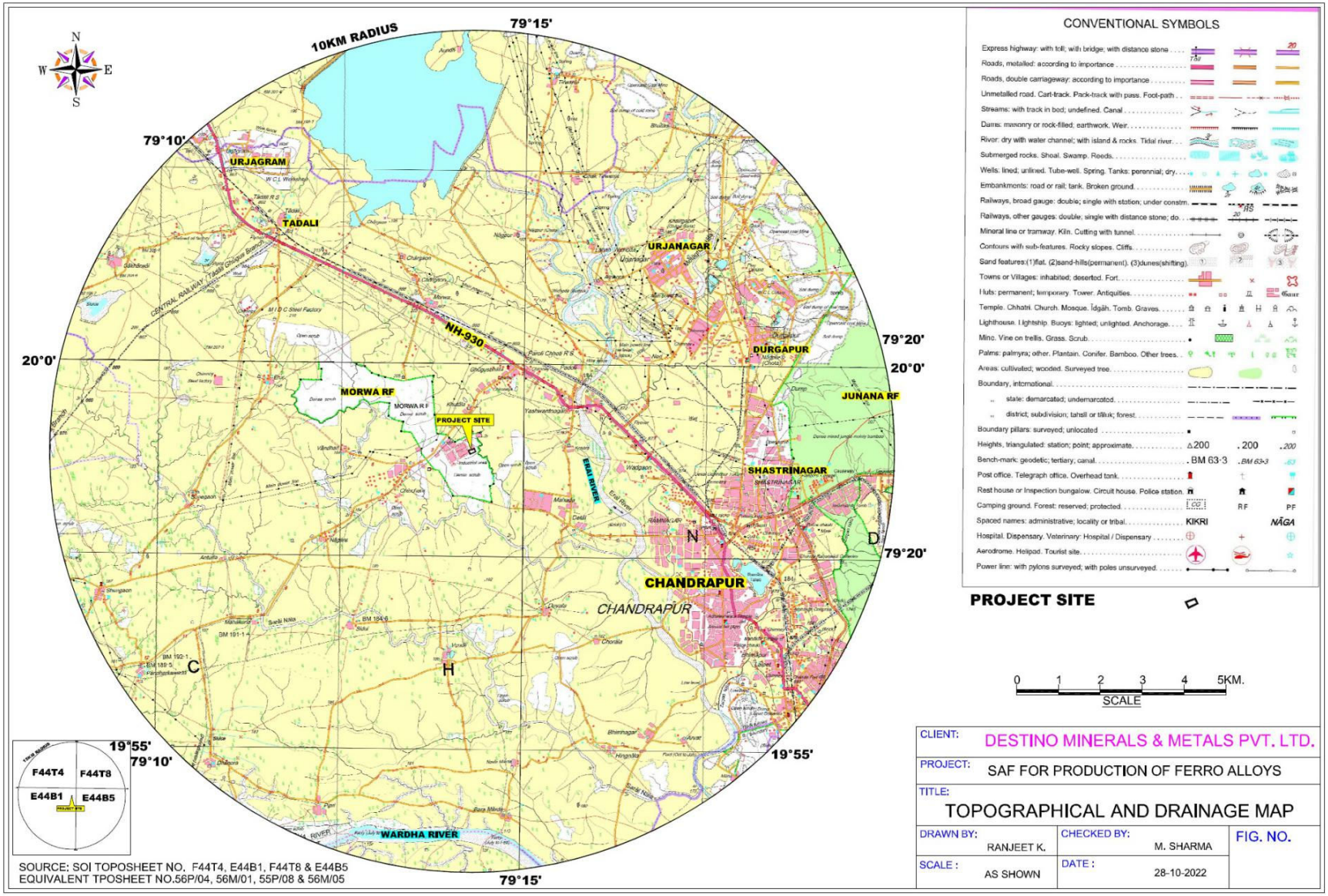
Topography: The topography of the proposed project area (core zone) is flat and will be leveled in the areas where plant construction and its activities have to be undertaken. The average elevation of core zone is 190 m amsl as per google earth. The study area has flat land. The surface elevation in buffer zone varies from 170 to 210 m above mean sea level, as per toposheet. However, mine areas in the north eastern part of the study area have dumps upto 257 m amsl and pits upto 129 m amsl as per google earth. The study area has many industries present around the project site.

