

**RAPID ENVIROMENT IMPACT ASSESSEMNT  
REPORT AND  
ENVIROMENT MANAGEMENT PLAN**

**For**

**INDIA STEELS**  
**Village Palohri , Tehsil- Ponta Sahib,**  
**Dist. Sirmour**  
**Himachal Pradesh.**

**Prepared by :**

**C P T L ENVIROTECH**

**Pollution Control Consultants**

**H.O. # 2093, Sector - 15C, Chandigarh. 160015.**

**Works : E-126 Phase-VII, Industrial Area, Mohali.-160055.**

**Phone : 0172-4668664,4669295, 2781307**

**Fax : 0172-4669295.**

## **INDEX**

<b>Chp. Description</b>	<b>Page No.</b>
<b>PROJECT AT A GLANCE</b>	
<b>INTRODUCTION</b>	<b>1</b>
<b>SCOPE</b>	<b>3</b>
<b>PROFILE OF THE COMPANY' &amp; PROMOTERS</b>	<b>4</b>
<b>MARKET SCENARIO</b>	<b>5</b>
<b>BASELINE ENVIRONMENTAL SETTING</b>	<b>6</b>
5.1 State	6
5.2 Sirmaur District	7
5.3 Project Site	8
5.4 Climate	12
5.5 Temperature	12
5.6 Rainfall	14
5.7 Humidity	15
5.8 Cloudiness	17
5.9 Winds	17
5.10 Human Settlement	19
5.11 Places of Tourist Interest	19
5.12 Industrial Units	19
5.13 Water Supply	19
5.14 Soil	19
5.15 Drainage	20
5.16 Land Use	20
5.17 Forest	20
5.18 Flora & Fauna	20
5.19 Demography & Socio-economics	21
<b>6. PROJECT DESCRIPTION</b>	<b>23</b>
6.1 General	23
6.2 Raw Material	23
6.3 Finished Products	23
6.4 Installed Capacity	23

6.5	Process	24
6.6	Facilities at plant	24
6.7	Machinery	25
6.8	Power	25
6.9	Water Supply	25
6.10	Man Power	25
6.11	Waste Handling	26
6.12	Pollution Control Measures	28
<b>7.</b>	<b>ENVIRONMENT IMPACT ASSESSMENT</b>	<b>33</b>
7.1	General	33
7.2	Population	35
7.3	Workers	35
7.4	Present Environment	36
7.5	Impact Assessment	52
<b>8.</b>	<b>ENVIRONMENT MANAGEMENT PLAN</b>	<b>57</b>
8.1	General	57
8.2	Air Pollution	57
8.3	Water Pollution	57
8.4	Noise Pollution	58
8.5	Hazardous Material	58
8.6	Waste Management	58
<b>9.</b>	<b>ENVIRONMENT MONITORING PLAN</b>	<b>59</b>
<b>10.</b>	<b>RAIN WATER HARVESTING</b>	<b>61</b>
<b>11.</b>	<b>EXPENDITURE ON ENVIRONMENTAL MEASURES</b>	<b>67</b>
<b>12.</b>	<b>FIRE FIGHTING</b>	<b>68</b>
<b>13.</b>	<b>SAFETY &amp; POLLUTION CONTROL STANDARDS</b>	<b>74</b>

## **List of Figures:**

5.1	Key Plan	10
5.2	Location / Layout Plan	11
5.3	Wind-rose Diagram	18
6.1	Water Balance	27
6.2	Flow chart of APCS	30
7.1	Layout Ambient air monitoring stations	38
7.2	Ground/ Surface water monitoring stations	43
7.3	Soil monitoring stations	47
7.4	Noise monitoring stations	51

## **List of Tables:**

5.1	Plant site & Location	9
5.2	Average temperature	13
5.3	Average rainfall	14
5.4	Average Relative Humidity	16
5.5	Demographic Statistics	22
7.1	Study Area	33-34
7.3	Occupational Structure	35
7.4	Ambient Air Monitoring Stations	37
7.5	Ambient Air Monitoring Results	39-40
7.6	Water Monitoring Stations	42
7.7	Water Monitoring Results	44-45
7.8	Land use pattern	46
7.9	Soil Monitoring Stations	48
7.10	Soil Monitoring Results	49
7.11	Noise Monitoring Stations/Results	52

## **Annexure**

I	STP Details	80
II	Single Window Clearance	87
III	Essentiality Certificate	89
IV	Demand Notice for Power	90
V	Resolution of Panchayat	93
VI	Registration of Land	94
VII	Copy of Jamabandi	105

## PROJECT AT A GLANCE

Name of Company	:	India Steels.
Name of Project	:	Steel Manufacturing and Rolling
Location	:	Vill. Palohri, Tehsil Paonta Sahib, District Sirmaur (HP)
Product	:	Stainless Steel, Mild Steel, Flats, Rounds and Bars
Capacity of unit	:	2,16,000 TPA
Cost of the Project	:	Rs. 63.26 Crore.
Total Land	:	21075 sq mt.
Source of Water Supply	:	Own Tube-well
Power	:	20 MW
Source of power	:	From HPSEB
Water Consumption	:	550 KLD
Waste Water generation	:	16 m <sup>3</sup> /day
Waste Water treatment	:	STP (To be used on land for plantation & landscaping within the premises.)
Alternate source of power	:	D.G. Set (1000 KVA)
Air Pollution Control	:	Bag Filters, Cyclones & Chimney
Hazardous Materials	:	Used oil from DG Set
Solid Waste	:	STP sludge & Slag

# **EXECUTIVE SUMMARY**

**FOR**

**M/S INDIA STEELS**

Village Palohri, Tehsil-Ponta Sahib,  
Distt. Sirmour  
Himachal Pradesh.

**Prepared by :**

**C P T L ENVIROTEC**

*(S.No. 219 of Ministry of Environment & Forest List)*

**POLLUTION CONTROL CONSULTANTS**

H.O. # 2093, Sector - 15C, Chandigarh. 160015.

Works : E-126 Phase-VII, Industrial Area, Mohali.-160055.

Phone : 0172-4668664,4669295, 2781307, Fax : 0172-4669295

## PROJECT AT A GLANCE

Name of Project	:	INDIA STEELS
Location	:	Vill. Palohri, Tehsil Ponta Sahib, District Sirmour (Himachal Pradesh)
Product	:	Stainless Steel, Mild Steel, Flats, Rounds and Bars.
Capacity	:	2,16,000 TPA
Type of Project	:	Scrap melting by Induction Furnace & moulding plus Rolling Ingots into bars.
Cost of the Project	:	Rs. 63.26 Cr.
Total Land	:	21075 Sqm.
Power Requirement	:	20 MW
Source of power	:	HPSEB
Source of Water Supply	:	Own Tube-well
Quantity of Water	:	550 m <sup>3</sup> /day
Effluent Quantity	:	Domestic Waste = 16.0 m <sup>3</sup> /day
Effluent treatment	:	Domestic- Treated through STP and used on land for plantation & land scaping within the premises.
Alternate source of power	:	DG Set (1000 KVA)
Air Pollution Control	:	Bag Filters, Cyclones, Chimney
Solid Waste	:	Slag from furnace & STP Sludge
Hazardous waste	:	Solid from APCD & Used Oil from DG Set.

# **EXECUTIVE SUMMARY**

## **1 INTRODUCTION**

- 1.1. Human environment can be defined as the interaction of the surrounding in which he lives. Thus, the air he breathes the water he drinks, the temperature in which he survives and in fact all other items which have a direct bearing on human existence can be classified as environment. Usually the most important and universally accepted components of this complex system are the land, which gives him food, the water bodies which satisfy his thirst and the atmosphere which provides him air to breathe. Any imbalance in any of these has a direct detrimental effect on the physical and mental health of man.
- 1.2. Environmental awareness is thus growing day by day and the development actions viz-a-viz their consequences are getting due attention at all levels. Department of Environment and Forest G.O.I. & State Pollution Control Boards have already taken stringent actions to protect the bio-diversity of the Country and have enacted various laws towards that end.
- 1.3. M/s India Steels propose to manufacture Stainless Steel, Mild Steel, Steel Bars and Flats for which they want to set up a new unit in Village Palohri, Teh. Paonta Sahib, Distt. Sirmour, Himachal Pradesh. They have to submit Form No. I along with Rapid Environment Impact Assessment Report and other relevant documents for getting Environmental Clearance. Further, since the project site falls within the “10 km state boundary Haryana” as notified by the Central Pollution Control Board, the project is to be treated as Category ‘A’ and thus the environmental clearance will be given by the Central Govt. MOEF. Earlier REIA report was, prepared to assess the likely impact of the proposed unit on various factors which may be affected with

the implementation of the programme and to suggest remedial / precautionary measures, if any, which has been submitted separately. The proposal was considered by the MOEF in their 8<sup>th</sup> Expert Appraisal Committee (Industry –I) meeting held on 3<sup>rd</sup> March 2010 when TOR were issued by their for the presentation of Final EIA. One of the conditions of TOR is that Public hearing should be done and result of the same will be incorporated in the Final EIA Report. Accordingly this Executive Summary of the REIA has been prepared for information of public and concerned officers.

## **2 BRIEF SYNOPSIS**

### **2.1 General**

It is a Steel Manufacturing Unit located in Village Palohri, Tehsil Paonta Sahib, Distt. Sirmour, Himachal Pradesh. The total area of the plot is about 21075 sqm. The capacity of the unit will be 2, 16,000 MTA Steel Ingot & Structural Steel.

### **2.2. Climate**

The Meteorology of the area of the Project is well known. The Sirmour District falls under climatic type-Cwa: Sub tropical monsoon, Mild winter, Dry winter, Hot summer. The general trends of various meteorological data like Rainfall, Temperature, Humidity, Wind have been established from the secondary data from IMD meteorological observatory in Ambala located at Latitude 30° 21' and Longitude 76° 52' and 300 m approximate above mean sea level which is the nearest station. There is no other I.M.D station near the site.

### **2.3 Rainfall**

The rainfall in the Zone is caused by the South-West monsoon. It starts in the month of July and extends upto the end of Sept. During this period the monsoon rain-fall contributes about 80 to 90% of the total annual rainfall. The average annual rain fall is in the range of 900 to 1000 mm. The annual number of rainy days on a average are about 44 in a year, out of which about 27 fall in the monsoon period of July to September.

### **2.4 Humidity**

In summer months of April, May and June, which is the driest part of the year, the afternoon humidity comes down to 21% while the relative humidity during monsoon months goes upto about 82%.

## **2.5 Cloudiness**

During monsoon season skies are over cast with moderate to heavy clouds. During rest of the year, the sky is mostly clear. It is lightly clouded occasionally during winter season.

## **2.6 Winds**

The predominant wind direction in the area is mostly West and North-West. During January to May the winds are quite strong while July to October are calm months. During the remaining period winds are light.

## **2.7 Human Settlements**

The unit is situated on the road from Yamunanagar to Paonta Sahib. The nearest major city is Yamunanagar which is at a distance of about 45 kms from the site of the unit, Other towns are Paonta Sahib at a distance of about 25 Kms, Kala Amb at a distance of about 60 kms.

## **2.8 Places of Tourist Interest**

There are no major places of tourist interest near the plant. The nearest one is Historic Gurudwara at Paonta Sahib at a distance of about 25 Kms from the site. The Ranuka lake is about 60 km from site.

## **2.9 Soil**

Soil is generally sandy loam almost all over the District and Soil depth is generally shallow except in areas having good vegetative cover. It is generally dry, shallow and deficient in organic matters. The study area comprises mostly of alluvial deposits of Quaternary age. The geological formations in the study area comprise of Sandstone largely micaceous and form major features. The top zone of this stage consists of maroon clays and buff clays alternating one by one.

## **2.10 Drainage**

Yamuna River flows from NE to South and seasonal Boli Nadi from NW to South. The area near the project has a fairly good slope towards seasonal Boli Nadi and is well drained. There is no stagnation of rain water. The entire rain water flows to river Yamuna through the local drainage system which is close by.

## **2.11 Land Use**

Land use pattern of the District was studied. The vacant lands around the unit are mixture of barren and agricultural lands, where extensive flow irrigation facility does not exist. Wheat and Maize are the main crops in the area. About 60% of land in this District is under forest and the remaining 40% is used for Agriculture, Industries, road & residential purposes etc.

## **2.12 Forest**

There are a number of Reserved Forests near the site of the project. The forest cover on the South of the road from Yamunanagar to Paonta Sahib is quite thick, which is very close to the site and extends upto River Yamuna. The other forest areas lie on North East side of the project at a distance of 2-4 Km. The company also proposes to plant about 2000 trees and shrubs within the project area.

### **3 PROJECT DESCRIPTION**

#### **3.1 Finished Product**

Manufacture of Stainless Steel, Mild Steel, rolled bars, flats and structural steel.

#### **3.2 Installed Capacity**

The proposed installed capacity of the plant for the product is as per details given below:

Stainless Steel, Mild Steel Bars, Flats & Structural steel =2,16,000 MTA

The unit after commissioning is expected to operate for an effective period of 300 days in a year on three shifts per day basis.

#### **3.3 Raw Materials**

The main raw materials used in the manufacturing process are as under:

<b>SS/ MS Scrap</b>	<b>:-</b>	Will be sourced from local market/ Punjab.
<b>Sponge Iron</b>	<b>:-</b>	Will be from local markets
<b>Ferro Alloys</b>	<b>:-</b>	Local market.
<b>Ferro Silicon</b>	<b>:-</b>	Local market / Punjab/ Haryana.
<b>Aluminium</b>	<b>:-</b>	Local market/Punjab/ Haryana.

For Rolling Mill the raw materials are steel ingots which will be produced in the unit itself.

### **3.4 Manufacturing Process**

#### **Steel Ingots & Billets:**

M/S Scrap is put into the Electric furnace pot through magnetic conveying system, where it is heated to 1800 °C. Scrap is melted and is heated for about 100 mints. In the molten steel some Ferro alloys are added according to the carbon content in the scrap. The molten steel is then put in moulds with the help of hydraulic crucible where, after cooling, the product is taken out from the moulds and the same is ready for dispatch. In order to keep the temperature of the furnace within the desired limits, water is circulated around the furnace coils and make-up water is added daily.

#### **TMT Bars and other Structural Steel Section:**

These are produced by heating the Ingots and billets received from the manufacturing process to about 1150 – 1200°C so that they can be converted into the desired sections through rolling. They are then cooled and cut into proper sizes for dispatch.

### **3.5 Facilities at the Plant**

The firm has already acquired 21075 sqm of land where factory building, boundary wall and some other ancillary structures are proposed to be constructed.. It provides adequate space for the following areas of working:-

1. Storage for raw material and finished goods.
2. Plant and Machinery
3. Storage and handling of slag
4. Offices
5. Toilets
6. Water storage tanks
7. STP
8. DG Set room

Open space will be landscaped and trees will be planted in due course of time.

### **3.6 Machinery**

Following machinery will be finally in position within the unit:

- i) Scrap Handling System
- ii) Scrap and Alloys Feeding System to Furnaces
- iii) Induction Furnace (12 TPH x 4 No.)
- iv) Slag Processing and Metal Recovery Plant
- v) Reheating Furnace for Rolling Mill
- vi) 14" Rolling Mill
- vii) 10" Rolling Mill
- viii) APCD
- ix) Sewage Treatment Plant
- x) Cooling Tower
- xi) Overhead Cranes
- xvi) Weigh bridge

### **3.7 Power**

The unit requires about 20 MW of power & same will be supplied by HPSEB.

### **3.8 Water Supply**

A Tube well is proposed to be installed in the premises of the unit. The daily requirement of water is about 550 m<sup>3</sup> per day and will be met from this source. The capacity of storage tank is about 250 m<sup>3</sup>. Another tank of about 100 m<sup>3</sup> will also be provided for fire fighting which shall be kept always full.

### **3.9 Manpower**

Unit works on three shifts basis i.e.

- 1<sup>st</sup> shift - 6.0 AM to 2.0 PM
- 2<sup>nd</sup> shift - 2.0 PM to 10.0 PM
- 3<sup>rd</sup> Shift - 10.0 PM to 6.0 AM

The total requirement of workers is about 435 persons.

### **3.10 Waste Handling**

#### **i) Liquid waste**

There will be no use & discharge of water in the manufacturing process. Some waste water from the toilets in the offices is expected which will be treated through STP and the treated effluent will be used within the premises for landscaping and irrigation. However, during rainy season this surplus treated water will be passed on to the nearest drain. Similarly, water coming out from cooling system will be reused and only make up water shall be added.

#### **ii) Solid waste**

Solid wastes in the unit are from the following sources.

- i) Slag from the furnace
- ii) Sludge from STP
- iii) Solids from bag filters & Cyclones
- iv) Packing material such as gunny bags, cardboard etc.

Solids shown at serial no. i & iii contain traces of metals in addition to dust etc. as such these will be collected separately and disposed off at TSDF site. STP sludge will be used within the premises as manure for plantation.

## **4 ENVIRONMENTAL IMPACT ASSESMENT**

### **4.1 Present Environment**

Various Environmental factors as existing in the study area which are liable to be affected by the activities have been assessed both quantitatively and qualitatively. Following are the factors which could be sensitive to the plant activities.

