

FORM-I
FOR
CAPACITY ADDITION OF INTEGRATED STEEL PLANT FROM
5.0 MTPA TO 10.0 MTPA AND
CAPTIVE POWER PLANT FROM 300 MW TO 600 MW
AT JSW ISPAT STEEL LIMITED,
NEAR GEETAPURAM, DOLVI VILLAGE, PEN TALUKA,
RAIGAD DISTRICT, MAHARASHTRA

Submitted to:

Ministry of Environment and Forests
New Delhi



ISPAT STEEL LIMITED

DOLVI WORKS

Submitted by:

JSW ISPAT STEEL LTD., DOLVI WORKS
DOLVI VILLAGE, PEN TALUK, RAIGAD DISTRICT
MAHARASHTRA

APPLICATION FOR PRIOR ENVIRONMENTAL CLEARANCE
(FORM-1)

(I) BASIC INFORMATION

| | |
|---|--|
| Name of the Project/s | Capacity Addition of Integrated Steel Plant from 5.0 Mtpa To 10.0 Mtpa and Captive Power Plant from 300 MW To 600 MW at JSW ISPAT Steel Ltd., Dolvi Works, Dolvi Village, Raigad District, Maharashtra. |
| S. No. in the schedule | 3 (a) |
| Proposed capacity / area / length / tonnage to be handled / command area / lease area / number of wells to be drilled | Capacity Addition of Integrated Steel Plant from 5.0 Mtpa To 10.0 Mtpa and Captive Power Plant from 300 MW To 600 MW. |
| New / Expansion / Modernization | Expansion |
| Existing Capacity / Area etc. | Expansion of 3.0 MTPA Steel Plant to 5.0 MTPA and 300 MW Captive Power Plant under implementation. |
| Category of Project i.e. 'A' or 'B' | Category 'A' |
| Does it attract the general condition? If yes, please specify. | No |
| Does it attract the specific condition? If yes, please specify. | No |
| Location | The proposed plant facility is located in existing plant premises at Geetapuram, Dolvi Village, Pen Taluka, Raigad District, Maharashtra State. The site falls between - Longitude - 73°00'00" - 73°05'00" E Latitude - 18°39'00" - 18°45'00" N The location of the site and study area map are given in Figure-1 & Figure-2, respectively. |
| Plot/Survey /Khasra No. | Land comprises Dolvi, Jui Bapuji & khar Karavi Villages. |
| Village | Dolvi |
| Tehsil | Pen |
| District | Raigad |
| State | Maharashtra |
| Nearest railway station /airport along with distance in kms. | Pen is the nearest railway station at about 8 km (aerial distance) on the Konkan Railway line connecting Mumbai-Mangalore along the west |

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|--|---|
| | coast of India. The nearest airport is Mumbai (national and international) located about 80 km in the north direction from the proposed project site. |
| Nearest Town, City, District Headquarters along with distance in kms. | Alibag 20 Km |
| Village Panchayat, Zilla Parishad Municipal Corporation, Local body (complete postal address with telephone nos. | Grampanchayat, Dolvi. |
| Name of the applicant | JSW ISPAT Steel Ltd., Dolvi Works |
| Registered Address | JSW ISPAT Steel Limited, Dolvi Works Jindal Mansion, 5A, Dr. G. Deshmukh Marg, Mumbai – 400 026 |
| Address for correspondence | JSW ISPAT Steel Limited, Dolvi Works Geetapuram, Village – Dolvi, Taluka – Pen, District – Raigad. Maharashtra - 402107. |
| Name | Shri. Murali B. Shenoy |
| Designation (Owner / Partner /CEO) | Head-Utility & Services |
| Address | JSW ISPAT Steel Limited, Dolvi Works Geetapuram, Village – Dolvi, Taluka – Pen, District – Raigad. Maharashtra. |
| Pin Code | 402 107 |
| E-mail | Murali.Shenoy@jswispat.in |
| Telephone No. | Phone no: 02143 277501 – 15 |
| Fax No. | Fax No. : 02143 – 277542 |
| Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet. | Not Applicable |
| Interlinked Project | No |
| Whether separate application of interlinked project has been submitted? | Not Applicable |
| If yes, date of submission | Not Applicable |
| If no, reason | Not Applicable |

| | |
|--|----------------|
| <p>Whether the proposal involves approval / clearance under: if Yes, details of the same and their status to be given.</p> <p>(a) Name of the Court (b) Case No. (c) Order/ directions of the Court, if any and its relevance with the proposal project.</p> | Not Applicable |
|--|----------------|

(II) ACTIVITY

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|---|----------------|---|
| 1.1 | Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan) | No | The company has already a total of about 1200 acres of land in its possession for its existing operating integrated steel plant complex of 5.0 MTPA capacity. Some of the proposed additional capacities are proposed to be setup within the existing plant and some need relocated by acquiring additional 600 acres land. |
| 1.2 | Clearance of existing land, vegetation and building? | No | There will be clearance of existing land, vegetation wherever required. The proposed area is generally plain area with slight undulation. |
| 1.3 | Creation of new land uses | No | Some of the proposed facilities will be constructed within the existing industrial area and some require land to be acquired adjacent to the existing plant boundary. |
| 1.4 | Pre-construction investigations e.g. bore holes, soil testing? | Yes | Detailed land survey, topographical surveys and soil testing / investigation studies have been carried out earlier for existing plant while the land which is to be acquired has neither been surveyed, nor topographical surveys or soil testing /investigation have been done. |
| 1.5 | Construction works? | Yes | 5.0 MTPA Integrated Steel Plant and 300 MW Captive Power Plant and support infrastructure such as township, raw water reservoir and railway sidings |

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|---------|---|---------|--|
| | | | will be expanded / constructed. The proposed facilities are furnished at Para 1.0 of Annexure-I. |
| 1.6 | Demolition Works? | No | There will not be any demolition works during the construction of the plant. |
| 1.7 | Temporary sites used for construction works or housing of construction workers? | Yes | Temporary construction offices will be set up during the construction stage, which will be removed later. |
| 1.8 | Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations | Yes | Excavation works will be carried out for constructing the civil structures of the facilities. The project requires filling, leveling and piling works. |
| 1.9 | Underground works including mining or tunnelling? | No | Not applicable |
| 1.10 | Reclamation works? | No | Not applicable |
| 1.11 | Dredging? | No | Not applicable |
| 1.12 | Offshore structures? | No | Not applicable |
| 1.13 | Production and manufacturing Process? | Yes | The description of manufacturing process and process flow of plant is presented in Annexure-I. |
| 1.14 | Facilities for storage of goods or materials? | Yes | Storage facilities are planned for raw material and finished goods. |
| 1.15 | Facilities for treatment or disposal of solid waste or liquid effluents? | Yes | <p>The wastewater generated from the indirect cooling circuit would be routed through the cooling tower and pressure filter for recycling purpose.</p> <p>The wastewater generated from the coke ovens will be treated in a bio-oxidation plant to reduce the level of phenolic compounds, oil & grease and cyanide. The treated wastewater will be reused in the system.</p> <p>The wastewater of gas cleaning plants of blast furnace and steel melt shop containing suspended solids will be clarified in the wastewater treatment plant.</p> <p>The clarified water will be recycled to the waste gas cleaning units. Similarly, the wastewater coming out from the continuous casting machine will be treated to remove scale and oil and the treated water will be recycled after cooling.</p> |

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|---------|--|---------|--|
| | | | The plant sanitary waste water will be treated in sewage treatment plant and the treated water will be used for dust suppression and maintenance of plant green belt. |
| 1.16 | Facilities for long term housing of operational workers? | No | It is proposed to create housing complex for employees / construction workers. |
| 1.17 | New road, rail or sea traffic during construction or operation? | Yes | Augmentation of port, road and rail facilities for receipt of additional raw materials and dispatch of additional products. |
| 1.18 | New road, rail, air water or other transport infrastructure including new or altered routes and stations, ports, airports etc? | Yes | Augmentation of port, road and rail facilities for receipt of additional raw materials and dispatch of additional products. |
| 1.19 | Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements? | No | Not envisaged |
| 1.20 | New or diverted transmission lines or pipelines? | Yes | It is proposed to relocate the existing MSDS to a new location. |
| 1.21 | Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers? | No | The plant drainage network will be planned and designed in line with the existing topography and systems. |
| 1.22 | Stream crossings? | No | Not envisaged |
| 1.23 | Abstraction or transfers of water from ground or surface waters? | No | The total water requirement for the 10.0 MTPA steel plant, 600 MW power plant and township will be about 116 MLD. At present JSW ISPAT Steel Ltd., Dolvi Works has been allocated about 56.0 MLD water from Amba river, Nagothane, K.T.Bandhara and consent for 30 MLD has been obtained. Application is in progress for the balance amount. |
| 1.24 | Changes in water bodies or the land surface affecting drainage or run-off | No | The plant drainage net work will be designed such that there are no significant alterations in the existing drainage network. |
| 1.25 | Transport of personnel or materials for construction, operation or decommissioning? | Yes | Construction materials, mechanical and electrical materials will be sourced from different parts of the state and as well as various part of country through road, rail and sea network. |

