

EXECUTIVE SUMMARY

For

Installation of new facilities for production of Noble Ferro-alloys - 10,200TPA through Alumino Thermite process and Vanadium Penta Oxide - 600 TPA through beneficiation process (the project which require EC under EIA Notification, 2006) and Enhancement of Existing Scrap Melting facilities from 3,600 to 7,200 TPA to produce Ferro Titanium/Ferro Aluminum/Ferro Silico Magnesium, Cored Wire from 5,000 TPA to 17,000 TPA, installation of new facilities to produce 18,000 TPA Briquetting of Metallic Mineral Ore fines, 24,000 TPA Aluminum Wire, Ingots, Notch Bars, Shots & Cubes (the project for which CTE obtained under Air and Water Act)

at

M/s Shivam Hitech Steels Pvt. Ltd.

By

Plot No. 4, 4B, 4D, 3E, 4D & 31, Light Industrial Area, Bhilai, District- Durg (C.G.)

*Study Period: Winter
(December 2023 to February 2024)*

Applicant

**Mr. Ketan Gulati
M/s Shivam Hi-Tech Steels Pvt. Ltd.
Director,
Plot No. 4, 4B, 4D, 3E, 4D & 31,
Light Industrial Area, Bhilai, District- Durg (C.G.)**



Environment Consultant

**Vardan EnviroNet
(NABET/EIA/ 2326/RA 0284)
Plot No.82A, Sector 5, IMT Manesar,
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EXECUTIVE SUMMARY

1.0. INTRODUCTION

1.1. Name of the Project

Installation of new facilities for production of Noble Ferro-alloys - 10,200TPA through Alumino Thermite process and Vanadium Penta Oxide - 600 TPA through beneficiation process (the project which require EC under EIA Notification, 2006) and Enhancement of Existing Scrap Melting facilities from 3,600 to 7,200 TPA to produce Ferro Titanium/Ferro Aluminum/Ferro Silico Magnesium, Cored Wire from 5,000 TPA to 17,000 TPA, installation of new facilities to produce 18,000 TPA Briquetting of Metallic Mineral Ore fines, 24,000 TPA Aluminum Wire, Ingots, Notch Bars, Shots & Cubes (the project for which CTE obtained under Air and Water Act) by M/s Shivam Hitech Steels Pvt. Ltd. at Plot No. 4, 4B, 4D, 3E, 4D & 31, Light Industrial Area, Bhilai, District- Durg (C.G.)

1.2. Location of the Project

The project is located at Plot No. 4, 4B, 4D, 3E, 4D & 31, Light Industrial Area, Bhilai, District- Durg (C.G.), in a total plant area of 4.44 Ha. The project will be installed within the existing plant area and no additional land is involved.

The site falls under the Survey of India Toposheet No. F44P7 & F44P8 and is bounded between the Latitude and Longitude 21° 13' 35.99" N to 21° 13' 48.66" N and 81° 22' 56.61" E to 81° 23' 6.00" E respectively. The project is located near NH-53 which is at a distance of 0.41km in south direction through which raw material and finished products will be transported. The nearest river is Shivnath River which is at a distance of 9.78km in WNW Direction. There are no Biosphere Reserve/ National Parks/ Wildlife Sanctuary/ Ecological Sensitive Area / Reserved Forest/ Protected Forest within the 10 km study area. The nearest airport is Swami Vivekananda Airport, Raipur which is at a distance of 37.15km in WNW direction. The nearest railway station is Bhilai Railway Station which is at a distance of 4.68km in SE Direction. The project is located in Bhilai.

Table - 1: Details of the Environmental Features in 10km radius from the Project Site

S. No.	Features	Details
1.	The Project	Installation of new facilities to produce 10,200 TPA Low Carbon/ Medium Carbon Ferro Alloys through Alumino Thermite process and 600 TPA Vanadium Penta Oxide through Beneficiation process (by obtaining EC under EIA Notification 2006) and enhancement of existing Scrap Melting facilities



S. No.	Features	Details
		through Induction Furnaces to produce Ferro Titanium/Ferro Aluminum/Ferro Silico Magnesium from 3,600 to 7,200 TPA, Cored wire from 5,000 TPA to 17,000 TPA, new facilities to produce 18,000 TPA Briquetting of metallic mineral ore fines, 24,000 TPA Aluminum wire, Ingots, Notch bars, Shots & Cubes and No change in existing 14,40,000 Liters/year Industrial & Decorative Paint formulation unit (for which CTE obtained under Air Act and Water Act), by Shivam Hitech Steels Pvt Ltd. at Plot No. 4, 4B, 4D, 3E, 4D & 31, Light Industrial Area, Bhilai, District- Durg (C.G.)
2.	Village, District and State	Bhilai, District- Durg (C.G.),
3.	Topo sheet number of the study area	F44P7 and F44P8
4.	Latitude	21° 13' 35.99" N to 21° 13' 48.66" N
5.	Longitude	81° 22' 56.61" E to 81° 23' 6.00" E
6.	Area of project	4.44Ha.
7.	Nearest Highway/State High Way	NH-53 is at 0.41km in South direction.
8.	Nearest Railway Station	Bhilai Railway Station is at 4.68km in SE direction.
9.	Nearest Airport	Swami Vivekananda Airport, Raipur is at 37.15 km in WNW direction.
10.	Nearest River	Shivnath River is at 9.78 km in WNW direction
11.	Reserved/ Protected Forest	Nil within the 10km radius study area.
12.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	<ul style="list-style-type: none"> • G.G.S Public school is at 1.04 km in SSW direction. • Govt. School is at 1.68km in SSE direction. • Shree Ambey Hospital is at 2.19km in SSW direction. • Sparsh Multi Specialty Hospital is at 3.30km in SW direction. • Hanuman mandir is at 1.02km in West direction. • Shiv Mandir is at 1.87km in SE direction.
13.	Tourist Place	• Maitry Baugh Zoo Park Tourist place 7.5 km SW
14.	State, National boundaries	Nil within the 10km radius study area.
15.	Nearest Habitation	The project is located in Industrial Area which Is surrounded by



