

Executive Summary

1.0 Introduction

M/s. Topworth Urja and Metals Limited (TUML) have proposed to set up the expansion unit for Sponge Iron Plant, Induction Furnaces, TMT Rolling Mill & Installation of Ferro Alloys Unit, Alloy Steel Billet Plant And Rolling Mill And Structure Mill at village Heti, in Tehsil Umred, District Nagpur, state Maharashtra.

M/s Topworth Group is one of India's fastest growing conglomerates, with over 2,500 employees, and revenues exceeding 1.0 Billion USD.

The application to prior EC (Form-1) for the proposed project was submitted to MOEF for approval of Terms of Reference (TOR). The proposal was considered by the Expert Appraisal Committee (EAC) during its **14th RECONSTITUTED EXPERT APPRAISAL COMMITTEE (INDUSTRY) HELD DURING 19th TO 20th DECEMBER, 2013** for the TOR for preparation of EIA report. The EAC has suggested TOR for preparation of the EIA report and TOR compliance is given in EIA EMP report as Table 1.2. Subsequently, the Company had made an application for revised capacities of the Project and revised TOR was granted in the **23RD MEETING OF THE RECONSTITUTED EXPERT APPRAISAL COMMITTEE (INDUSTRY) HELD ON 18TH SEPTEMBER 2014.**

1.1 TYPE OF THE PROJECT

As per the Environmental Impact Assessment (EIA); Notification S.O. 1533, 14-09-2006, as amended and issued by Ministry of Environment and Forests (MOEF), Government of India, the proposed ferroalloys manufacturing unit is categorized as Category – A under the Schedule 3(a) Metallurgical industries (ferrous & nonferrous), which mandates obtaining prior Environmental Clearance from MOEF, GOI, New Delhi.

1.2 LOCATION OF PROPOSED SITE

The proposed project of the TUML has selected a site at Village Heti, Tehsil Umred, District Nagpur, and Maharashtra.

Latitude: 20°55'39.10"N

Longitude: 79°14'47.96"E

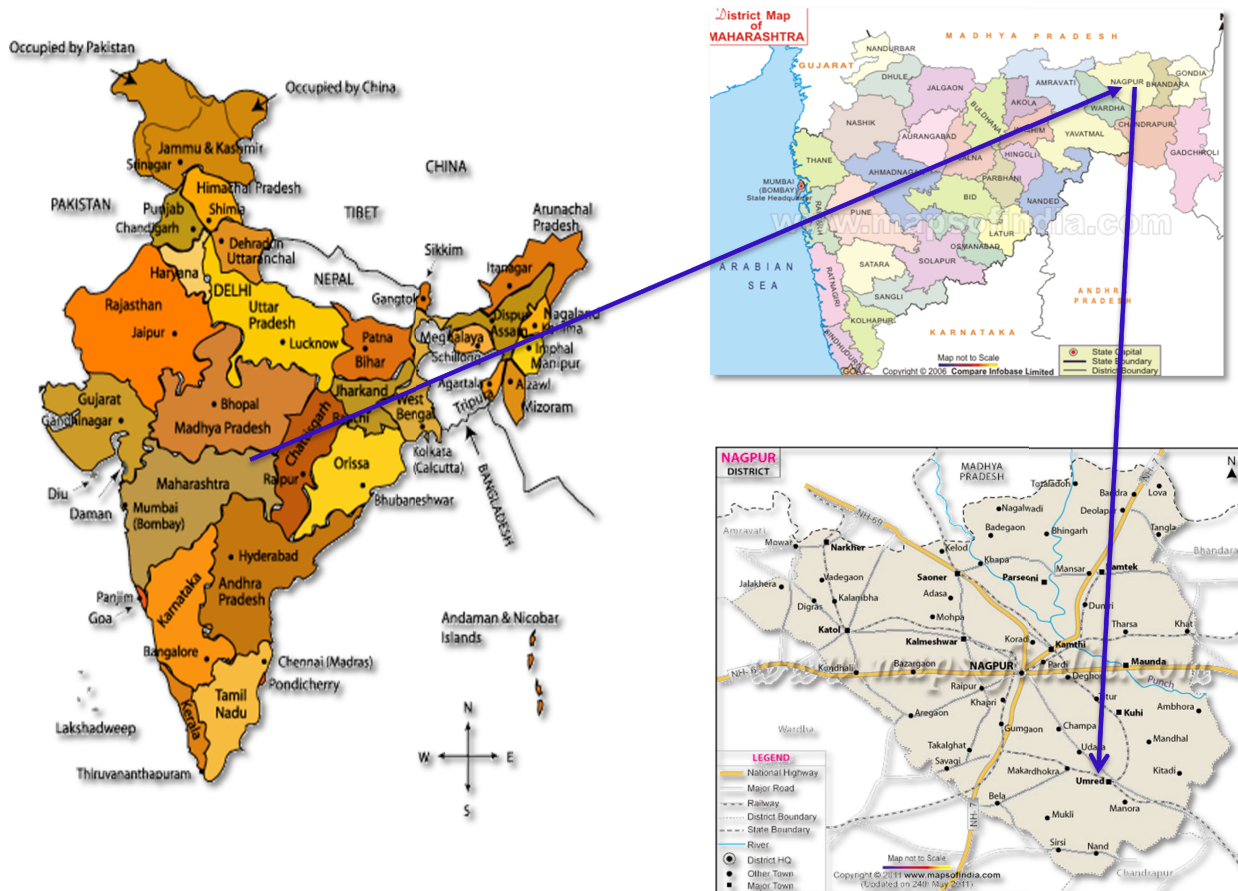
The general location of the proposed project site is shown in **Figure no. 1.0**.