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|---------|--|---------|--|
| 1.26 | Long-term dismantling or decommissioning or restoration works? | No | Not envisaged. |
| 1.27 | Ongoing activity during decommissioning which could have an impact on the environment? | No | Not envisaged |
| 1.28 | Influx of people to an area in either temporarily or permanently? | Yes | The requirement of total manpower for proposed expansion project will be about 5,000. However, the proposed Integrated steel plant will additionally generate more than 15,000 indirect secondary and tertiary employment. |
| 1.29 | Introduction of alien species? | No | Not envisaged |
| 1.30 | Loss of native species or genetic diversity? | No | Not envisaged |
| 1.31 | Any other actions? | No | - |

2. Use of Natural resources for construction or operation of Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply).

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data | | | | |
|---|--|---------|--|---|-----------|-----------------------------------|-----------|
| 2.1 | Land specially undeveloped or agricultural land (ha) | Yes | Additional 600 acres land is required for the proposed project. | | | | |
| 2.2 | Water (expected source and competing users) | Yes | The total water requirement for the 10.0 MTPA steel plant, 600 MW power plant and township will be about 116 MLD. At present JSW ISPAT Steel Ltd., Dolvi Works has been allocated about 56.0 MLD water from Amba river, Nagothane, K.T.Bandhara and consent for 30 MLD has been obtained. Application is in progress for the balance amount. | | | | |
| 2.3 | Minerals (MT) | Yes | The additional raw material requirement for the proposed capacity expansion is given below: <table border="1" data-bbox="883 1717 1472 1873"> <tr> <td>Iron Ore Fines/Conc. (For Pellet Plant)</td> <td>4,200,000</td> </tr> <tr> <td>Iron ore fines (for sinter plant)</td> <td>6,880,000</td> </tr> </table> | Iron Ore Fines/Conc. (For Pellet Plant) | 4,200,000 | Iron ore fines (for sinter plant) | 6,880,000 |
| Iron Ore Fines/Conc. (For Pellet Plant) | 4,200,000 | | | | | | |
| Iron ore fines (for sinter plant) | 6,880,000 | | | | | | |

| | | | | |
|-----|---|-----|--|-----------|
| | | | Iron Ore Lumps | 380,000 |
| | | | Coking Coal (for coke oven) | 3,500,000 |
| | | | Non-coking coal for PCI | 675,000 |
| | | | Limestone (for sinter plant) | 491,000 |
| | | | Limestone (for pellet plant) | 80,000 |
| | | | Dolomite (for sinter plant) | 503,000 |
| | | | Quartzite | 60,000 |
| | | | Limestone (for SMS) | 860,000 |
| | | | Dolomite (for SMS) | 388,000 |
| | | | Ferro-Alloy (for SMS) | 103,600 |
| | | | Bentonite (For pellet plant) | 28,000 |
| | | | Clinkers (For Grinding unit) | 5,000,000 |
| 2.4 | Construction material – stone, aggregates, and/ soil (expected source-MT) | Yes | <ul style="list-style-type: none"> • Cement – 0.85 million tonnes • Coarse aggregates – 1.25 million cu.m. • Fine aggregates – 0.85 million cu.m • Reinforcement steel – 0.125 million tonnes • Structural Steel – 0.35 million tonnes | |
| 2.5 | Forests and timber (source-MT) | No | No timber use is envisaged in the proposed expansion project. | |
| 2.6 | Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW) | Yes | The total power requirement is proposed to be supplied from the captive power plant of 600 MW capacity. Some power would also be available from the top pressure recovery turbine generators of the blast furnace & CDQ. Any additional power requirement will be met from the local grid. | |
| 2.7 | Any other natural resources (use appropriate standard units) | No | Not envisaged | |

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|---------|--|---------|--|
| 3.1 | Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies) | Yes | In-built safety features of the plant and machinery would be made adequate in order to avoid hazardous events causing damage to the life and property. |

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|--|----------------|--|
| 3.2 | Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases) | No | Not envisaged |
| 3.3 | Affect the welfare of people e.g. by changing living conditions? | Yes | Standard of living of the population surrounding the proposed project area is likely to be further improved. |
| 3.4 | Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc | No | Not envisaged |
| 3.5 | Any other causes | No | - |

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|---|----------------|---|
| 4.1 | Spoil, overburden or mine wastes | Yes | No major spoil or overburden will be generated at the project site during land development. However, the spoil or earthwork generated during construction will be reused for construction. |
| 4.2 | Municipal waste (domestic and or commercial wastes) | Yes | All municipal solid waste generated from the sewage treatment plant will be used within the plant site for plantation as manure. |
| 4.3 | Hazardous wastes (as per hazardous waste management rule-s) | Yes | The oil sludge from the oil storage area and oil & grease removed from the wastewater treatment plant will be sold to authorized users/recyclers approved by state pollution control board. |
| 4.4 | Other industrial process wastes | Yes | Major solid waste generated from the industrial processes would include BF slag, gas cleaning plant sludge, ESP/bag filter dust, refractory debris, etc. All the solid waste described above would be recycled/used in a proper manner / sinter plant and the rejects would be dumped in a designated area. |
| 4.5 | Surplus product | No | Not envisaged |
| 4.6 | Sewage sludge or other sludge from effluent treatment | Yes | Process sludge generated from the plant will be used as raw material in sinter plant. The sewage sludge from the STP will be |

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|---------|---------------------------------------|---------|---|
| | | | used within the plant premises as organic manure. |
| 4.7 | Construction or demolition wastes | Yes | Small quantity of metallic scrap waste expected and the same will be used as melting scrap in steel making. Construction material will be used internally for filling and leveling of the sites within the plant site area. |
| 4.8 | Redundant machinery or equipment | No | Not envisaged |
| 4.9 | Contaminated soils or other materials | No | Not envisaged |
| 4.10 | Agricultural wastes | No | Not envisaged |
| 4.11 | Other solid wastes | No | Not envisaged |

5. Release of pollutants or any hazardous, toxic or noxious substances to air (kg/hr)

| Sr. No | Information/ Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|--------|---|---------|--|
| 5.1 | Emissions from combustion of fossil fuels from stationary or mobile sources | Yes | <p>The captive power plant is proposed to use Multi fuel gases having relatively low sulphur content.</p> <p>A stack of adequate height will be provided which may be single or two nos. depending upon the design and detailed engineering. The steam generators would be provided with low NOx burners and hence the emissions of the Oxides of Nitrogen from the steam generator would be minimum.</p> <p>The associated traffic with respect to the steel plant complex would generate carbon monoxide and Oxides of Nitrogen.</p> |
| 5.2 | Emission from production processes | Yes | <p>From Pellet Plant, Sinter Plant, Coke Oven Plant, Blast Furnace, Direct Reduction Plant, Calcining Plant, Slab Caster Shop, BOF caster, LF & RH-Degasser Shop and Rolling Mills, SO₂, NOx, dust, TSP, CO₂, PAH, VOCs, heat and dust will be generated.</p> <p>The principal air pollution control system for pellet plant, sinter plant, DR Plant would be dedusting and waste gas cleaning systems separately.</p> |

| Sr. No | Information/ Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|--------|--|---------|---|
| | | | <p>The coke oven gas generated in the coke ovens after by-product recovery would be utilized as supplementary fuel for proposed steel plant complex.</p> <p>The top gas coming from the blast furnace would be cleaned by taking the gas through BF gas cleaning device for separation of particulate before the clean gas is recovered for meeting in-plant energy demand. The stock house and cast house areas would be provided with proper DE/FE systems complete with ESPs and stacks.</p> <p>The LD gas generated in the SMS shop would be subjected to cleaning before it is used as plant supplementary fuel. There would be proper FE systems to capture any secondary fumes generated during hot metal and liquid steel transfer points.</p> <p>Dust emissions from calcining plant would be controlled by bag filters. The re-heating furnaces would generate particulates, SO₂, NO_x and CO. The combustion system would incorporate low NO_x burner system and controlled combustion.</p> |
| 5.3 | Emissions from materials handling including storage or transport | Yes | <p>Fugitive dust will be generated from the material handling activities.</p> <p>Dust suppression or dust extraction systems with bag filters along with water sprinklers will be provided to prevent the fugitive dust emissions.</p> <p>Further, the development of Greenbelt would prevent the fugitive dust emissions.</p> |
| 5.4 | Emissions from construction activities including plant and equipment | Yes | Fugitive Dust. |
| 5.5 | Dust or odours from handling of materials including construction materials, sewage and waste | Yes | <p>Dust emissions from raw material handling and construction materials are envisaged. Suitable dust suppression and dust extraction methods will be followed.</p> <p>There is no possibility of any odour generation as there are no organic solvents / processes involved. There is a possibility of odour from sewage; however, this can be reduced by maintaining good ventilation conditions.</p> |
| 5.6 | Emissions from incineration of waste | No | Not envisaged |

| Sr. No | Information/ Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|---------------|---|----------------|--|
| 5.7 | Emissions from burning of waste in open air (e.g. slash materials, construction debris) | No | Not envisaged |
| 5.8 | Emissions from any other sources | No | Not envisaged |

