REPORT FOR REGULARIZATION OF FACILITIES UNDER EC VIOLATION
For
SHIVAM IRON & STEEL CO LTD
Jambad, Udnabad, Giridih, Jharkhand

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CHAPTER-1
EXECUTIVE SUMMARY

M/s Shivam Iron & steel Co. Ltd at present manufacturing MS bars, MS angles, Flats, Fe-Mn & Si-Mn ferroalloys at Jambad in Giridih district of Jharkhand with latitude 24° 09’ 34.18” N and longitude 86° 21’ 02.33” E with 307m AMSL.

M/s Shivam Iron & Steel Co Ltd. was incorporated on 16th September 1998. It is now a well-established company with other running units at Raniganja, Jamuria and Koderma.

Mr. Arun Kumar Agarwala is promoter cum director of M/s Shivam Iron & Steel Co Ltd with three other directors namely Mr. Binod Kumar Agarwala, Mr. Pramod Kumar Agarwala and Mr. Shiva Kumar Agarwala.

The unit at Jambad is having 1) SMS & TMT division producing MS billets from 2x12T & 1x7T IFs and converting a part to 27,000 TPA TMT rods and balance billets/ingots for sale and 2) Ferroalloy & Furnace division producing Ferroalloys namely Fe-Mn and Si-Mn. for sale, & a 15 TPD Section mill for production of MS Flats, Angles & channels. These two divisions are independent and separated by width of a 30m public roadpassing between these two divisions. Out of total 379.87Ac of land the SMS & TMT division is having 2.89 Ac of land and the other side Ferroalloys & Furnace division is having balance 376.98 Ac of land and an expansion has been proposed in this division for which ToR has already been issued.

Since the project was established in 1998, prior to notification 2006, some of the facilities are running with due Environmental Clearance while others are running on NOC and partly not regularized and comes under environmental clearance violations and needs Environmental clearance to be regularized.

The Ministry of Environment, Forest and Climate Change (MoEF&CC) has issued a notification, giving a six-month window period to project proponents, who have been operating without obtaining a prior environmental clearance (EC), to apply for the same. The notification, issued on March 14, clarifies that this opportunity can only be availed for projects or activities which are observed to be in violation till the date of the notification, thus, making this a one-time opportunity.

The Ministry says that the notification has been issued because it is “necessary to bring such projects and activities in compliance with the environmental laws at the earliest point of time, rather than leaving them unregulated and unchecked, which will be more damaging to the environment”. Thus, it is “essential” to grant EC to these projects with adequate safeguards to make them compliant.

Besides laying out conditions for obtaining EC, the notification also gives certain specifications in order to ensure compliance of EC conditions and implementation of the remediation plan and the NCRAP. The one that’s particularly important is with respect to furnishing of bank guarantee.

The project proponent will have “to submit a bank guarantee equivalent to the amount of remediation plan and Natural and Community Resource Augmentation Plan (NCRAP) with the State Pollution Control Board (SPCB)”. According to Manoj Kumar Singh, joint secretary, MoEF&CC, the bank guarantee should compel the project developers to implement the
remediation plan and the NCRAP in a timely manner, because by not doing so, the bank guarantee will be forfeited or its renewal every time will cost the developer considerable additional money.

The collection and analysis of data for assessment of ecological damage, preparation of remediation plan and NCRAP shall be done by an environmental laboratory duly notified under the Environment (Protection) Act (1986)—E(P)Act, or an environmental laboratory accredited by the National Accreditation Board for Testing and Calibration Laboratories or the Council of Scientific and Industrial Research (CSIR).

The EAC shall stipulate the implementation of EMP, comprising remediation plan and NCRAP corresponding to the ecological damage assessed and economic benefit derived due to violation as a specific condition of EC.

