1.0 INTRODUCTION

M/s MSP Steel and Power limited has an Existing DRI, Induction Furnace, Rolling mill and Captive power plant in Jamgaon Village, Raigarh (Tehsil & District), Chhattisgarh. Now it has been proposed to increase the production capacity of Sponge iron from 2,00,000 to 4,00,000 TPA, Liquid Steel (by Induction furnaces) production from 95,000 to 6,00,000 TPA, Various Rolled products, TMT bars of capacity from 80,000 to 4,80,000 TPA, Power generation from 16 MW to 52 MW capacity [32 MW through WHRB and 20 MW through AFBC boilers], a new Coal Washery unit with an installed capacity of 7,20,000 TPA, a new Iron ore Processing/Beneficiation and Agglomeration unit with an installed capacity of 6,00,000 TPA, a new Sinter Plant unit with an installed capacity of 60 m$^2$ and a new Blast Furnace unit with an installed capacity of 450 m$^3$. The expansion project will be implemented with in and the adjoining premises of existing plant in Village Manuapali and Jamgaon, Raigarh (Tehsil & District), Chhattisgarh.

The Production Capacities in the Existing and proposed expansion of integrated steel plant are shown below

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Manufacturing Unit</th>
<th>Product</th>
<th>Existing Capacity</th>
<th>Proposed Capacity</th>
<th>Total Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DRI Kiln</td>
<td>Sponge iron</td>
<td>2,00,000</td>
<td>2,00,000</td>
<td>4,00,000</td>
</tr>
<tr>
<td>2</td>
<td>Induction furnace / Electric Arc furnace</td>
<td>Ingot/ Billet/ Slab</td>
<td>95,000</td>
<td>6,00,000</td>
<td>6,95,000</td>
</tr>
<tr>
<td>3</td>
<td>Rolling Mill</td>
<td>Rolled Products</td>
<td>80,000 - 4,00,000</td>
<td>4,80,000</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Blast Furnace</td>
<td>Liquid metal/ Pig iron</td>
<td>-----</td>
<td>4,00,000</td>
<td>4,00,00</td>
</tr>
<tr>
<td>5</td>
<td>Sinter Plant</td>
<td>Sinter</td>
<td>-----</td>
<td>6,41,520</td>
<td>6,41,520</td>
</tr>
<tr>
<td>6</td>
<td>Coal Washery</td>
<td>Clean coal</td>
<td>-----</td>
<td>7,20,000</td>
<td>7,20,000</td>
</tr>
<tr>
<td>7</td>
<td>I/O Processing / Beneficiation/agglomeration unit</td>
<td>Iron Concentrate/ Pellet</td>
<td>-----</td>
<td>6,00,000</td>
<td>6,00,000</td>
</tr>
<tr>
<td>8</td>
<td>Power Plant through Waste heat recovery</td>
<td>Electricity</td>
<td>16 MW</td>
<td>16 MW</td>
<td>32 MW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>20 MW</td>
<td>20 MW</td>
</tr>
</tbody>
</table>
Pioneer Enviro Laboratories & Consultants Private Limited have prepared Rapid Environmental Impact Assessment (REIA) report for the proposed expansion of Steel plant in Jamgaon Village, Manuapali Village Raigarh (Tehsil & District), Chhattisgarh by incorporating the additional TOR’s approved by MoEF. The report contains detailed description of the following,

a. Detailed characterization of status of environment within an area of 10 km. radius from the plant site for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.

b. Assessment of air emissions, liquid waste and solid waste from the proposed expansion project along with the noise level assessment.

c. Pollution control measures proposed to be adopted.

The summary of the report is presented below.

2.0 DETAILS ABOUT THE PROJECT SITE

1. The plant site is located at Village Manuapali and Jamgaon, Raigarh (Tehsil & District), Chhattisgarh.

2. The nearest railway facility is available at Jamgaon, which is about 1.5 Kms. from the proposed expansion project site.

3. The power generated in the plant will be utilized for plant internal requirement.

4. Kolaibahal, Manuwapali, Junadi, Jamgaon, Sarbahal, Saraipalli, Behrapali, Sapnai, Kukurda, Kotmar. etc., are the near by habitations to the existing plant.