6. Generation of Noise and vibration, and emissions of Light and heat

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|---|----------------|--|
| 6.1 | From operation of equipment e.g. engines, ventilation plant, crushers | Yes | Noise will be generated from Sinter plant, Blast furnace, Rolling mills, continuous caster and Oxygen plant which will not be allowed to exceed 85 dB (A). |
| 6.2 | From industrial or similar processes | Yes | Blast furnace, pellet plant, sinter plant, DR Plant, Rolling mills, continuous casting machines and Oxygen plant are likely to generate noise The expected noise level will not be allowed to exceed 85 dBA or proper noise protection systems will be used whenever required. There will be no adverse effect on the ambient Noise. Waste heat recovery unit is proposed for the proposed Sinter Plant and CDQ & Waste heat boiler is proposed for the Coke Oven Plant, so that no heat shall be wasted. |
| 6.3 | From construction or demolition | Yes | Yes. This will be in the range of about 65-80 dB(A). Regular maintenance of the equipment will help in reducing these noise levels. |
| 6.4 | From blasting or piling | Yes | Some noise <85 dB (A) will be generated. |
| 6.5 | From construction or operational traffic | Yes | The noise levels are expected to be in the range of about 70-75 dB(A). |
| 6.6 | From lighting or cooling systems | No | Not envisaged |
| 6.7 | From any other sources | No | Not envisaged |

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|---|----------------|---|
| 7.1 | From handling, storage, use or spillage of hazardous materials | No | Not envisaged. |
| 7.2 | From discharge of sewage or other effluents to water or the land (expected mode and place of discharge) | No | The sewage water will be treated and used for greenbelt development within the premises. Out side discharge is not envisaged. The wastewater from the plant units will be treated at the individual source of generation and re-used or re-cycled into the processes. There will not be any external discharge of wastewater. |
| 7.3 | By deposition of pollutants emitted to air into the land or into water | No | There is no discharge of wastewater outside the plant. |
| 7.4 | From any other sources | No | Not envisaged |
| 7.5 | Is there a risk of long term build up of pollutants in the environment from these sources? | No | Not envisaged |

8. Risk of accidents during construction or operation of the project, which could affect human health or the environment

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|---|----------------|---|
| 8.1 | From explosions, spillages, fires etc and from storage, handling, use or production of hazardous substances | Yes | There is a possibility of oil spillages and fires from the storages. However, suitable risk assessment will be carried out and disaster management plan will be in place. |
| 8.2 | From any other causes | No | Not envisaged |
| 8.3 | Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, slides, could burst etc) | No | The area is generally flat land. There is no record of occurrence of floods, land slides, cloud bursts etc. The proposed project site falls in Zone-IV as per IS-1893 (Part-I):2002. |

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

| Sr. No. | Information/Checklist Confirmation | Yes/ No | Details thereof (with approximate quantities/ rates, wherever possible) with source of information data |
|----------------|--|----------------|--|
| 9.1 | Lead to development of supporting, facilities, ancillary development or development stimulated by the project which could have impact on the environment | Yes | Existing and ancillary facilities will improve. |
| | Supporting infrastructure (roads, power supply, waste or waste water treatment, etc) | Yes | Existing infrastructure facilities will be expanded / extended to take care of the project. |
| | Housing development | Yes | New facilities about 10 km North of plant, away from pre-dominant wind direction. |
| | Extractive industries | No | The proposed facilities are captive to JSW ISPAT Steel Ltd., Dolvi Works. |
| | Supply industries | Yes | Existing supply chain will improve |
| | Other | | --- |
| 9.2 | Lead to after use of the site, which could have an impact on the environment | Yes | The proposed project will have impact on environment. However, these impacts will be contained by adopting suitable mitigation measures. |
| 9.3 | Set a precedent for later developments | Yes | Ancillary industries will be developed as a consequence. |
| 9.4 | Have cumulative effects due to proximity to other existing or planned projects with similar effects | Yes | The industry is not located in a critical zone. There are not many major industries operating in this region. Hence, no major effects are envisaged. |

(III) Environmental Sensitivity

| Sr. No. | Areas | Name / Identity | Aerial distance (within 15 km) Proposed project location boundary |
|----------------|---|------------------------|--|
| 1 | Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value | No | There are no ecological, landscapes, cultural or other related sensitive areas in 15 -km radius. |

| Sr. No. | Areas | Name / Identity | Aerial distance (within 15 km) Proposed project location boundary |
|---------|---|-----------------|---|
| 2 | Areas which are important or sensitive of ecological reasons – wetlands, water courses or other water bodies, coastal zone, biospheres, mountains, forests | Yes | There are no national parks, sanctuaries in 15-km radius from proposed project site. Two rivers are within 15km radius from proposed project site. 1. Amba river 0.8 – km, W 2. Bhogeswar river 7.8-km, N |
| 3 | Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration | Yes | Four reserve forests exist in 15 Km radius area as listed below: <ul style="list-style-type: none"> • RF near Kharkhara village (1- km, E) • RF near Katkariwadi village (5.3- km, NE) • RF near Turmal village (4.6-km, E) • RF near Katvira village(5.1- km, SW) • RF near Dhavte village(8.5-km NE) Detailed floral and fauna studies will be conducted and details will be incorporated in EIA report. |
| 4 | Inland, coastal, marine or underground waters | Yes | Amba river 0.8 – km, W Bhogeswar river 7.8-km, N |
| 5 | State, national boundaries | No | Nil |
| 6 | Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas | No | Not applicable |
| 7 | Defence installations | No | Nil within 10-km radius |
| 8 | Densely populated or built-up area | Yes | Pen Taluka is 6.9-km from the plant site. |
| 9 | Areas occupied by sensitive man made land uses (<i>hospitals, schools, places of worship, community facilities</i>) | Yes | Pen Taluka has all the facilities such as primary schools, middle schools, high schools, hospitals health centers, public health sub centers, dispensaries and places of worship. |
| 10 | Areas containing important, high quality or scarce resources (<i>ground water resource, surface resources, forestry, agriculture, fisheries, tourism, minerals</i>) | No | No scarce resources are present in 15-km radius |
| 11 | Areas already subjected to pollution or environmental damage. (<i>those where existing legal environmental standards are exceeded</i>) | No | This is not a listed or critically polluted area. |

| Sr. No. | Areas | Name / Identity | Aerial distance (within 15 km) Proposed project location boundary |
|---------|---|-----------------|--|
| 12 | Areas susceptible to natural hazard which could cause the project to present environmental problems (<i>earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions</i>) | No | The proposed project site falls in zone-IV as per IS-1893 (Part-I): 2002. No land slides / flooding is envisaged in project area. |

(IV) Proposed Terms of Reference for EIA Studies – Annexure – II.

I hereby given undertaking that the data and information given in the application and enclosure are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and Clearance give, if any to be the project will be revoked at our risk and cost.

Date: 03rd December 2012

Place: Dolvi

Murali B. Shenoy
Head – Utility & Services

JSW ISPAT Steel Limited
Geetapuram, Village – Dolvi,
Taluka – Pen, District – Raigad
Maharashtra 402107.