Drainage: There is no water body or drain in the project area. A seasonal nala flows in the vicinity of the proposed project. The main drainage of the study area is controlled by the Wardha River. It is located 9.0 km south of the plant. Erai river is one of its tributary and it's located at a distance of 2.6 km. There are various water bodies present in 10 km of radius. Some major ones are Motaghat Nala (4.4 NE), Zarpat Nala (7.7 SE), Sarai Nala (4.4 SW), Ramala Talav (6.9 SE) and Vendli (1.7 S).

3.2 Climate and micro-meteorology

The climate of the region is tropical monsoon type. As per data available from India Meteorology Department, Chandrapur for 1981-2009, the average annual rainfall is 1248.2 mm. Monthly average of minimum temperatures ranges from 13.4°C to 26.6°C and maximum temperature ranges from 29.9°C to 42.9°C. Annual average humidity is found to be 67% at 8:30 hrs and 48% at 17:30 hrs.

FIG 2: TOPOGRAPHY AND DRAINAGE MAP OF THE STUDY AREA



The micro-meteorology of the core zone has been recorded for the winter season from December 2021 to February 2022. The temperature ranged between 10.94°C to 34.85°C and relative humidity ranged between 36.20% to 90.00% during the monitoring period. The wind speed varied between 0.22 to 17.32 km/hr and the predominant wind direction was observed from north east with 19.12% of occurrences.

3.3 Ambient air quality

Ambient air quality study was monitored at 8 locations. One location was in the core zone (project area). Seven stations were in buffer zone near Chinchara village, near Nigara village, Near Mahada, Nearest settlement of Khutala village, Vendli village, RM family Dhaba near Khutala village and Vandhari village.

Twenty four hour average PM_{10} level was found to range from 43.1 to 61.1 µg/m^3, $PM_{2.5}$ was found to vary from 15.8 to 27.7 µg/m^3, SO_2 from 6.3 to 15.6 µg/m^3 and NO_2 from 9.62 to 27.9 µg/m^3. All the values were within the National Ambient Air Quality Standard 2009. Ammonia, Benzo (a) Pyrene, Benzene, Lead and Arsenic were also measured and found within permissible limit or below detectable limit.

3.4 Water resource and quality

The main drainage of the area is controlled by the Wardha River. It is located at 9.0 km south of the plant. Erai river is one of its tributary and it's located at a distance of 2.6 km east of the plant. There are many nalas and other water bodies present in the study area. Within project area, no perennial source of surface water exists.

During pre-monsoon period in Morwa region, the depth to water level is 9.64 m and during post monsoon period, the depth to water level is 6.03 m BGL. During pre-monsoon period in Tadali, the depth to water level is 5.81 m and during post monsoon period, the depth to water level is 3.74 m BGL.

Surface water: Eight surface water samples were collected. These are (i) Erai River upstream near Yashwant Nagar (ii) Erai River downstream near Chandrapur (iii) Nala upstream near project site (iv) Nala downstream near Mahada Colony (v) Nala upstream near Vandhari village (vi) Nala downstream near Datala village (vii) Wardha river near Pipri village (viii) Overhead tank at MIDC, which is supplied water from Wardha river.

Ground water: Eight ground water samples were collected. These are from borewells at (i) near Chinchara Village, (ii) Khutala village, (iii) Vandhari village, (iv) Nagara village, (v) Kosara village, (vi) Ramnagar, (vii) Urjanagar and (viii) Tadali village. It is observed that the surface water and ground water quality is within the permissible limits specified by IS: 10500 - 2012 for drinking purposes.

3.5 Land use pattern and soil quality

Land use: The project land lies in MIDC Chandrapur, Tehsil and District Chandrapur of Maharashtra. The total area of existing plant is 1.2 ha and is under the possession of the company.

Land use pattern of study area is available from Census 2011. The data shows that the agricultural land (net sown + current fallows + other fallows) accounts for a major portion (49.13%) followed by areas under non agricultural uses (33.84%), forest land (2.07%) and culturable waste land (7.82%).

