

**RAPID ENVIRONMENTAL IMPACT ASSESSMENT
FOR
THE PROPOSED 1,10,000 TPA STEEL MELTING PLANT
at Valavanthi East Village, Trichy District, Tamil Nadu**

EXECUTIVE SUMMARY

Sponsor by

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TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

1.0 BRIEF DESCRIPTION OF THE PROJECT

Trichy Sumathi Steel Rolling Mills Pvt Limited (TSSRM), a part of the Covai Mani Group (CMG) of companies are one of the south India's steel manufacturing group, is planning to establish a steel melting plant with capacity of 1,10,000 TPA at Valavanthi Village, Musiri Taluk, Trichy district, Tamil Nadu state.

In order to assess the environmental impacts due to the proposed project, Environmental Impact Assessment (EIA) report has been prepared. As per the latest Environmental Impact Assessment Notification dated 14th September 2006, the proposed steel melting plant project falls under '**Category B**' for which Environmental Clearance (EC) from Ministry of Environment and Forests (MoEF) is necessary. Inline with new EIA Notification, meeting was held in MoEF for determining Terms of Reference (TOR) on 24th January 2008 for the preparation of EIA/EMP report for the proposed steel melting plant. Based on TOR conditions given by MoEF vide their letter F. No. J-11011/874/2007-IA II (I) dated 27th February 2008 this EIA has been prepared. This draft EIA report is prepared covering all the conditions of TOR.

TSSRM proposes to set up the steel plant at Valavanthi Village, Musiri Taluk, Trichy district, Tamil Nadu state with an estimated capital cost of about Rs.34.00 Crores. The proposed induction furnace and concast facilities will have a total installed production capacity of around 0.11 MTPA, will be in the form of MS Billets.

1.1 Land Requirement

The proposed plant will be developed in an area of 5.258-ha. The land use break-up is given in **Table-1.0**.

TABLE-1.0
LAND USE BREAK-UP

Sr. No.	Plant Facilities	Area (ha)	Percentage (%)
1	Production facilities	0.693	13.2
2	Raw material storage	0.032	0.6
3	Transformer yard	0.130	2.5
4	Greenbelt development	1.840	35.0
5	Others including open area	1.963	37.3
	Total	5.258	100.00

The proposed plant site is fairly flat and consists of dry barren land. No forest land, wet lands present in the project site .

1.2 Power Requirement and Supply

The total power required for the proposed unit is 20 MVA. The power requirement will be met from Tamil Nadu State Electricity Board (TNEB). However, one diesel generator set having capacity of 500 KVA with acoustic enclosure has been envisaged to meet the emergency power requirements. In case of main's power failure the diesel generator will automatically start and supply power to the emergency loads using Cooling circuit.

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

The fuel required in the plant is High Speed Diesel (HSD). HSD is used as fuel in generators, which are operated in the case of TNEB power failure. The maximum fuel requirement of HSD is about 80.0 liters/hour. The total fuel requirement depends on TNEB power failure.

1.3 Water Requirement and Source

Water is required in the proposed plant for cooling of induction furnace. In addition, it is used for drinking and sanitation. The total water requirement of the plant is 24.0-m³/day. The water requirement details are presented in **Table-2.0**. The entire requirement of the water will be extracted from the existing bore wells located within the plant premises.

TABLE-2.0
WATER REQUIREMENT

Sr. No.	Category	Quantity (m ³ /Day)
1.	Cooling water (make-up)	20.0
2.	Domestic requirement	4.0
Total		24.0

1.4 Man Power Requirement

The total manpower requirement for the proposed project works out to be about 90 persons.

1.5 Raw Materials Requirement and Sources

The major raw materials required for the proposed steel melting plant are Imported Scrap, Domestic Scrap and Sponge Iron.

The raw material handling system is envisaged to deal with receipt, storage, process and supply of raw materials to the proposed Steel Melting plant.

The annual requirement of various raw materials and their sources is given in **Table-3.0**.

TABLE - 3.0
ANNUAL RAW MATERIALS REQUIREMENT

Sr. No.	Raw Material	Quantity (TPA)	Source
1	Imported Scrap	45000	Importing
2	Domestic Scrap	36500	Local market
3	Sponge Iron	45000	Local market

Source: Project Report, TSSRM

2.0 DESCRIPTION OF ENVIRONMENT

The proposed plant site forms plain with gentle slopes and elevation of about 100-m above MSL. Land identified for the proposed project is dry barren land. The current land use of the proposed plant is undeveloped dry barren land and no activities of agriculture. The site is generally a plain land with less undulation.