**FIGURE -1
LOCATION MAP**

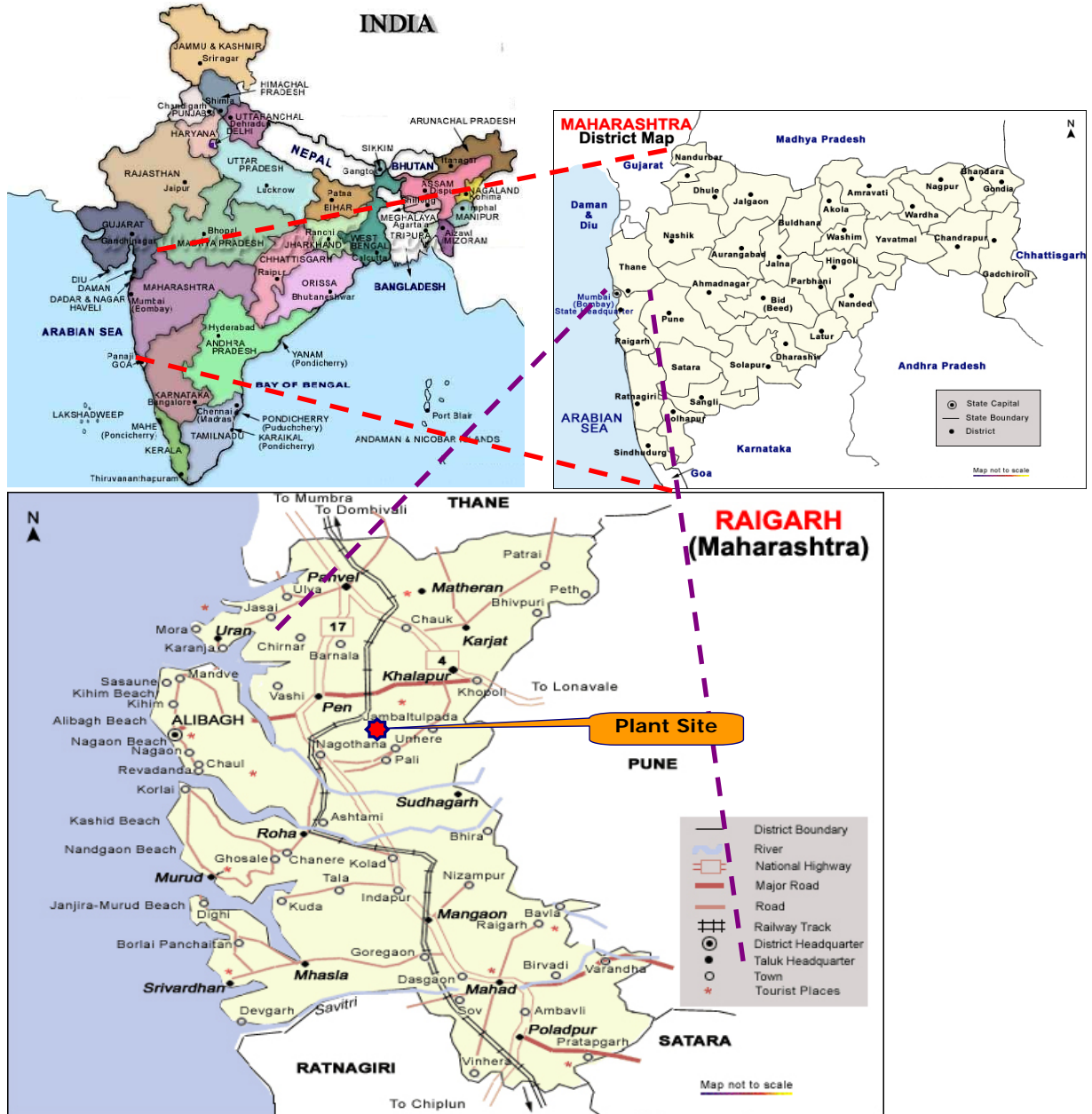
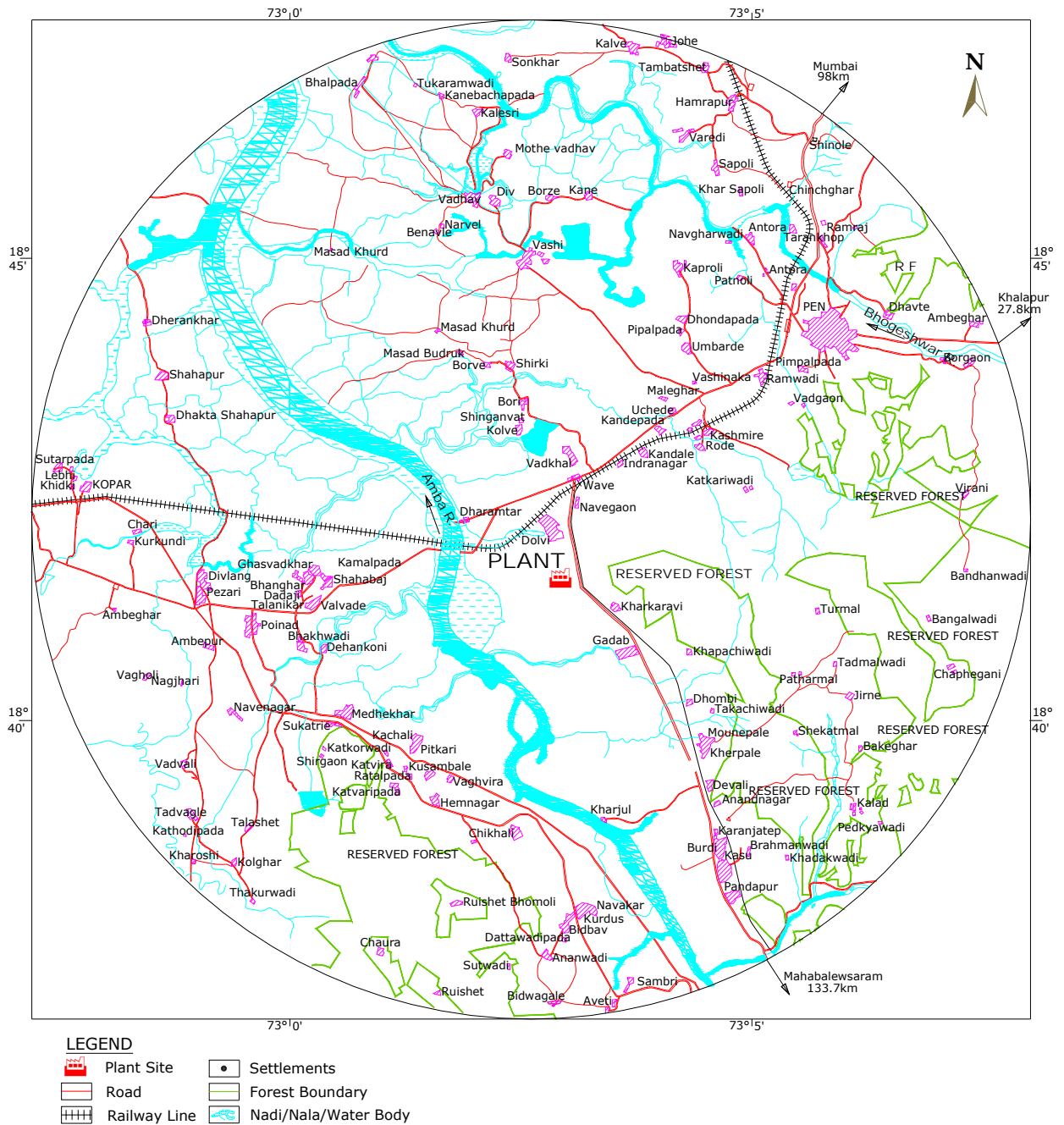


FIGURE -2
STUDY AREA MAP



ANNEXURE-I

INTEGRATED STEEL PLANT PROCESS DESCRIPTION

1.0 Introduction

The project envisages capacity addition of Integrated Steel Plant from 5.0 MTPA to 10.0 MTPA and Captive Power Plant from 300 MW to 600 MW at Dolvi.

The plant will be equipped with coke oven complex, pellet plant, sinter plant, blast furnace, Direct Reduction Plant, BOF converter, ladle furnace, RH-Degasser, continuous casting facility, hot rolling mill, cold rolling mill, lime & dolo calcinations plant, oxygen plant, grinding unit & township for the production of value added products.

Supporting facilities up to production of finished products will also be set up in the plant based on the state-of-the-art technology. All technological facilities required at each processing step to achieve good quantity rolled products are given below:

| S. No. | Facilities | Unit | Total capacity at 5 MTPA (EC Received) | Additional units from 5 MTPA to 10 MTPA | Total capacity at 10 MTPA |
|---------------|--|-------------|---|--|----------------------------------|
| 1 | DRI (Gas based Mega Module) | MTPA | 2.0 (by augmenting) | 2.0 | 4.0 |
| 2 | Pellet Plant | MTPA | 4.0 | 4.0 | 8.0 |
| 3 | Coke oven with By- Product Plant & CDQ | MTPA | 2.0 | 2.5 | 4.5 |
| 4 | Sinter Plant | MTPA | 2.8 + 3.2 | 8.0 | 14.0 |
| 5 | Blast Furnace with Pig /Granshot Casting & TRT | MTPA | 2.0 + 1.6 | 4.5 | 8.1 |
| 6 | SMS (CONARC) | MTPA | 5.2 (By Augmenting the existing facilities) | - | 5.2 |
| 7 | SMS – BOF | MTPA | - | 6.0 | 6.0 |
| 8 | Ladle Furnace | | 2x200 T + 1x205 T | 2 X 280/300 T | 2x200 T + 1x205 T + 2x280/300 T |
| 9 | VD/VOD/RH-Degasser | | 1x200 T + 1x205 T | 2 X 280/300 T | 1x200 T + 1x205T + 2x280/300 T |
| 10 | CSP (HRC Coil) Thin Caster-cum- Hot Strip Finishing Train | MTPA | 3.5 (by augmenting) | - | 3.5 |
| 11 | Conventional Slab Caster | MTPA | 2 x 1 strand | 2 x 2 strand | Total 6 strands |
| 12 | Plate Mill | MTPA | 1.5 | - | 1.5 |
| 13 | Galvanizing Line (Cold Rolled Steel Strips, Hot Dip Zinc Coated Full Hard) | MTPA | 0.6 | - | 0.6 |
| 14 | Electrical Steel CRGO Line | MTPA | 0.4 | - | 0.4 |
| 15 | Tin Plate Line | MTPA | 0.4 | - | 0.4 |
| 16 | Color Coating Plant | MTPA | 0.5 | - | 0.5 |
| 17 | Lime & Dolo Plant | TPD | 1800 | 1800 | 3600 |

