

# **FINAL EIA REPORT**

**For**

Steel Manufacturing Unit for increasing the production capacity to 330 TPD for manufacturing of Ingots/ TMT Bars

**Located at**

Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh,  
Distt. Fatehgarh Sahib, Punjab

**By**  
**“M/s Punjab Steels”**

Project schedule 3(a): Metallurgical Industries (ferrous & nonferrous)

**Category: B1**

**Capacity: Existing – 115 TPD**

**After Expansion – 330 TPD**

(TOR Letter No. – SEIAA/2018/875 dated 16<sup>th</sup> July 2018)

(Baseline Monitoring Period – 1<sup>st</sup> March 2018 to 31<sup>st</sup> May 2018)

**Submitted by**



**M/s Eco Laboratories & Consultants Pvt. Ltd.**

Eco Bhawan, E-207, 204 & 205, Industrial Area, Phase VIII-B (Sector-74)  
Mohali (Punjab) - 160071.

[www.ecoparvavaran.org](http://www.ecoparvavaran.org)

(QCI NABET Accreditation No. - **NABET/EIA/1720/IA0032** dated **11.04.2018**)

(In-house Lab., NABL Accreditation No. – **TC-7477** dated **22.06.2018**)

**August, 2019**

**CONTENTS**

S. No.	Particulars	Page No.
1.	Declaration by project proponent	i
2.	Disclosure of Consultant	ii
3.	TOR Letter	v
4.	TOR Compliance	xvi
5.	Executive Summary in English	xxxxvii
6.	Executive Summary in Punjabi	xxxxxx
7.	EIA/EMP report	1-184

**Chapter 1 Introduction**

1.1	Introduction	1
1.2	Purpose of the report	2
1.3	Identification of the project & project proponent	2
1.3.1	Nature of the project	2
1.3.2	Size of the project	3
1.3.3	Location of the project	3
1.3.4	Project proponent	6
1.4	Importance of the project	6
1.5	Scope of the study	7

**Chapter 2 Project Description**

2.1	Project Description	10
2.2	Type of project	10
2.3	Need for project	11
2.4	Location of project	11
2.5	Project size & magnitude of operation	13
2.6	Project layout	16
2.7	Schedule for approval & implementation	16
2.8	Manufacturing process description	16
2.8.1	Existing Manufacturing Process	16
2.8.2	Manufacturing Process after Expansion	17
2.8.3	Fume extraction system for induction furnace (APCD)	18
2.9	Project description	19
2.9.1	Machinery	19
2.9.2	Raw material requirement	20
2.9.3	Land requirement	21
2.9.4	Project cost	22

2.9.5	Water requirement	23
2.9.6	Sewage Treatment Technology	24
2.9.7	Power	28
2.9.8	Manpower	29
2.9.9	Solid waste	29
2.10	Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions or other EIA requirements	31

### **Chapter 3 Description of Environment**

3.1	Introduction	32
3.2	Study area and period	32
3.3	Components & Methodology	33
3.4	Meteorological data	34
3.4.1	Climate	34
3.4.2	Temperature	35
3.4.3	Rainfall	35
3.4.4	Humidity	36
3.4.5	Cloudiness	37
3.4.6	Wind speed & direction	37
3.5	Air environment	38
3.5.1	Duration and season of monitoring	39
3.5.2	Sampling frequency	39
3.5.3	Parameters & methods of monitoring	39
3.5.4	Ambient air quality monitoring	39
3.5.5	Ambient air quality status	43
3.6	Noise environment	44
3.6.1	Ambient standards in respect of noise	45
3.6.2	Noise results	47
3.7	Land environment	48
3.7.1	Land use & land cover	48
3.7.2	Geomorphology & soil	51
3.7.3	Soil quality	51
3.7.4	Physical characteristics	51
3.7.5	Chemical characteristics	53

3.7.6	Conclusion	57
3.8	Water Environment	57
3.8.1	Hydrogeology	57
3.8.2	Water level behavior	57
3.8.3	Ground water flow	57
3.8.4	Ground Water Resources	58
3.8.5	Status of Ground Water Development	60
3.8.6	Water quality	61
3.8.7	Ground Water Quality	67
3.8.8	Surface Water Quality	67
3.8.9	Conclusion	68
3.9	Biological environment	68
3.9.1	Sampling	68
3.10	Socio-economic environment	74
3.10.1	Scope of Socio Economic Survey	74
3.10.2	Methodology	75
3.10.3	Demographic & Socio Economic Details of District Fatehgarh Sahib	75
3.10.4	Demographic details of the study area	76
3.10.5	Socio- Economic Benefits of the project activities on the local community	82

**Chapter 4 Anticipated Environmental Impacts & mitigation measures**

4.1	Introduction	85
4.2	Identification & Characterization of Impacts	86
4.2.1	Impacts & mitigation measures due to project location	86
4.2.2	Impacts & mitigation measures due to project design	86
4.2.3	Impacts & mitigation measures due to construction phase	87
4.2.4	Impacts & mitigation measures due to operation phase	87
4.3	Impacts during operational phase	92
4.3.1	Impact on air	92
4.3.2	Impact on water resources and water quality	105
4.3.3	Impact on noise	106
4.3.4	Impact on Land Environment	107
4.3.5	Hazardous waste management	107
4.3.6	Impact on biological environment	108

4.3.7	Impact on Socio – Economic environment	108
<b>Chapter 5 Analysis of Alternatives (Technology and Site)</b>		
5.1	Introduction	112
<b>Chapter 6 Environmental Monitoring Programme</b>		
6.1	Introduction	113
6.2	Parameters monitored	113
6.2.1	Ambient air quality	114
6.2.2	Stack emissions	114
6.2.3	Ground water quality	114
6.2.4	Noise monitoring	114
6.2.5	Domestic effluent quality	115
6.2.6	Soil sampling	115
6.2.7	Occupational health & safety monitoring	115
6.2.8	Industrial safety training	116
6.2.9	House keeping	116
6.2.10	Periodic preventive maintenance	116
6.2.11	Accidents & diseases monitoring	116
6.3	Budget & procurement schedule	117
6.4	Summary	118
<b>Chapter 7 Additional Studies</b>		
7.1	General	119
7.2	Public consultation	119
7.3	Environment Risk Assessment & Disaster management plan	122
7.3.1	Objectives of environmental risk Assessment	122
7.3.2	Terms environmental risk	122
7.3.3	Identification of Hazards	123
7.3.4	Hazardous material identification methodology	128
7.3.5	F&EI computation	129
7.3.6	Toxicity index	129
7.3.7	Hazards ranking	130
7.3.8	Other precautions	135
7.3.9	Grounding and lightning protection	135
7.3.10	Risk management measures	137
7.3.11	Disaster and emergency response management	137

7.3.12	On –site emergency plan	143
7.3.13	Off-site emergency planning	143
7.3.14	Existing occupational & safety hazards	144
7.3.15	Occupational hazards and preventive safety measures	148
7.3.16	Other safety measures	149
7.3.17	Identification of hazardous process/area	150
7.3.18	Occupational health monitoring plan	150
7.3.19	Conclusion	151
7.4	Rehabilitation and Resettlement (R&R) plan	152
7.5	Traffic study	152
7.5.1	Methodology adopted	152
7.5.2	Traffic study existing and after expansion	152
<b>Chapter 8 Project Benefits</b>		
8.1	Introduction	160
8.2	Employment potential	160
8.2.1	Direct employment	160
8.2.2	Indirect employment	160
8.3	Improvement in infrastructure	161
8.4	Education	161
8.5	Corporate environmental responsibility	162
8.6	Other tangible benefits	162
<b>Chapter 9 Environmental Cost Benefit Analysis</b>		
9.1	Introduction	164
<b>Chapter 10 Environmental Management Plan</b>		
10.1	General	165
10.2	Purpose of Environmental Management Plan	165
10.3	Environment Management Policy & Environment Committee	168
10.4	Budgetary provision for EMP implementation	170
<b>Chapter 11 Summary and Conclusion</b>		
11.1	Introduction	171
11.2	Project description	171
11.3	Baseline environmental status	173
11.3.1	Meteorological data	173
11.3.2	Ambient air quality data	173

11.3.3	Ambient noise quality data	174
11.3.4	Water quality data	174
11.3.5	Soil quality data	175
11.3.6	Land use/land cover	175
11.3.7	Additional studies	175
11.3.8	Ecology and biodiversity	176
11.4	Anticipation environmental impacts and mitigation measures	177
11.4.1	Land environment	177
11.4.2	Air environment	177
11.4.3	Noise environment	177
11.4.4	Water environment	178
11.4.5	Solid waste	178
11.5	Greenery development	179
11.6	Environmental monitoring program	180
11.7	Risk mitigation measures	180
11.8	Public consultation	180
11.9	Project benefits	180
11.10	Corporate environment responsibility	181
11.11	Environmental management plan	181
11.12	Conclusion	
<b>Chapter 12 Disclosure of Consultant engaged</b>		
12.1	Introduction about Consultant	182
12.2	Accreditation from Quality Council of India, QCI	183

**List of Annexures**

S. No.	Description	Page No.
A-1	Land Documents	185
A-2	Resolution	191
A-3	Undertaking for No Litigation	192
A-4	Consents to Operate obtained till now	193
A-4 (a)	Certified compliance report from PPCB	227
A-5	Authorization for Hazardous waste from PPCB	241
A-6	Agreement with M/s Madhav Alloys for disposal of hazardous waste	245
A-7	Partnership Deed	253
A-8	CA certificate	257
A-9	Feasibility Report of APCDs	258
A-10	Stack test report	295
A-11	Environmental Policy of the Industry	296
A-12	Letter from District town planner regarding Industrial zone	297
A-13	Agreement for slag co-processing	298
A-14	List of Industries	302
A-15	Lab approvals	305
A-16	Test report for Air, Noise, Ground water & Surface water and Soil	314
A-17	Project photographs	394
A-18	Permission for power load	395
A-19	NOC for pond adoption	396
A-20	Proceeding for public hearing	397
A-21	Photographs of public hearing	428
A-22	Pert Chart	430
A-23	Medical records of the workers	431
A-24	Cheque for Environment Fee deposit	435
A-25	Land area details with Khasra No.	436
A-26	Acknowledgement for submission of CGWA application	437
A-27	Field data sheets	438
A-28	Details of test reports having common sampling location	448

<b>A-29</b>	Office Memorandum for validity of monitoring	456
<b>A-30</b>	Green area maintenance plan	457

### List of drawings

S. No.	Description	Page No.
<b>D-1</b>	Master plan of Mandi Gobindgarh showing project location	458
<b>D-2</b>	Google Earth image showing project location	459
<b>D-3</b>	Toposheet	460
<b>D-4</b>	Location plan	461
<b>D-5</b>	Layout plan of the project	462
<b>D-6</b>	Drainage Map	463
<b>D-7</b>	Elevation map	464
<b>D-8</b>	Landuse map	465
<b>D-9</b>	Landscape plan	466
<b>D-10</b>	Schematic diagram of the STP	467
<b>D-11</b>	Google Earth image showing boundry coordinates of the project	468
<b>D-12</b>	Services layout plan	469
<b>D-13</b>	Fire-fighting layout plan	470
<b>D-14</b>	Parking layout plan	471

### Proposal No: SIA/PB/IND/22215/2018

### Additional Documents for EDS dated 03.02.2020

S. No.	Description	Page No.
1.	EDS Reply	472
<b>E-1</b>	Summary along with land documents	480
<b>E-2</b>	Application to DC for Fresh Water Demand	510
<b>E-3</b>	Proposal on pond recharging	570

**List of Tables**

S. No.	Description	Page No.
<b>Table 1.1</b>	Break-up of the plot area	3
<b>Table 2.1</b>	Location details of the project site	12
<b>Table 2.2</b>	Size & magnitude of operation of the project	13
<b>Table 2.3</b>	Project Schedule	16
<b>Table 2.4</b>	Proposed machinery details	20
<b>Table 2.5</b>	Details of the raw materials for the proposed unit	20
<b>Table 2.6</b>	Area details	22
<b>Table 2.7</b>	Break-up of the project cost	22
<b>Table 2.8</b>	Water requirement	23
<b>Table 2.9</b>	Characteristics of Raw and treated sewage for design purpose (key parameters)	25
<b>Table 2.10</b>	Environmental Aspects, Impact and Proposed Mitigation Measures	31
<b>Table 3.1</b>	Monthly average temperature	35
<b>Table 3.2</b>	Monthly average rainfall	36
<b>Table 3.3</b>	Monthly average relative humidity	36
<b>Table 3.4</b>	Monthly average wind speed	37
<b>Table 3.5</b>	Test Methods for determining various air quality parameters	39
<b>Table 3.6</b>	Ambient air monitoring stations	40
<b>Table 3.7</b>	Summary of ambient air quality results	42
<b>Table 3.8</b>	Ambient Standards in respect of Noise	45
<b>Table 3.9</b>	Noise level results in db (A) in & around project area	47
<b>Table 3.10</b>	Landuse details of the 10 km study area	50
<b>Table 3.11</b>	Details of soil sample monitoring stations	54
<b>Table 3.12</b>	Results of soil samples	56
<b>Table 3.13</b>	Ground water resources and development potential, Fatehgarh Sahib District, Punjab (as on 31.03.2013)	59
<b>Table 3.14</b>	Details of ground water monitoring stations	62

S. No.	Description	Page No.
<b>Table 3.14 (a)</b>	Details of surface water monitoring stations	63
<b>Table 3.15(a)</b>	Results of Ground Water Samples	65
<b>Table 3.15(b)</b>	Results of surface water samples	67
<b>Table 3.16</b>	Aspect to be covered in the study Area	69
<b>Table 3.17</b>	Summary of Data Collected from various sources	70
<b>Table 3.18</b>	Result of Floral Study Plants Diversity	71
<b>Table 3.19</b>	Result of Faunal Study Bird Diversity	73
<b>Table 3.20</b>	Area details of the District	75
<b>Table 3.21</b>	Demographic details within study area of 10 km	77
<b>Table 4.1</b>	Environmental Impacts from operational phase	88
<b>Table 4.2</b>	Impact Identification Matrix	91
<b>Table 4.3</b>	Details of Major Emission Sources during Project Operation	95
<b>Table 4.4</b>	Details of the Air Pollution Control Measures	103
<b>Table 4.5</b>	Qualitative Effects on Socio-economic Environment	110
<b>Table 6.1</b>	Ambient Air Quality – No. of stations and parameters	114
<b>Table 6.2</b>	Cost of Environmental Monitoring along with cost details	117
<b>Table 7.1</b>	Summary of Public Hearing Proceedings	120
<b>Table 7.2</b>	Details of major emissions sources during operation	124
<b>Table 7.3</b>	GLC values during normal & worst conditions	125
<b>Table 7.4</b>	Conclusion for Fire, Explosion & toxicity Index	129
<b>Table 7.5</b>	Hazard ranking	130
<b>Table 7.6(a)</b>	Traffic survey on existing road at Location A Amloh Road on date 22.07.2019	155
<b>Table 7.6(b)</b>	Table 7.4 (b): Traffic survey on existing road at Location B approach road to village Tooran on date 22.07.2019	155
<b>Table 7.6(c)</b>	Traffic survey on existing road at Location A Amloh Road on date 23.07.2019	156
<b>Table 7.6(d)</b>	Traffic survey on existing road at Location B approach road to village Tooran on date 23.07.2019	156

S. No.	Description	Page No.
<b>Table 7.6(e)</b>	Traffic survey on existing road at Location A Amloh Road on date 24.07.2019	157
<b>Table 7.6(f)</b>	Traffic survey on existing road at Location B approach road to village Tooran on date 24.07.2019	157
<b>Table 7.7</b>	Existing Traffic Scenario & LOS at different locations	158
<b>Table 7.8</b>	Details of parking for Punjab Steels	158
<b>Table 7.9</b>	Additional traffic load of nearby industries due to proposed expansion	159
<b>Table 7.10</b>	Modified Traffic Scenario & LOS at different locations (after expansion)	159
<b>Table 8.1</b>	CER Activities to be undertaken	162
<b>Table 10.1</b>	Cost of EMP in the Plant	170

### List of Figures

S. No.	Description	Page No.
<b>Fig 1.1</b>	Location of project	5
<b>Fig 2.1</b>	Manufacturing process flow chart	18
<b>Fig 2.2</b>	Material Balance for the industrial unit after expansion	21
<b>Fig 2.3</b>	Water balance diagram	24
<b>Fig 2.4</b>	Diagram showing the MBBR Process	26
<b>Fig 2.5</b>	Tentative Flow Diagram of Sewage Treatment Plant	28
<b>Fig 2.6</b>	Metal Recovery process from Slag	30
<b>Fig 3.1</b>	Wind Rose Diagram at project location	38
<b>Fig 3.2</b>	Location of ambient air monitoring stations in the study area	41
<b>Fig 3.3</b>	Location of noise monitoring station	46
<b>Fig 3.4</b>	Land use map of the study area	49
<b>Fig 3.5</b>	Pie chart showing land use of the Study area	50
<b>Fig 3.6</b>	Location of soil monitoring stations	54
<b>Fig 3.7</b>	Drainage map	61
<b>Fig 3.8</b>	Locations of ground water monitoring stations	62
<b>Fig 3.9</b>	Locations of surface water monitoring stations	64
<b>Fig 3.10</b>	Villages within 10 km study area	76
<b>Fig 4.1</b>	Wind Rose Diagram at the project site	94
<b>Fig 4.2</b>	Wind Class and Frequency Distribution at the project site	94
<b>Fig 4.3</b>	Incremental value of NOx within 10 km Influence Zone in normal condition	96
<b>Fig 4.4</b>	Total value of NOx within 10 km Influence Zone in normal condition	97
<b>Fig 4.5</b>	Incremental value of SO <sub>2</sub> within 10 km Influence Zone in normal condition	98
<b>Fig 4.6</b>	Total value of SO <sub>2</sub> within 10 km Influence Zone in normal condition	98
<b>Fig 4.7</b>	Incremental value of PM <sub>2.5</sub> within 10 km Influence Zone in normal condition	99

<b>Fig 4.8</b>	Total value of PM <sub>2.5</sub> within 10 km Influence Zone in normal condition	100
<b>Fig 4.9</b>	Incremental value of PM <sub>10</sub> within 10 km Influence Zone in normal condition	101
<b>Fig 4.10</b>	Total value of PM <sub>10</sub> within 10 km Influence Zone in normal condition	101
<b>Fig 4.11</b>	Incremental value of CO within 10km Influence Zone in normal condition	102
<b>Fig 7.1</b>	PM10 Incremental value within 10km Influence zone (In case of APCD failure)	126
<b>Fig 7.2</b>	PM10 Total value within 10km influence zone (In case of APCD failure)	126
<b>Fig 7.3</b>	PM2.5 Incremental value within 10km Influence zone (In case of APCD failure)	127
<b>Fig 7.4</b>	PM2.5 Total value within 10km influence zone (In case of APCD failure)	128
<b>Fig 7.5</b>	Google earth image showing existing approach road along with locations on which traffic was conducted	153
<b>Fig 7.6</b>	Photographs of traffic study	154
<b>Fig 10.1</b>	Environment Management Cell of the Company	168
<b>Fig 12.1</b>	Accreditation Certificate from QCI-NABET	184



# PUNJAB STEELS

Vill. Tooran, Amloh Road, Mandi Gobindgarh-147301 (Pb.)  
E-mail : cpseema@yahoo.co.in

(Office) : 01765-254213, 258213  
(Resi.) : 01765-258212, 500216

Date: 19.08.2019

## UNDERTAKING

I, Mr. Rajesh Mittal, Partner of M/s Punjab Steels located at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab do hereby solemnly affirm and declare that we have appointed Environmental Consultant i.e. M/s Eco Laboratories & Consultants Private Limited, Mohali for undertaking EIA study for obtaining Environmental Clearance under EIA Notification for increasing the production capacity to 330 TPD for Steel Manufacturing unit located at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab.

As a Project proponent, I undertake that the present EIA study report of the above mentioned project is entirely in line with the TOR obtained from SEIAA, Punjab vide Letter No. SEIAA/2018/875 dated 16.07.2018.

Further, I own all the contents (date & information) of the EIA report as required under the MoEF&CC Office Memorandum No. J-11013/41/2006-IA.II (I) dated 05.10.2011. The data submitted is accurate, true, & correct to the best of my knowledge and belief.

For M/s Punjab Steels

*Rajesh Mittal*  
(Partner)

## Annexure – VII

**Declaration by Experts contributing to the EIA.** Steel Manufacturing unit namely “Punjab Steels” located at Village Tooram, Amloh Road, Teh. Amloh, Distt. Fatehgarh Sahib, Punjab for increasing production capacity to 330 TPD, Cat. B1, Production Capacity = 330 TPD.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator: Dr. Sandeep Garg

Name: Dr. Sandeep Garg

Signature and Date:

Period of involvement: 27<sup>th</sup> Feb. 2018 to till date

Contact information: M/s Eco Laboratories & Consultants Pvt. Ltd.

E207, Industrial Area, Phase-VIII-B(Sector-74), Mohali (Punjab), Ph. No. - 01724616225

TM – Ms. Priyanka Madan

Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP*	Dr. Rai Singh TM – Ms. Aashraya	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Meteorology, Air Quality Monitoring, Stack Monitoring, Air pollution prevention and control measures	 
2	WP*	Ms. Simranjit Kaur TM: Ms. Neha Bansal	Period – 27 <sup>th</sup> Feb. 2018 to till date Task – selection of location for sampling ,Surface water and ground water quality monitoring and assessment, water Balance, water budgeting, water conservation, supervision of water/waste water parameters,	 

3	SHW*	Dr. Sandeep Garg TM: Ms. Priyanka Madan	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Identified Hazardous waste, handling , storage and disposal of hazardous waste.	
4	SE*	Ms. Rama Kaushal	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Baseline socio-economic surveys through interview/questionnaire, methodologies on extrapolation of census data, evaluation of socio-economic status, guidance on CER activities.	
5	EB*	Ms. Reena Chadha	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Ecological survey, preparation of status reports of rare, endangered and threatened species, provided guidance for conservation of species	
6	HG*	Mr. Joshua Anand TM: Dr. Sandeep Garg	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Analysis of surface hydrological data, computation of ground water recharge, flow rate and direction, determination of impact of withdrawal of groundwater	 
7	GEO*	NA		
8	SC*	NA		
9	AQ*	Dr. Amit Dhir TM: Mr. Sachin Kumar Singh	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Air quality modeling, plotting Isopleth of GLCs, micro-meteorological data	 
10	NV*	Dr. Rai Singh	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Monitoring of noise level, identify impact of noise on fauna from project and its measures.	

11	LU*	Mr. Joshua Anand	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Generation and analysis of data related to land use, Developing land use map, GIS based Land use analysis	
12	RH*	Mr. Paras Kumar Nagori TM: Ms. Ashraya	Period – 27 <sup>th</sup> Feb. 2018 to till date Task - Identified hazards and hazardous substances, prepared on-site emergency plan	 

\*One TM against each FAE may be shown

\*\*Please attach additional sheet if required

**Declaration by the Head of the accredited consultant organization/ authorized person**

I, Dr. Sandeep Garg, hereby, confirm that the above mentioned experts prepared the EIA “Steel Manufacturing unit namely “Punjab Steels” located at Village Tooram, Amloh Road, Teh. Amloh, Distt. Fatehgarh Sahib, Punjab for increasing production capacity to 330 TPD, Cat. B1, Production Capacity = 330 TPD”. I also confirm that EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information.

It is certified that no unethical practices, plagiarism involved in carrying out the work and external data / text has not been used without proper acknowledgement while preparing this EIA report.

Signature: .....

Name: Dr. Sandeep Garg

Designation: Managing Director

Name of the EIA consultant organization: Eco Laboratories and Consultants Pvt. Ltd.

NABET Certificate No. & Issue Date: NABET/EIA/1720/IA0032, Dated 11<sup>th</sup> April, 2018


**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY PUNJAB**

Ministry of Environment, Forest &amp; Climate Change, New Delhi

 O/O Punjab Pollution Control Board,  
 VatavaranBhawan, Nabha Road,  
 Patiala – 147 001  
 Telefax:- 0175-2215636

**No. SEIAA/2018/875**
**REGISTERED**
**Date: 16.07.2018**

To

M/s Punjab Steels,  
 Vilalge Tooran, Amloh Road,  
 Mandi Gobindgarh-147301

**Subject:** **Issuance of TORs for carrying out EIA study for obtaining Environmental clearance under EIA notification dated 14.09.2006 for expansion of Steel Manufacturing Unit namely "Punjab Steels" at Village Tooran, Amloh Road, Tehsil Amloh, Distt. Fatehgarh Sahib, Punjab by M/s. Punjab Steels (Proposal no SIA/PB/IND/22215/2018)**

This has reference to your application for issuance of ToRs for EIA study report to be submitted for expansion of steel manufacturing unit by replacing the existing induction furnaces of capacity 4 TPH & 6 TPH with 2 nos. of Induction Furnaces of capacity 15 TPH each in Village Tooran, Amloh Road, Tehsil Amloh, Distt. Fatehgarh Sahib, Punjab. The project is covered under category 3(a) -Secondary Metallurgical Industries project of the Schedule appended to the said notification. The details of quantity of the product to be produced, raw material required and machinery to be replaced are given below: -

S. No.	PARTICULARS	EXISTING	AFTER EXPANSION
<b>A</b>	<b>EXISTING &amp; PROPOSED CAPACITY OF FURNACES</b>		
1	Induction Furnace	2 nos. induction furnace one of 4 TPH and another of 6 TPH capacity	2 nos. induction furnace 15 TPH each
<b>B</b>	<b>PRODUCTS</b>		
1	MS ingots/TMT Bars	115 TPD	330 TPD
<b>C</b>	<b>RAW MATERIAL</b>		
1	MS Scrap (MTD)	121	340
2	Ferro Alloys (MTD)	1	2.7

3	Ferro Silicon/ Aluminum (MTD)	0.2	0.5
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The case was considered by the SEAC in its 166th meeting held on 24.05.2018 and decided to categorize the project into B-1 and finalized & recommended "Terms of Reference" for preparation of the draft Rapid EIA report.

The case was considered by the SEIAA in its 133rd meeting held on 06.07.2018 and decided to accept the recommendations of SEAC and to issue following Terms of References to the project proponent, as proposed by the SEAC:

#### **A. Executive Summary**

#### **B. Introduction**

- (i) Details of the EIA Consultant including NABET accreditation
- (ii) Information about the project proponent
- (iii) Importance and benefits of the project

#### **C. Project Description**

- (i) Cost of project and time of completion.
- (ii) Products with capacities for the proposed project.
- (iii) If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.
- (iv) List of raw materials required and their source along with mode of transportation.
- (v) Other chemicals and materials required with quantities and storage capacities.
- (vi) Details of Emission, effluents, hazardous waste generation and their management. Examine & submit the impacts of providing multi cyclone as additional APCD before proposed APCD i.e. Bag Filters.
- (vii) Requirement of water (breakup for induction and rolling mill) power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract).
- (viii) Process description along with major equipment and machineries, process flow sheet (quantitative) from raw material to products to be provided
- (ix) Hazard identification and details of proposed safety systems.

#### **D. Expansion/modernization proposals:**

- (i) Status of compliance of Consent to Operate for the ongoing /existing operation of the project from SPCB shall be attached with the EIA-EMP report.
- (ii) In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.
- (iii) Examine and submit impact due to ground water abstraction on ambient ground water on ambient ground water.
- (iv) Permission from CGWA for abstraction of ground water shall be submitted during submission of its EIA report.
- (v) Separate Air Pollution Control Devices will be installed for proposed new equipment i.e. Laddle Furnace & Vaccum Degasser or any other.
- (vi) STP will be provided inside the premises for treatment of domestic waste water as manpower will increase significantly after expansion. Treated waste water will be used for green belt development and cooling purpose as make up water.

#### **E. Site Details**

- (i) Location of the project site covering village, Taluka / Tehsil, District and State, Justification for selecting the site, whether other sites were considered. Copy of Master Plan indicating a land use pattern of the site is in conformity of proposals of Master Plan shall be attached with EIA report.
- (ii) A topo sheet of the study area of radius of 10 km and site location on 1:50, 000/1:25, 000 scale on an A3/A2 sheet. (Including all eco-sensitive areas and environmentally sensitive places)
- (iii) Co-ordinates (lat-long) of all four corners of the site.
- (iv) Google map-Earth downloaded of the project site
- (v) Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
- (vi) Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.
- (vii) Land use break-up of total land of the project site (identified and acquired), government/private - agricultural, forest, wasteland, water bodies, settlements, etc. shall be included. (not required for industrial area)

- (viii) A list of major industries with name and type within study area (10 km radius) shall be incorporated. Land use details of the study area.
- (vii) Geological features and Geo-hydrological status of the study area shall be included.
- (viii) Details of Drainage of the project up to 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)
- (ix) Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.
- (x) R&R details in respect of land in line with state Government policy

#### **F. Forest and wildlife related issues (if applicable):**

- (i) Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable).
- (ii) Land use map based on High resolution satellite imagery (OPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha).
- (iii) Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
- (iv) The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-a-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon.
- (v) Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area.
- (vi) Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.

#### **G. Environmental Status**

- (i) Determination of atmospheric inversion level at the project site and site specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.
- (ii) AAQ data (except monsoon) at 8 locations for PMI 0, PM2.5, S02, NOX, CO and other parameters relevant to the project shall be collected. The

monitoring stations shall be based CPCB guidelines and take into account the pre dominant wind direction, population zone and sensitive receptors including reserved forests.

- (iii) Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with - min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.
- (iv) Surface water quality of nearby River (60m upstream and downstream) and other surface drains at eight locations as per CPCB/MoEF & CC guidelines. Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF & CC.
- (v) Ground water monitoring at minimum at 8 locations shall be included. Ground water monitoring should be done for heavy metals in addition to routine parameters. At least three samples i.e. one from within the premises and two from outside the premises of the project.
- (vi) Noise levels monitoring at 8 locations within the study area.
- (vii) Soil Characteristic as per CPCB guidelines.
- (viii) Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, road width, parking arrangement etc. Areas within the premises meant for the movement of vehicles and around the weigh bridge should be paved. Scope of the traffic study & analysis shall include all the new projects and existing projects coming up in the area/ vicinity simultaneously with the proposed project under consideration.
- (ix) Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.
- (x) Socio-economic status of the study area.

## **H. Impact Assessment and Environment Management Plan**

- (i) Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modeling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be well assessed. Details of the model used and the input data used for modeling shall also be provided. The air quality contours shall

be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.

- (ii) Water Quality modelling.
- (iii) Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.
- (iv) A note on treatment, recycling and reuse of wastewater from different plant operations, extent for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under EPA Rules. Use of treated domestic water as makeup cooling water should be examined and submitted.
- (v) Details of stack emission and action plan for control of emissions to meet standards.
- (vi) Measures for fugitive emission control
- (vii) Details of hazardous waste generation and their storage, utilization and disposal. Copies of MOU regarding utilization of solid and hazardous waste shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resource conservation.
- (viii) Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.
  - (ix) Action plan for the green belt development in 33 % area with not less than 1, 500 trees per ha. giving details of species, width of plantation, planting schedule post plantation and maintenance plan for 3 years shall be included. The green belt shall be around the boundary and a scheme for greening of the roads used for the project shall also be incorporated.
- (x) Action plan for rainwater harvesting measures at plant site and outside the area of project site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.
- (xi) Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.
- (xii) Action plan for post-project environmental monitoring shall be submitted.
- (xiii) Onsite and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage

control. Disaster management plan should be linked with District Disaster Management Plan.

- (xiv) Examine and submit the proposal for:-
  - a) Recovery of iron from slag before disposing it off.
  - b) Identify the areas for disposal of slag in scientific manner and study the alternate uses of slag.
  - c) Use of APCD dust and slag for recovery of zinc and lead.

## **I. Occupational health**

- (i) Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.
- (ii) Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre-placement and periodical examinations give the details of the same. Details regarding last month analyzed data of abovementioned parameters as per age, sex, duration of exposure and department wise.
- (iii) Annual report of health status of workers with special reference to Occupational Health and Safety.
- (iv) Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.

## **J. Corporate Environment Policy**

- i. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
- ii. Does the Environment Policy prescribe for standard operating process procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
- iii. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.
- iv. Does the company have system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report

K. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

**L. Enterprise Social Commitment (ESC)**

1) Adequate funds (at least 2.5 % of the project cost) shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be included. Socio-economic development activities need to be elaborated upon.

M. Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.

N. A tabular chart with index for point wise compliance of above TORs.

**INDUCTION/ARC FURNACES/CUPOLA FURNACES 5 TPH OR MORE**

1. Details of proposed layout clearly demarcating existing & proposed features of the project within the plant.
2. Total no. of furnaces & details including capacity of each furnace.
3. Complete process flow diagram describing each unit, its processes and operations, along with material and energy inputs and outputs (material and energy balance).
4. Details on design and manufacturing process for all the units.
5. Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap and other recycled materials.
6. Details on requirement of raw materials, its source and storage at the plant.
7. Details on requirement of energy and water along with its source and authorization from the concerned department. Location of water intake and outfall points (with coordinates).
8. Details on toxic metal content in the waste material and its composition and end use (particularly of slag).
9. Details on toxic content (TCLP), composition and end use of chrome slag. Details on the recovery of the Ferro chrome from the slag and its proper disposal.

**Air Pollution**

Plant /Unit	Pollutants	Qty generated	Method used to Control/and specifications/ attach Separate Sheet to furnish Details	Number of units planned & Capacity	Budget	Control Pollutant	Qty Per day
						Per Unit	Per day

## Executive Summary

Executive summary of the report in about 8-10 pages incorporating the following:

- i. Project name and location (Village, Distt, State, Industrial Estate (if applicable)
- ii. Products and capacities. If expansion proposal then existing products with capacities and reference to earlier EC.
- iii. Requirement of land, raw material, water, power, fuel, with source of supply (Quantitative)
- iv. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
- v. Measures for mitigating the impact on the environment and mode of discharge or disposal.
- vi. Capital cost of the project, estimated time of completion
- vii. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt/private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10 km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
- viii. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
- ix. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk
- x. Likely impact of the project on air, water, land, flora-fauna and nearby population
- xi. Emergency preparedness plan in case of natural or in plant emergencies
- xii. Issues raised during public hearing (if applicable) and response given
- xiii. CSR plan with proposed expenditure.

- xiv. Occupational Health Measures
- xv. Post Project monitoring plan

The following general points shall be noted:

- i. All documents shall be properly indexed, page numbered.
- ii. Period/date of data collection shall be clearly indicated.
- iii. The letter/application for environmental clearance shall quote the MOEF / SEIAA file No. and also attach a copy of the letter.
- iv. The copy of the letter received from the Ministry / SEIAA shall be also attached as an annexure to the final EIA-EMP Report.
- v. The index of the final EIA-EMP report must indicate the specific chapter and page no. of the EIA-EMP Report.
- vi. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MOEF vide notification dated 03.03.2016 which is available on the website of this Ministry shall also be followed.
- vii. The consultants involved in the preparation of EIA-EMP report after accreditation with Quality Council of India (QCI) /National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA-EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. Name of the Consultant and the Accreditation details shall be posted on the EIA-EMP Report as well as on the cover of the Hard Copy of the Presentation material for EC presentation.

The TORs prescribed shall be valid for a period of three years for submission of the EIA-EMP reports along with Public Hearing Proceedings. TORs' prescribed by the State Expert Appraisal Committee (Industry) shall be considered for preparation of EIA-EMP report for the project in addition to all the relevant information as per the 'Generic Structure of EIA' given in Appendix III and III A in the EIA Notification, 2006. Where the documents provided are in a language other than English, an English translation shall be provided. The draft EIA-EMP report shall be submitted to the State Pollution Control Board of the concerned State for conduct of Public Hearing. The SPCB shall conduct the Public Hearing/public consultation, district-wise, as per the provisions of EIA notification, 2006. The Public Hearing shall be chaired by an Officer not below the rank of Additional District Magistrate. The

issues raised in the Public Hearing and during the consultation process and the commitments made by the project proponent on the same shall be included separately in EIA-EMP Report in a separate chapter and summarized in a tabular chart with financial budget (capital and revenue) along with time-schedule of implementation for complying with the commitments made. The final EIA report shall be submitted to the SEIAA Punjab for obtaining environmental clearance.

**Member Secretary**

**Endst. No.876-877**

**Dated 16.07.2018**

A copy of the above is forwarded to the following for information and necessary action: -

1. The Secretary to Govt. of India, Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhavan, Jorbagh Road, New Delhi - 110003.
2. The Advisor, Northern Regional Office, Ministry of Environment & Forests, Bays No. 24-25, Sector 31-A, Dakshin Marg, Chandigarh.
  - a) Name of the applicant Sh. Rajesh Kumar, Partner
  - b) Phone Number 9814026216
  - c) Email ID [cpseema@yahoo.co.in](mailto:cpseema@yahoo.co.in)

**Member Secretary**

### **TOR COMPLIANCE**

**(Vide Letter No. SEIAA/2018/875 dated 16<sup>th</sup> July, 2018)**

**Steel Manufacturing Unit for increasing production capacity to 330 TPD located at Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab by M/s Punjab Steels**

S. No.	Item Description	Compliance Reply
A.	<b>Executive Summary</b>	Executive summary of the project is enclosed with the EIA report in both English & Punjabi language.
B.	<b>Introduction</b>	
a)	Details of the EIA Consultant including NABET accreditation.	<b>EIA Consultant:</b> M/s Eco Laboratories & Consultants Pvt. Ltd. <b>NABET Accreditation:</b> Certificate No. NABET/EIA/1720/IA0032 dated 11 <sup>th</sup> April, 2018. Accreditation certificate from QCI-NABET along with lab approvals are attached along as <b>Annexure 15</b> .
b)	Information about the project proponent.	M/s. Punjab Steels is a Private company established in year 1998 which has marked its presence in the steel industry in India's Steel Town - Mandi Gobindgarh. The current Partners of the company are as under: 1. Sh. Rajesh Kumar Mittal 2. Sh. Chander Parkash Mittal Both the partners are well versed with the process involved & can handle the project efficiently. Details are given in <b>Section 1.3.4 in Chapter 1</b> of EIA report..
c)	Importance and benefits of the project.	India being a developing country; Iron and Steel Industry play very important role in economic development of the country. The manufacture of steel is regarded as one of the key industries. It is a prerequisite for modern industrial development. That's why, 'Iron and steel industries are economy's backbone'. According to a recent report: • India was the world's third largest steel producer and consumer in 2017. The country is slated to surpass USA to become the world's second largest steel consumer in 2019.

	<ul style="list-style-type: none"> <li>In FY18, India produced 104.98 million tonnes of finished steel and 103.13 million tonnes crude steel. Crude steel production between Apr-Oct 2018 (P) reached 61.03 million tonnes.</li> <li>India's finished steel consumption is anticipated to increase to 230 million tonnes by 2030-31 from 90.68 MT in 2017-18.</li> </ul> <p>Benefits of project are given below:</p> <ul style="list-style-type: none"> <li>To fulfill the demand – supply gap in the National market.</li> <li>Generation of employment opportunities both for skilled &amp; un-skilled persons.</li> <li>Estimated manpower requirement for project after expansion will be 80 Nos. as skilled &amp; un-skilled.</li> <li>Improvement of living standard.</li> <li>Income and employment opportunities in ancillaries and service units in the vicinity of the proposed steel plant, specifically ancillary, transport and manufacturing sectors.</li> </ul> <p>Details of the same are given in <b>Section 1.4</b> in <b>Chapter 1</b> of EIA report.</p>									
<b>C. Project Description</b>										
i.	<p>Cost of project and time of completion.</p> <p>Total cost of project after expansion: Rs. 13.93 Crores.            Cost of existing project: Rs. 9.37 Crores.            Cost of proposed project: Rs. 4.56 Crores.            Time of completion: Pert chart showing the Project Implementation Schedule is enclosed as <b>Annexure 22</b>.</p>									
ii.	<p>Products with capacities for the proposed project.</p> <p>Products manufactured along with capacities for the project both for existing unit &amp; after expansion is given below:</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Capacity</th> <th>Products</th> </tr> </thead> <tbody> <tr> <td>Existing</td> <td>115 TPD</td> <td>Ingots &amp; TMT Bars</td> </tr> <tr> <td>After Expansion</td> <td>330 TPD</td> <td>Ingots &amp; TMT Bars</td> </tr> </tbody> </table>	Description	Capacity	Products	Existing	115 TPD	Ingots & TMT Bars	After Expansion	330 TPD	Ingots & TMT Bars
Description	Capacity	Products								
Existing	115 TPD	Ingots & TMT Bars								
After Expansion	330 TPD	Ingots & TMT Bars								
iii.	<p>If expansion project, details of existing products with capacities and whether</p> <p>Yes, this is an expansion project.            The existing industrial unit deals with the manufacturing of Ingots &amp; TMT Bars having production capacity of 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and rolling mill.</p>									

	adequate land is available for expansion, reference of earlier EC, if any.	The area of the project is 5.60 acres (22,483.27 sq.m). Earlier EC was not applicable as SCA approval has been obtained from Competent authority for both Induction Furnaces prior to EIA notification of 14 <sup>th</sup> Sept. 2006. Copy of the same is enclosed as <b>Annexure 4</b> .							
iv.	List of raw materials required and their source along with mode of transportation.	The details of the raw materials along with the mode of transportation are given below:							
S. No.	Status	Raw Material	Quantity (TPD)	Source	Mode of transport				
1.	<b>Existing Unit</b>	Scrap	121	Mostly from Local Market	By road through trucks. No. of trucks req. 6 trucks per day				
		Ferro Alloys	1						
2.	<b>After Expansion</b>	Scrap	359	Mostly from Local Market	By road through trucks. No. of trucks req. 18 trucks per day				
		Ferro Alloys	4						
The material balance is given in <b>Fig. 2.2 of Chapter 2</b> of the final EIA report.									
v.	Other chemicals and materials required with quantities and storage capacities.	There is no use of the chemicals during the manufacturing process. Only small quantities of lab chemicals are used for in-house laboratory testing. Storage facility will be provided for raw materials to store approx. 41,040 T of scrap stock for maximum 113 days of scraps.							
vi.	Details of Emission, Effluents, Hazardous Waste generation and their management. Examine & submit the impacts of providing multi-cyclone as additional APCD before proposed APCD i.e. Bag Filters	<b>Emissions:</b> The sources of emissions are Induction Furnaces & DG set. The details of the emissions are given below:							
Source	Description	Capacity	<b>APCD</b>		Stack Height				
Furnaces	Existing	4 TPH and 6 TPH	Bag Filter of IF of capacity 4 TPH & Pulse Jet Bag Filter on IF of capacity 6 TPH with side suction hood		15 m				
	After Expansion	15 TPH each	Pulse Jet Bag Filter		18 m				
DG Set	Existing	1 No. 125	-----		3 m				

			KVA																				
		After Expansion	2 No. 125 KVA each	-----	3 m																		
<b>Domestic Effluent:</b> Approx. 2.5 KLD of domestic wastewater is being generated from the existing project which is being treated in the septic tank provided within the project premises. However, after expansion, the quantity of domestic wastewater generated is estimated to be 3.5 KLD and the same will be treated in the proposed STP of capacity 5 KLD.																							
<b>Industrial Effluent:</b> As such no industrial effluent is generated.																							
vii.	Requirement of water (breakup for induction and rolling mill), power with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract).	<p><b>Hazardous Waste:</b> Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021. Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust.</p> <p>After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor by PPCB.</p> <p><b>Water Requirement</b></p> <p>Total consumption of water after expansion will be 34.5 KLD. The break-up of the same is given below:</p> <table border="1"> <thead> <tr> <th rowspan="2">Description</th> <th colspan="2">Water Requirement (KLD)</th> </tr> <tr> <th>Existing</th> <th>After Expansion</th> </tr> </thead> <tbody> <tr> <td>Make up water demand for cooling</td> <td>16</td> <td>44.5</td> </tr> <tr> <td>Drinking water demand</td> <td>3</td> <td>4.5</td> </tr> <tr> <td>Green area water demand</td> <td>1</td> <td>41</td> </tr> <tr> <td><b>Total water demand</b></td> <td><b>20</b></td> <td><b>90</b></td> </tr> </tbody> </table>					Description	Water Requirement (KLD)		Existing	After Expansion	Make up water demand for cooling	16	44.5	Drinking water demand	3	4.5	Green area water demand	1	41	<b>Total water demand</b>	<b>20</b>	<b>90</b>
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<b>Total water demand</b>	<b>20</b>	<b>90</b>																					

	<p><b>Source of water</b></p> <p>Ground Water (bore well 2 Nos.)</p> <p>Application has been submitted to CGWA for abstraction of ground water withdrawal through 2 borewells existing within the project premises. Copy of application is enclosed as <b>Annexure 15</b>. Water balance is given in the <b>Fig 2.3</b> in <b>Chapter 2</b> of the EIA report.</p>
	<p><b>Power Requirement</b></p> <p>The existing power of the unit is 8,249.733 KVA which is being supplied by Punjab State Power Corporation limited. Permission for power load is enclosed as <b>Annexure 18</b>.</p> <p>The proposed power demand will be 4,000 KW. Presently, industry is having load of 8,249.733 KW which is sufficient to run one Induction Furnace of capacity 15 TPH &amp; rolling mill in Phase I. Total Power Requirement after expansion is: 12,249.733 KW.</p> <p>DG set: One existing DG set of capacity 125 KVA. However, after expansion, 2 DG sets of capacity 125 KVA each will be required; out of which one is the existing DG set.</p>
	<p><b>Manpower Requirement</b></p> <p><b>Existing</b> Manpower including both technical &amp; non-technical: 60 persons; out of which 5 are residing within the project premises. No worker is on Contractual basis and all are on pay roll basis</p> <p><b>Total manpower after expansion</b> will becomes: 80 persons (both technical &amp; non-technical). Out of which 10 will be residing within project premises.</p>
viii .	<p>Process description along with major equipments and machineries, process flow sheet (quantitative) from raw material to products to be provided.</p> <p>The detailed manufacturing process is given in <b>Section 2.8 and Section 2.9 of Chapter 2</b> in the EIA report along with the list of major equipments and machineries used in the manufacturing process &amp; process flow chart.</p>
ix.	<p>Hazard identification and details of proposed safety systems.</p> <p>Risk assessment involved in the furnaces are:</p>

