PRE-FEASIBILITY REPORT

(as per MoEF&CC OM no. J-11013/41/2006-IA.II(I) dated 30.12.2010)

FOR

INSTALLATION OF SUBMERGED ARC FURNACE FOR PRODUCTION OF FERRO ALLOYS AT PLOT NO. B-41/3, MIDC CHANDRAPUR, TEHSIL & DISTRICT CHANDRAPUR

(Production - Ferro Manganese (12000 TPA) or Silico Manganese (10000 TPA) or Ferro Silicon (5000 TPA); Land area: 12000 sq.m. (1.2 ha))

DECEMBER, 2021

(Issue 1, Rev 0)

By:

M/S DESTINO MINERALS AND METALS PRIVATE LTD.

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1.0 EXECUTIVE SUMMARY

Project name	Installation of Submerged Arc Furnace For Production of Ferro Alloys, By M/s Destino Minerals and Metals Private Ltd.
Project proponent	M/s Destino Minerals and Metals Private Ltd.
Location	Plot No. B-41/3, MIDC Chandrapur, Tah. & Dist. Chandrapur, Maharastra
Latitude	19°58’49.96” N to 19°58’54.35” N
Longitude	79°14’14.90” E to 79°14’20.95”E
Total Area	12 Ha.
Product	Ferro Manganese, Silico Manganese and Ferro Silicon
Production capacity	Ferro Manganese (12000 TPA) or Silico Manganese (10000 TPA) or Ferro Silicon (5000 TPA)
Working days	330
Manpower	40
Expected cost of the project	Rs. 1575 lakhs
Water requirement	30 KLD
Source of water	MIDC water supply scheme
Power requirement	5 MVA (40,000 MWh/annum) DG Sets : 1 X 100 KVA (during power failure)
Power source	MSEB electricity supply connection available at MIDC at 33 KV level.
Implementation Schedule	12 months within receipt of statutory clearances

2.0 INTRODUCTION

2.1 Identification of project and project proponent

M/s Destino Minerals and Metals Private Ltd. intends to come up with a 1X5 MVA Ferro Alloy Plant. The land requirement for the project is 12 Ha. Land has been purchased by the company and is in its possession. The land currently has a boundary wall, 3 industrial sheds and two rooms for security purposes. Greenbelt development over 33% of the land is proposed to be done.

Destino Minerals & Metals Private Limited is a Private incorporated on 19 December 2018. It is classified as Non-govt company and is registered at Registrar of Companies, Mumbai. It is inolved in Manufacture of other fabricated metal products; metal working service activities.

Directors of Destino Minerals & Metals Private Limited are Savita Sanjay Bodhankar, Mangala Moreshwar Zode, Madhavi Rajendra Kanchrlawar,

2.2 Brief description of nature of the project

The nature of the project as per **Schedule to EIA Notification, 2006 & its amendments** is Item no. 3(a) for metallurgical industries (ferrous & non - ferrous). This is a Category A project since it falls in the critically polluted area of Chandrapur.

2.3 Need for the project and its importance to the country and or region

As per the National Steel Policy, the objective is to build a globally competitive industry. It is anticipated that a crude steel capacity of 300 Million Tonnes will be required by 2030 based upon the demand projections. Thus, achieving crude steel capacity of up to 300 million Tonnes will require extensive mobilization of natural resources, finances, manpower and infrastructure including land.

The proposed project will assist in the endeavor to meet the projected demand of steel in the country by providing the necessary additives to the larger steel manufacturers.

2.4 Demand-supply gap

Ferro Alloys are used as additives in steel making as de-oxidants and as alloying agent. These are added in steel production process not only for de-oxidation but also for grain size control as well as for improvement in the mechanical properties of steel. Depending upon the process of steel making and the type of steel being made, the requirement of Ferro Alloys varies widely.

The product mix of the Ferro Alloy industry consists of Ferro manganese, Silico Manganese, Ferro Silicon, Ferro Chrome & Charge Chrome called

Bulk Ferro Alloys. There is another group of ferro alloys called Noble Ferro alloys which consists of Ferro Molybdenum, Ferro Titanium, Ferro Tungsten, Ferro Vanadium, etc. As per Indian Ferroalloys Producers' Association (IFAPA), the total installed capacity of bulk Ferroalloys Industry in India is estimated at 5.10 million tonnes per annum and for noble ferroalloys it is 50,000 tonnes per annum[1]. Owing to high cost of power, Ferroalloys Industry has not been operating to its full capacity in India

Ferro alloys are used in production of mild steel, carbon steel, special alloy steel and stainless steel in the country. India's steel production is increasing every year; thereby the consumption of ferro alloys is also increasing. The industry has enough capacity to produce ferro alloys required for domestic steel industry. However, certain basic raw materials, i.e., ores viz, manganese ore, chrome ore, roasted molybdenum ore and concentrate/ moly oxide, tungsten ore, wolframite ore, scheelite ore, nickel oxide, vanadium ore, vanadium pentoxide, etc need linkages and stable supplies.

The total production of ferromanganese in 2018-19 was about 5,18,000 tonnes while it was 47,406 tonnes in 2019-20 as per the annual return submitted to IBM in Form 'O'. The estimated consumption of ferromanganese was 50,800 tonnes in 2017-18.

