

**EXECUTIVE SUMMARY  
OF THE  
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT  
FOR**

**Environmental Clearance for Proposed Installation  
of Silico-Manganese Plant (25000TPA) Through  
Setting up of 1 x 18 MVA Submerged Arc Furnace**

**Near Gumgaon Mines,  
Vill - Ranjhana, Khapa; Dist. - Nagpur; Maharashtra**



***Project Proponent***



**M/s MOIL Limited  
[formerly Manganese Ore (India) Ltd.]**

***Prepared by***

**ULTRA-TECH**

**ENVIRONMENTAL CONSULTANCY AND LABORATORY**

***A QCI-NABET Accredited Environmental Consulting Organization***

**Unit No. 206, 224, 225 Jai Commercial Complex, Eastern Express Highway,**

**Opposite Cadbury Factory, Khopat, Thane (West) - 400 061**

**Tel: 022 2534 2776, 0484 4011173 , Fax: 022 25429650,**

**Email: [kolkata@ultratech.in](mailto:kolkata@ultratech.in), Website: [www.ultratech.in](http://www.ultratech.in)**



## EXECUTIVE SUMMARY

### 1.0 Introduction

Manganese Ore India Limited (MOIL), a Govt. of India Enterprise, a Miniratna, state owned Manganese ore mining company, is the largest manganese ore producer in the country with a credit of sharing 50% of the country's production. It holds about 73.5 million tonnes of reserves and resources of manganese ore out of which 44% are proven reserves.

MOIL Ltd., the largest and low cost manganese ore producer in the country holding larger reserves of high grade of manganese ore, is in dominant position to capitalize on India's Steel sector growth. As per the Indian Bureau of Mines about 4.25 million tones of manganese ore reserves are estimated at Gumgoan Mines in Maharashtra.

MOIL Ltd. have already taken up various ore beneficiation and mineral processing projects. At present as a forward integration program, MOIL has proposed to set up a ferro-alloy plant near their existing Gumgoan mines, Vill – Rajhana, Khapa at Maharashtra and the plant will comprise of 1x18MVA SAF units for production of Si-Mn Ferro Alloy. The brief of the project is shown in **Table E.1**.

**Table E.1: Brief of the Project**

Sl.No.	Description	Unit	Capacity
1.	Saleable Silico-Manganese production	t/yr	25,000
2.	Furnace transformer capacity	MVA	3 nos. x 6 MVA
3.	No. of operating furnaces (Submerged Arc Smelting Furnace)	No.	1 x 18MVA
4.	No. of operating days per year	Days	330
5.	Daily production (Average)	t/d	76

Approximately 24.75 acres has been allocated by MOIL for the proposed plant. The total cost of the proposed project is estimated at Rs 136.44 Crore.

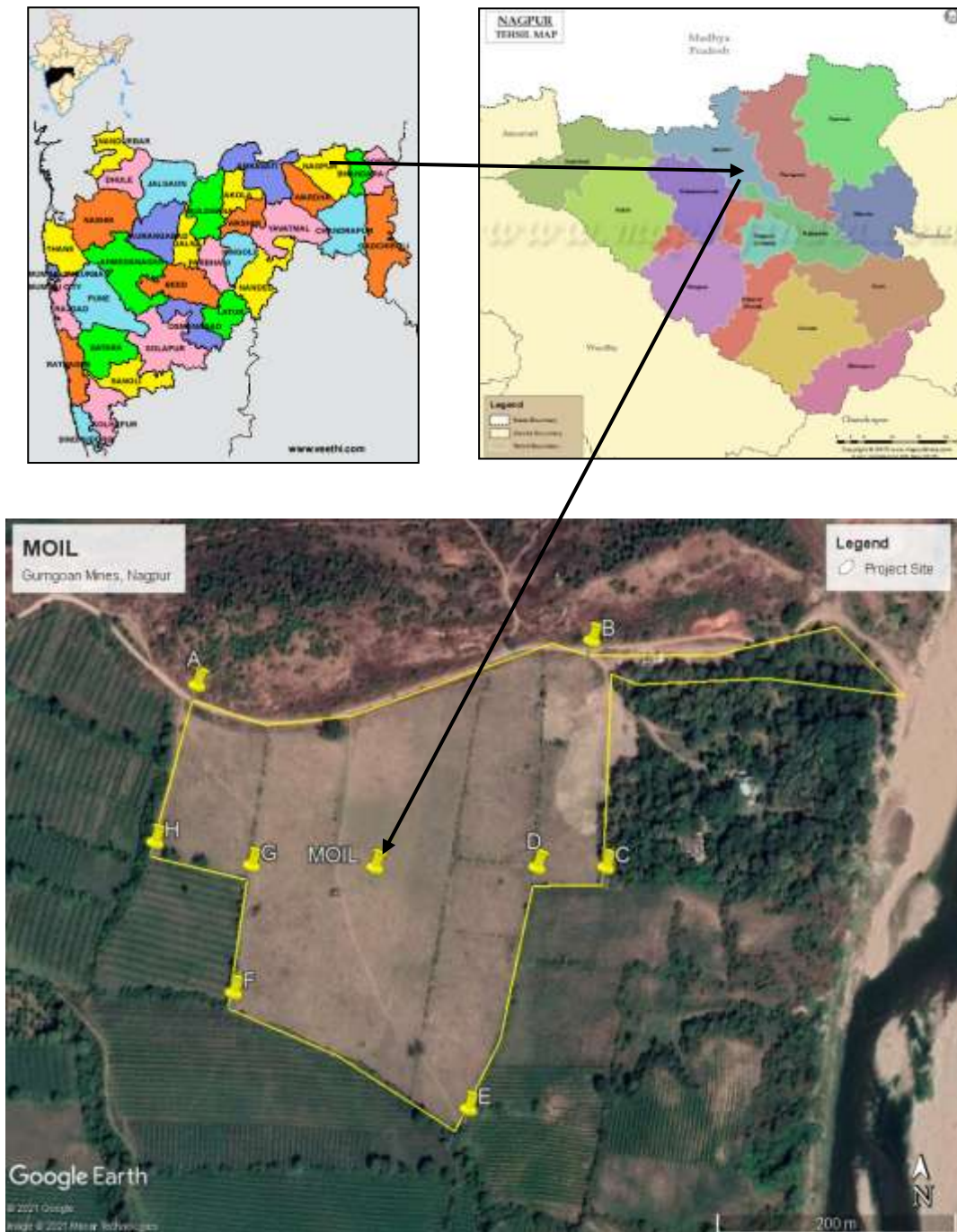
As per the Environmental Impact Assessment Notification dated 14th September 2006, the proposed project falls under the Schedule No.3 (a) [Metallurgical Industries Ferrous and Non-ferrous]. Considering the project activities, the project proposal falls under the Category A for which Environmental Clearance (EC) from MoEF&CC is necessary.