- (I) Ambient Air
- (II) Noise
- (III) Land Use Pattern
- (IV) Soil and Agricultural
- (V) Demography and Socio-economic pattern

### **4.2 Ambient Air Quality**

To quantify impact of the project on the Ambient Air quality it is necessary to measure the background level of Air Pollutants which are existing in the surrounding areas of the Unit. On this, the value effect due to the unit is to be added to obtain the future predicted quality levels. The background air quality of  $PM_{2.5}$ ,  $PM_{10}$ ,  $SO_z$  and  $NO_x$  have been determined quantitatively by conducting field monitoring. Sites of the monitoring stations were kept keeping in view the dominant wind direction. They were spread in an area of 10KM round the site. Effect of the expected pollutants coming out of the unit have been studied through a Mathematical model and it has been found that the max G.L.C. will be within the prescribed limits in the windward direction. The effect at other places will be comparatively less. The combined ultimate result is likely to be well within the norms.

### **4.3 Ambient Air Environment:**

There is only one source of likely pollution which is SPM emission from the furnace, there are four Induction furnaces which will be of 12.0 TPH

capacity each. All the processes are closed circuits as such emissions to the open atmosphere will be minimum. However, APCD, cyclones, dust dosing and Bag filters will be provided at the exit point to arrest particulate matter. Whatever solid waste goes out the furnace will be collected & disposed off at designated site.

#### **4.5 Water Quality**

Study of water environment is essential to know what is contained within the existing natural environment & how it can be expected to respond to the activities of the unit. Water resources in the study area may be classified in two categories.

- i) Ground Water
- ii) Surface Water

The principal source of water for both these categories is the precipitation. Rainfall thus is the single most import factor controlling the water availability in the area, the annual rainfall in the area is about 900 to 1000 mm and the major precipitation is in the months of July to September (Monsoon Season) and nominal in summer months of March to May.

#### **4.6 Water Environment:**

The domestic use of water will generate about 16.0 KLD of effluent, which will be treated through S.T.P. Treated water will be used partly for plantation for which species consuming large amount of water will be planted and partly for moulds. Thus water environment is not likely to be affected. Further, ground water will be balanced through recharge by rain

water harvesting from the roof top to the extent of about  $m^3/y$  through recharge wells. Thus pressure on underground water will be reduced.

There are small seasonal streams in the study area, which remain dry during the whole year except rainy season. Company proposes to draw water from the underground source through a tube well which is proposed to be installed in the premises of the unit.. For assessing the quality of water in the study area samples of water (ground & surface) were collected and the results of water samples have been given in the detailed Rapid EIA Report.

#### **4.7 Waste Water**

The process does not involve use of any water. But only waste water expected is from Domestic use. Domestic waste from the toilets is treated in STP and then used for raising crops and plantation within the factory premises.

#### **4.8 Noise Environment**

Noise is defined as unwanted sound, which interferes with speech & communication, causes annoyance, distracts from work and disturbs sleep and thus adversely affects quality of human environment. Noise levels in the area have been assessed and given in the main Rapid EIA Report. There will be no noise producing machinery or equipment except ID fans & Blower etc. which will be placed in acoustically sound proof room causing least disturbance in the area. There is no likelihood of any significant change in noise environment.

## 4.9 Land Use Pattern

Land use pattern means how the land is being used for various purposes. It highlights the environmental quality of a particular area. It is an important indicator of environmental health, intensity of human activity and degree of interaction between the two. Land use pattern is significantly influenced by the nature of soil, water availability and climatic conditions of the area. Data on land use pattern of Sirmour District have been collected to present baseline status of the study area which falls in this District and is given below.

### LAND USE PATTERN

Total Area	-	2,82,500 Ha
Cultivated Area	-	74,700 Ha (26.4%)
Forest area	-	1,74,820 Ha (62%)
Non agriculture use	-	72,980 Ha (11.6%)

## 4.10 Transport and communications

The project is located in a village area and is connected with the nearest towns of Paonta Sahib, Yamuna nagar & Kala Amb through metalled roads. There is frequent Bus service and approach to site is easy. Telephone is provided at site and Post Office is also available in Palohri at a distance of about 4.0 km.

## 4.11 Educational Facility

Educational facility in Paonta Sahib, the nearest towns, is good. There are Schools in the city. Primary Schools exist in the nearby villages.

#### **4.12 Hazardous Materials**

No hazardous materials are used in the process nor the finished goods fall in this category. There is no impact on the environment on this score.

#### **4.13 Waste Disposal**

No liquid or solid waste will be disposed off outside the factory. Toilet wastes will be used for raising plantation within the factory premises after treatment. There will be no effect of waste disposal on the environment in general. However, used CFL tubes and waste from Filter Bags which are hazardous will be disposed off at designated TSDF Site.

## **5 ENVIRONMENT MANAGEMENT PLAN**

### **5.1 General**

Environment Management Plan (E.M.P) in a project is prepared to mitigate the possible adverse effect of various activities on the existing environmental factors, during construction as well as in operational stages, to avoid their deterioration, if any. It is desirable that necessary steps are taken right from the beginning of the project to be more effective. As a social and moral obligation on the part of every body it becomes our bounden duty to leave our environment to the next generation in a state at least what we inherited from our ancestors, if not in a better condition. E.M.P. for this project has been prepared keeping in view the existing conditions and likely changes which may occur due to the proposed project. The implementation and monitoring of different control measures have also been covered. These are discussed as under:-

### **5.2 Air Environment**

During construction stage water will be sprinkled on the soil to avoid dust generation, if any. The debris and unused construction malba shall be removed immediately for recycling, if any, or for land fill. Bag filters shall be provided to arrest SPM from flue gases to keep it within permissible limits. All vehicles for service activities at the project site shall be checked for vehicular emission. The agencies will be asked to keep them within prescribed limits. They will also be asked to maintain them properly. Before the project comes under operation, a chimney of 30 mt. height shall be provided to discharge the clean gases to atmosphere. Extensive tree plantation shall be resorted to for further improving the air environment in general and minimize noise levels, if any.

### **5.3 Water Environment:**

Water shall be drawn from a tubewell installed in the factory area and distributed through an Over Head Service Reservoir. This will be a closed system. During construction toilet facilities shall be provided to labour with septic tank. Finally, waste water from the toilets shall be taken to S.T.P. through underground delivery system and treated to tertiary level. Treated water will be completely used within the premises for tree plantation, landscaping, parks & moulds etc. It will not be thrown outside either on land or in any water body. However, during rainy days the treated water may go to the nearest drain where it will get diluted further and will go to river through the natural drainage system of the area. Roof top rain water shall be harvested and used for ground water recharge to minimize effect of withdrawal of water from the underground.

### **5.4 Land Environment:**

To avoid erosion of the top soil the development is planned in the shortest possible time and land-clearing activity shall be kept to the absolute minimum by working at the specific sites one by one where construction is to take place so as to increase detention and infiltration. The construction activity is within the shed area. Natural waterways/drainage pattern shall be maintained by providing culverts where needed. The requirements of sand and aggregates for the construction works will be met through vendors. The land use is thus so planned that there is minimum adverse impact.

### **5.5 Solid Waste**

The solid waste generated from the construction activities shall be effectively recycled within the project. The other solid wastes from the bag

Filters shall be dumped in an dumping pit of R.C.C. construction and disposed off in the designated places. Slag from the furnace received from the manufacturing process shall be disposed off at land fill sites after removal of metal portion through magnetic removal. Solid waste from STP shall be used as manure within the premises.

## **5.6 Noise Environment**

During Construction stage “NO HORN” signs will be displayed at prominent places. The drivers shall be directed not to blow horn unnecessarily. Vehicle owners will be asked to maintain them in proper condition. During operational stage noise creating machinery such as Blower, ID Fans etc will be housed in acoustically sound proof room so as not to disturb the noise level in the area.

## **5.7 Green Belt:**

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. The green belt helps to capture the fugitive emission and to attenuate the noise generated, apart from improving the aesthetics. Development of green belt and other forms of greenery shall also prevent soil erosion and washing away of topsoil besides helping in stabilizing the functional ecosystem and further, to make the climate more conducive and to restore water balance. It is planned that the selected plants will be grown as per normal horticultural (or forestry) practice and authorities responsible for plantation will also make sure that adequate provision for watering and protection of the saplings exists at site. Species of trees shall be selected in consultation with the forest Department officers. A 3.0 meter wide green belt has been planned along the boundary wall of the unit. In addition trees will be planted along the internal roads. Land scapping of the open area shall also be done. Adequate number of trees & shrubs are proposed to be planted within the unit premises.

## **6 ENVIRONMENT MONITORING PLAN**

Regular monitoring of all significant environmental parameters is essential to check the compliance status vis-à-vis the environmental laws and regulation. The frequency of the monitoring will be as follows:

- The ambient Air quality shall be monitored at project site and two upward and downstream locations once every quarter for PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>x</sub> & SO<sub>2</sub>, and CO levels during the Construction Phase and Operational Phase.
- The Ambient Noise Levels shall also be monitored once every six months.

### **Environment Management Cell:**

An Environment Management Cell shall be created to effectively monitor all parameters. The Environment Management Cell shall include:

- Representative of Management (Head of Environment Cell)
- Process Incharge
- Incharge Maintenance Department
- A representative of Environmental Consultants

## 7 EXPENDITURE ON ENVIRONMENTAL MEASURES

<b>S.No</b>	<b>Title</b>	<b>Capital Cost Rs. Lacs</b>	<b>Recurring Cost Rs. Lacs (Annum)</b>
1	Air Pollution Control	40.0	5.0
2.	Water Pollution Control/ sewage Treatment Plant	10.0	1.0
3.	Noise Pollution Control (Including cost of Landscaping, Green Belt)	5.0	1.0
4.	Solid Waste Management	1.0	---
5.	Environment Monitoring and Management (Including Establishment of Laboratory)	2.0	0.5
6.	RWH	3.0	--
7.	Miscellaneous (Appointment of Consultants, Management of Environment Cell, Consent fees and monitoring)	3.0	1.0
	<b>Total</b>	<b>64.0</b>	<b>8.5</b>

## 8 RAIN WATER HARVESTING

### Recharge Potential

To compensate the withdrawal of underground water to some extent. Rain Water harvesting has been provided. The recharge is proposed to be done from the roof top of the building only. The recharge potential thus available is as below:-

$$\text{Area of the catchment (Roof Top)} \quad A \quad = \quad 10337 \text{ m}^2$$

$$\text{Average annual rainfall} \quad R \quad = \quad 1.0 \text{ m.}$$

$$\text{Runoff coefficient} \quad C \quad = \quad 0.8$$

About 80% of rainfall that falls on the roof (Roofs with tiles) is available for use.

$$\begin{aligned} \text{Annual Roof Top Rain Water Harvesting Potential} &= A \times R \times C \\ &= 8270 \text{ m}^3 \end{aligned}$$

## 1.0 INTRODUCTION

- 1.1 Human environment can be defined as the interaction of the surroundings in which he lives. Thus, the air he breathes the water he drinks, the temperature in which he survives and in fact all other items which have a direct bearing on human existence can be classified as environment. Usually the most important and universally accepted components of this complex system are the land, which gives him food, the water bodies which satisfy his thirst & the atmosphere which provides him air to breath. Any imbalance in any of these has a direct detrimental effect on the physical and mental health of man.
  
- 1.2 Today one hears of contamination of the atmosphere due to nuclear mishaps, pollution of land due to nuclear fallout and fouling natural waters by indiscriminate waste discharge by industries. The rapid deterioration of environment has not only jolted the developed and developing countries in action, but sounded a clear warning bell for the underdeveloped countries as well. The message is dear - **"Either preserve the environment and prosper or pollute it and perish"**.
  
- 1.3 Environmental movement in India in its present form has its genesis in the United Nations Conference on Human Environment held at Stockholm, in June 1972. Mrs. Indira Gandhi, the then Prime Minister of India made a mark in the conference with her off quoted remark "Poverty is the worst Polluter". The conference, marked a water-shed in India's efforts in Protection of the Environment, Forests & Wildlife. Legislations were enacted for protection of the bio-diversity of the country.
  
- 1.4 Earlier the assessment of the Projects was done on technical feasibility reports and Cost-Benefit-Ratio which mainly considered financial & technical resources. But no consideration was given to the Environmental protection in this evaluation and these flaws became apparent with continuous deterioration of Environment. Thus

in order to have a more realistic evaluation and keeping in view the deteriorating conditions, another dimension was added which is now called as "Environmental Impact Assessment" (E.I.A). This forms an integral part of the Project and is taken into account while appraising the Project at different stages. Thus in the new comprehensive approach all considerations like, Technical, Financial & Environmental are given due weight age.

- 1.5 M/S India Steels., propose to put up a Steel manufacturing Unit in Village Palohri, Tehsil, Paonta Sahib, District Sirmour (H.P). They propose to manufacture Steel Ingots from scrap and then roll them into structural steel sections. For this purpose they will install Induction furnaces & Steel Rolling Mill. The Installed capacity of the unit will be 2,16,000 MTA. Accordingly they have to get Environmental Clearance as per G.O.I Notification No. 1533 dated 14-09-2006. This report has, therefore, been prepared to assess the likely impact of the proposed project on various factors which may be affected with the implementation of the program and to suggest remedial/ precautionary measures, if any.
- 1.6 Since the unit lies within 2 kms of the State boundary with State of Haryana it falls in **Category "A"** and the Environmental Clearance is to be given by **Environment Impact Assessment Authority**, Govt. of India, New Delhi. In view of this reference has been made to them. The proposal was considered by the MOEF in their 8<sup>th</sup> Expert Appraisal Committee (Industry –I) meeting held on 3<sup>rd</sup> March 2010 when TOR were issued by their for the presentation of Final EIA. One of the conditions of TOR is that Public hearing should be done and result of the same will be incorporated in the Final EIA Report. Accordingly this Executive Summary of the REIA has been prepared for information of public and concerned officers.

## **2.0 SCOPE**

This study contains various information on the Environmental factors viz-a-viz contribution of pollution by the proposed unit. These factors include air, water, noise, health and welfare facilities, land use and agricultural pattern etc., and discusses the predicted impact of the proposed plant activities on these factors. Broadly under the scope of this E.I.A. report it is envisaged :-

- To assess the present status of air, water, land, noise, biological & socio economic components of environment.
- To identify, quantify & evaluate positive or negative impacts of various operations on different environmental components.
- To evaluate proposed pollution control measures and to suggest additional control strategies, if any, to mitigate the adverse effects.
- To prepare Environmental Management Plan for utilization and adoption of safety measures.
- To delineate future Environmental quality monitoring programme.

### **3.0 PROFILE OF THE COMPANY AND PROMOTORS**

India Steels is a partnership firm having four partners as under;

- 1) Sh. Raj Kumar Saini
- 2) Sh. Pawan Kumar Saini
- 3) Sh. Kailash Chand Saini
- 4) Sh. Vishwamitter Saini
- 5) Sh Munish Saini

Sh. Raj Kumar Saini is one of the Directors of M/S Saboo Ispat (P) Ltd. also which company is manufacturing Steel Ingots and structural steel. All the partners of the firm are in steel business for last about 15 years. Thus the firm is fully geared up & competent to take up this project in Vill. Palohri, Tehsil Paonta Sahib, Himachal Pradesh for a capacity of about 2,16,000 MTA.

He is running successfully a number of other ventures in Himachal Pradesh as under:

1. Saboo Ispat Pvt. Ltd. Kala Aamb (Himachal Pradesh)
2. Saboo Tor Pvt. Ltd. Kala Aamb (Himachal Pradesh)
3. Saboo Alloys Pvt. Ltd., Kala Aamb (Himachal Pradesh)

## **4.0 MARKET SCENARIO**

**4.1** In 2005 World Crude Steel output at 1129.4 million metric ton was 5.9% more than the previous year. (Source: IISI)

China remained the worlds largest Crude Steel producer in 2005 also (349.4 million metric ton) followed by Japan (112.47 million metric tons) and USA (93.89 million metric tons). India occupied the 8<sup>th</sup> position (38.08 million metric tons). (Source: IISI).

The International Iron and Steel Institute (IISTI) In its forecast for 2006 has confirmed the trend of recent years of an Increase in steel use In-line with general economic growth and with the fastest growth occurring in the countries with the highest GOP growth such as India and China. Apparent world-wide Steel demand is forecast to grow to between 1,040 and 1,053 million tons in 2006 from a total of 972 million tons in 2004. This is growth of 4-5% over the two year period. However, according to USE the cost of raw materials and energy would continue to represent a major challenge for the world steel industry.

**4.2** The domestic steel industry has been depressed for quite sometime. Not only has the sector been affected by the slowdown in the economy, but also by a decline in the sales realizations and increase in input costs. The overall performance of all the Steel majors has improved during the year 2002 onwards.

India is the 10<sup>th</sup> largest producer of finished steel in the world. According to estimates, consumption of steel, which touched 23.5 million tons. In 1997-98, declined slightly to 23.3 million tons in 1998-99 i.e. a negative growth of 0.87%. During the year 2002-2003 and domestic demand for steel also registered a growth rate of 6% during this period. Steel production also went up by 8% to reach a level of 33 million tons in 2002-03 from 31 million tons recorded a year before.