While ideally an EC should not be granted once project activities have started, by the virtue of the EIA Notification (2006), but if it is now allowed even through a limited window, the implementation of remedial measures and compliance of clearance conditions must be strictly monitored. Compliance is a major concern, given the already poor monitoring and compliance status of EC conditions.

A clear timeframe for implementation of the remediation and augmentation plans is crucial. Also, the government must ensure compliance by specifying monitoring intervals and detailed reporting on the same. In all cases of non-compliance or improper implementation of remedial plans, the project proponent must be held for serious offence and should be held liable for stiff penalty.

**Importance of the project to the country and region**

It is largely being felt now by Country’s policy makers that manufacturing has to be the backbone of future growth strategy of India over the next decade. Accordingly, the new manufacturing policy aims at raising its share in GDP from current 16% to 25% by 2025. To achieve the manufacturing growth of GDP’s share from 16% to 25% by 2025, there will be substantial increase in steel demand.

Draft National Steel Policy 2012 targets crude steel capacity of 300 Mt in the country by the middle of the next decade (2025-26). A High-Level Committee on Manufacturing (HLCM) in its meeting held on 9th July 2013 which was chaired by Hon’ble Prime Minister endorsed the growth strategy targeting National Mission of 300 Mt crude steel output by 2025-26.
The total installed crude steel capacity of the country is 98.3 Mt, of which 68 Mt is concentrated in the Eastern zone. Out of total projected crude steel capacity of 300 Mt in the country by 2025-26, Eastern zone contribution would be significant at around 244 Mt.

In order to achieve the figure of 300 Mt the requirement of Raw Material will be as follows.

India produced 88.97 mt, 89.79 mt and 96 mt of crude steel during 2014, 2015 and 2016 respectively. India’s steel exports grew 150.0 per cent year-on-year to 0.75 MT in February 2017, while steel imports declined 46 per cent year-on-year to 0.49 MT. Total consumption of finished steel grew by 3.4 per cent year-on-year to 76.22 MT during April 2016-February 2017.

The Minister of Steel & Mines has reiterated commitment of Central Government to support the steel industry to reach a production target of 300 Million Tonne Per Annum (MTPA) in 2025.

The world crude steel production in 2016 reached 1628 million tonnes (mt) and showed a growth of 0.8% over 2015.

China remained world’s largest crude steel producer in 2016 (808 mt) followed by Japan (105 mt), India (96 mt) and the USA (79 mt).

**Man power**

Total direct employment for the project is 300 and indirect employment through contractors is about 1200.

**Project Production capacity**

The present annual production capacity of the project is as follows:

1. TMT rods 54,000 TPA
2. Ferro alloys(Fe-Mn, Si-Mn & Fe-Cr) 37,400 TPA
3. Sections(channels &angles) 40,000 TPA
4. M S Metal sheets 20,000 TPA
5. Coal Gasifier 7,000-6,000 Nm3/hr
6. Coal crusher 6400 TPA
7. Jigging Plant 8000 TPA
8. G I plant to coat pipes made from MS metal sheets with Zinc for corrosion resistance 19200 TPA

**Raw material**

The major raw material consumption for the project is as follows:

1. Sponge iron 1,10,000 TPA
2. Pig iron 12,000 TPA
3. Scrap 6,000 TPA
4. Mn Ore 56,000 TPA
5. Chromite ore 36,750 TPA
6. Coke 22,000 TPA
7. 7) Dolomite 12,200 TPA
8. 8) Coal 6,000 TPA

Raw material is transported on road through fully covered environment compatible Euro/Bharat III/IV trucks.

**Water**

Waste Water generated from process is settled, treated and reused in the process; so that fresh water requirement is reduced to 810m$^3$/day only. This water is drawn from Ursi river about 800m away from project boundary. No waste water is discharged outside project boundary.