MOEF&CC, New Delhi has accorded Terms of Reference (TOR) for the proposed project vide letter no. F. No. J-11011/79/2021-IA. II (I) Dated: 26.03.2021.

### 1.1 Project Location

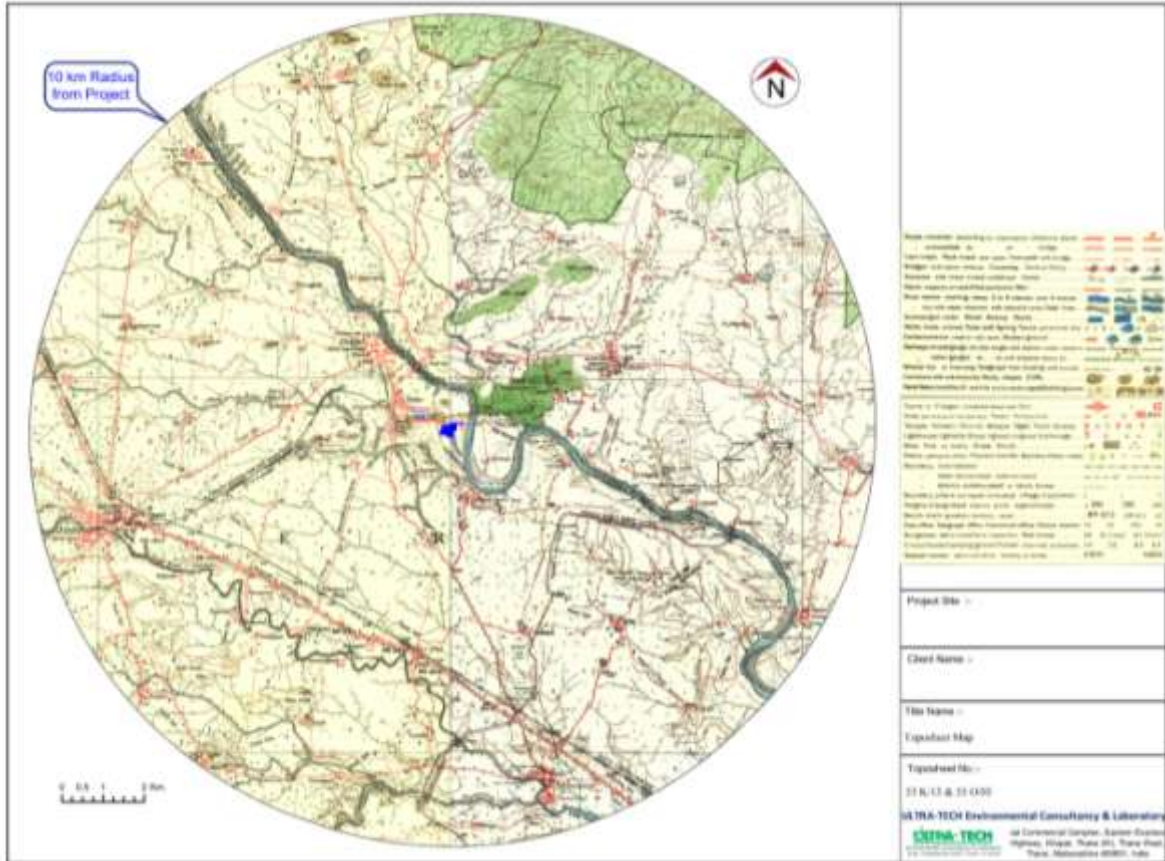
The proposed Ferro-alloy plant of M/s. MOIL Limited is located near Gumgaon Mines, Village – Rajhana, Khapa, Dist. – Nagpur, Maharashtra. The project site falls in Survey of India Toposheet No. - 55 K/15 & 55 O/03.