## **5.0 BASELINE ENVIRONMENTAL SETTING**

### **5.1 THE STATE:**

Himachal Pradesh having world's mightiest mountain ranges is one of the hilly States situated in the Northern part of India. It is blessed with some of the most spectacular and beautiful landscapes. It came into being in November, 1966 after the re-organization of States. Earlier, it was part of the combined State of Punjab. The various hill towns in the State not only provide visitors reprieve from the sultring heat of the plains, but offer beautiful scenic sites which are real treat to the eyes. Kulu and Kangra valleys offer natural beauty which is no less than Kashmir Valley. Valleys and streams, snow clad mountains and temperate forests offer tourists and sportsmen all they want. India's past is visible in the form of ancient forts that are impregnable eyries atop the rugged crags that dot the area.

The total area of the State is about 55,700 sq. km., with a population of more than 60 lac. The literacy rate is about 63%. The main crops in the State are apple, ginger, peach, plums, potato, forest produce, rice and wheat. The State has good deposits of minerals like gypsum, lime stone and slate etc.

Earlier the economy of the State mostly depended on tourism and a large number of tourist sites had been developed by the State. However, after the re-organization, the State has made big strides in the field of industrialization also. Industries like Cement, Electronics, Fertilizers, Pharmaceuticals and Liquor can be found in good number at different places in the State. A number of Industrial areas have been developed in the State, where all facilities are provided to the entrepreneurs. Parwanoo, Barotiwala, Baddi, Paonta Sahib are some of the important industrial areas developed by the State recently in the last two decades. In order to attract industries in the State, framed a policy in 2004 wherein certain areas were declared as industrial area eligible for various kinds of industries. For developing backward areas additional incentives were included in this policy

## 5.2 SIRMAUR DISTRICT:

District Sirmaur is located in outer Himalayas which is commonly known as Shivalik range. The district is bounded by district Shimla in North, Uttar Anchal in East, Haryana in South and Distt. Solan in North-West. Like other parts of Himachal Pradesh, it has beautiful landscapes, bracing climate, big and small game and legendry temples which hold abiding attraction for the tourists. Head quarter of the district is Nahan which is connected by metalled roads with Shimla, Chandigarh, Solan and Yamuna Nagar.

<b>Population</b>			
<b>Total</b>	4,58,593 No.	According to Census 2001	
<b>Male</b>	2,41,299 No.		
<b>Female</b>	2,17,294 No.		
<b>Rural</b>	410,923 No.	Male	215,656
		Female	195,267
<b>Urban</b>	47,670 No.	Male	25,643
		Female	22,027
<b>Sex Ratio</b>	901		
<b>Density of Population</b>	162 per sq. km		
<b>Geographical Area</b>			
<b>Total Area</b>	2825	sq km	
<b>Area under Forest</b>	174822	Hect	
<b>Total Cultivated Area</b>	74702	Hect	
<b>Net Cultivated Area</b>	40775	Hect	
<b>Net Irrigated Area</b>	13883	Hect	

### **5.3 PROJECT SITE**

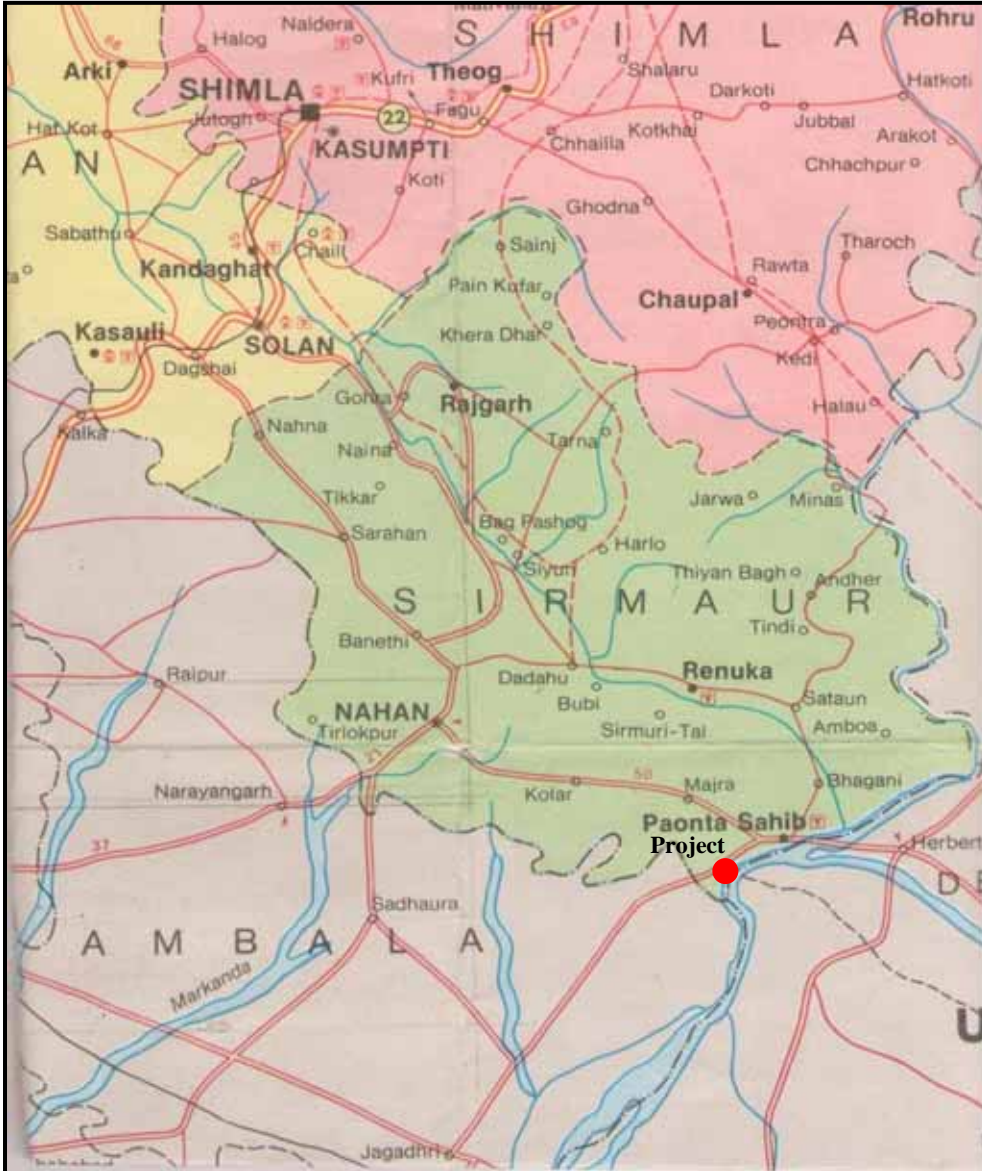
It lies on Shivalik foot hills with undulating terrain. Seasonal Boli Nadi is near the site. On both sides there is reserved forest. The area has been declared as backward by the State Government. Communication facility is not very good. The project site is at a distance of about 3 kms from the pucca road from Haryana side and 25 km from Paonta Sahib (HP). It is about 25 km away from Paonta Sahib on Paonta Sahib Yamunagar NH-73 A. Site and location details are given in table 5.1.

Total area of the plot is 21075 sqm. Layout plan of the unit is given in Fig. 5.2.

**TABLE 5.1**  
**Plant Site and Location**

<b>S.No</b>	<b>Particulars</b>	<b>Details</b>
1	<b>Location</b>	
a	Village	Palohri
b	Tehsil	Paonta Sahib
c	District	Sirmaur
d	State	Himachal Pradesh
e	Latitude	30°28'30" North
f	Longitude	77°32'40" East
2	<b>Elevation</b>	425 mts.
3	<b>Land use at the project site</b>	Uncultivated land declared as backward for Industrial uses.
4	<b>Climatic Conditions</b>	
	Temperature	Min: 6.8°C, Max:40.8°C
	Rainfall	1000 mm (average)
	Relative Humidity, %	Min: 21%, Max:82%
	Wind speed, Kms/hour	15 Km (approx.)
5	<b>Nearest highway</b>	National Highway-73A (Paonta Sahib-Yamuna Nagar)
6	<b>Nearest railhead/Railway station</b>	Yamuna Nagar (45 KM)
7	<b>Nearest airport</b>	Dehradun/Chandigarh
8	<b>Features within 10 kms</b>	
i)	Defence installations	Nil
ii)	Archaeological important places	Nil
iii)	Wild life sanctuaries	Nil.
iv)	Reserved/Protected forest	Behrampur / Sunkron Reserved forest ( about 2.0 – 4.0 KM)
v)	Industries	Nil
vi)	Rivers	Seasonal Boli Nadi, a tributary of Yamuna river
vii)	Hill ranges	Foot Hills of Shivalik range
9	<b>Nearest major city</b>	Yamuna Nagar (45 KM)
10	<b>Nearest major settlement</b>	Paonta Sahib (25KM)
11	<b>State Boundary</b>	Haryana State Boundary is about 2 km from the Site.

**Fig.: 5.1 KEY PLAN**



**Fig. 5.2 LAYOUT PLAN**



## **5.4 CLIMATE**

The Meteorology of the area of the Project is well known. The Sirmour District falls under climatic type-Cwa: Sub tropical monsoon, Mild winter, Dry winter, Hot summer. The general trends of various meteorological data like Rainfall, Temperature, Humidity, Wind have been established from the secondary data from IMD meteorological observatory in Ambala located at Latitude 30° 21' and Longitude 76° 52' and 300 m approximate above mean sea level which is the nearest station. There is no other I.M.D station near the site.

## **5.5 TEMPERATURE**

The area is semi-hilly with steep slopes and has Semi-arid climate. December and January are the coldest months whereas in May and June the heat is quite intense. The wettest months of the seasons are July, August and September. The temperature varies from 6.8°C minimum to 40.8°C maximum during the year. Monthly average temperatures of the area are given in Table 5.2

**TABLE - 5.2****MONTHLY AVERAGE DAILY TEMPERATURE - AMBALA  
(Period 1910-1980)**

Months	Mean	
	Maximum temp.	Minimum temp.
	<sup>o</sup> C	<sup>o</sup> C
January	20.8	6.8
February	23.8	8.5
March	29.6	14.1
April	36.2	19.7
May	40.8	24.9
June	40.5	27.3
July	35.2	26
August	33.8	25.4
September	35.4	23.9
October	33.2	16.4
November	28.6	10.2
December	33.2	7.1
<b>Annual</b>	<b>31.8</b>	<b>17.5</b>

**Source: Publication No. PDGM-126 of IMD, GOI**

## 5.6 RAINFALL

The rainfall in the Zone is caused by the South-West monsoon. It starts in the month of July and extends upto the end of Sept. During this period the monsoon rain-fall contributes about 80 to 90% of the total annual rainfall. The average annual rain fall is in the range of 900 to 1000 mm. The annual number of rainy days on a average are about 44 in a year, out of which about 27 fall in the monsoon period of July to September. Monthly rainfall data for this zone is given in Table 5.3.

**TABLE - 5.3**  
**MONTHLY AVERAGE RAINFALL - AMBALA**  
**(Period 1901 - 1980)**

<b>Months</b>	<b>RAINFALL (mm)</b>	<b>AV. NO. OF RAINY DAYS</b>
January	41.2	2.8
February	38.1	2.6
March	23.6	1.9
April	9.6	1.0
May	19.5	1.6
June	93.6	4.3
July	285.3	11
August	274.3	10.9
September	156.4	5.4
October	25.6	1.1
November	6.5	0.4
December	14.3	1.1
<b>TOTAL</b>	<b>988</b>	<b>44.1</b>

**Source: Publication No. PDGM-126 of IMD, GOI**

## **5.7 HUMIDITY**

In summer months of April, May and June, which is the driest part of the year, the afternoon humidity comes down to 21% while the relative humidity during monsoon months goes upto about 82%. The average monthly relative humidity in the area is given in Table 5.4.

**TABLE - 5.4**

**MONTHLY AVERAGE RELATIVE HUMIDITY - AMBALA**  
(Period 1910 - 1980)

<b>Months</b>	<b>Relative humidity (%)</b>	
	<b>830*</b>	<b>1730*</b>
January	79	52
February	73	44
March	61	33
April	41	22
May	36	21
June	49	32
July	78	63
August	82	68
September	80	58
October	68	41
November	68	39
December	78	48
<b>Annual</b>	<b>66</b>	<b>43</b>

\*Hours IST

**Source: Publication No. PDGM-126 of IMD, GOI**

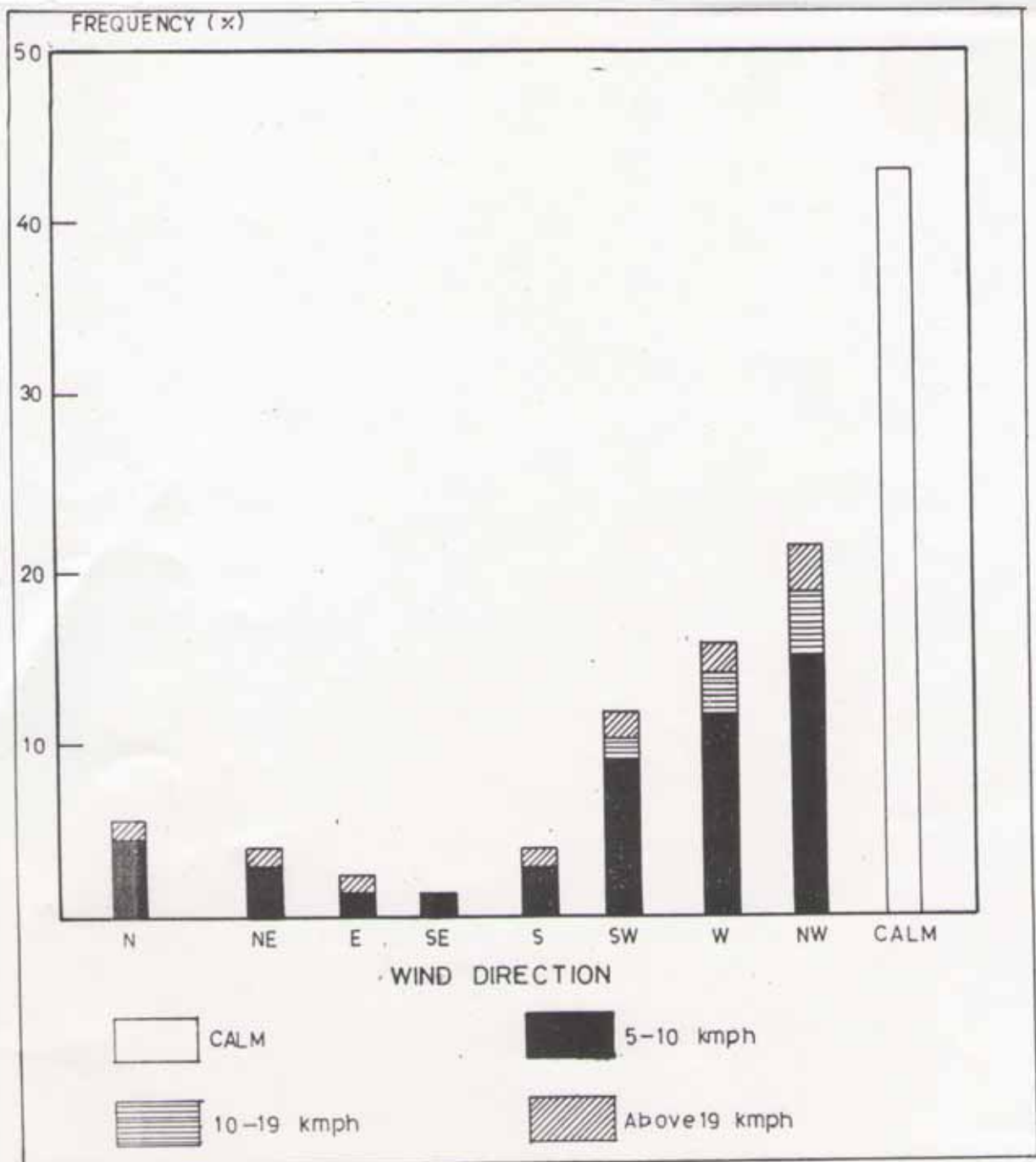
## **5.8 CLOUDINESS**

During monsoon season skies are over cast with moderate to heavy clouds. During rest of the year, the sky is mostly clear. It is lightly clouded occasionally during winter season.

## **5.9 WINDS**

The predominant wind direction in the area is mostly West and North-West. During January to May the winds are quite strong while July to October are calm months. During the remaining period winds are light. Wind rose diagram is shown in Fig. 5.3

**Fig. 5.3**  
**Wind rosé Diagram**



## **5.10 HUMAN SETTLEMENTS**

The unit is situated on the road from Yamunanagar to Paonta Sahib. The nearest major city is Yamunanagar which is at a distance of about 45 kms from the site of the unit, Other towns are Paonta Sahib at a distance of about 25 Kms, Kala Amb at a distance of about 60 kms. Other small villages lying within 10 kms radius of the plant have been shown in Table 7.1

## **5.11 PLACES OF TOURIST INTEREST**

There are no major places of tourist interest near the plant. The nearest one is Historic Gurudwara at Paonta Sahib at a distance of about 25 Kms from the site. The Ranuka lake is about 60 km from site.

## **5.12 OTHER INDUSTRIAL UNITS**

Paonta Sahib is an important industrial town having more than 100 small / medium scale industries. They employ about 10,000 workers. There are no other industrial units near the site.

## **5.13 WATER SUPPLY**

The requirement of water in the unit is i.e about 550 m<sup>3</sup>/day, which will be drawn from underground through a tubewell within the premises where enough water is available. Water is stored in an overhead tank which will feed the various user points.

