

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

OF

API Ispat & Powertech Pvt. Ltd.

Expansion of Steel Plant

at

**Village: Siltara, Near Phase – 2, Siltara Industrial Growth Centre,
Tehsil & District: Raipur[C.G]**

Submitted to

Chhattisgarh Environment Conservation Board

1.0 PROJECT DESCRIPTION

API Ispat & Powertech Pvt. Ltd. is an existing steel plant at Siltara Industrial Growth Centre, Phase – II, Siltara Village, Raipur Tehsil & District, C.G. Now it is proposed to expand existing steel plant by installing Iron ore beneficiation plant, Pellet plant, Induction Furnace, Electric Arc Furnace, Rolling Mill and Ferro Alloy plant. Proposed expansion will be taken up in the existing plant premises only. 96.57 acres of diverted land is in possession of management and proposed expansion will be taken up the existing plant premises. Khasra numbers of the total land are as follows : 384/1, 384/2, 384/3, 384/4, 384/5, 384/6, 384/7, 384/8, 384/9, 384/10, 384/11, 384/12, 385/1, 385/2, 385/3, 386/1, 386/2, 386/3, 387/1, 387/2, 387/3, 387/4, 387/5, 387/6, 388/1, 388/4, 388/5, 388/6, 388/7, 388/8, 388/9, 388/10, 388/11, 388/12, 389/1, 389/2, 390/1, 390/2, 391/1, 391/2-3, 392/2, 392/3, 392/4, 392/5, 392/6, 392/8, 392/9, 395, 396/1, 396/2, 396/3, 396/4, 397, 398, 399/1-3, 399/2.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded Terms of Reference (TOR) for the proposed expansion project vide letter no. J-11011/959/2008- IA II (I) dated 27th May 2016. The EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble EAC.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. **NABET/ EIA/ 1619/ RA 026**, for preparing EIA report for Metallurgical Unit, have prepared Draft Environmental Impact Assessment (EIA) report for the proposed expansion project by incorporating the TOR approved by Ministry of Environment, Forests & Climate Change, New Delhi. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- Assessment of air emissions, liquid waste and solid waste from the proposed project along with the noise level assessment.

- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

ENVIRONMENTAL SETTING WITHIN 10 Km. RADIUS OF THE PLANT SITE

The following is the environmental setting within the 10 Km. radius of the project site:

- The proposed project area does not fall under the industrial areas / cluster, which are listed in MoEF office memorandum dated 13th January 2010 and its subsequent amendments.
- The proposed project is situated adjacent to Siltara Industrial Growth Center.
- The proposed project area falls in Raipur area which is severely polluted area as categorized by CPCB with CEPI of - 65.45.
- Nearest Village is Sondra situated at a distance of 0.8 Kms. from the plant.
- There are no National Parks / Sanctuaries / Reserve Forest within 10 Km. radius of the plant..
- Kharun river & Chokhara nala are flowing at distance of 1.8 Kms. & 0.9 Kms. respectively from the plant.
- National Highway (NH # 200) is passing at a distance of 2.4 Kms. from the plant.
- Nearest Railway Station is Mandar situated at distance of 7.3 Kms. from the plant.
- No Forest land is involved in the site.
- No litigation pending against the project and/or any direction/order passed by any Court of Law against the proposed project.
- There are many industries are situated within phase – 1 and Phase – 2 of Siltara Industrial Area, Raipur. The following are the nearest industrial units
 1. Baldev Alloys Private Limited
 2. Bhagwati Steel and Power Limited
 3. P.D Industries Pvt. Limited
 4. Rashmi Sponge and Power Industries Limited
 5. G.R. Sponge Limited
 6. SKS Ispat and Power Limited, etc.