The details of environmental setting are given in **Table E.2**. The location map of the plant site is shown in **Figure E-1**. Similarly, the topographical feature of the study area within 10 km radius shown in **Figure E-2**. Google map – 10 km radius is shown in **Figure E-3**.

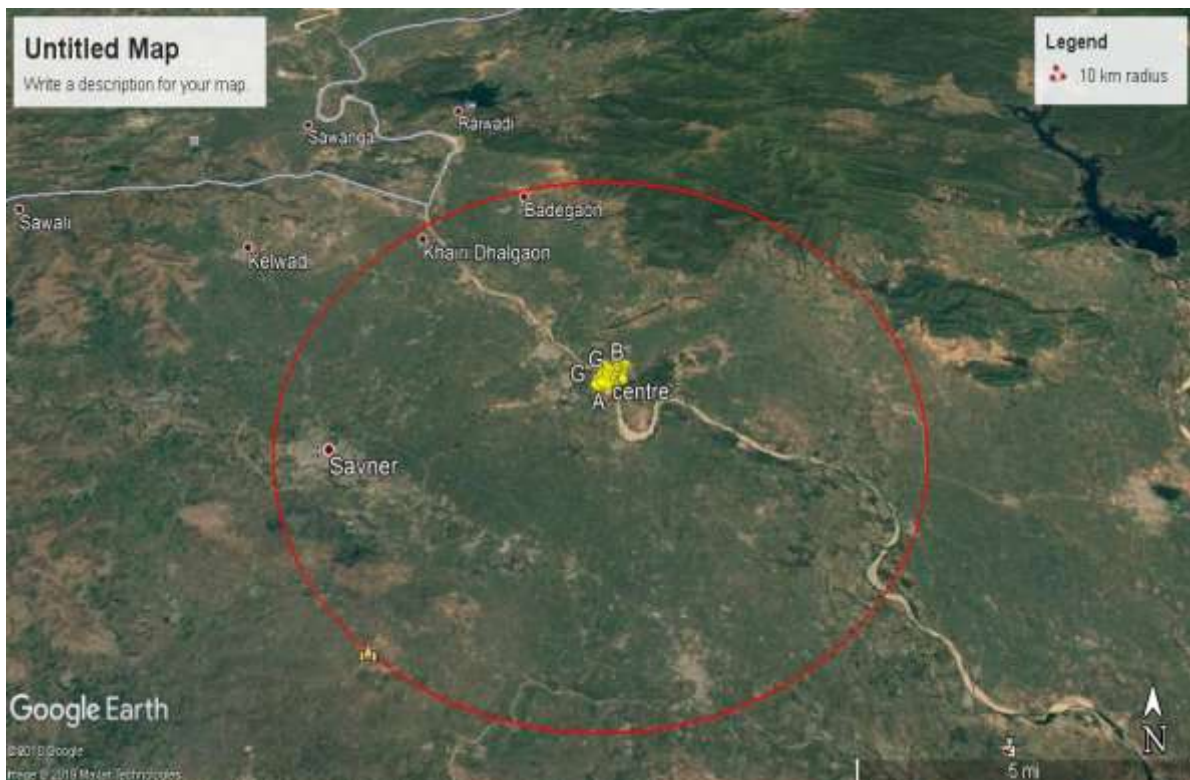


**Figure E-1: Location map of the Project Site**





**Figure E-2: Topographical Map of 10 KM Study Area**



**Figure E-3: Google map of 10 km radius from the Project Site**

**Table E.2: Environmental Setting around Project Site**

Particulars	Details		
	Pillar No.	Coordinates	
		Latitude	Longitude
Site Coordinates	A	21°24'25.8"N	78°59'49.4"E
	B	21°24'27.0"N	79°00'0.9" E
	C	21°24'20.9"N	79°00'01.3"E
	D	21°24'20.9"N	78°59'59.3"E
	E	21°24'14.4"N	78°59'57.3"E
	F	21°24'17.52"N	78°59'50.47"E
	G	21°24'20.96"N	78°59'50.99"E
	H	21°24'21.58"N	78°59'48.18"E
	Toposheet No.	55 K/15 & 55 O/03	
Elevation	Highest – 317 m MSL; Lowest – 302 m MSL		
Nearest Habitation/ Town	Town: Khapa – 1.0 KM, NW and Wakodi – 2.0 KM, SE District Head Quarter: Nagpur – 30.5 km, SSE		
Nearest Airport	Dr. Babasaheb Ambedkar International Airport: Aerial Distance – 35.9 km, SSE; Road Distance – 49.7 km, SSE;		
Nearest Highway	NH 47 : Aerial Distance – 5.46 Km, SW; Road Distance – 18.9 km;		
Nearest railway track from project boundary	Saonar Junction: Road distance- 10.4 Km and Aerial distance – 7.80 km, SW Patansavangi Railway Station: Road distance- 15.8 Km and Aerial distance – 6.82 km, SSE		
Nearest Dispensary and Govt. Hospital	Dispensary and Govt. Hospital and education facility are present in nearest habitation, Khapa – 1.0 KM, NW and Wakodi – 2.0 KM, SE		
Educational facility			
Nearest tourist places	None within 10 Km study area.		
Defense installations	None within the study area.		
Ecological sensitive zones	Mansingdeo Wildlife Sanctuary – 5.5 km, NE		
Nearest Forests	Sitagondi Reserve Forest – 5.64 km, NE		
Nearest streams/ rivers/ water bodies (from project boundary)	Kanhani River – 18.07 m, E <i>(Source: All distances are taken with respect to Google Earth)</i>		
Seismic zone	As per the 2002 Bureau of Indian Standards (BIS) seismic zone map of India, categorized as Seismic Zone-II.		