5. Total land for existing unit is 42 Acres. Company has further purchased 72 acres. Now it is proposed to acquire 427 Acres of land for the expansion. Hence total land after expansion will be 541 Acres.
Existing land (As per CFO) :  42 Acres  
Additional land procured :  72 Acres  
Land under acquisition :  427 Acres  

**Total land**  :  **541 Acres**  

6. The average annual rainfall in the area is 1520 mm.
7. There are no National parks / Wild life sanctuaries within 10 Km radius of project site.
8. The following are the industries situated with in 10 km radius of the proposed expansion project site.
   • M/s. Maa Shakambari Steel (P) ltd.
   • M/S. Shiva Shakti Steel Pvt Ltd.
   • M/s. Mangla Ispat (P) Ltd.
   • M/s. R.R. Energy (P) Ltd.
   • M/s. Ind Synergy Ltd
9. The major crops in the study area are Paddy, etc.

### 2.1 RAW MATERIALS
The following will be the raw material requirement after expansion.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Gross requirement, TPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lump iron ore (sponge iron Grade)</td>
<td>8,81,000</td>
</tr>
<tr>
<td>2</td>
<td>Iron Ore (Blast Furnace Grade)</td>
<td>6,70,903</td>
</tr>
<tr>
<td>3</td>
<td>Raw coal</td>
<td>9,25,917</td>
</tr>
<tr>
<td>4</td>
<td>Lime stone</td>
<td>1,02,643</td>
</tr>
<tr>
<td>5</td>
<td>Dolomite</td>
<td>60,944</td>
</tr>
<tr>
<td>6</td>
<td>Scrap</td>
<td>54,780</td>
</tr>
<tr>
<td>7</td>
<td>Ferro alloys</td>
<td>759</td>
</tr>
<tr>
<td>8</td>
<td>Pet coke</td>
<td>759</td>
</tr>
<tr>
<td>9</td>
<td>Coke breeze</td>
<td>44,906</td>
</tr>
<tr>
<td>10</td>
<td>Coke (BF grade)</td>
<td>2,30,472</td>
</tr>
</tbody>
</table>

Most of the above raw materials will be transported by railway wagons.
2.2 MANUFACTURING PROCESS

2.2.1 IRON ORE BENEFICIATION AND PELLETISATION PLANT
Iron ore fines will be transferred from raw material handling section by conveyors to the beneficiation plant. The conveyors will be provided with hoods in order to eliminate fugitive emissions.

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 Rotary 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 of 50m height.

2.2.2 SPONGE IRON (DRI)
Refractory lined rotary kilns will be used for reduction of Iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln.

Sized Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and convert it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000°C enters the reduction zone. Temperature of the order of 1050°C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron. This hot material will be transferred to Heat exchanger. In Heat exchanger the material will be cooled to
160°C. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char. Magnetic and non-magnetic material will be separated through magnetic separators and stored in separate bins.

2.2.3 Sinter
Iron ore fines, Lime stone, Dolomite, coke Breeze, flue dust and mill scales will be used in the sinter plant of size 1 x 60 m² to produce BF sinter which ultimately will be used as raw material in Blast furnace. The flue gases generated in the sinter plant will be treated in a State -of – The Art ESP and the dust concentration at the outlet of the ESP will be less than 100 mg/Nm³. These gases will be let out in to the atmosphere through a stack of 50m height for effective dispersion of pollutants.

2.2.4 Blast furnace
The blast furnace shop will comprise of one furnace of 450 m³ working volume. The blast furnace is envisaged to operate with sized lump iron ore, coke, fluxes and additives. The hot metal produced will be cast at pig casting machines to produce cold pigs. The liquid slag will be granulated at cast house granulation unit. The BF top gas will be cleaned in dust catcher and gas cleaning system and distributed to the stoves, burners for runner drying, boilers for process and process steam supply and for power generation.

2.2.5 Steel Melting Shop
i) Electric Arc Furnace
Scrap and other metallics stocked in open scrap bay will be brought near Electric Arc Furnace with the help of scrap bucket transfer cars and EOT cranes. Sponge Iron (DRI) from the day bins will be conveyed to operating platform of Electric Arc Furnace. Before starting the Electric Arc Furnace, the crucible will be inspected. Initial quantity of scrap & other metallics will be charged into the Electric Arc furnaces.