Toposheet Map showing the 10 km radius of the study area is given in **Figure no. 1.1**

Environmental setting of the project site is present in below **Table no. 1.0**

Figure no. – 1.0.

The location of the proposed project site



The proposed site is about 35 km south east of Nagpur city and about 12 km North East of Umred Tahsil. Sponge Iron Mini Steel Plant, M.S Billets plant and Rolling Mill are

present in the existing premises of Topworth group and Captive Power Plant (100 MW) is in operation. M/s Topworth Urja and Metals Ltd (TUML), located on Umred road, Village Heti, Distt. Nagpur (MH). The terrain of the land is almost flat and low lying. The location of the TUML is given below in the Study Area (10 Km. radius).

Figure no.– 1.1

Topo Map showing the 10 km radius of the study area

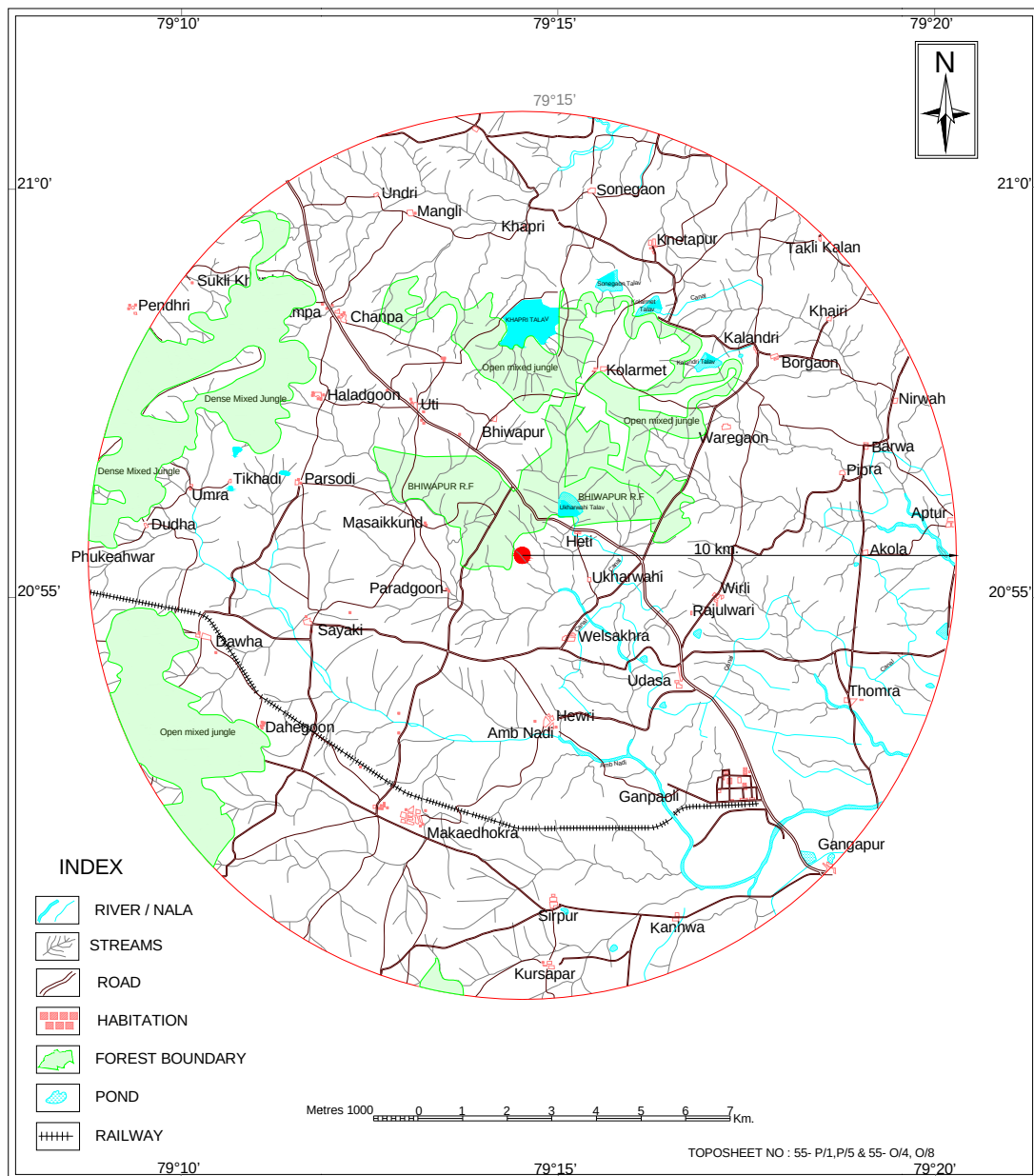


Table no. 1.0
Environmental settings of project site

Sr No	Perticulars	Details
1	Plant Location	Heti village, Tehsil Umred, district Nagpur, Maharashtra
2	Plant site coordinates	Latitude: 20°55'39.10"N Longitude: 79°14'47.96"E
3	Climatic condition IMD	Annual Max. Temperature : 47.8°C Annual Min. Temperature : 3.9°C Average Annual Rainfall : 1097.7 mm Predominant annual wind direction: North-West Relative Humidity 35 to 81 %.
3	Plant site Elevation above MSL	310 m
4	Plant site topography	Generally flat
5	Type of land	Non Agricultural Land
6	Nearest National Highway	NH 7
7	Nearest Railway station	Butibori Railway station, which is 35 Km from the plant site & Nagpur railway station. 35 Km from the site.
8	Nearest Airport	Nagpur
9	water source for the project	Paradgaon Dam 3 km from the site
10	Nearest major City	Nagpur
11	Protected area as per wildlife protection Act 1972	Non in 15 km radius area
12	Nearest Archeological Site	Non in 15 km radius area
13	Reserved forest	Bhevapur RF 0.5 km, North side from the site

1.3 SITE SELECTION CRITERIA

- Existing Plant in operation.
- Availability of 160 acres of plot with ample scope to accommodate all future expansions plans.
- No Rehabilitation/Resettlement required.
- No National Park, Biosphere Reserve and Wildlife Sanctuary including Notified Eco Sensitive Areas within 10 km radius.
- No archaeological monument, interstate boundary and defense installation.
- No notified critically polluted area.
- No nallah/water body, public roads, forests within the project site.