The production of silicomanganese (including medium-carbon & low carbon silicomanganese) which was about 3,42,591 tonnes in 2018-19 decreased to 3,20,594 tonnes in 2019-20. In 2017-18, the total consumption of silicomanganese by all industries has been estimated at 1,22,600 tonnes.

The production of ferrosilicon in 2018-19 was about 90,000 tonnes. The domestic consumption of ferro silicon in the Organised Sector was estimated at 23,400 tonnes in 2017-18.

Imports of ferroalloys (total) decreased marginally by 5% to 4,83,129 tonnes in 2019-20 from 5,08,009 tonnes in the previous year. In terms of value, the ferroalloys imports decreased to Rs. 6,343 crores in 2019-20 from Rs. 7,573 crore in 2018-19. Out of total imports in terms of quantity, imports of ferrosilicon accounted for about 45% followed by ferromanganese (20%), ferronickel (23%), ferrochrome (6%) and chargechrome (1%). Other ferroalloys together accounted for the remaining 5% of the imports in 2019-20. Imports were mainly from Bhutan (27%) followed by Indonesia & Malaysia (14% each), China (13%), South Africa (8% each), Albania (4%) Republic of Korea & Singapore (3% each), Japan (2%) and Brazil (1%).[1]

As per the steelworld report, ferroalloys Industry is estimated to grow at a CAGR of 5.9% between 2017 to 2025 and is expected to reach a valuation of US$ 188.7 Bn by 2025. India is expected to show strong growth in usage of steel in the coming years because of its robust economy, massive infrastructure needs and expansion of industrial production. India is

[1] Source: Indian Minerals Yearbook 2020 (part-II: metals & alloys), October 2021 of Indian Bureau of Mines available at https://ibm.gov.in/writereaddata/files/11292021123407Ferro%20Alloys_%202020.pdf accessed 30.12.2021

expected to become one of the leading steel consuming nations in the next decade. In this scenario, the Ferro alloys Industry estimates that the consumption of ferroalloys will increase domestically and internationally in the coming years. Some of the Ferroalloy Producers have already gone for expansion and some new units are coming up.

2.5 Export Possibility

Owing to high cost of power, Ferroalloys Industry has not been operating to its full capacity in India. As per Indian Minerals Yearbook 2020 (part-II: metals & alloys), October 2021 of Indian Bureau of Mines, in 20119-20, exports of ferroalloys (total) decreased by 12% to 17,15,936 tonnes in 2019-20 from 19,42,134 tonnes in the previous year. In terms of value, the ferro-alloys exports decreased to Rs. 11,810 crores in 2019-20 from Rs. 14,962 crore in 2018-19.

Out of total export, in terms of quantity, majority were exports of ferrochrome (43%) followed by ferrosilico-manganese (40%), ferromanganese (15%) and ferrosilicon (1%). The other ferroalloys together accounted for remaining 1% of exports in 2019-20. Exports were mainly to Republic of China (19% each), UAE (13%), Re[ublic of Korea (12%), Japan (10%), Taiwan (7%), Taiwan (7%) and Malaysia, Egypt, Bangladesh, Italy & Thailand (3% each).

The Table 1 below shows the trend in production for sale, import, export and actual consumption of finished steel (alloy/ stainless + non-alloy) in the country for the last five years.

TABLE 1: TREND IN PRODUCTION FOR SALE, IMPORT, EXPORT AND ACTUAL CONSUMPTION OF FINISHED STEEL IN INDIA (IN MILLION TONNES)

Description	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20*
Production (finished steel)	104.578	106.602	120.140	126.855	101.287#	76.326# (1.8)
Imports	9.32	11.712	7.227	7.482	7.834	5.51 (-6.7)
Export	5.596	4.079	8.242	9.620	6.361	6.52 (39.4)
Apparent steel use	76.994	81.525	84.042	90.708	90.708	75.05 (3.8)

Source: Annual Report 2019-20, Ministry of Steel, Government of India
**** Provisional; for April- December, 2019***
 # Crude steel equivalent

2.6 Domestic / Export markets

The ferro alloy can be both sold in domestic market or exported.

2.7 Employment generation (Direct and Indirect)

Employment generation from the proposed project is envisaged to be around 50 persons during constructions and 40 persons during operation. Many more persons will also get employment in the ancillary & other services connected with this project.

3.0 PROJECT DESCRIPTION

3.1 Type of project including interlinked and interdependent projects

There is no interlinked or interdependent project

3.2 Location with Coordinates

The project is proposed on Plot No. B-41/3, MIDC Chandrapur, Tah. & Dist. Chandrapur of Maharastra. No alternate site has been considered for the proposed project. The total land requirement for the proposed project is 12 Ha. The land required for the proposed project is already under possession of M/s Destino Minerals and Metals Private Ltd.

The location map of the proposed site is given in **Fig 1.**

The latitude and longitude of the proposed site based on Google earth are given in **Table 2** and the corresponding map is shown in **Fig 2**.