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

There are no wet lands existing in the plant site. The required land for steel melting plant is area of 5.258-ha . There are no major rivers passing through plant site. Due care has been taken while identifying the project site to avoid habitations, forest lands and vicinity of wild life sanctuaries, national parks and other sensitive areas.

The details of environmental setting of the site is given in **Table-4.0**. The vicinity map and the study area map covering 10-km radius of the proposed plant site is shown in **Figure-1.1**.

Table-4.0
ENVIRONMENTAL SETTING IN 10-KM RADIUS

Sr. No.	Particulars	Details
1	Latitude	11° 02' 10' North
2	Longitude	78° 29' 55' East
3	Elevation above MSL	100-m
4	Climatic conditions (Based on IMD, Trichy)	Annual Mean Max Temp: 38.0 °C (Summer) Annual Mean Min Temp: 20.7 °C (Winter) Annual Total Rainfall: 835.1 mm Predominant Wind Direction : SW and NE
5	Land use at the project site	Dry Barren Land
6	Nearest Highway	NH-67 connecting Coimbatore & Trichy - 13-km, SW
7	Nearest Railway station	Marudur R.S. -13.5 km , SW
8	Nearest Air Port	Trichy - 32.0 km, SE
	Nearby villages	Valavanthi East (1.0, SSW)
9	Nearest Town	Musiri -10.0 km, SW Trichy - 32.0 km, SE
10	Reserve Forest within 10-km radius	Mavilippatti R.F. - 3.2 km, WNW Viramachchmpatti R.F.- 6.0 km, North
11	Ecologically sensitive zones like Wild Life Sanctuaries, National Parks and biospheres	None within 10-km radius
12	Notified Archaeological monuments	None within 10-km radius
13	Water bodies	Iyyar River - 4.0 km, E Kaveri River - 11.0 km, S
14	Defence Installations	None within 10-km radius
15	Socio-economic factors	No resettlement and rehabilitation involved
16	Nearest Sea Port	Tuticurin - 200 km (Aerial) Cochin - 220 km Chennai - 250 km
17	List of Industries within 10-km radius	1. Krishna Rubber Pvt. Ltd., Jambunathapuram