- Availability of Raw Material.
- Availability of Water (3009 m³/day (after expansion); Source : Paradgaon dam).
- Assured Power Supply.
- Market available for finished products.
- Availability of man power.
- Availability of industrial infrastructure.

2.0 Production details

The production details of the proposed expansion and new unit are given below

Table no. 2.0
Production details

S. N	NAME OF UNITS	EXISTING CPACITY	PROPOSED EXPANSION/ NEW UNITS	AFTER EXPANSION AND AS PER TOR ISSUED BY VIDE LETTER NO.F.NO.J-11011/283/2013-IA-II (I) DATED 30 TH APRIL 14	AS PER PROPOSED AMENDMENT IN PROJECT CONFIGURATION
1	Sponge Iron	60000TPA	231000TPA	291000TPA	291000TPA
2	Steel Billets	240 TPD	240 TPD	480 TPD	480 TPD
3	TMT Bar	66,000TPA	84,000 TPA	1,50,000 TPA	1,50,000 TPA
4	Captive Power plant	100MW	--	100MW	100MW
5	Ferro Alloys Plant,	--	50000 TPA	50000 TPA	50000 TPA
6	Alloy Steel Melt shop	--	200000 TPA	200000 TPA	400000 TPA
7	Alloy Steel Bar/Wire Rod/TMT Bar Mill (Stainless Steel, Alloy Steel, Carbon Steel & Wire Rods)	--	200000 TPA	200000 TPA	300000 TPA
8	Section Mill For Rolling of Steel Sections	--	100000 TPA	100000 TPA	150000 TPA
9.	Heavy Section Mill For Rolling of Structural Steel Heavy Sections	-	250000 TPA	-	250000 TPA

2.1 Raw Material Details

The raw material requirement for the proposed expansion and new unit is given in **Table no. 2.1**

Table no. 2.1
Raw Material Details

Sr. No	Raw Material Requirement	Existing Requirement	TOTAL REQUIREMENT WITH EXISTING & PROPOSED EXPANSION AS PER TOR ISSUED BY VIDE LETTER NO.F.NO.J-11011/283/2013-IA-II (I) DATED 30TH APRIL 14		RAW MATERIAL REQUIREMENT AFTER AMENDMENT REQUEST	
			Proposed Expansion	Total Requirement	For all Proposed Expansion projects	Total Requirement
1.	Manganese Ore	-----	7050 MT/M	7050 MT/M	7050 MT/M	7050 MT/M
2.	Ferro Alloy	100 MT/M	350 MT/M	450 MT/M	600 MT/M	700 MT/M
3.	Pig Iron	-----	1750 MT/M	1750 MT/M	3500 MT/M	3500 MT/M
4.	Billets	5850 MT/M	34235 MT/M	40085 MT/M	70275 MT/M	76125 MT/M
5.	M. S. Scrap	1140 MT/M	2895 MT/M	4035 MT/M	6405 MT/M	7545 MT/M
6.	Sponge Iron	7200 MT/M	21910 MT/M	28200 MT/M	36615 MT/M	43815 MT/M
7.	Coal (DRI+ Power plant+ Rolling mill)	69300 MT/M	28875 MT/M	98175 MT/M	28875 MT/M	98175 MT/M
8	Iron Ore/Pellets	7500 MT/M	28875 MT/M	36375 MT/M	28875 MT/M	36375 MT/M
9.	Dolomite	750 MT/M	2888 MT/M	3638 MT/M	2888 MT/M	3638 MT/M