| | | | | | |
|----|---|------|------|------|------|
| 18 | Oxygen Plant | TPD | 4100 | 3500 | 7600 |
| 19 | Captive Power Plant (Gas Based) | MW | 300 | 300 | 600 |
| 20 | Hot Rolling Mill with Shearing & Slitting line | MTPA | - | 6.0 | 6.0 |
| 21 | Slag & Clinker Grinding Unit | MTPA | - | 10.0 | 10.0 |
| 22 | CRM (Hot Rolled Skin Pass + Cold Rolled Full Hard Coil + Hot Rolled Pickled & Oiled Coil) | MTPA | 1.0 | 1.5 | 2.5 |
| 23 | Township | - | - | ✓ | ✓ |

Facilities required outside the plant boundary like sourcing of iron ore, coking and non-coking coal will also be taken up **along with township** etc.

2.0 Coke Oven Batteries

Coke is one of the prime requirements for production of hot metal through blast furnace route. The coke supplies heat to the blast furnace for smelting purpose and also acts as reducing agent inside the furnace for reduction of iron oxides to metallic iron. Both active hot carbon of coke as well as reducing gas, generated in the furnace, by burning of coke, take part in reduction reaction. A number of technologies have been developed for reduction of coke requirement in blast furnaces resulting in cost effectiveness viz injection of auxiliary fuels like non-coking coal/tar/natural gas through tuyeres, etc.

Considering the level of technological development in the coke making area and total requirement of blast furnace coke in the blast furnace, installation of recovery type coke oven batteries have been envisaged. The gross coke generated in the coke ovens will be screened. BF coke and nut coke will be sent to the blast furnace and coke fines/ coke breeze generated in the plant will be utilized in the sinter plant.

The coke making technology would include pre-carbonization and post carbonization technologies like selective crushing of coal, stamp charging and high capacity ovens.

4 x 65 nos. batteries of 5.5 m tall Coke Oven having capacity of 2.5 MTPA has been envisaged for the capacity addition from 5.0 to 10.0 Mtpa.

3.0 Sinter Plant

The sinter plant will be equipped with the following major facilities:

- Base blending for input materials
- Flux and fuel crushing facilities
- Lime dozing facility
- Mixing and nodulising unit
- Sintering machine equipped with sinter strand, ignition furnace, wind boxes, suction fan, dust cleaning unit, etc.
- Sinter coolers
- Sinter screening and transportation facilities

Capacity of the sinter plant has been estimated based on use of about 80-85% sinter in the burden of blast furnaces, which shall be obtained from the twin (2) modules of sintering machine of 4.0 MTPA capacity each.

4.0 Pellet Plant

The Pelletization process involves reduction of moisture in the iron ore to less than 1%, grinding to 45 micron size, feed preparation by adding binders and moisture, green pelletization and induration (heat hardening).

It is proposed to install a Pellet Plant capable of producing upto 4.0 Mtpa of pellets. This Pellet Plant will produce DRI grade pellets to be used in the sponge iron plant and balance pellets will be used in the BF.

5.0 Blast Furnace

Hot metal production using blast furnace process has been envisaged for the proposed project, as the process is most established and competitive iron making technology till date. A number of technological improvements have taken place in blast furnace which have resulted in higher production, less coke consumption, most energy efficient, long campaign life, etc. State-of-the-art blast furnace equipped with the following major facilities has been envisaged for the proposed plant:

- Covered stock house with automatic conveyer charging facilities
- Bell less top charging equipment
- High top pressure operation (2.5 kg/cm² top pressure) and matching gas-cleaning plant.
- Stoves for generation of high hot blast temperature (1250°C blast temperature).
- Coal dust injection facilities (150 kg/thm)
- Oxygen enrichment of blast.
- Cast house slag granulation plant. (The slag would be grinded in slag grinding unit)
- Top gas recovery Turbine
- Level- III automation and control system, etc.

Hot metal produced from the blast furnace will be transported to the steel melting shop using torpedo ladles/open top ladles.

Considering the daily requirement of hot metal in the steel melting shop for production of liquid steel, which is sufficient to produce about 4.5 Mtpa hot metal, 1 (one) blast furnace of 4.5 Mtpa capacity have been envisaged for the proposed project. Slag generated from the blast furnaces will be granulated in the cast house slag granulation plant. The granulated slag will be processed in the grinding units.

6.0 Pig Casting Machine

The mismatched / off grade hot metal is proposed to be handled in a pig casting machine or a energy efficient hot metal noduliser unit.

The PCM will consist of the following units / facilities.

- PCM proper
- Lime preparation unit
- Settling tank and pump house
- Pouring end and discharge end sprocket
- Centralised grease lubrication system
- PCM control room and sub-station.
- Pig storage yard with magnet crane.

These will be of adequate capacity for production of pig iron/nodulised iron.

7.0 Direct Reduction Plant

One Mega Module Direct Reduction (DR) Plant based on the natural gas/coke oven gas/LD gas/Mixed gas with average gross production capacity of 2.0 Mt/yr has been envisaged.

8.0 Steel making and Secondary Refining

8.1 Hot Metal Desulphurisation

Two (2) twin hot metal desulphurisation stations of 280/300 t ladle capacity have been envisaged to bring down the sulphur content in hot metal received from blast furnaces. Desulphurisation of hot metal will be carried out in the hot metal charging ladles of steelmaking shop prior to charging into BOFs. Hot metal from blast furnace to steelmaking shop will be received by torpedo ladles/open ladles. Hot metal will be pretreated in desulphurisation stations before being used for steelmaking. The desulphurisation facilities will be based on lance injection process. Desulphurisation facilities are planned in hot metal receipt-cum-charging bay. Calcium carbide and magnesium based reagents will be used for desulphurisation of hot metal. Nitrogen will be used as the carrier gas during injection.

8.2 Steel Making

Basic oxygen furnace technology for production of liquid steel has been envisaged for the proposed project. This process till date dominates the steel production scenario of high capacity integrated steel plant worldwide mainly due to its energy efficiency. As such, external energy in terms of either electrical power or solid/liquid/gaseous fuel is not required for process. However, requirement of electricity and gaseous fuel are mainly for driving of electrical equipment, ladle heating, etc. Most of the other steel making process like electric arc furnace/Induction furnace process consumes high amount of electrical energy. However, oxygen with high purity is required for conversion of hot metal to liquid steel and scrap/iron ore/DRI is required as coolant in BOF process. A significant amount of medium calorific value (2000 kCal/Nm³) gas is generated during carbon refining reaction period of steel making which will be separated in the gas cleaning plant using suppressed combustion system.

Hot metal will be pre-treated before charging into the converter. For capacity addition from 5.0 to 10.0 Mtpa capacity, a new converter shop has been envisaged which has been designed to handle about 6.0 Mtpa hot metal, 4.5 Mtpa hot metal from proposed new Blast Furnace-2 and 1.5 Mtpa hot metal from existing Blast Furnace-1.

Considering the requirement of liquid steel for subsequent process requirements, chemical composition of input materials, quality of liquid steel to be produced, sequence of casting of liquid steel into slabs, oxygen blowing rate etc., two (2) number of converters of capacity 280/300 t each have been envisaged for the proposed project.

8.3 Ladle Furnace (LF)

With a view to achieve improved homogeneity and productivity of the primary unit and serving as a buffer between the Converter and the caster, ladle

furnace is the ideal secondary refining unit. The correction and homogenization of steel composition and temperature, desulphurisation and recarburisation, etc. can be efficiently carried out in a LF. Two (2) nos. LF of adequate size has been envisaged for the proposed project. The LF will also be equipped with argon purging facilities.

8.4 RH-Degasser

In order to produce value-added products subject to market requirements, RH are essential as secondary refining units. The processes assure liquid steel of high purity, low level of inclusions and good homogeneity with respect to temperature and chemistry. These processes help attainment of very low levels of gases and inclusions and provide controlled alloying and mixing to produce a great variety of alloys. These processes also allow improvement in plant productivity (through sharing of refining load) and yield, in addition to ensuring good quality.