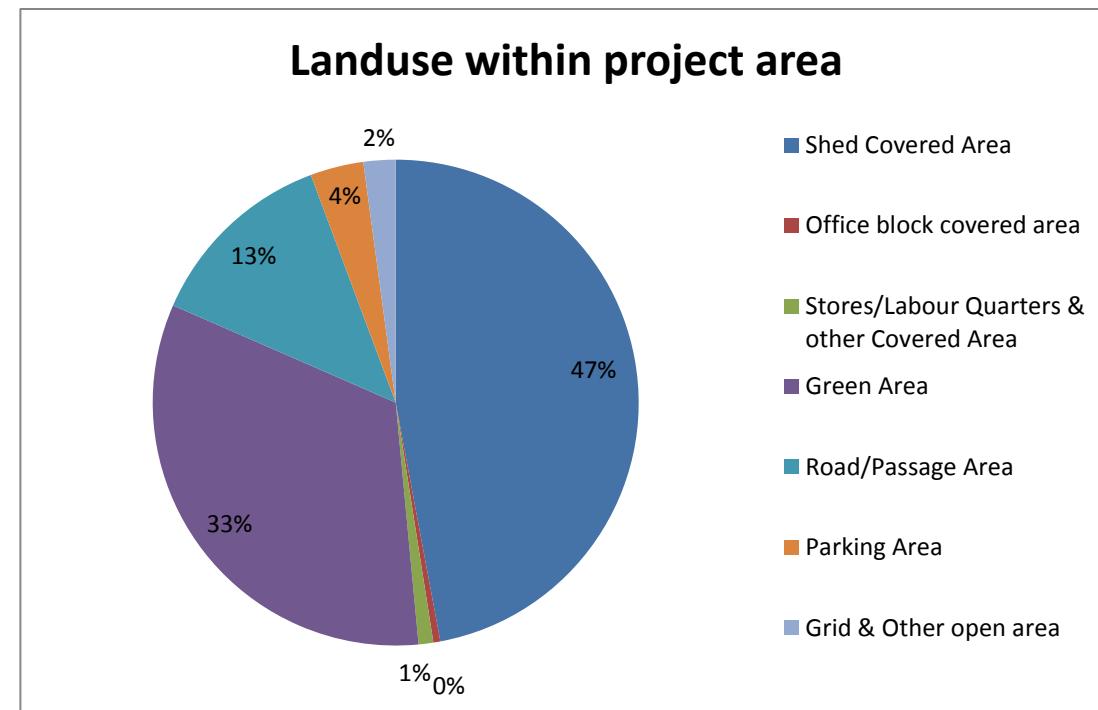
		Risk		Causes					
		<b>Steam Explosions</b>		<ul style="list-style-type: none"> <li>• Moisture containing MS Scrap, alloys</li> <li>• Heavily oxidized or rusted materials</li> <li>• Damp refractories or tools</li> </ul>					
		<b>Chemical Explosions</b>		<ul style="list-style-type: none"> <li>• Presence of chemicals or explosive substances in the metal scrap</li> <li>• Accidental mixing of oxidizing substances, like paints and varnishes, oil containing scrap into crucibles containing molten metal.</li> </ul>					
		<b>Fire Breakouts</b>		<ul style="list-style-type: none"> <li>• Sparking in electrical substations or cable networks</li> <li>• Accidental ignition of oil in equipment such as transformers</li> <li>• Infiltration of water, failure of core insulation, or exterior fault currents</li> </ul>					
However, the detailed Hazard identification is incorporated in <b>Section 7.2</b> in <b>Chapter 7</b> of EIA report along with the safety measures.									
<b>D. Expansion/ modernization proposals</b>									
i.	Status of compliance of Consent to Operate for the ongoing/existing operation of the project from SPCB shall be attached with the EIA-EMP report.	<p>Consent to Operate has been obtained from PPCB under Water (Prevention &amp; Control of Pollution) Act, 1974 and Air (Prevention &amp; Control of Pollution) Act, 1981 and valid till 31.03.2020; copy of the same is enclosed as <b>Annexure 4</b>.</p> <p>Also, certified compliance report to the conditions of consents has been obtained from Punjab Pollution Control Board and copy of same is enclosed as <b>Annexure 4 (a)</b>.</p>							
ii.	In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/ or EIA Notification 2006 shall be provided. Copies of Consent to	<b>Year of Establishment</b>	<b>Capacity of Furnace</b>	<b>Total Production</b>	<b>Whether covered Under EIA notification or not?</b>				
		2001	4 TPH- 1 IF's	45 TPD	The Industry does not cover under EIA notification S.O. 1533(E) dated 14-09-2006 because the capacity of induction furnace is less than 5 TPH.				
		2007	4 TPH & 6 TPH; 2 IF'S	115 TPD	The Industry does not cover under EIA notification S.O.3067 (E) dated				

	Establish/ No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of F.Y. 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.	2012	4 TPH & 6 TPH; 2 IF'S	115 TPD	1.12.2009 because the production capacity of the industry was <30,000 TPA. Document enclosed as <b>Annexure 4</b> .  Earlier Environmental clearance was not applicable as SCA approval was obtained from the Competent Authority. The certified compliance report to the conditions of consents has been obtained from Punjab Pollution Control Board and same is enclosed as <b>Annexure 4 (a)</b> .
iii.	Examine and submit impact due to ground water abstraction on ambient ground water.				Due to ground water abstraction the level will be decreased. But it will be replenish by implementing proper rain water proposal by adopting the pond and proper recycling/reuse of treated water within the industry. NOC has been obtained for pond adoption from the Sarpanch of the Village. Copy of the same is enclosed as <b>Annexure 19</b> .
iv.	Permission from CGWA for abstraction of ground water shall be submitted during submission of EIA report.				Agreed. Application has been submitted to CGWA for two bore wells provided within the project premises of ground water.
v.	Separate Air Pollution Control Devices will be installed for proposed new equipments i.e. Laddle Furnace & Vaccum Degasser or any other.				Air Pollution Control Devices will be required to be installed for the proposed Induction Furnaces. Details of APCD installation is given in <b>Section 2.8.3</b> in <b>Chapter 2</b> of EIA report.
vi.	STP shall be provided inside the premises for treatment of domestic wastewater instead of proposed septic tank as manpower will increase will				Agreed. After expansion, 3.5 KLD of domestic wastewater will be generated which will be treated in the proposed STP of capacity 5 KLD. Schematic diagram for the same is attached along as <b>Drawing 13</b> . Location of STP is shown on site layout plan which is enclosed as <b>Drawing 5</b> .

	increase significantly after expansion.	
<b>E. Site Details</b>		
i.	Location of the project site covering Village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered. Copy of Master Plan indicating a land use pattern of the site is in conformity of proposals of Master Plan shall be attached with EIA report.	Project is located at Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. As this is an Expansion project and no alternative site has been considered. For expansion, no additional land is required as the expansion has been proposed within the project premises. The project falls in the Industrial Zone as per the Master Plan of Mandi Gobindgarh. Letter has been obtained from DTP that industry falls is in Industrial zone. Copy of the same is attached as <b>Annexue 12</b> . Further, the master plan of Mandi Gobindgarh showing the project site is attached along as <b>Drawing 1</b> .
ii.	A Toposheet of the study area of radius of 10 km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet (including all eco-sensitive areas and environmentally sensitive places).	Agreed. Toposheet of the study area of radius of 10 km (i.e. Toposheet No: <b>H43K6</b> and <b>H43K2</b> & scale 1:50000) including all eco sensitive areas is attached along with EIA Report as <b>Drawing 3</b> .
iii.	Co-ordinates (lat-long) of all four corners of the site.	Co-ordinates (lat-long) of all corners of the project are: A: 30°38'47.00"N and 76°16'18.36"E B: 30°38'48.61"N and 76°16'13.52"E C: 30°38'53.96"N and 76°16'13.74"E D: 30°38'53.46"N and 76°16'18.70"E
iv.	Google map-Earth	Google Earth image showing project location & its surroundings within 500 m is enclosed as

	downloaded of the project site.	<b>Drawing 2.</b>												
v.	Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial Area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial Area/ Estate.	Layout showing existing unit as well as proposed unit including location of raw material shed, finished goods shed, green area and other utilities is enclosed as <b>Drawing 5.</b>												
vi.	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.	Photographs of the plant are attached along as <b>Annexure 21.</b>												
vii.	Landuse break-up of total land of the project site (identified and acquired), government/ private – agricultural, forest, wasteland, water bodies, settlements, etc. shall be included. (Not required for industrial area).	<p>The project break-up of the area details is given below:</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Land use details</th> <th>Area (in sq.ft.)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>           Shed Covered Area           <ul style="list-style-type: none"> <li>• Raw material storage area</li> <li>• Finished good area</li> <li>• Slag storage area</li> <li>• Working area/Furnace room/other shed</li> </ul> </td> <td>           1,13,830           <ul style="list-style-type: none"> <li>• 30,400</li> <li>• 28,000</li> <li>• 1,600</li> <li>• 53,830</li> </ul> </td> </tr> <tr> <td>2.</td> <td>Office block covered area</td> <td>1,130</td> </tr> <tr> <td>3.</td> <td>Stores/Labour Quarters 7 other Covered Area</td> <td>2,370</td> </tr> </tbody> </table>	S. No.	Land use details	Area (in sq.ft.)	1.	Shed Covered Area <ul style="list-style-type: none"> <li>• Raw material storage area</li> <li>• Finished good area</li> <li>• Slag storage area</li> <li>• Working area/Furnace room/other shed</li> </ul>	1,13,830 <ul style="list-style-type: none"> <li>• 30,400</li> <li>• 28,000</li> <li>• 1,600</li> <li>• 53,830</li> </ul>	2.	Office block covered area	1,130	3.	Stores/Labour Quarters 7 other Covered Area	2,370
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4.	Green Area	79,955
5.	Road/Passage Area	30,900
6.	Parking Area	8,570
7.	Grid & Other open area	5,165
<b>Total Area</b>		<b>2,41,920 sq.ft. (or 22,483.27 sq.m)</b>



**Pie chart showing the land use of the area of the project**

viii .	A list of major industries with name and type within study area (10 km radius) shall be incorporated. Land use details of the study area.	List of Industries in & around 10 km (radius) area are enclosed as an <b>Annexure 14</b> . Land use detail of the project area within 10 km radius along with break-up area is given in <b>Fig 3.4</b> in <b>Chapter 3</b> of the EIA report.
ix.	Geological features and Geo-hydrological status of the study area shall be included.	The area falls in cis Satluj Doab between river Satluj & Yamuna. The Doab form part of Indo - Gangetic alluvial plains. Elevation of land surface ranges from 285 m amsl in the north east to 246 m amsl in South to South-West direction. The general slope is towards South to South-West direction with an average gradient of 0.4 m per km. There are two streams which drains the area. Soil in the area are loamy sand at the surface and calcareous sandy loam in subsurface layers. Sand constitutes 80% in the soil profile. Silt constitutes 11% and clay 9% in the soil. The area is underlain by formations of Quaternary age comprising of alluvium deposits belonging to vast Indus alluvial plains. Sub surface geological formations comprise of fine to coarse grained sand, silt, clay and kankar. Total thickness of alluvium is expected to be more than 550 m as bed rock has not been encountered up to that depth. Subsurface geological formations show the existence of a top layer of 10 to 15 m of clay, kankar with sand lenses. This layer is followed by granular zones of 20 to 30 m in thickness and under laid by clay bed of 10 to 20 m in thickness. At a depth of 90 to 120 m another clay bed of 25 to 30 m in thickness exists. In general, the thickness of finer sediments increases below 100 m in the Eastern part.
x.	Details of Drainage of the project upto 5 km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of	Drainage map within 10 km radius of project is shown as <b>Figure 3.7</b> in <b>Chapter 3</b> of the EIA report.

	Flood Level of the project site and maximum Flood Level of the river shall also be provided. (Mega green field projects).	
xi.	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.	Not applicable. As expansion is proposed within the existing project premises and no fresh land acquisition is there.
xii.	R & R details in respect of land in line with State Government policy.	No R&R is required as expansion is proposed within the existing project premises only.
<b>F. Forest and wildlife related issues (if applicable)</b>		
i.	Permission and approval for the use of forest land (forestry clearance), if any and recommendations of the State Forest Department (if applicable).	Not applicable.
ii.	Landuse map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland ( <i>in case of projects involving forest land more than 40 ha</i> ).	Not applicable.

iii.	Status of Application submitted for obtaining the stage 1 forestry clearance along with latest status shall be submitted.	Not applicable.
iv.	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon.	Not applicable. No such bird or wildlife sanctuary falls within 10 km of project location. However, Bir Amloh protected forest is located at a distance of 6.5 km from project location
v.	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule 1 fauna, if any exists in the study area.	Not applicable. No such notified or sensitive area falls within 10 km of project location.
vi.	Copy of application submitted for clearance under the	No such notified or sensitive area falls within 10 km of project location. Thus, there is no need of submitting application for NBWL clearance.

	Wildlife (Protection) Act, 1972 to the Standing Committee of the National Board for Wildlife.	
<b>G. Environmental Status</b>		
i.	Determination of atmospheric inversion level at the project site and site-specific micrometeorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.	Meteorological data including climate, temperature, rainfall, humidity, cloudiness, and winds data presented in <b>Section 3.4</b> in <b>Chapter 3</b> along with wind rose diagram which is shown in <b>Fig. 3.1 (Chapter 3)</b> of EIA Report.
ii.	AAQ data (except monsoon) at 8 locations for PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.	AAQ data (except monsoon) at 8 locations for PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO and other parameters relevant to the project have been monitored and results of the same are compared in <b>Table 3.7</b> in <b>Chapter 3</b> . However, test reports of the same are enclosed as <b>Annexure 16</b> .
iii.	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM	AAQ data showing min., max., average and 98% values for each of the AAQ parameters are mentioned in <b>Table 3.7</b> in <b>Chapter 3 of the EIA report</b> . Complete test reports are enclosed as <b>Annexure 16</b> .

	Notification of Nov., 2009 along with – min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an Annexure to the EIA Report.	
iv.	Surface water quality of nearby River (60 m upstream and downstream) and other surface drains at eight locations as per CPCB/MOEF&CC guidelines. Whether the site falls near to polluted stretch of river identified by the CPCB/ MOEF&CC.	Surface water quality has been analyzed at 8 locations i.e. Bhakra Canal, Amloh Minor, Sirhind Choe & R 1 Distributary up-stream as well as down-stream. Results of the same are mentioned in <b>Section 3.8.6 in Chapter 3</b> of the EIA report. Test reports are enclosed as <b>Annexure 16</b> . No polluted river identified by the CPCB/ MOEF&CC falls near to the project.
v.	Ground water monitoring at minimum at 8 locations shall be included. Ground water monitoring should be done for heavy metals in addition to routine parameters. At least three samples i.e. one from within the premises and two from outside the premises of the project.	Ground water quality has been analyzed at 8 locations including heavy metals also along with the routine parameters. Locations along with results of the same are mentioned in <b>Section 3.8.6 in Chapter 3</b> of the EIA report. Test reports are enclosed as <b>Annexure 16</b> .
vi.	Noise levels monitoring at 8	Noise quality has been analyzed at 8 locations. Locations along with results of the same are

	locations within the study area.	mentioned in <b>Section 3.6 in Chapter 3</b> of the EIA report. Test reports are enclosed as <b>Annexure 16</b> .
vii.	Soil Characteristic as per CPCB guidelines.	Soil quality has been analyzed at 8 locations. Locations along with results of the same are mentioned in <b>Section 3.7.2 in Chapter 3</b> of the EIA report. Test reports are enclosed as <b>Annexure 16</b> .
viii.	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, road width, parking arrangement etc. Areas within the premises meant for the movement of vehicles and around the weigh bridge should be paved. Scope of the traffic study and analysis shall include all the new projects and existing projects coming up in the area/vicinity simultaneously with the proposed project under consideration.	Project is connected to Amloh Road vide internal village road. Amloh road is designed to withstand the large vehicles count & heavy vehicles. However, the vehicles passing on the approach road i.e. village road is mainly trucks & cars/ cycles/ auto rickshaws. Detailed traffic study report is given in <b>Section 7.5.2 in Chapter 7</b> of the EIA report.
ix.	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered	Flora & fauna are mentioned in <b>Section 3.9.2 &amp; 3.9.3 in Chapter 3</b> of the EIA report.

	species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.	
x.	Socio-economic status of the study area.	Socio-economic status is mentioned in <b>Section 3.10 in Chapter 3</b> of the EIA report.
<b>H. Impact Assessment &amp; Environment Management Plan</b>		
i.	Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modeling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be well assessed. Details of the model used and the input data used for modeling shall also be provided. The air quality contours shall be	

	plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.	
ii.	Water Quality modeling.	Not applicable. As no liquid effluent shall be generated and discharged.
iii.	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.	Approx. 6 no. of trucks per day are used to carry raw materials for the existing unit. After expansion, approx. 18 no. of trucks per day will be used to carry raw materials. Since, the existing road is sufficient to cater to this meager increase in transportation; therefore there will be negligible impact on the surrounding environment.
iv.	A note on treatment, recycling and reuse of wastewater from different plant operations, extent for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under EPA Rules. Use of treated domestic water	No effluent generation during manufacturing process; however, domestic waste water generated will be treated in the proposed STP of 5 KLD to be installed within the project premises. Details of STP are mentioned in <b>Section 2.9.2 in Chapter 2</b> of the EIA report including the characteristics of untreated and treated domestic effluent. Schematic drawing of STP of capacity 5 KLD is enclosed as <b>Drawing 9</b> .

	as makeup cooling water should be examined and submitted.	
v.	Details of stack emission and action plan for control of emissions to meet standards.	<ul style="list-style-type: none"> <li>Major sources of air pollution will be provided with air pollution control systems to limit the air pollutant emissions within the permissible norms.</li> <li>Fugitive emissions of smoke, gases and heat in and around the furnace and coolers will be removed by adequate ventilation systems.</li> <li>For adequate dispersion of gases, stack of adequate height has been provided that conforms to statutory requirements.</li> <li>For heat dissipation in the work zones arising from furnaces, adequate ventilation systems will be provided.</li> <li>Effective pollution control system i.e., Bag Filter, I.D. Fan &amp; stack of adequate height has been provided for controlling the emissions from Induction Furnace.</li> </ul>
	<b>Existing</b> <b>(2 Induction Furnaces of capacity 4 TPH and 6 TPH)</b>	<b>Primary &amp; Secondary Emissions</b> <ul style="list-style-type: none"> <li>New hood with adequate size has been installed.</li> <li>ID fan installed as per the specifications</li> <li>Pulse jet bag filter</li> </ul>
	<b>After Expansion</b> <b>(2 Induction Furnaces of capacity 15 TPH each)</b>	<b>Primary &amp; Secondary Emissions</b> <ul style="list-style-type: none"> <li>Side Suction Hood</li> <li>Compartmentalized Pulse Jet Bag Filter with duct &amp; ID fan as per the specifications.</li> </ul>
	<b>Material Handling Area</b>	Dust suppression system

**General Mitigation Measures:**

- Haulage roads are sprinkled with water at regular intervals for which water tankers with sprinkler arrangement are deployed.
- Trucks carrying raw materials will be having valid PUC Certificate.
- No pressure horns will be permitted to control noise pollution.

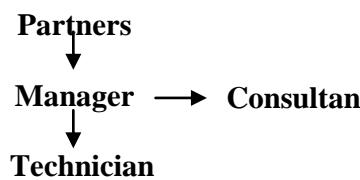
		<ul style="list-style-type: none"> <li>• Green belt and greenery development around storage yards, around plants, either side of roads and around the periphery of the industry.</li> <li>• Water sprinkling is practiced at loading &amp; un-loading locations.</li> <li>• Face masks are provided for the people working dust generating locations.</li> <li>• All internal roads in the premise are paved.</li> <li>• Speed limit of 10 km/hr. is enforced for vehicles in the plant premises to prevent road dust emission.</li> <li>• Regular sweeping of roads will be practiced with regular sprinkling with treated water to minimize dust emissions.</li> </ul>
vi.	Measures for fugitive emission control.	<p>Measures for fugitive emission control are given below:</p> <ul style="list-style-type: none"> <li>• Pucca roads within premises, water sprinkling in dusty areas</li> <li>• Greenbelt/plantation to arrest fugitive dust emission.</li> <li>• Trucks carrying raw materials shall be covered with tarpaulin to prevent spreading of dust during transportation.</li> <li>• Water sprinkling shall be practiced at loading unloading locations.</li> <li>• The conveyors shall be suitably covered to control fugitive emissions.</li> <li>• All internal roads in the premises are be paved .</li> </ul>
vii.	Details of hazardous waste generation and their storage, utilization and disposal. Copies of MOU regarding utilization of solid and hazardous waste shall also be included. EMP shall include the concept of waste minimization, recycle/reuse/recover techniques, Energy conservation and natural resource conservation.	<p>Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021. Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust.</p> <p>After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor by PPCB.</p>

viii .	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.	Agreed. As there will be only construction of foundation for the Induction Furnace, hence, there will be utilization of fly ash as per Fly Ash Notification, 2009. Fly ash based cement i.e. Portland Pozzolana Cement (PPC) will be used for construction of foundation.
ix.	Action plan for the green belt development plan in 33% area i.e. land with not less than 1,500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated. The project proponent shall also submit action plan regarding post maintenance of plantation area for 3 years.	Green belt will be kept to maximum i.e 79,955 sq.ft. (33.05 %) of the total project area. Landscape plan showing plantation is enclosed as <b>Drawing 8</b> .
x.	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground	As per the decision of committee, rain water recharging pits will not be constructed within the industry. Thus, artificial rain water recharging has been proposed outside the project by adopting the pond located in the Village Tooran, Mandi Gobindgarh. Copy of the NOC has been obtained from Sarpanch of the Village Tooran regarding adoption of pond; copy of the NOC is attached along as <b>Annexure 19</b> .

	<p>water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.</p>	
xi.	<p>Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.</p>	<p>Capital cost: Rs. 65 lakhs Recurring cost: Rs. 11.5 lakhs per annum The detailed break-up is given in <b>Table 10.1 in Chapter 10</b> of the EIA report.</p>
xii.	<p>Action plan for post-project environmental monitoring shall be submitted.</p>	<p>The action plan for post – project environmental monitoring has been given in <b>Section 6.1 in Chapter 6</b> of the EIA report. The Environment policy of the company is attached along as <b>Annexure 11</b>.</p>
xiii .	<p>Onsite and Offsite Disaster (Natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.</p>	<p>Disaster Management Plan (Onsite &amp; Offsite) and Emergency Preparedness &amp; Response Plan is prepared and given in <b>Section 7.2 of Chapter 7</b> of the EIA Report.</p>
xiv .	<p>Examine and submit the proposal for:</p> <ul style="list-style-type: none"> <li>a) Recovery of iron from slag before disposing off.</li> <li>b) Identify the areas for</li> </ul>	<p>Slag recovery process is described in <b>Figure 2.6 of Chapter 2</b> of EIA report.</p> <p>4 TPD of slag is being generated from existing industrial unit which is disposed of in a low lying area. However, after expansion, the slag produced is estimated to be 11 TPD which will be sold to M/s SH Infrastructure for manufacturing of ready mix concrete. Copy of the agreement is enclosed as <b>Annexure 13</b>.</p>

	<p>disposal of slag in scientific manner and study the alternate uses of slag.</p> <p>c) Use of APCD dust &amp; ash for recovery of zinc and lead.</p>	<p>Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021; copy of the same is enclosed as <b>Annexure 5</b>. Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust. Copy of the same is enclosed as <b>Annexure 6</b>.</p> <p>After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor by PPCB.</p>
<b>I. Occupational Health</b>		
i.	<p>Details of existing Occupational &amp; Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL, so that health of the workers can be preserved.</p>	<ul style="list-style-type: none"> <li>• All the workers are covered under ESI.</li> <li>• Personal Protection Equipment (PPE) are being provided to workers such as Earplugs, Gloves, Eye Goggles and Helmets &amp; Gum Boots etc in higher noisy areas to meet OSHA standard limits of 90dB(A) for eight hours in workzone areas.</li> <li>• Acoustics will be provided in rooms where noise creating machines work.</li> <li>• All moving &amp; protruding parts of machinery shall be guarded, so that worker does not come in contact with them.</li> <li>• Proper lighting is being provided in the work place. Glare will be avoided.</li> <li>• Exhaust fans &amp; canopy hoods are provided in the areas where dust &amp; other gases are expected from the operations.</li> <li>• First Aid Box will be kept at prominent place to be used in emergent cases.</li> </ul> <p>All firefighting equipment will be frequently checked to see their effectiveness.</p>
ii.	<p>Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest X rays. Audiometry, Spirometry. Vision testing (Far &amp; Near</p>	<p>Routine health check-up of workers are being done. Eye examination and Audiometry of truck drivers and crane operators are being done every year.</p> <p>Medical records of all the employees will be maintained from now onwards.</p> <p><b>Frequency of Periodical Examination:</b></p> <p><input type="checkbox"/> For employees &lt; 30 years, once in five years</p> <p><input type="checkbox"/> Between 31-50 years, once in four years</p> <p><input type="checkbox"/> Between 41-50 years, once in two years</p>

	<p>vision, colour vision and any other ocular defect) ECG, during pre- placement and periodical examinations give the details of the same. Details regarding last month analyzed data of abovementioned parameters as per age, sex, duration of exposure and department wise.</p>	<p><input type="checkbox"/> Above &gt; 50 years once a year Medical record of the workers is attached along as <b>Annexure 23.</b></p>
iii.	Annual report of health status of workers with special reference to Occupational Health and Safety.	The medical history of all the employees will be maintained.
iv.	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.	1 lakh will be allocated per year to ensure health & safety of all contract and casual workers.
<b>J. Corporate Environment Policy</b>		
i.	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.	
ii.	Does the Environment Policy prescribe for standard operating process/procedures to bring into focus any	

	infringement/deviation/violation of the environmental or forest norms/conditions? If so, it may be detailed in the EIA.	
iii.	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.	<p>Environment Management Cell will be responsible to deal with all the environmental issues. Detail of the EMC is given in <b>Section 10.2 in Chapter 10</b> of the EIA report. Hierarchy of the company is given below:</p>  <pre> graph TD     Partners[Partners] --&gt; Manager[Manager]     Manager --&gt; Consultant[Consultant]     Consultant --&gt; Technician[Technician]   </pre>
iv.	Does the company have system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.	Yes. Hierarchical system is followed for reporting of non-compliances/violations of environmental norms to the Board of Directors of the Company.
<b>K.</b>	<b>Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to</b>	Although there is no major construction work involved during the expansion of the industry except construction of the foundation for new Induction Furnace. Thus, the labour engage in the construction will be allowed to use the existing infrastructure facilities such as sanitation, restroom etc. which has already been provided as it is an existing running unit. Also, the casual workers will also be allowed to use the same existing infrastructure facilities.

	<b>the casual workers including truck drivers during operation phase.</b>	
<b>L.</b>	<b>Enterprise Social Commitment (ESC)</b>	
i.	Adequate funds (at least 2.5% of the project cost) shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be included. Socio-economic development activities need to be elaborated upon.	Rs. 4.5 lakhs has been reserved for CER activities. Details of funds for Enterprise Social Commitment have been given in <b>Section 8.5 of Chapter 8</b> of EIA report.
<b>M.</b>	<b>Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project. If so, details thereof shall also be included. Has the unit received any notice under the Section-5 of Environment (Protection) Act, 1986 or relevant sections of Air and Water Acts? If so, details thereof</b>	There is no litigation pending against the project. Undertaking regarding the same is enclosed as <b>Annexure 3</b> .

	<b>and compliance/ATR to the notice (s) and present status of the case.</b>	
N.	<b>A tabular chart with index for point wise compliance of above TORs.</b>	Agreed.

**Induction/Arc Furnaces/Cupola Furnaces 5 TPH or more**

S. No.	Points	Reply
1.	Details of proposed layout clearly demarcating existing & proposed features of the project within the plant including the marking of new induction furnaces with different colours.	Agreed The layout clearly showing the location of the 2 existing Induction Furnace which is to be replaced by 2 no's IF's of 15 TPH capacity each along with different colours is attached along as <b>Drawing 5</b> .
2.	Total no. of furnaces & details including capacity of each furnace.	Total 2 no. of Induction Furnaces. <ul style="list-style-type: none"><li>• Existing 2 no's of Induction Furnace 1 no. of capacity 4 TPH &amp; 6 TPH along with rolling mill.</li><li>• After expansion, replacement of the existing 2 Induction Furnaces with 2 new Induction Furnaces of capacity 15 TPH each. However, rolling mill remains even after expansion.</li></ul>
3.	Complete process flow diagram describing each unit, its processes and operations along with material and energy inputs and outputs (material and energy balance).	Process flow diagram describing the manufacturing process is given in <b>Section 2.8 in Chapter 2</b> of the EIA report.
4.	Details on design and manufacturing process for all the units.	Manufacturing process is given in <b>Section 2.8.2 in Chapter 2</b> of the EIA report.
5.	Details on environmentally sound technologies for recycling of hazardous materials as per CPCB Guidelines may be mentioned in case of handling scrap and other recycled materials.	Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021; copy of the same is enclosed as <b>Annexure 5</b> . Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust. Copy of the same is enclosed as <b>Annexure 6</b> . After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor by PPCB.

6.	Details on requirement of raw materials, its source and storage at the plant.	The quantity of raw materials required after expansion are estimated to be 363 TPD. The raw materials are procured from the local market and adequate storage sheds are provided as shown in the layout plan attached along as <b>Drawing 5</b> . Details of the storage are mentioned in <b>Section 2.9.3</b> in <b>Chapter 2</b> of the EIA report.
7.	Details on requirement of energy and water along with its source and authorization from the concerned department. Location of water intake and outfall points (with coordinates).	<p>The existing power of the unit is 8,249.733 KVA which is being supplied by Punjab State Power Corporation limited. Permission for power load is enclosed as <b>Annexure 18</b>.</p> <p>The proposed power demand will be 4,000 KW. Presently, industry is having load of 8,249.733 KW which is sufficient to run one Induction Furnace of capacity 15 TPH &amp; rolling mill in Phase I. Total Power Requirement after expansion is: 12,249.733 KW.</p> <p>DG set: One existing DG set of capacity 125 KVA. However, after expansion, 2 DG sets of capacity 125 KVA each will be required; out of which one is the existing DG set.</p> <p>Water requirement: Total consumption of water after expansion will be 49 KLD which will be meet from the bore wells (2). The application has been submitted to CGWA for seeking permission for abstraction of ground water.</p> <p>Domestic wastewater will be treated in the proposed STP of capacity 5 KLD.</p>
8.	Details of toxic metal content in the waste material and its composition and end use (particularly of slag).	Slag is non-hazardous in nature. 50% recovery of metal from slag will be done within the project premises & there after remaining will be sold to M/s SH Infrastructure for manufacturing of ready mix concrete. Copy of the slag agreement is enclosed as <b>Annexure 13</b> .

9.	Details on toxic content (TCLP), composition and end use of chrome slag. Details on the recovery of the Ferro chrome from the slag and its proper disposal.	No chrome slag will be generated from the process. As the raw materials used will be scrap along with ferro alloys
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**Air Pollution**

Plant/Unit	Pollutants	Quantity Generated	Method used to control/and specifications/attach separate sheet to furnish details	Number of units planned & Capacity	Budget	Estimated post control quantity pollutant	
						Per unit	Per day
Punjab Steels Existing 2 IF's of capacity 4 TPH & 6 TPH	PM <sub>10</sub>	150 mg/Nm <sup>3</sup>	<ul style="list-style-type: none"> <li>• Bag filters are provided</li> <li>• Side suction hood</li> </ul>	-	-	-	< 150 mg/ Nm <sup>3</sup>
After Expansion, replacement of existing IF's with 2 new IF's of capacity 15 TPH each	PM <sub>10</sub>	150 mg/Nm <sup>3</sup>	<ul style="list-style-type: none"> <li>• Side suction hood</li> <li>• Compartmentalized pulse jet bag filter with duct &amp; ID fan</li> </ul>	2	Rs. 40 lakhs	< 150 mg/Nm <sup>3</sup>	< 150 mg/Nm <sup>3</sup>

**GENERAL POINTS**

S. No.	Points	Reply
i.	All documents shall be properly indexed, page numbered.	Agreed.
ii.	Period/date of data collection shall be clearly indicated.	Baseline data has been collected for the pre Monsoon season i.e. March to May 2018.
iii.	The letter/application for environmental clearance shall quote the MOEF/SEIAA file No. and also attach a copy of the letter.	Agreed.
iv.	The copy of the letter received from the Ministry/SEIAA shall be also attached as an annexure to the final EIA-EMP Report.	Agreed. Copy of TOR letter is attached along with EIA report.
v.	The index of the final EIA-EMP report must indicate the specific chapter and page no. of the EIA-EMP Report.	Specific chapter along with page nos. are there in the EIA Report.
vi.	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF vide notification dated 03.03.2016 which is available on the website of this Ministry shall also be followed.	Agreed & accepted.
vii.	The consultants involved in the preparation of EIA-EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA-EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. Name of the Consultant and the Accreditation details shall be posted on the EIA-EMP Report as well as on the cover of the Hard Copy of the Presentation material for EC presentation.	EIA consultant engaged in preparation of EIA report is Eco Laboratories & Consultants Pvt. Ltd. which is approved by QCI-NABET vide Certificate No. NABET/EIA/1720/IA0032 dated 11 <sup>th</sup> April, 2018. Certificate is shown in <b>Chapter 12</b> of EIA Report. Laboratory study has been done by Eco Laboratories & Consultants Pvt. Ltd. which is approved by NABL, MoEF&CC, PPCB, ISO-9001:2008, ISO-14001:2004 and ISO 18001:2007 certified. Copy of lab approvals is enclosed as <b>Annexure 15</b> .

## **EXECUTIVE SUMMARY**

### **1.0 PROJECT DESCRIPTION**

M/s Punjab Steels is a Private company established in the year 1998. It is classified as Non-Govt. Company. The existing industrial unit deals with the manufacturing of Ingots/ TMT bars having production capacity of 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and rolling mill. Now, they have proposed expansion within the existing unit so as to increase their production capacity to 330 TPD of Ingots/ TMT bars by replacing the existing two Induction Furnaces with 2 no's Induction Furnaces of capacity 15 TPH each. However, the rolling mill remains even after expansion. The project is located in the Industrial Zone as per the Master Plan of Mandi Gobindgarh 2010-2031.

As per EIA Notification, it is a Secondary Metallurgical processing industry under Schedule 3(a) project which requires Environmental Clearance. The salient features of the project are as under:

- Existing production capacity: 115 TPD of Ingots/ TMT Bars with two Induction Furnaces of capacity 4 TPH and 6 TPH and rolling mill.
- Production capacity after expansion: 330 TPD of Ingots/ TMT Bars with two Induction Furnaces of capacity 15 TPH each and 1 rolling mill.
- Total Area: 5.60 acres (or 22,483.27 sq.m)
- Estimated Total Project cost after expansion: Rs. 13.93 Crores
- Interlinked projects: None.

### **2.0 LOCATION & CONNECTIVITY**

Project is located at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. The project is at a distance of approx. 1.5 km from National Highway-1 which connects India Capital New Delhi. The nearest railway station is Mandi Gobindgarh Railway Station at a distance of about 3.5 km in 'NE' direction. The nearest bus stand is Mandi Gobindgarh Bus Stand at a distance of about 2.5 km in 'NE' direction Project boundary coordinates of 4 corners are as follows:

A: 30°38'47.00"N and 76°16'18.36"E

B: 30°38'48.61"N and 76°16'13.52"E

C: 30°38'53.96"N and 76°16'13.74"E

D: 30°38'53.46"N and 76°16'18.70"E

Project and study area falls in the Survey of India, Toposheet No. **H43K6 & H43K2**.

### **3.0 BRIEF FEATURES OF PROJECT**

**Table 1: Size/magnitude of operation of the project**

S. No.	Parameters	Description
1.	<b>Project</b>	Expansion of steel manufacturing unit namely “Punjab Steels” falls under schedule 3(a) as per EIA Notification dated 14 <sup>th</sup> September, 2006 and its subsequent amendments.
2.	<b>Project Proponent</b>	Mr. Rajesh Kumar Mittal (Partner)
3.	<b>Brief description of nature of the project</b>	Existing industrial unit deals with the manufacturing of Ingots/ TMT Bars having production capacity 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill.  Expansion of the existing steel manufacturing unit will be done by replacing the existing two no's Induction Furnace with 2 Induction Furnaces 15 TPH each and rolling mill remain same
4.	<b>Salient Features of the Project</b>	
4.1	<b>Overall plant capacity</b>	The overall production capacity of the plant will become 330 TPD comprising of Ingots/ TMT Bars with 2 IF's of capacity 15 TPH each and one rolling mill.
4.2	<b>Total Plot Area</b>	5.60 acres (or 22,483.27 sq.m.); Expansion of project is within the existing land only.
4.3	<b>Location</b>	Project boundary coordinates of all corners are given below:  A: 30°38'47.00"N and 76°16'18.36"E B: 30°38'48.61"N and 76°16'13.52"E C: 30°38'53.96"N and 76°16'13.74"E D: 30°38'53.46"N and 76°16'18.70"E  The project and its study area falls in the Survey of India, Toposheet No. <b>H43K6 &amp; H43K2</b> .

S. No.	Parameters	Description		
		Details	Existing Water Demand (KLD)	Water Demand After Expansion (KLD)
4.4	<b>Water requirement</b>	Total consumption of water after expansion will be 90 KLD. Out of which, fresh water demand will be 86.5 KLD. The break-up of the same is given below:		
		Makeup water demand for cooling	16	44.5
		Domestic Water Demand	3	4.5
		Green area water demand	1	41
		<b>Total</b>	<b>20</b>	<b>90</b>
		<b>Source:</b> Ground water. Application has been submitted to CGWA for fresh water demand of 86.5 KLD through two existing bore wells provided within the project premises.		
4.5	<b>Wastewater</b>	Approximately, 2.5 KLD of domestic wastewater is being generated from the existing unit which is being treated in the septic tank provided within the project premises. However, after expansion 3.6 KLD of domestic wastewater will be generated which will be treated in the STP of capacity 5 KLD to be installed within project premises. Further, no industrial effluent is generated from the existing industrial unit and even, after expansion also no industrial effluent will be generated.		
4.6	<b>Man Power</b>	<b>Existing</b> Manpower including both technical & non-technical: 60 persons; out of which 5 are residing. <b>Total manpower after expansion</b> will becomes: 80 persons (both technical & non-technical); out of which 10 will be residing within project premises.		
4.7	<b>Power requirement</b>	Existing Power Demand: 8,249.733 KW which is being supplied by Punjab State Power Corporation		

S. No.	Parameters	Description
		Limited (PSPCL). Permission for power load is enclosed as <b>Annexure 18</b> . Additional Power Demand: 4,000 KW will be required for expansion which will be supplied by Punjab State Power Corporation Limited (PSPCL). Presently, industry is having load of 8,249.733 KW which is sufficient to run one Induction Furnace of capacity 15 TPH & rolling mill in Phase I. Total Power Requirement after expansion is: 12,249.733 KW.
4.8	<b>Land form, Land use and Land ownership</b>	Total land area of the proposed unit is 5.60 acres (or 22,483.27 m <sup>2</sup> ). The land documents are attached along as <b>Annexure 1</b> .

#### 4.0 METEOROLOGY

Meteorological data was obtained for the summer season monitoring period i.e. March to May, 2018. The predominant winds are mainly flowing towards North-West direction, with the secondary wind direction being from the South-East.

#### 5.0 AIR QUALITY

PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>2</sub> levels (Criteria Pollutants) as well as NH<sub>3</sub> and O<sub>3</sub> were monitored at eight locations in the 10 km study area and at project site. Sites of the monitoring stations were kept keeping in view of the dominant wind direction. The observed average levels are as follows: PM<sub>10</sub> from 50.4 µg/m<sup>3</sup> to 228.9 µg/m<sup>3</sup>, PM<sub>2.5</sub> from 28.7 µg/m<sup>3</sup> to 130.5 µg/m<sup>3</sup>, SO<sub>2</sub> from 6.9 µg/m<sup>3</sup> to 23.9 µg/m<sup>3</sup> and NO<sub>2</sub> from 13.7 µg/m<sup>3</sup> to 31.1µg/m<sup>3</sup>. The results when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) for "Industrial/ Residential/ Rural and Other Areas", it was observed that except PM<sub>10</sub> & PM<sub>2.5</sub> all the values of SO<sub>2</sub>, NO<sub>2</sub>, CO and PAH were within prescribed limits. Mass levels of particulate dust as PM<sub>10</sub> & PM<sub>2.5</sub> were quite higher than 24 hours average NAAQ standards of 100 µg/m<sup>3</sup> and 60 µg/m<sup>3</sup> respectively. This indicates air quality deterioration in study area due to presence of industries in areas of Mandi Gobindgarh and Khanna and other agro and biomass burning (after wheat harvesting) activities as predominant in the region.

## **6.0 NOISE QUALITY**

Ambient noise levels were measured at 5 locations within the project and 7 locations outside the project. Noise levels varied from 56.6 dB(A) to 68.2 dB(A) during the day time and were 49 dB(A) to 54.4 dB(A) during the night time in the study area. The obtained noise levels are well within prescribed limits for industrial area whereas marginally higher to prescribed limits for residential areas indicating annoying environment for population and sensitive receptors. Noisy environmental conditions are mainly associated to industrial activities in Mandi Gobindgarh and Khanna industrial hubs, heavy traffic movement on road network (national highways, state highways and connecting roads) and other agro and domestic activities in the region.

## **7.0 WATER QUALITY**

The ground water test results indicate that water is good in quality and safe for drinking purpose and fit for cooling water requirement. In the study area, since the samples have been collected from different sites at isolated places, the level of concentration and different elements vary quite considerably which may be due to small aquifers. However, the levels of the various components are within acceptable/ permissible norms for drinking water.

As no effluent will be generated from the industry after the commissioning of the industry. Hence, surface water quality will not be affected due to the industry.

## **8.0 SOIL QUALITY**

The above observations show that in the study area soil are generally alkaline in nature and Sandy loam texture with medium class of fertility.

## **9.0 ECOLOGY**

No plant or animal species were found as per the endangered list within 10 km radius of the project location. No ecologically sensitive area like biosphere reserve, tiger reserve, elephant reserve, migratory corridors of wild elephant, wetland, national park and wildlife sanctuary are present within 10 km distance of the project location. There is a protected Forest “Bir Amloh” located at 6.5 km from project location.

## **10.0 ANTICIPATED ENVIRONMENTAL IMPACT & MITIGATION MEASURES**

### **10.1 AIR QUALITY**

The major pollutants from the project after expansion will be particulate matter (PM) emissions and will be controlled using Side Suction Hood, Compartmentalized Pulse Jet Bag Filter with duct & ID fan will be restricted within 150 mg/Nm<sup>3</sup>. The efficient Air Pollution Control Devices will enhance environment cleanliness. Therefore impact on the surrounding environment will be minimal.

### **10.2 NOISE QUALITY**

The raw material handling yard, Induction Furnace etc. will be the major sources of noise during operation phase of the proposed project. All the workers engaged at and around high noise generating sources shall be provided with ear protection devices like ear mufflers/plugs. They will be regularly subjected to medical check-up for detecting any adverse impact on the ears. The green belt will also help to prevent noise generated within the plant from spreading beyond the plant boundary. Workplace ambient level is not expected to be beyond 75 dB(A) during day time and 70 dB(A) during night time which is much below the limit specified for 8 hours of exposure.

### **10.3 WATER QUALITY**

Domestic wastewater will be treated in the STP of 5 KLD capacity to be installed within the project premises. No wastewater will be discharged outside the plant premises (under normal operating conditions). The storm water drain will be kept separate from wastewater drains. No Industrial effluent will be generated from the proposed industrial unit. Hence Surface water quality is not affected.

### **10.4 SOLID WASTE**

#### **10.4.1 DOMESTIC WASTE**

Approximately, 13 kg/day of domestic solid waste is being generated from the existing project & after expansion approx. 18 kg/day of domestic waste will be generated, which will be properly collected and it will be disposed off as per Solid Waste Management Rules, 2016.

#### **10.4.2 INDUSTRIAL WASTE**

4 TPD of slag is being generated from existing industrial unit which is disposed of in a low lying area. However, after expansion, the slag produced is estimated to be 11 TPD which will be sold to M/s SH Infrastructure for manufacturing of ready mix concrete.

#### **10.4.3 HAZARDOUS WASTE**

Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021 Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust.

After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor by PPCB.

### **11.0 GREENERY DEVELOPMENT**

Adequate green area has been proposed within plant premises. Locally available types of trees which are resistant to pollutants have been and will also be planted. Tree plantation around the plant helps to arrest the effects of particulate matter and gaseous pollutants in the area besides playing a major role in environmental conservation efforts.

The green belt would;

- Mitigate gaseous emissions.
- Have sufficient capability to arrest accidental release.
- Effective in wastewater reuse.
- Maintain the ecological balance.
- Control noise pollution to a considerable extent.
- Prevent soil erosion.
- Improve the Aesthetics

All the species suggested are pollution tolerant, besides having an aesthetic appeal.

## **12.0 ENVIRONMENTAL MONITORING PLAN**

The environment monitoring plan enables environmental management system with early sign of need for additional action and modification of ongoing actions for environment management, improvement and conservation. The environmental monitoring points will be decided considering the environmental impacts likely to occur due to the operation of project as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action for protection of environment. Monitoring of environmental samples will be done as per the guidelines provided by MoEF&CC/CPCB/PPCB. Separate records for water, wastewater, air & stack emission will be maintained regularly. Along with other budgets, Budget for environmental management will be prepared and revised regularly as per requirement.

## **13.0 RISK MITIGATION MEASURES**

Even with all precautions, disasters may take place. As such, an Emergency Plan has been formulated to take care of any disaster in the plant and surrounding areas. In order to prevent occurrence of any disaster, the plant is provided with various safety and disaster control facilities. Normally, in the plant, no major disaster affecting nearby population areas are foreseen. However, accidents inside the plant affecting workplace in vicinity cannot be ruled out. In addition to these, numerous material handling systems, heavy road transport, high-tension electric lines, overhead cranes and various other handling and transport systems always have chances of accidents.

## **14.0 PUBLIC CONSULTATION**

Public hearing for the expansion the production capacity from 115 TPD to 330 TPD of Ingots/ TMT Bars was conducted within the premises on 27.02.2019 by PPCB. The hearing was conducted at project location i.e. Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. Representative from Environmental Consultant on behalf of M/s Punjab Steels made a presentation in the beginning describing the details of the expansion plan of the project including environment status, pollution control measures, management plan and socio-economic development activities undertaken by the proponent. 74 people signed the attendance register and 2 people spoke during the hearing and raised some issues and made suggestions. The proceedings of public hearing are attached as

**Annexure 20** and photographs of the public hearing are enclosed as **Annexure 21**. Therefore, summary of the complaints/queries raised by public hearing and action plan are given below in **Table 1.1**.

**Table 1.1: Summary of Public Hearing Proceedings**

S. No.	Name & address of the person	Detail of query/statement/information/clarification sought by the person present at the venue of hearing	Reply of the query/statement/information/clarification given by the project proponent	Action plan
1.	Sh. Gogi, Sarpanch, Village Tooran, District Fatehgarh Sahib.	He welcomed the additional Deputy Comissioner, Fatehgarh Sahib and public present. He asked the people of Village Tooran, present in the public hearing, to give suggestion, if any, for the project. He requested the owner of the factory to provide funds from time to time as reserved for CER activities as explained by the environmental consultant of the company. He demanded that two rooms may be constructed in the Govt. Middle School, Tooran.	Environmental Consultant of the industry informed that Rs. 4.5 Lacs have been reserved under the CER activities and the same will be spent with the consultation of Village Panchayat, Tooran. The Sarpanch expressed his satisfaction over the reply.	Construction of two rooms will be done in the Govt. Middle School of village Tooran, once the EC is granted to the project.

**Executive Summary**

2.	Sh. Kamaljit Singh, Village Jassran, District Fatehgarh Sahib	He wanted to know as to whether, there will be any adverse effect on the drinking water with the expansion of the industry.	Environmental consultant of the industry informed that there will be only domestic effluent from the industry, which will be treated in the adequate capacity of STP and after its treatment, the same will be used for plantation within the industrial premises. No water will be discharged outside the premises of the industry. Further, no trade effluent will be generated. The querist expressed satisfaction over the reply given.	STP has been proposed of capacity 5 KLD to treat the wastewater generated after expansion. The treated water will be used for horticulture purpose on the green area provided within project premises.
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Rs. 3.0 lakhs will be spent on the public hearing action plan.

## **15.0 PROJECT BENEFITS**

The project will overcome the demand and supply gap of steel product in the country. The project will also generate additional revenue for the State Government. The additional steel availability will boost the infrastructure sector and the overall economic scenario of the country. The project will create additional direct/indirect employment for people. Local people will be preferred for employment during the construction and operation stage.

## **16.0 CORPORATE ENVIRONMENTAL RESPONSIBILITY (C.E.R)**

Mr. Rajesh Kumar Mittal (Partner) of M/s Punjab Steels will be responsible for implementation of CER (Corporate Environment Responsibility). The cost of proposed project is Rs. 4.56 Crores. Thus, Rs. 4.56 lakhs (@ 1 % of proposed cost) is required for CER activities as per Office Memorandum vide F. No. 22-65/ 2017-IA.III dated 01.05.2018. The following activities have been proposed to be covered under CER as given below:

S. No.	Activities	Total Expenditure (in lakhs)	Timeline (Starting from date of grant of EC)	Total Expenditure in 1 Year (in lakhs)
1.	<b>Education</b> Providing solar panels, RO for clean drinking water & uniform to the poor & needy students of Government Middle School located in the village Tooran	4.5	1 year	4.5

## **17.0 ENVIRONMENTAL MANAGEMENT PLAN**

Environment Management Department will implement the EMP of this project. All recommendations given in the EIA report including that of occupational health, risk mitigation and safety will be complied. The capital cost required implementing the pollution control systems and EMP is Rs. 65 Lakhs. The annual recurring expenses will be approx. Rs.11.5 Lakhs. EMD will ensure that all air pollution control devices and water re-circulating systems function effectively. Schemes for resource conservation (raw materials, water etc.) and rainwater harvesting will be taken up by EMD. Greenbelt and greenery development inside and outside the plant premises will be intensified by the EMD. Guidelines issued by the Central Pollution Control Board (CPCB) on greenbelt development will be followed.

*Steel Manufacturing Unit for increasing the production capacity to 330 TPD*

***Executive Summary***

***Client: M/s Punjab Steels***

***Location: Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh,  
Distt. Fatehgarh Sahib, Punjab.***

Environmental awareness programs for the employees will be conducted. EMD will also ensure cleanliness inside the plant.