## **5.14 SOIL**

Soil is generally sandy loam almost all over the District and Soil depth is generally shallow except in areas having good vegetative cover. It is generally dry, shallow and deficient in organic matters. The study area comprises mostly of alluvial

deposits of Quaternary age. The geological formations in the study area comprise of Sandstone largely micaceous and form major features. The top zone of this stage consists of maroon clays and buff clays alternating one by one.

### **5.15 DRAINAGE**

Yamuna river flows from NE to South and seasonal Boli Nadi from NW to South. The area near the project has a fairly good slope towards seasonal Boli Nadi and is well drained. There is no stagnation of rain water. The entire rain water flows to river Yamuna through the local drainage system which is close by.

### **5.16 LAND USE**

Land use pattern of the District was studied. The vacant lands around the unit are mixture of barren and agricultural lands, where extensive flow irrigation facility does not exist. Wheat and Maize are the main crops in the area. About 60% of land in this District is under forest and the remaining 40% is used for Agriculture, Industries, road & residential purposes etc.

### **5.17 FOREST**

There are a number of Reserved Forests near the site of the project. The forest cover on the South of the road from Yamunanagar to Paonta Sahib is quite thick, which is very close to the site and extends upto River Yamuna. The other forest areas lie on North East side of the project at a distance of 2-4 Km. The company also proposes to plant about 2000 trees and shrubs within the project area.

### **5.18 FLORA AND FAUNA**

Ecological system consists of varieties of interrelationship between both biotic and abiotic components. Biotic components comprise of both plant and animal communities, which interact not only within and between them but also within the abiotic physical. Animal plant communities in their natural habitat exist in a well

organized manner. This natural setting may be disturbed by any external man induced or nature induced influences. Himachal Pradesh comprises of diverse terrain ranges from plain to the mountains and has varied climatic zone. This diversity has endowed it with very rich natural resources. The forest with diverse agro-climatic conditions and geographical features Agriculture, Horticulture, Floriculture, Sericulture, Forestry, Tea Plantation Hydro power generation and tourism are comparatively better developed. In the area where Ranuka Wild life Sanctuary and other reserved forests exist the flora generally consists of khair, shisham, sahl, kordia and variety of climber can be found. The fauna in the area include the animal & birds like Samber, Spotted Dear, Barking Dear, Jakel, Hare, Jungle cat, Blue Jay, Black Partridge, Hill Crow, Bulbulands, Greenm Pigeons etc. The changes over time can be quantified and related to the existing environmental factors.

## **5.19 DEMOGRAPHY AND SOCIO-ECONOMIC SCENARIO**

Large Scale Industrial development has taken place in the Paonta Sahib area. The socio-economic profile has been studied through random sample primary surveys and secondary data. The significant demographic and socio economic statistics are summarized and given in Table – 5.5.

The Industrial activity in the area has brought a sharp increase in Government revenue receipts from the area. The area emerged as the main Industrial complex on the map of the State. The area has also noticed huge investment on various development related activities such as on power sector improvement, roads improvement and other basic amenities. The revenue collection from the area increased number of times, in spite of the fact that Government of India and State Government of Himachal Pradesh extended the exemptions on the Central and State taxes to attract the investment in the Industrial Sector.

**Table-5.5**  
**Summary of Key Demographic Statistics**

	Himachal Pradesh	District Sirmaur
Particulars	2001	2001
Male Population	30,85,256	241299
Female Population	29,91,992	217294
Total Population	60,77,248	458593
Sex Ratio	970/1000	901/1000
Density of Population/Km <sup>2</sup>	109	162
Literacy Rate: Total (%)	77.13	70.85%

**Ref: Census of India 2001.**

## **6.0 PROJECT DESCRIPTION**

### **6.1 General**

M/S India Steels proposes to install steel unit in village Palohri, Tehsil Paonta Sahib, Distt. Sirmour (H.P). They have acquired 21075 sqm land for manufacturing Steel Ingots, Bars, Channel, Patra and flats with a capacity of 2,16,000 TPA.

### **6.2 Raw Materials**

The raw materials used in the above unit per ton of steel produced are given as under:

◆ Steel Scrap	: 800 kg
◆ Sponge Iron	: 200 kg
◆ Ferro Manganese	: 35 kg
◆ Ferro Silicon	: 10 kg
◆ Aluminum	: 5 kg

### **6.3 Finished Products**

The final finished products are as under:

MS Ingots, Structural Steel = 2,16,000 TPA

### **6.4 Installed Capacity :**

The installed capacity of the project will be 2,16,000 TPA.

The unit after commissioning is expected to operate for an effective period of 300 days in a year on 24 hours per day basis.

## **6.5 Manufacturing Process:**

Two distinct processes are involved in the entire manufacturing as below:

- i) Preparing Ingots from the Scrap
- ii) Rolling Ingots into desired sections

Detailed process involved in each case is given as under:

### **6.5.1 M.S. Ingots:**

MS Scrap is put into the Electric furnace pot through magnetic conveying system, where it is heated to 1800<sup>0</sup>C. Scrap is melted and is heated for about 100 minutes. In the molten steel some ferro alloys are added according to the carbon contents in the scrap. The molten steel is then put into the moulds with the help of hydraulic system where, after cooling, the product is taken out from the moulds and the same is ready for further use.

### **6.5.2 Bars, Rounds and Flats:**

These are produced by heating the Ingots from the manufacturing process received in a separate oil fired furnace to about 1150 – 1200<sup>0</sup>C so that they can be converted into the desired sections through rolling. They are then cooled and cut into proper sizes for dispatch.

## **6.6 Facilities at the Plant**

The firm has acquired 21075 sq mts of land where factory building, boundary wall and some other ancillary structures are proposed to be constructed.

It provides adequate space for the following areas of working:

1. Storage for raw material and finished goods.
2. Plant and Machinery Sheds
3. Storage and handling of slag
4. DG set room
5. Offices
6. Toilets

7. Water and storage tanks

8. STP

Open space will be landscaped and trees will be planted in due course of time.

## **6.7 Machinery**

Following Machinery will be in position in the unit:

- i) Scrap Handling System
- ii) Scrap and Alloys Feeding System to Furnaces
- iii) Induction Furnace (12 TPH x 4 No.)
- iv) Slag Processing and Metal Recovery Plant
- v) Reheating Furnace for Rolling Mill
- vi) 14" Rolling Mill
- vii) 10" Rolling Mill
- viii) APCD
- ix) Sewage Treatment Plant
- x) Cooling Tower
- xi) Overhead Cranes
- xvi) Weigh bridge

## **6.8 Power**

The unit requires about 20 MW of Electricity, which will be supplied by HPSEB. One D.G. set of 1000 KVA will also be installed as stand by for cooling of furnaces and running of auxiliary equipment during power failure.

## **6.9 Water Supply**

A tube-well has already been installed in the premises of the unit. The daily requirement of water is about 550 m<sup>3</sup> per day and will be met from this source. The capacity of overhead storage tank is about 250 m<sup>3</sup>. Another tank of about 100 m<sup>3</sup> will also be provided for fire fighting which shall be kept always full. Flow chart of water use given in figure 6.1.

## **6.10 Manpower**

Unit works on three shifts basis i.e.

1st shift	-	6 AM to 2 PM
2nd shift	-	2 PM to 10 PM
3rd shift	-	10 Pm to 6 AM

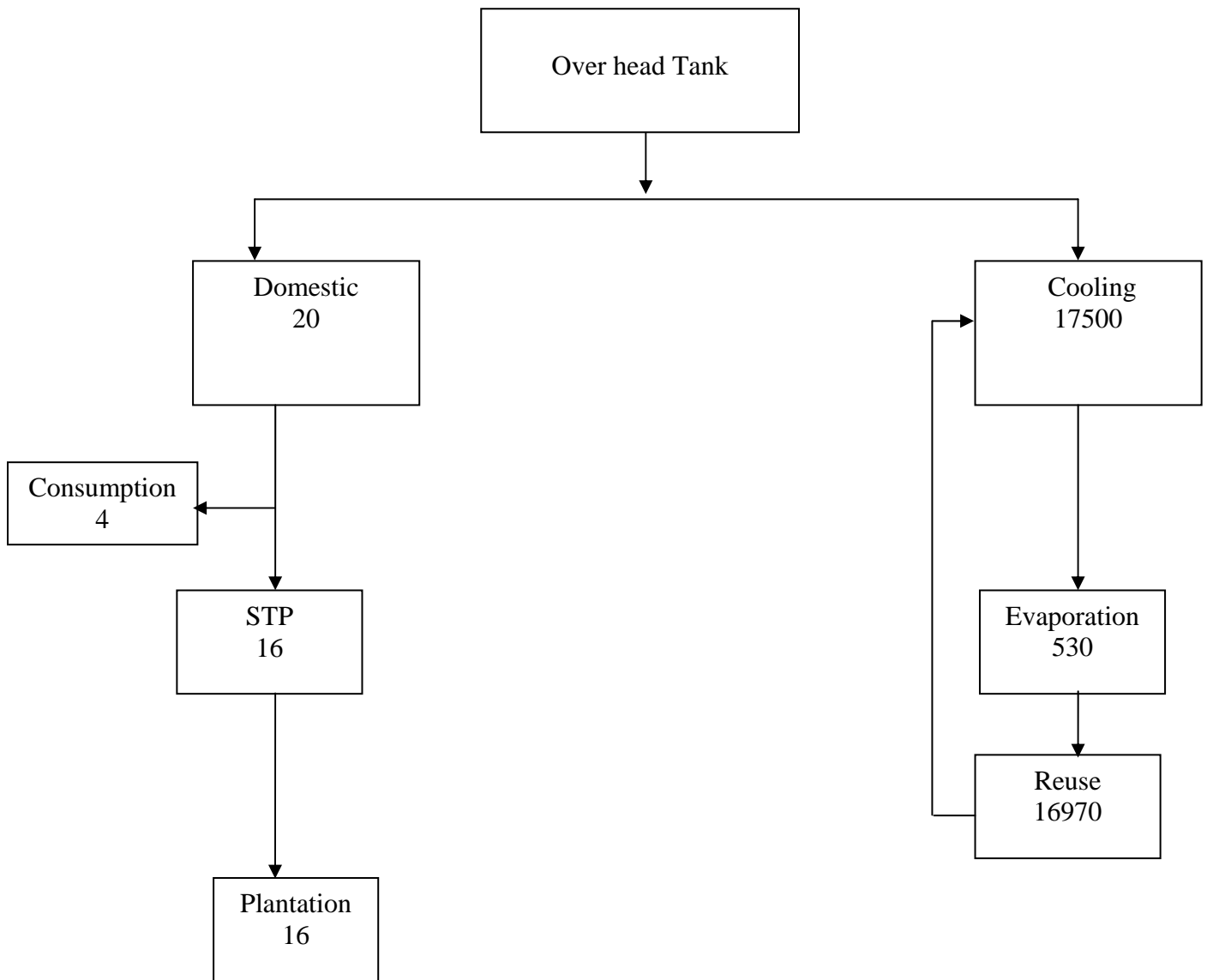
Another set of officials and workers will wok during day time only for management. The total requirement of workers is about 435 persons.

## **6.11 Waste Handling**

### **6.11.1 Liquid waste**

There will be no use & discharge of water in the manufacturing process. Some waste water from the toilets in the offices is expected which will be treated through STP and the treated effluent will be used within the premises for landscaping and irrigation. However, during rainy season this surplus treated water will be passed on to the nearest drain. Similarly, water coming out from cooling system will be reused and only make up water shall be added.

**Figure : 6.1**  
**WATER BALANCE**  
**(KLD)**



Consumptive use = 20 + 530 = 550 m<sup>3</sup>/day

### **6.11.2 Solid waste**

Solid wastes in the unit are expected from the following sources.

- i) Slag from the furnaces
- ii) Solids from the Bag filters & Cyclones.
- iii) Packing material such as gunny bags, cardboard etc.
- iv) Solids from S.T.P

Solids shown at serial no. (i) contain metals in addition to dust etc. as such these will be collected separately. Solids received from the bag filters etc. shall be sent to TSDF Site, Daboota. Other materials like packing material such as gunny bags and cardboard etc. shall be sold to vendors for recycling. STP sludge will be used within the premises as manure for plantation.

### **6.11.3 Hazardous waste**

No Hazardous wastes are generated during the melting process. However used oil from DG set will be sold to authorized recyclers.

## **6.12 Pollution Control Measures**

The main sources of pollution from the unit are discussed as under:

### **6.12.1 Air Pollution**

#### **i) Exhaust from Furnaces**

The major source of gaseous emissions at the plant are furnaces. In furnace melting process, emission takes place while charging, melting and taping operations. The main emissions are particulate matter, etc. The particulate matter contains traces of metals like oxides of Iron, Chrome, Manganese etc.

**ii) D.G. Sets Exhaust**

**Air Pollution Control Devices (APCD)**

The exhaust fumes of all furnaces are proposed to be handled & controlled by the respective centralized Air Pollution Control devices such as Bag filters and Cyclones based on modern technology. These will be provided with the attached units for smooth operation and to get the maximum efficiency of the system. Cooling of gases is provided to avoid damage to the bags. APCD provided in each unit are as under:-

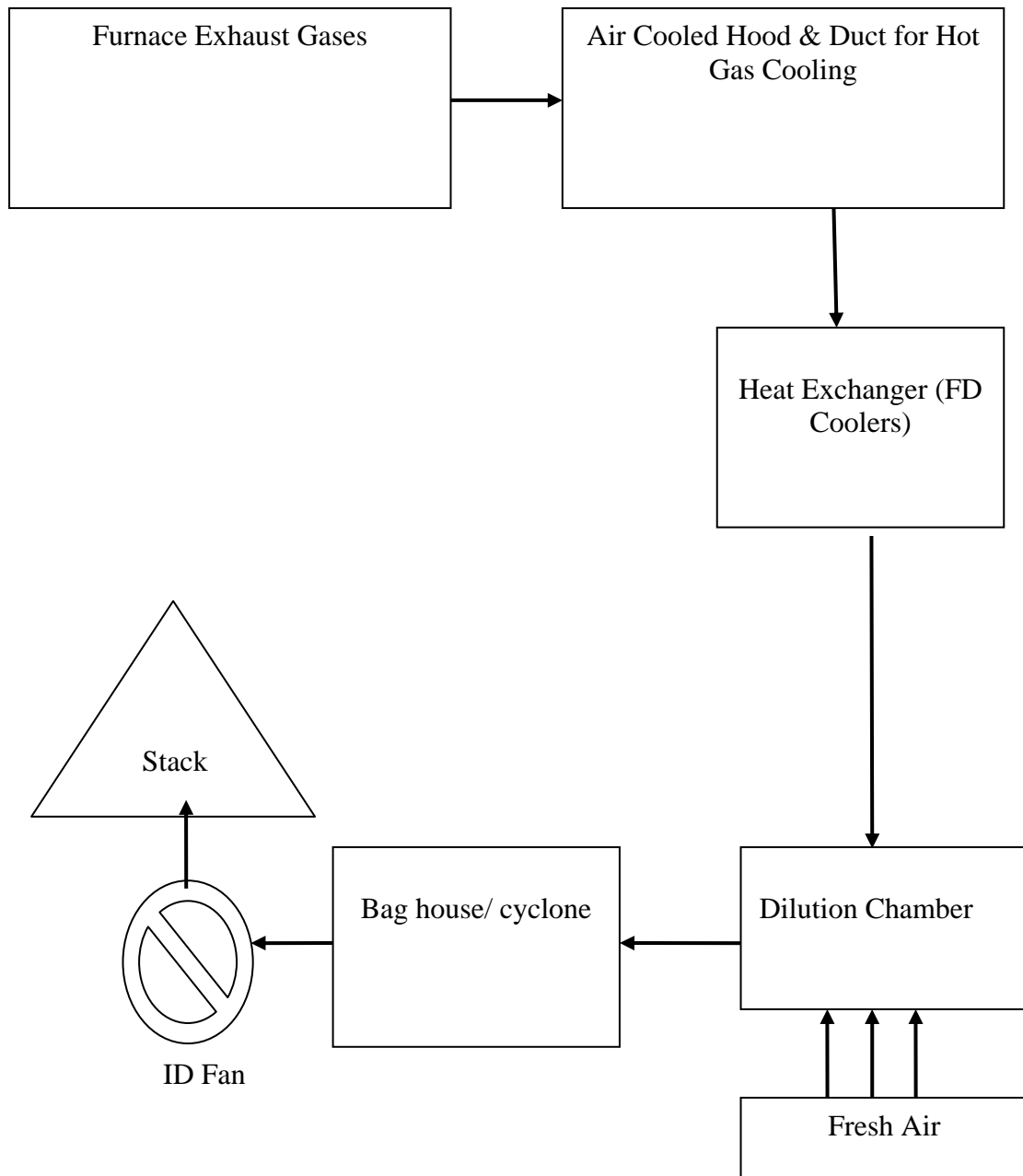
<b>Name of the Unit</b>	<b>APCD</b>
i) Induction Furnace/	Bag Filter & Cyclones
ii) Rolling Mill	Bag Filter

**System Process:**

Centralized dry Air Pollution Control Systems have been provided to control the exhaust dusty fumes of the Induction Furnace in which a well-designed ID fan will be installed for suction of hot gases alongwith dilution air with adequate suction capacity. The hot dusty gases generated during operation of the furnaces will be collected through respective air cooled furnace hood and conveyed to APCD through air cooled ducting. In the bag house the dusty gas is allowed to filter through needle felt & moisture repellent polyester bags before emitting into the environment. The clean gas is allowed to pass from the surface to inside the bags and dust is retained at outside surface of bags and clean gas is exhausted in the air through outlet. The filter bags will be cleaned periodically to remove the dust settled on the bags and to maintain the differential pressure across the bag filters within the acceptable limits with the help of vibrator & rotary air valves provided at the bottom of hoppers. The collected dust will be stored in gunny bags for further reuse. The emissions from stack will be much below the permissible norms at all the time. The final stack emission will have Particulate Matter less than 100 mg / NM<sup>3</sup>. Typical process diagram of the APCD is given in fig. 6.2

**Fig: 6.2**

**PROCESS FLOW CHART OF AIR POLLUTION CONTROL SYSTEM**



### **6.12.2 Water Pollution**

Water is not used anywhere in the manufacturing process as such there is no waste water from the process. Wastes from the toilets & canteen are treated in the STP and used for plantation within the premises. Similarly cooling water will be separately recycled & makeup water will be added.