Two (2) RH-Degasser units of matching size 280/300 t have been envisaged for production of value-added steels. The RH-TOP unit will be used for production of various steel grades and for special applications.

9.0 Slab Caster

To produce hot rolled plates, slab casters have been proposed. The technology of continuous casting of steel into slabs has been fully mastered today for any grade of steel. This technology has become well established through extensive mechanisation and control of various operating parameters. The continuous casting process has gained worldwide acceptance, mainly because of high yield, good product quality and good economics of operation. In order to cast 6.0 MTPA liquid steel into Flat products, slab casters have been envisaged for the proposed project.

Considering market requirements, two double strand casters capable of producing slabs of 950-2150 mm width and 220/250 mm thickness have been envisaged. However this could be revised to cater to the future market requirements.

10.0 Finishing Mill

10.1 Hot Rolling Mill

The continuous cast slabs from the slab caster are fed to a reheating furnace. The first part of the furnace serves as a heating zone while the second part as holding zone for the continuous cast slabs. The slabs are heated to achieve homogenous temperature over their enter length.

The slabs are then passed through a descaler where high-pressure water is sprayed simultaneously on top and bottom surfaces to remove the scale. The cleaned slab is then rolled in the rolling mill comprising of roughing mill and continuous finishing mill train to the desired thickness. The rolled strip is then cooled to the desired coiling temperature by the laminar cooling water spray system on the runout roller table. The hot rolled strip is then coiled on the downcoiler.

The hot rolled coil is transported by a coil conveyor system to the coil storage yard. The hot rolled coils are delivered by the coil conveyor system to the coil

yards where they are stored for further despatch. Based on the product-mix, one hot rolling mill of 6.0 Mtpa capacity has been proposed for the project.

10.2 Cold Rolling Mill

Hot strips produced in the Hot rolling mill will be processed in the Cold rolling Mill. EC had been obtained at 5 Mtpa stage for CRM of 1.0 Mtpa capacity. It is now proposed to apply for amending the capacity to 2.5 Mtpa. This large size would be more energy efficient.

11.0 Captive Power Plant

To meet the requirement of power for the proposed plant, a captive power plant of capacity 1 x 300 MW has been envisaged based on the excess fuel gases.

12.0 Lime & Dolo Plant

The limestone and raw dolomite from storage bunkers will be fed to the screen by belt conveyor and undersize lime stone and dolomite will be screened out and stored in another bunker which is meant to store the undersize material.

The undersize limestone and raw dolomite will be stored for onward disposal to other consuming units. Screened materials of Oversize will be fed to shaft kilns. Limestone and raw dolomite will be calcined at temperature of 950-1150°C.

The lime and calcined dolomite from the kilns will be discharged to two different conveyors which are placed below the kilns. The lime and calcined dolomite will then be fed to single deck screen to separate out undersize material. The undersize lime and dolomite material will be stored in two separate bunkers. The sized lime and calcined dolomite of Oversize will be stored in bunkers. Lime and calcined dolomite of Oversize will be conveyed to SMS through belt conveyor and undersize lime will be transported through trucks/cement tanker to other consuming units.

3 Nos. x 600 TPD capacity Lime and Dolo Calcination Plant have been envisaged for the proposed.

13.0 Oxygen Plant

Oxygen, nitrogen and argon will be produced by air separation process based on low pressure cryogenic cycle and double column rectification system. The unit will be able to produce gaseous as well as liquid products.

Gaseous products from the oxygen plant will be distributed through pipeline network system consisting of pressure regulating and metering station to various consumers.

Oxygen will be required for oxygen enrichment in the blast furnace, secondary refining in VD, cutting of slabs in continuous casting plant, and for general purpose use in various units of the steel plant.

Nitrogen will be mainly required as carrier gas in coal dust injection system, bell less top equipment for blast furnace, purging in GCP of BF and also for occasional purging of fuel gas pipelines and equipment.

Argon will be required for shrouding in the tundish, mould in the continuous casting plant and stirring in ladle. Argon will also be required for laboratory purpose.

Oxygen Plant of capacity 3500 tpd has been envisaged for the proposed project. Flow sheet of the production process is shown in Figure-3.

14.0 Township

The township is to serve a large steel plant of 10 Mtpa capacity and CPP of 600 MW capacity and may have up to 7065 dwellings of various categories in about 150 Acres of land. The new township shall be constructed to take care of the accommodation facilities of the employees. Area for the township has been identified near Pen but the specific details are yet to be finalized.

Township details are given below:

DOLVI TOWNSHIP AREA CALCULATION

| Type | BHK | Nos. | Area (sq. Ft)/ house | Total Area (sq. Ft) | No. of storeys | No. of houses per floor | Total houses per bldg | No. of blds. Required | Area Req (sq. ft) | |
|--------------|--|-------------|----------------------|---------------------|----------------|-------------------------|-----------------------|-----------------------|-------------------|--------|
| 1 | 5 | 15 | 4000 | 60000 | 1 | 1 | 1 | 15 | 60000 | |
| 2 | 4 | 50 | 2500 | 125000 | 1 | 1 | 1 | 50 | 125000 | |
| 3 | 3 | 500 | 1700 | 850000 | 3 | 2 | 6 | 83 | 283333 | |
| 4 | 2 | 1500 | 1200 | 1800000 | 7 | 4 | 28 | 54 | 257143 | |
| 5 | 1 | 3000 | 600 | 1800000 | 7 | 4 | 28 | 107 | 257143 | |
| 6 | 1 | 2000 | 350 | 700000 | 7 | 4 | 28 | 71 | 100000 | |
| Total | | 7065 | | 5335000 | | | | | 1082619 | |
| 7 | Area of roads/parking area in between houses, etc - 3 times more area than blgs. Area | | | | | | | | 3247857 | |
| Total | | | | | | | | | 4330476 | |
| 8 | Area for GH / schools / gardens / play grounds/ water pond / temple / parkings / shopping centres/hospital etc | | | | | | | | 2178930 | |
| Total | | | | | | | | | 6509406 | sq. ft |
| | | | | | | | | | 604743 | sq. m |
| TOTAL | | | | | | | | | 149 | acres |
| | | | | | | | | say | 150 | acres |

Raw water shall be treated in the plant and pumped to the township for their water requirement. Sanitary faecal sewage will be collected from the ablution blocks through pipeline and the same will be connected to a sewage treatment plant. The effluent from sewage treatment plant will be utilized for the development and maintenance of greenery. Details of the Sewage Treatment Plant are given below:

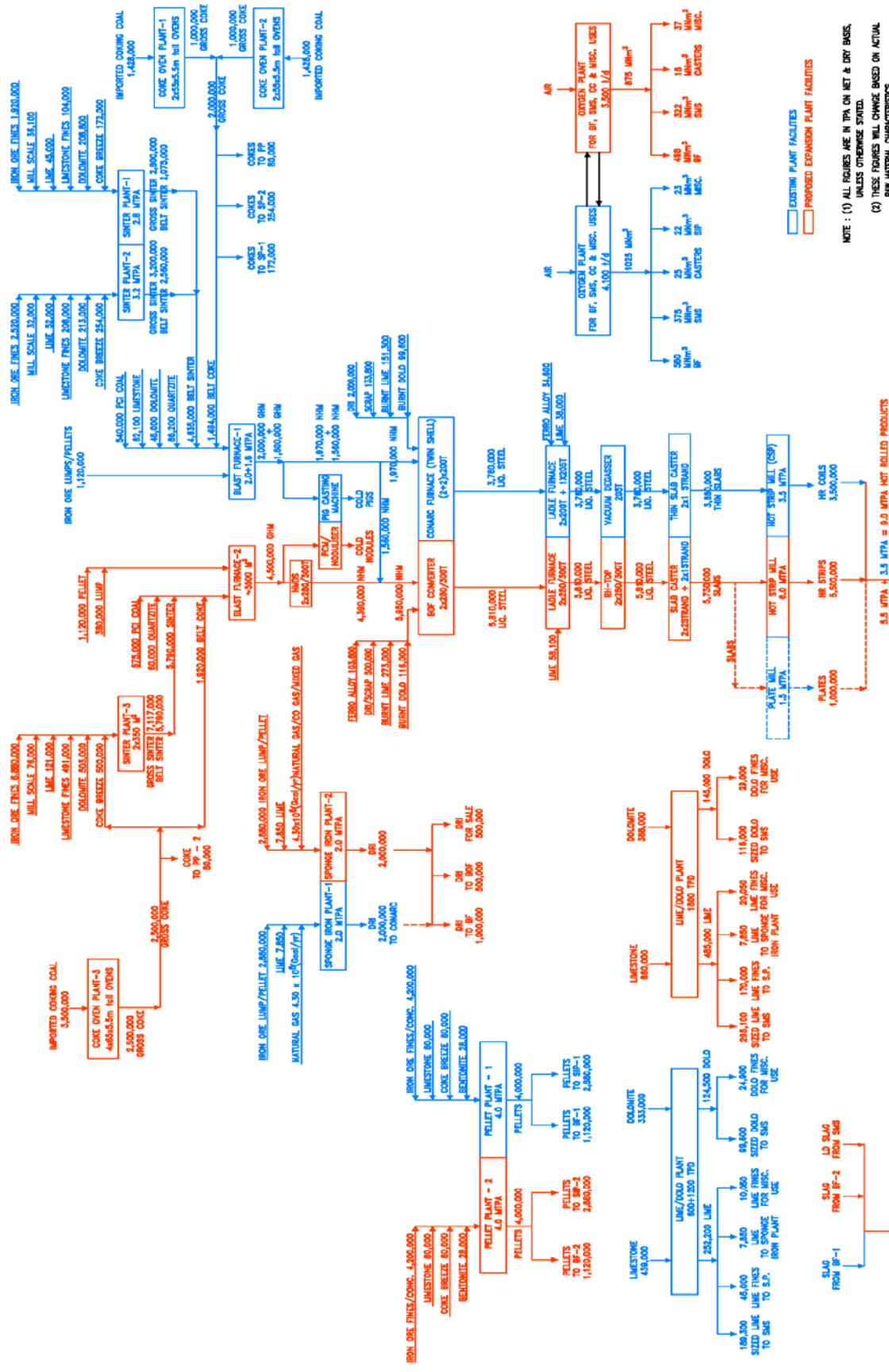
Sewage treatment Plant provide only preliminary and primary treatment, and tertiary treatment is rare.