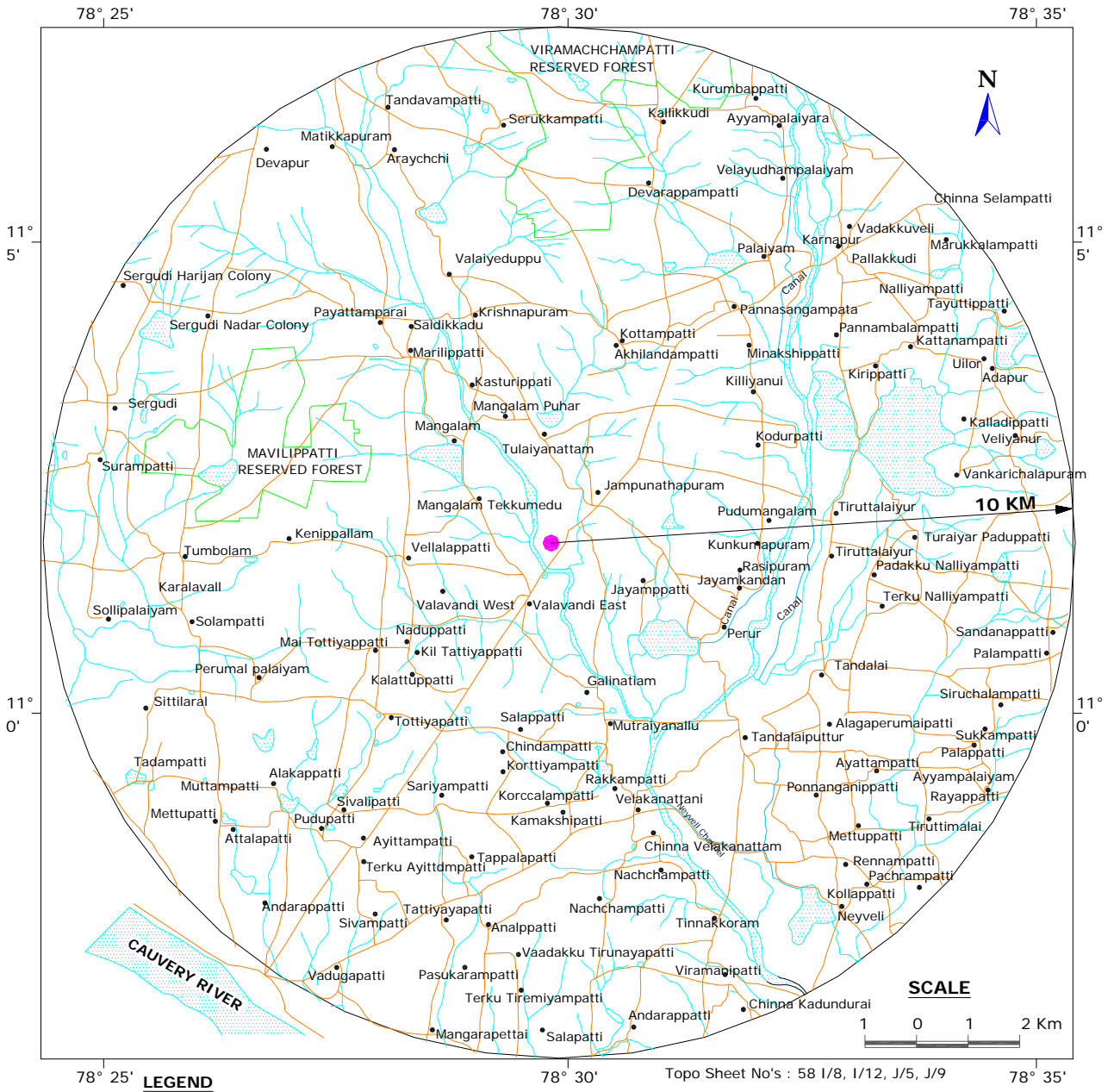


FIGURE-1
STUDY AREA MAP OF THE PROPOSED PROJECT - 10-KM RADIUS

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

2.1 Meteorology

The maximum and Minimum temperatures recorded during the study period are 36.5 °C and 18.1 °C respectively. The maximum and minimum relative humidity were observed to be 96.0% and 27% respectively during the study period. The predominant winds are mostly from ENE followed by NE direction. Predominant winds from NE direction were observed for 24.7 % of the total time and in ENE direction the winds were observed for 21.3% of the total time. The calm conditions were observed for 1.0 % of the total time.

2.2 Air Quality

Ambient Air Quality Monitoring (AAQM) stations were set up at eight locations. The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB), IS: 5184 and American Public Health Association (APHA).

The maximum and minimum concentrations for TSPM were recorded as 120.3 µg/m³ and 90.0 µg/m³ respectively. The maximum concentration was recorded near Perur Village and the minimum concentration was recorded at Janbunathapuram village. The average concentrations were ranged between 96.6 to 111.3 µg/m³. The maximum and minimum concentrations for RPM were recorded as 30.7 µg/m³ and 23.2 µg/m³ respectively. The maximum concentration was recorded Kamatchipatti Village and the minimum concentration was recorded at Valavandhi East village. The average values were observed to be in the range of 25.3 to 31.8 µg/m³. The maximum and minimum SO₂ concentrations were recorded as 10.0 µg/m³ and 4.6 µg/m³. The maximum concentration was recorded at Project site and the minimum concentration was recorded at Kamatchipatti village. The average values were observed to be in the range of 5.9 – 8.4 µg/m³. The maximum concentration of 15.8 µg/m³ for NO_x was recorded at Project site with minimum of 8.9 µg/m³ observed at Janbunathapuram Village. The average concentrations were ranged between 9.5 to 14.9 µg/m³. The maximum and minimum CO concentrations were recorded as 410 µg/m³ and 212- µg/m³. The average concentrations were ranged between 311 to 349 µg/m³. The PAH was observed to be <0.1 µg/m³ in the study are. The levels in all the stations are well within the standards specified by CPCB

2.3 Water Quality

Water samples were collected from sixteen sampling locations during the month of February/ 2008. Eight ground water and eight surface water samples were collected and were analyzed for various parameters to compare with the standards as per IS: 10500 and IS:2296 respectively.