1.1 Plant Configuration and Production Capacity

The proposed Steel Plant envisages manufacturing of the following products:

| S.No. | Unit | Existing Operational [EC & CFE awarded] | Proposed Expansion | After Expansion |
|-------|--|--|---|---|
| 1. | Iron Ore Beneficiation and Pelletization Plant | --- | 1 x 2000 TPD or 2 x 1000 TPD = (0.6 Million TPA) | 1 x 2000 TPD or 2 x 1000 TPD = (0.6 Million TPA) |
| 2. | Gasifier for Pellet Plant | --- | 14250 Nm³/Hr | 14250 Nm ³ /Hr |
| 3. | DRI Kilns (Sponge Iron) | 2 x 350 TPD = (210,000 TPA) | ---- | 2 x 350 TPD = (210,000 TPA) |
| 4. | Steel Melting Shop | | | |
| a. | Induction Furnace with CCM (MS Ingots/ billets/ blooms) | 1 x 350 Tons = (86400 TPA) | 3 x 15 Tons = (162000 TPA) | 2 x 12 MT & 3 x 15 MT = (248400 TPA) |
| b. | Electric Arc Furnace with AOD/ VOD & Caster (MS and SS Ingots/ billets/ blooms) | --- | 2 x 20 MT = (120000 TPA) | 2 x 20 MT = (120000 TPA) |
| 5. | Rolling Mill (Rolled Products / Structural Steels / TMT bars) | 1x322.5 TPD + 1x161.7 TPD = (145,250 TPA) | 1 x 650 TPD = (200000 TPA) | 1x322.5 TPD+1x161.7 TPD +1x650 TPD = (345,250 TPA) |
| 6. | Gasifier for Rolling Mill | --- | 15500 Nm³/Hr | 15500 Nm ³ /Hr |
| 7. | Ferro alloys [2 x 9 MVA] | | | 2 x 9 MVA |
| | i. Ferro – Silicon | --- | 12600 TPA | 12600 TPA |
| | or | | or | or |
| | i. Silico–Manganese | --- | 28400 TPA | 28400 TPA |
| | or | | or | or |
| | i. Ferro–Manganese | --- | 37000 TPA | 37000 TPA |
| 7. | Power Plant–WHRB based | 18 MW | --- | 18 MW |
| 8. | Power Plant–FBC based | 7 MW | --- | 7 MW |

1.2 Raw Materials

The following will be the raw material requirement for the proposed expansion project:

| Raw Material | | Quantity | Sources | Mode of Transport |
|---|----------|----------------|---|--|
| For Iron Ore beneficiation plant (Iron ore concentrate) | | | | |
| Iron ore fines | | 9,00,000 | Local / Orissa Sector | By Rail & Road through covered trucks |
| For Pellet Plant (Pellets) | | | | |
| Iron ore Concentrate | | 6,30,000 | Own Generation | Covered Conveyor |
| Bentonite | | 9,000 | Gujarat | By Rail & Road through covered trucks |
| Limestone | | 9,000 | Chhattisgarh / Madhya Pradesh | By Rail & Road through covered trucks |
| Coke breeze | | 21,450 | Chhattisgarh / Andhra Pradesh | Through sea route / rail route / by road |
| Coal (Gasifier) | Indian | 39,000 | SECL | By Rail & Road (Covered trucks) |
| | Imported | 24,000 | Indonesia / South Africa / Australia | By Sea, Rail & Road (Covered trucks) |
| Furnace Oil | | 10500 KL/annum | Raipur | By road (through Tankers) |
| For Induction Furnace (MS Billets) | | | | |
| Sponge Iron | | 1,32,000 | In house generation | By Road through covered trucks |
| Scrap | | 42970 | Raipur | By Rail & Road through covered trucks |
| Ferro Alloys | | 12,350 | In house generation | ---- |
| For Electric Arc Furnace with AOD/ VOD & Caster unit | | | | |
| Sponge Iron | | 1,08,000 | In house generation & External purchase | By Road through covered trucks |
| Scrap | | 24,000 | Raipur | By Rail & Road through covered trucks |
| Ferro Alloys | | 6,000 | In house generation | ---- |
| For Rolling Mill (TMT bars & Structural Steel) | | | | |
| Billets / Ingots | | 2,16,600 | In house generation | ---- |
| Coal for Gasifier | Indian | 41,500 | SECL | By Rail & Road (Covered trucks) |
| | Imported | 25,400 | Indonesia / South Africa / Australia | By Sea, Rail & Road (Covered trucks) |
| Furnace Oil | | 11450 KL/annum | Raipur | By road (through Tankers) |
| For manufacturing Ferro Silicon | | | | |
| Quartz | | 16890 | Chhattisgarh / | By Rail & Road through covered |