Soil quality: Top soil samples were collected from three locations. One from existing project site, second from open scrub land near Mahada and third from Nagara village. Texture of soil is Sandy Loam and Sandy Clay Loam. The results of soil quality indicate that the soil is of neutral in nature. Organic carbon is optimum and rich in nature.

3.6 Noise level and traffic volume

Noise level: Noise levels at eight stations were observed. One station was within the core area and seven within buffer area. The noise levels ranged from 46.3 to 61.2 dB(A) during day time and at night time it varied from 41.7 to 52.2 dB(A).

Traffic volume: A traffic volume survey was conducted round the clock on 10-11/01/2022 and 12-13/01/2022 at 2 locations i.e. Nagara village (T1) and Chinchara village (T2). Total number of equivalent passenger car units were found as 25473 and 15760, respectively.

3.7 Ecology

There is no forest within the project area. The core zone has sparse vegetation. Only babul, chilati, and few grasses, herbs and shrubs are found in the project site. Total of 40 species of terrestrial plants are observed in the study area. These include 23 species of trees, 13 species of shrubs and herbs and 4 species of climbers.

The core zone has common species of reptiles like chameleon and house lizard, birds such as blue rock pigeon, common myna, house sparrow, crow and mammals such as mongoose and squirrel. A total of 140 species of terrestrial fauna were recorded in the study area. These comprise 28 species of mammals, 17 species of reptiles and 92 species of avifaunal species and 3 amphibians. There are no National parks/ Wildlife Sanctuary/ Biospheres reserves within the 10 km radius of the project site. The eco sensitive zone of Tadoba – Andhari Tiger Reserve is at 10.5 km NE and Tadoba-Andhari Tiger Reserve core zone is at 21.30 km NE from the project boundary.

3.8 Socio-economic conditions

There is no habitation within the project area. There are 45 inhabited villages, 5 census towns and 1 municipal council in the buffer zone of the study area. The total population within the study area is 4,14,056 persons, as per Census 2011. It includes 2,12,808 males and 2,01,248 females.

The schedule caste population is 19.48% and schedule tribe population is 8.26%**.** The average literacy rate is 79.66%. The literacy amongst women is lower at 36.90%. Main workers are 30.69% of the total population. Marginal workers are 4.28% and 65.03% are non workers.

3.9 Industries around the project area

There are several industries, mines and industrial areas present within 10 km radius of the study area. Mines belong to Western Coalfield Limited, namely, Visapur, Hindustan Lalpeth, Durgapur, Padmapur and Bhatadi. Industrial area of MIDC and various ferro alloy and steel manufacturers are present. Chandrapur Super Thermal Power Station is one of the largest industry in the study area at a distance of 4 km in east.

3.10 Places of tourist/ religious/ historical importance

There are important archaeological (ASI)/ historical place or religious importance within the study area. These include Chandrapur fort at a distance of 5.8 km SE, Achaleshwar Temple at a distance of 7.8 km SE, and Temple of the Mahakali at a distance of 8.5 km SE. Tourists also visit buffer of Tadoba–Andhari Tiger Reserve located at 11.4 km NE and Tadoba-Andhari Tiger Reserve core zone located at 21.3 km NE of project.

4.0 ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

4.1 Topography and drainage

Impact: Further change in topography will occur due to construction of the buildings, roads and other plant facilities. There will be no impact on topography of the buffer zone. The change in topography will require management of rain water flow in project area. Impact on the drainage in the buffer zone is not anticipated because no construction will be taking place outside project boundary.

Management: 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 surface flow pattern of rain water will be managed by constructing storm water drains. Rain water will be harvested to the extent possible and excess rain water released to natural drain after settling. Thus, the impact of the new construction will be managed.

4.2 Climate & Meteorology

Impact: The climatic conditions including temperature variations, wind direction and speed, rainfall and humidity are governed by regional factors and the monsoon. The proposed plant construction will have marginal impact on climate or meteorology during construction phase as mostly civil/ mechanical work concerning erection of plant will be carried out. Operation phase will consume fossil fuels in production process as well as in transportation of raw materials and finished product.