S. No.	Features	Details
		a number of residential colonies which falls under Bhilai. The nearest colony Bhilai Chhavani which is 750m in South West Direction from the project site.
16.	Defense Installation	Nil within the 10km radius study area.
17.	Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area	Nil within the 10km radius study area.
18.	Nearest dam	Nil within the 10km radius study area.
19.	Existing Units and capacities	<ul style="list-style-type: none">• Ferro Titanium/Ferro Aluminium/ Ferro Silico Magnesium – 3,600 TPA• Industrial and Decorative Paint – 14,40,000 Liters per year,• Cored wire – 5,000 TPA.
20.	Proposed Units & Capacities	<ul style="list-style-type: none">• Ferro Titanium/Ferro Aluminium/ Ferro Silico Magnesium – 7,200 TPA• Industrial and Decorative Paint – 14,40,000 Liters per year, (there will be no change in this capacity)• Cored wire – 17,000 TPA.• Briquetting Plant for Mineral Oxides -18000 TPA• Aluminum wire, Ingot, Notch bar, Shots & Cubes -24000 TPA• Low carbon/ Medium carbon Ferro-alloys through Alumino-Thermite Process – 10,200 TPA,• Vanadium Penta Oxide – 600 TPA through beneficiation process
21.	Project Cost	Existing – Rs. 22.49 Crores Proposed – Rs. 12.0 Crores Total - Rs. 34.49 Crores
22.	Manpower Requirement	Existing – 78 Proposed – 80 Total – 158
23.	Requirement of Water (in KLD) and Source	Existing – 6 KLD Proposed – 29 KLD Total - 35 KLD, Source: Ground Water through Bore well Company will obtain necessary permission from Central Ground Water Authority.
24.	Requirement of Power (in MW) and Source/	Power: Existing –1500 KW Proposed Additional – 300 KW



S. No.	Features	Details
	Fuel	Total - 1800 kW Source - CSPDCL (State Grid) DG Sets: Existing - 125 KVA Proposed - 60 KVA Fuel: HSD - 20 litres/ hr. (for Emergency Power backup) LDO - 8 KLD (For Aluminum melting furnace) Coal - 61 TPA (for vanadium sludge drying) Wood/ Biomass - 68 TPA (for calcium hydroxide sludge drying in rainy season)

Applicant and Address for Correspondence (Name, Designation, and complete address)

Mr. Ketan Gulati
Director,
Plot No. 4, 4B, 4D, 3E, 4D & 31,
Light Industrial Area, Bhilai, District- Durg (C.G.)

2.0. PROJECT DESCRIPTION**2.1. Background**

The existing plant was established at Plot No. 4, 4B, 4D, 3E, 4D & 31, Light Industrial Area, Bhilai, District- Durg (C.G.) after obtaining Environmental Clearance (EC) from State Level Environmental Impact Assessment Authority, Chhattisgarh vide It. no. 499/SEIAACG/SIA/ CG/IND/325dt. 04.07.2016 for the production of Ferro Alloys of capacity 3600TPA. Subsequently, Consent to Establish (CTE) cum Consent to Operate (CTO) was obtained from Chhattisgarh Environment Conservation Board (CECB) vide It. no. 1429 and 1430/RO/TS/CECB/ 2016 dt. 14.09.2016. The plant then obtained CTE cum CTO from CECB for manufacturing of Industrial Decorative Paints of capacity 14,40,000 LPA vide It. no. 4065/RO/TS/CECB/ 2020 dt. 09.03.2020. The plant is now operations with a valid CTO from CECB vide It. no. 9973/TS/CECB/2024 dt. 12.03.2024 for the production of 3600TPA Ferro Alloy (Through melting in Induction Furnace) and 14,40,000 LPA of Industrial Decorative Paints valid till 08.03.2025.

The plant also obtained CTE from CECB vide It. no. 1617/TS/CECB/2023 dt. 09.06.2023 for increase in production capacity of Ferro Titanium (Fe-Ti)/ Ferro Aluminum (Fe-Al)/ Ferro Silico Manganese (Fe-Si-Mg) from 3600TPA to 7200TPA and Establishment of 17,000TPA Cored Wire, 18,000TPA Briquetting of Mineral Oxides/ores and 24,000TPA of Aluminium wire, Ingot, Notch Bard, Short and Cubes. Environmental Clearance for the facilities for these facilities is not required.



As per CTE dated 09.06.2023 the plant has obtained permission for Expansion of Ferro Alloy Plant (Through melting in Induction Furnace) from 3600TPA to 7200TPA and Establishment of 17000TPA Cored Wire, 18,000TPA Briquetting of Mineral Oxides/ores and 24,000TPA of Aluminium wire, Ingot. Notch Bard, Short and Cubes. In the present stage, the plant is in advanced stage of installation of Cored Wire, Briquetting and Box Furnace Unit. These plants will be brought into operation after obtaining CTO from CECB.

The plant now proposes to set up facilities for production of Noble Ferro Alloys 10,200 TPA (Low Carbon/ Medium Carbon Ferro-alloys) based on Alumino-Thermite process and production of 600 TPA Vanadium Penta Oxide through beneficiation of Vanadium Sludge. Since these facilities are covered under Schedule of EIA Notification,2006, thus the unit is required to obtain prior environment clearance for setting-up of these facilities. The details of the production capacity of the existing and proposed facility area given in **Table 2**.