## 2.0 Project Description

MOIL Ltd is planning for forward integration to produce Si-Mn for supplying to steel industry. In this prospect, MOIL has proposed to set up a Ferro-Alloy plant comprising of

1x18 MVA Submerged Arc Furnace for production of 25000 TPA Silico-Manganese at Ranjhaa Village near Gumgoan mines in Maharashtra. It is proposed to set up the plant for Production of Silico-Manganese based on smelting technology in SAF. The proposed unit will be located at Gumgoan mines, Khapa, State: Maharashtra. The land area acquired for the proposed plant is 10.02 ha. The total land area is industrial. No/forestland involved. The entire land is already under possession of the project proponent. Of the total area, 4.02 ha (40.09%) land will be used for green belt development. Total project cost is approx. Rs. 136.44Crores. The details of production capacity of proposed ferro alloy plant are listed in **Table E.3.**

**Table E.3: Details of Production Capacity**

Name of unit/facilities	Proposed unit	Production Capacity (TPA)
Ferro Alloys Plant	1 x 18 MVA Submerged Arc Furnace (SAF)	Silico-Manganese - 25000

### 2.1 Land Requirement

The land area acquired for the proposed plant is 10.02 ha or 24.75 Acre. The total land area is industrial. No/forestland involved.

The details of land-use breakup of the proposed project is given in Table-E-4.

**Table E.4: Land Use of Project Site**

Sl.No.	Land Use	Area		Percentage
		Sq. M	Ha	
1	Plant Area, Office buildings, Storage shed etc. (All covered area).	36377.51	3.64	36.32
2	Road & Gallery Area	11600	1.16	11.58
3	Parking Area	675	0.07	0.67
4	Green Belt Area	40152.12	4.02	40.09
5	Open area and others	11355.07	1.14	11.34
<b>Total</b>		<b>100159.7</b>	<b>10.02</b>	<b>100.00</b>

### 2.2 Raw Material (Quantity And Source), Product And Mode of Transport

The details of Raw material are given in table E-5. The storage capacity of each raw material is of 15 days.

**Table E.5: Details of Raw Material**

Sl. No.	Raw Materials	Annual Consumption (T)	Mode of transport	Source of raw material	Storage for
<b>1</b>	<b>Silico-Manganese</b>				
<b>1a</b>	Manganese Ore, SM Grade	14,800	Self Tippled Truck	Gumagaon Mine and nearby mines	15 Days
<b>1b</b>	Manganese Ore, Grade	25,575	Self Tippled Truck		15 Days

	GM 4516			of MOIL	
<b>1c</b>	Manganese Ore, GM 4187	16,150	Self Tipped Truck		15 Days
<b>2</b>	Dolomite	6,500	Self Tipped Truck	Domestic	15 Days
<b>3</b>	Coke	12,125	Self Tipped Truck	Domestic	15 Days
<b>4</b>	Coal	3,000	Self Tipped Truck	Local supply	15 Days
<b>5</b>	Iron Ore	1,875	Self Tipped Truck	Domestic	15 Days
<b>6</b>	Quartz	1,375	Self Tipped Truck	Domestic	15 Days
<b>7</b>	Electrode paste	575	Truck	Aluminum producers	15 Days

### 2.3 Power Requirement

The estimated power requirement of the proposed silico-manganese plant is 22 MVA.

#### Source of Power supply

Power requirement for the proposed SiMn plant shall be met from 132/33 kV Bhagimari LILO Sub Station Approximately 14 KM away from the plant site, through a single circuit 132 kV overhead lines of MSEDCL.

### 2.4 Water Requirement

The total requirement of fresh water from source to meet process make-up and domestic needs is estimated as 35 KLD which will be sourced from Gumgaon mine pit water. The water from Kanhan river can also be used as secondary source of water as per requirement. The details of water requirement for proposed project is presented in **Table E.6**.

**Table E.6: Details of Water Requirement**

Sl. No.	Consumer Units	Water requirement, KLD			
		Circulation water		Make -up water	
		Soft water in Primary circuit	Industrial water secondary circuit/ open indirect and direct circuit cooling	Industrial Make up water	
1	Silico-Manganese Plant				
a)	Submerged Arc Furnace (SAF) – one (1) No. of 18 MVA (Semi-Closed Type)	275	275	20.5	
b)	Soft Water Plant				
c)	Dust Suppression System	-	-	-	3*
d)	Drinking water	-	-	-	4
e)	Fire Fighting	-	-	-	5



f)	Greenbelt & Misc	-	-	-	5.5+7.5*
<b>Total</b>		<b>275</b>	<b>275</b>	<b>-</b>	<b>35</b>

## 2.4 Manpower Requirement

The proposed project will generate employment for around 42 people. Priority for employment will be given to local persons. Following staff & workers are proposed project is presented in Table E.7.