| Raw Material | Quantity | Sources | Mode of Transport |
|---|----------|-------------------------------|---------------------------------------|
| | | Andhra Pradesh | trucks |
| LAM coke | 5600 | Chhattisgarh / Bihar | By Rail & Road through covered trucks |
| MS Scrap | 350 | Raipur | By Road through covered trucks |
| Electrode paste | 840 | Andhra Pradesh (Vizag) | By Rail & Road through covered trucks |
| For manufacturing Silico Manganese | | | |
| Manganese Ore | 31780 | MOIL / OMC | By Rail & Road through covered trucks |
| Mn. Slag | 18000 | In house generation | ---- |
| Quartz | 7800 | Chhattisgarh / Andhra Pradesh | By Rail & Road through covered trucks |
| LAM coke | 3160 | Chhattisgarh / Bihar | By Rail & Road through covered trucks |
| For manufacturing Ferro Manganese unit | | | |
| Manganese Ore | 53400 | MOIL / OMC | By Rail & Road through covered trucks |
| LAM coke | 30780 | Chhattisgarh / Bihar | By Rail & Road through covered trucks |
| MS Scrap | 2060 | Raipur | By Road through covered trucks |
| Electrode Paste | 6160 | Andhra Pradesh (Vizag) | By Road through covered trucks |
| Manganese Ore | 53400 | MOIL / OMC | By Rail & Road through covered trucks |

1.3 Manufacturing Process

1.3.1 Iron Ore Beneficiation

Beneficiation is a process which removes the gang particle like Alumina, Silica from the Iron Ore. Basically, it separates Fe_2O_3 or Fe_3O_4 from other impurities in the iron ore. In this process the Fe content is improve to maximum possible extent. The highest can be 70% i.e. purest form.

1.3.2 Pelletization

Iron ore fines will be grinded in Ball mills. The concentrate will be fed to thickener and subsequently to filtering unit. The filter cake will be sent to pellet plant comprising of Travelling grate kiln. Green pellets will be produced from this process. The flue gases from grate kiln will be treated in ESP and discharged through a stack.

1.3.3 Steel Melting Shop

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel and then to mould it in required size billets. The SMS will consist of 3 nos. of Induction Furnaces each of 15 T capacity to produce MS Ingots/ billets/ blooms and 2 nos. of Electric Arc Furnace with AOD/ VOD & Caster each of 20 T capacity to produce MS and SS Ingots/ billets/ blooms in the SMS plant.

1.3.4 Rolling Mill

In the proposed expansion project, there will 1 x 650 TPD reheating furnaces is proposed for the heating of billets. Furnace will be heated with Furnace oil. A bar and round mill will be installed in the plant to produce 650 TPD of Rolled Products / Structural Steels / TMT bars.

1.3.5 Ferro Alloy Plant

2 no. of Submerged Electric Arc Furnaces each of 9 MVA will be setup in the existing plant. Ferro manganese, silicon-manganese will be produced using manganese ore as main raw material, Ferro silicon will be produced using Quartz as main raw material as main raw material in a sub-merged arc furnace using reducer (Coke) under high voltage.

1.3.6 Producer Gas plant (Gasifier)

Producer gas plant is proposed to be established for supply fuel to Pelletization Plant & Rolling Mill units. Coal is lifted to the coal storage bin by lifting system; the coal is added in the carbonation stage of two-stage coal gasifier by a programmable control feeding system. Air is blown in the bottom of furnace by air blower, at the same time, low pressure steam goes through the blending bin and blends with air, becomes the gasification agent, which will carry on the gasification reaction with 1200 Celsius degree semi coke in the gasification stage.