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Table – 2: Production Capacities of the Existing and Proposed Facilities

Sl. No.	Plant Equipment	Existing Facilities as per the EC Dated 04.07.2016		Proposed Units		Total after the proposed expansion		Remarks
		Config.	Capa.	Config.	Capa.	Config.	Capa.	
1.	Melting/ Induction Furnace	1x0.75T + 1x0.50T	3,600 TPA	2x0.75T	3,600 TPA	3x0.75T + 1x0.5T	7,200 TPA	Process involves melting of metallic Ferro Alloys scrap in Induction Melting furnaces, As the production capacity is less than 30,000 TPA, EC is not required as per amendment of EIA Notification, 2006 dated 01.12.2009
2.	Box Furnace	--	--	2x12T + 1x0.75T	24,000 TPA	2x12T + 1x0.75T	24,000 TPA	The process involves melting and casting and exempted from requirement of environment clearance as per MoEFCC OM dated 23.06.2011 regarding applicability of environmental clearance for new/expansion Aluminum Recycling projects (30,000 MTPA and above) (Given as Annexure – 13).
3.	Cored Wire Machine	15.3 TPD	5000 TPA	52 TPD	17,000 TPA	52 TPD	17,000 TPA	Cored Wire manufacturing facility involves engineering and fabrication and qualified as white category project as per serial no 14 of Table G-5 of Final Document on Revised





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Sl. No.	Plant Equipment	Existing Facilities as per the EC Dated 04.07.2016		Proposed Units		Total after the proposed expansion		Remarks
		Config.	Capa.	Config.	Capa.	Config.	Capa.	
								Classification of Industrial Sectors Under Red, Orange, Green and White Categories (February 29, 2016) notified on 07 March 2016 vide letter no B-29012/ESS(CPA)/2015-16. The unit has obtained certificate under ease of doing business, on 9/03/2015 from District Industries Centre Durg of State Industries department. (Given as Annexure - 13).
4.	Briquetting of Metallic Mineral Ore fines	--	--	60 TPD	18,000 TPA	60 TPD	18,000 TPA	Process involves briquetting of powder of different types of mineral oxides through Cold Briquetting process using binder. (Given as Annexure - 13).
5.	Industrial and Decorative Paint Unit	4.364 TPD	1,440,000 LPA	--	--	4.364 TPD	1,440,000 LPA	The industrial paint formulation unit is also exempted from EIA Notification, 2006. It is clarified by MOEFCC OM IA-J-11013/103/2021-IA-II (I) (E 169446) dated 21.03.2022. (Given as Annexure -





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Sl. No.	Plant Equipment	Existing Facilities as per the EC Dated 04.07.2016		Proposed Units		Total after the proposed expansion		Remarks
		Config.	Capa.	Config.	Capa.	Config.	Capa.	
								13).
6.	Alumino Thermite Plant	--	--	<ul style="list-style-type: none"> • Reaction Vessel – 60 nos. (1000 kg) • Jaw Crusher 15 TPH – 2 no. • Pulverizer 1000 kg. – 1 no. • Rotary Mixer 1000 kg – 2 nos • Suction hood with Air Pollution Control Facility – 2 nos. • Roaster – 3 TPH – 2 Nos. 	10,200 TPA	<ul style="list-style-type: none"> • Reaction Vessel – 60 nos. (1000 kg) • Jaw Crusher 15 TPH – 2 no. • Pulverizer 1000 kg. – 1 no. • Rotary Mixer 1000 kg – 2 nos • Suction hood with Air Pollution Control Facility – 2 nos. • Roaster – 3 TPH – 2 Nos. 	10,200 TPA	The process is covered under the EIA Notification, 2006 thus required EC.
7.	Vanadium Penta Oxide recovery Beneficiation Plant	--	--	--	600 TPA	--	600 TPA	The process is considered as beneficiation process involving recovery of mineral metallic oxides from waste, thus required to EC.





2.2. Process Details

M/s Shivam Hitech Steels Pvt. Ltd. is committed to use best technology available for controlling, treating and disposing of all type of waste to be generated during the operation of the proposed plant.

- The technology to produce Low/ Medium Carbon Ferro Alloy will be through Gold Smith Alumino-Thermite process in which oxides of metal is reduced with proper reducers. Various Inputs in predetermined quantity is mixed, which is calculated on the basis of the quality of raw material.
- Vanadium Pentoxide Sludge is used for the manufacturing of Vanadium Pentoxide by mixing Vanadium Pentoxide Sludge with Hydrochloric Acid which produces Ammonium Meta Vanadate which is then electrically heated in Roller Hearth Furnace.
- Box Type furnace is used for melting of aluminum scrap with LDO/ LSHS as fuel. The molten metal will be casted in the form of ingot/ notch/ bars/ cubes/ shots etc.
- Manufacturing of Cored Wire is a physical process in which steel strip/ sheet of required thickness and width is folded by the core forming machine in tubular shape and during this process of creating a pipe or tubular shape, the required flux powder is filled in the hollow tubular space by flux feeding machine.
- Fine ore powder is mixed with suitable binders like Sodium Silicate or Bentonite of Lime powder & molasses or any other organic binder. The mixture is feed to Briquettes process. The Green Briquettes are then kept in open air for curing or drying to enable to gain the required green strength.
- The raw material is induced in crucible to the achieve desired temperature and then molten metal then will be poured in desired caste iron moulds the casted plates are crushed in jaw crusher.
- The paint formulation is being done by mixing various ingredients and then packing the same and marketing. In this unit the plant, purchases the raw materials and then formulate and blend, rather than react, to produce a finished product.