**Table E.7: Manpower Details**

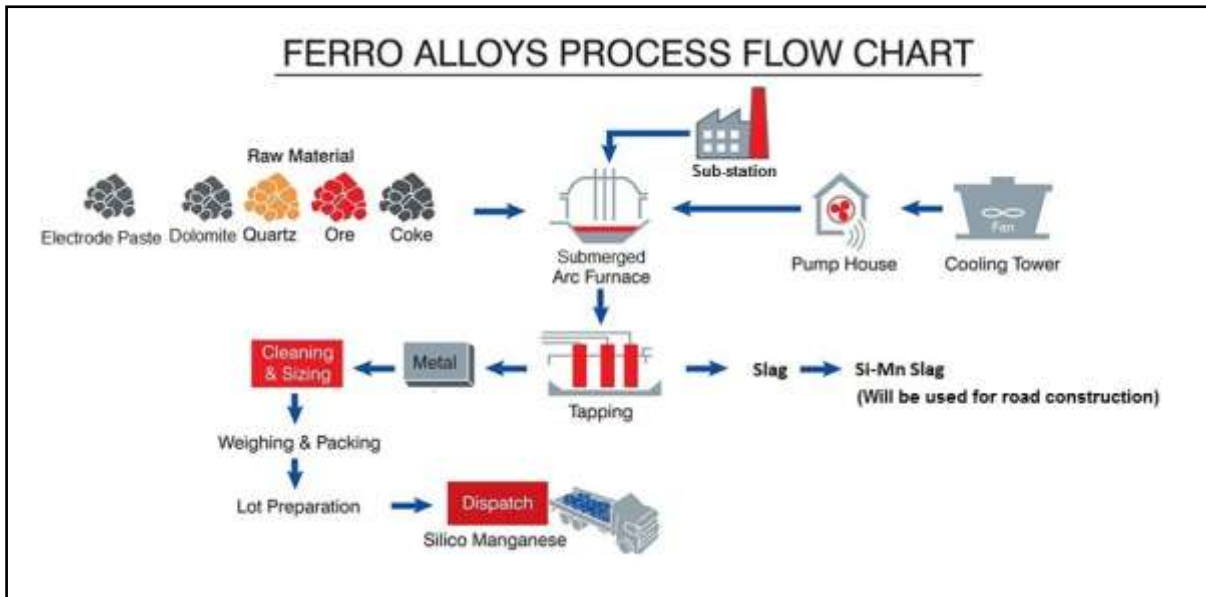
S. No.	Category	Proposed No. of Persons
1.	Dy. General Manager	01
2.	Managerial	04
3.	Engineer	02
4.	Supervisor	02
5.	Skilled worker	13
6.	Unskilled worker	06
7.	Charge Hand (Operator)	04
8.	Clerical	02
9.	Security	08
<b>Total</b>		<b>42</b>

## 2.5 Manufacturing Process Description

Ferro-alloys are produced by reducing metals from their oxides contained in ores by using a suitable reduction under conditions created to ensure a high recovery of the valuable elements from the starting materials. Such reduction reactions are characterized by stability of an oxide at high temperatures. The stability of all oxides will become more stable with increasing temperature. An element which forms a stronger oxide can under appropriate conditions be used as reductant for a less strong oxide. The reaction will proceed successfully if the difference of oxygen involved with a small difference, favorable conditions should be formed to make the reaction proceed.

The presence of iron or iron oxides can facilitate some reduction processes. Iron dissolves the reduced element, forms a compound with it, and thus lowers the melting point of an iron element alloy is lower than that of the pure element, e.g. in Ferro-manganese production, and therefore the reaction of reduction of the element can proceed at a lower temperature. Ferro alloy process flow chart shown in **Figure E-4**





**Figure E-4: Material Flow Chart Fe/Si-Mn**

### 3.0 Description of Environment

The 10 km radial distance from the proposed plant boundary has been considered as study area for Environmental Impact Assessment (EIA) baseline studies. Environmental monitoring for various attributes like meteorology, ambient air quality, surface and ground water quality, soil characteristics, noise levels and flora & fauna have been conducted at specified locations and the secondary data collected from various Government and Semi-Government organizations. Baseline Environmental monitoring studies for the various environmental attributes were carried out during 1<sup>st</sup> October 2020 to 31<sup>st</sup> December 2020. The details of the baseline study are presented as follows:

#### 3.1 Meteorology

The meteorological parameters were recorded on hourly basis during the study period near proposed project site and the summary of meteorological data generated at site is presented in following **Table E.8**.

**Table E.8: Summary of the Meteorological Data generated at Site**

Period	Wind Speed (m/s)		Temp (°C)		Relative Humidity (%)		Rainfall (mm)
	Max	Min	Max	Min	Max	Min	
October 2020	7.78	0.56	35	18	94	23	--
November 2020	5.28	0.28	33	11	94	18	--
December 2020	4.17	1.11	30	9	94	16	--

#### 3.2 Air Environment

8 ambient air quality monitoring stations were selected in and around the project site and studies were carried out as per CPCB standards. Levels of PM<sub>10</sub> and PM<sub>2.5</sub> are found to exist in the range of 51 to 85 µg/m<sup>3</sup> and 24 to 37 µg/m<sup>3</sup> respectively. Sulphur dioxide and Oxides

of Nitrogen are observed in the range of 7 to 14  $\mu\text{g}/\text{m}^3$  and 10 to 24  $\mu\text{g}/\text{m}^3$  respectively which are well within limits as per National Ambient Air Quality standards 2009.