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## ਕਾਰਜਕਾਰੀ ਸੰਖੇਪ

### **1.0 ਪ੍ਰੋਜੈਕਟ ਵੇਰਵਾ**

ਮੈਸ. ਪੰਜਾਬ ਸਟੀਲਜ਼ ਇਕ ਨਿੱਜੀ ਕੰਪਨੀ ਹੈ ਜੋ ਸਾਲ 1998 ਵਿਚ ਸਥਾਪਿਤ ਕੀਤੀ ਗਈ ਸੀ। ਇਸ ਨੂੰ ਗੈਰ-ਸਰਕਾਰੀ ਕੰਪਨੀ ਵਜੋਂ ਸ਼੍ਰੇਣੀਬੱਧ ਕੀਤਾ ਗਿਆ ਹੈ। ਮੌਜੂਦਾ ਉਦਯੋਗਿਕ ਇਕਾਈ 115 ਟੀਪੀਡੀ ਦੀ ਉਤਪਾਦਨ ਸਮਰੱਥਾ ਵਾਲੇ ਇੰਨਗੋਟਸ / ਟੀ.ਐਮ.ਟੀ ਬਾਰਾਂ ਦੇ ਨਿਰਮਾਣ ਨਾਲ ਸੰਬੰਧ ਰੱਖਦੀ ਹੈ। ਜਿਸ ਵਿਚ ਦੋ ਇੰਡੈਕਸ਼ਨ ਫਰਨੇਸ ਦੀ ਸਮਰੱਥਾ 4 ਟੀ.ਪੀ.ਐਚ ਅਤੇ 6 ਟੀ.ਪੀ.ਐਚ ਅਤੇ ਰੋਲਿੰਗ ਮਿਲ ਲੱਗੇ ਹਨ। ਹੁਣ, ਉਨ੍ਹਾਂ ਨੇ ਮੌਜੂਦਾ ਯੂਨਿਟ ਦੇ ਅੰਦਰ ਵਿਸਥਾਰ ਦੀ ਤਜਵੀਜ਼ ਰੱਖੀ ਹੈ ਤਾਂ ਜੋ ਮੌਜੂਦਾ ਉਤਪਾਦਨ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾ ਕੇ 330 ਟੀ.ਪੀ.ਡੀ ਇੰਨਗੋਟਸ / ਟੀ.ਐਮ.ਟੀ ਬਾਰਾਂ ਵਿਚ ਤਬਦੀਲੀ ਕਰ ਕੇ ਮੌਜੂਦਾ ਦੇ ਇੰਡੈਕਸ਼ਨ ਫਰਨੇਸ ਦੀ ਥਾਂ 2 ਨੰਬਰ ਦੀ ਸਮਰੱਥਾ ਵਾਲੇ ਫਰਨੇਸ ਨੂੰ 15 ਟੀ.ਪੀ.ਐਚ ਦੀ ਥਾਂ ਦਿੱਤੀ ਜਾਵੇ। ਹਾਲਾਂਕਿ, ਰੋਲਿੰਗ ਮਿਲ ਵਿਸਥਾਰ ਦੇ ਬਾਅਦ ਵੀ ਰਹਿੰਦੀ ਹੈ। ਇਹ ਪ੍ਰੋਜੈਕਟ ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ 2010–2031 ਦੀ ਮਾਸਟਰ ਪਲਾਨ ਦੇ ਅਨੁਸਾਰ ਉਦਯੋਗਿਕ ਜ਼ੋਨ ਵਿੱਚ ਸਥਿਤ ਹੈ।

ਈ.ਆਈ.ਏ. ਨੋਟੀਫਿਕੇਸ਼ਨ ਦੇ ਅਨੁਸਾਰ, ਇਹ ਸਫ਼ਿਲ 3 (ਏ) ਪ੍ਰੋਜੈਕਟ ਦੇ ਅਧੀਨ ਸੈਕੰਡਰੀ ਮੈਟਲੂਰਜੀਕਲ ਪ੍ਰੋਸੈਸਿੰਗ ਉਦਯੋਗ ਹੈ ਜਿਸ ਨੂੰ ਵਾਤਾਵਰਣ ਪ੍ਰਵਾਨਗੀ ਦੀ ਲੋੜ ਹੈ।

### **ਪ੍ਰੋਜੈਕਟ ਦੀਆਂ ਮੁੱਖ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਇਸ ਪ੍ਰਕਾਰ ਹਨ:-**

- ਮੌਜੂਦਾ ਉਤਪਾਦਨ ਸਮਰੱਥਾ: 115 ਇਨਗੋਟਸ / ਟੀ.ਐਮ.ਟੀ ਬਾਰ ਦੇ ਉਦਯੋਗ ਭੱਠੀ ਸਮਰੱਥਾ 4 TPH ਅਤੇ 6TPH ਕੁਮਵਾਰ ਅਤੇ ਇੱਕ ਰੋਲਿੰਗ ਮਿਲ ਨਾਲ ਹੈ।
- ਵਿਸਥਾਰ ਦੇ ਬਾਅਦ ਉਤਪਾਦਨ ਸਮਰੱਥਾ: 330 ਇਨਗੋਟਸ / ਟੀ.ਐਮ.ਟੀ ਬਾਰ 2 ਉਦਯੋਗ ਭੱਠੀ ਸਮਰੱਥਾ 15 TPH each ਅਤੇ ਇੱਕ ਰੋਲਿੰਗ ਮਿਲ ਨਾਲ ਹੈ।
- ਵਰਕਿੱਲ ਏਰੀਆ: 5.60 ਏਕੜ (22,483.27 Sq.m.)
- ਪ੍ਰੋਜੈਕਟ ਦਾ ਵਿਸਥਾਰ ਸਿਰਫ ਮੌਜੂਦਾ ਜ਼ਮੀਨ ਦੇ ਅੰਦਰ ਹੈ: Rs. 13.93 Crores
- Interlinked ਪ੍ਰੋਜੈਕਟ: ਕੋਈ ਨਹੀਂ

### **2.0 ਸਥਾਨ ਅਤੇ ਕਨੈਕਟੀਵਿਟੀ**

ਇਹ ਪ੍ਰੋਜੈਕਟ ਪਿੰਡ ਤੂਰਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ - ਅਮਲੋਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ ਵਿਖੇ ਸਥਿਤ ਹੈ। ਇਹ ਪ੍ਰੋਜੈਕਟ ਨੈਸ਼ਨਲ ਹਾਈਵੇ -1 ਤੋਂ ਲਗਭਗ 1.5 ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ 'ਤੇ ਹੈ ਜੋ ਭਾਰਤ ਦੀ ਰਾਜਧਾਨੀ ਨਵੀਂ ਦਿੱਲੀ ਨੂੰ ਜੋੜਦਾ ਹੈ। ਸਭ ਤੋਂ ਨੇੜਲਾ ਰੇਲਵੇ ਸਟੇਸ਼ਨ ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ ਰੇਲਵੇ ਸਟੇਸ਼ਨ ਹੈ ਜੋ 'NE' ਦਿਸ਼ਾ ਵਿੱਚ ਲਗਭਗ 3.5 ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ ਤੇ ਹੈ। ਸਭ ਤੋਂ ਨੇੜਲਾ ਬੱਸ ਸਟੈਂਡ ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ ਬੱਸ ਅੱਡਾ ਹੈ ਜੋ

ਉਤਪਾਦਨ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾਉਣ ਲਈ ਸਟੀਲ ਨਿਰਮਾਣ ਯੂਨਿਟ 330 ਟੀਪੀਡੀ

ਕਾਰਜਕਾਰੀ ਸੰਖੇਪ

ਕਲਾਇੰਟ: ਮੈਸਰਜ਼ ਪੰਜਾਬ ਸਟੀਲਜ਼

ਸਥਾਨ: ਪਿੰਡ ਤੂਰਾਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ ਅਮਲੋਹ, ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ

'NE' ਦਿਸ਼ਾ ਵਿੱਚ ਲਗਭਗ 2.5 ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ ਤੇ ਹੈ।

**ਪ੍ਰੋਜੈਕਟ ਸੀਮਾ 4 ਕੋਨਿਆਂ ਦੇ ਨਿਰਦੇਸ਼ਕ ਇਸ ਪ੍ਰਕਾਰ ਹਨ:**

- A: 30°38'47.00"N and 76°16'18.36"E
- B: 30°38'48.61"N and 76°16'13.52"E
- C: 30°38'53.96"N and 76°16'13.74"E
- D: 30°38'53.46"N and 76°16'18.70"E

ਪ੍ਰੋਜੈਕਟ ਅਤੇ ਅਧਿਐਨ ਕਰਨ ਦੇ ਖੇਤਰ ਨੂੰ ਭਾਰਤ ਦੇ Toposheet ਨੰ. H43K6 & H43K2 ਦੇ ਸਰਵੇਖਣ ਵਿੱਚ ਦਿਖਾਉਂਦਾ ਹੈ।

### 3.0 ਪ੍ਰੋਜੈਕਟ ਦੀ ਸੰਖੇਪ ਫੀਚਰ

**ਸਾਰਣੀ :1 ਆਕਾਰ / ਪ੍ਰੋਜੈਕਟ ਦੀ ਕਾਰਵਾਈ ਦੀ ਰਫ਼ਤਾਰ**

ਲੜੀ ਨੰ.:	ਪੈਰਾਮੀਟਰ	ਵਰਣਨ
1.	ਪ੍ਰੋਜੈਕਟ ਦੀ ਪਛਾਣ	ਮੈਜ਼ੂਦਾ ਸਟੀਲ ਨਿਰਮਾਣ ਇਕਾਈ "M/s ਪੰਜਾਬ ਸਟੀਲਸ" ਦਾ ਵਿਸਥਾਰ, 14 ਸਤੰਬਰ, 2006 ਦੀ EIA ਨੋਟੀਫਿਕੇਸ਼ਨ ਅਨੁਸਾਰ ਅਨੁਸੂਚੀ 3 (a) ਦੀ ਸ੍ਰੇਣੀ "ਬੀ" ਪ੍ਰੋਜੈਕਟ ਅਧੀਨ ਆਉਂਦਾ ਹੈ ਅਤੇ ਇਸਦੇ ਬਾਅਦ ਦੀਆਂ ਸੋਧਾਂ।
2.	ਪ੍ਰੋਜੈਕਟ ਖੋਜਕਾਰ	Mr. ਰਾਜੇਸ਼ ਕੁਮਾਰ ਮਿੱਤਲ ਸਾਥੀ
3.	ਪ੍ਰੋਜੈਕਟ ਦੀ ਸੰਖੇਪ ਫੀਚਰ	ਮੈਜ਼ੂਦਾ ਉਦਯੋਗਿਕ ਇਕਾਈ Ingots ਅਤੇ TMT ਬਾਰ ਉਤਪਾਦਨ ਸਮਰੱਥਾ 115 TPD ਦੇ ਉਤਪਾਦਨ ਦੇ ਨਾਲ ਹੈ, 2 ਇੰਨਡੈਕਸ਼ਨ ਫਰਨੇਸ ਦੀ ਸਮਰੱਥਾ 4 TPH ਅਤੇ 6 TPH ਅਤੇ ਰੋਲਿੰਗ ਮਿਲ ਦੇ ਨਾਲ। ਇਸ ਤਰ੍ਹਾਂ, ਵਿਸਥਾਰ ਕਰਨ ਤੋਂ ਬਾਅਦ, ਉਦਯੋਗਿਕ ਇਕਾਈ ਦੀ ਕੁੱਲ ਉਤਪਾਦਨ ਸਮਰੱਥਾ 330 TPD ਬਣ ਜਾਵੇਗੀ ਜਿਸ ਵਿੱਚ Ingots & TMT Bars ਹੋਣਗੇ ਅਤੇ 2 ਨੰਬਰਾਂ ਦੀ ਸਮਰੱਥਾ ਵਾਲੇ ਇੰਨਡੈਕਸ਼ਨ ਫਰਨੇਸ 15 ਟੀ.ਪੀ.ਐਚ ਅਤੇ ਹਰ ਮੈਜ਼ੂਦਾ ਰੋਲਿੰਗ ਮਿਲ।

	ਪ੍ਰੋਜੈਕਟ ਦੀਆਂ ਮੁੱਖ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ																	
4.1	ਕੁੱਲ ਮਿਲਾ ਕੇ ਪੋਦਾ ਦੀ ਸਮਰੱਥਾ	ਵਿਸਥਾਰ ਕਰਨ ਤੋਂ ਬਾਅਦ, ਪਲਾਟ ਦੀ ਕੁੱਲ ਉਤਪਾਦਨ ਸਮਰੱਥਾ 330 ਟੀ.ਪੀ.ਡੀ ਬਣ ਜਾਵੇਗੀ ਜਿਸ ਵਿੱਚ Ingots & TMT Bars ਹੋਣਗੇ।																
4.2	ਕੁੱਲ ਪਲਾਟ ਏਰੀਆ	5.60 ਏਕੜ (ਜਾਂ 22,483.27 ਵਰਗ ਮੀਟਰ); ਪ੍ਰੋਜੈਕਟ ਦਾ ਵਿਸਥਾਰ ਸਿਰਫ ਮੈਜ਼ੂਦਾ ਜ਼ਮੀਨ ਦੇ ਅੰਦਰ ਹੈ।																
4.3	ਸਥਾਨ	ਪ੍ਰੋਜੈਕਟ ਸੀਮਾ 4 ਕੋਨਿਆਂ ਦੇ ਨਿਰਦੇਸ਼ਕ ਇਸ ਪ੍ਰਕਾਰ ਹਨ:  30°38'47.00"N and 76°16'18.36"E 30°38'48.61"N and 76°16'13.52"E 30°38'53.96"N and 76°16'13.74"E 30°38'53.46"N and 76°16'18.70"E  ਪ੍ਰੋਜੈਕਟ ਅਤੇ ਅਧਿਐਨ ਖੇਤਰ ਸਰਵੇ ਆਫ ਇੰਡੀਆ, ਟੋਪੋਸ਼ੀਟ ਨੰ. H43K6 & H43K2 ਵਿੱਚ ਆਉਂਦਾ ਹੈ।																
4.4	ਪਾਣੀ ਦੀ ਲੋੜ	ਵਿਸਥਾਰ ਦੇ ਬਾਅਦ ਪਾਣੀ ਦੀ ਕੁੱਲ ਖਪਤ 90 ਕੇ.ਐਲ.ਡੀ.ਹੈ। ਜਿਸ ਵਿਚੋਂ, ਤਾਜ਼ੇ ਪਾਣੀ ਦੀ ਮੰਗ 86.5 ਕੇ.ਐਲ.ਡੀ. ਹੈ। ਇਸ ਦਾ ਬੋਕ-ਅਧ ਹੇਠਾਂ ਦਿੱਤਾ ਗਿਆ ਹੈ:  <table border="1"> <thead> <tr> <th>ਵੇਰਵਾ</th> <th>ਮੈਜ਼ੂਦਾ ਪਾਣੀ ਦੀ ਮੰਗ (ਕੇ.ਐਲ.ਡੀ.)</th> <th>ਵਾਧੇ ਤੋਂ ਬਾਅਦ ਪਾਣੀ ਦੀ ਮੰਗ (ਕੇ.ਐਲ.ਡੀ.)</th> </tr> </thead> <tbody> <tr> <td>ਠੰਢਾ ਪਾਣੀ ਦੀ ਮੰਗ</td> <td>16</td> <td>44.5</td> </tr> <tr> <td>ਘਰੇਲੂ ਪਾਣੀ ਦੀ ਮੰਗ</td> <td>3</td> <td>4.5</td> </tr> <tr> <td>ਹਰੇ ਖੇਤਰ ਪਾਣੀ ਦੀ ਮੰਗ</td> <td>1</td> <td>41</td> </tr> <tr> <td>ਕੁੱਲ</td> <td>20</td> <td>90</td> </tr> </tbody> </table>	ਵੇਰਵਾ	ਮੈਜ਼ੂਦਾ ਪਾਣੀ ਦੀ ਮੰਗ (ਕੇ.ਐਲ.ਡੀ.)	ਵਾਧੇ ਤੋਂ ਬਾਅਦ ਪਾਣੀ ਦੀ ਮੰਗ (ਕੇ.ਐਲ.ਡੀ.)	ਠੰਢਾ ਪਾਣੀ ਦੀ ਮੰਗ	16	44.5	ਘਰੇਲੂ ਪਾਣੀ ਦੀ ਮੰਗ	3	4.5	ਹਰੇ ਖੇਤਰ ਪਾਣੀ ਦੀ ਮੰਗ	1	41	ਕੁੱਲ	20	90	
ਵੇਰਵਾ	ਮੈਜ਼ੂਦਾ ਪਾਣੀ ਦੀ ਮੰਗ (ਕੇ.ਐਲ.ਡੀ.)	ਵਾਧੇ ਤੋਂ ਬਾਅਦ ਪਾਣੀ ਦੀ ਮੰਗ (ਕੇ.ਐਲ.ਡੀ.)																
ਠੰਢਾ ਪਾਣੀ ਦੀ ਮੰਗ	16	44.5																
ਘਰੇਲੂ ਪਾਣੀ ਦੀ ਮੰਗ	3	4.5																
ਹਰੇ ਖੇਤਰ ਪਾਣੀ ਦੀ ਮੰਗ	1	41																
ਕੁੱਲ	20	90																

		<p><b>ਸਰੋਤ :</b> ਜ਼ਮੀਨ ਦਾ ਪਾਣੀ</p> <p>ਪ੍ਰੋਜੈਕਟ ਦੇ ਅੰਦਰ ਮੁਹੱਈਆ ਦੇ ਮੌਜੂਦਾ ਬੋਰ ਖੂਹ ਦੁਆਰਾ 86,5 KLD ਦੇ ਤਾਜ਼ਾ ਪਾਣੀ ਦੀ ਮੰਗ ਲਈ CGWA ਨੂੰ ਐਪਲੀਕੇਸ਼ਨ ਪੇਸ਼ ਕੀਤੀ ਗਈ ਹੈ।</p>
4.5	ਗੰਦਾ ਪਾਣੀ	<p>ਮੌਜੂਦਾ ਸਨਅਤੀ ਇਕਾਈ 2.5 KLD ਦਾ ਘਰੇਲੂ ਵੇਸਟਵਾਟਰ ਤਿਆਰ ਕੀਤਾ ਜਾਵੇਗਾ ਜਿਸਦਾ ਪ੍ਰੋਜੈਕਟ ਪਲਾਂਟ ਦੇ ਅੰਦਰ ਸੈਪਟਿਕ ਟੈਂਕ ਵਿਚ ਇਲਾਜ ਕੀਤਾ ਜਾਵੇਗਾ।</p> <p>ਹਾਲਾਂਕਿ, ਵਿਸਥਾਰ ਤੋਂ ਬਾਅਦ 3.6 KLD ਦਾ ਘਰੇਲੂ ਵੇਸਟਵਾਟਰ ਤਿਆਰ ਕੀਤਾ ਜਾਵੇਗਾ ਜਿਸਦਾ ਪ੍ਰੋਜੈਕਟ ਪਲਾਂਟ ਦੇ ਅੰਦਰ ਸਥਾਪਿਤ ਹੋਣ ਵਾਲੀ 5 KLD ਸਮਰੱਥਾ ਦੀ ਪ੍ਰਸਤਾਵਿਤ STP ਵਿਚ ਇਲਾਜ ਕੀਤਾ ਜਾਵੇਗਾ। ਇਸ ਤੋਂ ਇਲਾਵਾ, ਮੌਜੂਦਾ ਉਦਯੋਗਿਕ ਇਕਾਈ ਤੋਂ ਕੋਈ ਉਦਯੋਗਿਕ ਢੂਸ਼ਿਤ ਉਤਪਾਦ ਪੈਦਾ ਨਹੀਂ ਹੁੰਦਾ ਅਤੇ ਵਿਸਥਾਰ ਦੇ ਬਾਅਦ ਵੀ ਕੋਈ ਉਦਯੋਗਿਕ ਢੂਸ਼ਿਤ ਉਤਪਾਦ ਪੈਦਾ ਨਹੀਂ ਹੁੰਦਾ।</p>
4.6	ਮੈਨ ਪਾਵਰ	<p>ਤਕਨੀਕੀ ਅਤੇ ਗੈਰ-ਤਕਨੀਕੀ ਦੇਵਾਂ ਸਮੇਤ ਮਨੁੱਖ ਸ਼ਕਤੀ: 60 ਵਿਅਕਤੀ; ਜਿਸ ਦੇ ਬਾਹਰ 5 ਰਹਿੰਦੇ ਹਨ।</p> <p>ਵਿਸਥਾਰ ਤੋਂ ਬਾਅਦ ਕੁੱਲ ਮਨੁੱਖੀ ਸ਼ਕਤੀ ਬਣ ਜਾਵੇਗੀ: 80 ਵਿਅਕਤੀ (ਦੇਵਾਂ ਤਕਨੀਕੀ ਅਤੇ ਗੈਰ ਤਕਨੀਕੀ); ਜਿਸ ਚੇ, 10 ਪ੍ਰੋਜੈਕਟ ਇਮਾਰਤ ਦੇ ਅੰਦਰ ਰਹਿਗੇ।</p>
4.7	ਪਾਵਰ ਦੀ ਲੋੜ	<p>ਮੌਜੂਦਾ ਬਿਜਲੀ ਦੀ ਮੰਗ: 8,249.733 ਕਿਲੋਵਾਟ ਜੋ ਸਪਲਾਈ ਪੰਜਾਬ ਰਾਜ ਪਾਵਰ ਕਾਰਪੋਰੇਸ਼ਨ ਲਿਮਟਡ (ਪੀਐਸਪੀਸੀਐਲ) ਦੁਆਰਾ ਕੀਤੀ ਜਾ ਰਹੀ ਹੈ ਪਾਵਰ ਲੋੜ ਲਈ ਅਧਿਕਾਰ Annexure 18 ਦੇ ਰੂਪ ਵਿਚ ਜੁੜੇ ਹੋਏ ਹਨ। ਵਾਧੂ ਬਿਜਲੀ ਦੀ ਮੰਗ: 4,000 ਕਿਲੋਵਾਟ ਵਾਧੇ ਲਈ ਲੋੜੀਂਦਾ ਹੋਵੇਗਾ ਜਿਸ ਦੀ ਸਪਲਾਈ ਪੰਜਾਬ ਰਾਜ ਪਾਵਰ ਕਾਰਪੋਰੇਸ਼ਨ ਲਿਮਟਡ (ਪੀ.ਐਸ.ਪੀ.ਸੀ.ਐਲ) ਦੁਆਰਾ ਕੀਤੀ ਜਾਵੇਗੀ। ਇਸ ਵੇਲੇ ਉਦਯੋਗ 'ਤੇ 8,249.733 ਕਿਲੋਵਾਟ ਲੋੜ ਹੈ ਜੋ ਪੜਾਅ I ਵਿਚ ਸਮਰੱਥਾ 15 ਟੀਪੀਐਚ ਅਤੇ</p>

		ਰੋਲਿੰਗ ਮਿੱਲ ਦੀ ਇਕ ਇੰਡਕਸ਼ਨ ਭੱਠੀ ਚਲਾਉਣ ਲਈ ਕਾਢੀ ਹੈ। ਵਿਸ਼ਾਰ ਤੋਂ ਬਾਅਦ ਬਿਜਲੀ ਦੀ ਕੁੱਲ ਜ਼ਰੂਰਤ ਹੈ: 12,249.733 KW.
4.8	ਜ਼ਮੀਨ ਦਾ ਫਾਰਮ, ਜ਼ਮੀਨ ਦੀ ਵਰਤੋਂ ਅਤੇ ਭੂਮੀ ਮਾਲਕੀ	ਪ੍ਰਸਤਾਵਿਤ ਇਕਾਈ ਦਾ ਕੁਲ ਭੂਮੀ ਖੇਤਰ 5.60 ਏਕੜ (ਜਾਂ 22,483.27 M <sup>2</sup> ) ਹੈ। ਜ਼ਮੀਨ ਦੇ ਦਸਤਾਵੇਜ਼ Annexure 1 ਦੇ ਰੂਪ ਵਿਚ ਜੁੜੇ ਹੋਏ ਹਨ।

#### 4.0 ਮੌਸਮ ਵਿਗਿਆਨ

ਮੌਸਮ ਸੰਬੰਧੀ ਜਾਣਕਾਰੀ ਗਰਮੀਆਂ ਦੀ ਸੀਜ਼ਨ ਦੀ ਨਿਗਰਾਨੀ ਲਈ ਪ੍ਰਾਪਤ ਕੀਤੀ ਗਈ ਸੀ ਯਾਨੀ ਮਾਰਚ ਤੋਂ ਮਈ 2018 ਤਕ ਮੁੱਖ ਤੌਰ ਤੇ ਉੱਤਰੀ -ਪੱਛਮ ਤੋਂ ਪ੍ਰਚੱਲਤ ਹਵਾ ਦੱਖਣੀ - ਪੂਰਬ ਤੋਂ ਹੋਣ ਵਾਲੀ ਸੈਕੰਡਰੀ ਹਵਾ ਦੀ ਦਿਸ਼ਾ ਦੇ ਨਾਲ ਹੈ।

#### 5.0 ਹਵਾ ਦੀ ਗੁਣਵੱਤਾ

PM2.5, PM10, SO<sub>2</sub> and NO<sub>2</sub> levels (ਮਾਪਦੰਡ ਪ੍ਰਦੂਸ਼ਿਤ) ਦੇ ਨਾਲ ਨਾਲ NH<sub>3</sub> ਅਤੇ O<sub>3</sub> ਦਾ 10 ਕਿਲੋਮੀਟਰ ਦੇ ਅਧਿਐਨ ਖੇਤਰ ਵਿਚ ਅਤੇ ਪ੍ਰੋਜੈਕਟ ਸਾਈਟ 'ਤੇ ਅੱਠ ਸਥਾਨਾਂ ਤੋਂ ਨਿਗਰਾਨੀ ਕੀਤੀ ਗਈ ਸੀ। ਨਿਗਰਾਨੀ ਸਟੇਸ਼ਨ ਦੀਆਂ ਸਾਈਟਾਂ ਹਵਾ ਦੇ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਦਿਸ਼ਾ ਦੇ ਮੱਦੇਨਜ਼ਰ ਰੱਖੀਆਂ ਗਈਆਂ ਸਨ। ਦੇਖਿਆ ਐਸਤ ਪੱਧਰਾਂ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਹਨ:- PM10 from 50.4 μg / m<sup>3</sup> ਤੋਂ 228.9 μg / m<sup>3</sup>, PM2.5 from 28.7 μg / m<sup>3</sup> ਤੋਂ 130.5 μg / m<sup>3</sup>, SO<sub>2</sub> from 6.9 μg / m<sup>3</sup> ਤੋਂ 23.9 μg / m<sup>3</sup> ਅਤੇ NO<sub>2</sub> from 13.7 μg / m<sup>3</sup> ਤੋਂ 31.1 μg / m<sup>3</sup>। "ਉਦਯੋਗਿਕ / ਰਿਹਾਇਸ਼ੀ / ਦਿਹਾਤੀ ਅਤੇ ਹੋਰ ਖੇਤਰਾਂ" ਲਈ ਕੇਂਦਰੀ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਬੋਰਡ (CPCB) ਦੇ ਕੌਮੀ Ambient ਏਅਰ ਕੁਆਲਿਟੀ ਸਟੈਂਡਰਡਜ਼ (NAAQS) ਦੀ ਤੁਲਨਾ ਕਰਦਿਆਂ ਨਤੀਜਾ ਇਹ ਨਿਕਲਦਾ ਹੈ ਕਿ PM 10 & PM 2.5 ਨੂੰ ਛੱਡ ਕੇ ਸਾਰੇ SO<sub>2</sub>, NO<sub>2</sub>, CO ਅਤੇ PAH ਨਿਰਧਾਰਤ ਸੀਮਾਵਾਂ ਦੇ ਅੰਦਰ ਸਨ। PM10 ਅਤੇ PM2.5 ਦੇ ਤੌਰ ਤੇ ਕਣ ਧੂੜ ਦੇ ਪੁੰਜ ਦਾ ਪੱਧਰ ਕੁਮਵਾਰ 100 μg / m<sup>3</sup> ਅਤੇ 60 μg / m<sup>3</sup> ਦੇ 24 ਘੰਟੇ ਦੇ NAAQ ਮਾਨਕਾਂ ਨਾਲੋਂ ਕਾਢੀ ਉੱਚਾ ਸੀ। ਇਹ ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ ਅਤੇ ਖੰਨਾ ਅਤੇ ਹੋਰ ਖੇਤੀਬਾੜੀ ਅਤੇ ਬਾਇਓਮਾਸ ਬਲਣ (ਕਣਕ ਦੀ ਕਟਾਈ ਤੋਂ ਬਾਅਦ) ਦੇ ਖੇਤਰਾਂ ਵਿਚ ਉਦਯੋਗਾਂ ਦੀ ਮੌਜੂਦਗੀ ਕਾਰਨ ਅਧਿਐਨ ਖੇਤਰ ਵਿਚ ਹਵਾ ਦੀ ਗੁਣਵੱਤਾ ਦੇ ਵਿਗਾੜ ਨੂੰ ਦਰਸਾਉਂਦਾ ਹੈ।

## 6.0 ਸ਼ੇਰ ਦੀ ਗੁਣਵੱਤਾ

ਪ੍ਰੋਜੈਕਟ ਦੇ ਅੰਦਰ 5 ਥਾਵਾਂ ਅਤੇ ਪ੍ਰੋਜੈਕਟ ਦੇ ਬਾਹਰ 7 ਸਥਾਨਾਂ 'ਤੇ ਅੰਬੀਨਟ ਏਆਰ ਦੇ ਪੱਧਰ ਨੂੰ ਮਾਪਿਆ ਗਿਆ। ਇਹ ਦੇਖਿਆ ਗਿਆ ਸੀ ਕਿ ਦਿਨ ਦਾ ਸਮਾਂ 56.6 dB (A) ਤੋਂ 68.2 dB (A) ਅਤੇ ਰਾਤ ਦੇ ਸਮੇਂ ਦਾ ਅਧਿਐਨ ਖੇਤਰ ਦੇ ਅੰਦਰ 49 ਤੋਂ 54.4 dB (A) ਦੇ ਵਿਚਕਾਰ ਹੁੰਦਾ ਹੈ। ਪ੍ਰਾਪਤ ਕੀਤੇ ਆਵਾਜ਼ ਦੇ ਪੱਧਰ ਉਦਯੋਗਿਕ ਖੇਤਰ ਲਈ ਨਿਰਧਾਰਤ ਸੀਮਾਵਾਂ ਦੇ ਅੰਦਰ ਵਧੀਆ ਹੁੰਦੇ ਹਨ ਜਦੋਂ ਕਿ ਰਿਹਾਇਸ਼ੀ ਖੇਤਰਾਂ ਲਈ ਨਿਰਧਾਰਤ ਸੀਮਾਵਾਂ ਤੋਂ ਥੋੜ੍ਹੇ ਜਿਹੇ ਵੱਧ ਆਬਾਦੀ ਅਤੇ ਸੰਵੇਦਨਸ਼ੀਲ ਸੰਵੇਦਕਾਂ ਲਈ ਤੰਗ ਕਰਨ ਵਾਲੇ ਵਾਤਾਵਰਣ ਨੂੰ ਦਰਸਾਉਂਦੇ ਹਨ। ਰੌਲਾ ਪਾਉਣ ਵਾਲੇ ਵਾਤਾਵਰਣ ਦੀਆਂ ਸਥਿਤੀਆਂ ਮੁੱਖ ਤੌਰ 'ਤੇ ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ ਅਤੇ ਖੰਨਾ ਦੇ ਉਦਯੋਗਿਕ ਕੇਂਦਰਾਂ, ਉਦਯੋਗਿਕ ਗਤੀਵਿਧੀਆਂ, ਸੜਕੀ ਨੈਟਵਰਕ (ਰਾਸ਼ਟਰੀ ਰਾਜਮਾਰਗਾਂ, ਰਾਜ ਮਾਰਗਾਂ ਅਤੇ ਸੰਪਰਕ ਸੜਕਾਂ) 'ਤੇ ਭਾਰੀ ਆਵਾਜ਼ਾਈ ਅਤੇ ਖੇਤਰ ਵਿਚ ਹੋਰ ਖੇਤੀ ਅਤੇ ਘਰੇਲੂ ਗਤੀਵਿਧੀਆਂ ਨਾਲ ਜੁੜੀਆਂ ਹਨ।

## 7.0 ਪਾਣੀ ਦੀ ਗੁਣਵੱਤਾ

ਧਰਤੀ ਹੇਠਲੇ ਪਾਣੀ ਦੇ ਟੈਸਟ ਦੇ ਨਤੀਜੇ ਇਹ ਸੰਕੇਤ ਕਰਦੇ ਹਨ ਕਿ ਪਾਣੀ ਕੁਆਲਿਟੀ ਵਿਚ ਵਧੀਆ ਹੈ ਅਤੇ ਪੀਣ ਦੇ ਉਦੇਸ਼ ਲਈ ਸੁਰੱਖਿਅਤ ਹੈ ਅਤੇ ਪਾਣੀ ਦੀ ਜ਼ਰੂਰਤ ਲਈ ਫਿਟ ਹੈ। ਅਧਿਐਨ ਦੇ ਖੇਤਰ ਵਿਚ, ਕਿਉਂਕਿ ਅਲੱਗ ਥਾਈਂ ਵੱਖੇ ਵੱਖਰੀਆਂ ਸਾਈਟਾਂ ਤੋਂ ਨਮੂਨੇ ਇਕੱਠੇ ਕੀਤੇ ਗਏ ਹਨ, ਇਕਾਗਰਤਾ ਦਾ ਪੱਧਰ ਅਤੇ ਵੱਖ ਵੱਖ ਤੱਤ ਕਾਫ਼ੀ ਵੱਖਰੇ ਹੁੰਦੇ ਹਨ ਜੋ ਕਿ ਛੇਟੇ ਐਕ੍ਰੂਆਇਫਰਾਂ ਕਾਰਨ ਹੋ ਸਕਦੇ ਹਨ। ਹਾਲਾਂਕਿ, ਵੱਖ ਵੱਖ ਭਾਗਾਂ ਦਾ ਪੱਧਰ ਪੀਣ ਵਾਲੇ ਪਾਣੀ ਦੇ ਸਵੀਕਾਰਯੋਗ / ਆਗਿਆਯੋਗ ਨਿਯਮਾਂ ਦੇ ਅੰਦਰ ਹਨ।

ਕਿਉਂਕਿ ਉਦਯੋਗ ਦੇ ਚਾਲੂ ਹੋਣ ਤੋਂ ਬਾਅਦ ਉਦਯੋਗ ਵਿਚੋਂ ਕੋਈ ਵੀ ਗਲਤ ਪੈਦਾ ਨਹੀਂ ਹੋਵੇਗਾ। ਇਸ ਲਈ, ਉਦਯੋਗ ਦੇ ਕਾਰਨ ਧਰਤੀ ਹੇਠਲੇ ਪਾਣੀ ਦੀ ਗੁਣਵੱਤਾ ਪ੍ਰਭਾਵਤ ਨਹੀਂ ਹੋਵੇਗੀ।

## 8.0 ਮਿੱਟੀ ਦੀ ਗੁਣਵੱਤਾ

ਮਿੱਟੀ ਦੇ ਨਮੂਨੇ ਅੱਠ ਟਿਕਾਣੇ ਤੋਂ ਇਕੱਠੇ ਕੀਤੇ ਗਏ ਸਨ ਅਤੇ ਵਿਸ਼ਲੇਸ਼ਣ ਕੀਤਾ ਗਿਆ। ਨਤੀਜਿਆਂ ਨੇ ਦਿਖਾਇਆ ਕਿ ਮਿੱਟੀ ਆਮ ਤੌਰ ਤੇ ਕੁਦਰਤ ਵਿੱਚ ਅਲੋਕਲੀਨ ਹੁੰਦੀ ਹੈ ਅਤੇ ਰੇਤਲੀ ਮਲਮ ਹੁੰਦੀ ਹੈ।

## 9.0 ਪਰਿਆਵਰਣ ਵਿਗਿਆਨ

ਪ੍ਰੋਜੈਕਟ ਸਥਾਨ ਤੋਂ 10 ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ ਦੇ ਅੰਦਰ ਕੋਈ ਪਲਾਟ ਜਾਂ ਜਾਨਵਰ ਦੀਆਂ ਜਾਨਾਂ ਖਤਰੇ ਵਾਲੀ ਸੂਚੀ ਵਿਚ ਨਹੀਂ ਮਿਲੀਆਂ। ਬਾਇਓਸਾਈਅਰ ਰਿਜ਼ਰਵ, ਟਾਈਗਰ ਰਿਜ਼ਰਵ, ਹਾਥੀ ਰਿਜ਼ਰਵ, ਜੰਗਲੀ ਹਾਥੀ ਦੇ ਪ੍ਰਵਾਸੀ ਗਲਿਆਰਾ, ਵੈਟਲੈਂਡ, ਨੈਸ਼ਨਲ ਪਾਰਕ ਅਤੇ ਜੰਗਲੀ ਜੀਵ ਪਵਿੱਤਰ ਅਸਥਾਨ ਪ੍ਰੋਜੈਕਟ ਦੇ ਸਥਾਨ ਤੋਂ 10

ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ ਤੱਕ ਮੌਜੂਦ ਨਹੀਂ ਹਨ। ਪ੍ਰੈਜੈਕਟ ਸਾਈਟ ਤੋਂ 6.5 ਕਿਲੋਮੀਟਰ ਦੀ ਦੂਰੀ 'ਤੇ ਇਕ ਸੁਰੱਖਿਅਤ ਜੰਗਲ “Bir Amloh” ਹੈ।

## 10.0 ਅਨਿਸ਼ਚਿਤ ਵਾਤਾਵਰਣ ਪ੍ਰਭਾਵ ਅਤੇ ਮੁਹਾਰਤ ਦੇ ਉਪਾਂ

### 10.1 ਹਵਾ ਦੀ ਕੁਆਲਿਟੀ

ਵਿਸਥਾਰ ਦੇ ਬਾਅਦ ਪ੍ਰੈਜੈਕਟ ਪ੍ਰਮੁੱਖ ਪ੍ਰਦੂਸ਼ਿਤ particulate matter (PM) ਨਿਕਾਸ ਹੋ ਜਾਵੇਗਾ ਅਤੇ side suction ਹੁੱਡ ਅਤੇ Side Suction Hood, Compartmentalized pulse jet bag filter with duct & ID Fan ਦੇ ਨਾਲ 150 mg/Nm<sup>3</sup> ਦੇ ਅੰਦਰ ਹੀ ਸੀਮਤ ਕਰ ਦਿੱਤਾ ਜਾਵੇਗਾ। ਕੁਸਲ ਹਵਾ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਜੰਤਰ ਵਾਤਾਵਰਣ ਦੀ ਸੁੱਧਤਾ ਨੂੰ ਵਧਾਉਣ ਲਈ ਅਤੇ ਇਸ ਲਈ ਆਲੇ-ਦੁਆਲੇ ਦੇ ਵਾਤਾਵਰਣ 'ਤੇ ਅਸਰ ਪੱਟੇ ਹੋ ਜਾਵੇਗਾ।

### 10.2 ਸ਼ੇਰ ਦੀ ਕੁਆਲਿਟੀ

ਕੱਚੇ ਮਾਲ ਦਾ ਹੈਂਡਲਿੰਗ ਯਾਰਡ, ਇੰਨਡੋਕਸ਼ਨ ਫਰਨੇਸ ਆਦਿ। ਪ੍ਰਸਤਾਵਿਤ ਪ੍ਰਾਜੈਕਟ ਦੇ ਕੰਮਕਾਜ਼ੀ ਪੜਾਅ ਦੌਰਾਨ ਸ਼ੇਰ ਦੇ ਪ੍ਰਮੁੱਖ ਸਰੋਤ ਹੋਣਗੇ। ਉੱਚ ਸ਼ੇਰ ਪੈਦਾ ਕਰਨ ਵਾਲੇ ਸਰੋਤਾਂ ਦੇ ਆਲੇ-ਦੁਆਲੇ ਲੱਗੇ ਸਾਰੇ ਕਰਮਚਾਰੀਆਂ ਨੂੰ ਕੰਨ ਸੁਰੱਖਿਆ ਉਪਕਰਣ ਜਿਵੇਂ ਕੰਨ ਦੇ ਮਫਲਰ / ਪਲੱਗਸ ਪ੍ਰਦਾਨ ਕਰਨਗੇ। ਕੰਨ 'ਤੇ ਕਿਸੇ ਮਾੜੇ ਪ੍ਰਭਾਵ ਦਾ ਪਤਾ ਲਗਾਉਣ ਲਈ ਉਨ੍ਹਾਂ ਨੂੰ ਨਿਯਮਤ ਤੌਰ 'ਤੇ ਡਾਕਟਰੀ ਚੈਕ-ਅਪ ਕੀਤਾ ਜਾਵੇਗਾ। ਗ੍ਰੀਨ ਬੈਲਟ ਪਲਾਟ ਦੇ ਅੰਦਰ ਪੈਦਾ ਹੋਣ ਵਾਲੇ ਆਵਾਜ਼ ਨੂੰ ਪਲਾਟ ਦੀ ਹੱਦ ਤੋਂ ਪਾਰ ਫੈਲਣ ਤੋਂ ਰੋਕਣ ਵਿੱਚ ਵੀ ਸਹਾਇਤਾ ਕਰੇਗੀ। ਵਰਕਪਲੇਸ ਅੰਬੀਨਟ ਦਾਪੱਧਰ ਦਿਨ ਦੇ ਸਮੇਂ 75 ਡੀ.ਬੀ (ਏ) ਅਤੇ ਰਾਤ ਦੇ ਸਮੇਂ 70 ਡੀ.ਬੀ (ਏ) ਤੋਂ ਪਾਰ ਹੋਣ ਦੀ ਉਮੀਦ ਨਹੀਂ ਹੈ, ਜੋ ਕਿ ਐਕਸਪੇਜਰ ਦੇ 8 ਘੰਟਿਆਂ ਲਈ ਨਿਰਧਾਰਤ ਸੀਮਾ ਤੋਂ ਬਹੁਤ ਘੱਟ ਹੈ।

### 10.3 ਪਾਣੀ ਦੀ ਗੁਣਵੱਤਾ

ਘਰੇਲੂ ਗੰਦੇ ਪਾਣੀ ਨੂੰ 5 KLD STP ਦੀ ਸਮਰੱਥਾ ਦੇ ਪ੍ਰੈਜੈਕਟ ਕੰਪਲੈਕਸ ਦੇ ਅੰਦਰ ਹੀ ਇੰਸਟਾਲ ਕੀਤਾ ਜਾ ਜਾਵੇਗਾ। ਕੋਈ ਗੰਦਾ ਪਾਣੀ ਇਮਾਰਤ (ਆਮ ਉਪਰੋਟਿੰਗ ਹਾਲਾਤ ਅਧੀਨ) ਦੇ ਬਾਹਰ ਨਹੀਂ discharge ਕੀਤਾ ਜਾਵੇਗੀ। ਪਾਣੀ ਡਰੇਨ ਗੰਦੇ ਪਾਣੀ ਦਾ ਪਾਣੀ ਵੱਖਰਾ ਰੱਖਿਆ ਜਾਵੇਗਾ। Storm water ਦੇ ਨਾਲੇ ਨੂੰ ਗੰਦੇ ਪਾਣੀ ਦੇ ਨਾਲਿਆਂ ਤੋਂ ਵੱਖਰਾ ਰੱਖਿਆ ਜਾਵੇਗਾ। |ਪ੍ਰਸਤਾਵਿਤ ਉਦਯੋਗਿਕ ਇਕਾਈ ਤੋਂ ਕੋਈ ਉਦਯੋਗਿਕ ਪ੍ਰਭਾਵ ਪੈਦਾ ਨਹੀਂ ਕੀਤਾ ਜਾਏਗਾ। ਇਸ ਲਈ ਸਤਹ ਦੇ ਪਾਣੀ ਦੀ ਗੁਣਵੱਤਾ ਪ੍ਰਭਾਵਤ ਨਹੀਂ ਹੁੰਦੀ।

## 10.4 ਮਿੱਟੀ ਦੀ ਗੁਣਵੱਤਾ

### 10.4.1 ਘਰੇਲੂ ਵਿਅਰਥ

ਲਗਭਗ 13 kg/day ਘਰੇਲੂ ਵਿਅਰਥ ਤੋਂ ਮੌਜੂਦਾ ਪ੍ਰੋਜੈਕਟ & ਲਗਭਗ ਵਿਸਥਾਰ ਦੇ ਬਾਅਦ ਤਿਆਰ ਕੀਤਾ ਜਾ ਰਿਹਾ ਹੈ। 18 kg/day generate ਹੋਵੇਗਾ, ਜਿਸ ਨੂੰ ਸਹੀ ਢੰਗ ਨਾਲ ਇਕੱਠਾ ਕਰਕੇ biodegradable and non-biodegradable Waste ਵਿਚ ਵੰਡਿਆ ਜਾਵੇਗਾ। ਠੋਸ ਰਹਿੰਦ, ਦੇ ਰੂਪ ਵਿਚ Solid Waste ਪ੍ਰਬੰਧਨ ਨਿਯਮ ਪ੍ਰਤੀ 2016 ਨੂੰ ਧਿਆਨ ਵਿਚ ਰੱਖ ਕੇ ਨਿਪਟਾਰਾ ਕੀਤਾ ਜਾ ਰਿਹਾ ਹੈ।

### 10.4.2 ਉਦਯੋਗਿਕ ਵੇਸਟ

ਮੌਜੂਦਾ ਸਨਅਤੀ ਇਕਾਈ ਤੋਂ ਸਲੈਗ ਦੀ 4 ਟੀਪੀਡੀ ਤਿਆਰ ਕੀਤੀ ਜਾ ਰਹੀ ਹੈ ਜਿਸ ਦਾ ਨਿਪਟਾਰਾ ਹੇਠਲੇ ਹਿੱਸੇ ਵਿਚ ਕੀਤਾ ਜਾਂਦਾ ਹੈ। ਹਾਲਾਂਕਿ, ਵਿਸਤਾਰ ਤੋਂ ਬਾਅਦ, ਪੈਦਾ ਕੀਤੀ slag 11 TPD ਹੋਣ ਦਾ ਅਨੁਮਾਨ ਹੈ ਜੋ ਰੈਡਰ ਮਿਕਸ ਕੰਕਰੀਟ ਦੇ ਨਿਰਮਾਣ ਲਈ ਮੈਸ. SH Infrastructure ਨੂੰ ਵੇਚੇ ਜਾਣਗੇ।

### 10.4.3 HAZARDOUS WASTE

ਉਦਯੋਗਿਕ ਇਕਾਈ ਤੋਂ hazardous waste 0.02 TPD ਦਾ ਨਿਕਾਸ ਜਾਂ ਗੈਸ ਦੀ ਸਫ਼ਾਈ ਦੇ ਬਚੇ ਖੁਚੇ (APCD ash) ਅਨੁਸੂਚੀ -1 ਦੀ ਸ੍ਰੇਣੀ 35.1 ਦੀ ਸ੍ਰੇਣੀ ਹੈ। Hazardous waste ਦੇ ਪ੍ਰਮਾਣਿਕਤਾ ਦਾ ਮੁੜ ਨਵੀਨੀਕਰਨ PPCB ਦੀ ਕਾਪੀ ਤੋਂ ਪ੍ਰਾਪਤ ਕੀਤਾ ਗਿਆ ਹੈ ਜੋ ਕਿ 31.03.2021 ਤਕ ਵੈਧ ਹੈ। ਜੋ ਕਿ Annexure 5 ਅਨੁਸਾਰ ਹੈ। ਸਮਝੌਤਾ hazardous waste ਦੀ ਨਿਪੁੰਨਤਾ ਲਈ M/s. Madhav Alloys Pvt. Ltd. ਨਾਲ ਕੀਤਾ ਗਿਆ ਹੈ।

ਵਿਸਥਾਰ ਕਰਨ ਤੋਂ ਬਾਅਦ ਉਦਯੋਗਿਕ ਇਕਾਈ ਤੋਂ hazardous waste 1 TPD ਦਾ ਨਿਕਾਸ ਜਾਂ ਗੈਸ ਦੀ ਸਫ਼ਾਈ ਦੇ ਬਚੇ ਖੁਚੇ (APCD ash) ਅਨੁਸੂਚੀ -1 ਦੀ ਸ੍ਰੇਣੀ 35.1 ਅਨੁਸੂਚੀ -1 ਦੀ ਸ੍ਰੇਣੀ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ, ਵਰਤਿਆ ਜਾਂਦਾ ਤੇਲ ਦਾ 0.20 ਕੇ.ਐਲ. / ਸਾਲਾਨਾ ਪੈਦਾ ਹੋਏਗਾ ਜੋ ਪੀਪੀਸੀਬੀ ਦੁਆਰਾ ਅਧਿਕਾਰਤ ਵਿਕਰੇਤਾ ਨੂੰ ਵੇਚੇ ਜਾਣਗੇ।