2.2 PROCESS DETAILS

- ROTARY KILN:**

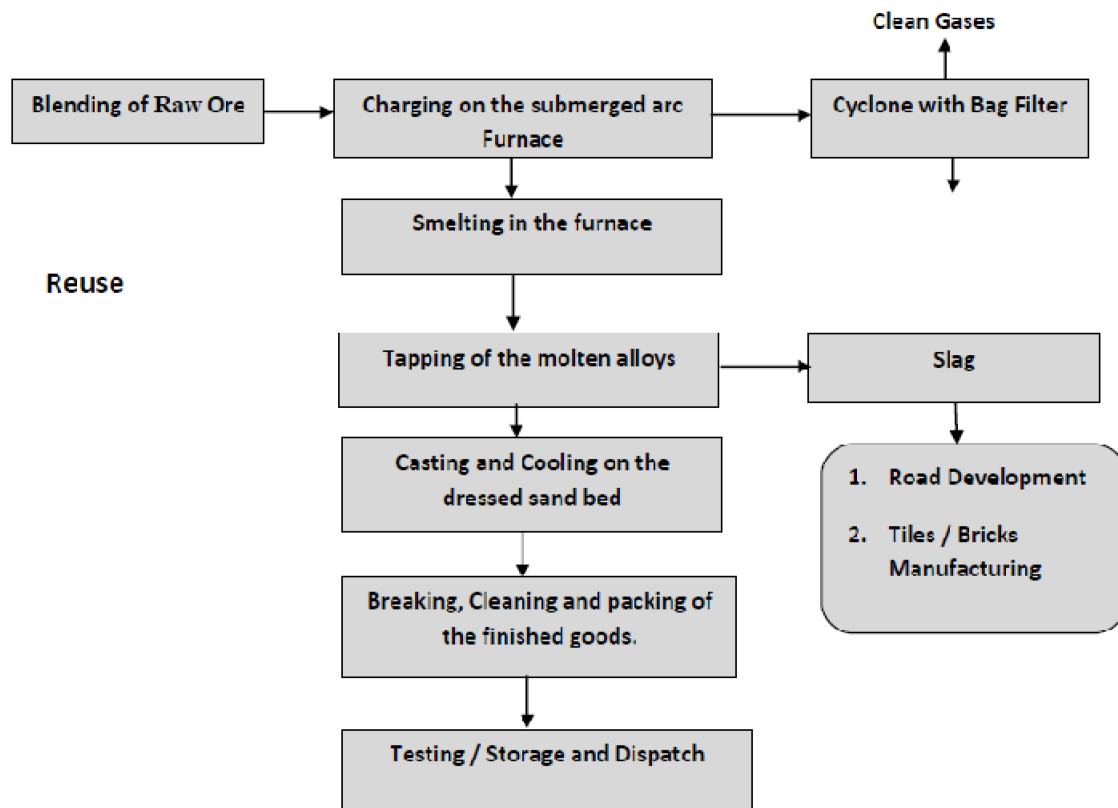
The proponent has decided to enhance the capacity of existing Sponge Iron Plant from 60,000 TPA to 291000TPA by installing 2 X 350 TPD Rotary Kiln for production of 231000TPA Sponge Iron. The char produced from the rotary kiln will be used in power plant.

- **SMELTING SHOP**

A) SUBMERGED ARC FURNACE (SAF)

Submerged Arc Furnace (SAF) is the heart of Ferro-alloy plant wherein oxides of manganese, silicon, iron, phosphorous etc contained in feed ore are reduced by coke carbon. These SAFs are located inside the Smelting shop.

Flow diagram of SAF



2.2.1 Refining the Liquid Steel

The Liquid Steel from the EAF is tapped into a pre heated ladle. The ladle is taken to Ladle Refining Furnace for carrying out refining operations. The ladle is fitted with porous plug and an inert gas is purged through the steel bath during entire refining

operation. The steel is deoxidized and desulphurised by treating under basic reducing slag which is rendered fluid by arc heating and also by adding fluorspar to it. For making/ reducing & desulphurising slag, burnt lime, fluorspar, ferro-silicon and powdered coke are normally added. The reducing slag reduces the oxides in the bath and assists in the removal of sulphur as calcium sulphide. The desulphurization is also promoted in presence of sufficient quantity of manganese in the bath, high basicity of slag and high bath temperature. By blowing with the inert gas, the metal in the ladle is stirred and as a result of purging its temperature and composition are equalized and non-metallic inclusions would float up to the surface. Necessary ferro-alloys are added to the liquid steel through a port on the ladle cover after the bath has been fully deoxidized. A sample is, thereafter, drawn out and sent to the laboratory for final analysis. Further arc power may be applied to increase the temperature to the desired level, if necessary. As soon as the final analysis conforms to the desired composition and proper temperature has been attained, the ready metal is transferred to vacuum degasser.