TABLE 2: COORDINATE OF PROJECT BOUNDARIES

Coordinate No.	Latitude(N)	Longitude(E)
A (North most)	19°58’54.35” N	79°14’19.86” E
B (East most)	19°58’52.33” N	79°14’20.95”E
C (South most)	19°58’49.96” N	79°14’16.25”E
D (West most)	19°58’52.40” N	79°14’14.90” E

FIG 1: LOCATION MAP

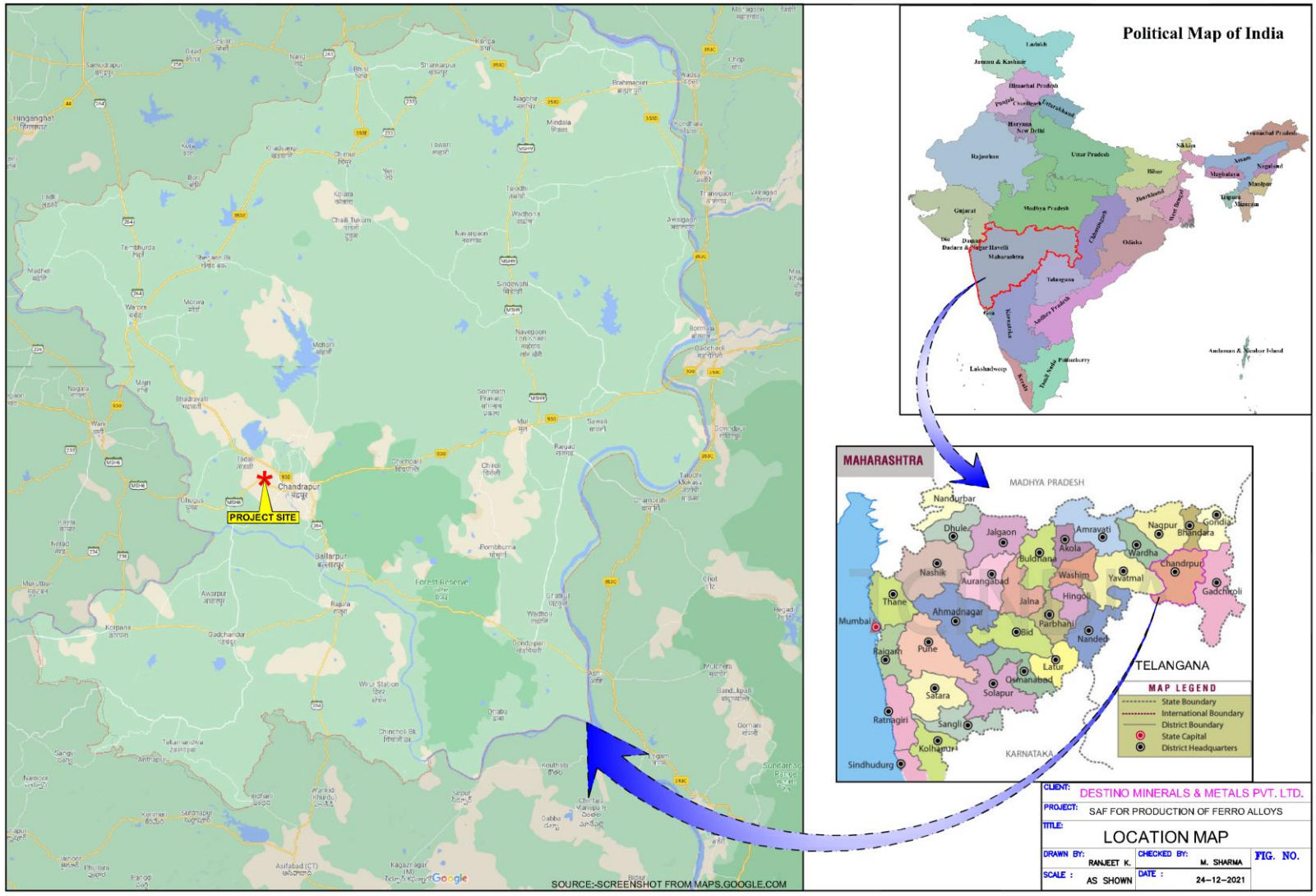


FIG 2: PLAN SHOWING COORDINATES OF PROPOSED AREA ON GOOGLE EARTH IMAGE

3.3 Details of Alternate Sites & Environmental Considerations

No alternative sites under consideration. The proposed project will be constructed within 12 Ha.

Environmental considerations: The eco sensitive zone and buffer zone of Tadoba – Andhari Tiger Reserve is at 9.8 km NE and Tadoba Andhari Tiger Reserve core zone is at 19 km NE from the project boundary. Besides that there is no National parks, Wildlife Sanctuary within 10 km radius. Eco-sensitive zone and core zone of Tipeshwar WLS is at 66 km W and 73 km W respectively. There are several water bodies and forest present within the study area of the project. The distance to various water bodies, forest, etc are given in Table 3.

TABLE 3: DISTANCE AND DIRECTION (WITHIN 10 KM) OF WATER BODIES, FORESTS FROM PROJECT BOUNDARY

Sl. No.	Particulars	Distance & Direction (km)
I.	**Forest**	
1.	Morwa RF	Adjoining
2.	Junana R.F.	7.1 E
3.	Balharshah P.F.	9.2 SE
II.	**River/Nala/ Drain**	
1.	Erai River	2.6 E
2.	Zarpad Nala	7.7 SE
3.	Motaghat Nala	4.4 NE
4.	Upasa Nala	9.2 NE
5.	Sarai Nala	4.4 SW
6.	Wardha River	9.0 S
7.	Gaontiadeo Nala	8.0 SE
8.	Ramala Talav	6.9 SE
9.	Sakharwai	9.3 WNW
10.	Vendli	1.7 S
11.	Urjanagar	6.8 NE

3.4 Size/Magnitude of operation

Plant area: 12 Ha

The capacities of the proposed project are given in Table 4.