## 11.0 ਹਰਿਆਲੀ ਵਿਕਾਸ

ਪਲਾਟ ਦੇ ਅੰਦਰ ਗਰੀਨ ਐਰੀਆ ਪ੍ਰਦਾਨ ਕੀਤਾ ਗਿਆ ਹੈ। ਸਥਾਨਕ ਤੌਰ 'ਤੇ ਉਪਲਬਧ ਕਿਸਮ ਦੇ ਦਰਖਤ ਜੋ ਪ੍ਰਦੂਸ਼ਿਤ ਰੇਕਣ ਵਾਲੇ ਪ੍ਰਤੀਰੋਧੀ ਹਨ ਅਤੇ ਇਨ੍ਹਾਂ ਨੂੰ ਵੀ ਲਗਾਇਆ ਜਾਵੇਗਾ। ਪਲਾਟ ਦੇ ਦੁਆਲੇ ਰੁੱਖ ਲਗਾਉਣ ਨਾਲ ਵਾਤਾਵਰਣ ਦੀ ਸੰਭਾਲ ਦੇ ਯਤਨ ਵਿੱਚ ਇੱਕ ਪ੍ਰਮੁੱਖ ਭੂਮਿਕਾ ਨਿਭਾਉਣ ਤੋਂ ਇਲਾਵਾ ਖਾਸ ਪਦਾਰਥ ਅਤੇ ਖੇਤਰ



ਵਿੱਚ ਗੈਸੀਫੀਕੇਸ਼ਨ ਪ੍ਰਦੂਸ਼ਣ ਦੇ ਪ੍ਰਭਾਵ ਨੂੰ ਰੋਕਣ ਲਈ ਮਦਦ ਕਰਦਾ ਹੈ।

- ਗੈਸਾਂ ਦੇ ਨਿਕਾਸ ਨੂੰ ਘਟਾਓ
- ਦੁਰਘਟਨਾ ਦੀ ਰਿਹਾਈ ਨੂੰ ਗ੍ਰਿਫਤਾਰ ਕਰਨ ਦੀ ਸਮਰੱਥਾ ਹੈ।
- ਗੰਦੇ ਪਾਣੀ ਮੁੜ ਵਰਤੇ ਵਿਚ ਪ੍ਰਭਾਨਸ਼ਾਲੀ।
- ਵਾਤਾਵਰਣ ਸੰਤੁਲਨ ਬਣਾਈ ਰੱਖੋ।
- ਕਾਢੀ ਹੱਦ ਤੱਕ ਸੋਰ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ।
- ਮਿੱਟੀ ਦੀ ਕਮੀ ਨੂੰ ਰੋਕਣਾ।
- ਸੁਹਜ ਸੁਧਾਰਾਂ

ਸਾਰੇ species ਦਾ ਸੁਝਾਅ ਪ੍ਰਦੂਸ਼ਣ ਸਹਿਣਸ਼ੀਲ, ਇੱਕ ਸੁਹਜਾਤਮਕ ਅਪੀਲ ਕਰਨ ਤੋਂ ਇਲਾਵਾ।

## 12.0 ਵਾਤਾਵਰਣ ਨਿਗਰਾਨੀ ਯੋਜਨਾ

ਵਾਤਾਵਰਣ ਦੀ ਨਿਗਰਾਨੀ ਦੀ ਯੋਜਨਾ ਵਾਧੂ ਕਾਰਵਾਈ ਦੀ ਹੈ ਅਤੇ ਵਾਤਾਵਰਣ ਨੂੰ ਪ੍ਰਬੰਧਨ, ਸੁਧਾਰ ਅਤੇ ਸੰਭਾਲ ਲਈ ਚੱਲ ਰਹੇ ਕੰਮ ਦੀ ਸੋਧ ਕਰਨ ਦੀ ਲੋੜ 'ਦੇ ਮੁਢਲੇ ਨਿਸ਼ਾਨ ਨਾਲ ਵਾਤਾਵਰਣ ਪ੍ਰਬੰਧਨ ਸਿਸਟਮ ਨੂੰ ਯੋਗ ਕਰਦਾ ਹੈ। ਪ੍ਰੈਜ਼ੈਕਟ ਦੇ ਕੰਮ ਦੇ ਕਾਰਨ ਹੋਣ ਵਾਲੇ ਵਾਤਾਵਰਣ ਪ੍ਰਭਾਵਾਂ ਨੂੰ ਵਾਤਾਵਰਣ ਨਿਗਰਾਨੀ ਸਬੰਧੀ ਵਿਚਾਰਾਂ 'ਤੇ ਵਿਚਾਰ ਕਰਨ ਦਾ ਫੈਸਲਾ ਕੀਤਾ ਜਾਏਗਾ ਕਿਉਂਕਿ ਨਿਗਰਾਨੀ ਪ੍ਰੋਗਰਾਮ ਦਾ ਮੁੱਖ ਖਰਚਾ, ਸਮੇਂ ਸਿਰ ਅਤੇ ਨਿਯਮਤ ਤੌਰ 'ਤੇ, ਵਾਤਾਵਰਣ ਦੀਆਂ ਸਥਿਤੀਆਂ ਸੱਬੰਧੀ ਹਨ ਅਤੇ ਵਾਤਾਵਰਨ ਦੀ ਸੁਰੱਖਿਆ ਲਈ ਸਮੇਂ ਸਿਰ ਕਾਰਵਾਈ ਕਰਨ ਲਈ ਹੈ। ਵਾਤਾਵਰਨ ਸੰਬੰਧੀ ਨਮੂਨੇ ਦੀ ਨਿਗਰਾਨੀ, MoEF&CC/CPCB/PPCB ਦੁਆਰਾ ਪ੍ਰਦਾਨ ਕੀਤੇ ਗਏ ਦਿਸ਼ਾ ਨਿਰਦੇਸ਼ਾਂ ਅਨੁਸਾਰ ਕੀਤੀ ਜਾਵੇਗੀ। ਪਾਣੀ, ਗੰਦਾ ਪਾਣੀ, ਹਵਾ ਅਤੇ ਸਟੈਕ ਨਿਕਾਸੀ ਲਈ ਵੱਖਰੇ ਰਿਕਾਰਡ ਨਿਯਮਿਤ ਤੌਰ 'ਤੇ ਬਣਾਏ ਜਾਣਗੇ। ਹੋਰ ਬਜਟ ਦੇ ਨਾਲ, ਵਾਤਾਵਰਨ ਪ੍ਰਬੰਧਨ ਲਈ ਬਜਟ ਤਿਆਰ ਕੀਤੀ ਜਾਵੇਗੀ ਅਤੇ ਲੋੜ ਅਨੁਸਾਰ ਨਿਯਮਿਤ ਤੌਰ 'ਤੇ ਸੋਧਿਆ ਜਾਵੇਗਾ।

## 13.0 ਜੋਖਮ ਮੁਹਾਰਤ ਦੇ ਉਪਾਅ

ਸਭ ਸਾਵਧਾਨੀਆਂ ਦੇ ਨਾਲ, ਆਫਤ ਵੀ ਹੋ ਸਕਦੀ ਹੈ, ਜਿਵੇਂ ਕਿ ਇੱਕ ਐਮਰਜੈਂਸੀ ਯੋਜਨਾ ਨੂੰ ਪਲਾਂਟ ਅਤੇ ਆਲੇ ਦੁਆਲੇ ਦੇ ਇਲਾਕਿਆਂ ਵਿੱਚ ਕਿਸੇ ਵੀ ਤਬਾਹੀ ਦੀ ਸੰਭਾਲ ਕਰਨ ਲਈ ਤਿਆਰ ਕੀਤਾ ਗਿਆ ਹੈ। ਕਿਸੇ ਵੀ ਆਫਤ ਦੇ ਵਾਪਰਣ ਤੋਂ ਰੋਕਖਾਮ ਕਰਨ ਲਈ ਇਹ ਪਲਾਂਟ ਲਈ ਸੁਰੱਖਿਆ ਅਤੇ ਆਫਤ ਨੂੰ ਰੋਕਣ ਦੀਆਂ ਸਹੂਲਤਾਂ ਦੇ ਨਾਲ ਦਿੱਤਾ ਗਿਆ ਹੈ। ਆਮ ਤੌਰ 'ਤੇ ਪਲਾਂਟ ਵਿੱਚ ਕੋਈ ਵੀ ਵੱਡਾ ਆਫਤ ਆਉਂਦੀ ਹੈ ਜੋ ਨੇੜੇ ਦੀ ਆਬਾਦੀ ਖੇਤਰ ਨੂੰ ਪ੍ਰਭਾਵਿਤ ਕਰਦੀ ਹੈ, ਹਾਲਾਂਕਿ ਵਿਵਸਥਾਂ ਵਿੱਚ ਕੰਮ ਵਾਲੀ ਥਾਂ 'ਤੇ ਅਸਰ ਪਾਉਣ ਵਾਲੇ ਪਲਾਂਟ ਦੇ ਅੰਦਰ ਹਾਦਸਿਆਂ ਨੂੰ ਰੱਦ ਨਹੀਂ ਕੀਤਾ ਜਾ ਸਕਦਾ। ਇਨ੍ਹਾਂ ਤੋਂ ਇਲਾਵਾ, ਅਨੇਕ ਸਾਮੱਗਰੀ ਨਾਲ ਸੰਬੰਧਿਤ ਪ੍ਰਬੰਧਨ, ਭਾਰੀ ਸੜਕੀ ਆਵਾਜਾਈ, ਉੱਚ ਤਣਾਅ ਵਾਲੀਆਂ ਬਿਜਲੀ ਦੀਆਂ ਲਾਈਨਾਂ, ਉਵਰਹੈਂਡ ਕਰੇਨਾਂ ਅਤੇ ਕਈ

ਉਤਪਾਦਨ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾਉਣ ਲਈ ਸਟੀਲ ਨਿਰਮਾਣ ਯੂਨਿਟ 330 ਟੀਪੀਡੀ

ਕਾਰਜਕਾਰੀ ਸੰਖੇਪ

ਕਲਾਇੰਟ: ਮੈਸਰਜ਼ ਪੰਜਾਬ ਸਟੀਲਜ਼

ਸਥਾਨ: ਪਿੰਡ ਤੂਰਾਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ ਅਮਲੋਹ, ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ

ਹੇਰ ਪ੍ਰਬੰਧਨ ਅਤੇ ਆਵਾਜਾਈ ਪ੍ਰਣਾਲੀ ਹਮੇਸ਼ਾਂ ਦੁਰਘਟਨਾਵਾਂ ਦੀ ਸੰਭਾਵਨਾ ਰੱਖਦੇ ਹਨ।

#### 14.0 ਜਨਤਕ ਸਲਾਹ-ਮਸ਼ਵਰਾ

ਪੀ.ਪੀ.ਸੀ.ਬੀ. ਦੁਆਰਾ 27.02.2019 ਨੂੰ ਇੰਗੋਟਸ / ਟੀ.ਐਮ.ਟੀ ਬਾਰਾਂ ਦੀ ਉਤਪਾਦਨ ਸਮਰੱਥਾ ਨੂੰ 115 ਟੀਪੀਡੀ ਤੋਂ ਵਧਾ ਕੇ 330 ਟੀ.ਪੀ.ਡੀ ਕਰਨ ਦੇ ਲਈ ਜਨਤਕ ਸੁਣਵਾਈ ਕੀਤੀ ਗਈ। ਸੁਣਵਾਈ ਪ੍ਰੋਜੈਕਟ ਦੀ ਜਗ੍ਹਾ ਅਰਥਾਤ ਪਿੰਡ ਤੂਰਾਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ ਅਮਲੋਹ, ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ ਵਿਖੇ ਕੀਤੀ ਗਈ। ਮੇਸ. ਪੰਜਾਬ ਸਟੀਲਜ਼ ਵੱਲੋਂ ਵਾਤਾਵਰਣ ਸਲਾਹਕਾਰ ਦੇ ਨੁਮਾਇੰਦੇ ਨੇ ਸੁਚੂਆਤ ਵਿੱਚ ਇੱਕ ਪੇਸ਼ਕਾਰੀ ਕੀਤੀ ਜਿਸ ਵਿੱਚ ਪ੍ਰੋਜੈਕਟ ਦੀ ਵਿਸਥਾਰ ਯੋਜਨਾ ਦੇ ਵੇਰਵਿਆਂ ਦਾ ਵਰਣਨ ਕੀਤਾ ਗਿਆ ਜਿਸ ਵਿੱਚ ਵਾਤਾਵਰਣ ਦੀ ਸਥਿਤੀ, ਪ੍ਰਦੂਸ਼ ਰੋਕਖਾਮ ਉਪਾਖ, ਪ੍ਰਬੰਧਨ ਯੋਜਨਾ ਅਤੇ ਪ੍ਰਸਤਾਵਕ ਦੁਆਰਾ ਕੀਤੀਆਂ ਸਮਾਜਿਕ-ਆਰਥਿਕ ਵਿਕਾਸ ਦੀਆਂ ਗਤੀਵਿਧੀਆਂ ਸ਼ਾਮਲ ਹਨ। ਸੁਣਵਾਈ ਦੌਰਾਨ 74 ਲੋਕਾਂ ਨੇ ਹਾਜ਼ਰੀ ਰਜਿਸਟਰ ਤੇ ਹਸਤਾਖਰ ਕੀਤੇ ਅਤੇ 2 ਵਿਅਕਤੀਆਂ ਨੇ ਗੱਲ ਕੀਤੀ ਅਤੇ ਕੁਝ ਮੁੱਦੇ ਉਠਾਏ ਅਤੇ ਸੁਝਾਅ ਦਿੱਤੇ। ਜਨਤਕ ਸੁਣਵਾਈ ਦੀ ਪ੍ਰਕਿਰਿਆ ਨੂੰ Annexure 20 ਦੇ ਤੌਰ ਤੇ ਜੋਤਿਆ ਗਿਆ ਹੈ ਅਤੇ ਜਨਤਕ ਸੁਣਵਾਈ ਦੀਆਂ ਤਸਵੀਰਾਂ Annexure 21 ਦੇ ਨਾਲ ਨੱਥੀ ਕੀਤੀਆਂ ਗਈਆਂ ਹਨ। ਇਸ ਲਈ, ਜਨਤਕ ਸੁਣਵਾਈ ਅਤੇ ਕਾਰਜ ਯੋਜਨਾ ਦੁਆਰਾ ਉਠਾਈਆਂ ਸ਼ਿਕਾਇਤਾਂ / ਸਵਾਲਾਂ ਦਾ ਸੰਖੇਪ ਸਾਰਣੀ 1.1 ਵਿੱਚ ਹੇਠਾਂ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਉਤਪਾਦਨ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾਉਣ ਲਈ ਸਟੀਲ ਨਿਰਮਾਣ ਯੂਨਿਟ 330 ਟੀਪੀਡੀ

ਕਾਰਜਕਾਰੀ ਸੰਖੇਪ

ਕਲਾਇੰਟ: ਮੈਸਰਜ਼ ਪੰਜਾਬ ਸਟੀਲਜ਼

ਸਥਾਨ: ਪਿੰਡ ਤੂਰਾਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ ਅਮਲੋਹ, ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ

### ਟੇਬਲ 1.1: ਜਨਤਕ ਸੁਣਵਾਈ ਦੀ ਕਾਰਵਾਈ ਦੇ ਸੰਖੇਪ

ਲੜੀ ਨੰ.	ਨਾਮ ਅਤੇ ਵਿਅਕਤੀ ਦਾ ਪਤਾ	ਸੁਣਵਾਈ ਦੇ ਸਥਾਨ ਤੇ ਮੌਜੂਦ ਵਿਅਕਤੀ ਦੁਆਰਾ ਮੰਗੀ ਗਈ ਪੁੱਛਗਿੱਛ / ਬਿਆਨ / ਜਾਣਕਾਰੀ / ਸਪਸ਼ਟੀਕਰਨ ਦਾ ਵੇਰਵਾ	ਪ੍ਰੋਜੈਕਟ ਪ੍ਰਸਤਾਵਕ ਦੁਆਰਾ ਦਿੱਤੀ ਗਈ ਪੁੱਛਗਿੱਛ / ਬਿਆਨ / ਜਾਣਕਾਰੀ / ਸਪਸ਼ਟੀਕਰਨ ਦਾ ਜਵਾਬ	ਕਾਰਵਾਈ ਯੋਜਨਾ
1.	ਸ਼੍ਰੀ ਗੋਰੀ ਸਰਪੰਚ, ਪਿੰਡ ਤੂਰਾਨ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ।	ਉਨ੍ਹਾਂ ਵਧੀਕ ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ, ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ ਅਤੇ ਜਨਤਕ ਹਾਜ਼ਰੀਨ ਦਾ ਸਵਾਗਤ ਕੀਤਾ। ਉਸਨੇ ਜਨਤਕ ਸੁਣਵਾਈ ਵਿਚ ਮੌਜੂਦ ਪਿੰਡ ਤੂਰਾਨ ਦੇ ਲੋਕਾਂ ਨੂੰ ਪ੍ਰੋਜੈਕਟ ਲਈ ਕੋਈ ਸੁਝਾਅ, ਜੇ ਕੋਈ ਹੈ ਤਾਂ ਦੇਣ ਲਈ ਕਿਹਾ। ਉਸਨੇ ਫੈਕਟਰੀ ਦੇ ਮਾਲਕ ਨੂੰ ਬੇਨਤੀ ਕੀਤੀ ਕਿ ਉਹ ਸਮੇਂ ਸਮੇਂ ਤੇ ਫੰਡ ਮੁਹੱਈਆ ਕਰਵਾਏ ਜਿਵੇਂ ਕਿ ਸੀਈਅਰ ਦੀਆਂ ਗਤੀਵਿਧੀਆਂ ਲਈ ਰਿਜ਼ਰਵਡ ਹਨ ਜਿਵੇਂ ਕਿ ਕੰਪਨੀ ਦੇ ਵਾਤਾਵਰਣ ਸਲਾਹਕਾਰ ਦੁਆਰਾ ਦਰਸਾਇਆ ਗਿਆ ਹੈ। ਉਨ੍ਹਾਂ ਮੰਗ ਕੀਤੀ ਕਿ ਸਰਕਾਰੀ ਮਿਡਲ ਸਕੂਲ, ਤੂਰਨ ਵਿੱਚ ਦੋ ਕਮਰੇ ਬਣਾਏ ਜਾ ਸਕਦੇ ਹਨ।	ਉਦਯੋਗ ਦੇ ਵਾਤਾਵਰਣ ਸਲਾਹਕਾਰ ਨੇ ਦੱਸਿਆ ਕਿ ਸੀ.ਈ.ਅਅਰ. ਦੀਆਂ ਗਤੀਵਿਧੀਆਂ ਤਹਿਤ 4.5 ਲੱਖ ਰੁਪਏ ਰਾਖਵੇਂ ਰੱਖੇ ਗਏ ਹਨ ਅਤੇ ਇਹ ਖਰਚ ਪੰਚਾਇਤ, ਤੂਰਨ ਦੀ ਸਲਾਹ ਨਾਲ ਖਰਚ ਕੀਤਾ ਜਾਵੇਗਾ। ਸਰਪੰਚ ਨੇ ਜਵਾਬ 'ਤੇ ਤਸੱਲੀ ਪ੍ਰਗਟਾਈ।	ਪਿੰਡ ਤੂਰਨ ਦੇ ਸਰਕਾਰੀ ਮਿਡਲ ਸਕੂਲ ਵਿਚ ਦੋਵਾਂ ਕਮਰਿਆਂ ਦੀ ਉਸਾਰੀ ਕੀਤੀ ਜਾਏਗੀ, ਇਕ ਵਾਰ ਪ੍ਰੋਜੈਕਟ ਨੂੰ ਈ.ਸੀ. ਮਨਜ਼ੂਰ ਹੋਣ ਤੋਂ ਬਾਅਦ।

ਉਤਪਾਦਨ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾਉਣ ਲਈ ਸਟੀਲ ਨਿਰਮਾਣ ਯੂਨਿਟ 330 ਟੀਪੀਡੀ

ਕਾਰਜਕਾਰੀ ਸੰਖੇਪ

ਕਲਾਇੰਟ: ਮੈਸਰਜ਼ ਪੰਜਾਬ ਸਟੀਲਜ਼

ਸਥਾਨ: ਪਿੰਡ ਤੁਰਾਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ ਅਮਲੋਹ, ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ

2.	ਸ਼੍ਰੀ ਕਮਲਜੀਤ ਸਿੰਘ, ਪਿੰਡ ਜੱਸਰਾਂ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ	ਉਹ ਜਾਣਨਾ ਚਾਹੁੰਦਾ ਸੀ ਕਿ ਕੀ ਉਦਯੋਗ ਦੇ ਵਿਸਥਾਰ ਨਾਲ ਪੀਂਘ ਵਾਲੇ ਪਾਣੀ 'ਤੇ ਕੋਈ ਮਾੜਾ ਪ੍ਰਭਾਵ ਪਏਗਾ ਜਾਂ ਨਹੀਂ।	ਉਦਯੋਗ ਦੇ ਵਾਤਾਵਰਣ ਸਲਾਹਕਾਰ ਨੇ ਦੱਸਿਆ ਕਿ ਉਦਯੋਗ ਵਿਚੋਂ ਸਿਰਫ ਘਰੇਲੂ ਗੰਦਾ ਪਾਣੀ ਮਿਲੇਗਾ, ਜਿਸ ਦਾ treat ਐਸ.ਟੀ.ਪੀ ਦੀ adequate ਸਮਰੱਥਾ ਵਿੱਚ ਕੀਤਾ ਜਾਵੇਗਾ ਅਤੇ ਇਸ ਦੇ treat ਤੋਂ ਬਾਅਦ ਇਹੀ ਵਰਤੋਂ ਉਦਯੋਗਿਕ ਅਹਾਤੇ ਵਿੱਚ ਬੂਟੇ ਲਗਾਉਣ ਲਈ ਕੀਤੀ ਜਾਏਗੀ। ਉਦਯੋਗ ਦੇ ਅਹਾਤੇ ਦੇ ਬਾਹਰ ਪਾਣੀ ਦੀ ਨਿਕਾਸੀ ਨਹੀਂ ਕੀਤੀ ਜਾਵੇਗੀ। ਅੱਗੇ, ਕੋਈ ਵਪਾਰ ਦਾ ਪ੍ਰਭਾਵ ਪੈਦਾ ਨਹੀਂ ਕੀਤਾ ਜਾਏਗਾ। qurriest ਨੇ ਦਿੱਤੇ ਜਵਾਬ 'ਤੇ ਤਸੱਲੀ ਜਾਹਰ ਕੀਤੀ।	ਵਿਸਥਾਰ ਤੋਂ ਬਾਅਦ ਪੈਦਾ ਹੋਣ ਵਾਲੇ ਗੰਦੇ ਪਾਣੀ ਦੇ treat ਲਈ 5 ਕੇ.ਐਲ.ਡੀ ਦੀ ਸਮਰੱਥਾ ਵਾਲੇ ਐਸ.ਟੀ.ਪੀ ਨੂੰ ਤਜਵੀਜ਼ ਦਿੱਤੀ ਗਈ ਹੈ। ਇਲਾਜ ਕੀਤਾ ਪਾਣੀ ਪ੍ਰੈਜੈਕਟ ਅੰਦਰ ਹਰੇ ਖੇਤਰ 'ਤੇ ਬਾਗਬਾਨੀ ਮਕਸਦ ਲਈ ਵਰਤਿਆ ਜਾਵੇਗਾ।
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## 15.0 ਪ੍ਰੋਜੈਕਟ ਲਾਭ

ਇਹ ਪ੍ਰੋਜੈਕਟ ਦੇਸ਼ ਵਿੱਚ ਸਟੀਲ ਉਤਪਾਦ ਦੀ ਮੰਗ ਅਤੇ ਸਪਲਾਈ ਦੇ ਘਾਟੇ ਤੋਂ ਬਾਹਰ ਹੋਵੇਗਾ। ਇਹ ਪ੍ਰੋਜੈਕਟ ਰਾਜ ਸਰਕਾਰ ਲਈ ਵਾਧੂ ਆਮਦਨ ਵੀ ਪੈਦਾ ਕਰੇਗਾ। ਵਾਧੂ ਸਟੀਲ ਉਪਲੱਬਧਤਾ ਬੁਨਿਆਦੀ ਖੇਤਰ 'ਹੈ ਅਤੇ ਦੇਸ਼ ਦੀ ਸਮੁੱਚੀ ਆਰਥਿਕ ਦਿਸ਼ਾ ਨੂੰ ਉਤਸ਼ਾਹਤ ਕਰੇਗਾ। ਇਹ ਪ੍ਰੋਜੈਕਟ ਲੋਕਾਂ ਲਈ ਵਾਧੂ ਸਿੱਧੇ / ਅਸਿੱਧੇ ਰੋਜ਼ਗਾਰ ਬਣਾਏਗਾ। ਸਥਾਨਕ ਲੋਕਾਂ ਨੂੰ ਰੁਜ਼ਗਾਰ ਅਤੇ ਆਪਰੇਸ਼ਨ ਸਟੇਜ ਲਈ ਤਰਜੀਹ ਦਿੱਤੀ ਜਾਵੇਗੀ।

## 16.0 ਕਾਰਪੋਰੇਟ ਸਮਾਜਿਕ ਜ਼ਿੰਮੇਵਾਰੀ (C.E.R)

ਸ੍ਰੀ ਰਾਜੇਸ਼ ਕੁਮਾਰ ਮਿੱਤਲ (ਸਾਥੀ) ਮੇਸ. ਪੰਜਾਬ ਸਟੀਲਜ਼ ਸੀ.ਈ.ਆਰ (ਕਾਰਪੋਰੇਟ ਵਾਤਾਵਰਣ ਜ਼ਿੰਮੇਵਾਰੀ) ਨੂੰ ਲਾਗੂ ਕਰਨ ਲਈ ਜ਼ਿੰਮੇਵਾਰ ਹੋਣਗੇ। ਪ੍ਰਸਤਾਵਿਤ ਪ੍ਰੋਜੈਕਟ ਦੀ ਕੀਮਤ 4.56 ਕਰੋੜ ਰੁਪਏ ਹੈ। ਇਸ ਲਈ, 4.56 ਲੱਖ ਰੁਪਏ (ਪ੍ਰਸਤਾਵਿਤ ਲਾਗਤ ਦਾ 1%) ਐਂਡ ਨੰਬਰ 22-65 / 2017-IA.III ਵਾਈਡ ਦਫਤਰ ਮੈਮੋਰੰਡਮ ਮਿਤੀ 01.05.2018 ਅਨੁਸਾਰ ਸੀ.ਈ.ਆਰ ਦੇ ਕੰਮ ਕਰਨ ਲਈ ਲੋੜ ਹੁੰਦੀ ਹੈ। ਹੇਠ ਲਿਖੀਆਂ ਗਤੀਵਿਧੀਆਂ ਨੂੰ ਸੀਈਈਆਰ ਦੇ ਅਧੀਨ ਸ਼ਾਮਲ ਕਰਨ ਦਾ ਪ੍ਰਸਤਾਵ ਦਿੱਤਾ ਗਿਆ ਹੈ:-

ਲੜੀ ਨੰ.	ਗਤੀਵਿਧੀਆਂ	ਕੁੱਲ ਖਰਚ (ਲੱਖ ਵਿੱਚ)	ਟਾਈਮਲਾਈਨ (EC ਗ੍ਰਾਂਟ ਦੀ ਮਿਤੀ ਤੋਂ ਸ਼ੁਰੂ)	1 ਸਾਲਾਂ ਵਿੱਚ ਕੁੱਲ ਖਰਚ (ਲੱਖ ਵਿੱਚ)
1.	ਸਿੱਖਿਆ ਪਿੰਡ ਤੂਰਾਨ ਵਿੱਚ ਸਥਿਤ ਸਰਕਾਰੀ ਮਿਡਲ ਸਕੂਲ ਦੇ ਗਰੀਬ ਅਤੇ ਲੋੜਵੰਦ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੀਣ ਵਾਲੇ ਸਾਫ਼ ਪਾਣੀ ਲਈ ਆਰ.ਓ. ਅਤੇ ਵਰਦੀਆ ਅਤੇ ਸੋਲਰ ਪੈਨਲ ਪ੍ਰਦਾਨ ਕੀਤੇ।	4.5	1 ਸਾਲ	4.5

## 17.0 ਵਾਤਾਵਰਣ ਪ੍ਰਬੰਧਨ ਯੋਜਨਾ

ਵਾਤਾਵਰਣ ਪ੍ਰਬੰਧਨ ਵਿਭਾਗ ਨੂੰ ਇਸ ਪ੍ਰੋਜੈਕਟ ਦੇ EMP ਲਾਗੂ ਕਰੇਗਾ। EIA ਰਿਪੋਰਟ ਵਿੱਚ ਦਿੱਤੇ ਗਏ ਸਾਰੀਆਂ ਸਿਫ਼ਾਰਸ਼ਾਂ ਦੀ ਪਾਲਣਾ ਕੀਤੀ ਜਾਵੇਗੀ ਜਿਸ ਵਿੱਚ ਕਿੱਤਾਮਈ ਸਿਹਤ, ਖਤਰੇ ਨੂੰ ਘੱਟ ਕਰਨਾ ਅਤੇ ਸੁਰੱਖਿਆ ਦੀ ਵੀ

ਉਤਪਾਦਨ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾਉਣ ਲਈ ਸਟੀਲ ਨਿਰਮਾਣ ਯੂਨਿਟ 330 ਟੀਪੀਡੀ

ਕਾਰਜਕਾਰੀ ਸੰਖੇਪ

ਕਲਾਇੰਟ: ਮੈਸਰਜ਼ ਪੰਜਾਬ ਸਟੀਲਜ਼

ਸਥਾਨ: ਪਿੰਡ ਤੂਰਾਨ, ਅਮਲੋਹ ਰੋਡ, ਤਹਿਸੀਲ ਅਮਲੋਹ, ਮੰਡੀ ਗੋਬਿੰਦਗੜ੍ਹ, ਜ਼ਿਲ੍ਹਾ ਫਤਿਹਗੜ੍ਹ ਸਾਹਿਬ, ਪੰਜਾਬ

ਪਾਲਣਾ ਕੀਤੀ ਜਾਵੇਗੀ। **capital cost** ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਸਿਸਟਮ ਨੂੰ ਲਾਗੂ ਕਰਨ ਅਤੇ **EMP Rs. 65 ਲੱਖ** ਹੈ। ਸਾਲਾਨਾ ਆਵਰਤੀ ਖਰਚਾ ਲਗਭਗ **11.5 ਲੱਖ ਰੁਪਏ** ਹੋਵੇਗਾ। **EMD** ਇਹ ਯਕੀਨੀ ਬਣਾਏਗਾ ਕਿ ਸਾਰੇ ਹਵਾ ਦੇ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਵਾਲੇ ਯੰਤਰ ਅਤੇ ਪਾਣੀ ਮੁੜ ਸੰਚਾਰ ਪ੍ਰਬੰਧਨ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਤਰੀਕੇ ਨਾਲ ਕੰਮ ਕਰਦੇ ਹਨ। ਸਰੋਤ ਸੰਭਾਲ (ਕੱਚਾ ਮਾਲ, ਪਾਣੀ ਆਦਿ) ਲਈ ਸਕੀਮਾਂ ਅਤੇ ਮੰਹ ਵਾਲੇ ਪਾਣੀ ਦੀ ਕਟਾਈ **EMD** ਦੁਆਰਾ ਸ਼ੁਰੂ ਕੀਤੀ ਜਾਵੇਗੀ। ਪਲਾਂਟ ਦੇ ਅੰਦਰ ਅਤੇ ਬਾਹਰ ਹਰੇ-ਭਰੇ ਅਤੇ ਹਰਿਆਲੀ ਦਾ ਵਿਕਾਸ **EMD** ਦੁਆਰਾ ਵਧਾਇਆ ਜਾਵੇਗਾ। ਗਰੀਨਬੈਲਟ ਡਿਵੈਲਪਮੈਂਟ ਤੇ ਸੈਂਟਰਲ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਬੋਰਡ (**CPCB**) ਦੁਆਰਾ ਜਾਰੀ ਦਿਸ਼ਾ ਨਿਰਦੇਸ਼ਾਂ ਦੀ ਪਾਲਣਾ ਕੀਤੀ ਜਾਵੇਗੀ। ਕਰਮਚਾਰੀਆਂ ਲਈ ਵਾਤਾਵਰਣ ਸਬੰਧੀ ਜਾਗਰੂਕਤਾ ਪ੍ਰੋਗਰਾਮ ਕਰਵਾਏ ਜਾਣਗੇ। **EMD** ਵੀ ਪੈਂਦੇ ਦੇ ਅੰਦਰ ਸਫ਼ਾਈ ਨੂੰ ਯਕੀਨੀ ਬਣਾਏਗਾ।

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## **CHAPTER 1.0**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

M/s Punjab Steels is a Private company established in year 1998 which has marked its presence in the steel industry in India's Steel Town - Mandi Gobindgarh. The Industrial Unit is located at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. The existing industrial unit deals with the manufacturing of Ingots/ TMT Bars. The existing production capacity of the industrial unit is 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill. The industrial site is located in the Industrial Zone as per the Master Plan of Mandi Gobindgarh, 2010-2031.

Now, the project proponent wants to increase their production capacity by replacing existing Induction Furnaces with two Induction Furnaces of capacity 15 TPH each. Thus, after expansion, the production capacity of the industrial unit will become 330 TPD for manufacturing of Ingots/TMT Bars by 2 IF's of capacity 15 TPH each along with the existing rolling mill.

As per, EIA Notification and its amendments, it is a Secondary Metallurgical processing industry under Schedule 3(a); category B project which requires Environmental Clearance.

The application for issue of Terms of Reference (TORs) was submitted on 1<sup>st</sup> March, 2018 to State Level Environment Impact Assessment Authority (SEIAA), Punjab. The proposal was considered in 166<sup>th</sup> SEAC, Punjab held on 24<sup>th</sup> May, 2018. Thereafter, proposal was considered in 133<sup>rd</sup> SEIAA, Punjab held on 6<sup>th</sup> July, 2018 wherein TORs were issued for the preparation of draft EIA Report. The final TOR letter was issued by SEIAA, Punjab vide Letter No. SEIAA/2018/875 dated 16<sup>th</sup> July, 2018; copy of the TOR letter is attached along the report. Draft EIA was submitted to PPCB on 20<sup>th</sup> December, 2018 for conducting Public hearing. Public hearing for the proposed expansion of project was conducted on 27<sup>th</sup> February, 2019. Copy of the proceedings is attached along as **Annexure 20** & photographs of the public hearing are attached along as **Annexure 21**. The final EIA report is prepared after incorporating the public hearing proceedings.

## **1.2 PURPOSE OF THE REPORT**

In pursuance of Government of India Notification under Environmental (Protection) Act, 1986; any expansion/modernization project necessitates statutory prior Environmental Clearance in accordance with the objectives of National Environmental Policy as approved by the Union Cabinet on 18<sup>th</sup> May, 2006 and MoEF&CC EIA Notification dated 14.09.06 & its amendments by preparing Environmental Impact Assessment (EIA) report. In view of the above, the final EIA report has been prepared taking into consideration the requirement and guidelines of statutory bodies and also client's requirement.

The objective of the EIA study report is to take stock of the prevailing quality of environment, to assess the impacts of proposed industrial activity on environment and to plan appropriate environmental control measures to minimize adverse impacts and to maximize beneficial impacts of project.

The following major objectives have been considered:

- Assess the existing status of environment.
- Additional impacts if any due to the proposed expansion.
- Suggest additional pollution control and ameliorative measures to minimize/reduce the impacts.
- Prepare an action plan for implementation of suggested ameliorative measures.
- Suggest a monitoring programme to assess the efficacy of the various adopted environmental control measures.
- Assess financial considerations for suggested environmental control plans.
- Clearances from statutory authorities

## **1.3 IDENTIFICATION OF THE PROJECT & PROJECT PROPONENT**

### **1.3.1 NATURE OF THE PROJECT**

Expansion of the steel manufacturing unit will be done by replacing the existing two Induction Furnaces of capacity 4 TPH & 6 TPH with two new Induction Furnaces of capacity 15 TPH each. However, the rolling mill remains same even after expansion. After expansion, the production capacity of the industrial unit will become 330 TPD for manufacturing of Ingots/TMT Bars with 2 Induction Furnaces of capacity 15 TPH each and 1 rolling mill.

### 1.3.2 SIZE OF THE PROJECT

Total Area of the industrial unit is 5.60 acres (or 22,483.27 sq.m). Detailed area break up is given below in **Table 1.1**. The existing plant has the following main facilities:

- Office, Canteen, Security Room;
- Sheds & Stores, Rolling Mill Shed, Workshop Area, Existing furnace shed, Parking Shed and Scrap Shed;
- Other areas as Transformers, CCM Plant, Transport vehicle parking, watchman room, spectra lab, substation, Labour residence area.

**Table 1.1: Break-up of the plot area**

S. No.	Land use details	Area (in sq.ft.)
1.	Shed Covered Area	1,13,830
2.	Office Block Covered Area	1,130
3.	Stores/Labour Quarters & other Covered Areas	2,370
4.	Green Area	79,955
5.	Road/Passage Area	30,900
6.	Parking Area	8,570
7.	Grid & Open Area	5,165
<b>Total Area</b>		<b>2,41,920 sq. ft. (or 22,483.27 sq.m)</b>

### 1.3.3 LOCATION OF THE PROJECT

Project is located at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. The project is at a distance of approx. 1.5 km from National Highway-1 which connects India Capital New Delhi. Project location is shown below in **Fig. 1.1**. The nearest railway station is Mandi Gobindgarh Railway Station at a distance of about 3.5 km in ‘NE’ direction. International Airport, Mohali is located at a distance of 50 km in ‘NE’ direction, while the nearest airport is Ludhiana Airport, Sahnewal located at 38 km in ‘NW’ direction. The nearest bus stand is Mandi Gobindgarh Bus Stand at a distance of about 2.5 km in ‘NE’ direction. The nearest surface water body is Sirhind Canal located at a distance of 6 km in ‘E’ direction. The industrial site is located in the notified Industrial Zone as per the Master Plan of

Mandi Gobindgarh, 2010-2031. Letter has been obtained from District Town Planner in this regard. Copy of the same is attached along as **Annexure 12**. There are no Wildlife sanctuaries or National Park within 10 km radius of the project location. But, there is a protected forest namely Amloh Bir protected forest located at a distance of 6.5 km in 'SW' direction.

Project boundary coordinates of 4 corners are as follow:

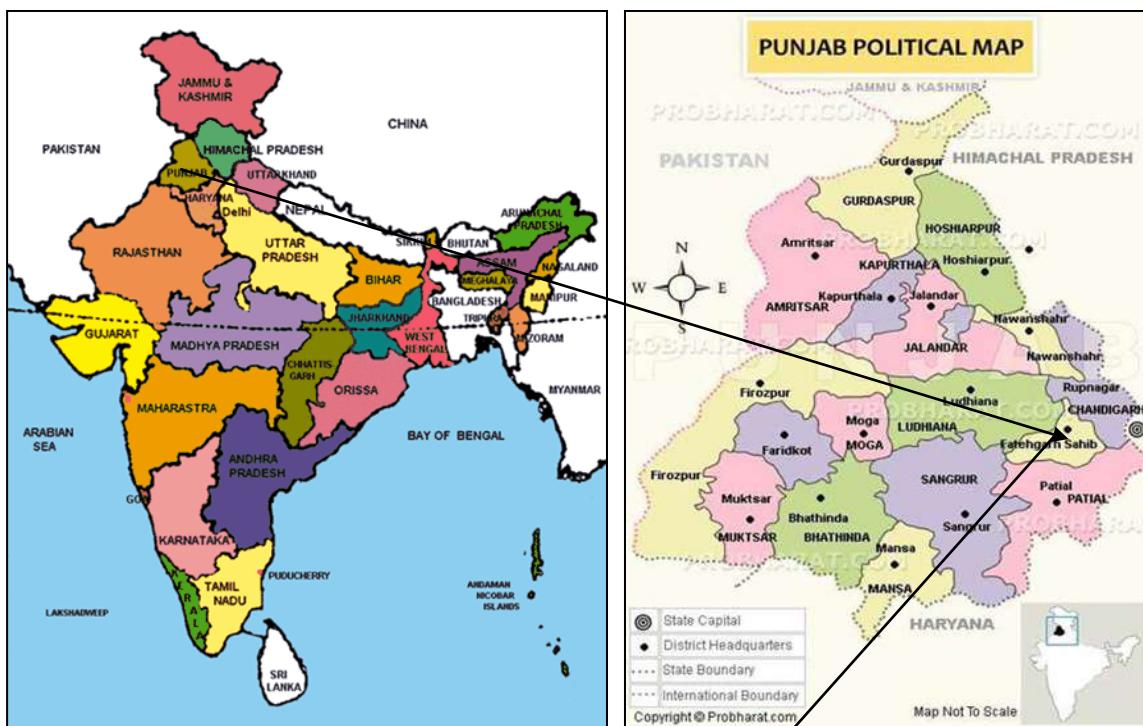
A: 30°38'47.00"N and 76°16'18.36"E

B: 30°38'48.61"N and 76°16'13.52"E

C: 30°38'53.96"N and 76°16'13.74"E

D: 30°38'53.46"N and 76°16'18.70"E

Google Earth Image showing project location & its surroundings within 500 m are attached along as **Drawing 2**. Project and study area falls in the Survey of India, Toposheet No. **H43K6 & H43K2**. Toposheet showing location of the project is attached along the report as **Drawing 3**.



**Fig. 1.1: Location of the Project**

### **1.3.4 PROJECT PROPOSAL**

M/s Punjab Steels is a Private company established in the year 1998. The work here goes round the clock to maintain excellent quality standards, efficient delivery schedules and competitive prices.

A long span of experience in the steel business has led to provide excellent sales and services to our valued customers. The company makes persistent efforts to deliver highest quality to its customers, right from the stage of procurement of raw material till the final product is delivered.

The Partners of the company are as under:

1. Sh. Rajesh Kumar Mittal
2. Sh. Chander Parkash Mittal

Both the partners are well versed with the process involved & can handle the project efficiently.

### **1.4 IMPORTANCE OF THE PROJECT**

India being a developing country; Iron and Steel Industry play very important role in economic development of the country. The manufacture of steel is regarded as one of the key industries. It is a prerequisite for modern industrial development. Large amounts of iron and steel is required for constructing bridges, rail track, railway rolling stock, ships, vehicles, various machines, power plants, airports etc.

According to recent report:

- India was the world's third largest steel producer and consumer as of 2017. The country is slated to surpass USA to become the world's second largest steel consumer in 2019.
- In FY18, India produced 104.98 million tonnes (MT) and 103.13 million tonnes of finished steel and crude steel respectively. Crude steel production between Apr-Oct 2018 (P) reached 61.03 million tonnes.
- India's finished steel consumption is anticipated to increase to 230 million tonnes by 2030-31 from 90.68 million tonnes in 2017-18.

That's why, 'Iron and steel industries are economy's backbone'. Based on increased capacity, National Steel Policy (NSP), 2007 implemented to encourage the industry to reach the global benchmark. Huge scope for growth is offered by India's comparatively low per capita steel consumption and the expected rise in consumption due to increased infrastructure construction and the thriving automobile and railways sectors. The benefits of the industry are as follows:

- To fulfill the demand – supply gap in the National as well as International market.
- Generation of the employment opportunities both for skilled & non-skilled persons.
- Improvement of living standard.

## **1.5 SCOPE OF THE STUDY**

This study contains various information on the Environmental factors viz-a-viz contribution of pollution by the expansion of the industrial unit. These factors include air, water, noise, health, socio economic, land use and agricultural pattern etc. It discusses the predicted impact of the plant activities on these factors. Broadly under the scope 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 identify risk factors & suggest their mitigation including occupational health of the workers.
- To prepare Environmental Management Plan for utilization and adoption of safety measures.
- To delineate future Environmental quality monitoring programme.
- To identify the needs of the study area and suggest supportive measures under Corporate Environment Responsibility.

Various steps involved in Environmental Impact Assessment study of the project are divided into the following phases:

- Identification of significant environmental parameters and to study the existing status within the impact zone with respect to air, water, noise, soil and socio economic components of the environment.
- Study of various activities of the project for manufacture of final product and to identify the area leading to impact/change in environmental quality.
- Identification/prediction of impacts for the identified activities and to study levels of impacts on various environmental components.
- Evaluation of final levels of various parameters after superimposing the predicted impacts over the baseline quality.
- Formulation of Environmental Management Plan for implementation in the project after expansion.

The baseline data from period March to May, 2018 has been collected by NABL and MoEF&CC approved laboratory. Data is collected to determine the existing conditions of various environmental attributes.

The Acts, Notifications, Rules and Amendments applicable for expansion of existing Metallurgical industry and its operation includes the following:

- The Water (Prevention & Control of Pollution) Act, 1974/ Rules, 1975.
- The Water (Prevention & Control of Pollution) Cess Act, 1977/ Rules, 1977.
- The Air (Prevention & Control of Pollution) Act, 1981/ Rules, 1982.
- The Environment (Protection) Act, 1986/Rules, 1986.
- The Environmental Impact Assessment (EIA) Notification, 2006 & its amendments.
- Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
- Batteries (Management & Handling) Rules, 2001.
- Bio-Medical Waste Management Rules, 2016.
- Solid Waste Management Rules, 2016.
- E-Waste (Management) Rules, 2016 and amendment Rules, 2018.
- The Manufacture, Storage & Import of Hazardous Chemical Rules, 1989 (Including amendment rules till date).
- The Public Liability Insurance Act, 1991 & Rules, 1991.

- Ozone Depleting Substance (Regulation & Control) Rules, 2000.
- The Factory Act, 1948 (as amended till 1987).
- The Central Motor Vehicle Rules 1989 (Under Motor Vehicle Act 1988).
- The Boiler Act, 1923 & Rules, 1950.

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## **CHAPTER 2.0 PROJECT DESCRIPTION**

### **2.1 PROJECT DESCRIPTION**

This chapter highlights the features of the expansion of steel plant, its layout and design, details on the process, raw materials requirement, utilities and services, infrastructure facilities and sources of waste generation, their quantity, treatment and disposal of the waste.

### **2.2 TYPE OF PROJECT**

The existing industrial unit deals with the manufacturing of Ingots/ TMT Bars having production capacity of 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill.

Now, the project proponent wants to increase their production capacity by replacing the existing Induction Furnaces with two numbers of Induction Furnaces of capacity 15 TPH each. However, the rolling mill remains even after expansion. Thus, after expansion, the production capacity of the industrial unit will become 330 TPD comprising of Ingots/ TMT Bars.

The salient features of the project are as under:

- **Existing production capacity:** 115 TPD of Ingots/ TMT Bars with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill.
- **After expansion production capacity:** 330 TPD of Ingots/ TMT bars with 2 no's of Induction Furnace of capacity 15 TPH each and one rolling mill.
- **Total Area:** 5.60 acres (or 22,483.27 sq.m.)
- **Estimated Project cost including expansion:** Rs. 13.93 Crores
- **Interlinked projects:** None.

#### **Envisaged changes due to expansion**

- Replacing the existing IF's with 2 Induction Furnace of capacity 15 TPH each. However, rolling mill remains even after expansion.

### **2.3 NEED FOR PROJECT**

India being a developing country; Iron and Steel Industry plays a very important role in economic development of the country. The manufacturing of steel is regarded as one of the key industries. It is a prerequisite for modern industrial development. Large amount of iron and steel is required for constructing bridges, rail track, railway rolling stock, ships, vehicles, various machines, power plants, airports etc.

M/s Punjab Steels is presently manufacturing Ingots / TMT Bars with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill of production capacity 115 TPD. To make end product economically viable in present fluctuating market, M/s Punjab Steels have decided to go for expansion by replacing the existing Induction Furnaces with 2 IF's of capacity 15 TPH each. The capacity of the industrial unit after expansion will become 330 TPD for manufacturing of Ingots/ TMT Bars by 2 Induction Furnaces of capacity 15 TPH each and existing rolling mill to withstand the present market situations. Production capacity after expansion, will essentially meet the increasing steel demand in India. The Partners of industry are experienced Industrialist, dynamic, practical, hardworking & self-made entrepreneur. They have excellent reputation in & around Punjab, Haryana and Himachal Pradesh. The management team consists of experienced and matured professionals. The team is quite capable of managing the business. Therefore, no financial problem is envisaged. The technology involved in expansion project is well proven and reliable. All equipment purchased shall be brand new & latest in model and will be purchased from reputed suppliers. For O&M of the plant, experienced Engineers/Technicians are available in the region.