2.2.2 Vacuum Degassing

A ladle of liquid is transferred by overhead crane from the LRF unit to the vacuum degasser. The ladle is placed in a cylindrical tank and is supported inside the tank. The tank is constructed with the steel plate and is lined with refractory.

When the ladle has been located in the tank and inert gas supply is connected to one or more porous plugs located in the refractory lining in the bottom of the ladle. Inert gas is blown through the plug at control rate to stir the liquid metal in the ladle and expose the surface of the liquid steel by pushing aside the slag layer on the surface.

The tank equipped with a flange around the upper periphery of the tank side wall is then sealed by a cover which is located in self propelled car. The car drives over the tank and then covered is lowered until the flange around the lower edge of the cover is connected with the tank flange.

An “O” ring seal between the two flanges creates a vacuum tight seal. The volume enclosed by the tank and the cover is then evacuated by a set of vacuum pumps connected to the tank. As the pressure in the tank falls, the flow of inert gas through porous plug in the bottom of the ladle can be adjusted to create the required degree of turbulence in the ladle. The dissolved gases like hydrogen, oxygen etc are removed by effusion from the surface of steel to the low pressure surrounding atmosphere.

In case of unkilld steels, carbon and oxygen in metal bath react under vacuum to form carbon monoxide, which is then removed from steel in bubble form and is extracted from the tank by vacuum system. Under vacuum conditions, the steel can boil quite violently, and for this reason there should be sufficient freeboard of 0.9 to 1.0m in the ladle above the normal liquid steel surface to accommodate the reaction.

The vacuum cover can be equipped with a vacuum lock with arrangement for automatic weighing and batching of alloy additions without disturbing low pressure conditions within the vacuum tank during treatment.

Alternately a simple pre filled vacuum bunker can be attached to the vacuum cover, which is manually pre filled with alloys.

2.2.3 Continuous Casting of Billets

Liquid metal from VD is transferred to the continuous casting machine for casting into billets.

The main operations involved in the whole process of turning out billets are:

- i) Checking the individual major components of the casting machine and their synchronized operation;
- ii) Insertion of a dummy bar to close the bottom end of the mould;
- iii) Accurate centering of the tundish over the mould;
- iv) Transferring the ladle to the casting aisle and placing it on the ladle stand of the casting machine;

- v) Pouring of liquid steel from the ladle through a slide gate mechanism into the lined tundish;
- vi) Pouring of liquid steel into the water cooled mould through tundish;
- vii) Passage of liquid steel through water cooled mould tubes initiated by withdrawing dummy bar;
- viii) Oscillation of the mould;
- ix) Maintaining a constant level of liquid steel in the mould and introducing lubricants into the mould through out the casting process;
- x) Controlling the intensity of cooling of the emerging billets in the primary and secondary cooling areas; and
- xi) Straightening and cutting of billets.

The most important component of a casting machine is the bottomless water cooled copper mould. The internal shape and size of the mould tube is the same as that of the cross section of the billet / blooms to be cast. To initiate casting, a dummy bar is inserted to the bottom end of each mould, while the other end of the dummy bar is held by withdrawal/ straightening rolls. Molten steel at the correct temperature is poured into the mould and when it reaches the stipulated level, the withdrawal rolls, mould reciprocation unit are operated, cooling water circulation through the mould and in the secondary circuit is started few minutes earlier the actual casting operation is started. The dummy bar is withdrawn, followed by hot solidified billet. The cooling water circulating around the mould has carried away enough heat from the liquid steel to produce a solid outer skin of sufficient strength to safely envelop the still liquid portion at the interior that too will be solidified by a secondary cooling. The rates of solidification and withdrawal are obviously inter linked. Before beginning to withdraw the dummy bar it must be ensured that the outer casting of the billet is strong enough for the process to continue. An error in this regard will cause “break out” of the strand, which will then remain inoperative for the rest of that heat into casting. For obtaining satisfactory surface quality of billets and for satisfactory performance in general, the liquid steel temperature, casting speed, the rates of primary and secondary cooling must be controlled and matched. Usually this harmonization is developed on the basis of practice in the particular plant. If the casting speed is increased to raise output, the

quality of the central zone of the billet may suffer because of increase in unsoundness, chemical heterogeneity and prone to internal cracking.

Lubrication

For reducing friction between the mould wall and the solidifying steel, a vegetable water free oil such as rapeseed oil is introduced to wet the inner wall of the mould above the metal level. The oil then seeps downward to lubricate the portion of the mould wall in contact with the solidifying steel. The cooling system of the mould prevents the oil from being burnt off.

Mould

The mould is made of copper of high purity and high thermal conductivity. The mould is tapered, hard plated with chromium on the inner surface. The mould tube is a copper tube fitted into a fabricated steel water jacket. The entire mould assembly together with its cooling jacket is oscillated by an eccentric drive.