1. Preliminary treatment: This is the mechanical removal of coarse and fine solid material. The sewage passes through screens, which trap pieces of wood, rags, wire, etc.
2. Primary treatment: The sewage then flows slowly through grit tanks, where particles of sand or grit settle out. Fine particles still remain suspended in the sewage, so it is passed to large primary sedimentation tanks where most of the remaining particles settle out to form a sludge. Primary treatment removes about 60–70% of suspended solids. The liquid leaving the primary sedimentation tanks still contains very fine solids and dissolved matter, so secondary treatment is usually required.
3. Secondary treatment: This is a biological process, involving the oxidation of dissolved organic material by micro-organisms to decompose the organic compounds, a process similar to that taking place in rivers, the soil, or filter beds in water treatment works. The process is speeded up by increasing the amount of oxygen available, which can be done by two possible methods:
 - Filter beds;
 - Activated sludge:.Secondary treatment in addition to primary treatment removes about 70–90% of the BOD in the sewage, so the effluent is usually sufficiently purified.
4. Tertiary treatment: Primary and secondary treatment remove only 20–40% of the phosphorus and nitrogen, and about half of the toxic compounds. If it is necessary to reduce plant nutrients or toxic compounds beyond these levels tertiary treatment is required, but this is very expensive and not commonly used. Various types of tertiary treatment exists, e.g. nutrient stripping, disinfection by UV light or filter membranes.

**FIGURE -3
PROCESS-CUM-MATERIAL FLOW SHEET**

DATE: 26/11/12

PROCESS-CUM-MATERIAL FLOW



EXISTING PLANT FACILITIES
 PROPOSED EXPANSION PLANT FACILITIES

NOTE : (1) ALL FIGURES ARE IN TPA ON NET & DRY BASIS, UNLESS OTHERWISE STATED.
 (2) THESE FIGURES WILL CHANGE BASED ON ACTUAL RAW MATERIAL CHARACTERISTICS.

| | | | |
|-----------------------------|----------|--------------|---------|
| JSW ISPAT STEEL LTD. | | DOLVI | |
| SECTION | LOCATION | DESIGNED | CHECKED |
| DATE | BY | DATE | BY |
| APPROVED | DATE | APPROVED | DATE |

CAPACITY ADDITION OF ISP FROM 5.0 MTPA TO 10.0 MTPA AND CPP FROM 300 MW TO 600 MW AT DOLVI
 PROCESS-CUM-MATERIAL FLOW
 SCALE: A1:1
 REV: 0

ANNEXURE-II

PROPOSED TERMS OF REFERENCE

Project Implementation:

A detailed description of all the additional elements of the project from 5.0 to 10.0 Mtpa stage during the pre-construction, construction and operational phases will be prepared. The elements analyzed will include the infrastructures of the project including: drainage features, roads, waste collection, disposal and management and utility requirements.

Analysis and assessment of designs to ensure environmental soundness, sustainability and regulatory compliance of the designs will be studied and incorporated in the draft and final EIA Report.

Field Assessments:

Field assessments of the physical, ecological, and socioeconomic aspects of the site and associated environs will be conducted during winter season. These assessments will be used to determine the potential impacts, if any, of the proposed project. A photographic survey of the proposed site and the nearby environs has been conducted. The survey included a photo-inventory of the physical and biological features of the site and environs, and the areas are viewed with respect to the suitability of the proposed facility. The assessments included:

Physical:

Meteorology, air quality, geology, topography, soils, groundwater/surface water hydrology quality, hazard vulnerability, noise levels, land use, water use and solid waste management.

Ecological:

Terrestrial and aquatic communities; presence of rare, threatened and endangered species.

Socioeconomic:

Demography, regional setting, location assessment, and land uses.

The technical scope of work for carrying out the baseline monitoring would be as given below. The baseline monitoring will be carried out in 10-km radius study area around the proposed project site for three months representing the winter season.

| Sr. No. | Attributes | Scope of Work |
|----------------|---------------------|--|
| 1 | Ambient Air Quality | 4 Locations - 2 days/week for 13 weeks (3 months) PM-2.5, SPM, RPM, SO ₂ , NO _x , and CO will be monitored as per CPCB guidelines. Design of ambient air quality sampling network with regard to topography, population, sensitive locations, emission sources, background |

| Sr. No. | Attributes | Scope of Work |
|---------|--|---|
| | | concentrations and possible impact zones, through application of screening air quality models for assessing the maximum GLC zones prior to start of baseline study. |
| 2 | Meteorological data | <p>1 Location - 90 days Wind speed, direction, temperature, humidity, cloud cover and rainfall will be monitored. This is further supported by the meteorological data for the area of interest from the nearest meteorological observatory and Trend analysis of micrometeorological data generated at the site.</p> |
| 3 | Water Quality | <p>9 Locations- (Surface and Ground water samples)</p> <p>- Once during the EIA study</p> <p>Parameters as per IS-10500, IS:2296 and EPA Act as applicable .</p> <p>The survey also include estimation of water balance and assessment of impacts on regional water demand and availability of fresh water due to drawl of water for plant, recommendations on water conservation and rain water harvesting measures based on past experience on similar projects; and identification of suitable location and methodology for disposal of waste water form all sources.</p> |
| 4 | Soil Quality | <p>6 Locations once during EIA study. Parameters related to afforestation, nutrients, pollutants etc. will be carried out.</p> |
| 5 | Noise Levels | <p>8 Locations (Residential, Commercial and Sensitive areas) once during EIA study. Readings will be taken for 24-hr duration at each location</p> |
| 6 | Land use | <p>Land use as per the district census handbooks as well as with the help of satellite imagery will be presented in 10-km radius study area.</p> |
| 7 | Solid waste | <p>Characterization of all the solid wastes generated from the plant operations and its disposal including impacts due to disposal.</p> |
| 8 | Socio-Economic and Demography | <p>Socio-economic and health aspects are covered for 10-km radius study area based on the Census documents and NIC database.</p> |
| 9 | Ecological studies (Terrestrial and Aquatic) | <p>Flora and fauna will be studied in 10-km radius study area. These studies will be based on primary as well as secondary sources.</p> <p>The survey also includes assessment of the species diversity, density, abundance etc. in the study area and formulation of ecological indexes, assessment of likely changes on flora and fauna due to the project related activities, suggestions</p> |

| Sr. No. | Attributes | Scope of Work |
|---------|----------------------------|--|
| | | for conservation and protection of flora and fauna in the study area and suggestions for development of new conservation areas locally. |
| 10 | Traffic Study | Traffic at important points on the approach roads will be surveyed for the existing total daily traffic, peak hour traffic and traffic composition. Assessment of the change in traffic composition and volumes and suggestions for improvement of traffic flow around the project site and around will be studied |
| 11 | Aesthetic/Cultural Aspects | Identification of all historical/ archeological sites/monuments in the study area. |

Detailed qualitative assessments of the physical, ecological, and socioeconomic conditions associated with the site in the Draft and Final Report.

Legislation and Regulatory Considerations

Government policies, legislation and regulations relevant to the proposal will be identified. Local plans and policies will also be evaluated. Project characteristics will be analyzed to ensure compliance with these policies, legislation and regulations. Appropriate recommendations will be provided to ensure regulatory compliance.

The legislation relevant to the project will be summarized and presented in the EIA Reports.