Surface Water Quality

The analysis results indicate that the pH is found to be in the range of 6.5 to 7.8, which is well within the specified standard of 6.5 to 8.5. The TDS was observed to be in between 481 to 768 mg/l, which is below the permissible limit of 1500 mg/l. DO was observed to be in the range of 5.6 to 5.9 mg/l.

The chlorides and sulphates were found to be in the range of 128 to 199 mg/l and 22.5 to 72.0 mg/l respectively. It is observed that chlorides and sulphates are well within the permissible limits. It is evident from the above values that all the parameters are found to comply with the

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

requirements of IS: 2296 specification of surface water. The Heavy metal content is below detectable limits. The surface water quality does not indicate any industrial contamination.

Ground Water Quality

Most of the villages in the project area have hand pumps, as most of the residents of these villages make use of this water for drinking and other domestic uses. Therefore, six bore well samples have been considered for sampling.

The analysis results indicate that the pH ranges in between 7.4 to 8.2, which is well within the specified standard of 6.5 to 8.5. The maximum pH of 8.2 was observed at GW7 and the minimum pH of 7.4 was observed at GW3 & GW8. Total hardness was observed to be ranging from 170 to 360 mg/l. The maximum hardness (360 mg/l) was recorded at GW4 and the minimum (170 mg/l) was recorded at GW7.

Chlorides at all the locations were within the permissible limit, ranging in between 43.0 to 128.0 mg/l. Fluorides are ranging in between 0.4 to 1.3 mg/l and are found to be within the permissible limit. Nitrates were found to be in the range of 10 to 44.8 mg/l. Bacteriological studies reveal that no coli form bacteria are not present in the samples. The heavy metal content is below detectable limits. The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 512 to 886 mg/l.

The physico-chemical and biological analysis revealed that all the parameters are well within the prescribed limits of IS: 2296.

2.4 Soil Quality

Six locations within 10-km radius from the center of the proposed Project site were selected for soil sampling. At each location, soil samples were collected from three different depths viz. 30 cm, 60 cm and 90 cm below the surface and homogenized. The homogenized samples were analyzed for physical and chemical characteristics.

It has been observed that the texture of soil is mostly sandy loam and sandy clay loam in the study area. It has been observed that the pH of the soil in the study area ranged from 7.2 - 8.0. The maximum pH value of 8.0 was observed at Plant site (S1) and the minimum value of 7.2 was observed at Perur village (S4).

The electrical conductivity was observed to be in the range of 197 - 416 μ mhos/cm, with the maximum observed at Plant site (S1) with the minimum observed in Mangalam village (S6). The electric conductivity is favorable for the agricultural activities.

The nitrogen values range between 24 - 66 kg/ha. The maximum value (66) was observed at Thulayanatham Village (S2) and the minimum value of 24 was observed in Janbunathapuram Village (S3).

The phosphorus values range between 3.7- 8.0 kg/ha. The maximum value (8.0) was observed at Thulayanatham Village (S2) and the minimum value of 3.7 was observed in the Project site (S1). The potassium values range between 68 - 654 kg/ha.

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

2.5 Noise Levels

The noise monitoring has been conducted for determination of noise levels at **ten** locations in the study area. The daytime noise level at most of the locations were observed to be within the prescribed limit of 55 dB (A). The day time noise levels at all the residential locations were ranging in between 48.4 and 54.7 dB (A). The nighttime noise levels were ranged in between 42.5 and to 44.8 dB (A). The night time noise levels at all the locations were found to be within the prescribed limit.

2.6 Ecology

Flora and Fauna studies were conducted to assess the existing floristic composition and faunal components in and around project area. As per records of forest department, there is two reserved forests in 10-km radius of the study area, namely Viramachchmpatti R.F and Mavilippatti R.F. and no protected forests, village forest in 10-km radius. In the study area, maximum number of species are phanerophytes (45.06%) followed by therophytes (29.62%). These classes are followed by hemicryptophytes (12.96%) and hydrophytes (9.88%), Geophytes(1.86%) and Epiphytes were found in very few numbers.