### 3.3 Noise Environment

The noise monitoring has been conducted for determination of noise levels at 8 locations in the study area. Noise level of the study area varied from 51.4 to 54.0dB (A) in day time and from 41.1 to 44.7 dB (A) in the night time, which are well within the limits as per ambient noise standards.

### 3.4 Water Environment

#### Ground Water Quality

- The analysis results indicate that the pH ranges in between 7.3 to 7.7, which is well within the specified standard of 6.5 to 8.5. The minimum pH of 7.3 was observed at GW2, GW4 & GW7; the maximum pH of 7.7 was observed at GW1.
- Total hardness was observed to be ranging from 184 to 452 mg/l. The minimum hardness (184 mg/l) was recorded at GW8 and the maximum (452 mg/l) was recorded at GW2.
- Chlorides were found to be in the range of 94 to 200 mg/l, the minimum concentration of chlorides (94 mg/l) was observed at GW8, whereas the maximum value of 200 mg/l was observed at GW2.
- Sulphates were found to be in the range of 30 to 86 mg/l. The minimum value observed at GW8 (30 mg/l) whereas the maximum value observed at GW2 (86 mg/l).
- The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 378 to 840 mg/l, the minimum TDS observed at GW8 (378 mg/l) and maximum concentration of TDS observed at GW2 (840 mg/l).
- The Iron concentrations were found to be ranging in between 0.15 to 0.28 mg/l, the minimum concentration of Iron observed at GW5 (0.15 mg/l) and maximum concentration of Iron observed at GW6 (0.28 mg/l).
- Arsenic, Zince and other heavy mental's i.e. Cadmium, Chromium etc are found below detectable limit.

#### Surface Water Quality

- The analysis results indicate that the pH ranges in between 7.2 to 7.5, which is well within the specified standard of 6.5 to 8.5. The minimum pH of 7.2 was observed at SW6; the maximum pH of 7.5 was observed at SW1 & SW5.
- DO was observed to be ranging from 5.3 to 6.2 mg/l. The minimum DO (5.3 mg/l) was recorded at SW3 and the maximum (6.2 mg/l) was recorded at SW6.
- TDS was observed to be ranging from 218 to 364 mg/l. The minimum TDS (218 mg/l) was recorded at SW8 and the maximum (364 mg/l) was recorded at SW1.
- Chlorides were found to be in the range of 28 to 66 mg/l, the minimum concentration of chlorides (28 mg/l) was observed at SW8, whereas the maximum value of 66 mg/l was observed at SW1 & SW3.

- Total hardness was observed to be ranging from 148 to 236 mg/l. The minimum hardness (148 mg/l) was recorded at SW8 and the maximum (236 mg/l) was recorded at SW1.
- Calcium was found to be in the range of 32 to 51 mg/l, the minimum concentration of chlorides (32 mg/l) was observed at SW8, whereas the maximum value of 51 mg/l was observed at SW1.
- Magnesium was found to be in the range of 17 to 27 mg/l, the minimum concentration of chlorides (17 mg/l) was observed at SW8, whereas the maximum value of 27 mg/l was observed at SW1.
- Surface Water quality is falling within Class A at SW6 & SW8, class B at SW1, SW4, SW5 & SW7 and Class D at SW2 & SW3 as per CPCB classification.

### 3.5 *Soil Quality*

- It has been observed that the pH of the soil in the study area varied from 7.5 to 8.3. The maximum pH value of 8.3 was observed at S-6 where as the minimum value of 7.5 was observed at S-5.
- The electrical conductivity was observed to range from 0.189 to 0.365 ms/cm, with the maximum observed at S-7 with the minimum observed in S-6.
- The nitrogen value was observed to range from 102 to 132 kg/ha, with the maximum observed at S-6 with the minimum observed in S-2.

### 3.6 *Ecology and Biodiversity*

On the basis of field studies, records of Botanical Survey of India and Forest department, Maharashtra state did not indicate the presence of any endangered and/or vulnerable species in this area and there are no reserved, protected or village forests at a distance of 10-km from the proposed plant boundary. Indian Peafowl which belongs to Schedule I, of Wildlife Protection Act, 1972 has been found within the study area and a conservation plan for the Indian Peafowl has been prepared. There are no other endangered, threatened wild animal species in study area.

### 3.7 *Socio Economics*

Total population of the study area as per the census of 2011 is 115114. The sex ratio of the area is 953 (female) per 1000 (male). The sex ratio for the study area is higher as compared to district sex ration of Nagpur Dist. (951). There are about 26181 households in the study area.

In the study area the average literacy rate is 76% and 45.1% of the total population is working in the study area.

## 4.0 **Anticipated Environment Impacts and Environment Management Plan**

### **Impact on Soil**

During construction phase there shall be import of construction material from outside like bricks, cement, murrum, sand etc, use of these will change the characteristics of the soil in the plant construction area. Further, usage of diesel oil and lubricating oils for vehicles and

equipments, municipal wastes due to construction workers, domestic sewage and sillage from construction labour canteen and office at project site, etc, may have certain impact on soil.

Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / MPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. 4.02 Ha of greenbelt will be developed as per guidelines. Hence there will not be any significant impact on land environment due to the proposed project.

### **Impact on Air Quality**

Particulate Matter (PM), Sulphur dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) will be the major pollutants emitting from the proposed plant. In order to control the emissions of particulates, the pollution control equipments are proposed. Adequate stack height (30 m) and bag filter will be provided for effective dispersion of emissions from SAF.

The following air pollution control systems/ measures are proposed in the project:

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.
- The Fugitive emissions from the Submerged Electric Arc Furnace will be sucked through hoods and will pass through a 4 th hole fume extraction system with bag filters and then the treated gases will be discharged into the atmosphere through a stack of 30 m height for SEAF & Dust extraction system with bag filter for effective dispersion of emissions. The outlet dust emission in the exhaust gases will be limited to 30 mg/Nm<sup>3</sup>. The dust will be pneumatically carried to covered bins

### **Impact on Water Quality & Management**

The total fresh water requirement for the project will be 35 KLD. As the process being thermal, generation of process effluent from Silico-manganese plant is negligible.

In the proposed project, wastewater generated from the proposed plant will be sent to guard pond after it will be recycled again as closed-circuit cooling system will be provided. Oil & grease traps will be provided, to treat if water is getting mixed with oil, grease and cleaning agents. Sanitary waste water generation due to proposed project will be 2.8 KLD and will be sent to Septic tank followed by Soak Pit. No effluent will be let out of the plant premises. Hence Zero discharge will be implemented in the proposed project. Rain water harvesting helps in augmenting the water table. Hence there will not be any significant impact on water environment due to the proposed project.



### Impact due to Solid Waste Generation

In order to avoid problems associated with solid waste disposal, an effective solid waste management system will be followed. Hence, the impact due to solid waste generation during the plant operation is not envisaged. The sources, quantity of the solid waste generation and waste management measures for the proposed project is presented in Table-E.9.

**Table E.9: Solid Waste Quantity**

Sr. No	Description	Quantity	Treatment/ disposal
1	Si-Mn Slag	90 T/Day	Si-Mn slag will be used in road construction
2	Mn Ore Dust	3.5 T/Day	It will be used in briquette plant to produce briquette which will further be used as raw material
3	Bag Filter Dust	2.5 T/Day	
4	Municipal Solid Waste	19kg/Day	To be disposed as per MSW rules
5	Septic tank and soak pittank sludge	-	Used as manure for greenbelt development

Further, the hazardous waste such as used oil, will be handled as per hazardous waste management handling rules 2016

### Impact on Noise levels

The major sources of noise generation in the proposed project will be Furnace arcing, Compressor. The noise levels at the sources for these units will be in the range of 80-90 dB(A)

### Noise Attenuation Measures

The following control measures will be implemented for the proposed project:

- ❖ No noise polluting work in night shifts
- ❖ All noise generating equipments shall be provided with noise attenuation arrangements like silencers, mufflers, insulators, etc, to reduce the noise levels below 85dB(A) as far as technically feasible
- ❖ Pumps – Enclosure in acoustic screen, allowing for engine cooling and exhaust, use of anti-vibration mounting, flexible couplings of hoses, maintaining adequate inlet pressure
- ❖ Awareness will be imparted to labours employed in the project and shall be encouraged to commute through mass/public transport to reduce traffic and minimum use of horns while travel
- ❖ Provision of ear plugs for labour in high noise area
- ❖ Provision of barricades along the periphery of the site
- ❖ All contractors and subcontractors involved in the construction phase shall comply with the CPCB noise standards
- ❖ Activities that take place near sensitive receptors to be carefully planned (restricted to daytime, taking into account weather conditions etc.)

- ❖ Vehicles and generator set to be serviced regularly and maintained properly to avoid any unwanted generation of noise or vibration from them
- ❖ Use of suitable muffler systems/ enclosures/ sound proof glass panelling on heavy equipment/ pumps/ blowers
- ❖ In case of steady noise levels above 80-85 dB (A), initiation of hearing conservation measures
- ❖ The extensive greenbelt will be developed within the plant premises and will help in attenuating the noise levels further.

### Impact on Ecology

The incremental concentrations of the air quality modelling shows that the resultant levels of PM, SO<sub>2</sub> and NO<sub>x</sub> were well within the permissible limits as per National Ambient Air Quality Standards (2009). The impacts on aquatic ecology due to the proposed project activity would be negligible as the treated water will be properly reused and no waste water is discharged outside the plant premise. The proposed project does not create any significant impact on aquatic bodies.

### Socio - Economic Environment

There will be lot of opportunities in employment to local people during construction as well as in operation phase. There will be further upliftment in Socio Economic status of the people in the area. Socio economic activities will be carried out in the nearby villages. Hence there will be further development of the area due to the proposed project.

### Impact on Public Health

The discharge of waste materials (stack emission, wastewater and solid wastes) from process operations can have some adverse impact on public safety and health in the surrounding area, if appropriate treatment procedures are not followed. As the plant pollution control equipments will be designed as per the modern available technology for controlling the impacts, no adverse impacts on public health in the area are anticipated.