Environmental Impact Assessment

The guidelines suggested and international practices will be reviewed to determine the adverse impacts and critical areas.

There are various qualitative as well as quantitative methods of conducting EIA studies, each having its own merits and demerits. We intend to use the best logical tool to assess the impact of the project.

The baseline data generated from above studies will be analyzed and compared with applicable standards for each environmental attribute, so that the critical environmental areas and also attributes of concern will be identified. The short term and long-term impacts particularly on sensitive targets such as endangered species, plants and historically important monuments will be identified.

The Environmental Impact Assessment of proposed project will be done on above basis to determine the environmental acceptability of this proposed project in absence of control measures and after implementation of the mitigation measures, including worst impact.

A qualitative and quantitative assessment of pollution aspects of proposed project (air and dust, wastewater, noise pollution, wastewater discharges etc.) will also be done to identify the adequacy of the proposed control measures as well as the likely impact on existing critical areas. Mitigation measures to reduce adverse impacts will be suggested.

Air Impacts:

Emission Inventory will be carried out in an area of 10-km around the project site. A computer based internationally recognized mathematical air quality model (ISC-ST3) will be used to predict the concentration of SO₂, NO_x and SPM due to the operation of the proposed project. The model would also take into account other sources of pollution and topographical features of the area. The emission of relevant pollutant (SO₂, NO_x and SPM) from nearby sources shall be used in the model for more accurate estimate of air quality. The results will be presented for short term (24 hourly) concentrations over a radius of 10-km around the plant site. The dispersion model results will be included in the report using isopleths or other graphical methods, over laying a land use map of the surrounding area. The predicted air quality will be compared with existing regulations and mitigative measures, if any, will be identified. The long term and short term impact at all the monitoring locations shall also be estimated.

Noise Impacts:

Sources of noise and its impact on the environment would be clearly brought out. The noise level at varying distances for multi-sources will be predicted using suitable model. A comparison of measured noise (Leq) at monitoring locations to that of predicted noise levels (Leq) would be made and mitigatory measures required, if any, will be recommended to conform to regulatory ambient air noise standards.

We propose to estimate increase in noise levels over the baseline conditions in different zones like industrial, residential and sensitive areas like hospitals, wild life habitation etc. The potential noise level exposure will be determined and evaluated for acceptable limits of exposure.

Environment Management Plan

For each potential negative impact identified, recommendations will be presented for avoidance, minimization or mitigation of impacts along with costs associated with potential mitigation.

An EIA/EMP, based on three months baseline study, will be prepared for the project. The EMP will address the following:

- Identify and summarize all anticipated significant adverse environmental impacts;
- Identify and summarize all mitigation measures, including the type of impact to which it relates and the conditions under which it is required;
- Define a set of policies and objectives for environmental performance and continual enhancement of performance;
- Recommend monitoring measures including the parameters to monitored, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions;
- Recommend monitoring and reporting procedures;
- Recommend capacity development and training requirements for implementation of EMP;

- Recommend organizational structure for effective implementation of the EMP; and
- Draw up an implementation and cost schedule for EMP.

Environmental Monitoring

An environmental monitoring and management plan will be developed for the sensitive elements of the environment that may require monitoring during construction and operations of the facility. Recommendations will be made on the institutional arrangements that will be necessary to ensure effective monitoring and management.

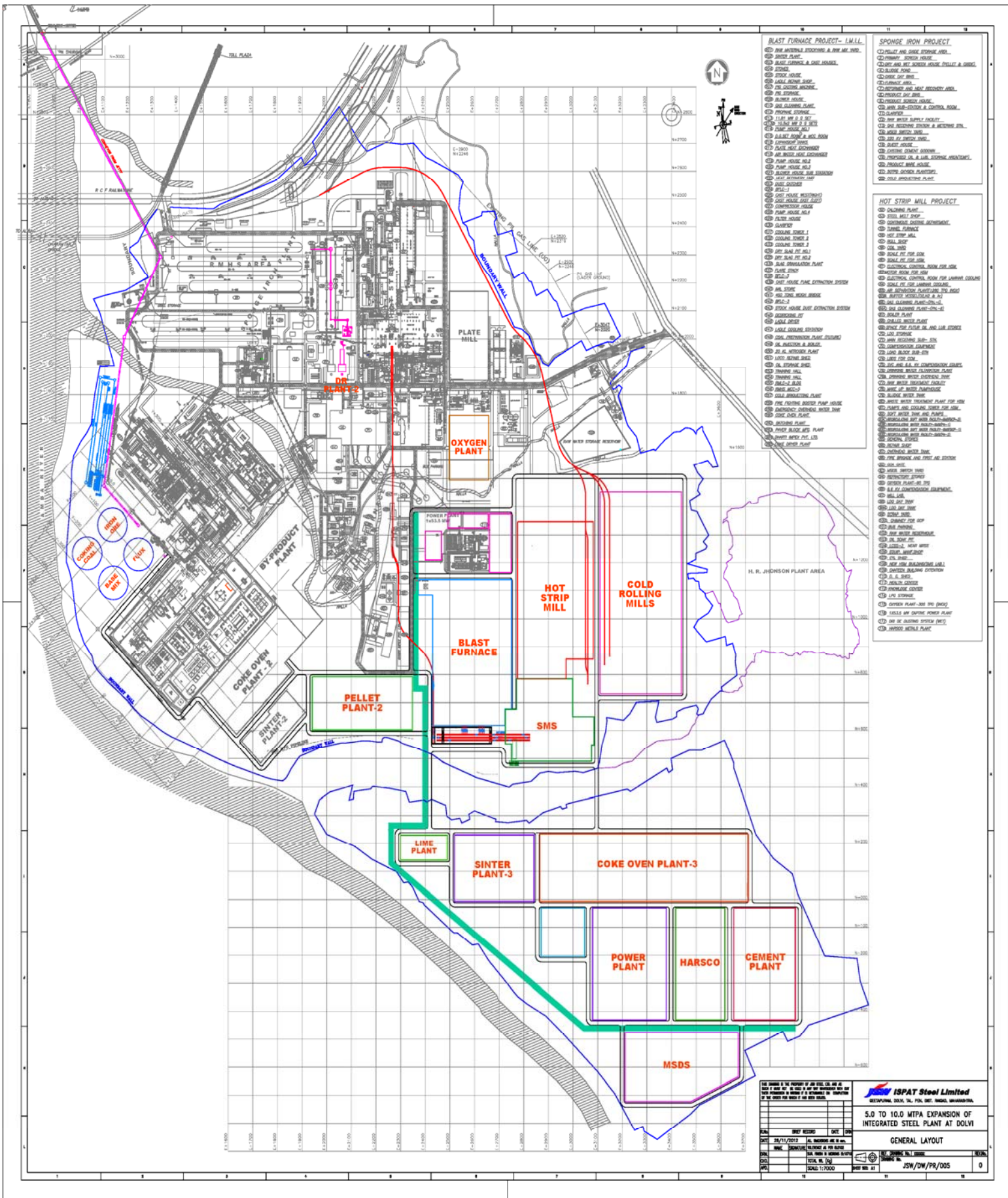
A detailed management and monitoring program will be developed to reduce the effects of potential negative environmental impacts.

Risk Assessment and Disaster Management Plan

Risk Assessment studies comprising sub-activities such as hazard identification, assessment and quantification of risk for suggesting risk mitigation measures based on Maximum Credible Accident (MCA) Analysis to be carried out for the proposed project. Preparation of the Risk Assessment Report will be followed by Disaster Management Plan (DMP) and Emergency Preparedness Plan (EPP) based on the quantitative Risk Assessment of the proposed activity and associated infrastructure for the project.

Occupational Health and Safety

We will review the existing system of safety management and occupational health surveillance system in the plant and recommend for further appropriate measures in view of the proposed expansion facilities.



- BLAST FURNACE PROJECT - I.M.I.L.**
- ① AIR INJECTION ROOMS & AIR INJ. SILEN.
 - ② BLOWER PLANT
 - ③ HOT STRIP MILL & HOT STRIP
 - ④ BLOWER
 - ⑤ BLOWER HOUSE
 - ⑥ BLOWER HOUSE SHIP
 - ⑦ BLOWER HOUSE
 - ⑧ BLOWER HOUSE SHIP
 - ⑨ BLOWER HOUSE SHIP
 - ⑩ BLOWER HOUSE SHIP
 - ⑪ BLOWER HOUSE SHIP
 - ⑫ BLOWER HOUSE SHIP
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- SPONGE IRON PROJECT**
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- HOT STRIP MILL PROJECT**
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ISPA Steel Limited

5.0 TO 10.0 MTPA EXPANSION OF INTEGRATED STEEL PLANT AT DOLVI

GENERAL LAYOUT

DATE: 28/11/2017 BY: [Signature] CHECKED: [Signature]

SCALE: 1:1000

PROJECT NO: JSW/DW/PPR/005

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