**Power**

Power requirement for the project is about 42 MW which includes plant and domestic use as well. Power saving measures have been taken up; like solar lighting for internal roads and water heating, variable frequency drive for blowers and fans, LED bulbs for plant lighting etc. to be followed

**Solid Waste Generation & Management**

<table>
<thead>
<tr>
<th>Solid waste</th>
<th>Quantity in TPA</th>
<th>Utilization Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe-Mn slag</td>
<td>9,000</td>
<td>Use in Si-Mn production</td>
</tr>
<tr>
<td>Si-Mn Slag</td>
<td>3,300</td>
<td>Being sold to cement plant for production of alkali activated cement.</td>
</tr>
<tr>
<td>Fe-Cr slag</td>
<td>7,700</td>
<td>Refractory material, can be sold to refractory users after recovery of Fe-Cr.</td>
</tr>
<tr>
<td>IF slag</td>
<td>16,000</td>
<td>River sand substitute, land fill</td>
</tr>
<tr>
<td>Dust &amp; scrap</td>
<td>-</td>
<td>To be fully consumed in plant</td>
</tr>
</tbody>
</table>

**Pollution Control measure**

**Air pollution control**

IFs  Swivel hood, Flame arrester, Bag filter, ID fans & stack
SAF (Fe-Mn, Si-Mn)  Bag filter, ID fans & stack
SAF (Fe-Cr)  ESP, ID fans & stack
RMHP  Water sprinklers

**Water pollution control**

Waste water treatment with settling basin and filtration

**Sound pollution control**
Acoustic control cover on noise producing machines

Personal protection equipment

Green belt on 33% area of total land i.e. 125 Ac of land which controls air and noise pollution.

**Project cost**

As land has already been acquired, the project cost for equipments, land preparation, civil structures, engineering, ESC, contingency and EMP. The project cost has been Rs. 307 crores.
CHAPTER-2
INTRODUCTION OF THE PROJECT

2.1 IDENTIFICATION OF PROJECT & PROJECT PROPOONENT

M/s Shivam Iron & Steel Co Ltd has its steel plant located at Jambad, PO- Udnabad, Dist:-Giridh, Jharkhand with latitude 24° 09’ 34.18” N and longitude 86° 21’ 02.33” E with 307m AMSL.

The existing unit at Jambad is manufacturing and selling TMT rods, billets, ferro alloys like Fe-Mn and Si-Mn, MSAngles, channels, Flat and manufacturing GI pipes from flats.

The company profile of M/s Shivam Iron & Steel Co Ltd., Giridh is as follows:

M/s Shivam Iron & Steel Co Ltd. was incorporated on 16th September 1998, is a well established company having long experience in production and selling M.S Billets, TMT bars and Ferro Alloys.

Mr. Arun Kumar Agarwala is promoter cum director of M/s Shivam Iron & Steel Co Ltd with three other directors namely Mr. Binod Kumar Agarwala, Mr. Pramod Kumar Agarwala and Mr. Shiva Kumar Agarwala.

The company is marketing TMT rods in India and abroad with brand name “SISCON” and is accredited with ISO 9002. The company has other steel manufacturing units at Raniganja, Jamuria, Koderma and Vizag also.

SMS & T M T Division

M/s Shivam Iron & Steel Co Ltd is running its SMS division with 2x12T CTO for 170 TPD billet, vide D-175(C) dated 27.1.2015 and thereafter renewed up to 30.9.2017 and renewal has not been received although applied for the same on time.

1) 1x7T IF has been set up but not commissioned. Errection of 1x7T IF with additional production capacity of 16,000 TPA MS billet without NOC/EC comes under violation.

2) Rolling mill is running & producing 27,000 TPA TMT bars/rods. But it is running on CTE, vide B-2743, dated 28.04.2016 from JSPCB. Capacity has been enhanced to 54,000 TPA matching with billet production from IFs. CCM has been introduced and rerolling mill has been converted to Rolling mill, discarding cold billet heating furnace. Pollution load has been reduced there by. This is a case of violation, because no EC has been received for existing and expansion capacity.