Secondary Cooling

The cooling in the mould, called primary cooling, solidifies only the outer crust of the billet while its interior still remains liquid or semi-liquid. Hence the billet issuing from the bottom of the mould is immediately subjected to a secondary cooling. Water jets spray water directly on each of its faces all down its length. The spraying should be closely controlled so that the cooling rate may match the withdrawal speed, steel quality and product shape.

Billet Cutting

The automatic gas cutting torches are provided for cutting billets to a desired length. The equipment comprises a water cooled structure for trolley support. Auto cutter trolley with drive mechanism, a gas and pneumatic panels suitable for both the strands. The trolley moves on the rails above the hot strand in the direction of discharge. During cutting, torch swings like a pendulum across the hot strand at a predetermined cutting

speed. In the forward direction trolley moves at casting speed swing to the clamping of the hot strand whereas retracting the trolley to the home position is carried out by motorized drive. As soon as predetermined length to be cut is sensed, the following commands are given:

- i) Positioning of the torch at the edge of the billet;
- ii) Clamping of hot strand by the clamps through pneumatic cylinder;
- iii) Ignition of the torch by releasing oxygen and acetylene gas.

Upon clamping, the trolley moves forward along with the hot strand at the casting speed. Torch drive starts thereby swinging the ignited torch across the hot strand and thereby cutting it. As soon as the torch cleans the width of the billet, the following function will take place:

- i) Ignition of the torch will be put off;
- ii) Movement of the torch by drive will be stopped and the torch retracts back to the home position;
- iii) First group of discharge roller table will be made on, thereby separating the cut billet from the hot strand;
- iv) Clamps holding the hot strand will be released;
- v) Trolley will retract to the home position.

This completes one full cycle of cutting a billet. The complete operation is automatic; however, it can also be carried out by means of push buttons located on the control desk

Billet Processing

The billets from a particular cast are lifted from the cooling bank and stored separately. When cooled, they are inspected on each face for defects, surface defects are normally removed by a swing frame grinder, etc.

B) ALLOY STEEL BAR MILL

Billets after heating in Reheating Furnace will be pushed out and taken on Roller Table to feed into Bar Mill. In Bar Mill the size of Billet will be reduced to desired size to feed into Continuous Mill. Before feeding to Continuous Mill the front end of the bar will be cut in a crop cum cobble shear.

After Rolling in Continuous Mill, the desired section will be achieved and the Bar will be divided into multiples of marked length and pushed to Automatic Cooling Bed.

Bars on cooling bed will be aligned by aligning Rollers and the bars will be taken on outgoing Roller Table.

Bars will be cut to market lengths by cold shear. Cut bars will be handled by Bar Handling System and made into bundles. Bundles will be lifted by crane and stored in Finishing Bay.

2.2.4 INDUCTION FURNACE BASED STEEL BILLET PLANT AND INSTALLATION OF LADLE REFINING FURNACE.

Melting process

Induction Furnace crucible is first filled with MS Scrap with the help of Electromagnet installed on the crane along with CPC (to obtain required carbon percentage in metal). Furnace is then switched on for heating. MS scrap gets heated when power in Furnace is increased. MS scrap gets heated and scrap and CPC start to melt. Approx 20% of the total charge weight comprises of MS Scrap and rest 80% sponge iron of the total charge Weight is fed into furnace in a small batches for melting through weigh feeder which is installed on Furnace platform. Slag (molten non – metallic impurities present in the charge) generated during melting is being continuously removed manually by de-slagging spoon. Finally, sample is drawn from liquid metal to check the chemical composition in Laboratory. Required qty of alloys (silico manganese & ferro silicon is added in metal at suitable temperature (1610°-1640° Celsius).

2.2.5 ROLLING MILL

Reheating Furnace & Producer Gas Plant:

The Steel Billets from The Billet Plant shall be fed into the Reheating Furnace of 25 TPH capacity. The Reheating Furnace will be refractory lined from inside with burners arranged for heating the Steel Billets inside the furnace. A provision for either 2 row charging (billet length of max. 3 meters) or single row charging (billet length of max. 6 meters) will be available. The Billet of Cross section sizes 100 x 100 mm Square upto 130 x 130 Sq. mm and max. 6 meters length will be charged in the Reheating Furnace by Pusher mechanism.

These Billets will be properly heated and soaked upto a temperature of 1200° Celsius (Max.). The heated billets will be discharged from the Furnace by Ejector facilitated by Pinch Rollers at the furnace outlet.

1 No of Producer Gas Plant will be installed for gasification of coal to generate Producer gas and this producer gas will be fired in the Reheating Furnace to maintain the required temperature inside the furnace. The entire producer gas from the PG Plant will be fired in the Reheating Furnace and the Furnace will be equipped with Low SOx/NOx emission burners and Furnace will be designed such that the SOx/NOx and SPM levels will be within the prescribed limits. The Furnace Flue gases will be at slightly higher temperatures i.e. about 650° to 700°C and high efficiency special design Heat Recuperator will be installed in the flue gas path to heat the combustion air upto 600°C required for the Reheating Furnace and the flue gas temperature will come down upto 120° C before releasing them to the atmosphere through a 30 m. tall stack.