Mitigation: Development of greenbelt in existing and additional area shall contribute in a positive manner towards mitigation of greenhouse gases. The trees planted over life of plant will help sequester carbon. The company will also undertake measures to minimise the CO_2 emissions such as solar power generation at project site.

4.3 Ambient air quality

Impact: During the construction phase there will be several sources of air pollution and it will be due to vehicle exhausts, dust generation due to excavation work, shifting of construction materials (cement, sand and gravel), vehicle movement on unpaved roads and exhaust from diesel based construction equipment. During operation phase, the emissions will be due to process stack emissions, material handling in stock yards, crushing, fugitive dust within project and transportation.

Mitigation: During construction, dust is anticipated due to leveling, 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. The impact on surrounding air quality has been calculated using a mathematical model. The maximum incremental Ground Level Concentration (GLC) values are calculated as 0.608 $\mu g/m^3$, 0.349 $\mu g/m^3$, 0.061 $\mu g/m^3$ and 0.950 $\mu g/m^3$ for PM_{10}, $PM_{2.5,}$ SO_2 and NO_2, respectively in the study area. The maximum incremental GLC values due to transportation are calculated as 0.43 $\mu g/m^3$, 0.10 $\mu g/m^3$, 0.003 $\mu g/m^3$ and 0.01 $\mu g/m^3$ for PM_{10}, $PM_{2.5,}$ SO_2 and NO_2, respectively. The impact of the plant will remain within permissible limits.

4.4 Water environment

Impact: During construction phase, water will be required on account of concrete mixing, curing, cooling water for various machines, spraying, sprinkling for dust suppression, etc. Waste water generation will be only from domestic usage, i.e. from construction workers.

During operation phase, the requirement of water of 30 kilo litres/day will be sourced from MIDC water supply scheme. The total waste water generation from the proposed ferro alloy plant will be 2.4 kilo litres/day.

Management: For domestic wastewater generation, septic tank will be provided within plant boundary. The water utilised for plant processing will be in closed loop water circuit, which will be recirculated. The recirculated water after certain circulations will be blown down and reused in dust suppression, sprinkling and greenbelt watering. Thus, there will be no discharge from the proposed project.

4.5 Land use and soil quality

Impact: The total project area is 12,000 sq. m (1.2 ha). It is an industrial landin MIDC Chandrapur. It is under company's ownership. Four shets have been constructed but further construction and development will take place to establish the plant. There will be creation of roads, green belt, office buildings and other plant facilities. These construction activities will disturb the top soil.

Management: During construction, the topsoil generated shall be removed carefully, stored temporarily and spread over the area where plantation is proposed. Soil erosion will be minimised with the stabilisation of soil. Forty percent (40%) of total project area will be under greenbelt. The land use of the project will permanently be industrial use.

4.6 Noise level

Impact : The noise level during construction will be due to construction machinery and activities. It will be of temporary and reversible nature. During operation, noise will be generated due to operation of various equipment, machinery, pumps, material handling system, etc.

Management : The equipment shall be provided with enclosures to limit the sound level within the plant boundary. Vibration dampeners shall be used during erection of machinery. 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.

4.7 Traffic volume

Impact : The overall quantity of raw material, finished products and solid waste have been calculated for the 12,000 TPA plant. From ferro alloy plant, the maximum quantity of raw material and finished product has been considered i.e. from Ferro Manganese. Considering 20 T capacity trucks, the total number of trucks required shall be 12 trucks per day. The daily maximum movement of trucks movement (to & fro) will be 24 truck trips/ day, which is an average of 1 truck/hour for 24 hours operation.

Management : All trucks used for transportation of raw material and finished product will be covered with tarpaulin, maintained, optimally loaded and have Pollution under control (PUC) certificates. Maintenance shall be as per the periodicity and procedure specified by the manufacturer. Vehicles will be Euro-III & IV compliant, as applicable. Existing road infrastructure is adequate to cater to the additional traffic.