Ferro alloy & Furnace Division

1) M/s Shivam Iron & Steel Co Ltd has existing 4x6 MVA Ferro-alloys Plant producing 37,400 TPA Si-Mn, Fe-Cr and Fe-Mn taken together. EC has been accorded for 3x6 MVA Ferro-alloy plants vide EC from MoEFCC, dated 29.10.2010 for production capacity of 28,050 TPA. Running of additional 1x6 MVA ferro alloy Plant over accorded EC with additional production of 9,350 TPA comes under case of violation.

2) The unit is having 50T/day induction furnace with CTO from JSPCB D-176(C), dated 27.01.2015 and not running at present and not coming under violation.
3) For section mill the unit has taken NOC vide T-3865, dated 7.09.2000 and renewed up to 30.09.2015 and there after no renewal has been received although applied for renewal. The capacity of section mill has been increased from 15 TPD to 120 TPD, which is a case of violation.

4) The unit has also commissioned 1x60 TPD metal sheet re-rolling mill and producing 20,000 TPA flats and making MS pipes out of sheets, a part of MS pipes are dipped in molten Zinc bath and thus GI pipes are being manufactured for sale. for the facilities EC has not been taken and comes under violation.

5) The unit has set up Coal Gasifier of capacity 7,000 to 8,000 Nm$^3$/hr. for heating of billets for sheet re-rolling mill. The facility has already been commissioned without EC, hence comes under violation.

6) A coal crusher of capacity 20TPD and 25 TPH Jigging plant for recovery of Fe-Cr from its slag has been constructed and commissioned without EC, hence comes under case of violation

2.2 BRIEF DESCRIPTION OF NATURE OF THE PROJECT

The project is an steel manufacturing project producing TMT rods, M S angles, channels, MS pipes, Galvanized Iron pipes and ferroalloys. The project comes under category-A and supposed to get prior Environmental Clearance from MoEFCC for all the facilities, which have not been done.

All the units of the project have been set up on fully acquired land of 153.69 ha.

The unit is producing hot metal by melting sponge iron, pig iron and iron scrap in induction Furnaces and convert to liquid steel in LFs, cast liquid steel in CCM to red hot billets. Billets are cut in to required size and drawn in hot rolling mills to produce rod, channel or angles. For manufacturing TMT red hot rods is allowed to pass through water bath for surface quenching., In another rolling mill MS plates are produced, rolled in to pipes of required diameter, seem welded. To manufacture GI pipes these MS pipes are cleaned of oil, grease, rust and scale and immersed in liquid zinc bath. Ferroalloys like Fe-Mn, Si-Mn and Fe-Cr are being manufactured in submersed arc Furnaces. Project comes under red category. Coal Gas generating station will produce fuel gas for reheating cold billets.

2.3 IMPORTANCE OF THE PROJECT TO THE COUNTRY AND REGION

TMT rod, channels and bar products are normally used in constructional/structural work due to its workability and Rolled products like angles and channels find versatile use in industries and erection work. Plates are used in fabrication of equipments and household furniture. Plates are bent to pipe shape and seem welded to pipes and pipes can be given Zinc coating and used in places where MS can be corroded. Ferro alloys have demand in making quality steel like SS, Mn steel and other alloy steels for specific use. Hence all the products proposed to be manufactured have high market demand.

Steel is a basic commodity for all industrial activity and its consumption marks industrial prosperity. The steel industry has tremendous forward and backward linkages in terms of material flow, income and employment generation.
Steel is a core industry and thus its demand is strongly linked to the overall economic activity of the nation. Given the inherent long-term potential of the Indian economy and its cyclical nature, the long-term prospects of the steel industry are fairly comfortable. The demand and production has been growing at a healthy rate for the last few years and the forecast for the next decade and half is also very promising.