Faunal studies, primary survey was conducted to assess the faunal components in selected villages and near ponds, lakes and in the vicinity commercial plantations. 42 species of fauna components recorded/reported from study area which are mainly belongs to mammals, birds, reptiles, amphibians and butterflies. out of observed faunal components only 2 species belongs to schedule-II and rest of the animals belongs to schedule-IV and V of Wildlife protection Act,1972. On the basis of records of forest department and also from literature survey pertaining to study area reveals that there are no protected areas and also no endangered, threatened plant and animal species present in 10-km radius.

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS & ENVIRONMENT MANAGEMENT PLAN

The anticipated environmental impacts and mitigation measures are presented in **Table-5**.

TABLE-5
ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES EMP

Discipline	Potential Negative Impacts	Probable Source	Mitigative Measures & EMP	Remarks
Constructional Impact				
Water Quality	Increase in suspended solids due to soil run-off during heavy precipitation	Loose soil at construction site	During monsoon season run off from construction site will be routed to a temporary sedimentation tank for settlement of suspended solids.	–
Air Quality	Increase in dust and NO _x concentration	Leveling activity and Heavy vehicular movement	Sprinkling of water in the construction area and unpaved roads. Proper maintenance of vehicles will be done.	The impact will be low, as the main approach road will be tarred.
Noise	Increase in noise level	Construction equipment	Equipment will be kept in good condition to keep the noise level within 90 dB(A).	Workers will be provided with necessary protective equipment e.g. ear plug, earmuffs.
Terrestrial Ecology	Clearing of Vegetation	Soil enabling activities	Landscaping and extensive plantation will be done.	Plantation will be done in consultation with the local forest department.
Operational Impact				
Water Quality	Deterioration of surface water quality	Discharge from various plant units.	Adequate treatment facilities will be provided so that the treated effluents conform to the regulatory standards.	The plant effluent after treatment will be reused to maximum possible extent.
Air Quality	Increase in SPM, SO ₂ and NO _x levels in ambient air.	Stack emissions.	High efficiency Bagfilter, Scrubber, Dust extraction system will be installed to control Particulates. Adequate stack height will be provided as per CPCB guidelines for the proper dispersion of pollutants. Motorable roads in the plant area will be paved to reduce dust emission. Plantation	The resultant air quality will conform to the stipulated standards. Particulate emission from stack will be kept below 150 mg/Nm ³ and

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

Discipline	Potential Negative Impacts	Probable Source	Mitigative Measures & EMP	Remarks
			programs will be undertaken around the plant area. Dust suppression measures will be implemented raw material handling area.	coke oven plant will be kept below 50 mg/Nm ³ .
Solid waste	SMS slag	From Steel Plant	The rejects would be dumped in a designated area.	Efforts will be made to utilize the solid waste to the extent possible.
Ecology				
a. Terrestrial	Impact on plant species	Emissions from stack	Emission will be controlled as well as dispersed through appropriate design.	As ambient air quality will be within limits, no active injury to the vegetation is expected.
Noise	Increase in noise levels in the plant area.	Equipment in main plant and auxiliaries.	Equipment will be designed to conform to noise levels prescribed by regulatory agencies. Provision of green belt and plantation would further help in attenuating noise.	Employees working in high noise areas would be provided earplugs/ earmuffs as protective device.
Demography and Socio-economics	Strain on existing amenities like housing, water sources and sanitation, medical and infrastructure facilities.	Influx of people of proposed steel plant employees as well as contractor's employees/ labourers.	No significant impact is envisaged. Additional facilities will be developed by the project proponents.	Overall socio-economic status of the area is expected to improve.

4.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental monitoring will be conducted on regular basis by TSSRM to assess the pollution level in the surrounding area. A comprehensive monitoring program is suggested in **Table-6**.