### **6.12.3 Noise Pollution**

There are some noise producing machineries such as DG Set, ID Fan, Blowers & pump etc. All these machines are located in closed covered rooms where acoustics are being provided. Thus no noise of significant level shall be allowed to go out side the rooms which may disturb the general noise environment heavily. DG Set is to be used for short periods only. Even otherwise noiseless sets will be used with acoustics. Appropriate steps are being taken by the proponent to mitigate the noise effect so that general noise Environment is not disturbed appreciably and does not go beyond prescribed limit

### **6.12.4 Industrial Waste**

#### **i) Slag from Furnaces**

Major solid wastes from the unit are the slag from the furnaces which contain metals. Approximate quantity expected is about 5.0 Ton per day. Since its disposal on land is likely to cause contamination of soil, it will be first be stored in impervious tanks and then partly reused for lining of furnaces, if needed and remaining sent to TSDF site for disposal.

#### **ii) Solids from Filter Bags**

Solids from filter bags will be collected separately & stored in impervious tanks. Then it will be sent to TSDF Site.

**iii) Sludge from STP**

STP Sludge will be used as manure for plantation within the premises.

**iv) Used Oil**

Used oil from D.G. Set shall be sold to authorized recyclers.

**6.12.5 Storm Water:**

The land in the unit has ample slope. The storm water during rains will flow to the natural streams through cemented drains to be provided along the roads in the premises. No treatment is envisaged as no standards have been laid by the State Pollution Control Board for storm water. Efforts shall be made to store some rain water in an impervious earthen tank of about 250 m<sup>3</sup> capacity and used for lawns purposes.

## 7.0 ENVIRONMENTAL IMPACT ASSESMENT

### 7.1. General

As per requirement an area of 10 KM. radius around the unit has been taken for study. Details of villages, with reference to the site has been given in Table 7.1.

**TABLE – 7.1**  
**STUDY AREA DETAILS (10 Km Radius Area)**

<b>Sr. No.</b>	<b>Name of Village</b>	<b>Direction wrt the unit</b>
1.	Palohri	N
2.	Nagla	W
3.	Jaitpur	W
4.	Muhaiuddinpur	W
5.	Nagli	NW
6.	Salempur	W
7.	Gohrabani	W
8.	Rajpur	W
9.	Rampur Jat	W
10.	Sundar Bahadurpur	W
11.	Chholi	W
12.	Darpur	S
13.	Jatanwala	S
14.	Sipianwala	SW
15.	Chuharpur	SW
16.	Baniawala	S
17.	Muqaribpur	SW
18.	Tibi	SW
19.	Bhangera	SE
20.	Gulabmajra	W
21.	Majri	W

22.	Daulatpur	S
23.	Thon	S
24.	Khizri	S
25.	Bagpat	S
26.	Balohalpur	S
27.	Matakpur	W
28.	Udamgarh	W
29.	Kotra Khas	W
30.	Ibrahimpur	W

## 7.2 Population

The study area falls in district Sirmaur. The total population of the district, as per 2001 census, is 4,58,593 persons in an area 2825 sq km giving a density of 162 persons per sq / km. Sex ratio is 901 females for 1000 males. It is predominantly rural with about 90% of the total population living in villages.

## 7.3 Workers

People are mostly engaged in agriculture related activities. However, other occupations are also practiced, although to a lesser degree, as per details given below in table 7.3:

**TABLE-7.3**

### **Occupational Structure in the Distt.**

<b>Occupation</b>	<b>1991</b>	<b>2001</b>	<b>Percentage Growth</b>
Agriculture labour	591	505	-14.55
Agriculture labour supported by other employment	571	697	22.6
Cultivators	20255	20473	1.07
Cultivation supported by other Employment	690	756	9.5
House hold industry	571	425	-25.56
Transport and Communication	1234	3556	188
Trade and commerce	875	1586	81
Government services	7499	7623	15
Government services supported by other employment	2232	2487	11
Construction	245	1460	467
Industry	4326	17844	312

## **7.4 PRESENT ENVIRONMENT**

Various Environmental factors as existing in the study area which are liable to be affected by the activities have been assessed both quantitatively and qualitatively. Following are the factors which are sensitive to the plant activities.

- i) **Ambient Air**
- ii) **Water Quality**
- iii) **Land use pattern**
- iv) **Soil and Agriculture**
- v) **Transport and Communication**
- vi) **Noise**
- vii) **Demography and Socio-economic pattern**

Position in each case is discussed as under:

### **7.4.1 Ambient Air Quality**

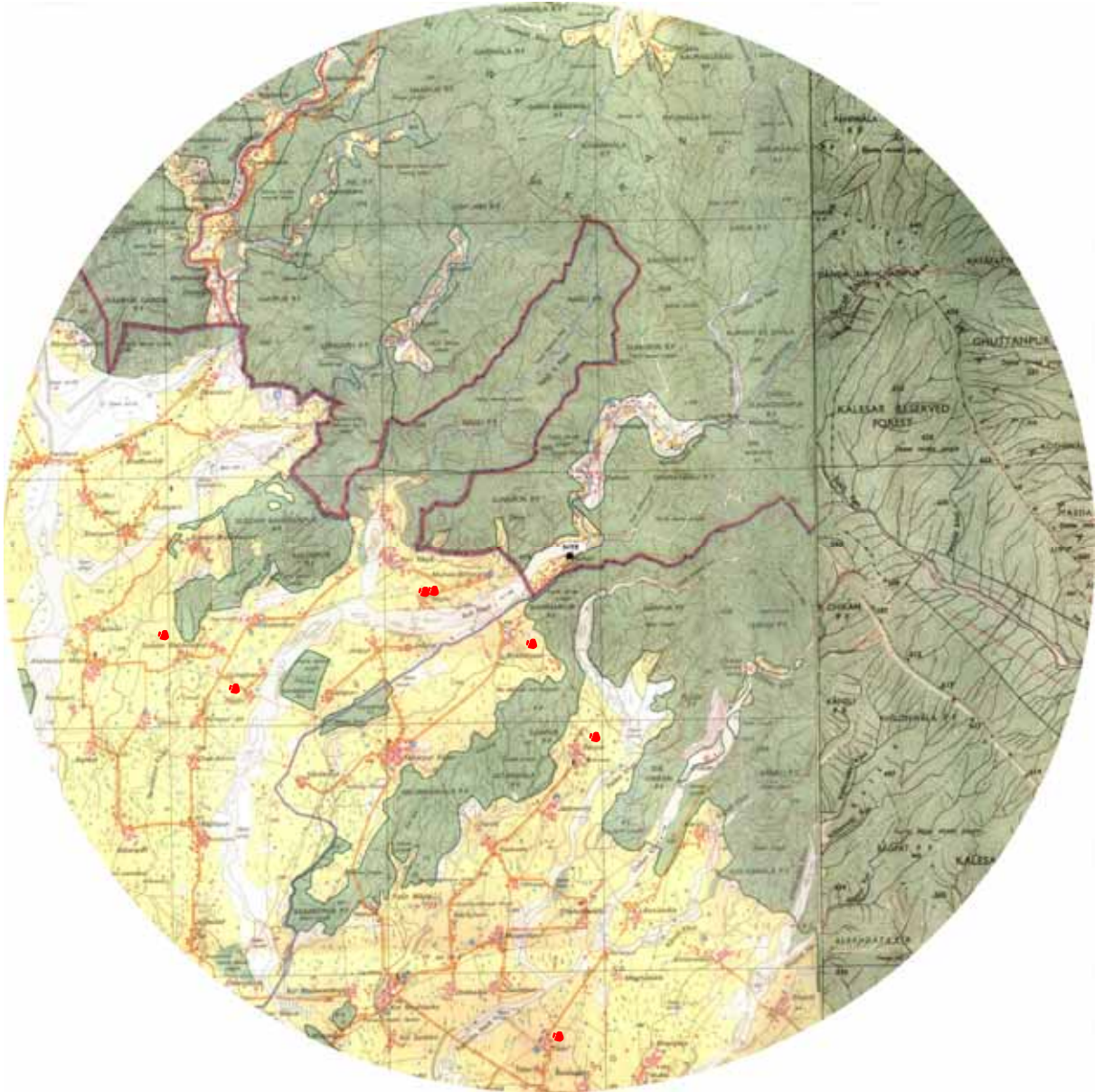
To quantify impact of the project on the ambient air quality it is necessary to measure the background level of Air Pollutants which are existing in the surrounding areas of the Unit. On this, the value effect due to the unit is to be added to obtain the future predicted quality levels. Accordingly, the background air quality of PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> have been determined quantitatively by conducting field monitoring. Sites of the monitoring stations were kept keeping in view the dominant wind direction. They were spread in an area of 10 KM round the site. Location of the monitoring stations is given in Table 7.4 and shown in Fig. 7.1.

**TABLE 7.4**  
**AMBIENT AIR MONITORING STATIONS**

<b>S.No.</b>	<b>Sample Code</b>	<b>Name of Village/Location</b>	<b>Distance from site (KM)</b>
1.	AA-1	Project Site	0
2.	AA-2	Nagla	3.0
3.	AA-3	Sundar Bahadurpur	5.0
4.	AA-4	Tibi	9.0
5.	AA-5	Khizri	7.0
6.	AA-6	Ibrahimpur	3.0
7.	AA-7	Rajpur	8.0
8.	AA-8	Darpur	5.0

**Figure -7.1**

**LOCATION OF AMBIENT AIR MONITORING STATIONS**



Samples were collected and analyzed in the Laboratory. Following instruments were used for conducting tests.

- i) PM<sub>2.5</sub>/PM<sub>10</sub> - RDS / HVS with filter paper,
- ii) For SO<sub>2</sub> - Impinger and spectrophotometer.
- iii) For NO<sub>x</sub> - Impinger and spectrophotometer.

The monitoring results of the samples have been indicated in Table 7.5

**Table-7.5: Summary of Ambient Air Quality Monitoring Results**

Location	MONTH	Concentration of Pollutants (µg/m <sup>3</sup> ) 24-Hour Average Value					
	Parameters	SO <sub>2</sub>	NO <sub>x</sub>	Pb	CO	PM <sub>2.5</sub>	PM <sub>10</sub>
	Permissible Limits	<b>80</b>	<b>80</b>	<b>1.0</b>	<b>2.0</b>	<b>60</b>	<b>100</b>
<b>AA1 Project Site</b>	March-2010	2.8	15.5	BDL	0.5	38	72
	April 2010	2.6	15.0	BDL	0.4	42	80
	May 2010	2.4	15.2	BDL	0.5	46	78
	<b>Average</b>	<b>2.6</b>	<b>15.2</b>	<b>BDL</b>	<b>0.5</b>	<b>42</b>	<b>77</b>
<b>AA2 Nagla</b>	March-2010	2.5	14.8	BDL	0.4	36	68
	April 2010	2.4	14.5	BDL	0.4	40	70
	May 2010	2.5	14.5	BDL	0.3	37	72
	<b>Average</b>	<b>2.5</b>	<b>14.6</b>	<b>BDL</b>	<b>0.4</b>	<b>38</b>	<b>70</b>
<b>AA3 Sundar Bahadurpur</b>	March-2010	2.4	14.4	BDL	0.4	40	66
	April 2010	2.3	14.3	BDL	0.3	36	74
	May 2010	2.4	14.0	BDL	0.3	38	78
	<b>Average</b>	<b>2.4</b>	<b>14.3</b>	<b>BDL</b>	<b>0.3</b>	<b>38</b>	<b>72</b>
<b>AA4 Tibi</b>	March-2010	2.5	14.3	BDL	0.3	41	66
	April 2010	2.4	14.0	BDL	0.3	37	70
	May 2010	2.5	14.0	BDL	0.3	36	72
	<b>Average</b>	<b>2.5</b>	<b>14.1</b>	<b>BDL</b>	<b>0.3</b>	<b>38</b>	<b>69</b>

**TABLE-5.4 (Contd..)**

**Summary of Ambient Air Quality Monitoring Results  
 AMBIENT AIR QUALITY ( $\mu\text{g} / \text{m}^3$  and CO in  $\text{mg}/\text{m}^3$ )**

Location	MONTH	Concentration of Pollutants ( $\mu\text{g}/\text{m}^3$ ) 24-Hour Average Value					
	Parameters	SO <sub>2</sub>	NO <sub>x</sub>	Pb	CO	PM <sub>2.5</sub>	PM <sub>10</sub>
	Permissible Limits	<b>80</b>	<b>80</b>	<b>1.0</b>	<b>2.0</b>	<b>60</b>	<b>100</b>
<b>AA5 Khizri</b>	March-2010	2.6	14.5	BDL	0.3	38	70
	April 2010	2.5	14.2	BDL	0.3	40	66
	May 2010	2.4	14.4	BDL	0.3	42	68
	<b>Average</b>	<b>2.5</b>	<b>14.3</b>	<b>BDL</b>	<b>0.3</b>	<b>40</b>	<b>68</b>
<b>AA6 Ibrahimipur</b>	March-2010	2.3	14.0	BDL	0.4	36	72
	April 2010	2.6	14.8	BDL	0.3	38	70
	May 2010	2.4	14.2	BDL	0.3	42	68
	<b>Average</b>	<b>2.4</b>	<b>14.3</b>	<b>BDL</b>	<b>0.3</b>	<b>39</b>	<b>70</b>
<b>AA7 Rajpur</b>	March-2010	2.5	14.5	BDL	0.3	38	74
	April -2010	2.4	14.6	BDL	0.3	42	72
	May -2010	2.4	14.3	BDL	0.3	40	70
	<b>Average</b>	<b>2.4</b>	<b>14.4</b>	<b>BDL</b>	<b>0.3</b>	<b>40</b>	<b>72</b>
<b>AA8 Darpur</b>	March-2010	2.4	14.0	BDL	0.3	38	68
	April 2010	2.2	14.3	BDL	0.3	36	66
	May 2010	2.5	14.4	BDL	0.3	40	70
	<b>Average</b>	<b>2.3</b>	<b>14.2</b>	<b>BDL</b>	<b>0.3</b>	<b>38</b>	<b>68</b>

The monitoring for PM<sub>10</sub>, PM<sub>2.5</sub>, Pb, CO, SO<sub>2</sub> and NO<sub>x</sub> has been undertaken from March, 2010 to May, 2010 as per CPCB guidelines.

## 7.4.2 Water Quality

Study of water environment is essential to know what is contained within the existing natural environment & how it can be expected to respond to the activities of the unit. Water resources in the study area may be classified in two categories.

- i) Ground Water
- ii) Surface Water

The principal source of water for both these categories is the precipitation. Rainfall thus is the single most important factor controlling the water availability in the area. The annual rainfall in the area is about 900-1000 mm and the major precipitation is in the months of July to September (Monsoon season) and nominal in summer months of March to May. Major streams in the area are Boli Nadi and Yamuna river. While Boli Nadi is seasonal and Yamuna Nadi is perennial. There are small seasonal streams also in the study area, which remain dry during whole year except rainy season. Company proposes to draw water from the underground source through an existing tubewell already drilled within their premises. For assessing the quality of water in the study area samples of water (ground & surface) were collected as given in TABLE 7.6 and tested. Sites of water samples have been shown in Fig. 7.2. Results of Ground water samples have been given in Table 7.7. & results of surface water samples have been given in Table 7.8.

Various likely sources of waste water generation from the plant are as below.

- i) Domestic Sewage Water
- ii) Cooling blow down

Domestic waste from the toilets is treated in STP and then used for raising plantation and landscaping within the factory premises. Cooling water is recycled.