TABLE 4: CAPACITIES OF PROPOSED UNITS

Sl. No.	Plant	Capacity	Units
1	**Submerged Arc Furnace**	**1 nos. X 5 MVA**	
a	Ferro Manganese or	12000	TPA
b	Silico Manganese or	10000	TPA
c	Ferro Silicon	5000	TPA

3.5 Project description with process details

Ferro alloys are consumables required to manufacture steel. Ferro alloys can be used to manufacture various types of carbon and steel, essentially to impart certain physical and chemical properties in a particular grade of steel viz change of tensile strength, ductility, hardness, corrosion resistance, wear resisting or abrasion resistance properties etc.

Ferro alloys are also commonly used for de-oxidation and refining of quality steel. Ferro manganese (Fe-Mn) is primarily used for this purpose and its demand is proportional to the production of steel. It acts as a double deoxidizer and is ideally suited for steel making. Harden-ability, hardness ultimate strength and yield limit of steel increase and its toughness decreases with a higher content of manganese. Steel containing about 1% C and 11-13% Mn are distinguished by high abrasion resistance.

The Submerged Arc Furnace is a versatile one and can produce either of the Ferro alloys viz. Silico Manganese, Ferro Silicon & Ferro Manganese.

The smelting furnace can be broadly divided into 3 zones, viz. preheating zone, pre-reduction zone and smelting zone. The smelting process is a continuous type. The raw materials are mixed in definite proportion and continuously fed inside the furnace. In the preheating zone, the moisture contained in the raw materials is driven out and in the pre reduction zone, MnO_2 (which is a stable oxide in manganese ores) transforms into its lower oxide form as follows:

$$MnO_2 \rightarrow Mn_2O_3 \rightarrow Mn_3O_4 \rightarrow MnO$$

Simultaneously, the calcinations of fluxes also takes place in the same zone. In the smelting zone, simultaneous reduction of FeO, MnO and SiO_2 takes place with the help of carbon from coke according to the following reactions:

$$FeO + C \rightarrow Fe + CO$$
$$2\,MnO + 2C \rightarrow 2Mn + 2CO$$
$$2MnO + 8/3\,C \rightarrow 2/3\,Mn_3C + 2CO$$
$$SiO_2 + 2C \rightarrow Si + 2CO$$

The above reactions take place inside the furnace at temperature of 1300-1500 degree centigrade. Heat is generated inside the furnace with the help

of electric arcing between the 3 nos. of Soderberg Electrodes and the coke bed. The furnace transformer provides necessary electric supply to the electrodes for arcing. The CO gas generated during the reactions gets converted into CO_2 by combining with oxygen during its ascend to the charge surface.

The impurities in the ore and coke such as silica, alumina etc. combines with calcium and magnesium oxide of flux to form slag. The slag and metal is tapped from the furnace at definite time interval in molten condition. The slag and metal are separated in molten state by using skimmer block. The solidified metal is further broken in the size range as desired by the customers. The slag can be used in land filling as boulder material.

The dust and gas generated during the production process is collected from the Furnace Hood with the help of Fume Extraction System. The system does not allow the fumes/ dust to spread in the atmosphere, preventing it from atmospheric pollution. The dust collected through the Fume Extraction System shall be utilized in the furnace after suitable agglomeration.

Water is used in the process for cooling of the furnace equipments only. The water is re-circulated in the system and the evaporation loss of water is made good by make-up water. The water shall be treated suitably for re-circulation purpose. As there will be no generation of any effluent, there will be no discharge of any effluent.

The following flow sheet gives clear view of the production process in brief.

The material and energy balance of the Ferro Manganese is given in **Table 5 & 6** respectively.

TABLE 5: MATERIAL BALANCE OF FERRO MANGANESE

Input Material	Specific consumption (T/ T of product)	Quantity (TPA)	% of charge	Output Material	Specific generation, T/ T of product	Quantity (TPA)	% of total output (T/ T of product)
Mn Ore	1.90	22,800	70.37	Ferro Manganese	1.000	12,000	37.74
Coke Breeze	0.50	6,000	18.52	Slag (Fe-Mn)	0.880	10,560	33.21
Dolomite	0.30	3,600	11.11	Moisture in Coke	0.067	804	2.53
				Reduction loss	0.667	8,004	25.17
				Bag Filter fines	0.036	432	1.36
Total	**2.70**	**32400**	**100**	**Total**	**2.65**	**31800**	**100**

TABLE 6: ENERGY BALANCE OF FERRO MANGANESE

Electrical Energy Required (kWh/t)	2850	
Heat Input	**%**	**kWh/t**
Electrical Energy	59.07	2850
Heat Energy from coke combustion	31.81	1535
Heat Energy from volatiles	9.12	440
Total	**100**	**4825**

Heat Output	%	kWh/t
Heat removed with alloy	50.69	2446
Heat losses by the furnace	5.43	262
Heat losses by electrical equipment and furnace cooling	9.87	476
Heat removed with slag	15.36	741
Heat removed with off gases	18.65	900
Total	**100**	**4825**

The material and energy balance of the Silico Manganese is given in **Table 7 & 8** respectively.