3.0. PROJECT REQUIREMENT

3.1. Land Requirement

The existing plant is installed in a total area of 4.44Ha. The proposed expansion will be done within the existing plant premises. The total land area has been leased to the project proponent and is already in Industrial Use.

3.2. Raw Material Requirement

The raw material requirement for the proposed expansion is given in **Table 3**.

Table – 3 (a): Annual Raw Material Requirement for the process for which





Proposal- Installation of new facilities for production of Noble Ferro-alloys - 10,200TPA through Alumino Thermite process and Vanadium Penta Oxide - 600 TPA through beneficiation process (the project which require EC under EIA Notification, 2006) and Enhancement of Existing Scrap Melting facilities from 3,600 to 7,200 TPA to produce Ferro Titanium/Ferro Aluminum/Ferro Silico Magnesium, Cored Wire from 5,000 TPA to 17,000 TPA, installation of new facilities to produce 18,000 TPA Briquetting of Metallic Mineral Ore fines, 24,000 TPA Aluminum Wire, Ingots, Notch Bars, Shots & Cubes (the project for which CTE obtained under Air and Water Act)

Environmental Clearance is required

Raw Materials	Quantity in TPA			Source of Raw Material	Transportation	
	Existing	Proposed	Total		Rail (km)	Road (km)
Alumino -Thermite Plant (Low carbon Ferro Manganese - 10,200 TPA)						
Manganese ore roasted powder	--	15,300	15,300	Madhya Pradesh	-	350
Aluminum Powder	--	5,100	5,100	Local Market/imported	-	100
M.S. Scrap (fines)	--	1,020	1,020	Local Market	-	50
Silico Manganese	--	8,160	8,160	Local Market	-	50
Lime Powder	--	2,040	2,040	Local Market	-	50
Total	--	31,620	31,620			
Alumino Thermite Plant (Low carbon Ferro Chrome - 10,200 TPA)						
Chrome Ore	--	18,360	18,360	Odisha	--	450
Aluminum Powder	--	6,446	6,446	Local Market	--	50
Mill Scale	--	1,204	1,204	Local Market	--	50
Fluorspar	--	1,173	1,173	Local Market/ Imported	--	200
Sodium Nitrate	--	1,428	1,428	Local Market	--	50
Total	--	28,611	28,611			
Alumino Thermite Plant (Ferro Titanium - 10,200 TPA)						
Ilmenite Powder	--	14,260	14,260	Local Market	--	50
Aluminum Powder	--	5,294	5,294	Local Market	--	50
Lime Powder	--	133	133	Local Market	--	50
Titanium Scrap	--	673	673	Import (Germany)	--	700
Rutile	--	847	847	Local Market	--	50
Fluorspar	--	82	82	Local Market	--	50
Titanium Dioxide	--	1,938	1,938	Local Market	--	50
Sodium Nitrate	--	459	459	Local Market	--	50
Total	--	23,686	23,686			
Alumino-Thermite Plant (Ferro Molybdenum - 10,200 TPA)						
Molybdc Oxide	--	10,404	10,404	Imported	-	700
Aluminium	--	1,244	1,244	Local Market	-	50





Raw Materials	Quantity in TPA			Source of Raw Material	Transportation	
	Existing	Proposed	Total		Rail (km)	Road (km)
Powder						
Ferro Silicon	--	4,162	4,162	Local Market	-	50
Mill Scale	--	3,958	3,958	Local Market	-	50
MS Turning Boring /Nails	--	1,662	1,662	Local Market	-	50
Lime	--	418	418	Local Market	-	50
Total	--	21848	21848	Local Market		
Alumino Thermite Plant (Ferro Vanadium - 10,200 TPA)						
Vanadium Pentoxide	--	10506	10506	Inhouse/Local Market	-	100
Aluminium Powder	--	2,510	2,510	Local Market	-	50
Mill Scale	--	102	102	Local Market	-	50
Aluminium Shots	--	4794	4794	Local Market	-	50
Lime	--	714	714	Local Market	-	50
M.S.Scrap	--	3876	3876	Local Market	-	50
Fluorspar	--	204	204	Local Market	-	100
Total	--	22,706	22,706			
Vanadium Pentoxide (600 TPA)						
Vanadium Oxide Sludge	--	3,334	3,334	Maharashtra, Odisha	-	400
Hydrochloric Acid	--	1,332	1,332	Local Market	-	50
Aluminium Chloride	--	1,332	1,332	Local Market	-	50
Coal	--	61	61	Local Market	-	50
Wood/ Biomass	--	68	68	Local Market	-	50
Lime (CaO)	--	636	636	Local Market	-	50
Total	--	6,763	6,763	-	-	-



Table – 3 (b): Raw Material Requirement for the Process for which is not covered under EIA Notification 2006 and required CTE/CTO under Air Act and Water Act