4.8 Ecology

Impact: There is no forest land in the project area. In the proposed project, 40% of the green belt shall be established on the land. No significant adverse impact of proposed project is anticipated on the flora or fauna in the immediate surroundings. This conclusion is based on the negligible level of increase in ground level concentrations of pollutants in surrounding areas due to project.

Management: The green belt will cover 40% (4800 sq.m.) of the plant area. It will help in controlling pollution inside the premises and will act as a micro-habitat for small sized mammals and birds. The species to be planted shall be Arjun, Gulmohar, Siris, Neem, Mango, Peepal etc. Mitigation measures as suggested in the Wild Life Conservation Plan shall be taken.

4.9 Solid waste

Impact: The generation of solid waste will be low during the construction phase. The solid waste will comprise of waste construction material and used packaging materials, boxes, containers, etc. In the operation phase, slag will be the main solid waste generated from ferro alloy production. After metal recovery from slag, the reject slag will be the main waste. Another solid waste will be the dust collected by bag filters. Domestic waste shall also be generated from workers during construction as well as operation phase.

Management: Construction wastes will be segregated at site itself. After segregation, the recyclable material will be recovered for reuse or sale and the non-recyclable material shall be used for leveling. Dustbins shall be installed around the work site. Empty packaging materials, drums, glass, tin, paper, plastic, pet bottles, wood, thermocol, solder butts, etc. will be disposed off through recyclers.

Slag generated from Ferro Manganese will be reuseable in Silica Manganese plant and excess will be sold to other manufacturers. The slag generated from Silico-Manganese will be sellable, useable by jigging plant for metal recovery (3-4%) and thereafter supply as construction material or filling of low lying areas. Slag from ferro silicon will be sold and useable in cupola furnace.

The fines generated from Bag filter will be recycled in the production process after suitable agglomeration.

4.10 Socio-economics status

Impact: There are no households in the project site, hence, there will be no displacement. Most of the work force required for construction and operation phase will be taken from the surrounding areas. Approximately 50 persons will be required during construction phase. During operation, 40 people are expected to get employed.

Management: Manpower will be hired from the nearby areas, to the extent possible. It will have a positive socio-economic impact on local people due to steady income. Thus, the direct and indirect employment will lead to economic growth. The company will also carry out activities for social welfare.

4.11 Occupational Health

The occupational safety and health are very closely related to productivity and healthy relation between employer and employees. The Company will have qualified engineers, safety and health officer, and statutory manpower. First aid room with necessary medicines will be maintained as per norms. Personal protective equipment (PPE) will be provided to workers. Regular training shall be provided for safe handling of material and machines. Company shall put 100% efforts for a zero accident rate.

5.0 ANALYSIS OF ALTERNATIVES

No site alternatives have been considered. The proposed project will be constructed in 1.2 ha of industrial land. The plant had already obtained 'Consent to Establish' (CTE) from Maharashtra Pollution Control Board vide letter no. RO-CHANDRAPUR/CONSENT/1912000503 dated 09.12.2019. Hence, the same site has been considered without analysing any alternatives. Submerged arc furnace technology has been chosen for production of ferro alloys.

6.0 ENVIRONMENTAL MONITORING PROGRAM

An environment management team shall be formed which will be responsible for implementation of environment management plan. It will also be responsible for ensuring the environmental monitoring of the proposed plant. The capital cost of environmental monitoring has been worked out as Rs. 48 lakhs and recurring cost as Rs. 21.18 lakh/ annum. Monitoring of stack emissions, ambient air quality, water quality, water levels, noise levels, soil quality, etc. shall be carried out periodically at plant level as follows:

- Ambient air- through an online continuous monitoring station and one 24 hourly sample per season except monsoon. Parameters will be PM_{10}, $PM_{2.5}$, SO_2 and NO_2.
- Stack emissions - online stack monitoring system for PM monitoring. The data will be transmitted real time to Maharashtra SPCB and CPCB.

- Noise- in plant premises, once in six months.
- Soil - green belt in plant, once in six months.
- Green belt - height, girth and survival will be monitored annual

7.0 ADDITIONAL STUDIES

Risk Assessment: All types of industries face certain types of hazards which can disrupt normal activities abruptly. The can lead to disaster like fires, inundation, failure of machinery, explosion, oil spillage, electrocution, etc. The aim of the disaster management plan is to take precautions; prevent hazard from occurring and avert disaster. It also plans for actions that are taken after a disaster occurs. This limits the damage to the minimum. To tackle a disaster situation, an emergency control room will be set up with communication facility. The emergency team shall be headed by the plant manager, who will be called Site Main Controller.