**TABLE-7.6****DETAILS OF WATER MONITORING STATIONS**

<b>S.No.</b>	<b>Sample Code</b>	<b>Name of Village/Location</b>	<b>Distance from site (KM)</b>
1.	GW-1	Project Site	0
2.	GW-2	Nagla	3.0
3.	GW-3	Tibi	9.0
4.	GW-4	Sundar Bahadurpur	5.0
5.	GW-5	Khizri	7.0
6.	GW-6	Ibrahimpur	3.0
7.	GW-7	Rajpur	8.0
8.	GW-8	Dhirpur	5.0
9.	SW-1	Boli Nadi	3.0

**Figure -7.2**

**LOCATION OF GROUND/SURFACE WATER MONITORING STATIONS**



**TABLE – 7.7****RESULTS OF WATER SAMPLES (mg/l except pH)  
Ground Water**

<b>Characteristic</b>	<b>GW-1</b>	<b>GW-2</b>	<b>GW-3</b>
Colour, Hazen, units,.	<2	<1	<3
Odour	Unobjectionable	Unobjectionable	Unobjectionable
Taste	Agreeable	Agreeable	Agreeable
Turbidity, NTU	<1	<2	<1
pH	7.0	6.4	6.9
Total Hardness (as CaCO <sub>3</sub> )	124	128	195
Iron (as Fe)	0.2	0.02	0.05
Chloride (as Cl)	26	30	42
Magnesium	16	14	28
Sulphate (as SO <sub>4</sub> )	114	108	146
Calcium	24	26	32
Alkalinity	96	163	198
Fluoride (as F)	BDL	BDL	BDL
Sodium (as Na)	116	156	184
Cadmium(as Cd)	BDL	BDL	BDL
TDS	38	34	42
Arsenic (as As)	BDL	BDL	BDL
Cyanide (as CN)	BDL	BDL	BDL
Lead (as Pb)	BDL	BDL	BDL
Chromium (as Cr)	BDL	BDL	BDL
Mineral Oil	BDL	BDL	BDL
Ecoli/Total Coliforms	Absent	Absent	Absent
Suspended Solids	--	--	--

<b>Characteristic</b>	<b>GW-4</b>	<b>GW-5</b>	<b>GW-6</b>
Colour, Hazen, units,.	<2	<1	<3
Odour	Unobjectionable	Unobjectionable	Unobjectionable
Taste	Agreeable	Agreeable	Agreeable
Turbidity, NTU	<1	<2	<1
pH	7.0	6.4	6.9
Total Hardness (as CaCO <sub>3</sub> )	124	128	195
Iron (as Fe)	0.2	0.02	0.05
Chloride (as Cl)	26	30	42
Magnesium	16	14	28
Sulphate (as SO <sub>4</sub> )	114	108	146
Calcium	24	26	32
Alkalinity	96	163	198
Fluoride (as F)	BDL	BDL	BDL
Sodium (as Na)	116	156	184
Cadmium(as Cd)	BDL	BDL	BDL
TDS	38	34	42
Arsenic (as As)	BDL	BDL	BDL
Cyanide (as CN)	BDL	BDL	BDL
Lead (as Pb)	BDL	BDL	BDL
Chromium (as Cr)	BDL	BDL	BDL
Mineral Oil	BDL	BDL	BDL
Ecoli/Total Coliforms	Absent	Absent	Absent
Suspended Solids	--	--	--

<b>Characteristic</b>	<b>GW-7</b>	<b>GW-8</b>
Colour, Hazen, units,.	<2	<1
Odour	Unobjectionable	Unobjectionable
Taste	Agreeable	Agreeable
Turbidity, NTU	<1	<2
pH	7.0	6.4
Total Hardness (as CaCO <sub>3</sub> )	124	128
Iron (as Fe)	0.2	0.02
Chloride (as Cl)	26	30
Magnesium	16	14
Sulphate (as SO <sub>4</sub> )	114	108
Calcium	24	26
Alkalinity	96	163
Fluoride (as F)	BDL	BDL
Sodium (as Na)	116	156
Cadmium(as Cd)	BDL	BDL
TDS	38	34
Arsenic (as As)	BDL	BDL
Cyanide (as CN)	BDL	BDL
Lead (as Pb)	BDL	BDL
Chromium (as Cr)	BDL	BDL
Mineral Oil	BDL	BDL
Ecoli/Total Coliforms	Absent	Absent
Suspended Solids	--	--

**TABLE – 7.7****RESULTS OF WATER SAMPLES (mg/l except pH)  
Surface Water**

<b>Characteristic</b>	<b>SW-1</b>
Colour, Hazen, units,.	<1
Odour	Unobjectionable
Taste	Agreeable
Turbidity, NTU	3
pH	7.1
Total Hardness (as CaCO <sub>3</sub> )	152
Iron (as Fe)	0.04
Chloride (as Cl)	12
Magnesium	17
Sulphate (as SO <sub>4</sub> )	87
Alkalinity	140
Calcium	34
Fluoride (as F)	BDL
Sodium (as Na)	19
Cadmium(as Cd)	BDL
TDS	180
Arsenic (as As)	BDL
Cyanide (as CN)	BDL
Lead (as Pb), mg/l	BDL
Chromium (as Cr)	BDL
Mineral Oil	BDL
Suspended Solids	110

### **7.4.3 LAND USE PATTERN**

Land use pattern means how the land is being used for various purposes. It highlights the environmental quality of a particular area. It is an important indicator of environmental health, intensity of human activity and degree of interaction between the two. Land use pattern is significantly influenced by the nature of soil, water availability and climatic conditions of the area. Data on land use pattern of Sirmour District have been collected to present baseline status of the study area which falls in this District and is given in table 7.8.

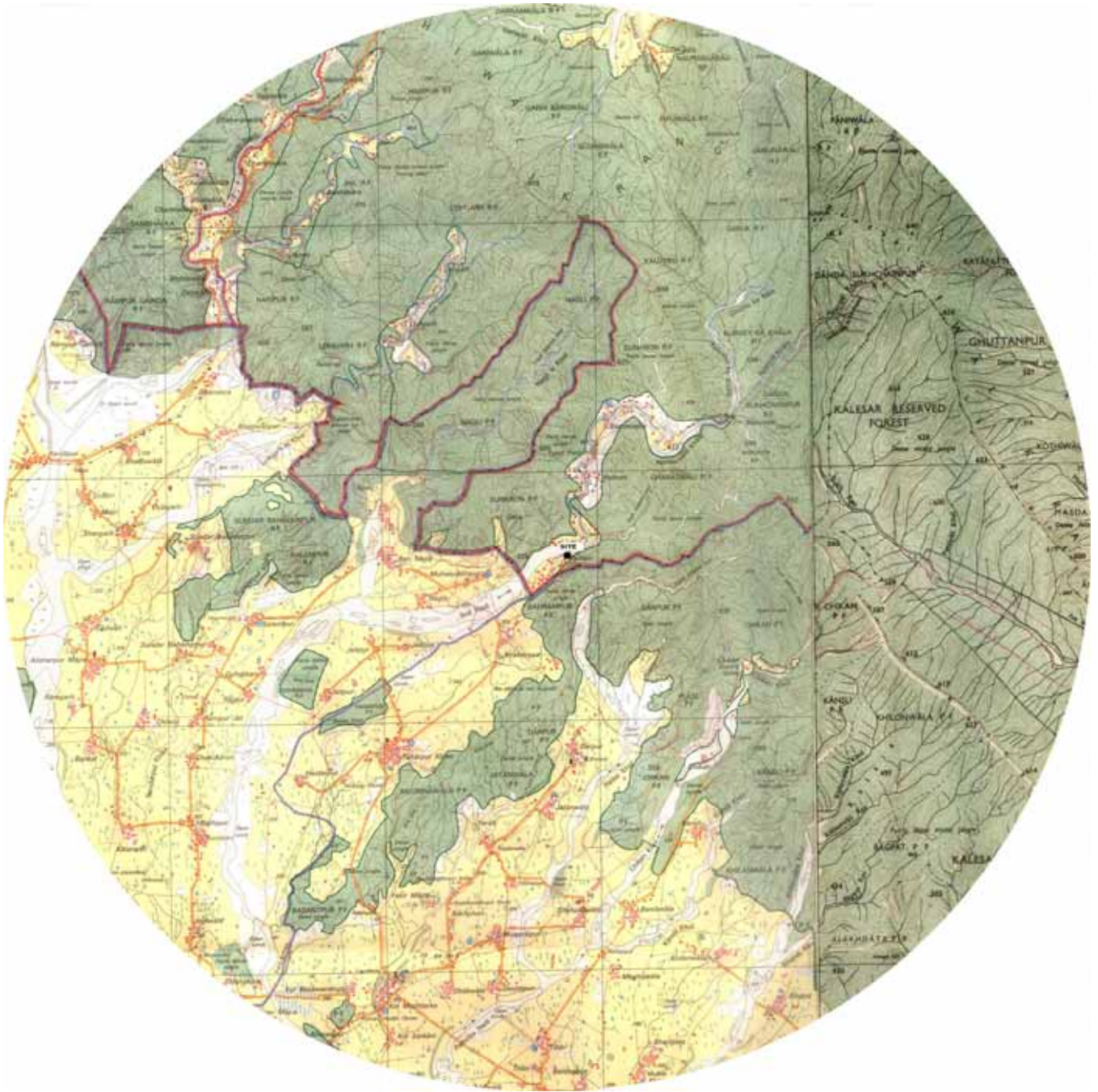
**TABLE-7.8**  
**LAND USE PATTERN**

Total Area	-	2, 82,500 Ha
Cultivated Area	-	74,700 Ha (26.4%)
Forest area	-	1, 74,820 Ha (62%)
Non agriculture use	-	72,980 Ha (11.6%)

### **7.4.4 Soil and Agriculture**

Topography of the study area is undulating with sharp slopes and forest areas. Agricultural lands are fertile and cultivated. Wheat, maize, fodder and vegetables are the main crops. Samples of the soil from the plant area and from surrounding area were taken for testing. Soil sample monitoring stations are given in table 7.9 and their position has been shown in fig. 7.3

**Figure -7.3**  
**LOCATION OF SOIL MONITORING STATIONS**



**TABLE-7.9**  
**DETAILS OF SOIL MONITORING STATIONS**

<b>S.No.</b>	<b>Sample Code</b>	<b>Name of Village/Location</b>	<b>Distance from site (KM)</b>
1.	S-1	Project Site	0
2.	S-2	Tibi	9.0

The results are indicated in Table 7.10. The soil in the study area is considered to be slightly alkaline with favorable pH for cultivation of crops. The soil contains medium level of primary nutrients. The secondary nutrients like, Ca & Mg are also in good quantity.

**TABLE – 7.10**  
**RESULT OF SOIL SAMPLES (% W/W except pH)**

S.No.	Parameter	Monitoring Stations	
		S-1.	S-2.
1.	pH	6.0	6.2
2.	Chlorides	0.05	0.04
3.	Sulphates	0.03	0.06
4.	Sodium	0.9	0.4
5.	Potassium	1.6	1.8
6.	Calcium	1.8	1.5
7.	Megnesium	1.4	1.2
8.	Iron	1.9	1.4
9.	Nitrogen	0.20	0.23
10.	Phosphurus	0.02	0.05
11.	Organic matter	0.94	1.09

#### **7.4.5 Transport and Communications**

The project is located in a village area and is connected with the nearest towns of Paonta Sahib, Yamuna nagar & Kala Amb through metalled roads. There is frequent Bus service and approach to site is easy. Telephone is provided at site and Post Office is also available in Palohri at a distance of about 4.0 km.

## **7.4.6 Noise Environment**

Noise is defined as unwanted sound, which interferes with speech & communication, causes annoyance, distracts from work and disturbs sleep and thus adversely affects quality of human environment.

For industrial operations there are usually two types of noise assessments considered.

### **i) Occupational Noise**

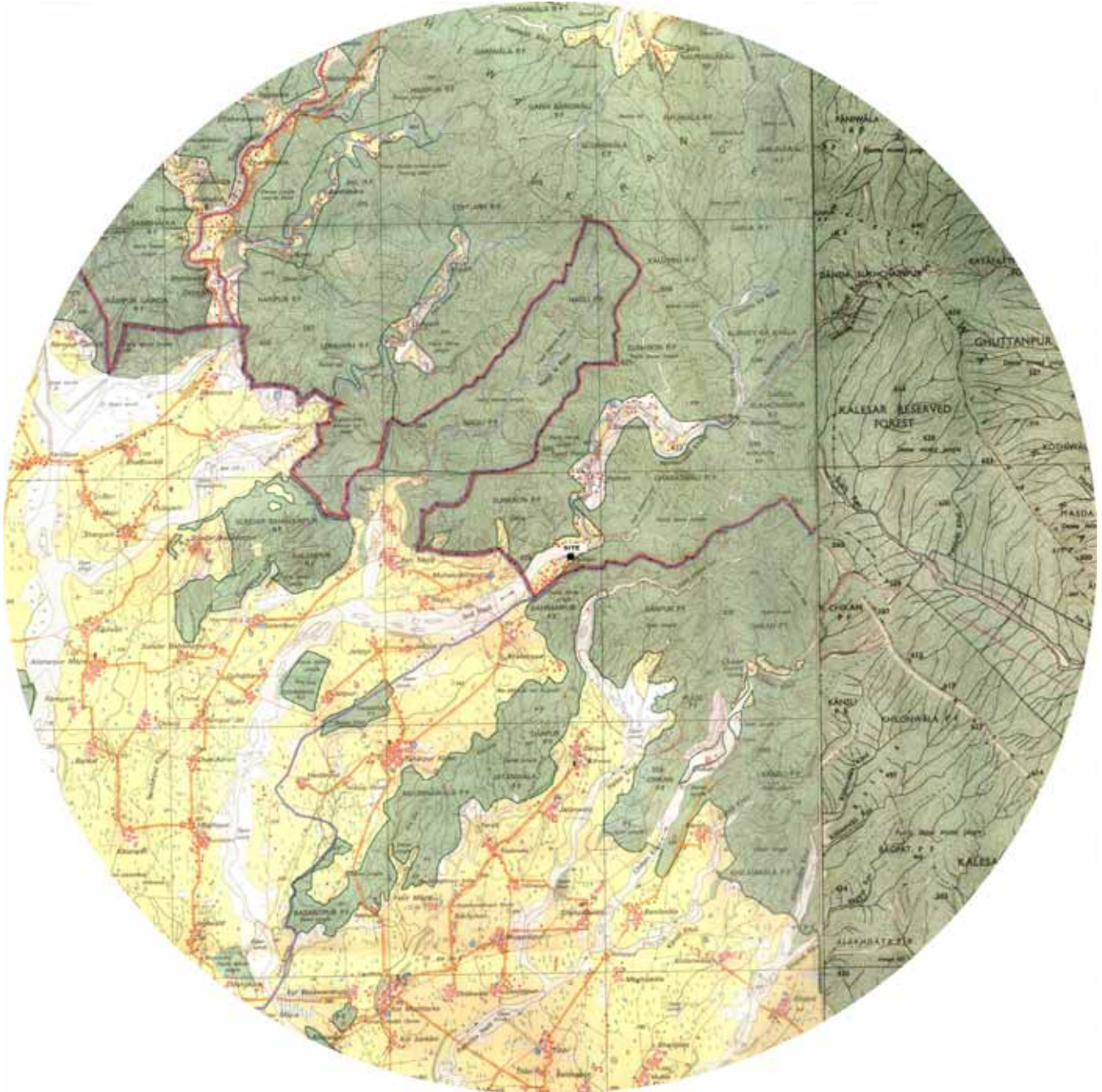
This is noise to which an employee in the occupational environment of the industrial activity is exposed. Critical impacts on exposed workers include, hearing impairment, communication disturbance, speech interference and reduction of efficiency of work and loss of task, concentration leading to work loss and economy loss.

### **ii) Environmental Noise**

Noise emitted by an industrial activity which reaches and is perceived in the neighboring community environment “viz” outside the plant fence or near the boundary wall is considered as Environmental Noise. The critical impact usually is the potential for annoyance and sleep.

Noise level measurements were taken in & around the site and are given in Table 7.11 and Locations of stations monitored, have been shown in fig. 7.4.

**Figure -7.4**  
**LOCATION OF NOISE MONITORING STATIONS**



**TABLE 7.11**

**NOISE LEVEL RESULTS  
(BETWEEN, 9.00 A.M. – 12.00 P.M.)**

<b>SR. NO.</b>	<b>SITE</b>	<b>NOISE LEVEL</b>
1.	Project Site	44
2.	Nagla	42
3.	Sundar Bahadurpur	40
4.	Tibi	46
5.	Khizri	42
6.	Ibrahimpur	40

**7.4.7 Demography & Socio Economic scenario**

Since the existing village kacha road linking this village and site of the project to the main pucca road, about 3 km long, shall be metalled this will add to the prosperity of the area. Moreover setting up an Industrial Unit in this backward area will increase job opportunity to the inhabitants, in addition to availability and electricity in the villages. The company further proposes to establish a School and a Dispensary in the village as a part of their Corporate Social Responsibility. The Company will spend about Rs. 4 – 5 crores for provision of these facilities in the area. This will improve the overall Socio Economic pattern, as other auxiliary facilities shall be available to the population.

**7.5 IMPACT / RISK ASSESSMENT**

Under the "Present Environment" at the Project Site, the important factors which could be affected either positively or negatively have been brought out and documented. These will be verified and documented after the implementation of the project to cross check the likely impact discussed here under: -

## 7.5.1

### Ambient Air Quality

Impact on ambient air quality at site and in the immediate neighborhood could be attributed to the following sources of emissions.

- (i) D. G. Sets
- (ii) Fugitive emission from material handling
- (iii) Emission from furnaces.

#### **(i) D.G. Set**

D.G. Set is run only during electricity breakdowns and the duration of such contingencies are small and widely spaced, since ample power is available in H.P. Thus there is no continuous flow of pollutants from this source. Even otherwise the SPM emitted through the D.G. stack shall be within norms. The stack height has been kept 3.0 mt above the building height to control the Pollutants.