Roughing Mills:

The Hot billets will be transferred to the Roughing Mills of 18" size via Skid transfer and Roller Tables. Roughing Mill train will consist of 2 Nos. 3 Hi / 2 Hi Mill Stands of 460 mm (18") size arranged in one line and will be driven at required fixed rpm by a 1250 HP Electric motor, Fly Wheel, gearbox and pinion stand. Solid Steel Mill rolls of Cast Steel with passes cut into these rolls will be installed inside these Mill stands and these Rolls

will be driven by the pinion stand by wobblers/spindles. The Hot billets/metal will be passed through the Roughing Mill stand roll passes many times depending upon the Rolling pass design.

Repeaters/Tilting Tables/Lifting Roller Tables/Straight Roller Tables will be arranged at the entry and exit side of the Roughing Mills for enabling the entry and exit of the hot metal from the Mill Stand passes and for shifting the metal from one pass to the other pass.

After completing the required Roughing Mill passes, the hot metal will be transferred to the Intermediate stands of TMT Bars rolling line via Roller Tables.

2.2.6 TMT Bars Rolling Line:

Intermediate Mills:

This shall comprise of 2 Nos of 360 mm (14") & 4 Nos of 310 mm (12") size Intermediate Mill Stands in which the size of the hot metal will be further reduced.

Intermediate Mill train will consist of 2 Nos 2 Hi Mill Stands of 360 mm (14") & 4 Nos 2 Hi Mill Stands of 310 mm (12") size arranged in one line (Tandem Mill) and will be driven at required rpm by a 300 KW DC Electric motor, Fly Wheel, gearbox cum pinion stand. Solid Steel Mill rolls of Cast Steel with passes cut into these rolls will be installed inside these Mill stands and these Rolls will be driven by the pinion stand by wobblers/spindles. The Hot metal will be passed through these Intermediate Mill stand roll passes depending upon the Rolling pass design.

Bigger size of the TMT Bars i.e. 16 mm upto 32 mm will be finished in these Intermediate Stands only and Finishing Mill passes will not be required for the same.

Finishing Mills:

This shall comprise of 6 Nos 10" (260 mm) size Finishing Mill Stands in which the size of the hot metal will be further reduced and final product i.e. TMT Bars will be rolled.

Finishing Mill train will consist of Continuous 6 Nos 2 Hi Mill Stands of 260 mm (10") size arranged in tandem one after the other and will be driven at required variable rpm by a 250 KW DC Electric motor, gearbox cum pinion stand. Solid Steel Mill rolls of hardened Steel with passes cut into these rolls will be installed inside these Mill stands and these Rolls will be driven by the pinion stand by wobblers/spindles. The Hot metal will be passed through these Continuous Finishing Mill stand roll passes depending upon the Rolling pass design. Loopers will be provided between these Finishing Mill Stands for speed variation compensation.

Smaller size of the TMT Bars i.e. 8 mm upto 12 mm will be finished in these Finishing Mill passes.

Once the TMT Bars of the required size are rolled, they are passed through the TMT quenching line for rapid cooling of these hot bars for enhancing the mechanical properties of these TMT Bars and imparting higher strength to them. The TMT Quenching line is designed & supplied by H & K Rolling Mill Engineers Pvt. Ltd. under license from "Thermex" Germany. Pinch Rolls before & after the TMT Quenching Box are provided for precise speed control.

After passing through the TMT Quenching line, the TMT Bars are cut online into 60 meters length by the Rotary Flying Shear and conveyed to the Cooling Bed for cooling. Tail Break Pinch Rolls are provided after Flying Shear but before Cooling Bed for precise speed control. These bars of 60 meters length travel from one side of the Cooling Bed to the other side and get cooled by natural heat transfer. These bars are then collected on the exit roller tables in lots of 10-12 bars and are then cut to commercial lengths varying from 6 to 12 meters by online Cold Shear as per the customers requirement and are then bundled and strapped. The Bundles of the finished TMT bars are stacked/stored in the stockyard and dispatched by trucks/trailers.

Stringent Quality Control Checks are ensured and a elaborate Quality Control (QC) laboratory is set up for checking the physical and chemical properties of the TMT Bars rolled in the Rolling Mill.

EOT Cranes of 10 Tons capacity will be installed in the Mill Bay for maintenance and also in the Stockyard bay for handling the Steel finished TMT Bars.

As the hot metal temperature is about 800 to 1000 Deg C in the Rolling Mill, a elaborate Roll pass cooling water arrangement will be provided and the same water will be collected in the scale pit and recycled. The Mill Scale collected in the Scale Pit, which is a waste by product, will be sold in the market.

A cooling water circuit with water pumps, cooling towers for cooling the return water, water collection and recycling tanks, flume tunnels for conveying the return water to the hot well will be constructed/installed. For the TMT Quenching Box water contamination is not envisaged and water will be recycled. About 100 m³/day water losses are envisaged due to evaporation and equivalent make up water will be added to the system.