1.4 Water Requirement

The water requirement for **expansion project** will be **1525 KLD**. This includes Make-up water for Iron ore beneficiation unit, Pellet plant, Induction Furnace, Electric Arc Furnace, Rolling Mill, Ferro Alloy Plant. Presently 904 KLD of water is drawing for existing operating facilities. Water required for the existing & expansion project will be supplied by C.G. Ispat Bhumi Limited. Water supply agreement for 1100 KLD from C.G. Ispat Bhumi Limited is already obtained for Existing plant operations. Water supply for additional water

requirement from C.G. Ispat Bhumi Limited will be obtained in due course. The following is the break-up of the water requirement for proposed project.

WATER REQUIREMENT (For Expansion)

| S.No. | Facilities | Water Requirement (in KLD) For Proposed Expansion project |
|-------|--|--|
| 1 | Iron ore Beneficiation & Pelletization | 840 |
| 2 | Induction Furnace | 225 |
| 3 | Electric Arc Furnace | 150 |
| 4 | Rolling Mill | 240 |
| 5 | Ferro Alloy Plant | 50 |
| 6 | Domestic | 20 |
| | Total | 1525 |

1.5 Waste Water Generation

There will be no effluent generation in the Iron ore beneficiation plant, Pellet plant, Induction Furnace, Electric Arc Furnace, Ferro Alloy plant & Rolling mill as closed circuit cooling system will be adopted. Sanitary waste water of 16 KLD will be treated in septic tank followed by sub-surface dispersion trench.

1.6 Wastewater Characteristics

The following are the Characteristics of Sanitary waste water

| PARAMETER | CONCENTRATION |
|---------------------|----------------------|
| | Sanitary waste water |
| pH | 7.0 – 8.5 |
| BOD (mg/l) | 200 – 250 |
| COD (mg/l) | 300 – 400 |
| TDS (mg/l) | 800 – 900 |
| Oil & Grease (mg/l) | -- |
| SS (mg/l) | -- |

2.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, flora and fauna and socio economic details of people within 10 km radius of the plant.

2.1 Ambient air quality

Ambient air quality was monitored for PM_{2.5}, PM₁₀, SO₂, NO_x & CO at 8 stations including project site during December 2016 to February 2017. The following are the concentrations of various parameters at the monitoring stations:

| Parameter | | Concentration |
|--------------------|---|--------------------------------|
| PM _{2.5} | : | 39.5 to 52.9 µg/m ³ |
| PM ₁₀ * | : | 70.6 to 91.3 µg/m ³ |
| SO ₂ | : | 8.0 to 29.5 µg/m ³ |
| NO _x | : | 7.4 to 39.7 µg/m ³ |
| CO | : | 675 to 1225 µg/m ³ |

* PAH in PM₁₀ were analyzed and their concentrations at all monitoring Stations are Below Detectable Level.

2.2 Water Quality

2.2.1 Surface Water Quality

2 no. of samples one from upstream & other on downstream w.r.t. the project site have been collected from Kharun River which is flowing at a distance of 1.8 kms. & 1 no. from Chokhara Nallah which is flowing at a distance of 0.9 kms. from the plant to assess surface water quality. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

8 No. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

2.3 Noise Levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from **45.40 dBA to 67.65 dBA**.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are PM₁₀, SO₂, NO_x & CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model.

- The predicted max. Incremental PM₁₀ concentrations (24 hourly) due to the proposed project will be 4.3 µg/M³ at a distance of 1050 m from the stack in the down wind direction over the baseline concentrations.