TABLE 7: MATERIAL BALANCE OF SILICO MANGANESE

Inputs	Specific consumption, T/ T of product	Quantity, TPA	% of charge	Output	Specific generation, T/ T of product	Quantity, TPA	% of total output (T/ T of product)
Manganese Ore & Slag	1.68	16840	45.27	Silico Manganese	1	10000	26.88
Fe-Mn Slag	1.06	10560	28.39	Slag (Si-Mn)	1	10000	26.88
Coke	0.27	2700	7.26	Bag Filter fines	0.05	500	1.34
Coal	0.47	4700	12.63	Losses	1.67	16700	44.89
Dolomite	0.24	2400	6.45				
Total	**3.72**	**37200**	**100**	**Total**	**3.72**	**37200**	**100**

TABLE 8: ENERGY BALANCE OF SILICA MANGANESE

Electrical Energy Required (kWh/t)	4000	
Heat Input	**%**	**kWh/t**
Electrical Energy	63.9	4000
Heat Energy from coke combustion	28.29	1771
Heat Energy from volatiles	7.81	489
Total	**100**	**6260**
Heat Output	**%**	**kWh/t**
Heat removed with alloy	48.87	3059
Heat losses by the furnace	7.83	490
Heat losses by electrical equipment and furnace cooling	9.65	604
Heat removed with slag	12.78	800
Heat removed with off gases	20.88	1307
Total	**100**	**6260**

The material and energy balance of the Ferro Silicon is given in **Table 9 & 10** respectively.

TABLE 9: MATERIAL BALANCE OF FERRO SILICON

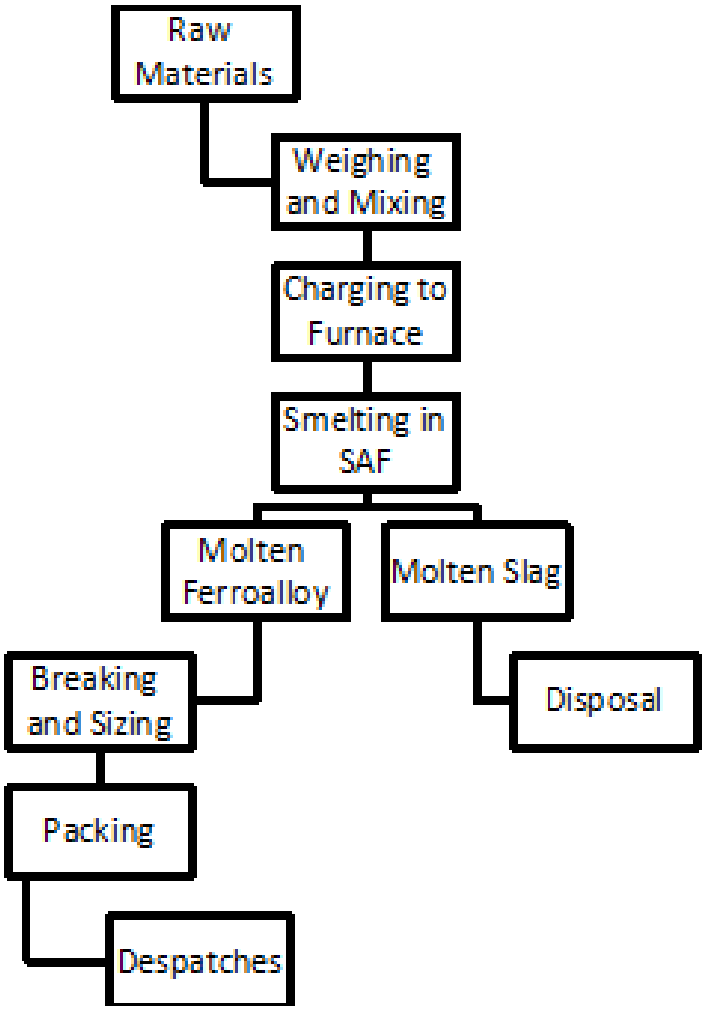
Input Material	Specific consumption (T/ T of product)	Quantity (TPA)	% of charge	Output Material	Specific generation, T/ T of product	Quantity (TPA)	% of total output (T/ T of product)
Quartz	1.04	5,200	48.37	Ferro Silicon	1.000	5,000	46.51
Iron Scrap	0.53	2,670	24.84	Slag (Fe-Si)	0.055	275	2.56
Coke	0.58	2,880	26.79	Gases	1.014	5,070	47.16
				Moisture in coke	0.053	265	2.47
				Silicon with the gases	0.014	70	0.65
				Silicon monoxide with the gases	0.014	70	0.65
Total	**2.15**	**10750**	**100.00**	**Total**	**2.15**	**10750**	**100.00**

TABLE 10: ENERGY BALANCE OF FERRO SILICON

Heat Input	**%**	**kWh/t**
Heat introduced by electrical power	79.87	16.62
Same, by the charge	0.05	0.01
Heat from the oxidation of C to CO	15.47	3.22
Heat from exothermic reactions	4.61	0.96
Total	**100**	**20.81**
Heat Output	**%**	**kWh/t**
Heat of dissociation of the oxides	45.03	9.37
Heat removed with alloy	5.72	1.19
Heat removed with slag	0.34	0.07
Heat removed with evaporating moisture	0.43	0.09
Heat removed with evaporation Si & SiO	0.53	0.11
Sensible heat of the top gases	2.16	0.45
Heat losses by the furnace shell	8.12	1.69
Potential energy of the gases and radiation from the top	37.67	7.84
Total	**100**	**20.81**