#### **(ii) Fugitive Emission from Materials handling**

These emissions mostly arise from the furnaces during charging. These are collected through APCD and arrested through Cyclones & bag filters which are highly efficient. The solid from the bag filters is sent to TSDF Site. The effect on the general environment of the study area is, thus, v. insignificant.

#### **(iii) Emission from furnaces**

Emission from the furnaces which emanate during melting process are passed through APCD such as cyclones and bag filters which are most effective and remove about 98% SPM generated. No other gases are emitted. Thus clean air will be passed on to the atmosphere.

In view of the above discussion, the level of particulate matter in the outgoing gases in the stack is likely to be less than 100 mg/NM<sup>3</sup> and the ultimate Ambient Air level will be well within the normal limits. However, in case the bag filters are damaged there is a risk of particulate matter going above the

permissible limits. For this purpose firm will always keep additional bags in store to replace the damaged ones, if any, immediately to avoid effect of such a happening.

## **7.5.2 Water Quality**

Waste water is likely to be generated from the following sources:

- i) From cooling tower = 530 KLD (Re-circulated)
- ii) Domestic Waste = 16 KLD

Toilet waste will be treated through STP and treated water shall be used for plantation & landscaping within the premises. Flow from cooling tower shall be recycled.

In view of these measures there will not be any impact on the quality of the ground or surface water in the area due to coming up of the project.

## **7.5.3 Land Environment**

The study area consists of mostly forests and hill slopes. Flat areas are under agricultural, industrial, residential, roads and other common facilities. The unit has an area of about 21075 sq. mts. It is situated on a village which will be metalled by Company link road and no additional approach roads are needed. Thus existing land use pattern in the district is not likely to be changed significantly which could have any detrimental effect on the area as a whole.

## **7.5.4 Soil and Agriculture**

The soil of the study area contains medium level of primary and secondary nutrients. Agricultural operations will not be affected with the setting up of the unit. The major crops in the study area are wheat and maize with small percentage of vegetables and fodder. The emissions from the unit having insignificant pollution load will not be of any threat to the vegetation & soil in

this area as no materials, solids or liquids will be thrown in adjoining lands.

### **7.5.5 Transport & Communication**

The transport & communication system in the area is not very good and the same would be utilized by the workers for this unit which are about 435 in number in 3 shifts. No additional requirements are needed. Thus the impact of the unit on this aspect will be insignificant.

### **7.5.6 Demographic and Socio-Economic Growth**

The strength of workers and staff in the factory will be 435 persons. All workers are drawn mostly from the local population of the area. Thus, there will not be any appreciable change in population in the nearby towns. However, additional employment potential will be generated which will be helpful to the local area. More with provision of transport, education and moral facility to the villages of the area, their economic and social status is likely to improve.

### **7.5.7 Noise Level**

There are some noise producing machineries such as DG Set, ID Fan, Blowers & pump etc. All these machines are located in closed covered rooms where acoustics are being provided. Thus no noise of significant level shall be allowed to go out side the rooms which may disturb the general noise environment heavily. DG Sets are to be used for short periods only. Even otherwise noiseless sets will be used with acoustics. Appropriate steps are being taken by the proponents to mitigate the noise effect so that general noise Environment is not disturbed appreciably and does not go beyond the prescribed limits.

### **7.5.8 Hazardous Materials**

No hazardous materials are used in the process nor the finished goods fall in this category. Thus there is no risk to the Environment on this account.

### **7.5.9 Waste Disposal**

No liquid or solid waste will be disposed off outside the factory. Domestic wastes will be used for raising plantation within the factory premises after treatment. Used oil from DG set shall be sold to authorized recyclers. The impervious RCC tank has been provided within the premises for short time holding of the solids from furnace i.e. slag & from bag filters which shall be used partly for lining of the furnaces and the remaining sent to TSDF Site. Thus there will be no effect of waste disposal on the environment in general.

## **8.0 ENVIRONMENTAL MANAGEMENT PLAN**

### **8.1 General**

In order to counteract the likely adverse effects of the proposed unit, Environmental Management Plan (EMP) has been prepared keeping in view the existing conditions and the likely changes, though insignificant, which could occur due to the project. This covers the implementation and monitoring of different control measures. The remedial measures are discussed as follows.

### **8.2 Air Pollution**

As discussed earlier, the unit is providing Bag filters and Cyclones for process emissions which control the SPM to keep it within limits. The D.G. set are also likely to be used occasionally during the electricity break downs only. Chimneys of sufficient height have been provided to control the G.L.C. of various pollutants. Thus all these parameters such as SPM, SO<sub>2</sub> & NO<sub>x</sub> from the stacks will be well within the limits fixed by the Pollution Control Board. No other process gas passes to the atmosphere. The pollution load on account of these pollutants in the Ambient air in the area is already on the low side

The contribution of these parameters to the environment by the proposed unit is not likely to change the existing conditions appreciably. No additional remedial measures, apart from the already adopted are, therefore, necessary.

### **8.3 Water Pollution**

No waste water from unit is allowed to go to the surface or underground water without treatment. For domestic sewage, STP of 20 m<sup>3</sup>/ day capacity has been provided to treat the Sewage from toilets etc. Activated Sludge Packaged Plant based on SAFF Technology have been provided for this unit

with tertiary level treatment. Details of Plant have been given in Annexure-I  
Clear water is used for raising plantation within the factory premises and  
for landscaping. No other mitigating measures are needed

#### **8.4 Noise Pollution**

There are some noise producing machineries such as DG Set, ID Fan, Blowers & pump etc. All these machines are located in closed covered rooms where acoustics are being provided. Thus no noise of significant level shall be allowed to go out side the rooms which may disturb the general noise environment heavily. DG Sets are to be used for short periods only. Even otherwise noiseless sets will be used with acoustics. To insulate the workers in the working area from the noise effect Personnel Protection Equipment (PPE) like ear plugs & ear mufflers shall be provided. The existing noise levels are also well within the norms. In view of these measures the general noise level will not be affected very much and no other mitigation measures are needed.

#### **8.5 Hazardous Materials**

There are no hazardous materials either used in any manufacturing process or in finished goods. Used oil from DG Sets will be sold to Authorized vendors. No other mitigating measures are, therefore needed for this purpose. Used CFL shall be sent to the approved TSDF site.

#### **8.6 Waste Management**

There are no liquid or solid wastes from the manufacturing process except the excess water from the cooling systems which will be recycled. Domestic waste will be used within the premises after treatment for which STP has been provided. Sludge from STP will be used as manure for plantation. No other special arrangements for waste disposal are, therefore, required. Used oil from D.G. Set shall be sold to recyclers.

## **9.0 ENVIRONMENT MONITORING PLAN**

**9.1** Regular monitoring of all significant environmental parameters is essential to check the compliance status vis-à-vis the environmental laws and regulation. The objectives of the monitoring will be as follows:

- To verify the results of the impact assessment study with respect to the proposed projects.
- To study the trend of concentrated values of the parameters, which have been identified as critical and then planning the mitigating measures.
- To check and assess the efficacy of pollution control equipment.
- To ensure that any additional parameters, other than those identified in the impact, do not turn critical after the commissioning of proposed project.

A comprehensive Environmental Monitoring Program that has been prepared for the purpose of implementation in the proposed project is described below:

- The ambient Air quality shall be monitored at project site and two upward and downstream locations once every quarter for RSPM, SPM, NO<sub>x</sub> & SO<sub>2</sub>, levels during the Construction Phase and Operational Phase.
- The Ambient Noise Levels shall also be monitored once every six months.
- The vehicles shall be checked for PUC once every quarter during the development period and records shall be maintained.
- Groundwater quality of the Tube-wells at site area will be regularly monitored preferably once in a quarter during the development period.
- Effluent from the Sewage Treatment Plant shall be checked fortnightly. In addition monitoring shall be got done from an independent agency as laid down by HP State Environment Protection & Pollution Control Board.

All the above observations will be compiled and documented by the EMC to serve the following purposes.

- Identification of any environmental problems that are occurring in the area.
- Initiating or providing solution to those problems through designated channels and verification of the implementation status.
- Controlling activities inside the project, until the environmental problem has been corrected.
- Suitably responding to emergency situations.

## **9.2 Environment Management Cell:**

To implement the EMP, a structured Environment Management Cell (EMC) interwoven with the existing management system will be created. EMC will undertake regular monitoring of the environment and conduct yearly audit of the environmental performance during the construction of the project. It will also check that the stipulated measures are being satisfactorily implemented and operated. It shall also co-ordinate with local authorities to see that all environmental measures are well coordinated

The Environment Management Cell shall include:

- Representative of Management (Head of Environment Cell)
- Process Incharge from APCD/STP, Water Works
- Incharge Maintenance Department
- A representative of Environmental Consultants

## **10.0 RAIN WATER HARVESTING**

### **10.1 Introduction**

Rain Water Harvesting is collecting and using precipitation from a catchments surface. The rainwater collected can be stored for direct use or can be recharged into the groundwater. Rain Water Harvesting is thus becoming essential as it helps to meet our demand for the water either directly as rain water is stored and put to different uses or indirectly via replenishing the ground water.

Thus, there are two main techniques of Rain Water Harvesting (RWH) depending on the end use.

- Storage of rain water on surface for direct use
- Recharge to ground water

For RWH, the rainwater that falls on a catchment is carried through pipelines or drains for storage or recharge. The catchment can be a paved area like a roof, terrace or courtyard of a building, or an unpaved area like a lawn or open ground.

### **10.2 Methodology**

The decision whether to store or recharge the harvested water depends on:

- Hydro-meteorological characters viz. Rainfall duration, general pattern and intensity of rainfall.
- Hydro-geology of the area including nature and extent of aquifer, soil cover, topography, depth to water levels and chemical quality of ground water.

In areas where rain falls throughout the year, barring a few dry

periods, one can make use of small size storage tanks for storing rainwater, since the period between two spells of rain is short. On the other hand in areas where the majority of the rainfall occurs during 3 to 4 months of monsoon, the storage will require large size storage tanks and therefore it may be better to use rainwater to recharge. However, a combination of two systems may have to be adopted where hydro-geology of the area makes recharging uneconomical due to depth to aquifers, nature of strata etc. Both the approaches are discussed below:

### **10.2.1 Storage of Rainwater For Direct Use**

Rainwater can be stored in an underground RCC/masonry tank. Pre-fabricated tanks such as PVC can be installed above the ground. Each tank must have an overflow system for situations when excess water enters the tank. The overflow can be connected to the drainage system.

In general, runoff from only paved surfaces is used for storing since it will be relatively less contaminated. Drainpipes that collect water from the rooftop are diverted to the storage container. Rainwater collected from rooftops is free of mineral pollutants like fluoride and calcium salts which may be found in groundwater. But it is likely to be contaminated with pollutants in air and on surface.

To prevent leaves and debris from entering the system, mesh filters should be provided at the mouth of the drainpipe.

A first-flush device should be provided in the conduit before it is connected to the storage container. This is to drain-off the first spell of runoff the season, which may be more laden with dust and impurities.

A sedimentation tank can also be provided before the main storage tank to collect dust and impurities as se settlement.

This is particularly useful in case of underground storage water tanks. It is preferable to use the stored water for purposes like gardening, flushing, bathing, augmenting storage for fire-fighting etc. If it is to be used for drinking purposes it should be used after boiling or disinfecting with chlorine tablets of after filtration.

### **10.2.2 Artificial Recharge to Ground Water**

Artificial recharge techniques are adopted where:

- Adequate space for surface storage is not available especially in urban areas.
- Water level is deep enough (>8m.) and adequate subsurface storage is available.
- Permeable strata are available at shallow/moderate depth.
- Where adequate quantity of surface water is available for recharge to ground water.
- Ground water quality is bad and the aim is to improve it.
- Where there is possibility of intrusion of saline water especially in coastal areas.
- Where the evaporation rate is very high from surface water bodies.

### **10.2.3 Methods of Ground Water Recharge**

#### **(i) Recharge Pits**

Recharge pits are constructed for recharging the shallow aquifers. These are constructed 1 to 2 m. wide and 2 to 3 m. deep which are back filled with boulders, gravels & coarse sand. The size of filter material is generally taken as below:

Coarse sand:	1.5 – mm
Gravels:	5 – 10 mm
Boulders:	5 – 20 cm

The filter material should be filled in graded form. Boulders at the bottom, gravels in between & coarse sand at the top so that the silt content that will come with runoff will be deposited on the top of the coarse sand layer and can easily be removed. If clay layer encountered at shallow depth, it should be punctured with auger hole and that auger hole should be refilled with fine gravel of 3 to 6 mm size.

**(ii) Recharge Trenches**

These are constructed when the permeable strata is available at shallow depths. Trenches may be 0.5 to 1 m. wide, 1 to 1.5 m. deep and 10 to 20 m. long depending upon availability of water. These are back filled with filter materials. In case of clay layer encountered at shallow depth, the number of auger holes may be constructed & back filled with fine gravels.

**(iii) Abandoned Dugwells**

Existing abandoned dug wells may be utilized as recharge structure after cleaning and de-silting the same. For removing the silt contents, the runoff water should pass either through a de-silting chamber or filter chamber.

**(iv) Hand Pumps / Tube-wells**

The existing abandoned hand pumps may be used for recharging the shallow/deep aquifers, if the availability of water is limited. Water should pass through filter media before diverting it into hand pumps.

Abandoned tube-well may be used for recharging the shallow/deep aquifers. These tube-wells should be redeveloped before use as recharge

structure. Water should pass through filter media before diverting it

into recharge tubewell.

**(v) Recharge Wells**

Recharge wells of 100 to 300 mm. Diameter are generally constructed for recharging the deeper aquifers and roof top rain water is diverted to recharge well for recharge to ground water. The runoff water may be passed through filter media to avoid choking of recharge wells.

**(vi) Recharge Shafts**

For recharging the shallow aquifers, which are located below clayey surface at a depth of about 10 to 15 m, recharge shafts of 0.5 to 3 m. diameter and 10 to 15 m. deep are constructed depending upon availability of runoff. These are back filled with boulders, gravels & coarse sand. For lesser diameter shafts, the reverse/direct rotary rigs are used and larger diameter shafts may be dug manually. In upper portion of 1 or 2m depth, the brick masonry work is carried out for the stability of the structure.

**(vii) Lateral Shafts with Bore Wells**

If the aquifer is available at greater depth say 20 or 30 m, a shallow shaft of 2 to 5 m diameter and 5 to 6 m deep may be constructed depending upon availability of runoff. Inside the shaft, a recharge well of 100 to 300 mm diameter is constructed for recharging the available water to deeper aquifer. At the bottom of the shaft a filter media is provided to avoid choking of the recharge well.

For recharging the upper as well as deeper aquifers, lateral trench of 1.5 to 3 m. wide & 10 to 30 m. long depending upon availability of water with one or more bore wells may be constructed. The lateral trench is back filled with boulders, gravels & coarse sand.

**(viii) Open Spreading**

When permeable strata starts from top then open spreading is used. Water is spread in streams/nalah by making check dams, nalah bunds, cement plugs, gabion structures or percolation ponds.

**10.3 General Arrangements Proposed**

In the present case since the land available in the unit is limited and large tanks cannot be constructed it is proposed to recharge the ground water through deep bores.

**10.4 Recharge Potential**

The recharge is proposed to be done from the roof top of the building only. The recharge potential thus available is as below:-

Area of the catchment (Roof Top) A = 10337 m<sup>2</sup>

Average annual rainfall R = 1.0 m.

Runoff coefficient C = 0.8

About 80% of rainfall that falls on the roof (Roofs with tiles) is available for use.

Annual Roof Top Rain Water Harvesting Potential = A x R X C  
= 8270 m<sup>3</sup>

## 11.0 Expenditure on Environmental Measures

S.No	Title	Capital Rs. Lacs	Recurring Cost Rs., Lacs/Annum
	Cost of environment protection measures		
1	Air Pollution Control/	40.0	5.0
2.	Water Pollution Control/ sewage Treatment Plan	10.0	1.0
3.	Noise Pollution Control (Including cost of Landscaping, Green Belt and Rain Water Harvesting)	5.0	1.0
4.	Solid Waste Management	1.0	---
5.	Environment Monitoring and Management (Including Establishment of Laboratory at STP)`	2.0	0.5
6.	RWH	3.0	--
7.	Miscellaneous (Appointment of Consultants, Management of Environment Cell, Consent fees and monitoring)	3.0	1.0
	<b>Total</b>	<b>64.0</b>	<b>8.5</b>

## **12.0 FIRE FIGHTING:**

### **12.1 Introduction:**

The project is coming up in an area, which is already an industrial and residential area. A number of Industrial units exist adjacent to this unit. It is, therefore, desirable that there should be an emergency plan in case there is any accident in any industry.

### **12.2 Management of fire & other hazards**

Industrial fires and explosions cause considerable damage to lives and property besides impending productivity. This damage may extend to neighboring areas. The fundamental approach governing fire safety attempts shall be adopted to ensure that fires do not at all start in the first place and should they occur, to restrain their spread by quick detection and extinguishment.