It has been estimated by certain major investment houses such as Credit Suisse that India’s steel consumption will continue to grow at 16% rate annually fuelled by demand for construction projects worth US $1 trillion. The scope for raising the total consumption for steel is huge, Per capita consumption of steel at current levels is about 65 kg. As a comparison per capita steel consumption in China is 430 kg and the world steel consumption per capita average is 180 kg.

By 2020-21 the demand at 7% and 8% GDP growth is estimated to be 123 million tons and 137.5 million tons respectively. Taking a mean figure of 130 million ton, there is a need of 65 million ton in 10 years time. This translates into an average growth requirement of about 10 million tons per year.

2.4 EMPLOYMENT GENERATION DUE TO PROJECT

The project has given more employment opportunities to skilled & unskilled workers by Direct & Indirect Employment. The total man power employed due to the project are around 300 including all employees. Other than those some 1200 contractual workers are also in operational phase.

2.6 ENVIRONMENTAL MANAGEMENT PLAN:

Following environmental management plan has been implemented to reduce the adverse impacts and to make provision to compensate for any residual adverse impact

- Air Pollution control Equipments (APE) like swivel hoods, flame arresters, bag filters, ID fans and 30mstacks have been provided for all induction Furnaces and Ferro-alloys plants.
- Solid waste slag from Fe-Mn production is being used as raw material for Si-Mn production. Fe-Cr being recovered from Fe-Cr slag by Jigging and being recycled to process.
- IF slag are being crushed, passing through magnetic separator for recovery of about 14% Fe from about 15% Fe from slag and being recycled to IFs. After Iron recovery slag has about 85% Silica and equivalent to river sand for disposal or use in construction work.
- Fugitive dust emission from the different storage & transfer point and haul road emissions are being controlled by use of water sprinklers and spraying of water by tankers.
- Considering water as important and valuable utility, company has formulated waste water recovery system, recycle and reuse. No contaminated water is discharged outside project boundary.
- Storage of storm water in the monsoon in water harvesting ponds and the use of the same water in lean season has been initiated.

- Noise control devices with different equipments at design stage, protective measures at work zone sites and supply of protective gears to affected personnel have been taken care of.

- Realizing the need for the greenbelt cover as a very good sink for pollutants and the aesthetical aspects the company has developed thick green belt along the boundary, by the side of internal roads and around material handling section.

- EMP cell has been formed which has been equipped with environment monitoring laboratory, technical man power and fund allocation. Details of monitoring program with respect to pollutant parameters. Monitoring scheduled and reporting as per statutory requirement has been planned.

- Safety and disaster management plan with onsite emergency plan to deal with the unforeseen accidents has also been chalked out.

- Beneficial aspects of project with respect to direct and indirect employment, business opportunities and peripheral development has been discussed. Trickledown effect of all the project benefits to affected local population will be analyzed.

- Taking into consideration of the environmental degradations due to the project implementation and the consequent environmental management plan followed by the post project benefits, the subjective assessment with a Total Impact Score will be analyzed to draw a summary conclusion.

### 2.7 LITIGATION/COURT CASE AGAINST THE COMPANY

No, litigation or court cases are pending against the project and/or no direction/order has been passed by any court of law against the project.

### 2.8 AUTHORIZATION

M/s. Shivam Iron & Steel Co. Ltd has entrusted M/S Global Tech Enviro Experts Pvt. Ltd., Bhubaneswar for the preparation of techno feasibility report to point out EC violation case of the unit with suggestions for environmental protection for sustainability of the project. In accordance to the scope of work, M/s. GTEEPL team has visited the project site and compared the plant facilities already erected/commissioned against the facilities for which NOC/EC has already been accorded, and pointed out the cases of violation to be reported for consideration by EAC.