The process description of Submerged Arc Furnace is given in **Fig 3.**

FIG 3: PROCESS FLOW SHEET OF SUBMERGED ARC FURNANCE



3.6 Raw material required along with estimated quantity, likely source, marketing area of final product's mode of transport of raw material and finished product

The raw material availability is within 200 km from project location and its requirement and their sources are given below in **Table 11**:

TABLE 11: RAW MATERIAL AND THEIR SOURCE

Sl. No.	Raw Material	Quantity (TPA)	In house source (TPA)	Outhouse source (TPA)	Source	Transportation
1.	Manganese Ore & Slag	22800	0	22800	MOIL Ltd.	By Road
2.	Fe-Mn Slag	10560	10560	0	Process by product	Internal within plant for reuse/ sold by road
3.	Coke	2880	0	2880	Chandrapur (Local)	By Road

Sl. No.	Raw Material	Quantity (TPA)	In house source (TPA)	Outhouse source (TPA)	Source	Transportation
4.	Coal	4700	0	4700	Chandrapur (Local)	By Road
5.	Dolomite	3600	0	3600	Local (Wani area of Yeotmal District)	By Road
6.	Coke Breeze	6000	0	6000	Chandrapur (Local)	By Road
7.	Quartz	5200	0	5200	Chandrapur (Local)	By Road
8.	Iron Scrap	2670	0	2670	Chandrapur (Local)	By Road
9.	Electrode Paste	250	0	250	Chandrapur (Local)	By Road
	Total	**58660**		**48100**	**TPA**	

The finished product details are given below in **Table 12.**

TABLE 12: FINISHED PRODUCT DETAILS

Sl. No.	Finished Product	Quantity (TPA)	Remarks
1.	Ferro Manganese or	12000	Sale
2.	Silico Manganese or	10000	Sale
3.	Ferro Silicon	5000	Sale

3.7 Resource optimization/ recycling and reuse envisaged in the project

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. For domestic wastewater generation, septic tank will be provided within plant boundary and water utilised for plant processing is in closed loop water circuit which will be recirculated.

The blow down from the recirculated water after certain cycles of concentration will be reused in dust suppression, sprinkling and greenbelt watering. Excess water can be stored in the reservoir for subsequent reuse. Thus, there will be no discharge from the proposed project.

Domestic waste shall be generated from the plant office, organic component of which shall be composted/ vermi composted. Wastes such as used oils/ spent oil shall be generated periodically, which shall be sold to authorized recycling vendors in drums.

3.8 Availability of water its source, energy / power requirement and source

The estimated make-up water requirement for the Ferro alloy plant will be 30 KLD including 2 KLD domestic consumption. The water will be sourced from MIDC water supply scheme.

The power requirement for the Ferro alloy plant will be 40,000 MWh/annum. A 5 MVA connected load shall be taken. 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.

3.9 Quantity of wastes likely to be generated (liquid and solid) and scheme for their management /disposal

The main solid waste generated is slag from ferro alloy plant. Bag filter system will be installed in the ferro alloy plant. These air pollution control equipment will capture dust as well. Domestic waste shall be generated from the plant office, organic component of which shall be composted/ vermi composted. Quantities of waste generation are given in **Table 13**.