The region shall also be benefited from the expansion of project as there will be more employment of people in the industry. Preference will be given to the people of the state possessing requisite skill and qualification criteria. Also, there will be more scope for indirect employment of the people of the state in and around the project like in transportation sector.

## **2.4 LOCATION OF PROJECT**

Project is located at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. It is located at a distance of 1.5 km from National Highway-1. Total area of the project is 5.60 acres (or 22,483.27 sq.m.). The list of industries located within 10 km of the project area is enclosed along as **Annexure 14**.

**Table 2.1: Location details of the Industrial Plant**

S. No.	Particulars	Details within 10 km
<b>1.</b>	<b>Location</b>	
a)	Village	Tooran
b)	Tehsil	Amloh
c)	Sub Tehsil	Mandi Gobindgarh
d)	District	Fatehgarh Sahib
e)	State	Punjab
<b>2.</b>	<b>Elevation</b>	268m m.s.l
<b>3.</b>	<b>Landuse at the project</b>	Industrial
<b>4.</b>	<b>Nearest Highway</b>	National Highway-1 (GT Road); 1.5 km in 'NE'
<b>5.</b>	<b>Nearest Railway</b>	Mandi Gobindgarh Railway Station; 3.5 km in 'NE'
<b>6.</b>	<b>Nearest Airport</b>	Ludhiana Airport, Sahnewal; 38 km in 'NW' International Airport, Mohali; 50 km 'NE'
<b>7.</b>	<b>Nearest Major City</b>	Mandi Gobindgarh; 2 km in 'NW'
<b>8.</b>	<b>Nearest Major settlement</b>	Village Tooran
<b>9.</b>	<b>Features within 10 km</b>	
a)	Defense Installations	Nil
b)	Archaeological Important Places	Nil
c)	Wild Life Sanctuaries	Nil
d)	Reserved/Protected Forest	Amloh Bir Protected Forest: 6.5 km 'SW'
S. No.	Particulars	Details within 10 km
e)	Industries	Project site is located in Industrial Zone as per the Master Plan of Mandi

		Gobindgarh, 2010-2031.
f)	Surface Water Body (Canal)	Sirhind Main Canal; 6 km in 'E'
g)	Hill Ranges	Nil
h)	State Boundary	Nil

Project site and its study area falls in the Survey of India, Toposheet No. **H43K6 & H43K2**. Toposheet demarcating the same is attached as **Drawing 3**.

## 2.5 PROJECT SIZE & MAGNITUDE OF OPERATION

The size and magnitude of operation of the project after expansion is given in **Table 2.2**.

**Table 2.2: Size & magnitude of operation of the project after expansion**

S. No.	Parameters	Description
1.	<b>Project</b>	Expansion of steel manufacturing unit namely "Punjab Steels" falls under Schedule 3(a) as per EIA Notification dated 14 <sup>th</sup> September, 2006 and its subsequent amendments.
2.	<b>Project Proponent</b>	Mr. Rajesh Kumar Mittal (Partner)
3.	<b>Brief description of nature of the project</b>	Existing industrial unit deals with the manufacturing of Ingots/ TMT Bars having production capacity 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill.  Expansion of the existing steel manufacturing unit will be done by replacing existing 2 no's Induction Furnace with 2 Induction Furnaces 15 TPH each and rolling mill remain same.
4.	<b>Salient Features of the Project</b>	
4.1	<b>Overall plant capacity</b>	The overall production capacity of the plant will become 330 TPD comprising of Ingots/ TMT Bars

S. No.	Parameters	Description															
		with 2 IF's of capacity 15 TPH each and one rolling mill.															
4.2	<b>Total Plot Area</b>	5.60 acres (or 22,483.27 sq.m.); Expansion of project is within the existing land only.															
4.3	<b>Location</b>	<p>Project boundary coordinates of all corners are given below:</p> <p>A: 30°38'47.00"N and 76°16'18.36"E          B: 30°38'48.61"N and 76°16'13.52"E          C: 30°38'53.96"N and 76°16'13.74"E          D: 30°38'53.46"N and 76°16'18.70"E</p> <p>The project and its study area falls in the Survey of India, Toposheet No. <b>H43K6 &amp; H43K2</b>.</p>															
4.4	<b>Water requirement</b> <b>Source:</b> Ground water.	<p>Total consumption of water after expansion will be 90 KLD. The break-up of the same is given below:</p> <table border="1"> <thead> <tr> <th>Details</th> <th>Existing Water Demand (KLD)</th> <th>Water Demand After Expansion (KLD)</th> </tr> </thead> <tbody> <tr> <td>Cooling Water Demand</td> <td>16</td> <td>44.5</td> </tr> <tr> <td>Domestic Water Demand</td> <td>3</td> <td>4.5</td> </tr> <tr> <td>Green area water demand</td> <td>1</td> <td>41</td> </tr> <tr> <td><b>Total</b></td> <td><b>20</b></td> <td><b>90</b></td> </tr> </tbody> </table> <p><b>Source:</b> Ground water          Application has been submitted to CGWA for fresh water demand of 86.5 KLD through two existing bore wells provided within the project premises.</p>	Details	Existing Water Demand (KLD)	Water Demand After Expansion (KLD)	Cooling Water Demand	16	44.5	Domestic Water Demand	3	4.5	Green area water demand	1	41	<b>Total</b>	<b>20</b>	<b>90</b>
Details	Existing Water Demand (KLD)	Water Demand After Expansion (KLD)															
Cooling Water Demand	16	44.5															
Domestic Water Demand	3	4.5															
Green area water demand	1	41															
<b>Total</b>	<b>20</b>	<b>90</b>															
4.5	<b>Wastewater</b>	Approximately, 2.5 KLD of domestic wastewater is being generated from the existing unit which is															

S. No.	Parameters	Description
		<p>being treated in the septic tank provided within the project premises.</p> <p>However, after expansion 3.6 KLD of domestic wastewater will be generated which will be treated in the STP of capacity 5 KLD to be installed within project premises. Further, no industrial effluent is generated from the existing industrial unit and even, after expansion also no industrial effluent will be generated.</p>
4.6	<b>Man Power</b>	<p><b>Existing</b> Manpower including both technical &amp; non-technical: 60 persons; out of which 5 are residing.</p> <p><b>Total manpower after expansion</b> will become: 80 persons (both technical &amp; non-technical); out of which 10 will be residing within project premises.</p>
4.7	<b>Power requirement</b>	<p><b>Existing Power Demand:</b> 8,249.733 KW which is being supplied by Punjab State Power Corporation Limited (PSPCL). Permission for power load is enclosed as <b>Annexure 18</b>.</p> <p><b>Additional Power Demand:</b> 4,000 KW will be required for expansion which will be supplied by Punjab State Power Corporation Limited (PSPCL). Presently, industry is having load of 8,249.733 KW which is sufficient to run one Induction Furnace of capacity 15 TPH &amp; rolling mill in Phase I.</p> <p><b>Total Power Requirement after expansion is:</b> <b>12,249.733 KW.</b></p>

S. No.	Parameters	Description
4.8	<b>Land form, Land use and Land ownership</b>	Total land area of the proposed unit is 5.60 acres (or 22,483.27 m <sup>2</sup> ). The land documents are attached along as <b>Annexure 1</b> .

## **2.6 PROJECT LAYOUT**

Project layout plan showing the existing and expansion features, utilities and services within the project is attached along as **Drawing 5**.

## **2.7 SCHEDULES FOR APPROVAL & IMPLEMENTATION**

The project schedule for getting Environmental Clearance is given below in **Table 2.3**.

**Table 2.3: Project schedule**

1.03.2018	Submission of Form-I/PFR for issuance of TORs
28.03.2018	Acceptance of application
1.03.2018- 31.05.2018	Monitoring period (12 weeks)
24.05.2018	Proposal was considered in 166 <sup>th</sup> SEAC, Punjab
06.07.2018	Proposal was considered in 133 <sup>rd</sup> SEIAA, Punjab
16.07.2018	TOR issued from SEIAA, Punjab
20.12.2018	Submission of draft EIA report to PPCB
27.02.2019	Public Hearing conducted for proposed expansion
24.04.2019	Proceedings of Public hearing

The implementation of the expansion of project will be taken up after receipt of Environmental Clearance from SEIAA, Punjab and Consent to Establish from Punjab Pollution Control Board.

Pert chart showing the schedule for expansion of project is enclosed as **Annexure 22**.

## **2.8 MANUFACTURING PROCESS DESCRIPTION**

### **2.8.1 EXISTING MANUFACTURING PROCESS**

The existing industrial unit deals with manufacturing of Ingots/ TMT bars. There are 2 induction furnaces of capacity 4 TPH and 6 TPH and 1 rolling mill. Only one crucible is operated at a time

for a furnace and the other will be kept as stand by. Pre-tested steel and iron scrap of different varieties are charged into the Induction Furnace Crucible by Electro Magnets. These crucibles are already lined with Refractory Ramming Mass. The solid state inverter converts the three phase supply at normal frequency to DC supply and the DC supply is converted to AC at medium frequency of 1,000 cycles in the inverter with the help of water cooled capacitor of suitable rating and capacity. The induction heating is aided by the flow of Medium frequency current in the coil which is supplied by the use of Static Frequency Convertor, DC choke, Capacitor Bank and Water cooled power cables.

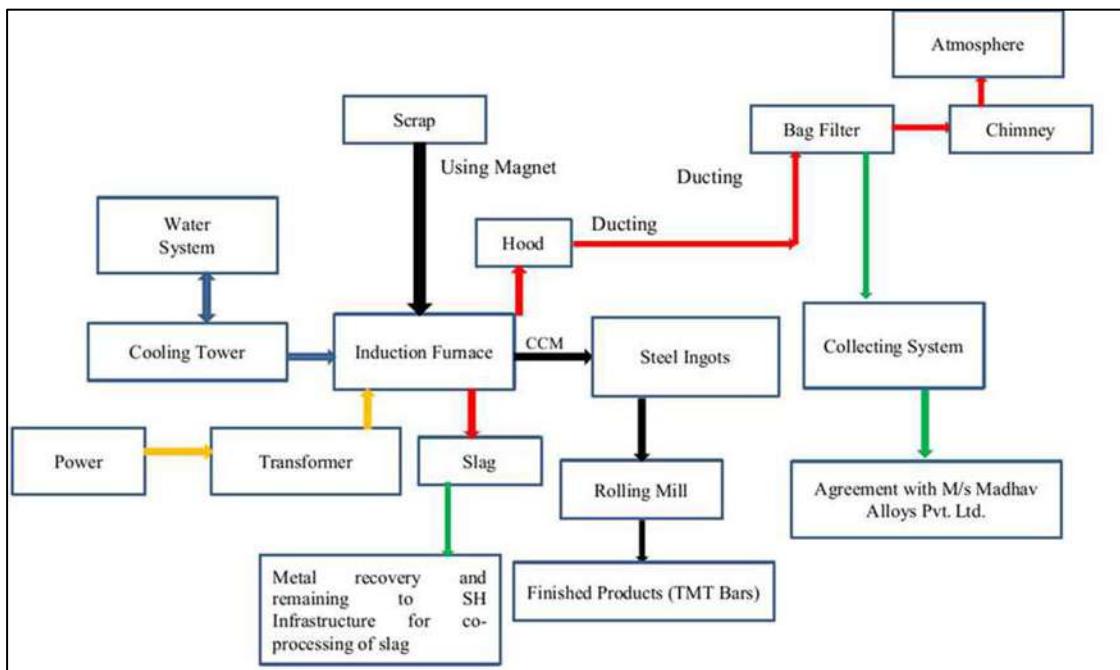
Due to the high frequency, an induced current develops a heating effect inside the crucible in which the scrap is charged and the scrap will be melted by Induction heating into a liquid form. The liquid metal is tested in the laboratory and necessary ingredients such as Ferro Silicon/ Aluminum are added in required proportions according to the carbon content in the scrap. The temperature of the liquid metal is allowed to rise in the furnace and samples are collected for testing the final composition in the laboratory after removal of slag.

The temperature is constantly checked with the help of the optical thermometer in the refractory lined crucible. After the temperature has reached about 1,680°C, the furnace is tilted with the help of the hydraulic system. The liquid metal is poured in the ladle and is sent to the Continuous Casting Machine, wherein the Billets are manufactured in the length and sizes as required.

The steel ingots from Continuous Casting Unit are transferred to conveyors which loads the materials to roughing mill stands. After processing through the three stands of roughing mill, the material will move to Continuous Finishing Mill through conveyors. After processing through the last stand of Continuous Mill, finished goods is produced.

## **2.8.2 MANUFACTURING PROCESS AFTER EXPANSION**

After expansion, the manufacturing process remains same, as their will be manufacturing of same products i.e. Ingots/ TMT bars. But, there will be increase in the production capacity. Two new Induction Furnaces of capacity 15 TPH each will be installed in place of the existing induction furnace along with existing rolling mill.



**Fig. 2.1: Manufacturing Process flow chart**

### 2.8.3 FUME EXTRACTION SYSTEM FOR INDUCTION FURNACE (APCD)

Punjab State Council for Science and Technology has proposed some recommendations to be implemented related to raw material handling and APCD for the proposed Induction Furnaces. Following recommendations were made to make the containment system effective:

1. Use shredded scrap for uniformity of size.
2. Bunding/pressing the scrap to increase bulk density.
3. Provide side suction hood in place of canopy hood.
4. Stop the use of man-cooler.
5. Up-grade existing air pollution control device.
6. Cover the sides of shed to the maximum possible extent to avoid cross winds.

Punjab State Council for Science and Technology has also proposed some recommendations to be implemented for the existing Induction Furnaces:

1. Side Suction Hood for containment of dust emissions as it does not interfere during charging of raw materials with magnet & pusher.
2. Compartmentalized Pulse Jet Bag Filter with spark arrestor and ID fan as per specifications mentioned in the report to achieve the emission levels (SPM <150

mg/Nm<sup>3</sup>) as prescribed by Punjab Pollution Control Board.

3. ID fan to be procured as per specifications.
4. New chimney to be installed.

The fume extraction will consist of primary as well secondary emission through a single swiveling side hood with high suction velocity for each crucible. This will replace conventional furnace top swiveling hood for primary suction during melting and roof mounted canopy hood for secondary suction during charging and tapping. Detailed report for air pollution control devices prepared by PSCST for proposed 15 TPH each Induction Furnace is enclosed as **Annexure 9.**

<b>Existing (2 Induction Furnace of capacity 4 TPH and 6 TPH)</b>	<b>Primary &amp; Secondary Emissions</b> <ul style="list-style-type: none"><li>• New side suction hood with adequate size has been installed on IF of capacity 6 TPH</li><li>• ID fan has been procured as per the specifications</li><li>• Pulse jet bag filter installed</li><li>• IF of capacity 4 TPH is having Bag filter</li></ul>	Side suction hood with pulse jet bag filter is installed on IF of capacity 6 TPH as per PSCST.
<b>After expansion (2 Induction Furnace of capacity 15 TPH each)</b>	<b>Primary &amp; Secondary Emissions</b> <ul style="list-style-type: none"><li>• Side Suction Hood</li><li>• Compartmentalized Pulse Jet Bag Filter with duct &amp; ID fan as per the specifications</li></ul>	It will be installed as per PSCST.
<b>Material Handling Area</b>	Dust suppression system	

## **2.9 PROJECT DESCRIPTION**

### **2.9.1 MACHINERY**

Following Machinery will be in position within the unit:

**Table 2.4: Machinery Details**

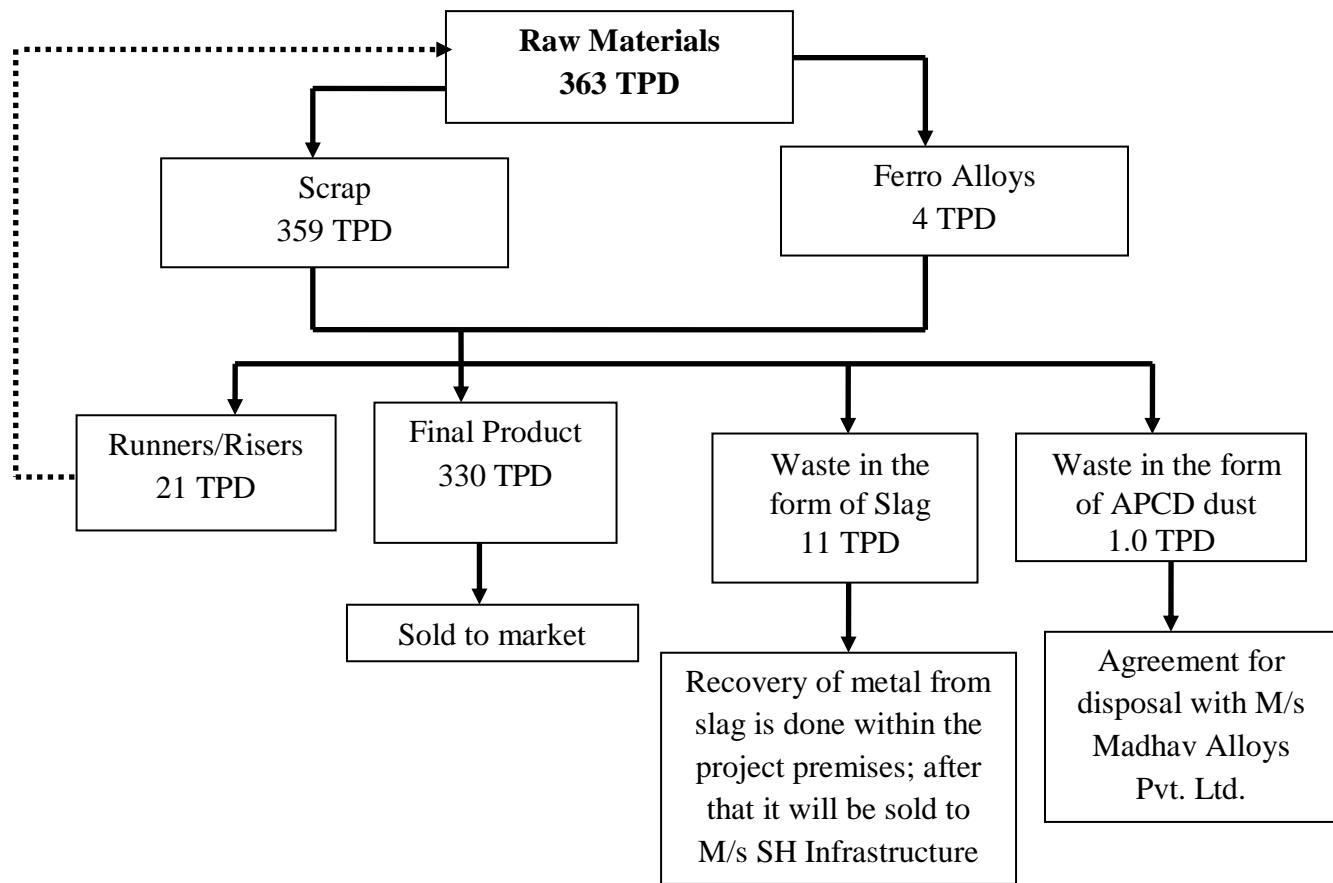
S. No.	Machinery	Existing	After Expansion
1.	Induction Furnace	2 (4 TPH & 6 TPH and rolling mill)	2 (15 TPH each & existing rolling mill)
2.	Rolling Mill	1	1
3.	EOT Cranes	9	9
4.	Hydraulic scrap Bundling Press Machine	1	1
5.	Air Compressor	6	6
6.	CCM (Continuous Casting Machine)	1	1
7.	DC Smoothing Reactor	-	2
8.	Operator Control Desk	-	4
9.	Demineralized Water Cooling System	-	2
10.	Hydraulic Power Pack for tilting operation with pipefitting.	-	2
11.	DG set	1 (125KVA)	2 (125 KVA each)

### 2.9.2 RAW MATERIAL REQUIREMENT

The raw materials used in the manufacturing of existing and proposed products are given in **Table 2.5** below.

**Table 2.5: Details of the raw materials for existing unit & after expansion**

S. No.	Status	Raw Material	Quantity (TPD)	Source	Mode of transport
1.	<b>Existing Unit</b>	Scrap	121	Mostly from Local Market	By road through trucks. No. of trucks req. 6 trucks per day
		Ferro Alloys	1		
2.	<b>After Expansion</b>	Scrap	359	Mostly from Local Market	By road through trucks. No. of trucks req. 18 trucks per day
		Ferro Alloys	4		



**Fig 2.2: Material Balance of the Industrial Unit after Expansion**

### 2.9.3 LAND REQUIREMENT

Existing area of the project is 5.60 acres (or 22,483.27 sq.m.). Further, no additional land will be required. The expansion will be done on the existing land area only. Also, no new shed will be proposed, as the new Induction Furnace will be installed in the existing shed only. The land break-up of the plant is given in **Table 2.6**.

**Table 2.6: Land Details**

S. No.	Land use details	Area (in sq.ft.)
1.	Shed Covered Area <ul style="list-style-type: none"> <li>• Raw material storage area</li> <li>• Finished good area</li> <li>• Slag storage area</li> <li>• Working area/Furnace room/other shed</li> </ul>	1,13,830 <ul style="list-style-type: none"> <li>• 30,400</li> <li>• 28,000</li> <li>• 1,600</li> <li>• 53,830</li> </ul>
2.	Office block covered area	1,130
3.	Stores/Labour Quarters & other Covered Area	2,370
4.	Green Area	79,955
5.	Road/Passage Area	30,900
6.	Parking Area	8,570
7.	Grid & Other open area	5,165
<b>Total Area</b>		<b>2,41,920 sq.ft.</b> <b>(or 22,483.27 sq.m)</b>

#### 2.9.4 PROJECT COST

The total cost of project after expansion is estimated at Rs. 13.93 Crores; out of which Rs. 9.37 Crores is existing project cost and proposed cost for expansion is estimated to be Rs. 4.56 Crores. The break-up of the project cost is given in **Table 2.7**.

**Table 2.7 Break-up of the project cost**

S. No.	Details	Existing (in Crores)	Proposed (in Crores)	Total after Expansion (in Crores)
1.	Building & Shed	1.41	-	1.41
2.	Plant & Machinery	7.33	4.56	11.89
3.	Others	0.63	-	0.63
<b>Total</b>		<b>9.37</b>	<b>4.56</b>	<b>13.93</b>

## 2.9.5 WATER REQUIREMENT

Water requirement for the existing plant and additional water requirement:

- a) Industrial use
- b) Drinking, Sanitation and Horticulture demand

The water requirement for the steel plant is mostly for cooling purpose with a small part of the requirement being for drinking and dust suppression etc. To minimize the requirement of fresh water drawn from the source, re-circulation system has been adopted. The effluent discharged from the toilet blocks will be diverted to proposed Sewage Treatment Plant (STP) to be provided within the project premises of capacity 5 KLD. There will be zero discharge of effluent outside the plant boundary.

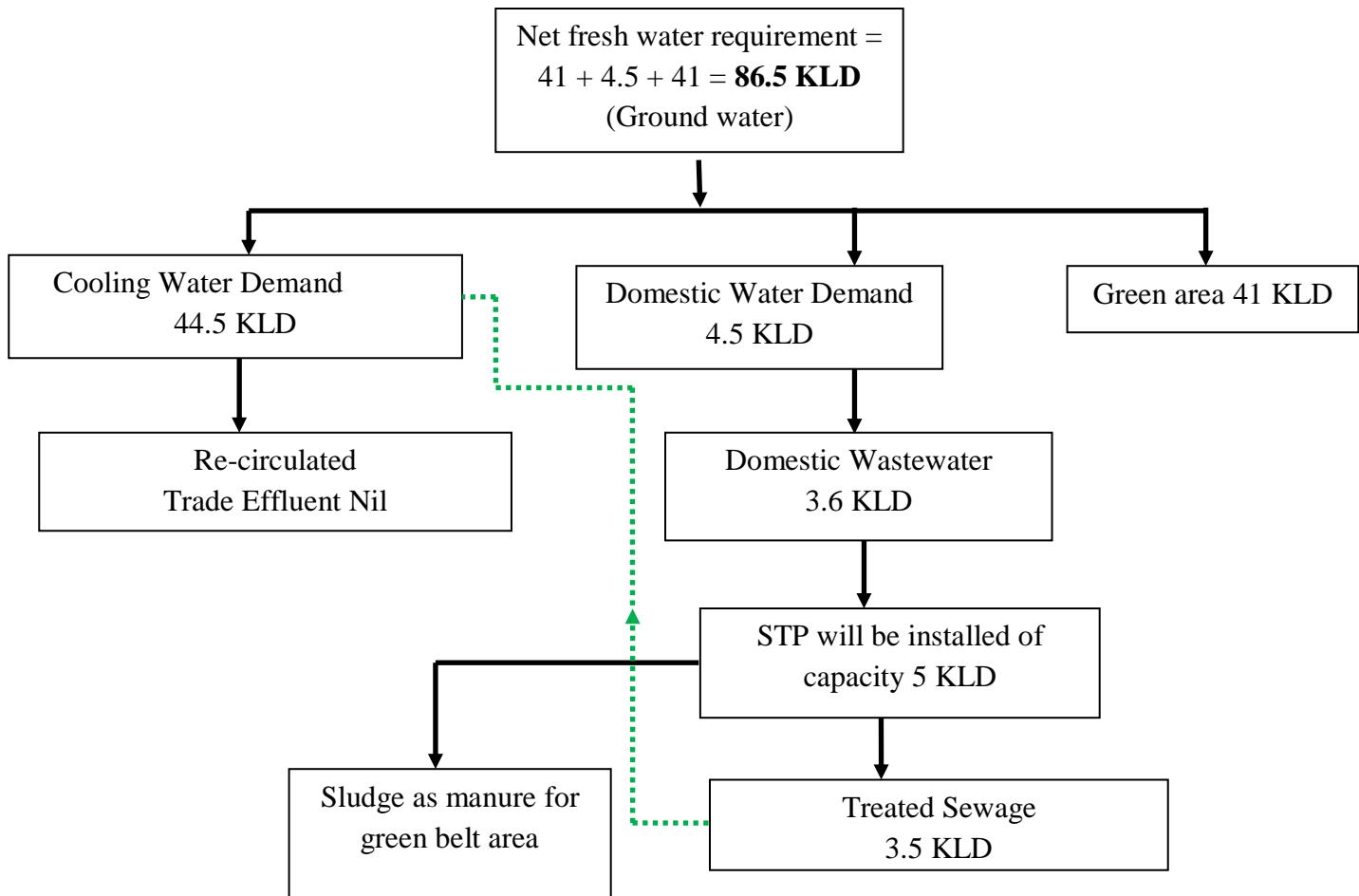
### 2.9.5.1 Re-circulation System

To meet the cooling water and process water requirement for various technological units and auxiliary units, separate recirculation network have been considered. Each network will have pump houses. Each pump house will have separate group of pumps. Cold water will be supplied and hot return water will be collected and pumped to the cooling towers. In the entire recirculation system, fresh make-up water will be added for make-up losses.

The main facilities of the above system will constitute pumping installations, storage reservoirs, distribution network, cooling towers where necessary etc. After expansion, net fresh water requirement will be 86.5 KLD which will be taken through two existing bore wells. Make-up water requirement for cooling purpose is estimated around 44.5 KLD after expansion.

**Table 2.8: Water Requirement**

Description	Water Requirement (KLD)	
	Existing	After Expansion
Make-up water demand for cooling	16	44.5
Drinking water demand	3	4.5
Green area water demand	1	41
<b>Total water demand</b>	<b>20</b>	<b>90</b>
<b>Source of water</b>	Ground Water (bore well 2 Nos.)	



**Fig. 2.3: Water Balance Diagram**

## 2.9.6 SEWAGE TREATMENT TECHNOLOGY (STP)

Sewage treatment plant (STP) of capacity 5 KLD will be provided in expansion of the project. The sewage water generated from toilets, bathrooms, canteens and floor washings etc. The sewage water requires treatment in order to meet the standard norms set by the PCB.

This consider various aspects covering the parameters of sewage water (both quality and quantity), scheme & process of treatment, process units involved in the treatment, their specification with commercial terms & conditions.

### 2.9.6.1 Design requirements and scheme of treatment

On the basis sewage parameters and requirements of PCB, the characteristic for the raw sewage and treated sewage for the design purpose are considered:

**Table 2.9: Characteristics of Raw and Treated Sewage for Design Purpose  
 (Key Parameters)**

S. No.	Parameter	Unit	Raw Sewage Characteristics	Treated Sewage Characteristics
1.	pH	-	7.0-9.0	6.5-9.0
2.	BOD	mg/l	200-300	< 20
3.	COD	mg/l	400-600	< 100
4.	TSS	mg/l	150-250	< 50
5.	Oil & grease	mg/l	20-30	< 5
6.	Fecal Coliform	MPN	$>10^5$	< 1000

Eco-Bio carrier Skid Mounted Unit is proposed for the secondary treatment of the sewage as per PCB norms. The sewage shall be further polished by passing through a set of polishing units that will include a PSF, ACF and UV disinfection system. The excessive oxidation in the aeration tank (Eco-Bio carrier has inbuilt two stage aeration) and ACF will help to remove color, odor and suspended solids.

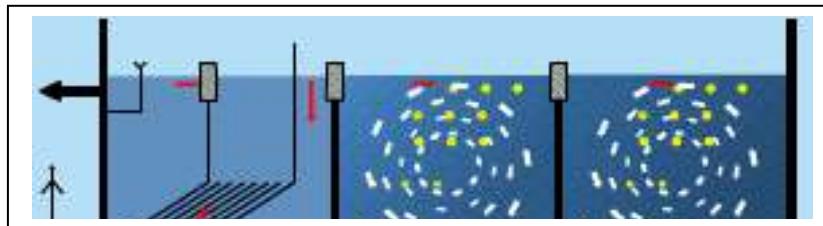


### 2.9.6.2 Features of Eco-Bio Carrier

- A State of Art Skid Mounted Unit which ensures easy transportation and relocation if required at any stage.
- A modular single piece system that incorporates both extended aeration unit and Secondary Settlement Compartment built at our Workshop including in-built Front Centralized Control Panel.
- Modular Skid based manufacturing also ensures that little preparation is required on site for installation including minimum civil works.
- It also offers an easy to operate system even employing semi-skilled workers.

Eco-Bio Carrier is a Moving Bed Bio-Reactor based system

- MBBR is high rate biological aerobic system and is the up gradation/ modification of the conventional activated sludge process. The specially designed cross fluted PVC fixed film media provides lot of surface area ( $500 \text{ m}^2/\text{m}^3$ ) for active bacteria to grow and treat the effluent within the same volume of the aeration tank.



**Fig. 2.4: Diagram showing the MBBR Process**

- With higher surface of Biodek, higher organic loading rates are enabled, thus reducing the overall size required for the aeration tank. This leads to reduction in overall costs.
- 40% reduction in Aeration Tank size is achieved.

#### 2.9.6.3 Other key features

- Quality is such that it ensures long life of the Unit.
- Diffusers used for aeration are of Silicon membrane (imported from Germany) and specifically developed for fine bubble aeration of sewage. These are highly heat resistant; Resistant to ageing; Low incrustation; Weathering & ozone resistant; Oil resistant and Anti- microbial.
- Secondary Settlement unit is a tube settler that offers enhanced capacity for settling of suspended solids in a fractional area.

#### 2.9.6.4 Brief process description

STP has been designed to ensure that various parameters of treated wastewater are well below the permissible limits, even under the varying flow conditions which are typical for such systems.

The major process steps along with salient technological aspects are described below:

#### ➤ **PRIMARY TREATMENT**

The sewage will first pass through a screen chamber containing bar screen for removal of floating materials followed by oil & grease chamber for removal of oil & grease through gravity. The overflow of oil & grease chamber will be collected into the collection tank from where the sewage will be transferred to MBBR Reactor for Biological Treatment.

#### ➤ **SECONDARY (BIOLOGICAL) TREATMENT**

In MBBR reactor, the organic matter is oxidized in sewage to CO<sub>2</sub>& H<sub>2</sub>O by the aeration principle along with the bacteria. In MBBR reactor, PVC UV stabilized plastic media is provided for the attachment of bacteria and growth. This media provide a large surface area and high Voidage ratio. MBBR reactor tank is fitted with number of air diffusers of suitable capacity to provide necessary dissolved oxygen mixed to the sewage. Twin-Lobe Blowers for oxidation provides the aeration. The biological system has to be operated continuously for at least 20 hours and there by constant feed of sewage is required.

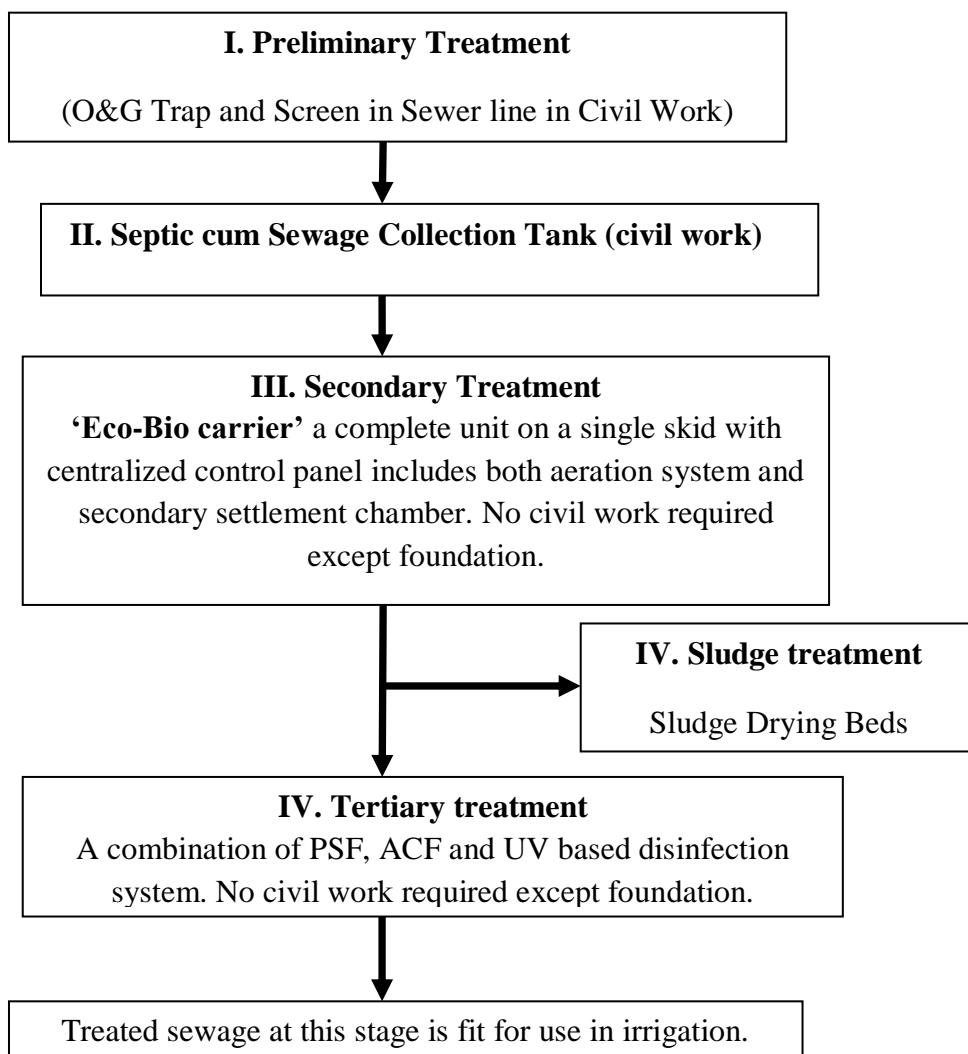
The secondary clarifier/tube settler, which is designed on low overflow rate, is provided after the MBBR reactor to enable separation of solids. A steep slope is provided in the secondary settling tank to eliminate the need of scrapper mechanism. A part of the sludge is re-circulated to the MBBR Reactor in order to maintain MLSS levels and a part is drained to the sludge holding tank. Acclimatized Bacterial Culture is added into the MBBR reactor.

#### ➤ **TERTIARY TREATMENT**

The Clarified water collected from the collection launder of the tube settler will be then passed to the Filter Feed tank. It is necessary to pass the sewage further through tertiary treatment comprises of filtration with pressure sand filter for removal of suspended solids & Activated carbon filter for removal of trace organic matter, color & odor. Disinfection of treated effluent is done by Chlorine dosing. Then this treated water will be discharged to irrigation/plantation.

#### ➤ **SLUDGE HANDLING SYSTEM**

Excess sludge needs to be removed and dried for easy disposal. The sludge from the tube settler is sent to sludge drying beds where it will get dried by the natural heat of the sunlight. Dried sludge is removed, packed and can be used for manure.



**Fig. 2.5: Tentative Flow Diagram of Sewage Treatment Plant**

Schematic drawing of STP of 5 KLD capacity is enclosed as **Drawing 13**.

### 2.9.7 POWER

The existing power of the unit is 8,249.733 KVA which is being supplied by Punjab State Power Corporation limited. Permission for power load is enclosed as **Annexure 18**.

The proposed power demand will be 4,000 KW. Presently, industry is having load of 8,249.733 KW which is sufficient to run one Induction Furnace of capacity 15 TPH & rolling mill in Phase I. Total Power Requirement after expansion is: 12,249.733 KW.

DG set: One existing DG set of capacity 125 KVA. However, after expansion, 2 DG sets of

capacity 125 KVA each will be required; out of which one is the existing DG set.

## **2.9.8 MANPOWER**

The requirement of personnel for the expansion of the existing industrial unit has been made keeping in view of the following:

- Technical concept of plant, including process control and instrumentation.
- Smooth and efficient operation of the plant.
- Effective co-ordination between the various departments within the plant.
- Optimum organization with well-defined and judicious job distribution.
- Optimum utilization of different grades of workmen and supervisory staff and maximum capacity of the facilities.

In all, presently there are about 60 persons working in the unit out of which 5 are residing within the project. For expansion, additional 20 persons will be required. Thus, after expansion, the total manpower of the industrial unit will become 80 persons including both technical & non-technical; out of which 10 will be residing within the project premises.

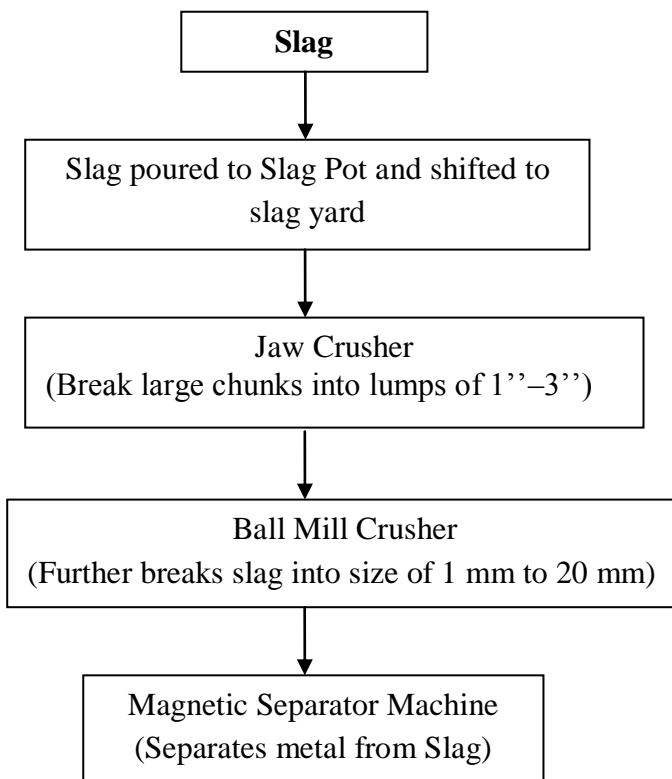
## **2.9.9 SOLID WASTE**

### **2.9.9.1 Domestic waste**

Approximately, 13 kg/day of domestic solid waste is being generated from the existing project & after expansion approx. 18 kg/day of domestic waste will be generated, which will be properly collected and segregated into biodegradable and non-biodegradable waste. The solid waste is being disposed off as per Solid Waste Management Rules, 2016.

### **2.9.9.2 Industrial waste**

4 TPD of slag is being generated from existing industrial unit which is being disposed of in a low lying area after metal recovery. However, after expansion, the slag produced is estimated to be 11 TPD which will be sold to M/s SH Infrastructure for manufacturing of ready mix concrete. Copy of the agreement is enclosed as **Annexure 13**. Slag recovery process is shown below in **Fig. 2.6**.



**Fig. 2.6: Metal Recovery process from Slag**

#### 2.9.9.3 Hazardous waste

Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021; copy of the same is enclosed as **Annexure 5**. Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust. Copy of the same is enclosed as **Annexure 6**.

After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor of PPCB.

#### 2.9.9.4 Domestic effluent

Approx. 2.5 KLD of domestic wastewater is being generated from the existing project which is being treated in the septic tank provided within the project premises. However, after expansion,

the quantity of domestic wastewater generated is estimated to be 3.5 KLD and the same will be treated in the proposed STP of capacity 5 KLD.

#### 2.9.9.5 Industrial effluent

No industrial effluent is being generated from the existing industrial unit and even, after expansion, no liquid effluent will be generated.

### 2.10 DESCRIPTION OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT TO MEET ENVIRONMENTAL STANDARDS, ENVIRONMENTAL OPERATING CONDITIONS OR OTHER EIA REQUIREMENTS

**Table 2.10: Environmental Aspects, Impact and Proposed Mitigation Measures**

S. No.	Aspect	Impact	Proposed Measures
1.	Wastewater generation	Water Pollution	As per expansion domestic wastewater will be treated in the proposed STP of capacity 5 KLD and treated water will be reutilized for green area provided within the project premises for horticulture purpose.
2.	• Emission of Gases • Dust Emission	Air Pollution	<ul style="list-style-type: none"><li>• New hood of adequate size is to be installed.</li><li>• Side Suction Hood will be provided to proposed furnace.</li><li>• Pulse Jet Bag Filter</li><li>• ID fan to be procured as per the specifications proposed furnace.</li></ul>
3.	Noise generation during operation of plant	Noise Pollution	<ul style="list-style-type: none"><li>• All noise generating machines will be provided at different places within the cover sheds.</li><li>• Plantation of more trees within the project premises to control noise pollution and along the boundary wall.</li></ul>
4.	Use of water	Impact on Hydrogeology	Water recycled to the best possible extent. No effluent discharge from the plant.

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## **CHAPTER 3.0**

### **DESCRIPTION OF THE ENVIRONMENT**

#### **3.1 INTRODUCTION**

This chapter illustrates the description of the existing environmental status of the study area with reference to the major environmental attributes. The existing environmental setting is considered to establish the baseline conditions which are described with respect to Physical Environment, Air Environment, Water Environment, Noise Environment, Land Environment, Biological Environment and Socio Economic Environment.

The monitoring of environmental parameters has been conducted within the core zone and buffer zone (10 km radial distance) from project location at Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab in accordance with the guidelines issued by the Ministry of Environment, Forest & Climate Change, CPCB and PPCB during the study period (March, 2018 to May, 2018).

Baseline Environmental status in and around the project depicts the existing quality of Air, Noise, Water, Soil, Ecology & Biodiversity and Socio-economic environment. Based on the baseline data, environmental impact assessment is carried out and Environmental Management Plan is prepared.

This baseline environmental study reveals information on existing environmental scenario:

- Delineation of project location and study area.
- Delineation of the environmental components and methodology.
- Delineation of study period.
- Delineation of the location of the Plant and description of its surroundings based on secondary data.

#### **3.2 STUDY AREA AND PERIOD**

Studies of various environmental parameters have been done within 10 km radius area of the project location. The impact identification always commences with the collection of baseline data such as Ambient Air Quality, Micro-Meteorology, Ground and Surface Water Quality, Noise levels, Soil Quality, Land use pattern, Biological Environment and Socio-economic aspects,

Solid and Hazardous waste, Risk Assessment, Geology and Hydrology within the study zone of 10 km radius.

The baseline environmental study has been done for the period of March to May, 2018 by M/s Eco Laboratories & Consultants Pvt. Ltd., NABL Accredited Lab (Certificate No. TC-7477) in accordance with the Guidelines for EIA issued by the Ministry of Environment, Forest and Climate Change, Govt. of India and CPCB, New Delhi. The Study area marked on Toposheet is enclosed as **Drawing 3**.

### **3.3 COMPONENTS & METHODOLOGY**

The data was collected from both primary and secondary sources. The baseline information on micro-meteorology, ambient air quality, water quality, noise levels, soil quality and floristic descriptions are largely drawn from the data generated by M/s Eco Laboratories & Consultants Pvt. Ltd., NABL Accredited Lab. Climatological data was collected from IMD station, Chandigarh. Micrometeorological data at project location was recorded using automatic weather station. Apart from these, secondary data have been collected from Census Handbook, Revenue Records, Statistical Department, Soil Survey and Land use Organization, District Industries Centre, Forest Department, Central Ground Water Authority etc.

The studies involved conducting field studies and analyzing various parameters that might be affected due to the industry and conducting socio-economic survey among the people. During reconnaissance survey, the sampling locations were identified based on:

- Existing topography and meteorological conditions.
- Locations of water intake and waste disposal points.
- Location of human habitation and other sensitive areas present in the vicinity of the project location.
- Representative areas for baseline conditions.
- Accessibility for sampling

The scoping and the extent of data were formulated based on interdisciplinary team discussions, and professional judgment keeping in view of ToR issued by SEIAA, Punjab. The baseline studies started with reconnaissance survey and the project visits in the study area for fixing the

monitoring locations for collection of the primary data. Various Government and other organizations were approached for getting information for the secondary data. The various parameters surveyed and studied for the baseline study are discussed in the following components:

- Physical environment
- Air environment
- Noise environment
- Land environment
- Water environment
- Biological environment
- Socio-economic environment

### **3.4. METEOROLOGICAL DATA**

Assessment of the micro and macro meteorology is important from the point of view of understanding the nature of environment in the study area. Climate has an important role in the build-up of pollution levels. The climatic condition of the study area may be classified as moderately or seasonally dry, tropical or temperate savanna climate with four seasons in a year. Winter is critical for air pollution build-up because of frequent calm conditions with temperature inversions resulting in poor atmospheric mixing, natural ventilation and high emission loads. The metrological station was set-up at the project location and meteorological data were collected during the study period. The hourly based data were computed and wind rose for entire duration was drawn through WR Plot (**Fig. 3.1**).

#### **3.4.1 CLIMATE**

Climate of the district is characterized by dryness except a brief spell of monsoon season in a very hot summer and a bracing winter. The cold season is from middle of November to the early part of March. The succeeding period up-to the end of June is the hot season. July, August and half of September constitute the South-West monsoon, the period of mid-September to about the middle of November may be termed as post-monsoon or transitional period. June is generally the hottest month. Hot and scorching dust laden winds blow during summer season.

### 3.4.2 TEMPERATURE

Temperatures start increasing rapidly after February. May and June are the hottest months with daily average temperature going up to  $41.2^{\circ}\text{C}$  and minimum average daily temperature as  $24.2^{\circ}\text{C}$ . Hot scorching dust laden winds blow during the summer season and on individual day the temperature sometimes goes upto  $45^{\circ}\text{C}$  to  $47^{\circ}\text{C}$ . With on-set of monsoon in July there is appreciable drop in temperature but due to increased moisture in the air the weather becomes humid and uncomfortable. After monsoon in September, the night temperature drops appreciably. December and January are the coldest months when the maximum average daily temperature is around  $20.2^{\circ}\text{C}$  and minimum about  $5.8^{\circ}\text{C}$ . The yearly variation is from  $5.0^{\circ}\text{C}$  min to  $41^{\circ}\text{C}$  max. Monthly average temperatures of the area are given in **Table 3.1**

**Table 3.1: Monthly Average Temperature**

S. No.	Month	Max ( $^{\circ}\text{C}$ )	Min ( $^{\circ}\text{C}$ )
1.	January	20.0	5.8
2.	February	23.0	8.4
3.	March	29.0	12.9
4.	April	36.0	18.5
5.	May	41.2	24.2
6.	June	41.0	27.0
7.	July	36.0	26.7
8.	August	35.0	26.0
9.	September	35.0	24.0
10.	October	34.0	18.0
11.	November	29.0	10.0
12.	December	23.0	6.0

(Source: 2008-2013 IMD, Chandigarh)

### 3.4.3 RAINFALL

Rainfall in the zone is caused by the South-West monsoon. It starts in the month of July and extends upto the end of September. During this period, the monsoon rain-fall contributes about 70 to 80% of the total annual rainfall. The average annual rainfall is in the range of 660-700 mm.