After the scrap & other metallics are fully melted and the temperature of the melt reaches above 1600°C, Sponge Iron (DRI) will be continuously charged into the furnace. Initial charging of scrap is done with the help of scrap bucket and overhead crane. The subsequent feeding of charge materials will be done by EOT crane. Main activities of the operation such as charging of input raw materials, melting and de-slagging are done simultaneously. As soon as the charge is melted, bath sample will be taken and the temperature will be measured. The steel at this stage will be ready for tapping.
ii) Ladle furnace
Lime, ferro-alloys, aluminium and fluorspar will be added as per the requirement and the final temperature and analysis will be adjusted

iii) AOD
One AOD converter of replaceable shell design will be installed for production of different grades of stainless steels.

iv) VOD
Degassing of Liquid Steel for removal of dissolved gases, removal of inclusions and Required Metallurgical Reactions

v) Billet Caster
In Billet caster, the liquid steel after ladle furnace treatment will be casted into the desired billet sizes.

2.2.6 Rolling Mill
There will be 4 no’s of reheating furnaces to produce rolled products. Furnaces will be heated with Furnace Oil.

2.2.7 Coal Washery
The coal washery will be installed inside premise near raw material yard. This section comprises of coal crushing and screening station and coal washery to produce clean coal with 25 % ash, appropriately sized and a middling fraction by treating the raised coals from the mine.

The coal washery has been designed to wash the coal in heavy media circuit to reduce clean coal with 25% ash and middling. The process consists of crushing of the ROM coal in a single toothed roll crusher. The crushed coal is then washed in zig to produce clean coal and middling with the help of water stream and air pressure.

2.2.8 Power Generation
2.2.8.1 Through Waste Heat Recovery Boiler (WHRB)
The hot flue gases from DRI kilns (expansion) will pass through a waste heat recovery Boiler to recover the heat and to generate electricity of 16 MW. The
gases after heat recovery will pass through ESP and then let-out through a stack of 60 m height. The outlet dust emission will be less than 100 mg/Nm$^3$.

### 2.2.8.2 Through AFBC Boiler

Coal washery middlings, dolochar & Coal fines will be used in 36 TPH and 51 TPH AFBC Boilers to generate steam and then electricity of 36 MW. The flue-gases will be treated in two separate State Of-The-Art- ESP’s and then discharged through stacks of 68 m and 75 m height respectively. The outlet dust emission will be less than 100mg/Nm$^3$.

The Captive Power Plant will be self-reliant in meeting its inhouse power requirement, other power requirement of the plant and process steam requirement.

### 3.0 Water Requirement

The proposed expansion project requires about 6701.2 cum/day of water and the total water requirement after the expansion will be 8298.2 cum/day.

This includes water for Cooling of DRI, SMS, Rolling mill Make-up water for Cooling tower Make-up for Sinter plant & Blast furnace, WHRB make-up, FBC boiler make-up, Coal washery, D.M. plant regeneration water and domestic water. Water requirement for the proposed Expansion project will be met from Sapnai river / Kur Nala situated at a distance of 5 Kms / 3 Kms from the site. A dedicated pipe line will be laid from the river to the water reservoir in the plant.

#### WATER REQUIREMENT (cum/day)

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>1. Make-up water for Iron ore processing, beneficiation and agglomeration plant</td>
<td></td>
</tr>
<tr>
<td>2. Cooling water Make-up for DRI plant</td>
<td>151.5</td>
</tr>
<tr>
<td>3. Cooling water make-up for SMS plant</td>
<td>68.0</td>
</tr>
<tr>
<td>4. Cooling water make-up for Rolling mill</td>
<td>30.4</td>
</tr>
<tr>
<td>5. Make-up for Coal washery</td>
<td>---</td>
</tr>
<tr>
<td>6. Cooling water make-up for Blast furnace</td>
<td>---</td>
</tr>
<tr>
<td>7. Iron Ore crusher</td>
<td>---</td>
</tr>
<tr>
<td>8. POWER PLANT</td>
<td></td>
</tr>
<tr>
<td>a) Cooling Tower Make-up</td>
<td>1,319</td>
</tr>
<tr>
<td>b) Boilers make-up</td>
<td>13.8</td>
</tr>
<tr>
<td>c) D.M. plant regeneration water</td>
<td>2.3</td>
</tr>
<tr>
<td>9. Domestic</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1588</strong></td>
</tr>
</tbody>
</table>
3.1 Waste Water Generation
The total quantity of effluents generated from the proposed expansion project will be 315.3 m³/day. The following is the break-up of the waste water generation from the proposed expansion project.