### 2.9 ACKNOWLEDGEMENT:

M/s GLOBAL TECH ENVIRO EXPERTS PVT LTD, Bhubaneswar expresses its deep gratitude to M/s. Shivam Iron & steel Co.Ltd for the assignment entrusted to them.
3.1 LOCATION OF THE PROJECT

M/s Shivam Iron & Steel Co Ltd. has its existing steel plant at Jambad, PO- Udnabad, Dist:-Giridh, Jharkhand. The project is located at latitude $24^\circ 09' 34.18''$ N and longitude $86^\circ 21' 02.33''$ E with $307m$ AMSL.

Fig3.1: Site Location Map
Fig 3.2: Satellite imagery of location—Shivam Iron & Steel Ltd.
3.2 LAYOUT

![Layout Map of the area]

Fig 3.3 Layout Map of the area

3.3 PROCESS DESCRIPTION

M/s Shivam Iron & Steel Co Ltd has an existing running unit producing billets and TMT rods for sale. The Project Proponent now proposes expansion and diversification of this unit to increase TMT production, produce channels/angles, manufacture MS/GI pipes and add Fe-Cr to existing Fe-Mn/Si-Mn production.
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plant Facilities</th>
<th>Clearance</th>
<th>Capacity as per Clearance</th>
<th>Commissioned Facilities</th>
<th>Status</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Induction Furnace with Billet caster</td>
<td>NOC vide letter no N.11 dt 13.01.05 &amp; CTO has been already obtained</td>
<td>170 MT/day</td>
<td>2 X 12 T + 1 X 7 T</td>
<td>Commissioned and 7T Already Erected</td>
<td>Erection without prior clearance</td>
</tr>
<tr>
<td>2</td>
<td>Rolling mill</td>
<td>NOC vide letter no B-2743 dt 28.04.16. No CTO</td>
<td>27,000 TPA</td>
<td>27000 TPA enhanced to 54,000 TPA</td>
<td>Commissioned</td>
<td>EC has not been received for existing and expansion capacity.</td>
</tr>
<tr>
<td>3</td>
<td>SAF</td>
<td>EC vide letter no 11011/365/2009-IA II (I) dt 29.10.2010 with NOC &amp; CTO</td>
<td>3x6 MVA</td>
<td>4 X 6 MVA</td>
<td>Commissioned</td>
<td>Capacity enhanced without clearance. 1 X 6 MVA is under violation.</td>
</tr>
<tr>
<td>4</td>
<td>Re-Rolling mill</td>
<td>-</td>
<td>1x60 TPD</td>
<td>Commissioned</td>
<td>Commissioned without prior clearance</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Coal Gasifier</td>
<td>-</td>
<td>7,000-8,000 Nm$^3$/hr</td>
<td>Commissioned</td>
<td>Commissioned without prior clearance</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Section mill</td>
<td>NOC vide letter no T-3865 dt 07.09.2000. and CTO already obtained</td>
<td>15 TPD</td>
<td>15 TPD enhanced to 120 TPD</td>
<td>Commissioned</td>
<td>Capacity enhanced without clearance.</td>
</tr>
<tr>
<td>7</td>
<td>GI Plant</td>
<td>Nil</td>
<td>1x60 TPD</td>
<td>Commissioned</td>
<td>Commissioned without prior clearance</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Coal crusher</td>
<td>Nil</td>
<td>1x20 TPD</td>
<td>Commissioned</td>
<td>Commissioned without prior clearance</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Jigging plant</td>
<td>Nil</td>
<td>1x25 TPD</td>
<td>Commissioned</td>
<td>Commissioned without prior clearance</td>
<td></td>
</tr>
</tbody>
</table>
3.4 MAJOR RAW MATERIAL INVENTORY