Public Consultation: The draft EIA report has been prepared on the basis of which the public consultation will be held. Action plan to address the issues raised during public consultation will be added after conduct of public hearing.

8.0 PROJECT BENEFITS

The employment generation from the proposed project will be 40 persons during operation. In addition to this, there will be indirect deployment of persons in the project. As majority of unskilled and semi-skilled persons will be from the surrounding villages, the local population will be benefited. Social welfare activities shall be carried out by the project management in the surrounding villages.

9.0 ENVIRONMENT MANAGEMENT PLAN

An environment management team shall be responsible for implementation of environment management plan, developing greenbelt, ensuring good housekeeping, statutory compliance as well as creating environmentally aware work forces. Regular monitoring of the statutory environmental parameters will be taken up as discussed in section 6 earlier. The parameter wise management plan comprises of following:

- Air quality management plan: provision of dust extraction system and bagfilter connected to submerged arc furnace, sprinkling in roads and material handling areas, green belt for absorption of pollutants.
- Noise quality management plan : plant machinery will be established in enclosed shed to present noise propagation to surrounding, DG set will have acoustic enclosure, boundary wall and green belt will also mitigate noise.
- Solid waste and hazardous waste management plan: Slag generated from Ferro Manganese will be reuseable in Silica Manganese plant and

excess will be sold to other manufacturers. The slag generated from Silico-Manganese will be sellable, useable by jigging plant for metal recovery (3-4%) and thereafter supply as construction material or filling of low lying areas. Slag from ferro silicon will be sold and useable in cupola furnace. The fines generated from Bag filter will be recycled in the production process after suitable agglomeration.

- Effluent management plan: There will be no process discharge from the plant. The blow down from the cooling system shall be reused for sprinkling and green belt watering.

- Storm water management plan: There will be rain water harvesting from roof tops. Excess rain water from the premises will be collected through storm water drainage system and sent to settling tank prior to release to natural drain.

- Occupational health and safety management plan: Pre-induction and during employment monitoring of occupational health shall be carried out as per Maharashtra Factories Rules 1963. First aid room with necessary medicines will be maintained as per norms. Personal protective equipment (PPE) will be provided to workers. Regular training shall be provided for safe handling of material and machines. Company shall put 100% efforts for a zero accident rate.

- Green belt development plan: Shall be undertaken over 40% of the plot area comprising of 1200 native species.

- Socio economic management plan: Social welfare measures to fulfill to the issues raised during public hearing.

The total investment for the proposed project is Rupees 1575 lakhs. The estimated investment cost for the project is based on the requirement of fixed and non fixed assets. The environmental management cost for the project shall be Rs. 316.20 lakhs capital cost and Rs.298.65 lakhs/ annum recurring cost. This includes monitoring cost.

10.0 DISCLOSURE OF CONSULTANTS

The consultants engaged for the preparation of the EIA/EMP of the project is Min Mec Consultancy Pvt. Ltd. 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 valid upto 16.03.2024), which has been renewed as per procedure since. In 2012, lab had been recognized under Environment Protection Act (EPA) by Ministry of Environment, Forest & Climate Change, Government of India and has been renewed till 2024. On 25.02.2021, Min Mec Consultancy was accredited by QCI-NABET as Mine Plan Preparing Agency (MPPA). Min Mec was accredited as EIA Consultant Organisation by NABET vide Accreditation Certificate No. NABET/EIA/2225/IA 0096 valid upto 29.03.2025.

11.0 CONCLUSION

The analysis of the cost benefit shows that the project will be profitable after taking into the accounts of all requisite environmental management cost. The cost effectiveness analysis in terms of topography, drainage, climate, ambient air quality, water resource, water quality, noise level, traffic volume, land environment, soil quality, ecology and socio-economics shows that the project will have an overall positive impact.