Raw Materials	Quantity in TPA			Source of Raw Material	Transportation	
	Existing	Proposed	Total		Rail (km)	Road (km)
Manufacturing of Ferro Titanium or Ferro Aluminum or Ferro Silico Magnesium (Existing – 3,600 TPA & After Expansion – 7,200 TPA)						
Metallic scrap Containing Ferro Titanium, Ferro-Aluminium, Ferro Silico Magnesium	2,880	2,880	5760	Imported/Local Market	-	700/50
Ramming Mass	45	45	90	Local Market	-	50
Steel Scrap	756	756	1512	Local Market	-	50
Total	3,681	3,681	7,362			
Briquetting Plant – 18,000 TPA (Proposed)						
Mineral Oxide (Moly-oxide powder/ Chromate Ore Powder/ Manganese Ore Powder / Fluorspar powder / other Mineral ores like dolomite, hematite etc.)	--	17,224	17,224	Local Market/ Import	--	50/700
Binder	--	776	776	Local Market	--	50
Total	--	18,000	18,000			
Manufacturing of Aluminum wire, ingot, notch bar, shots & cubes – 24,000 TPA						
Aluminium Scrap / Aluminium Ingot	--	24,750	24,750	Local Market/ Imported	--	50/700
Total	--	24,750	24,750			
Cored Wire Manufacturing (Existing - 5000 TPA, After Expansion - 17000 TPA)						
Steel Strip	20	50	70	Local Market		50
Filling Material (different type of material Such as Ca Si; FeMn; CaC etc as per market requirement)	5,000	12,000	17,000	Local Market / Imported		50/700
Total	5,020	12,050	17,070			
Industrial and Decorative Paint – 14,40,000 liters per year (1,440 TPA) (Existing)						
Solvent Based Decorative Paint						



Raw Materials	Quantity in TPA			Source of Raw Material	Transportation	
	Existing	Proposed	Total		Rail (km)	Road (km)
Alkyd Long Oil (60 %)	832.3	-	832.3	Local Market/ Import		50/700
Ura Alkyd Resin (65%)	43.2	-	43.2	Local Market/ Import		50/700
MTO	391	-	391	Local Market/ Import		50/700
Titanium Oxide	126.7		126.7	Local Market/ Import		50/700
Phthalocyanine Blue	25.4		25.4	Local Market/ Import		50/700
Calcium Octave	3		3	Local Market/ Import		50/700
Zirconium Octave	18.4		18.4	Local Market/ Import		50/700
TOTAL	1440		1440			
Paint and Decorative paints formulation Plant -14,40,000 Liters/Year (14,40 TPA) - Existing						
Dolomite	1,142		1,142	Local Market		50
MHEC	5		5	Local Market		50
Opagel-CMT	1		1	Local Market		50
White Cement	274		274	Local Market		50
RD Powder	18		18	Local Market		50
Total	1,440		1,440	Local Market		50

Note: for Industrial and Decorative Paint, quantities are given in TPA, whereas Consent is in Liters per year

3.3. Water Requirement

Existing water requirement is 6KLD. Existing water requirement is exempted from CGWA Permission as water requirement is less than 10KLD. The requirement of water for proposed expansion project will be 35 KLD. The requirement will be met from Ground Water. Permission for the quantity shall be obtained from CGWA.



3.4. Power Requirement

The existing plant operates on 1500 KVA (\approx 1.5 MW). Existing Power requirement is obtained from CSPDCL (State grid). After expansion, power requirement will be 1.7 MW for the Units which will be implemented / under implementation under CTE dated 09.06.23 from CECB, power requirement of 0.1 MW for the proposed expansion for which EC is required. Hence, total power requirement for the proposed expansion will be 1.8 MW, which will also be sourced from CSPDCL State grid.

3.5. Manpower Requirement

The existing manpower for the plant is 78. Manpower required for the proposed expansion project will be 80 comprising Technical Managerial, Supervisory and workers. Total manpower after proposed expansion will be 158. Indirect employment in the region will be generated in different sector during the operation phase.

3.6. Cost Estimate of the Project

The existing project cost is Rs. 22.49 Crs. Total project cost after the proposed expansion is estimated to be Rs. 34.49 Crs. Including the proposed project cost of Rs. 12.0 Crs.

4.0. BASELINE ENVIRONMENTAL STUDIES

The monitoring of the environmental parameters has been conducted within the core zone and buffer zone (10 kms, radial distance) from the Project site in accordance with the guidelines issued by the Ministry of Environment, Forests and Climate Change, CPCB, and SPCB, during the study period (1st December 2023 to 29th February 2024).

The summary of the Baseline Environment Status is given in **Table 4.**

Table - 4: Summary of the Baseline Environmental Study

Parameters	No. of Locations	Description	Permissible Level
Ambient Air Quality	8	PM2.5 -32.50 $\mu\text{g}/\text{m}^3$ and 48.30 $\mu\text{g}/\text{m}^3$ PM10 - 56.80 $\mu\text{g}/\text{m}^3$ to 78.60 $\mu\text{g}/\text{m}^3$ SO2 - 9.40 $\mu\text{g}/\text{m}^3$ to 24.30 $\mu\text{g}/\text{m}^3$ NO2 - 15.20 $\mu\text{g}/\text{m}^3$ to 29.30 $\mu\text{g}/\text{m}^3$ CO - 0.48 mg/m^3 to 0.89 mg/m^3 HC - BLQ $\mu\text{g}/\text{m}^3$ to 0.44 $\mu\text{g}/\text{m}^3$	60 $\mu\text{g}/\text{m}^3$ 100 $\mu\text{g}/\text{m}^3$ 80 $\mu\text{g}/\text{m}^3$ 80 $\mu\text{g}/\text{m}^3$ 02 mg/m^3
Ambient Noise Quality	2 (Industrial)	Day Time (6:00 a.m. to 10:00 p.m.) 53.86 to 72.48 Leq dB(A) Night Time (10:00 p.m. to 6:00 a.m.) 43.64 to 61.57 Leq dB(A)	75 Leq dB (A) 70 Leq dB (A)