The annual numbers of rainy days on an average are about 51 days in a year, out of which about 34 falls in the monsoon period of July to September. Monthly rainfall data for this zone is given in **Table 3.2**.

**Table 3.2: Monthly Average Rainfall**

S. No.	Month	Rainfall (in mm)	Average No. of rainy days
1.	January	28	2.0
2.	February	29	2.3
3.	March	26	2.0
4.	April	12	1.0
5.	May	14	1.3
6.	June	47	3.0
7.	July	195	8.0
8.	August	172	8.0
9.	September	101	4.0
10.	October	18	0.8
11.	November	4	0.5
12.	December	15	1.0

(Source: 2008-2013 IMD, Chandigarh)

#### 3.4.4 HUMIDITY

In summer months of April, May and June, which is the driest part of the year, the afternoon humidity comes down to 23% while the relative humidity during monsoon months goes up-to about 81%. The average monthly relative humidity in the area is given in **Table 3.3**.

**Table 3.3: Monthly Average Relative Humidity**

S. No.	Month	Humidity (%) 08.30 hrs.	Humidity (%) 17.30 hrs.
1.	January	83	53
2.	February	78	44
3.	March	67	38
4.	April	47	27
5.	May	37	22

6.	June	49	32
7.	July	74	60
8.	August	79	66
9.	September	74	53
10.	October	64	39
11.	November	64	39
12.	December	79	50

(Source: 2008-2013 IMD, Chandigarh)

### 3.4.5 CLOUDINESS

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

### 3.4.6 WIND SPEED & DIRECTION

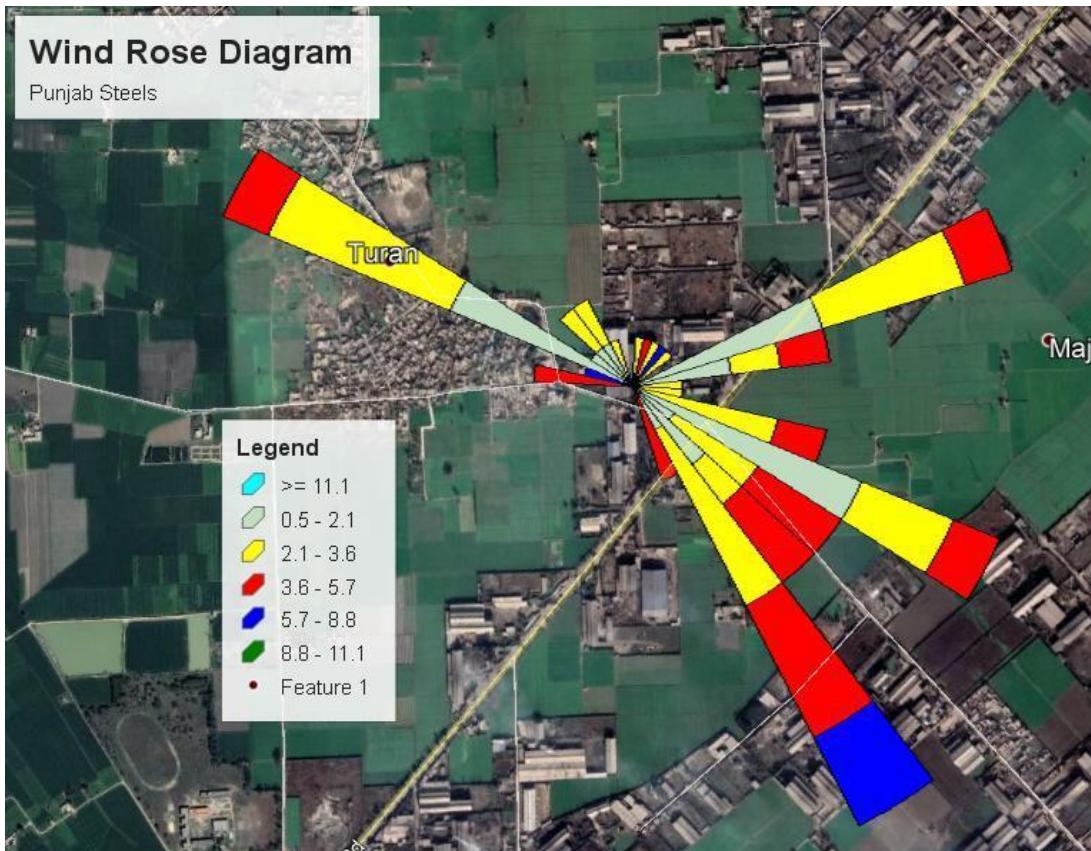
Wind speed and wind direction have a significant role in the dispersion of atmospheric pollutants and therefore, in the air quality of the area. Ground level concentrations for the pollutants are inversely proportional to the wind speed in the down wind direction, while in the upwind direction no effect will be observed and in cross wind directions, partial effect due to the emission sources is observed.

Annual trend indicates mean wind speeds to be highest in the months of March, April, May, June and July (7.8-15.5 km/hour) and lowest in the month of October, November and December (2.5-3.5 km/hour). Monthly mean wind speeds at site for the summer season are presented in **Table 3.4.**

**Table 3.4: Monthly Average Wind Speed**

Month	Wind speed (km/hr.)
April	8.2
May	12.4
June	13.1

Wind rose diagram of project site for the study period is presented in **Fig. 3.1**. The wind rose diagram indicates that the predominant wind direction is from North West during the study period.



**Fig. 3.1: Windrose diagram**

### 3.5 AIR ENVIRONMENT

The ambient air quality with respect to the study area of 10 km radius around the study area forms the baseline information. The various sources of air pollution in the region are dust rising from unpaved roads, domestic fuel burning, vehicular traffic, agricultural activities, other industries, etc. The prime objective of baseline air quality monitoring is to assess the existing air quality of the area. This will also be useful in assessing the conformity to standards of the ambient air quality during the operations. The baseline status of the ambient air quality has been assessed through scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Meteorological conditions
- Topography of the study area;
- Likely impact area.

### **3.5.1 DURATION AND SEASON OF MONITORING**

The ambient air monitoring was carried out from March, 2018 to May, 2018.

### **3.5.2 SAMPLING FREQUENCY**

Ambient air quality monitoring has been carried out with a frequency of two days per week at 8 locations during the study period. The baseline data of air environment is monitored for the below mentioned parameters as given in **Table 3.5**.

### **3.5.3 PARAMETERS MONITORED AND METHODS USED**

Test methods for determining Various Air Quality Parameters are given below in **Table 3.5**.

**Table 3.5 Test Methods for determining Various Air Quality Parameters**

S. No.	Test Parameter	Test Method
1.	Particulate Matter (PM <sub>10</sub> )	IS:5182 (P-23) 2006
2.	Particulate Matter (PM <sub>2.5</sub> )	Lab SOP EL/SOP/AAQ/01, Issue No. 03 & Date 01.01.16
3.	Sulphur Dioxide (SO <sub>2</sub> )	IS:5182 (P-2) 2001
4.	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182 (P-6) 2006
5.	Ammonia (NH <sub>3</sub> )	Lab SOP EL/SOP/AAQ/02, Issue No. 03 & Date 01.01.16
6.	Ozone (O <sub>3</sub> )	IS:5182 (P-9):2006
7.	Carbon Monoxide (CO)	Lab SOP EL/SOP/AAQ/03, Issue No. 03 & Date 01.01.16
8.	Lead (Pb)	IS:5182 (P-22):2004
9.	Arsenic (As)	Lab SOP EL/SOP/AAQ/04, Issue No. 03 & Date 01.01.16
10.	Nickel (Ni)	Lab SOP EL/SOP/AAQ/04, Issue No. 03 & Date 01.01.16
11.	Benzene (C <sub>6</sub> H <sub>6</sub> )	IS:5182 (P-11) 2006
12.	Benzo-a-pyrene (BaP), Particulate Phase Only	IS:5182 (P-12) 2004

### **3.5.4 AMBIENT AIR QUALITY MONITORING**

The baseline air quality was established by monitoring of major air pollutants like Respirable Suspended particulate matter ( $\leq PM_{10} \mu m$ ), Fine Particulate Matter ( $\leq PM_{2.5} \mu m$ ), Sulfur dioxide, Nitrogen dioxide and Carbon monoxide at various locations in the study area. Samples were collected twice a week from all the stations continuously for 24 hours.

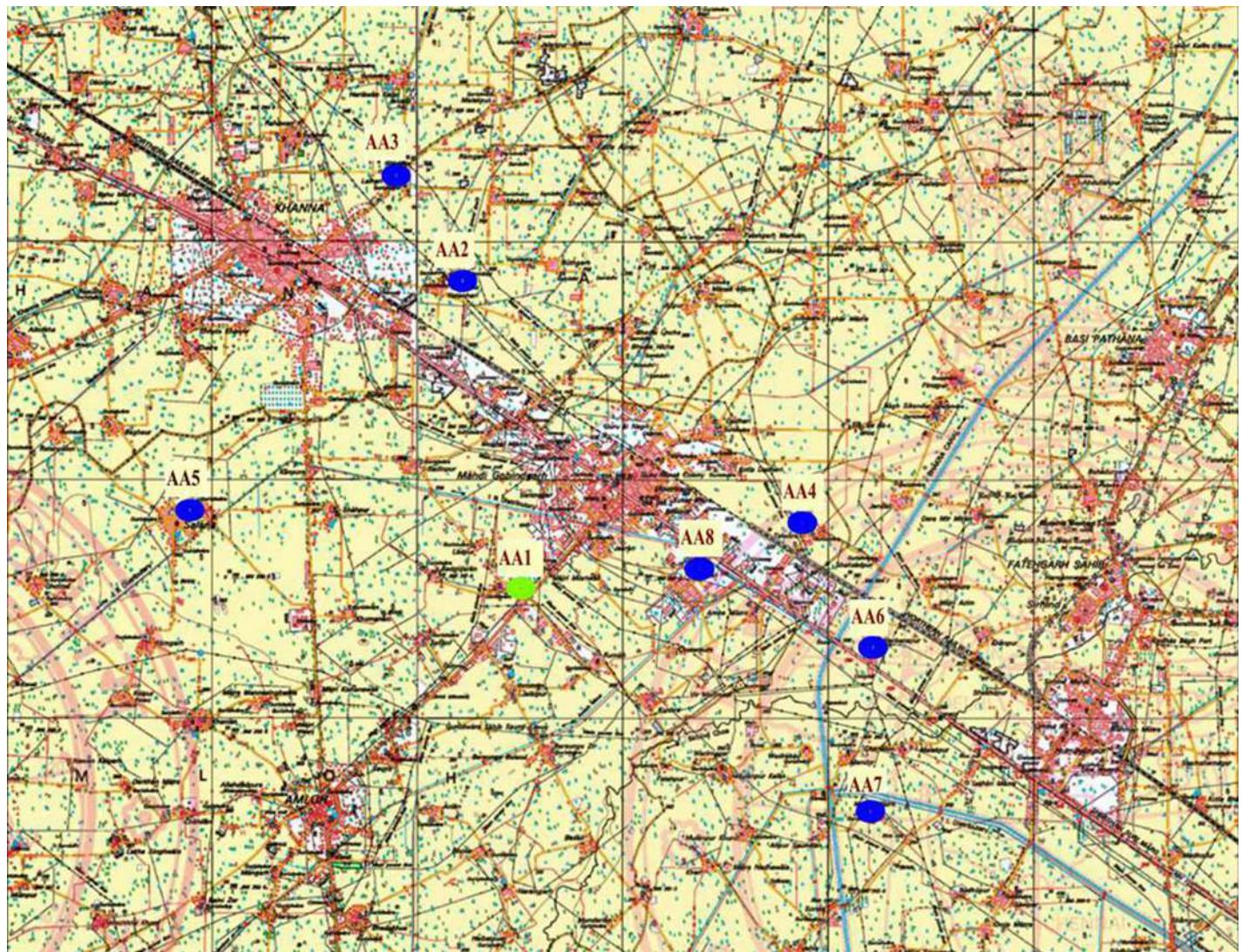
The baseline data for ambient air quality were collected at 8 locations within the study area during the period of 1<sup>st</sup> March, 2018 to 31<sup>st</sup> May 2018. The sampling stations along with their distance and direction from the project are detailed in **Table 3.6** and shown in **Fig. 3.2**. Ambient air quality analysis data for various parameters are given in **Table 3.7**.

To study the existing ambient air quality, monitoring was done by M/s Eco Laboratories & Consultants Pvt. Ltd., NABL Accredited and MoEF&CC approved. The observations made during the study period are presented under the forthcoming sub-sections.

**Table 3.6: Ambient Air Monitoring Stations**

S. No.	Sample Code	Name of Village/ Location	Distance & Direction (km)	Wind Direction
1.	AA1	Project location	0	-
2.	AA2	Ratanhari (House of Gurmeet Singh S/o Hukam Singh)	6 (NW)	UW
3.	AA3	Lalheri (House of Gurmeet Singh S/o Dalbara Singh)	8 (NW)	UW
4.	AA4	Oasis Enterprises Pvt. Ltd.	5 (NE)	CW
5.	AA5	Salana (House of Avtar Singh S/o Mohinder singh)	6.7 (NW)	CW
6.	AA6	Harbanspura (House of Ashok Kumar S/o late Sri Ram Parshad)	7 (SE)	CW
7.	AA7	Malko Majra (House of Satnam Singh S/o Meher Singh)	8 (SE)	DW
8.	AA8	Jogindra Castings Pvt. Ltd.	4(E)	CW

(UW: Upwind, DW: Down Wind, CW: Cross Wind)



**Fig. 3.2: Location of Ambient Air Monitoring Stations in the study area**

(Marked on Toposheet no. H43K2 & H43K6; Not on scale)

**Table 3.7: Summary of Ambient Air Quality Results**

Station Code	Name of Station	Type of Result	PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NH <sub>3</sub> ( $\mu\text{g}/\text{m}^3$ )	O <sub>3</sub> ( $\mu\text{g}/\text{m}^3$ )
AA1	Project location	Average	133.5	73.9	11.4	25.7	23.5	26.7
		SD	47.07	26.78	0.80	3.00	1.22	3.39
		98 Percentile	221.08	125.40	13.16	30.52	25.71	32.47
AA2	Ratanhari	Average	94.2	52.2	8.0	18.1	16.6	18.9
		SD	33.21	18.90	0.56	2.12	0.86	2.39
		98 Percentile	156.0	88.48	9.28	21.53	18.14	22.91
AA3	Lalheri	Average	92.3	51.1	7.9	17.7	16.2	18.5
		SD	32.53	18.51	0.55	2.08	0.84	2.34
		98 Percentile	152.78	86.66	9.09	21.09	17.76	22.44
AA4	Oasis Enterprises Pvt. Lt d.	Average	127.9	70.8	10.9	24.6	22.5	25.6
		SD	45.1	25.66	0.77	2.88	1.17	3.25
		98 Percentile	211.80	120.13	12.61	29.24	24.63	31.11
AA5	Salana	Average	97.5	54.0	8.3	18.7	17.1	19.5
		SD	34.36	19.55	0.58	2.19	0.89	2.47
		98 Percentile	161.36	91.53	9.61	22.28	18.76	23.71
AA6	Harbanspura	Average	135.3	74.9	11.5	26	23.8	27.1
		SD	47.69	27.14	0.81	3.04	1.24	3.43
		98 Percentile	224.0	127.05	13.34	30.92	26.05	32.90
AA7	Malko Majra	Average	110.4	61.2	9.4	21.2	19.4	22.1
		SD	38.94	22.16	0.66	2.48	1.01	2.80
		98 Percentile	182.85	103.71	10.88	25.24	21.26	26.86
AA8	Jogindra Castings Pvt. Ltd.	Average	128.84	71.34	10.99	24.75	22.64	25.79
		SD	45.42	25.85	0.77	2.90	1.17	3.271
		98 Percentile	213.32	121.00	12.70	29.45	24.81	31.33

### **3.5.5 AMBIENT AIR QUALITY STATUS**

#### **3.5.5.1 Respirable Particulate Matter (PM<sub>10</sub>)**

As it is evident from the data, PM<sub>10</sub> concentration observed in the study area during March – May, 2018 is minimum at Lalheri i.e. 50.4  $\mu\text{g}/\text{m}^3$ , maximum at Harbanspura i.e. 228.9  $\mu\text{g}/\text{m}^3$  and at project location 133.5  $\mu\text{g}/\text{m}^3$ . This indicates air quality deterioration in study area against 24 hours average permissible limits of 100  $\mu\text{g}/\text{m}^3$  due to presence of industries in Mandi Gobindgarh and Khanna and other agro and biomass burning (after wheat harvesting) activities as predominant in the region. The additional emission loads due to proposed expansion (Induction furnaces 15 TPH x 2 Nos., DG set 2 Nos., Vehicular and other fugitive emissions) is to be quantified and associated environmental impacts are to be identified based on air quality modeling and prediction of ground level concentrations (GLCs) which has been explored in **Chapter 4**.

#### **3.5.5.2 Fine Particulate Matter (PM<sub>2.5</sub>)**

**Table 3.6** gives the PM<sub>2.5</sub> levels concentration at different monitoring stations. It was minimum at Lalheri i.e. 28.7  $\mu\text{g}/\text{m}^3$  and maximum at Harbanspura i.e. 130.5  $\mu\text{g}/\text{m}^3$ . At project location, average PM<sub>2.5</sub> level is 73.9  $\mu\text{g}/\text{m}^3$ . The average mass concentration of PM<sub>2.5</sub> 73.9  $\mu\text{g}/\text{m}^3$  against 24 hours average permissible limits of 60  $\mu\text{g}/\text{m}^3$  indicates deterioration of air quality.

#### **3.5.5.3 Sulphur Dioxide (SO<sub>2</sub>)**

The average SO<sub>2</sub> levels at various monitoring stations ranged from 7.9 to 11.5  $\mu\text{g}/\text{m}^3$ . It would be seen that the SO<sub>2</sub> levels are quite low in the area. The 98 percentile value for SO<sub>2</sub> has been determined as 13.03  $\mu\text{g}/\text{m}^3$ . SO<sub>2</sub> levels are quite low in the study area against 24 hours average permissible limits of 80  $\mu\text{g}/\text{m}^3$  and the air quality in respect to SO<sub>2</sub> is good and comfortable.

#### **3.5.5.4 Oxides of Nitrogen (NOx)**

The average NOx concentration in the study area varied from 17.7 to 26  $\mu\text{g}/\text{m}^3$ . P98 remained as 30.26  $\mu\text{g}/\text{m}^3$  during this period. It would be seen that the NO<sub>2</sub> levels are quite low in the

study area in respect to 24 hours average permissible limits of  $80\mu\text{g}/\text{m}^3$ . The situation in the study area as far as  $\text{NO}_2$  concentration as concerned is good and comfortable.

### **3.5.5.5 Conclusion**

The Ambient Air Quality Monitoring in the study area shows that:

- i) Mass levels of particulate dust as  $\text{PM}_{10}$  &  $\text{PM}_{2.5}$  were quite higher than 24 hours average NAAQ standards of  $100 \mu\text{g}/\text{m}^3$  and  $60 \mu\text{g}/\text{m}^3$  respectively. This indicates air quality deterioration in study area due to presence of industries in areas of Mandi Gobindgarh and Khanna and other agro and biomass burning (after wheat harvesting) activities as predominant in the region.
- ii) The mass levels of  $\text{SO}_2$  and  $\text{NO}_2$  are much below the desired limits of  $80\mu\text{g}/\text{m}^3$  indicates good air quality.
- iii) Mass levels CO were reported as less than  $1.5 \text{ mg}/\text{m}^3$  whereas other gases such as ammonia ( $\text{NH}_3$ ) and ozone ( $\text{O}_3$ ) were reported as safer zone in respect to their NAAQ standards.
- iv) Mass levels of particulate metals as Lead (Pb), Arsenic (As) and Nickel (Ni) are reported as traces or below detection levels which indicates safe environment.
- v) Mass levels of hydrocarbons as Benzene, Benzo(a)pyrene (BaP) were also reported as below detection levels which indicates safe environment with no health hazards.

## **3.6 NOISE ENVIRONMENT**

A total of eight locations within the study area as well as 5 locations within the project have been selected for measurement of ambient noise levels. Noise level monitoring has been carried out once during March - May 2018. Day and night time Leq values have then been computed from the hourly Leq values. Day time & Night time Leq have been computed from the hourly Leq values between 6 a.m. to 10 p.m. & between 10 p.m. to 6 a.m. respectively. Ambient noise levels were measured using integrated sound level meter at 8 locations located within the study area (**Fig. 3.3**).

The acoustical environment varies dynamically in magnitude and character throughout most

communities. The noise level variation can be temporal, spectral and spatial. The maximum impact of noise is felt in urban areas which are mostly due to the commercial activities and vehicular movement during peak hours of the day.

From environment point of view, higher noise levels may affect health of human beings and disturbance to animals if they are close to the noise generating sources. Measurement of noise levels in the study area at several locations has been carried out to determine the existing noise levels to subsequently superimpose increment in noise levels.

### **3.6.1 AMBIENT STANDARDS IN RESPECT OF NOISE**

MoEF&CC has notified the ambient standards in respect of noise. **Table 3.8** gives these standards in respect of noise.

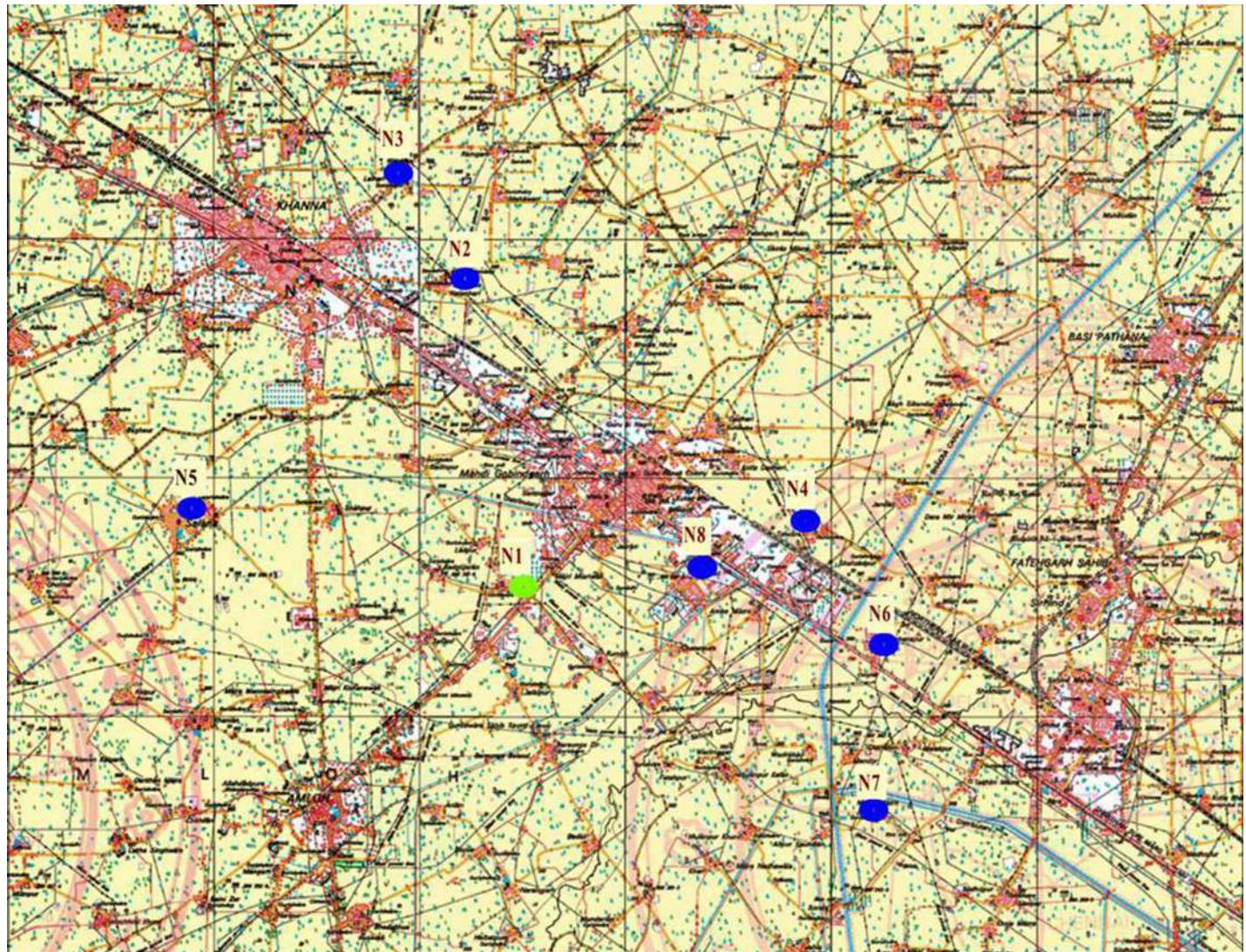
**Table 3.8: Ambient Standards in Respect of Noise**

<b>Area Code</b>	<b>Category of Area</b>	<b>Leq. Limits in dB(A)</b>	
		<b>Day Time</b>	<b>Night Time</b>
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

**Note:**

1. Day time is reckoned in between 6:00 a.m and 10:00 p.m.
2. Night time is reckoned is between 10:00 p.m and 6.00 a.m.
3. Silence Zone is defined as areas upto 100 m around such premises as hospitals, educational, institutions and Courts. The Silence Zones are to be declared by the competent authority.

The day-time (Ld) and night-time (Ln) noise levels within project location as well as at different locations are given in **Table 3.8** computed from hourly Leq values during day-time and night-time, respectively. Detailed test reports depicting noise results are enclosed as **Annexure 16**.



**Fig 3.3: Location of Noise Monitoring Stations  
(Marked on Toposheet no. H43K2 & H43K6; Not on scale)**

### 3.6.2 NOISE RESULTS

**Table 3.9: Noise level results db (A) in & around Project Area**

Station Code	Location Name/Village	Day Time (Hourly Equivalent) Leq db(A)	Night Time (Hourly Equivalent) Leq db(A)
N1	Project location	A 68.2	53.4
		B 62.1	54.4
		C 59.9	52.3
		D 57.7	51.2
		E 56.6	49.0
N2	Ratanhari (House of Gurmeet Singh S/o Hukam Singh)	57.5	47.3
N3	Lalheri (House of Gurmeet Singh S/o Dalbara Singh)	55.3	46.2
N4	Oasis Enterprises Pvt. Ltd.	56.1	44.7
N5	Village Salana (House of Avtar Singh S/o Mohinder singh)	52.6	43.5
N6	Harbanspura (House of Ashok Kumar S/o late Sri Ram Parshad)	56.1	44.7
N7	Malko Majra (House of Nasib Singh S/o Mamho Singh)	54.2	44.3
N8	Jogindra Castings Pvt. Ltd.	62.6	54.36

Ambient noise levels were measured at 5 locations within the project location and 7 locations outside near the project. Noise levels varied from 52.6 dB(A) and 68.2 dB(A) during the day time and were 44.3 dB(A) and 54.4 dB(A) during the night time in the study area. The obtained noise levels are well within prescribed limits for industrial area whereas marginally higher to prescribed limits for residential areas indicating annoying environment for population and

sensitive receptors. Noisy environmental conditions are mainly associated to industrial activities in Mandi Gobindgarh and Khanna industrial hubs, heavy traffic movement on road network (national highways, state highways and connecting roads) and other agro and domestic activities in the region.

### **3.7 LAND ENVIRONMENT**

#### **3.7.1 LAND USE AND LAND COVER**

##### **3.7.1.1 Methodology for Land Use Land Cover Mapping**

The land use and land cover (LULC) map have been prepared by adopting the interpretation techniques of the image in conjunction with collateral data. Image classification was done by using visual interpretation techniques and digital classification using Arc GIS 9.3.1 image processing software. LANDSAT (IRS, NRSC LISS-III) image were acquired and used to evaluate LULC changes. The image processing software is used for preprocessing, rectification and classifying the satellite data for preparation of land use land cover map for assessing and monitoring the temporal changes in land use land cover and land developmental activities.

##### **3.7.1.2 Ground data**

Ground data is essential to verify and increase the accuracy of the interpreted classes and also to minimize the field work.

##### **3.7.1.3 Data analysis**

For analysis and interpretation of satellite data, the study can be divided into three parts:

- I. Preliminary work
- II. Field work
- III. Post field work

##### **3.7.1.4 Outcome**

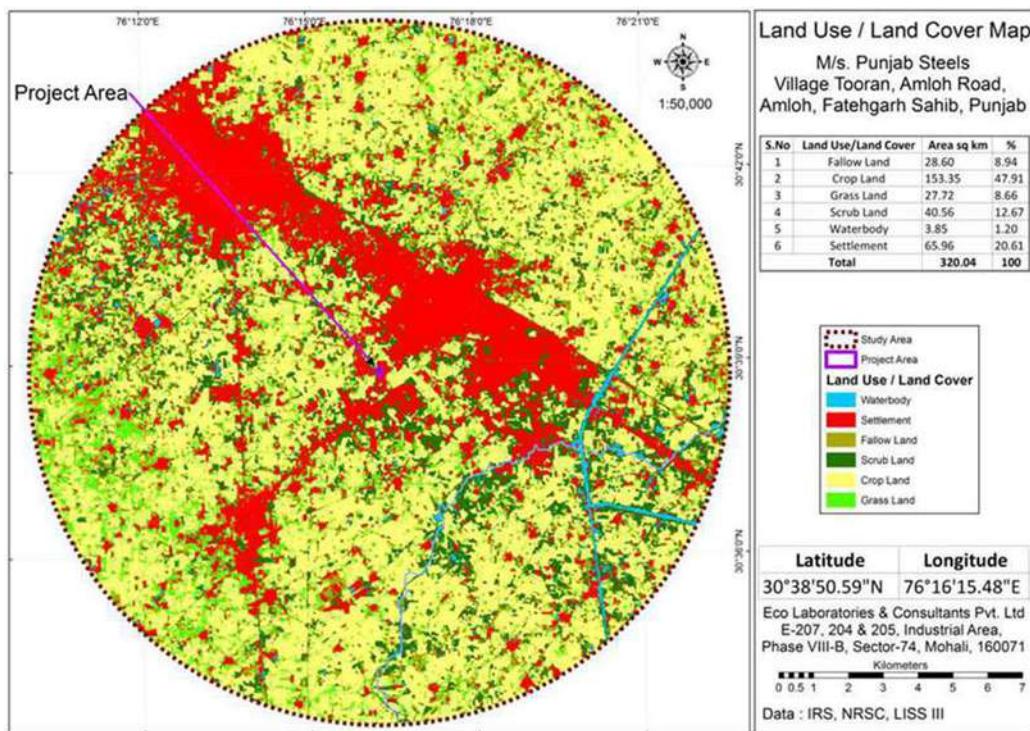
Landuse and land cover have a direct relationship with environmental characteristics and processes, including the productivity of the land, species diversity, climate, biogeochemistry and the hydrologic cycle. GIS and Remote Sensing are gradually becoming an integrated technology that is being widely used in various applications. These two technologies are complementary, as

they are simply variants of the digital spatial data. They have become inextricably linked in many application fields. The spatial display techniques for GIS and Remote Sensing information has greatly advanced within the past two decades. Technological advances in image processing and visualization techniques have developed display and interpretation mechanisms for the analysis of all forms and sources of geographical information.

### 3.7.1.5 Study Area Landuse and Land Cover Classification System

As per the mandatory requirements, the mapping of Landuse and land cover of the area falling within the 10 km radius of study area is to be undertaken with the help of Topographical data, Satellite data and Field studies.

The landuse and land cover (LULC) map has been prepared by adopting the interpretation techniques of the image in conjunction with collateral data such as Survey of India topographical maps, census records, LANDSAT Imagery and ground truth. Land use map is shown in **Figure 3.4.**



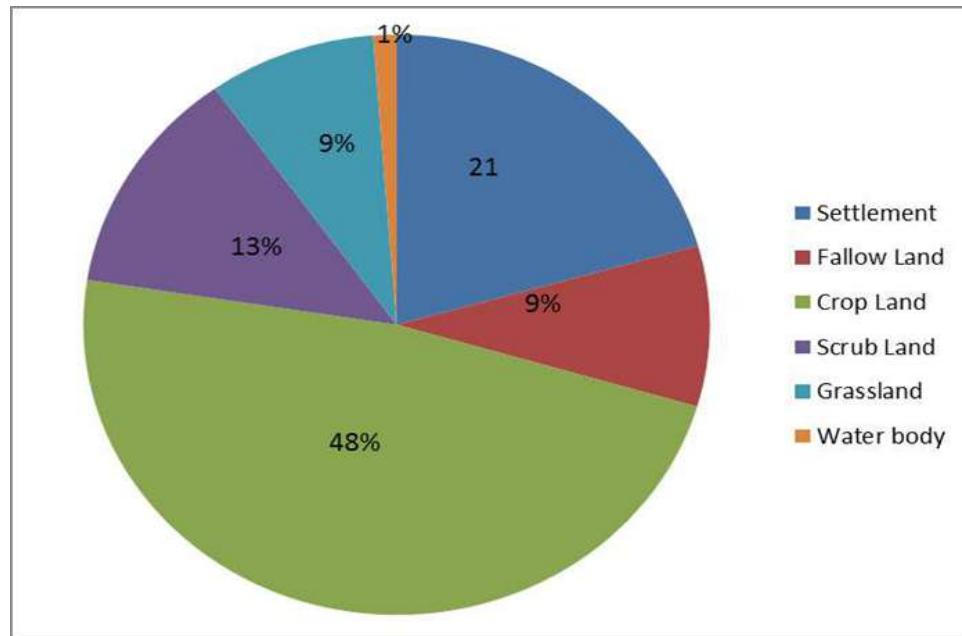
**Fig. 3.4: Landuse map within 10 km of the study area**

The distribution of land use land cover categories is shown in **Table 3.10** below:

**Table 3.10: Landuse details of the 10 km study area**

Land Use/Land Cover	Area (sq. km)	Percent (%)
Settlement	65.96	20.61
Fallow Land	28.60	8.94
Crop Land	153.35	47.91
Scrub Land	40.56	12.67
Grassland	27.72	8.66
Water body	3.85	1.20
<b>Total</b>	<b>320.04</b>	<b>100</b>

The above table indicates that, the majority of land is used by agriculture purpose (47.91%) and followed by fallow land (8.94 %), settlement (20.61%), scrub land (12.67 %), grass land (8.66%) and water body (1.20 %).



**Fig.3.5: Pie chart showing the Land Use/Land cover**

### **3.7.2 GEOMORPHOLOGY & SOIL**

Amloh Tehsil falls in Satluj Doab between river Satluj & Yamuna. The Doab form part of Indo - Gangetic alluvial plains. Elevation of land surface ranges from 280 m amsl in the North-East to 259 m amsl in South to South-West direction. The general slope in the tehsil is towards South to South-West direction with an average gradient of 0.4 m per km. There is one stream which drains the area. Sirhind Choe drains central and western part of the tehsil. River Satluj flowed through the district in the past. The paleo channels of river Satluj exists. Soil in the area is loamy sand at the surface and calcareous sandy loam in subsurface layers. Sand constitutes 80% in the soil profile. Silt constitutes 11% and clay 9% in the soil.

### **3.7.3 SOIL QUALITY**

The information on soil has been collected from various secondary sources and also through primary soil sampling analysis of which is described in this section. For studying the soil profile of the region, soil samples were collected from 8 locations to assess the existing soil conditions within the study area representing various land uses. The sampling locations have been finalized with the following objectives:

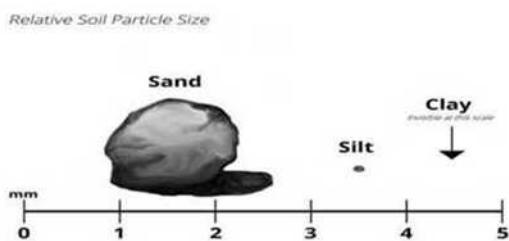
- To determine the base line characteristics
- To determine the soil characteristics of project location.
- To determine the impact of industrialization/urbanization on soil characteristics
- To determine the impacts on soils from agricultural productivity point of view.

### **3.7.4 PHYSICAL CHARACTERISTICS**

Soil is generally considered as the upper layer of the earth that is dug or ploughed, especially the loose material in which plants grow. It is generally unconsolidated material composed of soil particles produced by disintegration of rocks. The void spaces between the particles may contain air, water or both. Physical characteristics of soil influence its use and behavior towards plants growth. The plant support, root penetration, drainage, aeration, retention of moisture & plant nutrients is linked with the physical condition of soil. Normally following physical parameters are important for determining the quality of soil:

### (i) Soil Texture

Soil texture determined by percentage of sand, silt and clay is the important soil characteristic influencing soil quality. Sand particles are relatively large, silt particles are medium-sized and clay particles are very tiny in size. Clay and silt soil holds more water and plant nutrients than the sand. Soils can be classified as four major textural classes: 1) sand; 2) silt; 3) clay and 4) loam based on the proportion of particle sizes. Sand varies from 30.5% to 41% with average 34.6% indicates soil texture as sandy loam.



### (ii) Porosity

Volume of soil mass that is not occupied by soil particles and usually occupied by air & water are known as pore space. The plant roots grow & exist in the pore spaces. Porosity therefore, refers to that percentage of soil volume which is occupied by pore spaces. Porosity of soil in the study area varies from 0.43 to 0.8 with average 0.62.

### (iii) Bulk Density

The bulk density weight of a unit of volume of soil inclusive of pore spaces is called bulk density. Average bulk density of soil 1.41gm/cc in the study areas as low indicates favorable physical conditions.

### (iv) Water holding capacity

Water holding capacity is the amount of water retained by soil to make available for crops which is determined by soil texture and available pore spaces in soil. Water holding capacity of soil in the study area varies from 14.3% to 50.2% with average of 32.2%. Clay and silty soil tend to have higher water holding capacity whereas sandy soils have lower water holding capacity.

#### **(v) Soil fertility**

Soil fertility is the ability of a soil to provide the nutrients needed by crop plants to grow

### **3.7.5 CHEMICAL CHARACTERISTICS**

Locations of soil monitoring stations are shown in **Fig. 3.6.** & **Table 3.11.** Chemical characteristics of soil observed in the study area are given in **Table 3.12.**

#### **Soil pH**

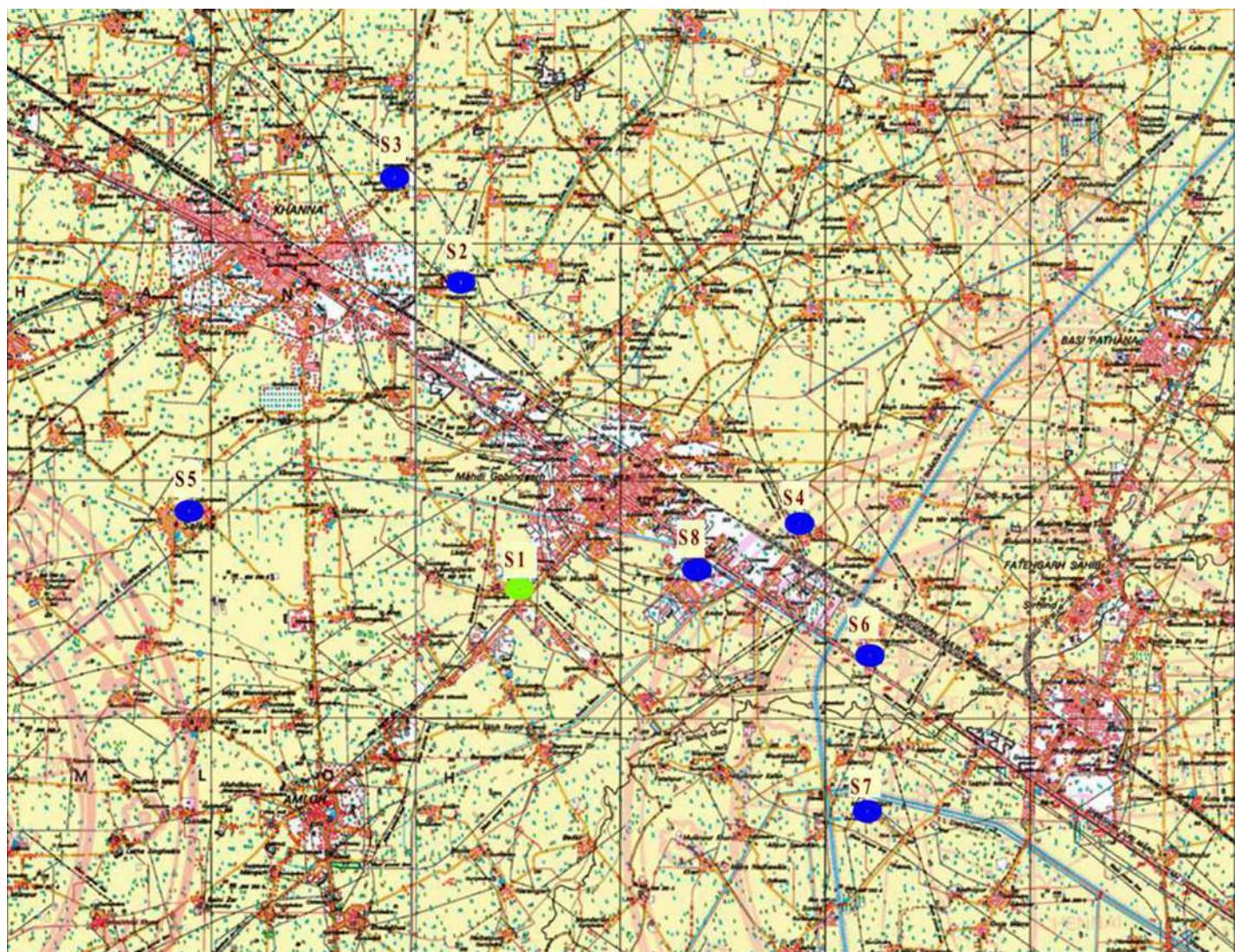
Soil pH is another aspect of soil fertility after nutrients. Most of crops grow best in the pH range of 6.2 to 6.8 as plant roots can best absorb most nutrients from the soil in this range. Soil pH varied from 7.46 to 7.93 & alkaline in nature.

#### **Organic matter**

Organic matter in the soil of study area varies from 0.64% to 0.84% with average 0.73%. Organic matter comprising of plant and animal residues, decomposed materials, living and dead soil microorganisms is only in small proportion (usually less than 5%) for a good soil quality and tends to improve soil structure, soil fertility and soil biological activity.

#### **Nutrient value**

Potassium varies from 20 mg/kg to 40.3 mg/kg with average of 30 mg/kg whereas Sodium varies from 28 mg/kg to 53.2 mg/kg with average of 40.4 mg/kg indicates medium class of fertility.



**Fig 3.6: Location of Soil Monitoring Stations**

(Marked on toposheet No. H43K2 & H43K6; Not on scale)

**Table 3.11: Details of Soil Sample Monitoring stations**

S. No.	Sample Code	Name of Village/ Location	Distance from project (km)
1.	S1	Project location	0
2.	S2	Ratanhari (House of Gurmeet Singh S/o Hukam Singh)	6 (NW)
3.	S3	Lalheri (House of Gurmeet Singh S/o Dalbara Singh)	8 (NW)

4.	S4	Oasis Enterprises Pvt. Ltd.	5 (NW)
5.	S5	Salana (House of Avtar Singh S/o Mohinder Singh)	6.7 (NW)
6.	S6	Harbanspura (House of Ashok Kumar S/o late Sri Ram Parshad)	7 (SE)
7.	S7	Malko Majra (House of Satnam Singh S/o Meher Singh)	8 (SE)
8.	S8	Jogindra Castings Pvt. Ltd.	4 (E)

**Table 3.12: Results of soil sample**

Parameter	S1	S2	S3	S4	S5	S6	S7	S8
pH	7.83	7.52	7.48	7.92	7.46	7.82	7.61	7.93
Electrical Conductivity (mmhos/cm)	0.273	0.294	0.28	0.291	0.245	0.256	0.215	0.291
Soil Moisture Content (%)	11.3	12	11.4	5.9	7.9	9.5	10.7	9.3
Soil Texture	Sandy loam							
Organic Matter (%)	0.64	0.68	0.84	0.79	0.79	0.79	0.69	0.69
Bulk Density (gm/cc)	1.41	1.35	1.39	1.34	1.44	1.38	1.36	1.34
Sodium Absorption Ratio	0.89	0.28	0.29	0.71	0.37	0.61	0.42	0.29
Water Holding Capacity (%)	14.3	40.2	35.5	21.2	38.7	34.5	23	50.2
Porosity (Vf)	0.69	0.45	0.65	0.43	0.8	0.52	0.7	0.78
Sand (%)	34	30.5	32	41	32	34	34.1	39.2
Salt (%)	7.3	7.3	8.4	10.2	10	5.9	4.5	7.9
Potassium (mg/kg)	20	36.5	31.5	29	21.8	30.8	30.5	40.3
Sodium (mg/kg)	29	40	49	43	28	42	39	53.2
Permeability (cm/hr)	16.2	13.2	15.6	17.2	12.7	14.2	15.9	15.2
Cation Exchange Capacity (meq)	28.2	14	20.1	21.2	14	13	13	14

### **3.7.6 CONCLUSION**

The above observations show that in the study area soil are generally alkaline in nature and Sandy loam texture with medium class of fertility.

## **3.8 WATER ENVIRONMENT**

### **3.8.1 HYDROGEOLOGY**

The district is underlain by formations of Quaternary age comprising of alluvium deposits belonging to vast Indus alluvial plains. Sub surface geological formations comprise of fine to coarse grained sand, silt, clay and kankar.

Central Ground Water Board has carried out ground water exploration up to a depth of 550 meters at Village Rasulpur in Khera block. Total thickness of alluvium is expected to be more than 550 m as bed rock has not been encountered up to that depth. Subsurface geological formations show the existence of a top layer of 10 to 15 m of clay, kankar with sand lenses. This layer is followed by granular zones of 20 to 30 m in thickness and under laid by clay bed of 10 to 20 m in thickness. At a depth of 90 to 120 m another clay bed of 25 to 30 m in thickness exists. In general, the thickness of finer sediments increases below 100 m in the eastern part of the district.

### **3.8.2 WATER LEVEL BEHAVIOR**

Depth to water level in the Amloh Tehsil ranges from 7.65 to 27.24 m bgl during pre-monsoon period and between 7.02 to 30.06 m bgl during post monsoon period. Depth to water level in Amloh tehsil ranges between 10 to 20 m bgl. Long term water level fluctuation (10 Years) shows a decline of 2.2 m to 6.6 m in whole of the district. Water levels have declined in the range of 5 to 6.6 m in the central & southern part of the district in Sirhind, Amloh.

### **3.8.3 GROUND WATER FLOW**

Water level elevation in the district ranges from 246 m to 266 m amsl. The ground water flow direction is from North East to South West. The gradient of water table elevation is steeper in the North Eastern part and gentle in the South West part of the District. The gradient of ground water table is 1.36 m/km in the North East and 0.45 m/km in the South-West.

### **3.8.4 GROUND WATER RESOURCES**

The ground water resource potential of the Amloh Tehsil has been assessed as per GEC-97 (**Table 3.13**). Ground water development in the block has exceeded available recharge; hence the block has been categorized as over exploited. Net Replenishable ground water availability in the tehsil has been assessed as 13,134 ham. Gross ground water draft for all uses in the tehsil is 24,961 ham, leaving a shortfall (over draft) of 13,134 ham. The stage of ground water development in the district has been assessed as 209 %.