2.3 Basic requirement of project

2.3.1 Water Requirement

Water will be sourced from Paradgaon dam and the total water requirement will be 3009 m³/day.

2.3.2 Power Requirement

The power required will be supplied by Captive power plant of 100 MW. The power requirement for the proposed project will be 92.5MW/hr.

2.3.3 Land Requirement

M/s. TUML is in possession of 160 Acres of land.

2.3.4 Man Power:

The proposed project creates employment to 670 people. After expansion total will be 935.

3.0 DESCRIPTION OF THE ENVIRONMENT (BASELINE DATA)

3.1 AIR ENVIRONMENT

Ambient air quality (AAQ) samples were collected on basis of 24-hour sampling and twice a week at each site. The ambient air quality samples were collected for continuous 13-weeks beginning from 7th Jan 2014 to 7th Apr.-2014 assessed in an area of 10 km radius around the proposed project site.

The predominant wind directions were from N (26.0%), from NE (11.3%) and from NNE (16.2%). Average wind speed was 5.9 km/hr during monitoring period and most of the time wind speed was between 1 to 5 km/hr.

The ambient air quality monitored at 8 locations selected based on predominant wind direction, indicated the following ranges;

PM ₁₀	:	29.7 µg/m ³ -59.7 µg/m ³
PM _{2.5}	:	14.2 µg/m ³ -30.7 µg/m ³
SO ₂	:	6.3 µg/m ³ - 25.7 µg/m ³
NO _x	:	8.1 µg/m ³ - 32.7 µg/m ³

Industrial Area Residential, Rural Area (CPCB Norms)	PM ₁₀	PM _{2.5}	SO ₂	NO _x
	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³

The concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x were found within the National Ambient Air Quality Standards (NAAQ).

3.2 SOCIO ECONOMIC ENVIRONMENT

The proposed Ferro alloy plant will generate employment opportunities for both skilled and unskilled workers living in the area. This will produce multiple effects on the life and economy of the local people. Not only has their come of the local residents increased but also their social status, which will improve to a great extent. Thus from socio-economic point of view the project is beneficial to the people and can be

executed with no hesitation. The project will provide ample employment opportunities to local people to get employed. This will uplift the socioeconomic status of the people living in the area.

The impacts of the proposed plant on socio economic conditions of the local people of the study area are expected to be positive during expansion phase.

The local population will have employment opportunities due to the proposed Project. The local people will be preferred during the expansion phase.

- ❖ Benefits due to the civil construction and transportation companies to the local people
- ❖ Local people shall be given preference for employment depending on their qualification
- ❖ All the applicable guidelines under the relevant Acts and Rules related to labour welfare and safety shall be implemented during the expansion phase;

3.3 CORPORATE SOCIAL RESPONSIBILITY

M/s Topworth Urja & Metals Ltd. will put the efforts towards socio-economic activities for the betterment of the society and will contribute Rs. 45.129 Crore investment of the plant towards capital investment in 5 years in various CSR activities as per need base survey and demand. Rs.15.993 Crore per annum will be spend towards recurring expenditure for various CSR activities as per need base survey & demand of various villages in study area.

- Primary health checkups for the people in surrounding villages.
- Constructing Community centers, Libraries for better improvement of villagers.
- Regular medical camps would be held.
- Improvement in street lightening.
- Hand pumps and drinking water supply in village.
- Prepare / construction of road in nearby villages.

- Developments of parks, plantation of trees in the nearby area.
- To sponsor and support sports at regional and local level.
- Training to unemployed, educated, local youth for personality development.
- The part of fund will be reserved for developing forestation in nearby area.

3.4 ENVIRONMENT MANAGEMENT PLAN

Table no.3.1
BUDGETARY PROVISIONS FOR ENVIRONMENTAL PROTECTION

Sr No	Particulars	Capital cost in Rs.(Crores)	Recurring cost in Rs.(Crores)
1.	Environmental management cost a. ETP b. Air pollution control c. Solid and hazardous waste Management	18.6	1.86
2.	Pollution Monitoring	2	0.2
3.	Occupational Health	1.40	0.14
4.	Green Belt Development	2.40	0.24
5.	Rainwater harvesting	2.40	0.24
	Total	26.8	2.68

4.0 PURPOSE OF EIA

The purpose of this Environmental Impact Assessment (EIA) study is to provide information on the surroundings and the extent of environmental impact likely to arise on account of the proposed expansion activities.

The objectives of the EIA study are:

- To assess the present status (baseline) of air, water, land, noise, biological and socio-economic components of environment including parameters of human interest;
- To identify and quantify significant impacts of various activities
- To evaluate existing pollution controls measures and suggest modifications, if required;
- To prepare Environmental Management Plan (EMP) outlining control measures for mitigation of adverse impacts; and
- To delineate post project environmental quality monitoring program for management of emissions from the proposed expansion.
- To prepare risk assessment and disaster management plan.