Parameters	No. of Locations	Description	Permissible Level
	4 (Residential)	Day Time (6:00 a.m. to 10:00 p.m.) 53.86 Leq dB(A) to 51.54 Leq dB(A) Night Time (10:00 p.m. to 6:00 a.m.) 43.64 Leq dB(A) and 41.41 Leq dB(A)	55 Leq dB (A) 45 Leq dB (A)
	2 (Silent)	Day Time (6:00 a.m. to 10:00 p.m.) 43.21 Leq dB(A) to 43.52 Leq dB(A) Night Time (10:00 p.m. to 6:00 a.m.) 34.58 Leq dB(A) and 33.26 Leq dB(A)	50 Leq dB (A) 40 Leq dB (A)
Traffic Study	1 (NH-53)	Present Scenario: Volume - 1567 PCU/ Day Capacity - 15000 PCU/ Day LOS - A	--
		Post Expansion Scenario: Volume - 1736 PCU/ Day Capacity - 15000 PCU/ Day LOS - A	--
Surface Water Quality	8	pH varies from 7.41 to 7.88, DO varies from 5.1 to 6.4 mg/L, BOD varies from 11.0 to 24.0 mg/L COD varies from 36.0 to 78.0 mg/l. Total Coliform < 1.8 MPN/100ml	In compliance with IS:2296 Class C Norms
Ground Water Quality	8	pH varies from 7.18 to 7.53, Total Hardness varies from 172.0 to 246.0 mg/L, Total Dissolved Solid varies from 284.0 to 408.0 mg/L, Chloride varies from 52.83 to 83.62 mg/l Fluoride varies from 0.42 to 0.63 mg/l.	6.5-8.5 200-600 mg/L 500-2000 mg/L 250- 1000mg/L 1.0-1.5mg/l
Soil Quality	8	pH: 7.28 to 7.72 Potassium K: 81.22 to 104.32 kg/ha. Available nitrogen N: 164.62 to 250.38 (kg/ha.)	--



Parameters	No. of Locations	Description	Permissible Level
		Phosphorus: 20.65 to 28.11 kg/ha. Conductivity: 0.212 mS/cm to 0.381 mS/cm	
Biological Environment	10 km Study Area	As per the EB Survey there are no Schedule - I Species within the 10km radius study area.	--
Land Use	10 km Study Area	Agricultural Land - 12540Ha. Airport - 82Ha. Barren Land - 357Ha. Build-up Area - 9915Ha. Grassland - 2378Ha. Industry - 2647Ha. Mining Activity - 471Ha. Open Scrub - 2100Ha. Water body - 1923Ha.	--
Socio-Economic Environment	10 km Study Area	The study area was defined as an area within 10 km radius around the project site which includes total 113 locations with 28 villages and urban areas including wards of Bhilai Municipal corporation, Jamul and Bhilai Charoda urban area that is from Dhamdha, Durg and Patan tehsil of Durg district of Chattishgarh state.	--



5.0. ANTICIPATED IMPACT ON THE ENVIRONMENT AND MITIGATION MEASURES

5.1. Land Environment

The company has planned for the expansion of the plant by installation of new facilities for production of Noble Ferro-alloys - 10,200TPA through Alumino Thermite process and Vanadium Penta Oxide - 600 TPA through beneficiation process (the project which require EC under EIA Notification, 2006) and Enhancement of Existing Scrap Melting facilities from 3,600 to 7,200 TPA to produce Ferro Titanium/Ferro Aluminum/Ferro Silico Magnesium (Through melting in Induction Furnace), Cored Wire from 5,000 TPA to 17,000 TPA, installation of new facilities to produce 18,000 TPA Briquetting of Metallic Mineral Ore fines, 24,000 TPA Aluminum Wire, Ingots, Notch Bars, Shots & Cubes (the project for which CTE obtained under Air and Water Act).

The existing plant is established in an area of 4.44Ha. The proposed expansion will be done within the existing plant premises. The total land area has been leased by the project proponent and is already in industrial use.

5.2. Air Environment

Construction Phase

During construction phase main activities on the site were excavation, leveling and material handling. Diesel combustion involved for operating the small machineries used for construction activities. Also, there was increase in the vehicular traffic for the transportation of construction materials and workers to site.

Mitigation Measures

- Water sprinkling will be done on the approach roads and near excavation/clearance/stockpiling areas at suitable intervals to control dust generation.
- Top soil generated during site leveling will be stock piled, compacted and covered.
- Proper maintenance of vehicles and machineries will be done and combustion efficiency of vehicles & machineries will be tested regularly.
- Emission from machinery shall confirm the standards as prescribed for combustion sources.
- Ambient air quality monitoring as per details given in **Chapter- 6** or stipulated by MoEF&CC/CECB will be conducted on regular basis.
- Approach roads and internal roads will be repaired and maintained periodically.



Operation Phase

Emission from the Point Source Stack

Flue Gas Emission:

Stack emission (Flue gas) will be from Induction Furnace, Alumino Thermite Process, Box Furnace, and DG Sets.

Process Stack:

Stack emission from Induction Furnace, Alumino Thermite Process, Box Furnace, Reactor Vessels, Briquetting Unit, etc.

Table - 5: Details of Air Pollution Control Facilities

Sl. No	Units	Config	Stack Temperature (K)	Gas Exit Velocity (m/s)	Stack Height (m)	Stack Dia. (mm)
1.	Induction Furnace (Existing)	1x750kg + 1x500kg	312	8.8	30	0.15
2.	Induction Furnace (Proposed)	2x750kg	318	9.5	30	0.15
3.	Box Furnace	2x12T + 1x750kg	300	10.5	30	0.2
4.	Reactor Vessels	1000kg	388	10.6	30	0.15
5.	Briquetting Plant	60TPD	303	6.7	30	0.15

Emission from Area Sources

Fugitive emission is expected during the sizing of raw material and Rotary Mixer and emission during loading and unloading and transportation of raw materials. The vehicular exhaust and other related activities will result in air pollution.