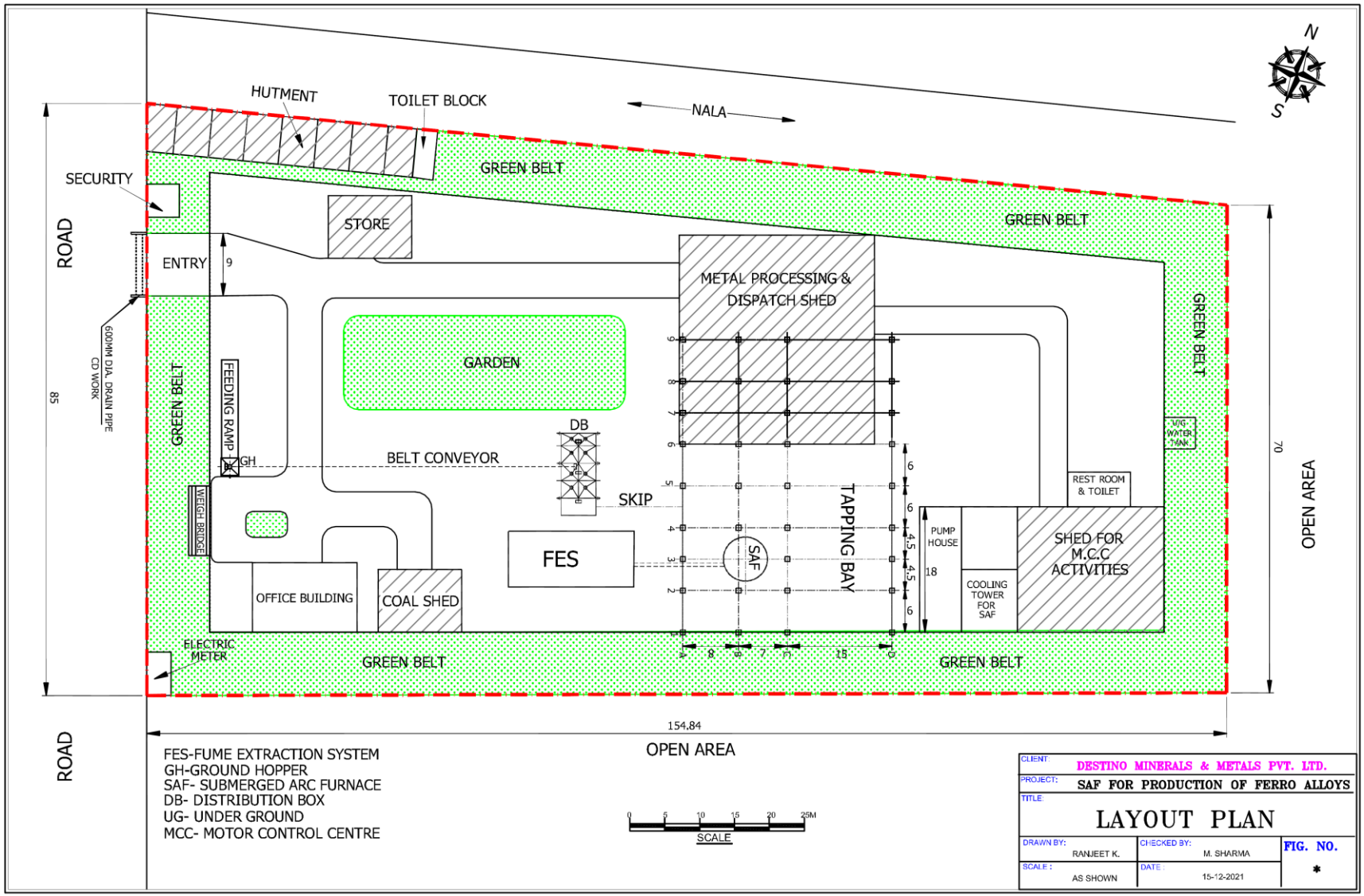
TABLE 13: SOLID WASTE GENERATION AND MANAGEMENT (TPA) AND OTHER PARAMETERS

Soild waste	TPA	Reuseable inhouse, TPA	Reuseable outside, TPA	
Slag (Si-Mn)	10000	0	10000	Sellable, useable by jigging plant for metal recovery (3-4%) and thereafter supply as construction material for low lying areas/ land filling etc. in place of boulders.
Bag Filter fines	500	500	0	Recycled in the production process after suitable agglomeration
Slag (Fe-Mn)	10560	10560	0	Reuseable in Silica Manganese plant and rest will be sold to other manufacturers
Slag (Fe-Si)	275	0	275	Sold, useable in cupola furnace

3.10 Schematic Representations of the Feasibility drawing which give information of EIA purpose

Process flow sheets have been given respective sections describing the processes. The layout plant is given in **Fig 4.**

FIG 4: PLANT LAYOUT



4.0 SITE ANALYSIS

4.1 Connectivity

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 N direction.

4.2 Land form, land use and land ownership

The proposed land is already in possession of company. The land required for the proposed project is 12 Ha and land use is industrial. The proposed Ferro Alloys Plant will be established in this land only.

4.3 Topography

The topography of the proposed project area is flat with average elevation of 190 m amsl as per google earth.

4.4 Existing land use pattern

Same as per point 4.2.

4.5 Existing infrastructure

The plot area is vacant except for three sheds along with two rooms. The sheds are comprising of pillars and roof only. New supporting infrastructure like office building, roads, rest room, slag yard, raw material handling area, etc. are proposed when the plant will be constructed.

4.6 Soil classification

Based on the geophysical survey carried out by the project proponent, the whole area is covered by black clayey soil at the top followed by clayey sandy soil with boulder formation up to certain depth. This layer was followed by Yellow clayey sandy soil. Below this layer highly weathered shale formation was encountered. This layer was followed by 1.00m thick layer of moderately weathered shale rock formation up to the depth of investigation.

The soil depth is from surface to 7.8 m. Average soil moisture in July at different depth varies between 6.94% at the depth of 4.5 m to 4.95 m to 15.66% between 0 to 1.2 m. During rainy season soil moisture reaches the field capacity level.

4.7 Climatic data from secondary sources

Temperature

As per the nearest IMD station, Chandrapur (1981– 2009), the mean of the minimum temperature ranges from 13.4°C in December to 28 °C in May and the mean maximum temperature ranges from 29.9°C in December to 42.9°C in May.

Rainfall

The total average rainfall from 1990 to 2007 is 1248.2 mm monthly variation is from 6.2 mm in December to 363.7 mm in August.

Relative Humidity

The relative humidity is higher in the morning hours averaging 67% compared to night hours scoring 48% of average. The relative humidity varies from 41% in May to 85% in August during morning and from 22% in April to 75% in August during evening.

4.8 Social infrastructure available

There are schools, hospitals, health centers, etc. in the villages of the surrounding areas. Padoli is the nearest census town at the distance of 1.8 km NNE. List of amenities in villages in 15 km is given in Additional documents no. 1 uploaded at end of Form 1 at parivesh.nic.in.