## 5.0 Environmental Monitoring Programme

Post project monitoring will be conducted as per the guidelines of MPCB and MoEF&CC are tabulated below:

**Table E.10: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS**

Sr. No	Particulars	Monitoring Frequency	Duration of Sampling	Important Monitoring Parameters	
I	<b>A. Air Pollution &amp; Meteorology</b>				
	A	Stack Monitoring			
	1	Submerged Arc Furnace	CEMS (all Stacks) Once in a month	Online	PM, CO, SO <sub>2</sub> & NO <sub>x</sub>
	<b>B. Ambient Air Quality Monitoring</b>				
1	2-3 No. of AAQ	Twice in a	24 hr.	PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> and CO	

Sr. No	Particulars	Monitoring Frequency	Duration of Sampling	Important Monitoring Parameters
	locations	month/ as stipulated by SPCB	continuous	
2	Fugitive emissions	Once in a month	8 hours	PM
<b>C. Meteorology</b>				
	Meteorological data to be monitored at the plant	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed
<b>II A. Water quality</b>				
1	Ground Water Wells in the downstream and upstream of plant	Once in a month	Grab sampling	As per IS:10500,
	Surface Water Damoder river	Once in a month	Grab sampling	COD, pH, temperature, oil & grease and heavy metals
	Sanitary waste water	Once in a month	Grab sampling	As per EPA Rules 1996
<b>III Industrial Noise Levels</b>				
1	Near administrative office	Once in a month	8 hr continuous with 1 hr interval	Noise levels in dB(A)
2	Near Si-Mn shop			Noise levels in dB(A)
3	Near Briquette plant			Noise levels in dB(A)
<b>Ambient Noise Levels</b>				
1	Four locations	Once in a month	24 hr continuous with one hr interval	Noise levels in dB(A)

### Budgetary Allocation for Environmental Protection

The total project cost for the proposed project is about Rs. 134.66 Cr. Out of this, Rs 387 lakhs will be spent on environment protection, management, pollution control, treatment and monitoring systems, appropriate budgetary provision would be made and provision for recurring expenditure for environment management of the project would be made. The details of budget allocation during functional phase are given in Table E.11.

**Table E.11: Expenditure Proposed for Environmental Protection Activities**

S. No.	Description of Item	Capital Cost (In Lacs)	Recurring Cost (In Lacs)
1	Pollution control during Construction stage	30	-
2	Air/Noise Pollution Control	90	10
3	Water Pollution Control	30	5
4	Environmental Monitoring and Management	15	5
5	Green Belt Development	7	1

S. No.	Description of Item	Capital Cost (In Lacs)	Recurring Cost (In Lacs)
6	Occupational Health	10	3
7	Social Environment development	205	--
<b>Total</b>		<b>387</b>	<b>24</b>

## 6.0 Risk Assessment & Disaster Management Plan

A detailed risk assessment and consequence analysis has been carried for all the plant operations in the proposed ferro alloy plant. A suitable disaster management plan has been recommended. A qualified and experienced safety officer will be appointed. The responsibilities of the safety officers include identification of the hazardous conditions and unsafe acts of workers and advice on corrective actions, conduct safety audit, organize training programs and provide professional expert advice on various issues related to occupational safety and health. He is also responsible to ensure compliance of works safety rules/statutory provisions.

All the potential occupational hazardous work places such as raw material handling and storage areas, furnace area, hot metal handling area, Product handling area and Furnace Transformers etc will be monitored regularly. The health of employees will be monitored once in a year for early detection of any ailment due to exposure to noise, respirable dust and hazardous chemicals. The audiometry and lung function tests will be included in this surveillance program.

## 7.0 Project Benefits

The Proposed project will have indirect positive impact on surrounding area which is as mentioned below:

- The proposed project will be carried out on the land which is already under possession of M/s MOIL Limited; hence no displacement of people is required
- Substantial Socio-economic benefits
- Good Techno-commercial viability
- Around the project site semi-skilled and unskilled workmen are expected to be available from local population in these areas to meet the manpower requirement during construction phase.
- Infrastructural facilities will be improved due to the project
- Secondary employment will be generated thereby benefiting locals

Thus a significant benefit to the socio-economic environment is likely to be created due to the project.

## 8.0 Budgets for Social Development

M/s MOIL Limited not only carries out business but also understands the obligations towards the society. The unit is aware of the obligations towards the society and to fulfill the social



obligations unit will employ semi-skilled and unskilled labor from the nearby villages for the proposed project as far as possible. Unit will also try to generate maximum indirect employment in the nearby villages by appointing local contractors during construction phase as well as during operation phase. The Project Proponents will contribute reasonably as part of social development as a part of EMP and will carry out various activities in nearby villages.

The total estimated cost of the proposed project is 134.66 Crores. The project Proponent will allot 1.5% of the project cost i.e. around 205 Lacs towards the this activity.

## **9.0 Conclusions**

M/s MOIL Limited is Proposed installation of the Ferro Alloy Plant through setting up of 1 x 18 MVA Submerged Arc Furnaces for production of Silico Manganese (25000 TPA) which will not only contribute to the growth of Indian economy but also strengthen the socio-economic values/ status in the area. All the latest and environment friendly technology will be adopted. The unit will adopt all measures like; pollution control equipments, effective EMP & DMP to prevent harm/ damage to the environment. Green belt development in & around the area will increase aesthetic value, as tool for effective pollution mitigate measure.