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

TABLE-6
MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequency	Method of Sampling	Important Monitoring Parameters
Air Pollution & Meteorology			
A Stack Monitoring			
4 Steel Melting Shop	Once in four weeks	ISO-Kinetic, manual procedure	SPM, CO
B Air Quality Monitoring			
1 Six locations in and around the plant	Twice in a week	24 hr continuously	SPM, RPM, SO ₂ , NO _x and CO
2 Work zone monitoring	Twice in a month	Low volume sampler	SPM, SO ₂
C Fugitive Emissions			
Raw material handling, product processing area and other areas specified by SPCB	Twice in a month	8-hour basis with High Volume Sampler	SPM
D Meteorology			
	Wind speed, direction, temperature, relative humidity, atmospheric pressure, rainfall etc shall be monitored at plant site		
Water and Wastewater Quality			
A Water Quality			
1 Ground Water	Once in a month	Grab	Parameters specified under IS:2296 (Class C) and IS:10500, 1986
B Domestic Wastewater			
1 Sanitary effluents from STP outlet	Once in a month	24 hr composite	As per EPA Rules, 1986
C Industrial Effluents			
C Steel Melting Shop	Once in a day	24 hr composite	pH, SS, O&G
Industrial Noise Levels			
1 Near administrative office	Once in 3 months	8 hr continuous with 1 hr interval	Noise levels in dB(A)
6 DG Shed	Once in 3 months	8 hr continuous with 1 hr interval	Noise levels in dB(A)
Ambient Noise Levels			
1 On the Plant Boundary at ten directions	Once in three months for the industry Once in each season for ambient noise levels	24 hr continuous with one hr interval	Noise levels in dB(A)

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

Particulars	Monitoring Frequency	Method of Sampling	Important Monitoring Parameters
Soil Quality			
In and around the plant at ten locations	Winter season	Grab	Physio-chemical parameters and metals covering Zn, Pb, Cd, As and Cu.

5.0 PROJECT BENEFITS

The proposed project of TSSRM will result in improvement of infrastructure as well upliftment of social structure in the area. The people residing in the nearby areas will be benefited directly and indirectly as well. It is anticipated that the proposed steel plant will provide benefits for the locals in two phases i.e., during construction phase as well as during operational phase of the steel plant.

5.1 **Employment**

The major benefit due to the proposed project will be in the sphere of generating temporary employment for substantial number of personnel. The construction phase of project is expected to span over 12 months. Approximately, an indirect employment for about 100 people will be created by the proposed project during the construction phase, which will last for over a year from the start of project execution activities at site. These construction workers will be taken from the study area to the extent possible. Hence, the proposed project will benefit locals to a great extent.

5.2 **Community Services**

TSSRM will employ local people to the extent possible. In addition, TSSRM will develop necessary infrastructure like water supply, sewerage, medical facility, etc. for catering to the needs of the project personnel and their families, which will be also beneficial to the locals residing in the area.

5.3 **Other Benefits**

As part of the Corporate Social Responsibility, TSSRM proposes to take steps in developing education, health, infrastructure development, women empowerment, sports and vocational training facilities. These will be taken up as part of social development of the neighbouring villages.

6.0 SOCIO-ECONOMIC DEVELOPMENT ACTIVITIES

has been brought out during the socio-economic survey (based on census data) that non-workers constitute about 45% of the total population in 10-km radius study area. Some of them will be available for employment in the proposed project during construction activities. As the labourers are generally un-skilled, the locals would get opportunities for employment during construction activities. The peak labour force required during the construction period is estimated to be about 100 per day and preference will be given to local laborers particularly unskilled labours. In addition to the opportunity of getting employment as construction

TSSRM	<i>Rapid Environmental Impact Assessment for the Proposed Steel Melting Plant at Valavanthi Village, Musiri Taluk, Trichy District, Tamil Nadu</i>
	<i>Executive Summary</i>

labourers, the local population would also have employment opportunities in related service activities like petty commercial establishments, small contracts/sub-contracts and supply of construction materials for buildings and ancillary infrastructures etc. Consequently, this will contribute to economic upliftment of the area.

Normally, the construction activity will benefit the local populace in a number of ways, which include the requirement of construction labourers skilled, semi-skilled and un-skilled, tertiary sector employment and provision of goods and services for daily needs including transport. In line with the above, some more recommendations are given below:

- Local people shall be given preference for employment;
- All the applicable guidelines under the relevant Acts and Rules related to labour welfare and safety shall be implemented during the construction work;
- The contractor shall be instructed to provide fire wood/kerosene/LPG to the workers to prevent damage to trees; and
- The construction site shall be secured with fencing and shall have guarded entry points.

7.0 CONCLUSIONS

The proposed project will have certain level of marginal impacts on the local environment. However, development of this project has certain beneficial impact/effects in terms of providing the employment opportunities that the same will create during the course of its setting up as well as during operational phase of the project.

Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed project will be beneficial to the society and will help reduce the demand – supply gap of steel and will contribute to the economic development of the region in particular and country in general.