**Table 3.13: Ground Water Resources and Development Potential, Fatehgarh Sahib District, Punjab (as on 31-03-2009)**

Block	Net Ground Water Availability (Ham)	Existing Gross Ground Water Draft for Irrigation (Ham)	Existing Gross Ground Water Draft for Domestic and Industrial Water Supply (Ham)	Existing Gross Ground Water Draft for all Uses (Ham)	Allocation for Domestic and Industrial Requirement Supply up to next 25 years (Ham)	Net Ground Water Availability for Future Irrigation Development (Ham)	Stage of Ground Water Development (%)	Category of Block
Khera	9005	19302	168	19469	244	-10541	216	Over-Exploited
Sirhind	15724	30566	357	30924	515	-15358	197	Over-Exploited
<b>Amloh</b>	<b>11946</b>	<b>24027</b>	<b>934</b>	<b>24961</b>	<b>1053</b>	<b>-13134</b>	<b>209</b>	<b>Over-Exploited</b>
Bassi Pathana	9039	17815	343	18158	500	-9276	201	Over-Exploited
Khamanon	7791	18740	231	18971	328	-11276	243	Over-Exploited
Total	53505	110450	2033	112483	2640	-59585	210	

### **3.8.5 STATUS OF GROUND WATER DEVELOPMENT**

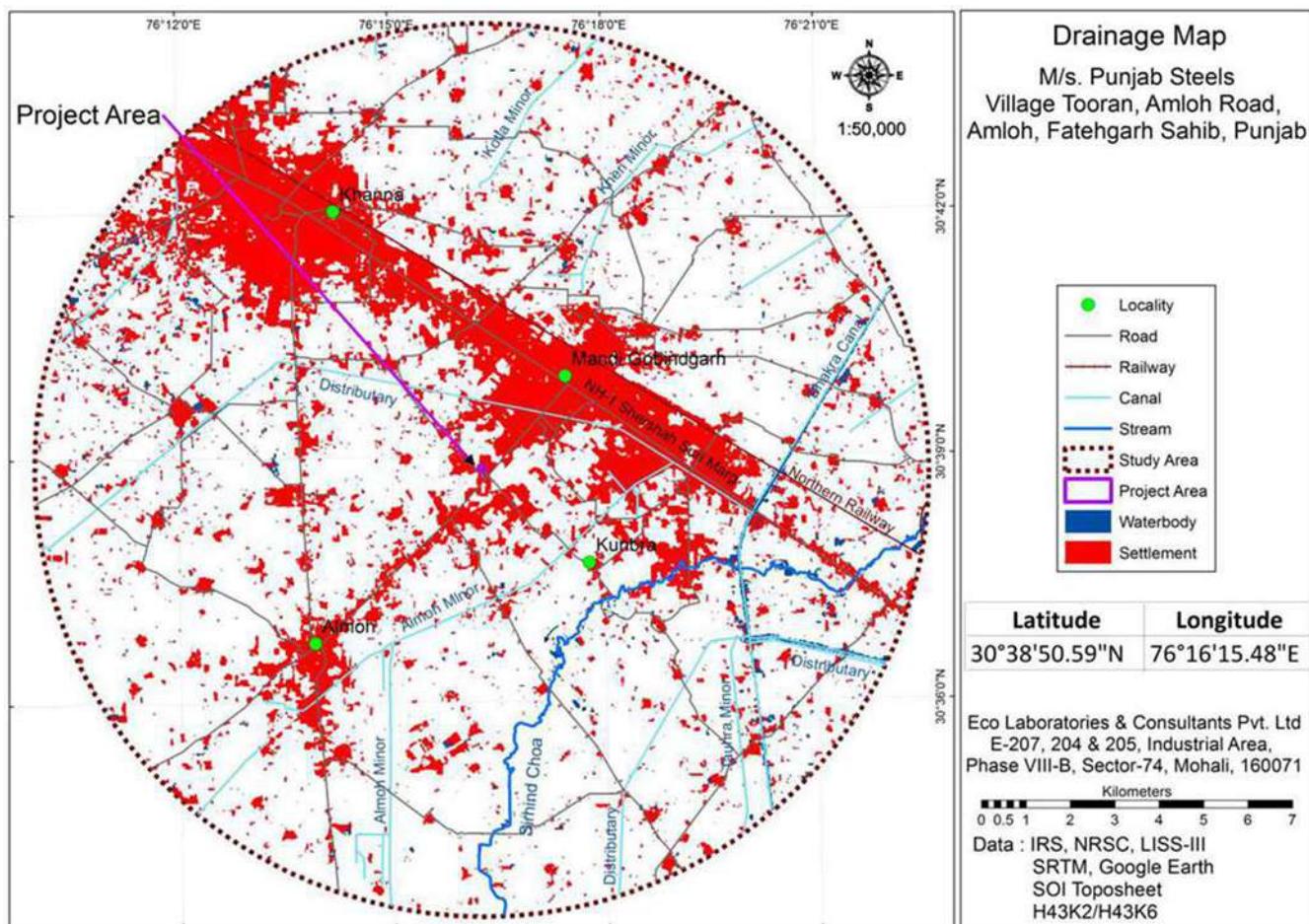
Agriculture and allied activities is the main occupation in the district, as 84% of the area in the district is under agriculture. Large part of the district is not covered by canal command; hence dependence on ground water is more for irrigation. There are 35,814 tubewells in the district out of which 33,865 are electric operated and 1,949 are diesel operated.

The depth of tubewells in Southern part of the district covering Sirhind and Khera blocks ranges from 50 to 200 m. Discharge of theses tubewells ranges from 13,00 lpm to 2,500 lpm. In the central and western part of the district, covering mainly Bassi Pathana and Amloh Block, depth of tubewells ranges from 50 to 130 m and discharge of theses tubewells ranges from 1,000 lpm to 1,300 lpm.

Drinking water supply in rural and urban area is based on tubewells only. State govt. has constructed tubewells for domestic purpose in the depth range of 80 to 150 meters.

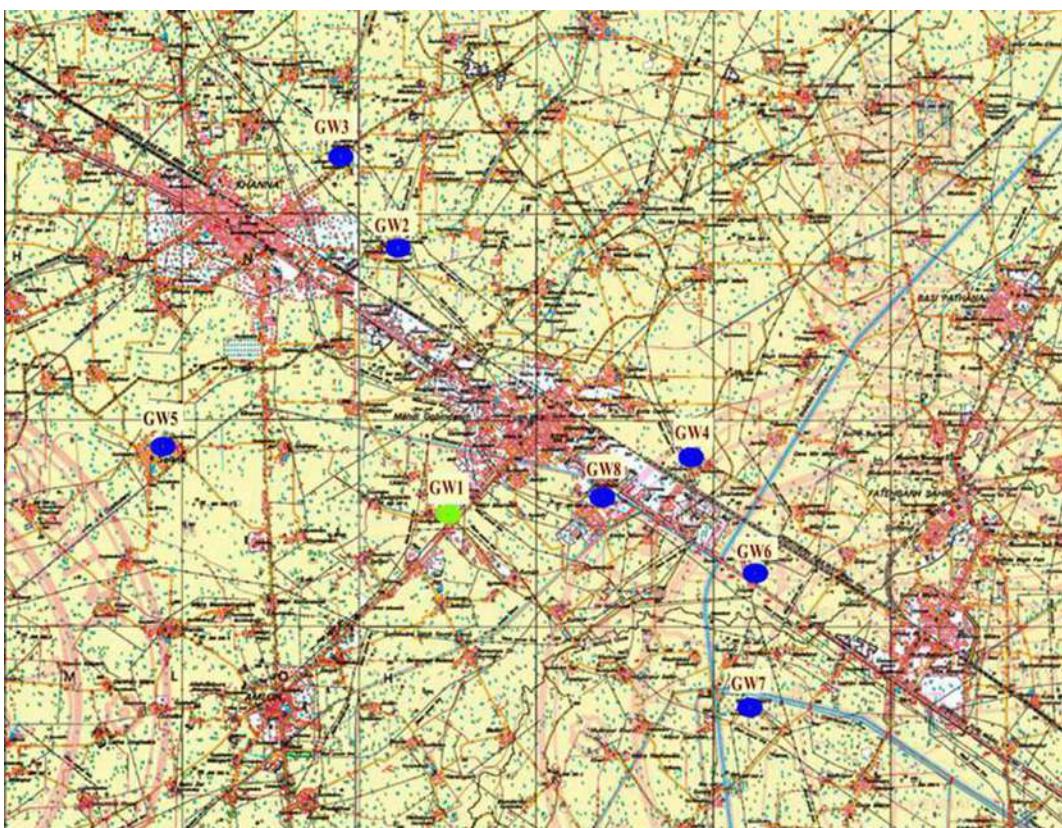
Water levels are declining in the district. In the last decade (2002-2012) water levels have declined at the rate of 30-90 cm/year. In general ground water is potable in the district. The presence of heavy metals in ground water is due to Industrial pollution.

Drainage map within 10 km of study area is shown below in **Fig. 3.7.**

**Fig 3.7: Drainage map**

### 3.8.6 WATER QUALITY

Ground water is available in the study area at different depths. Samples have been drawn from different sites and quality evaluated. To monitor the existing quality of the ground water, eight monitoring stations had been set up around the project site and samples were collected from them. Locations of Ground Water Monitoring stations are given in **Table 3.14(a)** and surface water monitoring station is given in **Table 3.14 (b)** and shown in **Fig 3.8 & Fig 3.9** respectively. Various parameters such as pH, TDS, Total Dissolved Solids, Hardness, Chlorides and Alkalinity, Calcium, Magnesium, Nitrates, Iron, Fluoride and heavy metals have been checked. Ground Water analysis results are given in **Table 3.15 (a)** and surface water analysis results are given in **Table 3.15 (b)**.

**Fig. 3.8: Locations of Ground Water Monitoring Stations**

(Marked on toposheet No. H43K2 &amp; H43K6; Not on scale)

**Table 3.14(a): Details of Ground Water Monitoring Stations**

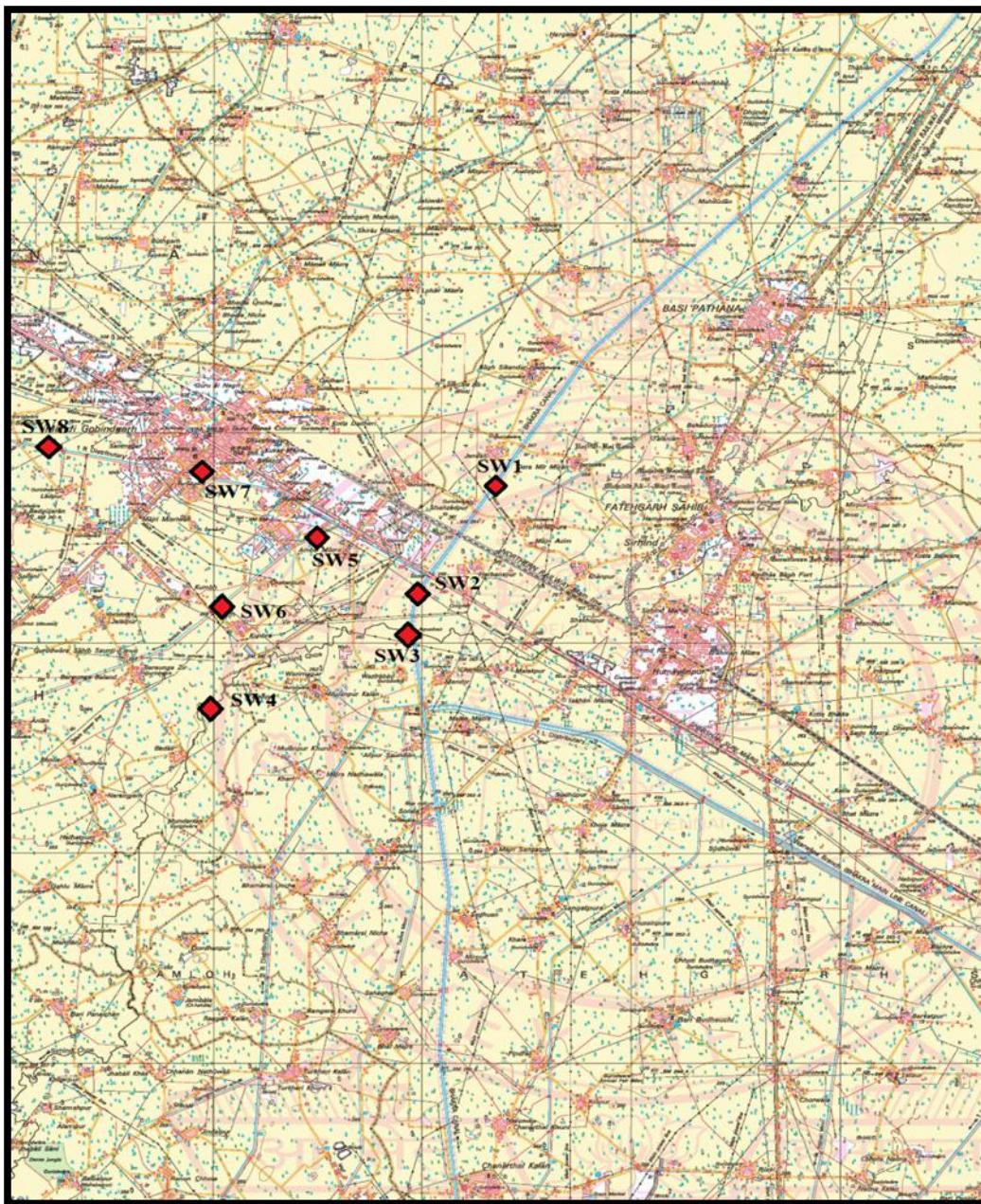
S. No.	Sample Code	Name of Village/ Location	Distance from Project (km)
1.	GW1	Project location	0
2.	GW2	Ratanhari (House of Gurmeet Singh S/o Hukam Singh)	6 (NW)
3.	GW3	Lalheri (House of Gurmeet Singh S/o Dalbara Singh)	8 (NW)
4.	GW4	Oasis Enterprises Pvt. Ltd.	5 (NE)
5.	GW5	Salana (House of Avtar Singh S/o Mohinder singh)	6.7 (NW)
6.	GW6	Harbanspura (House of Ashok Kumar S/o late Sri Ram Parshad)	7 (SE)

7.	GW7	Malko Majra (House of Satnam Singh S/o Meher Singh)	8 (SE)
8.	GW8	Jogindra Castings Pvt. Ltd.	4 (E)

**Table 3.14(b): Details of Surface Water Monitoring Stations**

S. No.	Sample Code	Name of Village/ Location	Distance from site (km)
1.	SW1	Bhakra canal (U)	7 (NE)
2.	SW2	Bhakra canal (D)	6 (E)
3.	SW3	Sirhind choe (U)	6 (SE)
4.	SW4	Sirhind choe (D)	3.8 (SE)
5.	SW5	Amloh Minor (U)	3.7 (NE)
6.	SW6	Amloh Minor (D)	2.6 (SE)
7.	SW7	1 R Distributary (U)	1.9 (NE)
8.	SW8	1 R Distributary (D)	2.5 (NW)

(U-Upstream, D-Downstream)



**Fig. 3.9: Locations of Surface Water Monitoring Stations  
(Marked on toposheet No. H43K2 & H43K6; Not on scale)**

**Table 3.15 (a): Results of Ground Water Samples**

Parameters	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8
Colour, Hazen units	BDL							
Odour	Agreeable							
Turbidity, NTU	BDL							
pH	7.3	7.44	7.33	7.3	7.32	7.26	7.45	7.26
Total Hardness (as CaCO <sub>3</sub> )	222	200	214	206	214	210	204	214
Iron as Fe (mg/l)	0.41	0.42	0.43	0.42	0.48	0.38	0.58	0.36
Chloride as Cl (mg/l)	40	66	57	55	51	55	53	58
Magnesium (mg/l)	20	20	21	20	18	18	21	20
Sulphate as SO <sub>4</sub> (mg/l)	65	95	69	78	67	63	60	68
Calcium (mg/l)	56	44	51	49	56	55	47	53
Alkalinity (as CaCO <sub>3</sub> )	230	212	228	214	238	220	206	226
Fluoride as F (mg/l)	0.74	0.71	1.37	1.52	1.55	0.74	0.64	0.76
Cadmium as Cd (mg/l)	BDL							
TDS (mg/l)	388	415	405	395	413	386	389	402

Lead as Pb (mg/l)	BDL							
Chromium as Cr (mg/l)	BDL							
Cyanide as CN (mg/l)	BDL							
Nitrate as NO <sub>3</sub> (mg/l)	44	40	58	49	59	44	44	43
Zinc as Zn (mg/l)	BDL							
Copper as Cu (mg/l)	0.03	0.04	0.02	0.02	0.04	0.02	0.04	0.04
Total Coliforms (MPN/100ml)	<2	<2	<2	<2	<2	<2	<2	<2
E.Coli (MPN/100ml)	<2	<2	<2	<2	<2	<2	<2	<2

**Table 3.15 (b): Results of Surface Water Samples**

Parameters	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
pH	7.05	7.10	7.34	7.38	7.21	7.24	7.15	7.19
BOD (mg/l)	17.5	18	20.1	20.8	19.1	19.5	18.5	19.2
Free Ammonia (mg/l)	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Boron (mg/l)	0.15	0.17	0.17	0.16	0.16	0.17	0.18	0.17
SAR	8.22	8.28	8.27	8.25	8.36	8.33	8.34	8.28
EC ( $\mu$ S/cm)	290	296	311	325	280	287	310	317

### 3.8.7 Ground Water Quality

It has been seen from the results that:

1. pH varies from 7.26 -7.45 which is the acceptable limits for potable water.
2. Calcium varies from 44.0 to 56.0 mg/l. The highest value was observed at project location and Salana.
3. Magnesium varies from 18 to 21 mg/l. The highest value was observed at Lalheri and Malko Majra.
4. Chloride concentration which is also one of the important parameters varies from 40 to 66 mg/l. It was found maximum at Village Ratanhari and minimum at Punjab steels.
5. Heavy metals like Cadmium, Chromium, Lead and Zinc were much below the permissible limit in all the samples.
6. Iron varies from 0.36- 0.58 mg/l.
7. Sulphates vary from 60 to 95 mg/l.

The ground water test results indicate that water is good in quality and safe for drinking purpose and fit for cooling water requirement.

### 3.8.8 Surface Water Quality

It has been seen from the results that:

1. The results of Bhakra Canal show that BOD is less than 20 mg/l & pH is nearly 7.
2. Similarly, for Amloh Minor canal BOD is about 20 mg/l & pH is nearly 7.
3. For Sirhind choe canal, BOD is around 20 mg/l & pH is nearly 7.



- 
4. For IR Distributary canal, BOD is less than 20 mg/l & pH is nearly 7.

### **3.8.9 Conclusion**

All the above parameters at the various locations in the study area are within permissible and tolerable limits. In the study area, since the samples have been collected from different sites at isolated places, the level of concentration and different elements vary quite considerably which may be due to small aquifers. However, the levels of the various components are within acceptable/ permissible norms for drinking water.

As no effluent will be generated from the industry after the commissioning of the industry. Hence, surface water quality will not be affected due to the industry.

## **3.9 BIOLOGICAL ENVIRONMENT**

A natural ecosystem is a structural and functional unit of nature. It has different biological and physical components, which are interrelated to each other and survive by interdependence. An ecosystem has self-sustaining ability and controls the number of organisms at any level by cybernetic rules. The basic purpose to explore the biological environment under Environmental Impact Assessment (EIA) is to assist the decision making process and to ensure that the project options under consideration are environmental-friendly. An ecological survey of the study area was conducted, particularly with reference to listing of species and assessment of the existing baseline ecological conditions in the study area. The main objectives of the ecological survey were aimed at assessing the existing flora and fauna components in the study area, to understand the possible impacts on the biological environment caused by the project activities after expansion and to formulate if necessary the appropriate mitigation/preventive measures for such impacts. Data has been collected through secondary sources and by site visit. The present study was carried out in two separate headings for floral and faunal community.

### **3.9.1 SAMPLING**

For field assessment, i.e., primary data collection, a standard statistical sampling method was followed. The sampling design followed random sampling method. The sampling area was decided based on prior land-use map of the project influence zone (within the 10 km radius



around the project area), outlining forest areas and other types of habitats, topographic features and build-up area.

The project is located in industrial zone which is being surrounded by many industrial units there are no eco-sensitive zones, coastal zones and heritage areas within 500 m radius of plant premises or any Schedule I and II species.

These are many local Parks in the vicinity of the project site within 10 km radius of the project, to provide green spaces, green buffer support, bio-accumulative capacity to ensure survival of the local ecosystem, few of them are mentioned below:

- Maharaja Agarsen Park
- Goyal colony park
- HF Super Park
- Super Green park

However, there is Protected Forest within 10 km study area. However, there is no National Sanctuary, wetlands or Reserved Forests within the 10 km radius of the project location as per the Environment Protection Act 1986, The Indian Wildlife (Protection) Act, 1972 and Indian Forest Act, 1927.

**Table 3.16: Aspect to be covered in the study Area**

Aspect of Environment	Impacts
A. Terrestrial Ecology	Impacts on terrestrial flora and fauna
	Impacts on Rare-Endangered-Threatened (RET) wildlife
	Impacts on socially/ economically/ genetically/ biologically important species
B. Aquatic Ecology	Impacts on aquatic fauna/flora
	Impacts on spawning and breeding grounds for aquatic species

The information presented in this section has been collected through field studies, consultation with various government departments and collation of available literature with various institutions and organizations. The summary of data collected from these sources as a part of the EIA study is outlined in **Table 3.17**.

**Table 3.17: Summary of Data Collected from various sources**

Aspect	Mode of data collection	Parameters Monitored	Frequency	Source(s)
Terrestrial Ecology	Primary field survey and secondary literature survey	Floral and Faunal Diversity and their Importance	One Season (summer)	Field studies, Forest & wild life Department and literature review
Aquatic Ecology	Primary field survey and secondary literature survey	Diversity of Species and Their Importance	One Season (summer)	Field studies, Forest/ wild life Department and literature review

With the change in environmental conditions, the vegetation cover as well as animals reflects several changes in its structure, density and composition. The present study was carried out separately for floral and faunal community respectively.

### **3.9.2 FLORA**

Methodology for floral study:

1. Secondary literature survey: Published literature, including those from relevant organizations like the Botanical Survey of India (BSI), the Wildlife Institute of India (WII-Dehradun), the respective Forest Department of the State concerned etc., research papers, articles, books and reliable websites, available within and adjacent to the study area were compiled and inventoried as “Secondary Floral Diversity Database”.
2. Primary field survey – herbs, herbaceous plants were studied using the quadrat method as followed, during vegetation survey. The size of each quadrat for herb survey was 1m x 1m. Field identification of the species and later identification through photographs were followed.
3. Primary field survey – shrubs: Shrubs were studied using the quadrat method as followed during vegetation survey. The size of each quadrat for shrub survey was 5m x 5m for shrubs of 3m height. Field identification of the species and later identification through photographs were followed. Unidentified shrubs were collected following proper procedure and prepared into herbarium sheets for later identification.

4. Primary field survey – trees: Trees were studied using the quadrat method as followed during vegetation survey. The size of each quadrat for tree survey was 20m x 20m. Field identification of the species and later identification through photographs were followed.
5. Primary database: Data generated from the field survey within and adjacent to the study area were meticulously compiled and inventoried as “Primary Floral Diversity Database”.
6. Field instruments/materials for floral study: Measuring tape/s, herbarium sheets, newspaper, herbarium press, polythene bags (incl. zip-locked pouches), clinometers, and magnifying glass, camera, and GPS unit.

**Table 3.18: Result of Floral Study Plants Diversity**

Common Name	Scientific Name
<b>Herbs</b>	
Yam	<i>Dioscorea spp.</i>
Bathua	<i>Chenopodium album</i>
Carrot grass	<i>Parthenium hysterophorus</i>
Black nightshade	<i>Solanum nigrum</i>
Amaranth	<i>Amaranthus spp.</i>
Durva/Doob grass	<i>Cynodon dactylon</i>
<b>Shrubs</b>	
Castor	<i>Ricinus communis</i>
Kasaundi	<i>Senna sophera</i>
Oleander	<i>Nerium oleander</i>
China rose	<i>Hibiscus rosa-sinensis</i>
Pomegranate	<i>Punica granatum</i>
Euphorbia	<i>Euphorbia sp.</i>
Wild sage/Lantana	<i>Lantana camara</i>
Tora	<i>Senna tora</i>
Crape jasmine/Tagar	<i>Tabernaemontana divaricata</i>
<b>Trees</b>	
Khejri	<i>Prosopis cineraria</i>
Indian gooseberry/Amla	<i>Phyllanthus emblica</i>
Indian lilac	<i>Melia azedarach</i>
White mulberry	<i>Morus alba</i>
Kikkar	<i>Vachellia karoo</i>
Jujube	<i>Ziziphus jujube</i>
Mango	<i>Mangifera indica</i>
Sacred fig/Peepal	<i>Ficus religiosa</i>
Banyan	<i>Ficus benghalensis</i>

Jamun	<i>Syzygium cumini</i>
Devil tree/Saptaparni	<i>Alstonia scholaris</i>
Fishtail palm	<i>Caryota urens</i>
Banana	<i>Musa para</i>
Guava	<i>Psidium guajava</i>
North Indian rosewood	<i>Dalbergia sissoo</i>
Teak	<i>Tectona gran</i>
Catechu/Khair	<i>Senegalia catechu</i>
Indian elm/Chilbil	<i>Holoptelea integrifolia</i>
Poplar	<i>Populus alba</i>
Mahogany	<i>Swietenia mahagoni</i>
Medlar/Bakul	<i>Mimusops elengi</i>
Devdaaru	<i>Polyalthia longifolia</i>
Blue jacaranda	<i>Jacaranda mimosifolia</i>
Silver oak	<i>Grevillea robusta</i>
Amaltas	<i>Cassia fistula</i>
Arjun	<i>Terminalia arjuna</i>
Eucalyptus	<i>Eucalyptus globules</i>
Lebbeck	<i>Albizia lebbeck</i>

### 3.9.3 FAUNA

1. Secondary literature survey: Published literature, including those from relevant organizations like The Zoological Survey of India (ZSI), The Forest Department of the State, research papers, articles, books and reliable websites, available within and adjacent to the study area were meticulously compiled and inventoried as “Secondary Faunal Diversity Database”.
2. Primary field survey – birds: For avian diversity assessment, point count method was used. The radius of each of the point was 50 m. Birds were identified on-site using field-books, or later through photographs and field-sketches.
3. Primary field survey – mammals: For mammalian diversity assessment, direct observations was done on the field. Field identification of species was done on-site and through photographs/sketches and with the help of field-books/other reliable sources. Primary field survey – amphibians and reptilians: Direct observation and indirect evidence/sign survey were done for assessing amphibian and reptilian diversity in the field

site. Identification of species was done on-site or through photographs/sketches and with the help of field-books or other reliable sources.

4. Primary database: Data generated from the field survey within and adjacent to the study area was meticulously compiled and inventoried as “Primary Faunal Diversity Database”.
5. Field instruments/materials for faunal study: Range-finder, compass, binoculars, camera, slide-calipers, measuring tape, GPS unit, polythene bags (incl. zip-lock pouches), and field-books.

**Table 3.19: List of Fauna Encountered in Study Area**

S. No.	Zoological Name	Local Name
1.	<i>Acridotheres tristis</i>	Common Myna
2.	<i>Aquila hetiaca</i>	Eagle
3.	<i>Bubulcus ibis</i>	Bugla
4.	<i>Chameleon species</i>	Girgit
5.	<i>Columba livia</i>	Kabutar
6.	<i>Corvus macrorhynchos</i>	Jangali Crow
7.	<i>Corvus splendens</i>	House Crow
8.	<i>Cuculus varius</i>	Titehri
9.	<i>Cynopterus sphinx</i>	Chamgadar
10.	<i>Eudynamys scolopacea</i>	Koyal
11.	<i>Hemidactylis species</i>	House Lizard
12.	<i>Lapus nigricollis</i>	Khargosh
13.	<i>Macaca mulatta</i>	Monkey
14.	<i>Otus scops</i>	Ullu
15.	<i>Paro cristatus</i>	Peacock
16.	<i>Psittacula krameri</i>	Parrot
17.	<i>Rattus rattus</i>	House rat

**Mammals (Mammalia):** Palm squirrel, Hare, Rat, Mice, Bat are encountered in the area.

**Reptiles (Lizards, Snakes, Turtles, etc.):** Wall lizard and Rat snake are present in the area.

**Aquatic faunal diversity:** The area is devoid of major water-bodies, thus may not support a considerable aquatic faunal diversity.

#### **3.9.4 CONCLUSION**

The faunal and floral diversity observed during the field survey does not claim considerable attention as most of the species observed are common throughout the region and no Rare, Endangered and Threatened species or endemic species were present. The area also does not possess the capacity to support such ecologically important species and their conservation. The impact of the project activities thus is understood to be negligible on the biological environment which is already disturbed and diminished because of previous industrial activities. As a measure to minimize the prevailing and forthcoming environmental impacts due to industrial pollution and activities, it is advisable to increase green areas through plantations in the available land so that the local faunal and floral biodiversity may increase.

### **3.10 SOCIO-ECONOMIC ENVIRONMENT**

#### **3.10.1 SCOPE OF SOCIO ECONOMIC SURVEY**

Scope of the study is as follows:

- Collection of baseline data of the Fatehgarh Sahib District and Tehsil Amloh.
- Collation of data, analyses and generation of tables.
- Comprehension of socio-economic status of the people living in the study area.
- Identification and inventory of probable socio economic impacts of the project activities on social and economic aspects in the study area.
- Assessment of the probable impacts of the project on the people living in the study area.
- Facilitation of sustainability of positive impact by recommending community development initiatives in the study area.
- Suggestion of mitigation measures in case of adverse impact.

### **3.10.2 METHODOLOGY**

The socio-economic aspects of people have been analyzed and presented for the project within the Tehsil Amloh of District Fatehgarh Sahib. The study carried out is descriptive and exploratory in nature. The methodology adopted for the project has been collected from various secondary sources.

- Review of secondary data (2011 census and latest available district statistical hand books) with respect to population and occupational structure.
- Discussion with local population in some areas on the socio- economic and cultural aspects of people in the study area
- Extensive site visits and observation of the socio- economic environment.

The sociological aspects of this study include human settlements, demographic, socio economic aspects and others. The economic aspects include agriculture, industry and occupational structures of workers. The demographic and socio-economic details are described in the following sections.

### **3.10.3 DEMOGRAPHIC & SOCIO ECONOMIC DETAILS OF DISTRICT FATEHGARH SAHIB**

Fatehgarh Sahib district comprises of 455 villages (450 inhabited and 5 uninhabited) spread over four Tehsils and one sub-tehsil viz. Amloh, Bassi-Pathana, Fatehgarh Sahib and Khamano and one Sub-tehsil Gobindgarh of Tehsil Amloh.

**Table 3.20: Area details of the District**

<b>S. No.</b>	<b>Tehsil</b>	<b>Area (sq. km.)</b>
1.	Fatehgarh Sahib	484.09
2.	Bassi Pathana	206.57
3.	<b>Amloh</b>	<b>261.20</b>
4.	Khamano	195.93
<b>Total</b>		<b>1,147.79</b>

(Source: FGS report LPA Master Plan 2010-31)

- Fatehgarh Sahib District has a population of 6,00,163 comprising of 3, 20,795 males and 2,79,368 females.

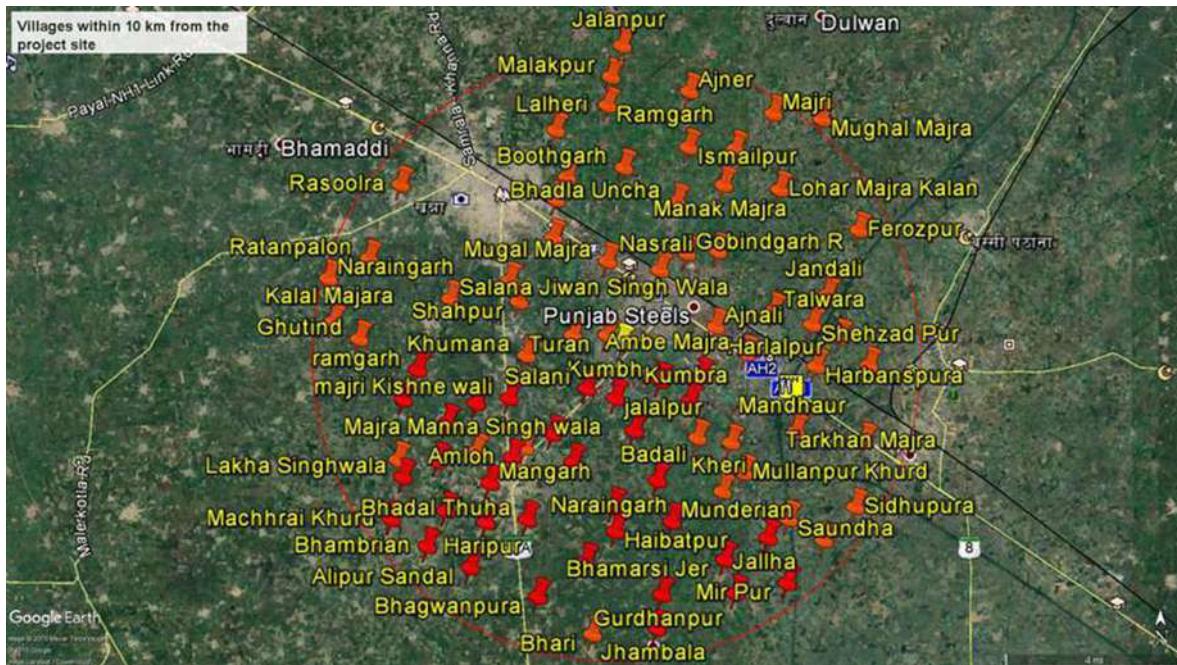


- Fatehgarh Sahib District ranks 19<sup>th</sup> in area and 19<sup>th</sup> in population.
  - Amloh is the most populous and Khamanon is the least populous tehsil.
  - Average population size of a village in the district (938) is lower than that of State (1,425).
  - The sex ratio in the district (871) is lower than the State (895). It ranks 19th among the district in the State.

Amloh is a Tehsil located in Fatehgarh Sahib district of Punjab. It is one of 4 Tehsils of Fatehgarh Sahib district. There are 102 villages and 3 towns in Amloh Tehsil. As per the Census India 2011, Amloh Tehsil has 42,832 households, population of which 1,14,805 are males and 95,823 are females. The population of children between ages 0-6 is 23,942 which is 11.37% of total population.

### **3.10.4 DEMOGRAPHIC DETAILS OF THE STUDY AREA**

**Table 3.21** gives the demographic details of the study area in detail and villages within 10 km of study are shown in **Fig. 3.10**.



**Fig. 3.10 Villages within 10 km study area**

**Table 3.21: Demographic details within study area of 10 km**

S. No.	Village Name	District Name	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village
1.	Bhagwanpura (60)	Fatehgarh Sahib	156	909	461	448
2.	Alipur Sandal (68)	Fatehgarh Sahib	108	606	318	288
3.	Lakha Singhwala (21)	Fatehgarh Sahib	164	801	417	384
4.	Dharamgarh Urf Tarkhan Majra (20)	Fatehgarh Sahib	114	634	335	299
5.	Amloh (P) (26)	Fatehgarh Sahib	164	751	403	348
6.	Machhrai Khurd (76)	Fatehgarh Sahib	181	937	492	445
7.	Haripur (251)	Fatehgarh Sahib	44	248	126	122
8.	Bhaini Kalan (260)	Fatehgarh Sahib	124	650	355	295
9.	Chehlan (22)	Fatehgarh Sahib	87	428	231	197
10.	Aladadpura (24)	Fatehgarh Sahib	105	541	288	253
11.	Mangarh (25)	Fatehgarh Sahib	205	1167	623	544
12.	Khanian (23)	Fatehgarh Sahib	446	2046	1056	990
13.	Bhambrian (66)	Fatehgarh Sahib	245	1276	705	571
14.	Raipur Raian (19)	Fatehgarh Sahib	137	715	377	338
15.	Majra Manna Singh Wala (16)	Fatehgarh Sahib	116	523	252	271
16.	Bhadal Thuha (62)	Fatehgarh Sahib	688	3338	1775	1563

17.	Bhari (195)	Fatehgarh Sahib	461	2445	1287	1158
18.	Ghullo Majra (61)	Fatehgarh Sahib	109	577	306	271
19.	Haibatpur (35)	Fatehgarh Sahib	97	536	298	238
20.	Naraingarh (34)	Fatehgarh Sahib	197	1081	585	496
21.	Annian (29)	Fatehgarh Sahib	173	869	470	399
22.	Saunti (30)	Fatehgarh Sahib	496	2561	1340	1221
23.	Majri Kishnewali (14)	Fatehgarh Sahib	230	1194	649	545
24.	Ramgarh (292)	Fatehgarh Sahib	110	640	345	295
25.	Jalalpur (31)	Fatehgarh Sahib	160	870	462	408
26.	Salani (66)	Fatehgarh Sahib	403	2242	1204	1038
27.	Jhambala (55)	Fatehgarh Sahib	155	863	429	434
28.	Gurdhanpur (56)	Fatehgarh Sahib	151	735	385	350
29.	Bhamarsi Buland (52)	Fatehgarh Sahib	253	1431	754	677
30.	Bhamarsi Zer (57)	Fatehgarh Sahib	372	1915	1035	880
31.	Badali (38)	Fatehgarh Sahib	194	1021	556	465
32.	Baraunga Buland (32)	Fatehgarh Sahib	118	634	335	299
33.	Kumbhra (40)	Fatehgarh Sahib	214	1182	619	563
34.	Kumbh (67)	Fatehgarh Sahib	274	1392	755	637
35.	Chattarpura (68)	Fatehgarh Sahib	107	601	326	275
36.	Mirpur (192)	Fatehgarh Sahib	90	541	270	271
37.	Jallah (50)	Fatehgarh Sahib	337	1745	923	822
38.	Munderian (36)	Fatehgarh Sahib	99	541	264	277

39.	Sidhpur (130)	Fatehgarh Sahib	80	433	212	221
40.	Mandaur (45)	Fatehgarh Sahib	115	513	278	235
41.	Tarkhan Majra (134)	Fatehgarh Sahib	351	1674	895	779
42.	Majri Sodhian (307)	Fatehgarh Sahib	115	530	274	256
43.	Saundha (49)	Fatehgarh Sahib	166	851	441	410
44.	Mullanpur Kalan (40)	Fatehgarh Sahib	113	562	277	285
45.	Kheri (37)	Fatehgarh Sahib	145	865	455	410
46.	Fetehpur (39)	Fatehgarh Sahib	74	390	208	182
47.	Salana Jiwan Singh Wala (11)	Fatehgarh Sahib	718	3769	2049	1720
48.	Ghutind (164)	Fatehgarh Sahib	211	1129	615	514
49.	Kalal Majra (162)	Fatehgarh Sahib	136	701	379	322
50.	Naraingarh (257)	Fatehgarh Sahib	40	209	118	91
51.	Rattan Palon (161)	Fatehgarh Sahib	151	747	388	359
52.	Kahanpura (10)	Fatehgarh Sahib	157	876	470	406
53.	Turan (4)	Fatehgarh Sahib	488	2403	1440	963
54.	Badinpur (8)	Fatehgarh Sahib	346	1740	913	827
55.	Bud Gujran (6)	Fatehgarh Sahib	160	851	463	388
56.	Rasulra (237)	Ludhiana	528	2583	1365	1218
57.	Alaur (221)	Ludhiana	351	1632	854	778
58.	Bullepur (222)	Ludhiana	215	970	482	488
59.	Boothgarh (214)	Ludhiana	254	1190	616	574

60.	Rattanheri (220)	Ludhiana	281	1285	664	621
61.	Ramgarh (18)	Fatehgarh Sahib	227	1310	716	594
62.	Malakpur (208)	Ludhiana	182	989	520	469
63.	Lalheri (219)	Ludhiana	437	2278	1226	1052
64.	Jalanpur (207)	Ludhiana	183	999	543	456
65.	Ambe Majra (69)	Fatehgarh Sahib	378	1811	1025	786
66.	Ajnali (65)	Fatehgarh Sahib	909	4364	2511	1853
67.	Talwara (74)	Fatehgarh Sahib	301	1401	741	660
68.	Shehzadpur (179)	Fatehgarh Sahib	115	576	298	278
69.	Harbanspura (70)	Fatehgarh Sahib	422	2091	1125	966
70.	Khanpur (126)	Fatehgarh Sahib	226	1110	585	525
71.	Harlalpur (72)	Fatehgarh Sahib	166	855	471	384
72.	Nasrali (63)	Fatehgarh Sahib	4	19	9	10
73.	Dodheri (202)	Fatehgarh Sahib	568	2849	1497	1352
74.	Bhadla Uncha (212)	Ludhiana	232	1030	535	495
75.	Lohar Majra Kalan (200)	Fatehgarh Sahib	345	1827	979	848
76.	Ajner (205)	Fatehgarh Sahib	259	1424	733	691
77.	Fatehgarh Niwan (204)	Fatehgarh Sahib	393	1977	1072	905
78.	Mughal Majra (190)	Fatehgarh Sahib	1	8	4	4
79.	Ferozepur (78)	Fatehgarh Sahib	256	1367	732	635

80.	Ismailpur (210)	Ludhiana	119	648	340	308
81.	Jandali (206)	Ludhiana	352	1936	1029	907
82.	Bir Amloh (P) (27)	Fatehgarh Sahib	144	721	367	354
<b>Total</b>			<b>19,298</b>	<b>98,679</b>	<b>52,725</b>	<b>45,954</b>

The sociological aspects of the project area have been studied that include human settlements, demographic, socio economic aspects among others. The economic aspects include agriculture, industry and occupational structures of workers. The demographic and socio - economic details are described in the following sections:

1. There are around 82 villages within 10 km radius of the project area, with 11 villages falling under Ludhiana District headquarters and 71 villages under Fatehgarh Sahib District headquarters (as per administrative division). As per the latest Census of India data (2011), total no. of households in the project area is 19,298 (in no.) with total rural population of 98,679 (in no.) in the 83 identified villages. Further, of total population of 98,769 (in no.) 53.43% is male population and 46.56% is female population while, only 40.38% belong to Scheduled Caste, with no identified scheduled tribes in the 10 km radius of project area.
2. There are around 19 government pre-primary schools and 18 private pre-primary schools within 10 km radius of the project area. As per the latest Census of India (2011) data total no. of Government Primary School are 78, Private Primary School are 18, Government Secondary School are 8, Private Secondary School are 5, Government Middle school are 30 and Private Middle school are 13 respectively within 10 km radius of the project area. There are around 2 (in no.) Government Senior Secondary School and 3 (in no.) Private Senior Secondary school within 10 km vicinity of the project area. There are around 1 Private Art and Science Degree College, 1 Government Engineering College and 1 Private Engineering College within 10 km of the project location while there are no identified Medical Colleges and Management Institute within 10 km radius of the project area. As

per Latest Census of India data, total no. of community Health center are 4, Primary Health center are 3 and Primary Health sub center are 13.

3. Out of 82 villages, 48 villages are under Total Sanitation Campaign (ISC) Scheme whereas, only two of the villages within 10 km radius of the project area have community toilet complex (including Bath) for general public. Around 51 villages have community waste disposal system (house to house collection) and 2 villages of Fatehgarh Sahib District have the community Bio-gas or recycling of waste for production use. Majority of the villages have access to the telephone landline except 3 villages; all the villages have the telephone landline system. On the other hand, 82 villages with 10 km radius of the project area have the mobile phone coverage. 32 of 82 villages have the Public Bus Service facility available with them, except 43 village of Fatehgarh Sahib District and 7 villages of Ludhiana District; all the villages have Black Topped (Pucca) Roads. Except 2 villages of Fatehgarh Sahib District, none of the other villages have Commercial Banks available. 49 of the 82 villages have Self-help Groups (SHG) in their villages. All the villages within 10 Km radius of the project area have access to Power Supply for Domestic Use.

### **3.10.5. SOCIO- ECONOMIC BENEFITS OF THE PROJECT ACTIVITIES ON LOCAL COMMUNITY**

M/s Punjab Steels Pvt. Ltd., will employ around 80 persons from the local region, to ensure maximum benefit to the local qualified un-employed youth around the project site, with around a total investment of Rs. 10,099,988 annually, thus the local population will benefit at large with the operation of the project. Employment to local population will ensure to benefit them by improving their living standard and consequently economic development of the region.

Schedule of employment	Number	Average pay scale per day per person	Total wages of workers per day
Skilled workers	7	375.62	2,629.34
Semi- skilled workers	70	341.12	23,878.4
Supervisory/Managerial jobs	3	510.02	1,530.06

Schedule of employment	Number	Average pay scale per day per person	Total wages of workers per day
Total contribution to wages of employees/ per day.	80	345.89	27,671.2
Total contribution to wages of employees/ per year.		@27,671.2 * 365	<b>10,099,988</b>

(Source: As per Punjab Minimum Wage w.e.f September 1, 2018 to August 31, 2019)

Thus, there are many youth in the district of Fatehgarh Sahib who can be trained through capacity building for contributing towards the GDP improvement of the district as well as state of Punjab. Further, as literacy rate of Amloh is higher than the average literacy rate of Punjab. The availability of educated and qualified youth in the local region of the project site is promising. ITI students from local ITI Institutes can also be employed under the skilled people's employment. It is an effort to access or estimate, in advance, the social consequences that are likely to follow from specific policy actions and specific government action as resultant of proposed unit.

Summarized socio economic benefits are as under:

- With coming up of the expansion in project, the employment opportunities (direct as well as indirect) will increase and local people will be employed on priority basis as per their skills. Training will also be provided to the local people.
- People will get direct opportunity in the unit. Not only the direct employment but also the indirect employment will be created from industry related various activities.
- The indirect employment will also be created from transportation, from mushrooming of services, shops and retails etc.
- After getting employment, socio- economic status of people will be increased. They will be able to get basic amenities directly and indirectly from the proposed project.
- The raw material requirement will be primarily related to metallurgical industry through the local market. Thus it will encourage the trade in the local market and in turn will help in the development of the area.
- Local people will be employed hence, it will not cause any stress on the community infrastructure, or any social stress, due to changing patterns of social interaction

- Increased income security will contribute to the empowerment of the most vulnerable sections of the society.
- It is a long term project, therefore it will bring avenues for long term jobs.
- Group insurance, free medical facilities, ESI and EPF will be provided to the employees.
- PPE's are being provided to the workers for safety.
- Indirectly, the expansion project will help the government by paying different taxes (sales tax, excise duty, etc.) from time to time, which is a part of revenue and thus, will help in development of the region.

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## **CHAPTER 4.0**

### **ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

#### **4.1 INTRODUCTION**

Environmental impact in the study area is any alteration of environmental conditions or creation of new set of environmental conditions, adverse or beneficial, caused or induced by the impacts of project. Prediction involving identification and assessment of potential impacts of the project on surrounding environment is a significant component of EIA studies. The likely impacts of various activities of the project on the environment were identified. These impacts were assessed for their significance based on the background environmental quality in the area and the magnitude of the impact. All components of the environment were considered and wherever possible impacts were evaluated in quantitative/qualitative terms. Several scientific methods are available to predict the impact of project on environmental factors such as water, air, noise, land, ecological, socio-economic. Such predictions are superimposed over base line environmental status to derive post projected scenario of the environmental conditions. The resultant (post-project) quality of environmental parameters is reviewed with respect to the permissible limits. Based on the impacts thus, predicted preventive mitigation measures were formulated and incorporated in the environmental management plan to minimize adverse impacts on environmental quality during and after expansion of project execution.

The environmental impacts can be categorized as primary and secondary. Primary are those which are directly attributed to the project and secondary impacts are those which are indirectly induced due to primary impacts and include those associated with investment & socio-economic status. Since for expansion, there is replacement of the existing 2 IF's with 2 new Induction Furnaces of capacity 15 TPH each. However, the rolling mill remains even after expansion. So, no construction work is involved in expansion of the project. As, the expansion will be done within the same existing sheds. Thus, impacts on environmental parameters during operational phase have been studied to estimate the impacts on environment. These impacts are continuous warranting built in permanent measures for mitigation and monitoring.

Operation phase of the project involve various activities which will have an impact on some or other environmental parameters. The impacts have been predicted for the industrial project,

after expansion assuming that the pollution due to the existing activities has already been covered under baseline environmental monitoring.

## 4.2 IDENTIFICATION & CHARACTERIZATION OF IMPACTS

Wastes and pollutants generated due to various activities of the project cause impacts on different environmental attributes. The major project activities and the anticipated environmental impacts of the expansion of project are discussed below under the following categories:

- Impacts and mitigation measures due to project location.
- Impacts and mitigation measures due to project design.
- Impacts and mitigation measures during construction.
- Impacts and mitigation measures during operation.