Raw materials used for production

Table 3.2: Raw Material Inventory

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Material</th>
<th>Quantity in TPA</th>
<th>Source</th>
<th>Mode of transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sponge iron</td>
<td>1,10,000</td>
<td>Koderma</td>
<td>Road</td>
</tr>
<tr>
<td>2</td>
<td>Pig Iron</td>
<td>12,000</td>
<td>Local</td>
<td>Road</td>
</tr>
<tr>
<td>3</td>
<td>Scrap</td>
<td>6,000</td>
<td>Local</td>
<td>Road</td>
</tr>
<tr>
<td>4</td>
<td>Mn Ore</td>
<td>28,000</td>
<td>Sukinda, Barbil Odisha</td>
<td>Road</td>
</tr>
<tr>
<td>5</td>
<td>Chromite ore</td>
<td>18,750</td>
<td>Sukinda, Odisha</td>
<td>Road</td>
</tr>
<tr>
<td>6</td>
<td>Coke</td>
<td>11,000</td>
<td>Local</td>
<td>Road</td>
</tr>
<tr>
<td>7</td>
<td>Dolomite</td>
<td>6,200</td>
<td>Sundargarh Odisha</td>
<td>Road</td>
</tr>
<tr>
<td>8</td>
<td>Coal</td>
<td>6,000</td>
<td>Local</td>
<td>Road</td>
</tr>
</tbody>
</table>
In addition to the above indicated major raw materials LDO/HSD, Electrode paste, electrode casing & lubricating oil will also be required.

**Raw Material Receipt & Store**

Most of the raw material is received by road. Separate store yard for the major raw materials at the back side of Furnace division.

### 3.6 WATER REQUIREMENT

Total water requirement for the project is 810 m$^3$/day.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Facilities</th>
<th>Fresh make up water in m$^3$/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2x12 T + 1 X 7 IFs</td>
<td>184</td>
</tr>
<tr>
<td>2</td>
<td>Billet caster</td>
<td>86</td>
</tr>
<tr>
<td>3</td>
<td>All the three Rolling mills</td>
<td>144</td>
</tr>
<tr>
<td>4</td>
<td>4x6 MVA SAFs</td>
<td>288</td>
</tr>
<tr>
<td>5</td>
<td>Domestic use</td>
<td>72</td>
</tr>
<tr>
<td>6</td>
<td>A/C and miscellaneous</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>810</strong></td>
</tr>
</tbody>
</table>

Raw water is drawn from river Usri which is about 800m away from project site. There are rain water harvesting and storage to use during lean period of the river.

No polluted water is being discharged outside project boundary. Zero discharge norm is being adhered to.

### 3.7 MANPOWER REQUIREMENT

400 manpower in manager, supervisor and worker levels and besides this about 1200 people are engaged as contract labors which includes security, canteen, house keeping and in the nature of manual labor.

### 3.8 Power

Power utilized by the project is about 33 MW which includes plant and domestic use as well. Power saving measures are taken; like solar lighting for street and water heating, variable frequency drive for blowers and fans, LED bulbs for plant lighting etc. are followed.
3.9 WASTE GENERATION & MANAGEMENT

### Table 3.7: Solid Waste Generation & Management

<table>
<thead>
<tr>
<th>Solid waste</th>
<th>Quantity in TPA</th>
<th>Utilization Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe-Mn slag</td>
<td>9,000</td>
<td>Use in Si-Mn production</td>
</tr>
<tr>
<td>Si-Mn Slag</td>
<td>3,300</td>
<td>To be sold to cement plant for production of alkali activated cement.</td>
</tr>
<tr>
<td>Fe-Cr slag</td>
<td>7,700</td>
<td>Refractory material can be used in road construction after recovery of Fe-Cr.</td>
</tr>
<tr>
<td>IF slag</td>
<td>16,000</td>
<td>River sand substitute, land fill</td>
</tr>
<tr>
<td>Dust &amp; scrap</td>
<td>-</td>
<td>To be fully consumed in plant</td>
</tr>
</tbody>
</table>

Rolling mill scraps, mill scale are to be recycled to IF for re-melting with fresh charge. The Solid wastes will be treated as byproducts and these will be fully utilized.