Mitigation Measures

Apart from point and mobile sources, fugitive emissions will also add considerable amount of pollution to the environment. Following measures are taken by company to mitigate the impact of fugitive emissions:

- Water sprinkling will be carried out twice in a day.
- Trucks carrying coal and other raw material shall be covered with tarpaulin to prevent spreading of dust during transportation.
- All internal roads in the premise are paved /tarred.
- Internal roads shall be sprinkled with water at regular intervals for which water tankers with sprinkler arrangement shall be deployed in premises to prevent road dust emission.



- Speed limit of 10 km/h is enforced for vehicles in the plant premises to prevent road dust emission.
- Green belt and greenery development shall be carried around storage yards, around plants, either side of roads and around the periphery of the industry.
- Water sprinkling shall be practiced at all loading unloading locations.
- The conveyors shall be suitably covered with hood or enclosures to control fugitive emissions.

5.3. Water Environment

Construction Phase

Nominal quantity of water will be used during construction period. However, Soil runoff from the site, stagnant pools of water and improper disposal of construction debris leads to off-site contamination of water resources.

Mitigation Measures

- Construction of storm water diversion channels to divert storm run-off from flowing over the construction areas.
- Disposal of construction debris in approved areas.
- As far as possible, construction activities will be avoided during rainy days to mitigate the small impacts on soil/water quality caused due to construction activity.
- Toilets with septic tanks is made available at site for construction workers

Operation Phase

Industrial wastewater generation shall be from Vanadium Pentoxide Plant, Softening Plant and Cooling Towers. Domestic wastewater will be generated from toilets, washrooms and canteens in the plant. Total wastewater generation during operation of all the units shall be 11KLD and domestic wastewater will be of 3KLD.

Table – 6: Details of Wastewater Generation

Plant	Effluent Generation KLD	Usage
Blowdown from Softening Plant	5	Will be used for dust suppression and plantation
Blowdown from Cooling Tower	4	
Wastewater from Vanadium Pentoxide	2	Will be treated in ETP
Industrial Wastewater Generation	11	
Domestic Waste Water Generation	3	Will be used for plantation
TOTAL WASTE WATER	14	

5.4. Noise Environment

Construction Phase

The areas affected are those close to the site. At the peak of the construction, marginal increase in noise levels is expected to occur but they are temporary. During the construction phase, noise generated from various construction activities are listed below.

- Movement of vehicles carrying materials and loading & unloading activities.
- Excavation machines, concrete mixer and other construction machines including pneumatic tools and compressors.
- Concreting, hammering.
- Mechanical operations, like, drilling, fitting, etc.

Mitigation Measures

- Selection of low noise generating machinery/equipment.
- Engineering specifications shall be stipulated during tendering as a condition to maintain noise level equal to or less than 75 dB(A) at 1 m from each source.
- Provision of rubber padding/noise isolators/silencers to modulate the noise generated by machinery/equipment, wherever possible.
- Provision of protective devices like ear muff/ plugs to the workers.
- Preventive maintenance of machinery/equipment and vehicles.
- The high noise zones at site will be demarcated and provided with enclosures & barriers.
- Regular monitoring of ambient noise level as per monitoring plan shall be carried out.

Operation Phase

The noise is generated from Induction Furnace, Box Furnace, Jaw Crusher, Pulverizer, Beneficiation Plant, DG Set, ID Fans.

Mitigation Measures

- Walls of Compressor and DG set shall be housed in a separate room with acoustic wall paneling.
- Noise proof cabins will be provided for operators wherever possible
- Inlet and outlet mufflers shall be provided wherever required.
- Suitable isolators will be provided at required locations to avoid rattling due to vibration
- Process air blower, pneumatic valves etc., shall be provided with Silencers



- Noise shall be reduced by preventing leakages from compressed air lines and steam lines
- The high noise zones are demarcated and provided with enclosures & barriers.
- The risks of exposure to high noise levels and the appropriate control measures are also displayed at various places in the workplace.
- Design/installation will be taken as specified by the manufacturers with respect to noise control and will be strictly adhered.
- Sound attenuation panels will be installed wherever required around noise generating equipment.
- All rotating equipment / parts will be well lubricated and provided with enclosures as far as possible to reduce noise transmission.
- Regular maintenance of all the machineries and equipment shall be done
- Regular ambient noise level checks shall be carried out at the site
- Greenbelt development inside the plant premises shall be carried which will serve as a buffer between the peripheries and the industry, there by controlling noise levels.
- In addition to this, effective ear plugs will be provided and their use will be made mandatory in specified areas where noise level is high.

5.5. Solid Waste Generation

The solid waste generation and utilization from the proposed expansion is given in **Table 7.**

Table – 7: Solid Waste Generation & Utilization

Sl. No.	Type of Waste	Source	Existing Quantity (TPA)	Proposed Quantity (TPA)	Total Quantity (TPA)	Management
1	Ferro Manganese Slag	Alumino-Thermite Process	--	9,180	9180	Used for relining vessel or will be sold.
2	Ferro Titanium Slag		--	6,120	6120	Used for relining vessel or will be sold.
3	Ferro Molybdenum Slag		--	6,120	6120	Used for relining vessel or will be sold.
4	LC Ferro Chrome Slag		--	15,300	15300	Used for relining vessel or will be sold.
5	Ferro Vanadium Slag		--	1,620	1620	Used for relining vessel or will be sold.
6	Bag Filter		--	400	400	Recycled and Reutilized



Sl. No.	Type of Waste	Source	Existing Quantity (TPA)	Proposed Quantity (TPA)	Total Quantity (TPA)	Management
	Dust					in the manufacturing process
7.	Ash from Wood firing	Vanadium Pentoxide Plant	--	10	10	Will be given to brick manufacturer
8.	Coal Ash		--	18	18	
9.	Ammonia Liquor		--	425	425	Will be sold to farmers as fertilizer
10.	Mud from processing of Aluminum meta vanadate		--	1,002	1002	Will be sold as soil booster for agriculture
11.	Aluminum Slag	Aluminum Plant	--	75	75	Used for relining of vessel or is sold
12.	Sludge from ETP	ETP	--	840	840	After processing will be sold as slacked lime
13	Fe-Ti Slag / Fe-Al / Fe-Si-Mg Slag	Ferro Alloys Plant from Induction Furnace	26	100	126	Used for relining vessel or is sold.