**TABLE 1.5**

WASTE WATER GENERATION (m³/ day)

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>QUANTITY (cum/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Power plant</td>
<td></td>
</tr>
<tr>
<td>Cooling tower blowdown</td>
<td>130.0</td>
</tr>
<tr>
<td>Boilers blowdown</td>
<td>3.5</td>
</tr>
<tr>
<td>D.M.Plant regeneration water</td>
<td>2.3</td>
</tr>
<tr>
<td>Domestic</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>138.2</td>
</tr>
</tbody>
</table>

3.2 Waste water Characteristics
The following are the Characteristics of the effluents generated from different sources.

**TABLE 1.6**

CHARACTERISTICS OF EFFLUENT

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DM plant regeneration</th>
<th>Boiler blowdown</th>
<th>Cooling Tower blowdown</th>
<th>Sanitary waste water</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>4 – 10</td>
<td>9.5 – 10.5</td>
<td>7.0 – 8.0</td>
<td>7.0 – 8.5</td>
</tr>
<tr>
<td>BOD (mg/l)</td>
<td>5000 – 6000</td>
<td>1000</td>
<td>1000</td>
<td>200 – 250</td>
</tr>
<tr>
<td>COD (mg/l)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>300 – 400</td>
</tr>
<tr>
<td>TDS (mg/l)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>800 – 900</td>
</tr>
</tbody>
</table>

4.0 POLLUTION CONTROL MEASURES

4.1 Air Pollution
The flue gases from the Rotary Kiln will pass through a Waste Heat Recovery Boiler and after the heat recovery, the gases will pass through state-of-the-art Electro Static Precipitator. The particulate matter at the outlet of all the Electro Static Precipitators will be less than 100 mg/Nm³ as per CREP recommendations. These treated gases will be let out into the
atmosphere through common stack for both kilns of 60 m height for effective
dispersion of pollutants into the atmosphere. The exhaust flue gases from
FBC boilers of capacities 36 TPH & 51 TPH will pass through State-Of-the Art
Electro Static Precipitator’s and the outlet dust emission will be less than
100 mg/Nm$^3$ as per CREP recommendations. The treated flue gases from
FBC boilers will be let out through stacks of 68m & 75m height respectively
for effective dispersion of pollutants into the atmosphere. The flue gases and
the fugitive emissions from the Electric Arc Furnaces/Induction furnace will be
treated in state-of-the-art Fume Extraction systems and the treated gases
will be let out into the atmosphere through stacks of 30 m height.
The flue gases from the rolling mill stacks (twin flues) will pass through 45 m
high stack for effective dispersion of pollutants into the atmosphere. All the
stacks height will be as per CPCB guidelines. The gases from sinter plant,
pellatization plants will be treated in separate ESP’s to comply with norms.
The flue gases from Blast Furnace will be treated in dust catcher followed by
Bag filters.
The following measures will be taken for control of fugitive emissions
- Dust extraction system with bag filters will be provided at material
  handling operations
- Dust extraction system with bag filters will be provided at screening and
  crushing of sinter
- Dust extraction system with bag filters will be provided at the crushing
  areas, cooler discharge area, product separation area.
- Dust extraction system with bag filters will be provided at raw material
  storage areas.
- All Conveyors will be totally covered with GI sheets to prevent the fugitive
  emissions.
- Well-designed telescopic chutes will be provided at transfer points.
- All bins will be totally packed and covered to prevent any dust emission.

4.2 Water Pollution
The total wastewater generated after expansion will be 453.5 cum/day.

Effluent Treatment Plant
The effluent generated from the expansion project will be treated in the
following manner.
pH of the boiler blowdown will be between 9.5 to 10.5. Hence a neutralization tank of size 3mx2mx2.3m will be constructed for neutralizing the boiler blowdown. DM plant regeneration water will also be neutralized in the neutralization tank of 2m x 2m x 2m. After neutralization these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). The treated effluent will be used for dust suppression, ash conditioning, Green belt development within the premises. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented. Sanitary waste water will be treated in Septic tank followed by soak pit.

**Effluent Generations, reutilization & disposal**

- Total effluent generation from existing and expansion projects (Excluding sanitary waste) : 441.5 m$^3$/day
- Effluent qty. to be used for ash conditioning : 30 m$^3$/day
- Effluent to be used for dust suppression : 30 m$^3$/day
- Balance effluent to be used for onland for irrigation : 381.5 m$^3$/day

Hence a greenbelt of 180 Acres will be developed within the plant premises by using the treated effluent. A dedicated pipe distribution network will be provided for using the treated effluent for ash conditioning, dust suppression & green belt development. The characteristics of the treated effluent will be in accordance with the CECB Standards for onland irrigation. Hence there will not be any impact on ground water / surface water due to the proposed expansion project.
4.3 Solid Waste Management

The following will be the solid waste generation from the proposed project.