- The predicted incremental rise in PM concentration due to the Vehicular emission will be $0.6 \mu\text{g}/\text{m}^3$.
- Hence the total predicted incremental rise due to the emission from proposed expansion and due the vehicular emission will be $4.3 \mu\text{g}/\text{m}^3 + 0.6 \mu\text{g}/\text{m}^3 = 4.9 \mu\text{g}/\text{m}^3$
- The predicted max incremental SO_2 concentrations (24 hourly) due to the proposed project will be $6.4 \mu\text{g}/\text{m}^3$ at a distance of 1050 m from the stack in the down wind direction over the baseline concentrations.
- The predicted max incremental NO_x concentrations (24 hourly) due to the proposed project will be $13.2 \mu\text{g}/\text{m}^3$ at a distance of 1050 m from the stack in the down wind direction over the baseline concentrations.
- The predicted incremental rise in NO_x concentration due to the Vehicular emission will be $5.4 \mu\text{g}/\text{m}^3$.
- Hence the total predicted incremental rise due to the emission from expansion project and due the vehicular emission will be $13.2 \mu\text{g}/\text{m}^3 + 5.4 \mu\text{g}/\text{m}^3 = 18.6 \mu\text{g}/\text{m}^3$
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- The predicted incremental rise in CO concentration due to the Vehicular emission will be $3.7 \mu\text{g}/\text{m}^3$.

Net Resultant maximum concentrations due to the Proposed Expansion Project

| Item | PM ₁₀ ($\mu\text{g}/\text{m}^3$) | SO ₂ ($\mu\text{g}/\text{m}^3$) | NO _x ($\mu\text{g}/\text{m}^3$) | CO ($\mu\text{g}/\text{m}^3$) |
|--|--|---|---|------------------------------------|
| Maximum baseline conc. in the study area | 91.3 | 29.5 | 39.7 | 1225 |
| Maximum predicted incremental rise in concentration due to proposed expansion project | 4.3 | 6.4 | 13.2 | 0 |
| Maximum predicted incremental rise in concentration due to Vehicular Emissions from the proposed expansion project. | 0.6 | -- | 5.4 | 3.7 |
| Net resultant concentrations during operation of the plant | 96.2 | 35.9 | 58.3 | 1228.7 |
| National Ambient Air Quality Standards | 100 | 80 | 80 | 2000 |

The predicted results show that the net resultant concentration (max. baseline conc. + max. incremental rise in conc.) of PM₁₀, SO₂, and NO_x will be well within the National Ambient Air Quality Standards after commissioning of proposed expansion project. Hence there will not be any adverse impact on air environment due to the proposed expansion project.

3.2 Prediction of impacts on noise quality

The major sources of noise generation in the proposed project will be Furnaces & machinery. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. 32 acres (inclusive of existing) of extensive greenbelt will be developed to further attenuate the noise levels. Hence there will not be any adverse impact due to noise on population in surrounding areas due to the proposed expansion project.

3.3 Prediction of impacts on Water Environment

There will be no effluent generation in the I/O Beneficiation plant, Pellet plant, SMS (IF & EAF), Ferro Alloy plant & Rolling Mill as closed circuit cooling system will be followed.. Sanitary waste water will be treated in septic tank followed by sub-surface dispersion trench. Hence there will not be any adverse impact on environment due to the proposed expansion project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve CECB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / CECB norms. All solid wastes will be disposed / utilized as per CPCB / CECB norms. **32 Acres (inclusive of existing)** of greenbelt will be developed as per guidelines. Hence there will not be any adverse impact on land environment due to the proposed expansion project.

3.5 Socio - Economic Environment

There will be lot of opportunities in employment to local people during construction as well as in operation phase. Priority will be given to locals for Semi-Skilled and Unskilled jobs. There will be further upliftment in Socio Economic status of the people in the area.

Hence there will be further development of the area due to the proposed expansion project.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

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

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

| S.No. | Particulars | Frequency of Monitoring | Duration of sampling | Parameters required to be monitored |
|---|---|---|--|--|
| 1. Water & Waste water quality | | | | |
| A. | Water quality in the area | Once in a month except for heavy metals which will be monitored on quarterly basis. | Composite sampling (24 hourly) | As per IS: 10500 |
| B. | Sanitary waste water | Twice in a month | Grab sampling (24 hourly) | As per EPA Rules 1996 |
| 2. Air Quality | | | | |
| A. | Stack Monitoring | Online monitors (Pellet Plant stack) Once in a month | | PM PM, SO ₂ & NO _x |
| B. | Ambient Air quality | Twice a week | 24 hours continuously | PM _{2.5} , PM ₁₀ , SO ₂ & NO _x |
| C. | Fugitive emissions | Once in a Month | 8 hours | PM |
| 3. Meteorological Data | | | | |
| | Meteorological data to be monitored at the plant. | Daily | Continuous monitoring | Temperature, Relative Humidity, rainfall, wind direction & wind speed. |
| 4. Noise level monitoring | | | | |
| | Ambient Noise levels | Twice in a year | Continuous for 24 hours with 1 hour interval | Noise levels |

5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed expansion project. Hence no R & R study has been carried out.