5.0 PLANNING BRIEF

5.1 Planning concept

The proposed project is a ferro alloy plant. Facilities required for the proposed project will be provided as per requirements for plant area, roads, green belt, utilities, water distribution, pollution management, etc. Transportation of raw material and final product will be done via road and rail network and cement concrete road will be developed within the plant premises. The proposed facilities are given in **Table 14**.

5.2 Population projection

The proposed project will require 50 people during construction phase and approximately 40 person’s to be directly employment during operation phase. In addition to this, there will be indirect deployment of persons in the project. Many more persons will also get employment in the ancillary & other services connected with this project. Unskilled and semi skilled (after training) will be hired from in and around the plant while skilled, engineers, managerial staff and technical experts will have to be hired from outside.

5.3 Land use planning (break up along with green belt etc.)

Total plant premises area is 12 Ha. Break up of proposed land use are given **Table 14**.

TABLE 14: BREAK UP OF PLOT AREA

Sl. No.	Description	Area (sq.m)	Percentage
1.	Plant facilities and utilities	3193.00	26.61
2.	Green Belt	3984.87	33.21
3.	Road	1081.82	9.02
4.	Open Area	3740.31	31.17
	Total	**12000.00**	**100.00**

5.4 Assessment of infrastructure demand (physical & social)

M/s Destino Minerals and Metals Private Ltd. will assess the demand of infrastructure (Physical & Social) in nearby areas of the plant site during the preparation of the EIA through village level surveys. Accordingly, development activities will be undertaken under corporate social responsibilities (CSR)/ social welfare program, as applicable, for the upliftment of the nearby communities.

5.5 Amenities / Facilities

Education, hospitals, drinking water, power supply, post and telegraph, banks, communication and approach roads are present in the villages in buffer zone within 15 km of study area as seen in the list of amenities in Additional Documents no. 1 uploaded at end of Form 1 at parivesh.nic.in. Additional amenities and facilities will be put by the company as a part of its CSR plan in due course, based on need assessment.

6.0 PROPOSED INFRASTRUCTURE

6.1 Industrial area (processing area)

The water and power related infrastructure proposed is already discussed in section 3.8 earlier. Following infrastructure will also be provided as following:

- Parking will be provided in the plant premises for the parking of vehicles.
- Weigh Bridges
- Air condition and ventilation system
- Auxiliary infrastructural facilities such as workshop, general stores and empty bags stores
- Compressed Air Supply System

- Administrative office cum Sales and Dispatch Office
- Time and Security office
- Pantry
- First Aid Centre
- Rest Room
- Electrical systems
- Fume Extraction System(FES)
- Ground Hopper(GH)
- Submerged Arc Furnace(SAF)
- Distribution Box(DB)
- Under Ground(UG) water tank
- Motor Control Centre(MCC)
- Control, instrumentation & automation systems
- Intercommunication equipment
- Pollution control, waste water and solid waste management systems

6.2 Residential area (non processing area)

Direct and indirect employment will be generated due to this project. Some skilled manpower may be required from outside the area while remaining unskilled/semi- skilled manpower will be sourced from the local villages. No residential facilities are envisaged for the employees.

6.3 Green belt

The green belt equivalent to 33.21% of the plot area shall be developed covering 3984.87 sq.m. land.

6.4 Social infrastructure

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure under social welfare programs.

6.5 Connectivity

Refer section 4.1

6.6 Drinking water management (source & supply of water)

Refer section 3.8.

6.7 Sewerage system & industrial waste management

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. For domestic wastewater generation, septic tank will be provided within plant boundary and water utilised for plant processing is in closed loop water circuit which will be recirculated. The recirculated water after certain use will be reused in dust suppression, sprinkling and greenbelt watering. Excess water can be stored in the reservoir for subsequent reuse. Thus, there will be no discharge from the proposed project.

6.8 Solid waste management

Refer section 3.9

6.9 Power requirement & supply / source

Refer section 3.8

7.0 REHABILITATION AND RESETTLEMENT PLAN

No rehabilitation and resettlement plan has been made as no displacement of population.

8.0 PROJECT SCHEDULE & COST ESTIMATES

8.1 Project Schedule

The tentative project implementation schedule is 12 months from date of receipt of Environmental clearance.

8.2 Cost of the Project

The total investment for the proposed project works out to approximately INR 1575 lakhs. The estimated investment cost for the project is based on the requirement of fixed and non fixed assets.

9.0 ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

M/s Destino Minerals and Metals Private Ltd. proposes 1X5 MVA Ferro alloy plant at village Plot No. B-41/3, MIDC Chandrapur, Tahsil & District Chandrapur, Maharashtra. 50 persons will be employed during construction and 40 persons will be employed during operation in the proposed project and further indirect employment shall be there in security, transportation, etc. The manpower would be mostly recruited in unskilled, semi skilled, office assistant categories, etc. The local persons will be given preference in employment. Therefore, having a positive impact on the the economic condition of the local people. Furthermore, as part of social welfare activities, development activities shall be carried out in the villages, thereby improving their social and physical infrastructure.

Various air pollution control equipment shall be installed and the dust collected and sold to other users. The waste water shall be treated and reused in dust suppression, water sprinkling and greenbelt development. The plant will be maintained zero discharge.

Thus, with the advancement in technology and by adhering stringently to permissible limits of emission along with regular monitoring, it is possible to operate the plant with minimal impact on the environment.