5.6. Socio-Economic Environment

Construction Phase

In addition to direct employment, several opportunities for local people will be available in terms of supply of construction materials & machinery, vehicles and other essential commodities. Project will have positive impact on socio-economic status of the area because of following:

- Preference will be given to locals for temporary direct and indirect employment.
- Local suppliers for machineries and construction materials will be given preference.
- Local transporters will be preferred for transportation of machinery/ materials

Operation Phase

With the coming up of the proposed expansion new source of income and employment will be generated. The situation will improve and will open up opportunities for new economic activities. The literacy rate is likely to improve once the area is developed. Many will find employment in service sector and marketing of day-to-day needs viz. poultry and other agricultural products. The project will improve the basic infrastructure

and the people of nearby villages can also use these amenities. The proposed long-term activity will open up avenues and opportunities of self- employment.

5.7. Biological Environment

Construction Phase

As per the EB Survey conducted within the study area there are no wild animals. Hence there are no significant adverse impact is expected on the biological environment.

Operation Phase

Air emissions and increase in dust levels during the operational phase may result in restricted growth, less regeneration and degradation of sensitive vegetation. The increase in population may result in tree cutting, lopping, grazing and a threat to fauna in the nearby regions. The air emissions might reduce the abundance of sensitive species like butterflies and birds.

Mitigation Measures

- Loss of vegetation during construction will be compensated by greenbelt development.
- The raw materials storage yard will be regularly sprinkled with water.
- The vehicles entering in the project site will not use pressure horns during night time as it may distract the fauna or animals near to the site.

5.8. Greenbelt Development

Greenbelt has been developed in 1.51Ha. of the area with 2400 trees surviving till date. Under the proposed expansion, company will be planting additional 1600 no. of trees required to cover 33% area under greenbelt, out of a total plant area of 1.51Ha.

5.9. Rainwater Harvesting

Rainwater collected from the rooftop, paved area and other open area will be brought to the RWH recharge pits for directly recharging the groundwater. M/s SHSPL has constructed 3 nos. of recharge pits filled with standard filter material, with one boring 6" dia and 25m depth at the centre of each of pit. The capacity of the recharge pit will be 75m³.

6.0. ALTERNATIVE SITE ANALYSIS

This is an expansion project which will be done within the existing plant premises of 4.44Ha. The land is already in the possession of the project proponent. Hence, alternative site was not examined. The proposed expansion has adopted a technically viable and feasible and proven technology which is a superior in production of the proposed facilities of plant.



7.0. ENVIRONMENTAL MONITORING PROGRAM

To take timely action for protection of environment, environmental monitoring will be done as per the guidelines provided by MoEFCC/CPCB/CECB and separate records for will be kept and preserved regularly. Along with other budgets, Budget for environmental monitoring will be prepared and revised regularly as per requirement.

8.0. ADDITIONAL STUDIES

8.1. Risk Assessment

The site-specific risk analysis was carried out and the probable hazard zoned like Induction Furnace, Box Furnace, Alumino-Thermite Processes, Cored Wire Unit, Briquetting Plant, Beneficiation Plant, and Paint Manufacturing Unit were examined along with other units of the proposed plant, The Action plan and control measures for the same were formulated based on the risk rating. The site-specific HIRA was conducted and the suitable safety measures were proposed to minimize the hazard.

8.2. Public Consultation

Public hearing of the project will be conducted after the submission of the Draft EIA of CECB. The public hearing issues related to the proposed project will be incorporated in the Final EIA/ EMP Report along with the reply from the PP and the action plan for the same.

8.3. Action plan to address the issues raised during public consultations as per MoEF&CC O.M. dated 30.09.2020.

The Action plan to address the issues raised during the public consultation as per the MoEF&CC O.M. dated 30.09.2020 will be given in the Final EIA/ EMP Report.

9.0. PROJECT BENEFITS

The growth of the Steel industry significantly contributes to economic growth as it generates employment both directly and also indirectly. Peripheral development takes place and due to more influx of money through the area, overall importance of the area increases and overall, the infrastructure improves.

- Availability of land.
- Utilization of existing facilities as it is in continuation with existing plant;
- Economic viability of the project due to addition of downstream facility.
- Increase in revenue in terms of taxes at local, state and national level;
- Opportunity to create direct and indirect employment to several other hundreds more through multiplier effect in terms of downstream socio-economic benefits and consequent improvement in the living conditions of local population in the study area and in region;



- Community development activities are going to increase due to the expansion project.

10.0. ENVIRONMENTAL MANAGEMENT PLAN

M/s Shivam Hitech Steels Pvt. Ltd. is responsible for implementation of all the mitigation and management measures. A separate department "Environmental Management Cell" (EMC) headed by EHS Head exists to look after all environmental related matters of the plant. The cell will act to ensure the suitability, adequacy and effectiveness of the Environment Management Program. Organization structure of EMC is given in **Chapter-6**, for implementation of EMPs and mitigation measures and to look after environmental monitoring program also.