6.0 PROJECT BENEFITS

With the establishment of the proposed project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve

due to the proposed project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment. The project will generate employment opportunities for about 500 persons during construction stage and for about 350 persons once the plant is commissioned.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

The following air emission control systems proposed in the proposed expansion project:

| S.No. | Source | Control Equipment | Particulate emission at the outlet |
|-------|---|---|------------------------------------|
| 1. | Pellet plant | Electro Static Precipitator (ESP) | < 50 mg/Nm ³ |
| 2. | Induction Furnaces with CCM | Fume Extraction system with bag filters | < 50 mg/Nm ³ |
| 3. | Electric Arc Furnace with AOD/ VOD & Caster | Fume Extraction system with bag filters | < 50 mg/Nm ³ |
| 4. | Submerged Electric Arc Furnace | Fume Extraction system with bag filters | < 50 mg/Nm ³ |
| 5. | Rolling Mill | -- | < 50 mg/Nm ³ |

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

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.

7.2 Water Environment

- In the existing plant zero effluent discharge is being maintained and similar pattern will be maintained after expansion also.
- There will not be any effluent generation from the I/O Beneficiation plant, Pellet plant, SMS (IF & EAF), Ferro Alloy plant & Rolling Mill as closed circuit cooling system will be followed.

- Sanitary wastewater will be treated in septic tank followed by sub-surface dispersion trench.

7.3 Noise Environment

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosure will be provided. All the machinery will be manufactured in accordance with MoEF&CC norms on Noise levels. The employees working near the noise generating sources will be provided with earplugs. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units.

7.4 Land Environment

There will be no effluent generation in the Iron ore beneficiation plant, Pellet plant, Induction Furnace, Electric Arc Furnace, Ferro Alloy plant & Rolling mill as closed circuit cooling system will be adopted. Sanitary waste water will be treated in septic tank followed by sub-surface dispersion trench. All the required Air emission control systems will be installed and operated to comply with CECB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed expansion project.

Solid waste generation and disposal

| S.No | Waste / By product | Quantity (TPD) | Method of disposal |
|------|---|----------------|---|
| 1. | Tailings | 900 | Will be given to Ceramic industries/other mineral based industries. |
| 2. | Ash / Dust generated from Pellet plant | 54 | Will be given to other brick manufacturers. |
| 3. | Slag from SMS | 94 | Slag will be crushed and after recovery of iron, it will be used for road construction. |
| 4. | Mill Scales from Rolling Mill | 34 | Will be reused in SMS |
| 5. | Slag from Ferro Silicon Manufacturing Process | 5 | Will be given to cast iron foundries. |

| S.No | Waste / By product | Quantity (TPD) | Method of disposal |
|------|--|----------------|--|
| 6. | Slag from Silico Manganese Manufacturing Process | 75 | Will be utilised in road construction |
| 7. | Slag from Ferro Manganese Manufacturing Process | 70 | Will be used in manufacture of Silico manganese as it contains high MnO ₂ . |
| 8. | Ash generated from Gasifier (Pellet plant) | 20 | Will be given to brick manufacturing units. |
| 9. | Ash generated from Gasifier (Rolling Mill) | 21 | Will be given to brick manufacturing units |
| 10. | Tar generation from Gasifiers | 8 | Will be given to coal tar recyclers / agencies engaged in construction activities. |

7.5 Greenbelt Development

Greenbelt of 32 acres (inclusive of existing) will be developed in the proposed project.
Capital cost for environment protection for the total project is **Rs. 12 Crores**.

7.6 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.