**Waste Water Management**

The waste water generation from the various processes is sent to the waste water treatment. After treatment the treated water is recycled for the processes again. The slime from washing screen is sent to a settling pond and dewatered. The water is recycled back. The product slurry then passed through the filter press and concentrate cakes are sent to the Concentrate Bin. The filter water is recycled back. The waste water from administrative building, canteen and office toilets is sent to a soak pit.
CHAPTER-4
SITE ANALYSIS

4.1 CONNECTIVITY

The site is located at Jambad, in Giridih district of Jharkhand. The area is industrially developed and has necessary infrastructure facilities such as motorable road up to the project site, nearness to rail head. NH-2 is around 30Km from project site. Giridih railway station is 5km from project site.

4.2 LAND

The total land acquired by M/s Shivam Iron & Steel Co. Ltd is 379.87 Ac. (153.69 ha) The breakup of land is as follows:

SMS & TMT division

<table>
<thead>
<tr>
<th>Division</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS</td>
<td>1.66</td>
</tr>
<tr>
<td>TMT</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Ferro alloy & Furnace division

<table>
<thead>
<tr>
<th>Division</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferro alloy unit with vacant space</td>
<td>371.42</td>
</tr>
<tr>
<td>Furnace &amp; Section Mill</td>
<td>1.90</td>
</tr>
<tr>
<td>Plate Mill</td>
<td>3.66</td>
</tr>
</tbody>
</table>

Total: 379.87 Ac

4.3 TOPOGRAPHY

The site is geographically located at 24° 09’ 34.18” N and longitude 86° 21’ 02.33” E with 307m AMSL. The area mostly is a plain area. Usri river is at a distance of 800m from project site.

The nearby industries of M/s Shivam Iron & Steel Co. Ltd are:

1) Saluja Steel
2) Lal Steel
3) Sri Tirupati wares and
4) Ganapati wire Industries
Fig 4.1: Toposheet

4.4 LAND USE PATTERN

The project area is present at Giridih, Dhanbad. It is also noted that the core zone i.e. the project boundary or the battery limit does not belong to part of any National Park, wild life sanctuary or Natural/ Biosphere reserve. It also does not contain any features of archaeological/ historical and cultural/aesthetic importance.
Table-4.1 Land use pattern of 10km radius buffer Zone of project site

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Class</th>
<th>Area in Ha</th>
<th>% of Study area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agricultural land</td>
<td>8548.22</td>
<td>27.22</td>
</tr>
<tr>
<td>2</td>
<td>Cultivable Waste land</td>
<td>1674.87</td>
<td>5.33</td>
</tr>
<tr>
<td>3</td>
<td>Area not available for cultivation</td>
<td>4460.12</td>
<td>14.20</td>
</tr>
<tr>
<td>4</td>
<td>Forest</td>
<td>4930.25</td>
<td>15.70</td>
</tr>
<tr>
<td>5</td>
<td>Settlement</td>
<td>6961.38</td>
<td>22.18</td>
</tr>
<tr>
<td>6</td>
<td>Others including</td>
<td>4825.16</td>
<td>15.37</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>31400.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

River and water bodies
In 10km radius buffer zone of project area the only river namely Usri is flowing. But a number of surface water bodies like private and public ponds exist in buffer zone.

Soil characteristic of buffer zone
Soil is mostly Redish Brown to Brown in color with texture Clay Gravel to Clay Silt. Soil of the study area has been formed through alluvial deposits and overlain by more recent black swamp deposition. Detail characteristic and chemical analysis will be done during Base line study.

Climatic data from secondary source
Climatic data from nearest IMD Dhanbad shows that temperature varies from 7.3 to 44.4°C. Relative humidity varies from 27% in April to 87% in August. Average annual rainfall is 1370mm and majority of rainfall occurs from mid June to mid October. Predominant wind direction are W, SE, Sw and N. Wind speed remain within 20km/hr and atmospheric pressure varies from 971 to 987hpa.