<table>
<thead>
<tr>
<th>Sl. no</th>
<th>Solid waste</th>
<th>Quantity (TPD)</th>
<th>Total</th>
<th>Method of disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>Expansion</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Dolochar</td>
<td>168</td>
<td>168</td>
<td>336</td>
</tr>
<tr>
<td>2</td>
<td>Wet scraper sludge (DRI)</td>
<td>25</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Ash/dust (WHRB) (DRI)</td>
<td>180</td>
<td>180</td>
<td>360</td>
</tr>
<tr>
<td>4</td>
<td>Ash(AFBC)</td>
<td>Nil</td>
<td>473</td>
<td>473</td>
</tr>
<tr>
<td>5</td>
<td>Accretion slag (DRI)</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Slag (SMS)</td>
<td>28.8</td>
<td>120</td>
<td>148.8</td>
</tr>
<tr>
<td>7</td>
<td>Granulated slag from MBF</td>
<td>Nil</td>
<td>448</td>
<td>448</td>
</tr>
<tr>
<td>8</td>
<td>Washery rejects middling from coal washery plant</td>
<td>Nil</td>
<td>960</td>
<td>960</td>
</tr>
<tr>
<td>9</td>
<td>Tailings</td>
<td>Nil</td>
<td>455</td>
<td>455</td>
</tr>
</tbody>
</table>

Ash utilization will be in accordance with Fly ash notification issued by MoEF.

5.0 Baseline data

5.1 Ambient air quality

Ambient air quality was monitored for RPM, SPM, SO₂ & NOx at 8 stations including project site for one season as per MOEF guidelines. The following are the concentrations of various parameters at the monitoring stations.

- RPM - 20.1 to 36.9 µg/m³
- SPM - 75.3 to 95.3 µg/m³
- SO₂ - 6.4 to 8.9 µg/m³
- NOx - 7.2 to 9.7 µg/m³
5.2 Water quality
Ground water samples were collected at 8 stations along with surface water samples and analysed for various Physico-Chemical parameters. The water samples are shows that they are suitable for potable purposes.

5.3 Noise levels
Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging 41.3 dBA to 52.71 dBA.

6.0 Prediction of impacts
6.1 Prediction of impacts on air quality
The emission from proposed expansion project and expansion of other units in the area are also considered for prediction of GLC’s.

The predicted max. incremental rise in SPM concentrations (24 hourly) will be 1.4 $\mu g/m^3$ which occur at a distance of 1420 m from the origin stack in the down wind direction over the baseline concentrations. The net resultant Ground Level Concentrations of SPM during operation will be 96.7 $\mu g/m^3$.

The predicted max. incremental rise in SO$_2$ concentrations (24 hourly) will be 7.9 $\mu g/m^3$ which occur at a distance of 1420 m from the origin stack in the down wind direction over the baseline concentrations. The net resultant Ground Level Concentrations of SO$_2$ during operation will be 16.8 $\mu g/m^3$.

The predicted max. incremental rise in NO$_x$ concentrations (24 hourly) will be 5.7 $\mu g/m^3$ which occur at a distance of 1420 m from the origin stack in the down wind direction over the baseline concentrations. The net resultant Ground Level Concentrations of NO$_x$ during operation will be 15.4 $\mu g/m^3$.

The net resultant concentrations of SPM, SO$_2$, and NO$_x$ are well within the National Ambient Air Quality Standards (NAAQS) after expansion project commences the operation. Hence there will not be any adverse impact on air environment due to the proposed expansion project.
NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE EXPANSION PROJECT

<table>
<thead>
<tr>
<th></th>
<th>SPM (µg/m³)</th>
<th>SO₂ (µg/m³)</th>
<th>NOₓ (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum baseline conc. in the study area</td>
<td>95.3</td>
<td>8.9</td>
<td>9.7</td>
</tr>
<tr>
<td>Maximum predicted incremental rise in concentration</td>
<td>1.4</td>
<td>7.9</td>
<td>5.7</td>
</tr>
<tr>
<td>Net resultant concentration</td>
<td>96.7</td>
<td>16.8</td>
<td>15.4</td>
</tr>
<tr>
<td>National Ambient Air Quality Standards</td>
<td>200</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

6.2 Impact on Reserved Forests / Protected Forests
Net resultant GLC’s are computed for SPM, SO₂ and NOₓ at all the sensitive receptors such as Reserved Forests/Protected Forests. These net resultant GLC’s are within the National Ambient Air Quality Standards (NAAQS) for sensitive zones. Hence there will not be any impact on Reserved Forests/Protected Forests, human beings, flora & fauna and animal life due to the proposed expansion.