### **12.3 Prevention of spread of fire:**

Despite many precautions taken, fires do break out. Hence every factory should have established measures to detect a fire and to attack it immediately. Automatic fire detection has many advantages such as speed and reliability and is recommended for warehouses, control rooms/computer rooms and unoccupied areas with high fire hazard. Depending on the nature of the occupancy and the hazard, a variety of detection systems are available. They are activated by one of the effects of fire such as temperature rise, smoke flame or heat and can be coupled to an alarm system which would provide visual/audible alarms at designated manned locations. They can also be designed to automatically actuate fire-extinguishing systems. The selection/installation of the detection system shall conform to the applicable National Standards.

## **12.4 Extinguishing Systems:**

Equipment for the fighting shall be chosen with care and suited to the task. Fires are classified depending on the materials involved and appropriate extinguishing agents are also recommended. Table 12.1 gives the classification/recommendation as per Indian Standard-2490. The extinguishing agents mentioned are applied to the fire using portable or fixed appliances. To fight fires at their incipient stage, portable extinguishers prove very useful. This type will be provided in adequate numbers at appropriate locations and employees shall be thoroughly trained in their use. Insurance regulations, the Factories Act, as well as the Bureau of Indian Standard provide guidance.

**Table 12.1**

**Fires Classification & Extinguishing Media**

Class of fire	Description	Extinguishing medium	Indian Standard
A	Fires involving ordinary combustible materials, like woods, paper textiles, etc. where the cooling effect of water is essential for the extinction of fire	Water	934 940 6234
B.	Fire in flammable liquids like oils, solvents, petroleum products, varnishes, paints etc. where a blanketing effects is essential	Foam Carbon dioxide Dry Chemical	933 2878 2171 4308
C	Fires involving gaseous substances under pressure where it is necessary to dilute the burning gas at a very fast rate with an inert gas or powder.	CO <sub>2</sub> , Dry Chemical Powder. The best way to extinguish such fires is by stopping the flow of fuel gas to the fire. Container is kept cool with water spray.	2878 2171,4308
D	Fires involving metals like magnesium, aluminium, zinc, potassium, etc. where the burning metal is reactive to water and which requires special extinguishing media or technique.	Special dry powders	2171 4861

## 12.5 Management Plan:

The task of accident and emergency control can be simplified and made effective if pre-planned systems and procedures are available. Without these, important matters may be overlooked at the time of an emergency. Every management must survey the total operation to identify potential for fire losses and develop an action plan to put the business back to normal with minimum loss of time. A fire protection Manual should be prepared, preferably in 3-parts. The first part should outline the fire risks in terms of plant locations, equipment and facilities and indicate the ways in which risks have been minimized. The Second part would set out operating procedures, standards of fire protection established, maintenance of these standards, action to be taken in the event of fire by every level of management, responsibility for inspection and repair. It should also include instructions for staff responsible for building services. The third part should outline the training required for existing and new staff, the inspection schedules and check lists, sources of additional information and help. To have effective control a Management Plan has been prepared to alert and take care of the workers and staff of the unit, in case there is any fire or other accident in the adjoining Industrial unit. That includes:

- Identifying Emergency team Leader and his Deputy and Establishment of Site Emergency Control Room (SECR).

- Emergency teams

Emergency teams shall consist of 2 teams, Action Team A and a Non-Action Team-B. Action team-A will consist of staff of maintenance department, security supervisor etc. Non-Action team-B will consist of people representative from the unit and other people in management such as those looking after STP,APCS & water works etc. Team-A will initiate action in case of emergency. Team-B will help team-A in preparing to comply with specific instructions. A multi-channel network shall connect site emergency control room to various district emergency support centers, i.e. fire department, police department and hospitals and automatically actuate fire-extinguishing

Systems. The selection/installation of the detection system shall conform to the applicable national standards.

During non-emergencies this team shall engage in following activities:

1. Identification of hazards, interact with local office of Pollution Control Board and Industry and find out which unit are using hazardous chemicals or materials.
2. Earmarking area for assembling during emergencies.
3. Training programme for the staff on fire, first aid and evacuation.
4. Identification of Hospitals.
5. Identification and displaying emergency numbers and contacts.
6. Displaying emergency symbols.
7. Checking display of emergency information in storage area.
8. Updating first aid emergency kit.
9. Updating fire control systems
10. Preparation and updating of standard operation procedures (SOP)

In case a staff member on duty spots any emergency and comes to know about any fire or explosion in the industrial area or any gas leakage, he, as per SOP, will go to the nearest emergency alarm station. He will also try his best to find out about the exact location and nature of emergency from local authorities. In accordance with the SOP the following activities will immediately begin:

- Team-A and Team-B will be activated
- Announcements shall be made on the loudspeaker and workers will be informed
- Necessary alarms shall be activated to direct the workers to the emergency assembly area, if needed.
- The external network of District Fire Station, Police and Hospital shall be Intimated.

The Emergency Supervisor shall also decide:

- Whether the incident requires evacuation of workers.

- Whether the workers to be kept indoors or to be evacuated and assembled at predetermined site.
- Whether district authorities are to be activated.

Once the emergency situation is under control, the advisory team will return to SECR with their observations, report and submit the findings in writing to Emergency Supervisor. Based on the report Emergency Supervisor will communicate further directives and communicate emergency and authorize step-by-step restoration of normal operation.

## **12.6 Alarm System during Disaster**

On receiving the message of disaster from the site, the control room will sound siren “wailing type” for 5 minutes. The message shall also be broadcasted through Public Address System. On receiving the message of emergency over, the alarm shall be sounded for 2 minutes. The features of alarm system shall be explained to all during trainings to avoid any confusion.

## 13.0 POLLUTION CONTROL STANDARDS & SAFETY MEASURES

Various regulatory standards for different parameters fixed by P.C.B. / MINAS shall be strictly followed by the unit. Storage & handling of Chemical shall also be regulated as per instructions laid down. Briefly these are discussed as under

### 13.1 Ambient Air

Ambient Air Quality standard fixed by the Central Pollution Control Board U/S 16(h) of the Air Act 1981 are as below:-

Area Category	Concentration in ug/m <sup>3</sup>			
	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
A. Industrial & Mixed use	500	20	120	5000
B. Residential & Rural	200	80	50	2000
C. Sensitive	100	30	30	1000

Monitoring shall be done uniformly over 12 month in a year with a frequency of once in a week with sampling time of 8 hours for any sample. The area is called sensitive because of its proximity to national parks, forest, historical monuments & health resorts etc.

As an abundant precaution company will keep sufficient no. of Bag filters in stock so that same could be use as replacement of damaged bags if any.

## 13.2 National Ambient Air Quality Standards (NAAQS) 1994

Pollutants	TWA	<u>CONCENTRATION</u>	<u>IN AMBIENT</u>	<u>AIR</u>
		Sensitive Area	Industrial Area	Residential, Rural & Other Areas
SO <sub>2</sub>	Annual* 24 hours**	15 µg/m <sup>3</sup> 30 µg/ m <sup>3</sup>	80 µg/m <sup>3</sup> 120 µg/m <sup>3</sup>	60 µg/m <sup>3</sup> 80 µg/m <sup>3</sup>
No <sub>2</sub>	Annual 24 hours	15 µg/m <sup>3</sup> 30 µg/m <sup>3</sup>	80 µg/m <sup>3</sup> 120 µg/m <sup>3</sup>	60 µg/m <sup>3</sup> 80 µg/m <sup>3</sup>
SPM	Annual 24 hours	70µg/m <sup>3</sup> 100µg/m <sup>3</sup>	360µg/m <sup>3</sup> 500µg/m <sup>3</sup>	140µg/m <sup>3</sup> 200µg/m <sup>3</sup>
RSPM	Annual 24 hours	50µg/m <sup>3</sup> 75µg/m <sup>3</sup>	120µg/m <sup>3</sup> 150µg/m <sup>3</sup>	60µg/m <sup>3</sup> 100µg/m <sup>3</sup>

### 13.3 Effluent

National Standards have been developed based on achievability & environmental requirements. These shall be followed by the unit as given below :-

<b>Parameter</b>	<b>Limiting Concentration mg/l except pH</b>
pH	5.5-9.0
Suspended Solids	100
Dissolved Solid	2100
BOD	30
COD	200
Oil &. Grease	10
Chromium (Hexavalent)	0.1
Chromium (Total)	2.0
Copper	1.0
Arsenic	0.2
Lead	0.1
Cyanide	0.1
Phenolic Compounds	1.0
Sulphide	2.0
Phosphate	5.0
Nitrates	50.0
Bio-Assay test	90%

### 13.4 Noise Levels

A. Ambient Noise Standards fixed by C.P.C.B. are as below:

Sr. No.	Category of Area	Limit in dB(A)	
		Day time	Night Time
1.	Industrial Area	75	70
2.	Commercial Area	65	55
3.	Residential Area	55	45
4.	Silence Zone	50	40

B. Permissible noise exposure for Industrial workers is as below:-

Location	Noise Level (dB (A))
Rural	25.35
Suburban	30-40
Urban (Residential)	35-45
Urban (Residential & Business)	40-50
City	45-55
Industrial Area	50-60

## 13.5 First Aid

First Aid shall be readily available and at the nearest place in case of any emergency. First aid charts showing actions to be taken in a practice shall be displayed prominently. Following equipment shall be provided.

- First Aid Boxes
- Stretchers/Wheel/Chairs
- Fire Blankets
- Emergency Showers & Eye wash facilities
- Emergency lighting

Arrangement shall be made with some local Doctor or Clinic for immediate assistance in case of Emergency. Antidotes shall either be kept in the factory or should be available with the Clinic/Doctor. M.S.D. Sheet shall be sent to the Doctor along with the patient.

First aid charts showing actions to be taken in case of a particular accident shall be prominently displayed at the working places. In general following actions could be taken depending on the injury.

### **i) Exposure to fumes or vapors**

Remove the affected person to fresh air. If needed try artificial respiration & consult Doctor immediately.

### **ii) Eye Contact**

Flush with water and get medical advice.

### **iii) Skin Contact**

Remove contaminated clothing and wash off immediately with water.

### **iv) Burns**

Cool down the affected area with cold water until pain subsides. Apply some antiseptic and obtain medical advice.

## **13.6 Fire Fighting Control**

Fire is one of the major hazards in factories, specially dealing with inflammable gases/materials. It is, therefore, necessary that adequate steps are taken to immediately control fire and reduce damages. Time element is very important in this case as such immediate action has to be taken. Different kinds of fire fighting media are suggested as below:

### **Water**

Water acts as a coolant, i.e. it reduces the temperature of the burning product to a point below its fire point and hence extinguishes the fire. Water should preferably be used as a fine spray or fog rather than a jet. This enhances its cooling potential and prevents fire spread. Water should never be used on water-reactive chemicals.

### **Dry Chemical Powders**

They are generally effective on flammable solvents, aerosols, products which react adversely with water and electrical fires.

### **Carbon Dioxide**

This is effective on flammable solvents, products which react with water and electrical wires.

### **Foam**

A number of different type of foams are available commercially. Their selection should be done after consulting the HSDS of different chemicals. However, great skill is needed in using foams for effective results.

**SEWAGE TREATMENT PLANT:**

The plant has been designed for a flow of 20 m<sup>3</sup>/day keeping in view future requirements to treat the sewage to an extent that the discharge from the plant will meet the standard norms set by the competent authority.

**INLET PARAMETERS**

Type of Effluent – sewage

Flow	M <sup>3</sup> /day	20.0 (Max.)
BOD 5, 20oC	mg/l	250
COD	mg/l	400
TSS	mg/l	350
pH	--	6.5-7.5
Oil & Grease	mg/lit.	18

**REQUIREMENT OF TREATED SEWAGE**

The treated sewage shall have the following characteristics:

pH	:	6-9
TSS	<	100 mg/lit.
TDS	<	2100 mg/lit.
BOD	<	30 mg/lit.
COD	<	150 mg/lit.
Oil & Grease	<	10 mg/lit.

## **SCHEME OF TREATMENT**

The sewage will be collected in the sewage collection cum pumping sump through different drains in the industry. It will then be passed through screen chamber and grit removal channels to remove any floating material. The sewage will then enter the sewage treatment plant. STP of modular construction which comprises of SAFF Reactor, Secondary Sedimentation Section, Chlorine contact and treated water sump, multi-grade filter comprising of Dual Media Filter.

A further consideration made in treatment process design is the non-installation of primary clarifier. Primary clarifier has deliberately not been used in the process, taking in view the problem of sludge separation and its disposal cum handling. The sludge generated from the clarifier is highly biodegradable and if not treated properly would cause severe odor problems due to natural anaerobic degradation taking place at the dumping/storage area. The treatment of the sludge either by anaerobic digestion or by aerobic digestion will be very costly affair.

On the other hand the excess sludge produced from the secondary system will be well oxidized and stabilized so that it can be disposed off as a landfill to act as soil and enriching bio-fertilizer.

As it is a biological system it has to be operated continuously all 24 hours and thereby constant feed of sewage is required. The effluent then passes on to the Aeration tank to oxidize the organic material to  $\text{CO}_2$  &  $\text{H}_2\text{O}$  by the aeration principle. SAFF Reactor tank is fitted with number of air diffusers of suitable capacity to provide necessary dissolved oxygen mixing in the effluent. Twin – Lobe Blowers for oxidation, provides the aeration. The secondary clarifier/tube settler, which is designed on low overflow rate, is provided after the aeration tank to enable separation of solids. A steep slope is provided to the tubes in the settling tank to eliminate the need of scrapper mechanism.

The clarified water collected from the collection launder of the tube settler is then passed through online chlorination system, where short dosing of chlorine is given. It is necessary to pass the effluent further through tertiary treatment system

comprising of Filtration with Dual Media Filter, to meet the desired norms. The treated effluent will be reused for irrigation within the Industry.

## **SYSTEM DESIGN**

### **Following major units are proposed**

1. Raw Sewage collection cum pumping sump
2. Screen Chamber
3. Grit Channel
4. SAFF Reactor
5. Secondary Tube Settler
6. Clear water sump
7. Online Chlorinator
8. Dual Media Filter
9. Sludge Drying Beds

## **SIZES OF EQUIPMENTS/UNITS**

Sizes of various units such as Aeration system, Secondary sedimentation tank are given as under.

### **i) BAR SCREEN/SCREEN CHAMBER**

No. of units	: one
Spacing of bars	: 10 mm c/c.
Screen Chamber m x m x m	: 1 x 1 x 1
MOC	: RCC/RBC

### **ii) COLLECTION CUM PUMPING SUMP**

No. of units	: one
Capacity, m <sup>3</sup>	: 20
Size m x m x m	: 2.0 x 3.0 x 3.5 SWD
F.I.	: 0.5
MOC	: RCC

### **iii) SAFF REACTOR / AERATION SYSTEM**

No. of units	: one
Capacity, m <sup>3</sup> /day	: 20
Size m x m x m	: 1.5 x 1.5 x 2.0
MOC	: RCC

### **vi) SECONDARY SEDIMENTATION TANK**

No. of units	: one
Type	: Tubedek media filled
Capacity, m <sup>3</sup> /day	: 20
Size m x m x m	: 1.5 x 1.5 x 1.75 SWD with 45° hopper bottom
MOC	: MS internally coated

## v) DUAL MEDIA FILTER

### Specification

Working	:	Down-Flow
Maximum Flow rate (m <sup>3</sup> /hr)	:	2.0
Minimum Flow rate (m <sup>3</sup> /hr)	:	1.0
Maximum Working Pressure (kg/cm <sup>2</sup> )	:	3
Minimum Working Pressure (kg/cm <sup>2</sup> )	:	1.5

### Pressure vessel

Type	:	Vertical cylindrical
MOC	:	Mild Steel
Testing Pressure (kg/cm <sup>2</sup> )	:	3
Working Dia (mm)	:	500
Height on straight (mm)	:	2000

### Filtration Media

Type	:	Graded sand with under Bed, Activated Carbon
Bed depth (mm)	:	750

### Operation System

Type	:	Semi Automatic
Flow monitoring unit	:	Multiple port valve
Quantity	:	One No.

### Frontal Pipe line

MOC	:	MS
Quantity	:	One Lot

## **vi) AIR DIFFUSION SYSTEM**

Air requirement, cfm	: 1.7
Type of air system	: Blower/Twin lobe
No. of Diffusers	: 5
Type of diffusers	: Tubular/non-clog

## **vii) SLUDGE DRYING BEDS**

No. of units	: Three
Capacity of each m <sup>2</sup>	: 3.0 x 2.0 m
Size m x m x m	: 3 x2x 1
MOC	: RCC/RBC

## **4.3 OTHER SPECIFICATIONS**

### **A. UNITS**

1. Foundation for pumps, drains, : Brick Masonry sludge bed, screen chamber etc.
2. Collection tank , aeration tank (SAFF) : R.C.C.  
clear water tank  
R.C.C. :1:1.5:3 (cement:sand:aggregate) mix.  
L.C.C. :1:4:8 (cement:sand:aggregate) mix.  
  
Plaster : 1:3 (cement:sand) mortar.  
Brick Masonry : 1:5 (cement:sand)mortar.

### **B. EQUIPMENT**

1. Electric Motors : Kirloskar/Siemens/NGEF/Crompton.
2. Sedimentation tank : M.S. Sheet Tank with internal FRP lining. Fitted with internal Mechanism
3. Pumps : Kirloskar.
4. Pipes & Specials : M.S. B-Class Welded connections.

5. Valves : Cast Iron with brass spindles.
6. Electricals : Best Indian make.
7. Cables : Aluminium-PVC Armoured