6.3 Prediction of impacts on water quality
The effluent generated from the proposed expansion project will be treated in effluent treatment plant and will be used for dust suppression, ash conditioning & green belt development after ensuring the compliance of CECB standards. Hence there will not be any adverse impact on ground water/ surface water due the proposed expansion project.

6.4 Prediction of impacts on noise quality
The major noise generating sources in the plant are STG, AFBC Boilers, compressors, etc. All these machinery will be manufactured keeping in view the MOEF/ International Standards on noise levels.

6.5 Prediction of Impacts on Land Environment Quality
The effluent will be treated to achieve CECB standards for on land for irrigation. All the required air pollution control systems will be provided to meet CECB norms. All solid wastes will be disposed / utilized as per CECB norms. Hence there will not be any adverse impact on land environment due to the proposed expansion project.
6.6 Biological Environment
All the required Air pollution control facilities for efficient treatment will be provided to comply with CECB norms. Solid wastes will be disposed off as per norms. Hence there will not be any adverse impact on flora and fauna due to the proposed expansion project.

6.7 Socio - Economic Environment
Certainly there will be a scope for employment to local people during construction as well as in operation phase. Hence there will be an all round development of the area.

7.0 ENVIRONMENT MANAGEMENT PLAN
7.1 Air Environment
The hot waste flue gases from the Sinter plant will be treated in a State-of-the-Art Electro Static Precipitator and let out into the atmosphere through a stack of 50 m height for effective dispersion of emissions into the atmosphere.

The flue gases from the Rotary Kiln will pass through a Waste Heat Recovery Boiler and after the heat recovery, the gases will pass through state-of-the-art Electro Static Precipitator. The particulate matter at the outlet of all the Electro Static Precipitators connected to Waste Heat Recovery Boilers in the proposed expansion project will be less than 100 mg/Nm$^3$ as per CREP recommendations.

These treated gases will be let out into the atmosphere through common stack for both kilns of 60m height for effective dispersion of pollutants into the atmosphere. The exhaust flue gases from FBC boilers of capacities 36 TPH & 51 TPH will pass through State-of-the Art Electro Static Precipitator’s and the outlet dust emission will be less than 100 mg/Nm$^3$ as per CREP recommendations. The treated flue gases from FBC boilers will be let out through stacks of 68m & 75m height respectively for effective dispersion of pollutants into the atmosphere. The flue gases and the fugitive emissions from the Electric Arc Furnaces/Induction furnace will be treated in state-of-the-art Fume Extraction systems and the treated gases will be let out into the atmosphere through stacks of 30 m height.

The flue gases from the rolling mill stacks (twin flues) will pass through 45 m high stack for effective dispersion of pollutants into the atmosphere. All the stacks height will be as per CPCB guidelines. The gases from pelletisation plant will be treated in separate ESP’s to comply with norms.
7.2 Water environment
Waste water generated from the Expansion project will be treated in Effluent Treatment Plant to meet the CECB standards. The treated waste water will be used for ash conditioning, dust suppression system and for Greenbelt development within the plant premises. Zero discharge will be implemented.

7.3 Noise environment
The major noise generating sources in the plant are STG, AFBC Boilers, compressors, etc. All these machinery will be manufactured keeping in view the MOEF/International Standards on noise levels. Extensive greenbelt will be developed all around the plant. Hence there will not be any significant impact on noise environment due to the proposed expansion project.

7.4 Land environment
The waste water generated from the plant will be treated in the Effluent Treatment plant to comply with the CECB standards and will be used for ash conditioning, dust suppression system and for greenbelt development. Hence there will not be any impact due to the proposed expansion project.

7.5 Greenbelt development
180 Acres (including existing greenbelt) of extensive greenbelt will be developed within the plant premises. This will further mitigate the pollution impacts. 50 m wide greenbelt will be developed all around the plant. Greenbelt will be developed as per CPCB guidelines in consultation with local DFO.