### 4.2.1 IMPACTS & MITIGATION MEASURES DUE TO PROJECT LOCATION

The expansion will be carried out within the existing sheds only. As the expansion involve replacement of existing 2 IF's with 2 new IF's of capacity 15 TPH each. However, the rolling mill remains same even after expansion. Since, no additional land is required. The project is located in notified industrial zone of Mandi Gobindgarh and proposed establishment will be limited to project boundary. Thus, no major and significant impact anticipated to project location on population and sensitive receptors is envisaged. However, vehicular load on road network for transportation of materials and machinery and subsequent air and noise emissions can exert additional load on baseline environmental conditions. These impacts will be identified by traffic survey, emissions inventory and air quality modeling for additional loads on environmental emissions to be carried out in additional studies as well as subsequent section respectively.

### 4.2.2 IMPACTS & MITIGATION MEASURES DUE TO PROJECT DESIGN

The impacts on air quality from any project depends on various factors like design capacity, configuration, process technology, raw material, fuel to be used, air pollution control measures, operation and maintenance. The expansion plan envisaged state of art technology, presently available in the country and thus, no anticipated impacts are envisaged due to project design. Further, designing of APCD has been done by PSCST, Chandigarh which is recent state of art technology. Copy of the feasibility report of APCD prepared by PSCST is enclosed as

**Annexure 9.** Hence, no significant anticipated impacts are envisaged due to project design.

#### **4.2.3 IMPACTS & MITIGATION MEASURES DUE TO CONSTRUCTION PHASE**

Infrastructure facilities like roads, boundary, drainage system etc. already exist within the project. Since, the expansion involves replacement of the existing 2 IF's with 2 new Induction furnaces of capacity 15 TPH each within the same existing sheds. Thus, no major construction work is involved except foundation for new IF's. Thus, no impact due to construction activities is envisaged.

#### **4.2.4 IMPACTS & MITIGATION MEASURES DUE TO OPERATION PHASE**

The operations of 2 no's Induction Furnaces of capacity 15 TPH each and rolling mill may result in higher particulate matter and gaseous emissions in surroundings. Higher production may affect the environment in varying degrees through natural resources depletion viz. water consumption, release of particulates and gaseous emissions, contamination of water body, run-off from waste storage area etc. During operational phase; air, water and noise may be affected due to material usage and manufacturing process and associated activities in general. Associated activities e.g. transportation of materials, operations of workshop, canteen etc., may affect air, water and noise environment. Green belt development will have a positive impact not only on flora and fauna but also on air quality, noise and soil characteristics.

Positive impacts on socio-economic environment are expected due to employment and further infrastructure development.

Induction Furnaces are equipped with side suction hood as effective capture of dust and fumes followed by best filters as a control measures to reduce the air emissions within prescribed limit.

Water spraying on raw material handling and on top soil to control fugitive emission. Plantation on plant boundary to be arranged to control noise and dust emissions across the boundary.

**Table 4.1: Environmental Impacts from operational phase**

Activity	Environmental Attributes	Cause	Impact Characteristics			
			Nature	Duration	Reversibility	Significance Mitigative measures
<b>Induction Furnace</b>						
<b>Operation of Induction Furnaces</b>	Air pollution & Thermal pollution	In Induction Furnaces, the melting of scrap and ferro alloys take place. During melting there may be some fugitive emission.	Direct Negative	Long Term	Reversible	For proposed Induction Furnaces, side suction hood system will be provided; compartmentalized Pulse Jet Filter Bag duct & ID Fan will be provided.
	Noise Pollution	Due to furnace operation	Direct Negative	Long Term	Reversible	Management will ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust & noise. Green belt development at plant periphery near boundary wall.
	Solid Waste Generation	During manufacturing process slag will be generated	Direct Negative	Long Term	Irreversible	Recovery of metals from the slag is being practiced and for remaining slag, agreement has been done with M/s SH Infrastructure for manufacturing of ready mix concrete.
<b>Operation of domestic</b>	Water Pollution	Operation of washroom, toilets-	Direct Negative	Long Term	Reversible	Wastewater will be treated in the proposed STP of capacity 5 KLD to

Activity	Environmental Attributes	Cause	Impact Characteristics			
			Nature	Duration	Reversibility	Significance Mitigative measures
<b>utilities</b>		Wastewater generation				be installed within project premises.
<b>Operation of DG Sets</b>	Air Pollution	Flue gas emission	Direct Negative	Short Term	Reversible	DG will be operated in case of power failure only. Silent DG sets shall be installed.
	Noise Pollution	Generation of noise during DG set operation	Direct Negative	Short Term	Reversible	DG Sets will have acoustic enclosure to minimize noise.
<b>Transportation of Ferro Alloys to the project location</b>	Air pollution (Dust & Gases)	Haul road dust emissions. Gaseous emissions due to vehicle exhaust	Direct Negative	Short Term	Reversible	Water sprinkling is being done at material unloading point. Regular vehicle maintenance and pollution check is being done. Vehicles having valid Pollution Under Control Certificate are permitted. Besides this management, ensure proper usage of personal protective equipment by the workers to avoid any exposure to dust. Also, dust suppression system will be provided at material handling area
	Noise Pollution	Noise pollution due	Direct	Short	Reversible	Low; unloading is done in covered

Activity	Environmental Attributes	Cause	Impact Characteristics			
			Nature	Duration	Reversibility	Significance Mitigative measures
		to unloading of raw material and vehicle movement	Negative	Term		area from low height. PPEs have been provided to the workers.
<b>Development &amp; maintenance of Green Belt</b>	Reduction in Air Pollution & Noise Pollution	Plantation of trees within premises to cover 33% of the area	Direct Negative	Long Term	Reversible	Positive impact due to development of proper green belt along the periphery of the premises. This will act as barrier for air emission and noise.
<b>Employment Generation</b>	Socio-economic impact	More employment in the area	Direct Positive	Long term	Irreversible	Positive Impact due to direct employment of persons from the nearby area. Substantial benefits in the form of contracts to local agencies for different services. Employment generation in transport sector for transportation of raw material and finished goods.

**Table 4.2: Impact Identification Matrix**

No.	Activities	Environmental Attribute						
		Air	Noise	Water	Land & Soil	Ecology	Socio-Economic	Aesthetics
<b>Operational Phase</b>								
1.	Operation of Induction Furnace	√	√		√			√
2.	Operation of Continuous Casting Machine (CCM)	√	√	√	√			√
3.	Operation of Rolling Mill	√	√	√	√			√
4.	Handling of Ferro Alloys	√	√					
5.	Operation of domestic utilities			√	√			
6.	Operation of the DG sets	√	√		√			
7.	Transportation of raw materials/ products	√	√					
8.	Development of greenbelt					√	√	√
9.	Employment generation						√	

## **4.3 IMPACT DURING OPERATION PHASE**

### **4.3.1 IMPACT ON AIR**

#### **4.3.1.1 Emission from Point Source (Stack Emissions)**

Particulate dust, flue gases and vapor emissions shall be there during the operation of induction furnaces, DG sets, scrap handling machinery and cranes and vehicles.

#### **4.3.1.2 Emission from Area Source (Fugitive Emissions)**

Fugitive emissions are expected from Induction Furnaces during melting operations, during unloading and transportation of raw materials. The vehicular exhausts and other related activities will result in air pollution.

#### **4.3.1.3 Air Pollution – Impacts identification and Mitigation Measures**

##### **Air Quality Modeling**

The extra load on the atmosphere by way of releasing air pollutants like particulate matter ( $PM_{10}$ ,  $PM_{2.5}$ ), sulphur dioxide, oxides of nitrogen, carbon monoxide from induction furnace and Diesel Generator sets have been taken to assess the impacts on its surroundings. Entry of pollutants into the atmosphere occurs in the form of gases or particles. Continuous mixing, transformation and trans-boundary transportation of air pollutants make air quality of a locality unpredictable. Dispersion estimates are determined by using distribution equations and/or air quality models.

Gaussian plume equation is simple and widely used to identify the variation of pollutant concentration away from the center of the plume. The distribution equation determines ground level pollutant concentration based in time-averaged atmospheric variables (e.g. temperature, wind speed). One of the dispersion model developed base on Gaussian plume equation was AERMOD (The America Meteorology Society-Environmental Protection Agency Regulatory Model) which is recommended for air quality simulations by the US EPA (2005). These models stand for the state-of-the-science in air quality modeling and provide powerful features to simulate various modeling situation and considerations.

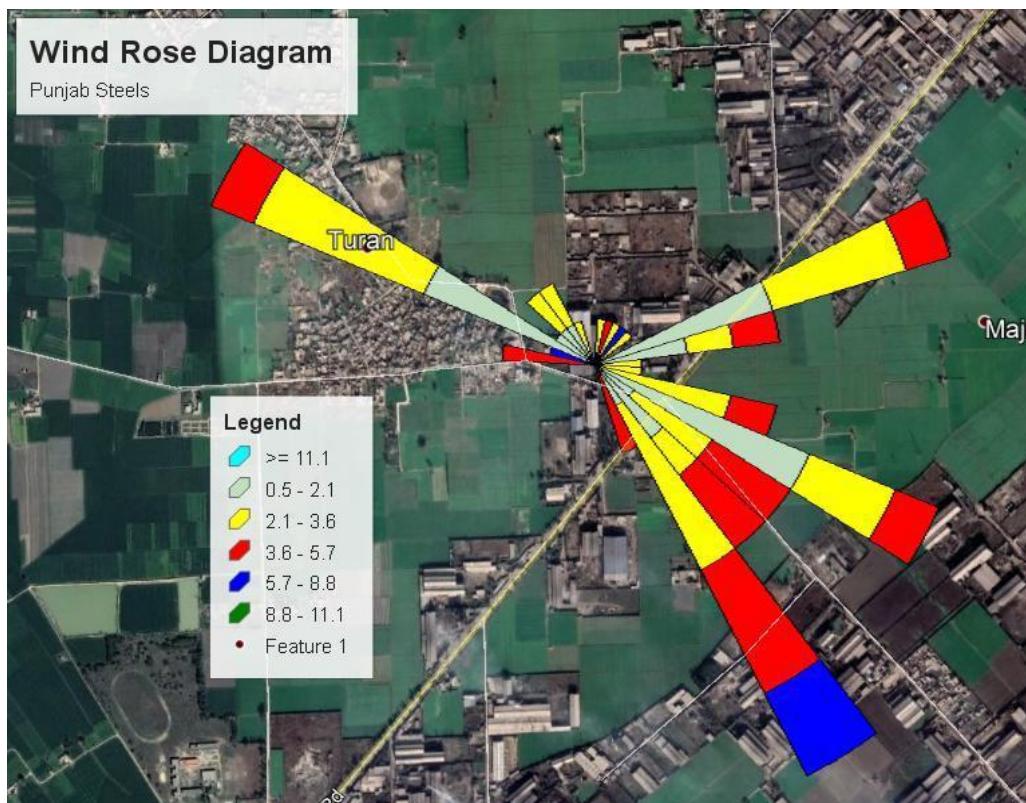
M/s Punjab Steels proposes to install 2 IF's of capacity 15 TPH each replacing existing 2 IF's of capacity 4 TPH & 6 TPH; and 2 DG sets of 125 kVA capacity each. The project is located at Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh

Sahib, Punjab. The project is in a semi-urban region. Terrain is mainly flat.

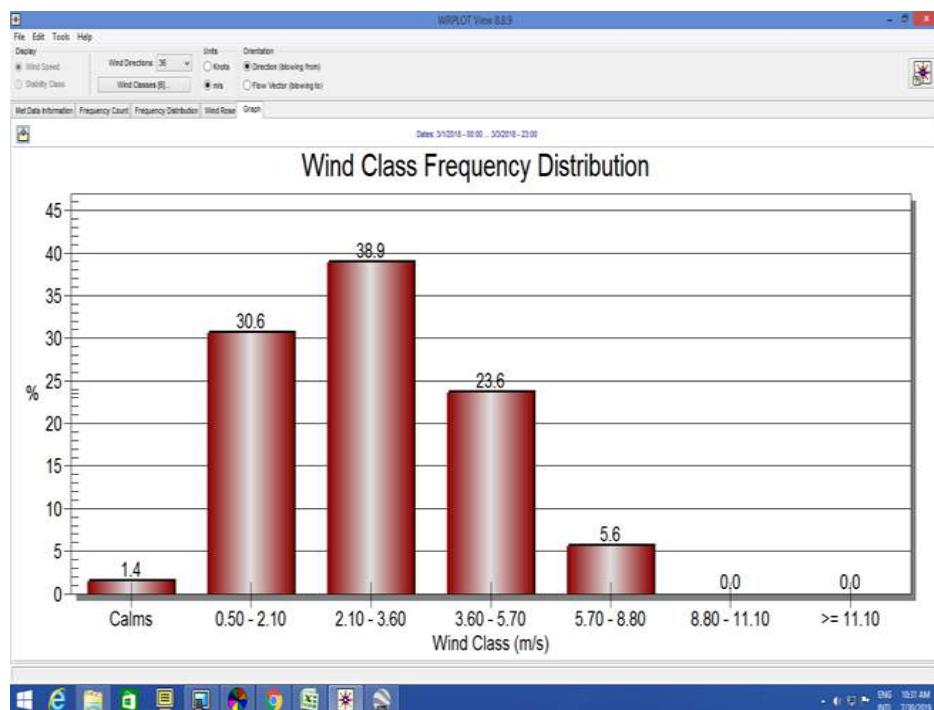
### **Meteorological Data**

AERMOD model requires hourly surface data values for wind speed, wind direction, temperature, relative humidity and cloud cover. Both data files for the surface and profile files were then used to generate the meteorological file required for by the AERMOD dispersion model using the AERMET meteorological pre-processor program. This AERMET program has three stages to process the data. The first stage extracts meteorological data and assesses data quality through a series of quality assessment checks. The second stage merges all data available for 24-hour period and writes these data together in a single intermediate file. The third and final stage reads the merged meteorological data and estimates the necessary boundary layer parameters for dispersion calculations by AERMOD.

The meteorological per-processed data was used to determine its corresponding Wind Rose plot. The Wind Rose shows the most pre-dominant wind direction from which the wind blows. This means that the emission plume will be dispersed mainly in that direction. The wind speed and direction for the period from 1<sup>st</sup> March to 31<sup>st</sup> May, 2018 were recorded on continuous basis during study period at project location. The percentage frequencies of occurrence of various wind speed classes in different directions were computed for recorded data on 24 hourly basis and presented in the form of Wind Rose plot (**Fig. 4.1**). The wind rose diagram shows the predominant winds are mainly flowing from South East, with the secondary wind direction being from the North-West. Calm conditions are observed for 1.4% of the total time.



**Fig. 4.1: Wind Rose Diagram at the project location**



**Fig. 4.2: Wind Class & Frequency Distribution at the project location**

## Emission Sources

The emission sources are mainly the induction furnaces and the diesel generator sets. The details are as given below in **Table 4.3**.

**Table 4.3: Details of Major Emission Sources during Project Operation**

S. No.	Input Parameter	Proposed I.F. No. 1	Proposed I.F. No. 2	Existing	After Expansion	
		Normal Cond. (APCD Functional)	Normal Cond. (APCD Functional)	DG No. 1	DG No. 2	DG No. 3
1	Capacity	15 TPH	15 TPH	125 KVA	125 KVA	125 KVA
2	Stack height	18 m	18 m	9 m	9 m	9
3	I.D. at top (m)	1.1 m	1.1 m	0.20	0.20	0 . .
4.	Exit Temperature (K)	120°C	120°C	120°C	120°C	120° C
5.	Ambient Temperature (K)	40°C	40°C	35°C	35°C	3 5 °
6.	Gas Exit velocity (m/s)	20 m/s	20 m/s	15m/s	15m/s	15m/s
7.	PM2.5 (kg/hr)	2.2	2.2	0.05	0.05	0
8.	PM10 (kg/hr)	3.7	3.7	0.08	0.08	0
9.	SO2 (kg/hr)	2.5	2.5	0.11	0.11	0
10.	NOx (kg/hr)	15.7	15.7	1.02	1.02	1
11.	CO (kg/hr)	4.4	4.4	0.40	0.40	0
12.	Baseline Avg. PM2.5			73.94		
13.	Baseline Avg. PM10			133.54		
14.	Baseline Avg. SO2			11.39		
15.	Baseline Avg. NOx			25.66		
16.	Baseline Avg. CO			BDL <1.5 mg/m <sup>3</sup>		

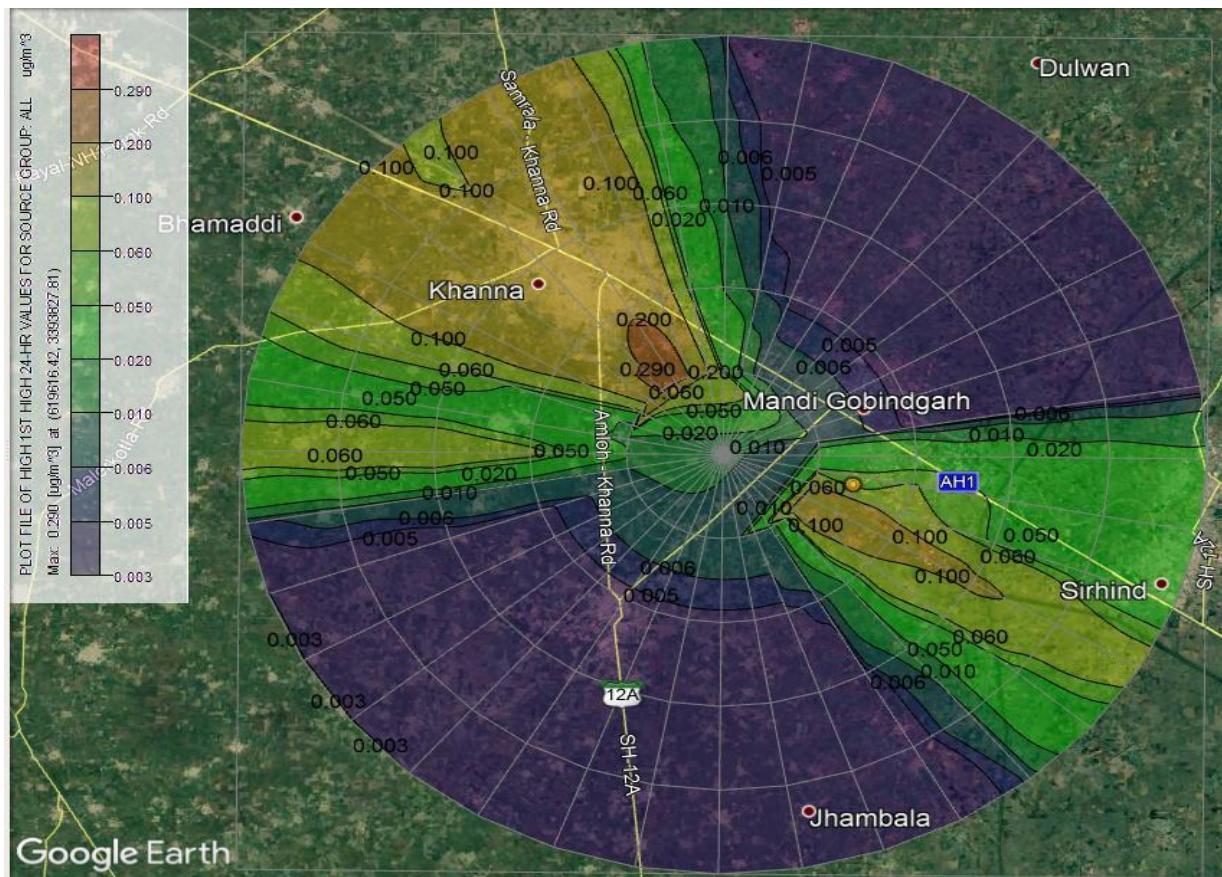
## Prediction of Air Pollutants

The AERMOD View is being used for the prediction of ground level concentrations of major air pollutants. The results of prediction during normal conditions are given below:

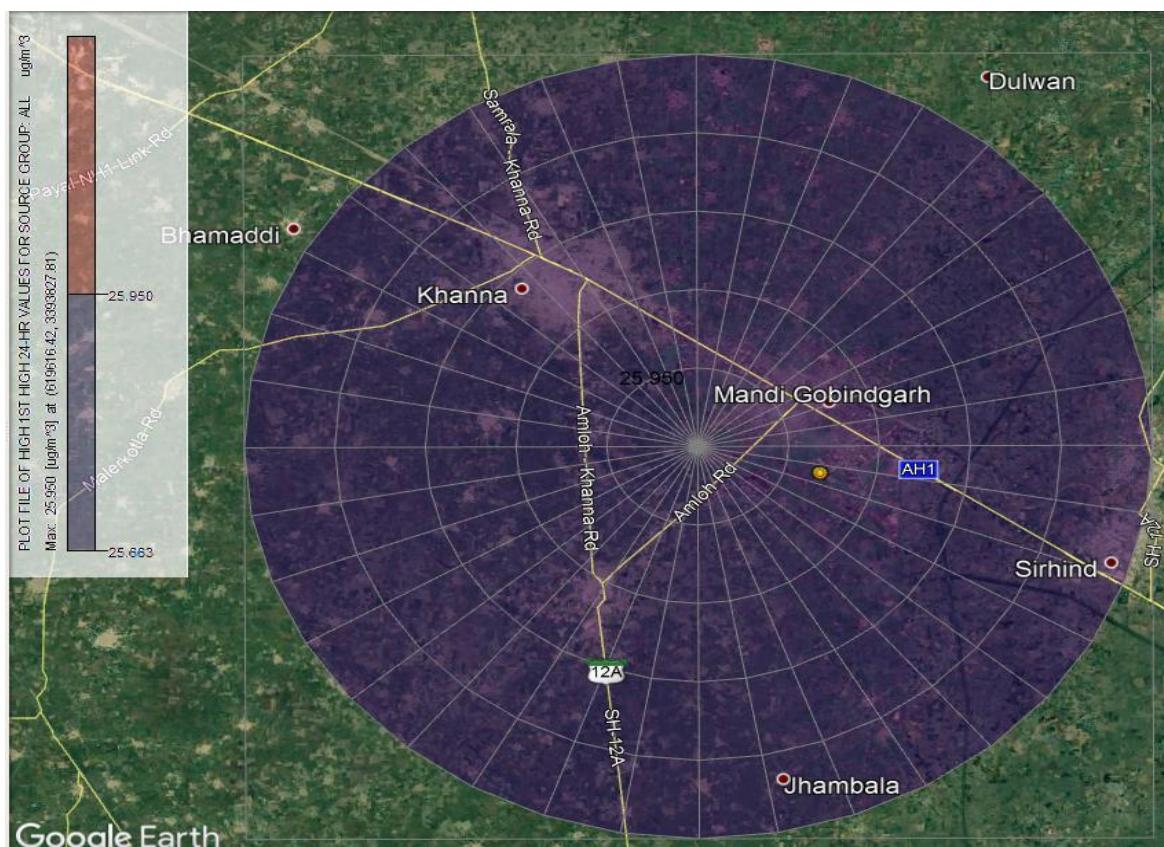
## Prediction of GLC for NOx

The maximum incremental pollutant concentration near the source and within 500m is 0.290  $\mu\text{g}/\text{m}^3$ , beyond which is rapidly gets diffused. An Ambient value of 25.950  $\mu\text{g}/\text{m}^3$  is observed in 10km influence zone, this graph does not show much variance due to very small difference.

The small incremental 0.290  $\mu\text{g}/\text{m}^3$  gets dispersed fast within 1000 m distance of the sources, indicating no impact of  $\text{NO}_x$  on any sensitive receptors. All values are much below CPCB limits.



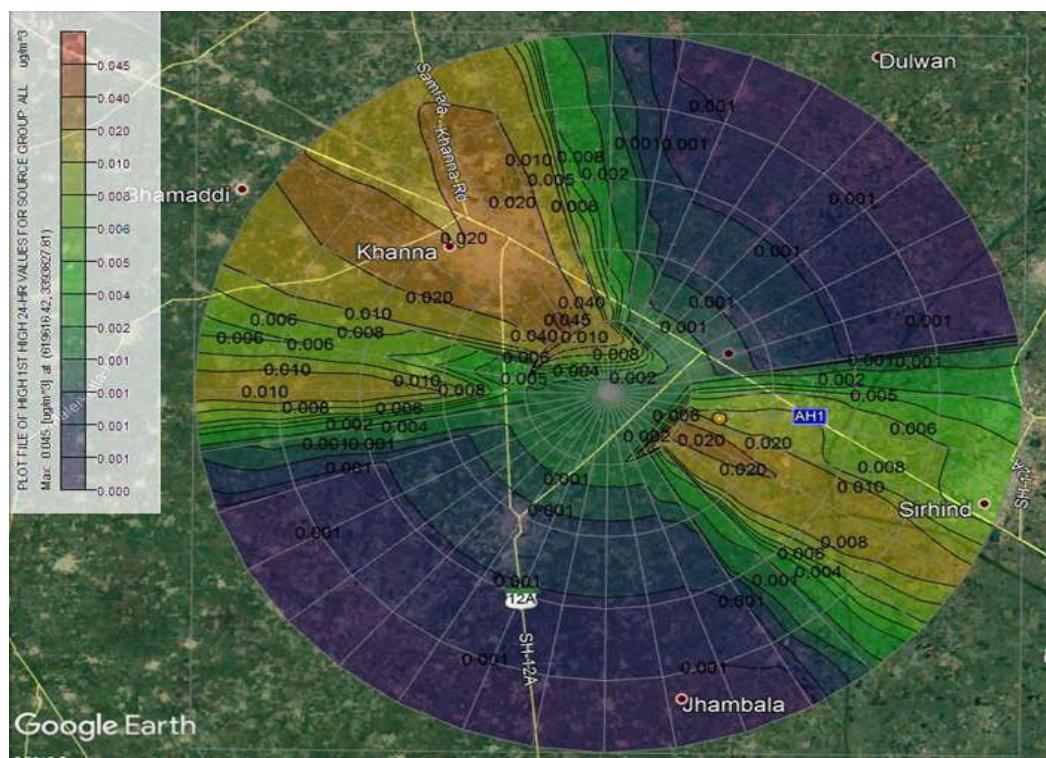
**Fig. 4.3: Incremental value of NOx within 10 km Influence Zone in normal condition**



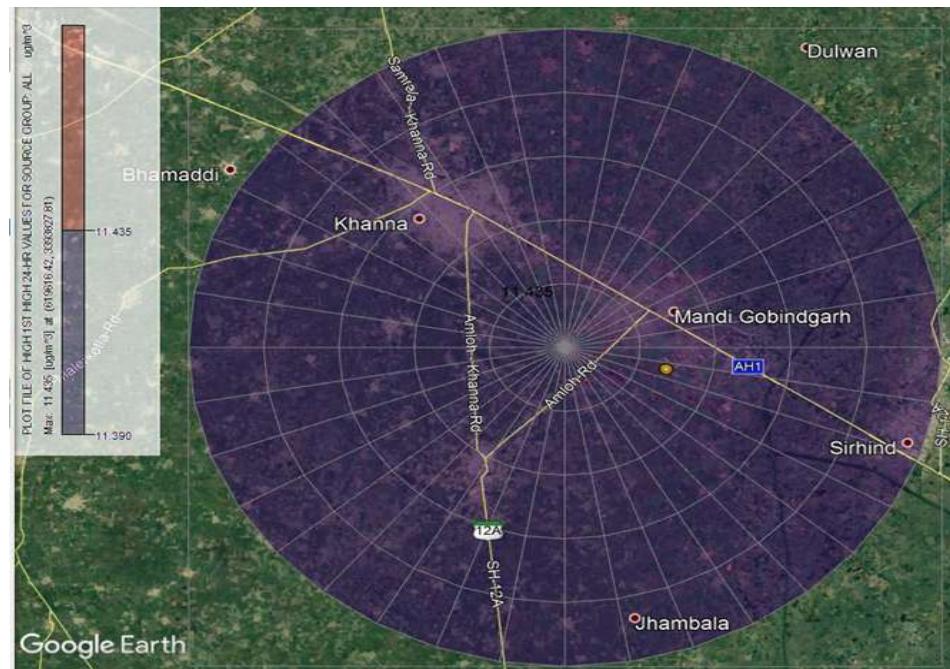
**Fig. 4.4: Total value of NOx within 10 km Influence Zone in normal condition**

### Prediction of GLC for SO<sub>2</sub>

The maximum incremental pollutant concentration near the source and within 500 m is 0.045  $\mu\text{g}/\text{m}^3$ , beyond which is rapidly gets diffused. An Ambient value of 11.435  $\mu\text{g}/\text{m}^3$ , is observed in 10km influence zone which is very near to the existing value, this graph does not show much variance due to very small difference. All values are much below CPCB limits.



**Fig. 4.5: Incremental value of SO<sub>2</sub> within 10 km Influence Zone in normal condition**

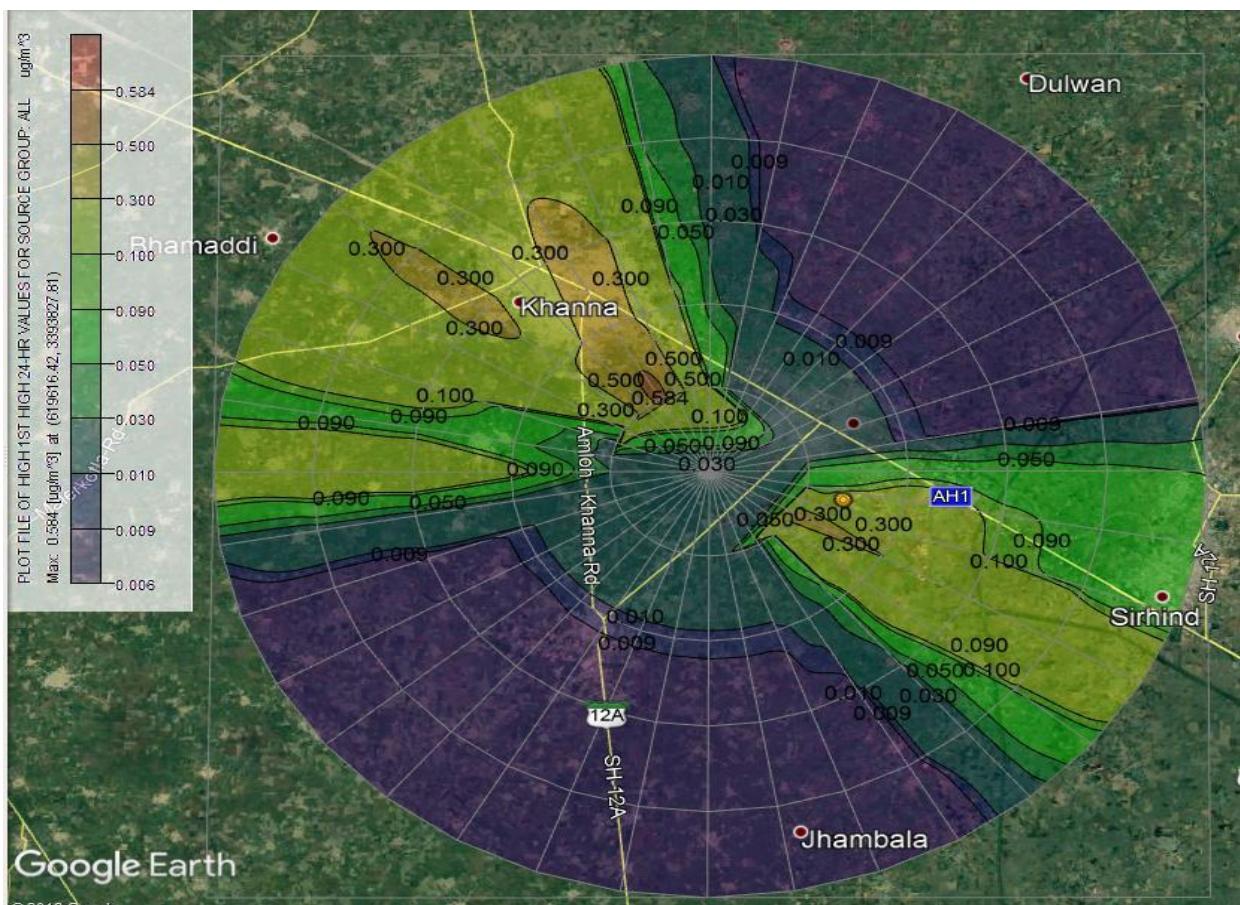


**Fig. 4.6: Total value of SO<sub>2</sub> within 10 km Influence Zone in normal condition**

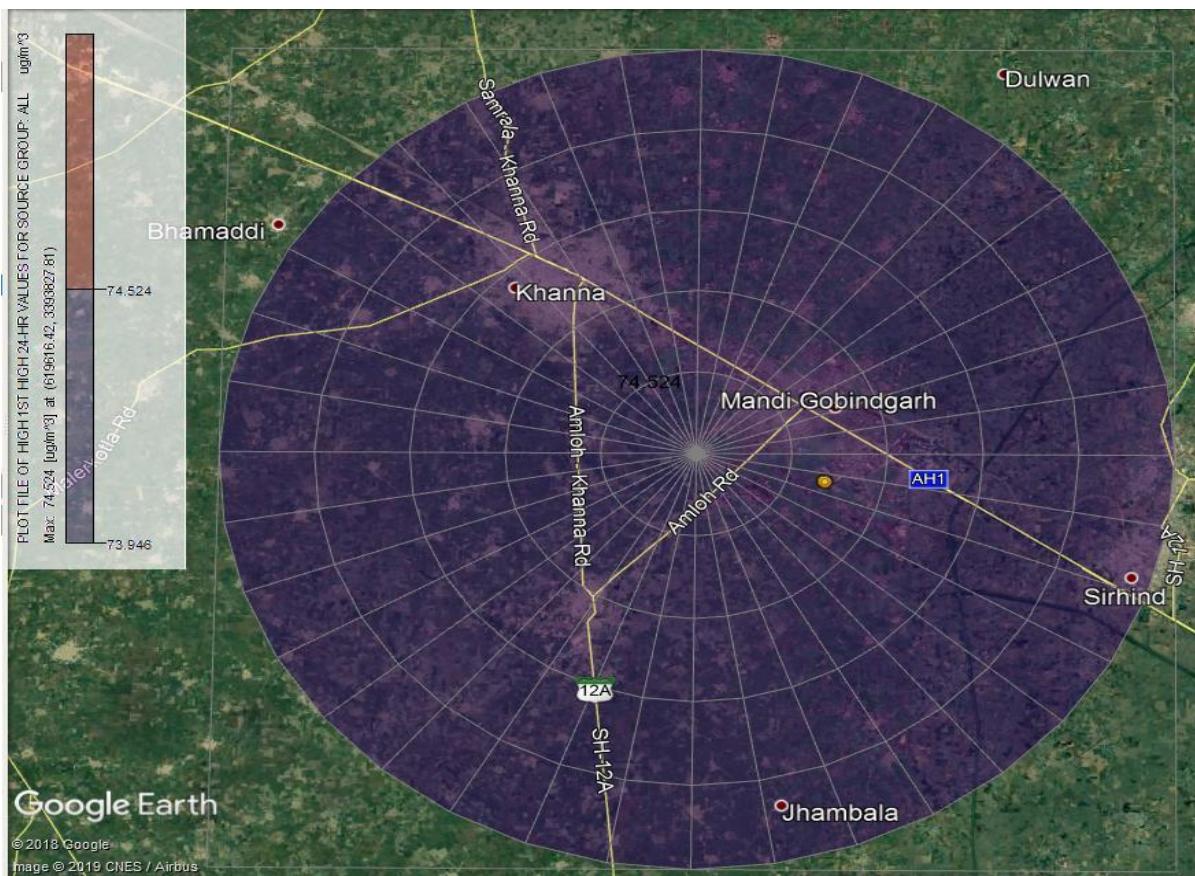
### Prediction of GLC for PM<sub>2.5</sub>

The maximum incremental pollutant concentration near the source and within 500m is 0.038 µg/m<sup>3</sup>, beyond which is rapidly gets diffused. An Ambient value of 73.978 µg/m<sup>3</sup>, is observed in 10km influence zone which is the existing value, this graph does not shows much variance due to very small difference. All values are much below CPCB limits.

In worst conditions (APCD failure), the maximum incremental pollutant concentration near the source and within 500m is 0.584 µg/m<sup>3</sup>, beyond which is rapidly gets diffused. An Ambient value of 74.524 µg/m<sup>3</sup>, is observed in 10km influence zone.



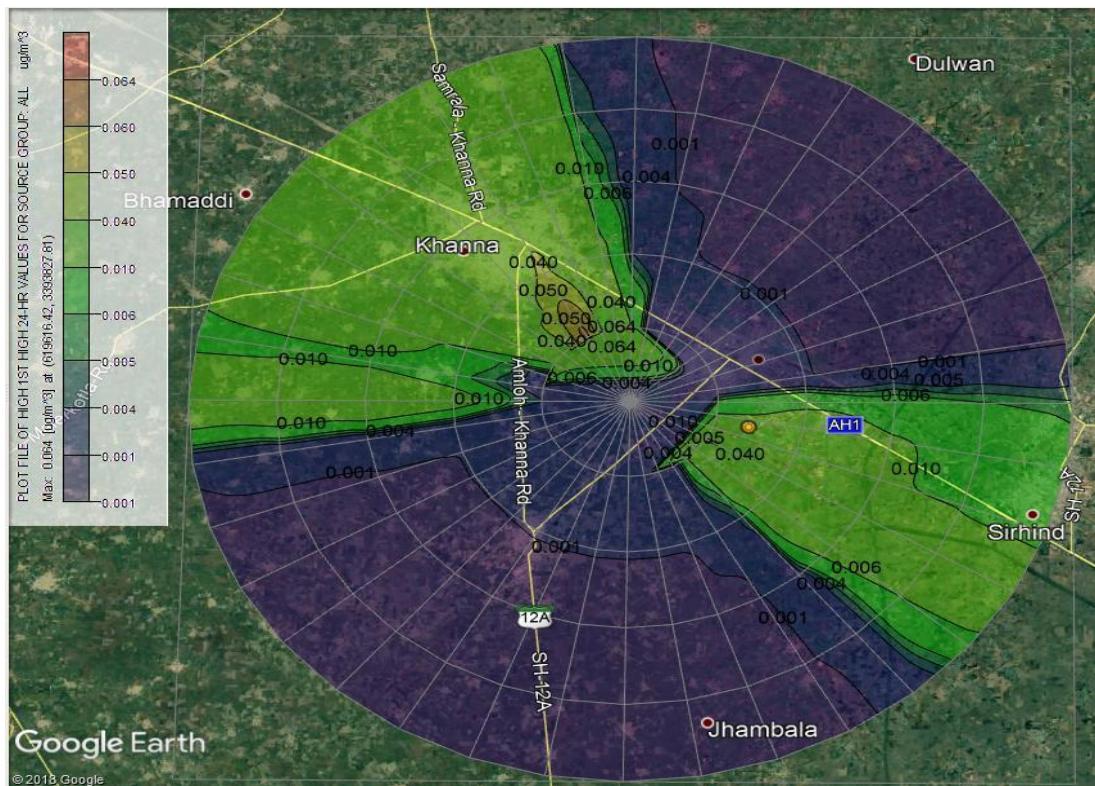
**Fig. 4.7: Incremental value of PM<sub>2.5</sub> within 10 km Influence Zone in normal condition**



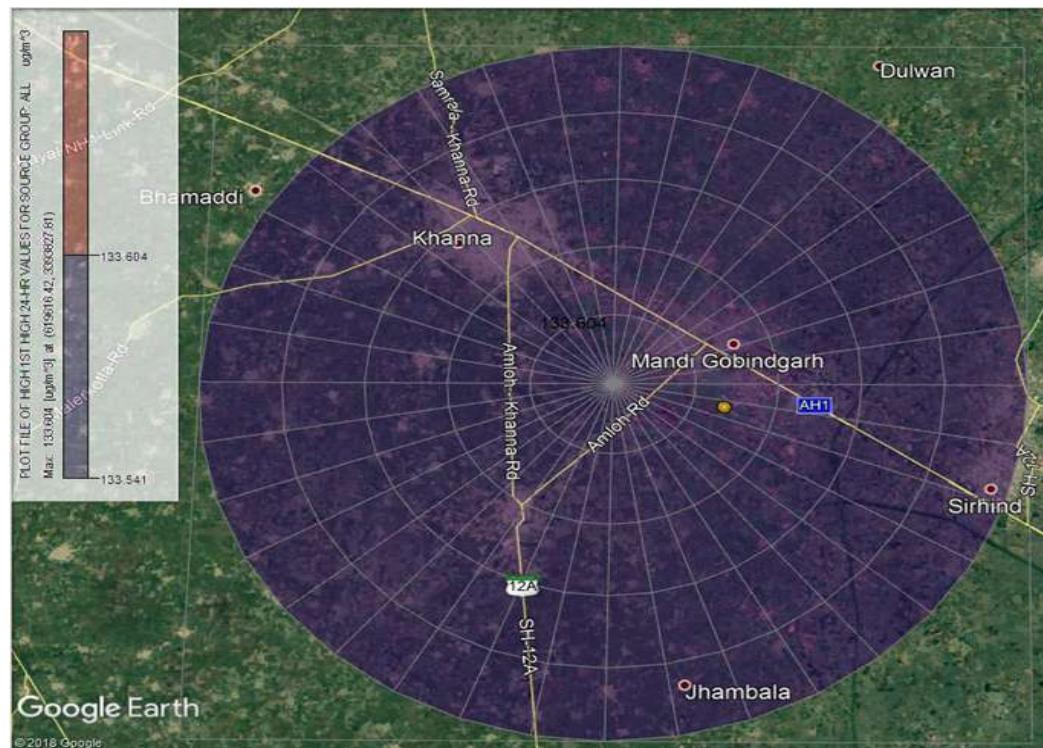
**Fig. 4.8: Total value of PM<sub>2.5</sub> within 10 km Influence Zone in normal condition**

#### Predicted GLC for PM<sub>10</sub>

The maximum incremental pollutant concentration near the source and within 500 m is 0.064 $\mu\text{g}/\text{m}^3$ , beyond which is rapidly gets diffused. An Ambient value of 133.604  $\mu\text{g}/\text{m}^3$ , is observed in 10km influence zone which is the existing value, this graph does not shows much variance due to very small difference. All values are much below CPCB limits. In worst conditions (APCD failure), the maximum incremental pollutant concentration near the source and within 500 m is 1.001  $\mu\text{g}/\text{m}^3$ , beyond which is rapidly gets diffused. An Ambient value of 134.541 $\mu\text{g}/\text{m}^3$  is observed in 10km influence zone.



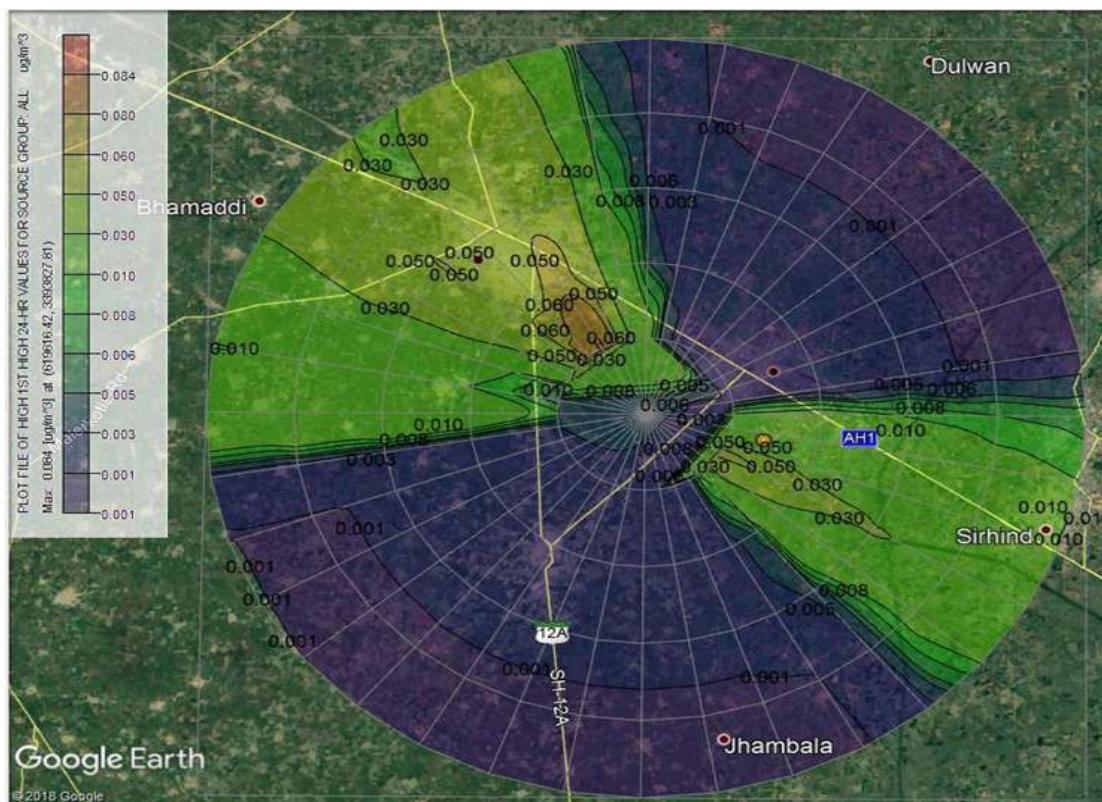
**Fig. 4.9: Incremental value of PM<sub>10</sub> within 10 km Influence Zone in normal condition**



**Fig. 4.10: Total value of PM<sub>10</sub> within 10 km Influence Zone in normal condition**

### Prediction GLC for CO

The maximum incremental pollutant concentration near the source and within 500 m is  $0.084 \mu\text{g}/\text{m}^3$  beyond which is rapidly gets diffused. All values are much below CPCB limits.



**Fig. 4.11: Incremental value of CO within 10 km Influence Zone in normal condition**

### CONCLUSION OF AIR QUALITY MODELING

The forecasting of air pollutants (SO<sub>2</sub>, NO<sub>x</sub>, PM and CO) emitted from industrial plant (Punjab Steels) to be expanded in Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, were studied through AERMOD View and local meteorological data were used to predict concentration of major air pollutants in the vicinity of the project in order to ensure compliance with the Indian standards (CPCB, 2009) for ambient air quality. Results findings indicate that after the implementation of the expansion project, concentration of air pollutants are found to be well below the permissible CPCB standards for ambient air quality except for PM<sub>2.5</sub> and PM<sub>10</sub>, which are slightly spilling the limits as the ambient values are already exceeding the prescribed standards. The results show that the project is not adding significant pollutants to the ambient air concentrations. Therefore, the proposed activity is not likely to have any significant adverse impact on the air environment in the vicinity of the project.

Implementing proper Environmental Management Plan along with mitigation measures like adaptation of Air Pollution Control Equipment's, water sprinkling, tree planting and developing ponds around the project area further minimize the pollution and protect the environment from the adverse effects.

**Table 4.4: Details of the Air Pollution Control Measures**

S. No.	Unit	Type of Pollution Control System	No. of Stacks	Stack Height (m)
1.	Existing 2 no. Induction Furnaces of capacity 4 TPH and 6 TPH	<b>Primary &amp; Secondary Emissions</b> <ul style="list-style-type: none"> <li>• Bag filter on the Induction Furnaces.</li> <li>• Side Suction Hood</li> <li>• Compartmentalized Pulse Jet Bag Filter with duct &amp; ID fan as per the specifications</li> </ul>	2	15
2.	After expansion, 2 no. Induction Furnaces of capacity 15 TPH each	<b>Primary &amp; Secondary Emissions</b> <ul style="list-style-type: none"> <li>• Side Suction Hood</li> <li>• Compartmentalized Pulse Jet Bag Filter with duct &amp; ID fan as per the specifications</li> </ul>	2	18

#### 4.3.1.4 General Mitigation Measures

The impacts of fugitive emissions in the industry are controlled by following measures:

- Haulage roads are sprinkled with wastewater at regular intervals for which water tankers with sprinkler arrangement are deployed.
- Trucks carrying raw material are covered with tarpaulin to prevent spreading of dust during transportation.
- Green belt and greenery development around storage yards, around plant, either side of roads and around the periphery of the industry.
- Water spray and sprinkling is practiced at unloading locations.
- Dust respirators are provided for the people working near dust generating locations.
- All internal roads in the premise are paved.
- Speed limit of 10 km/hr. is enforced for vehicles in the plant premises to prevent road dust emission.

#### **4.3.1.5 Specific Mitigation Measures for Dust Extraction and Control System**

##### **Raw Material Handling**

The industry will implement the following recommendations to make the containment system effective:

- i. Use shredded scrap for uniformity of size
- ii. Bundling/pressing the scrap to increase bulk density
- iii. Provide side suction hood in place of canopy hood
- iv. Stop the use of man-cooler
- v. Up-grade existing air pollution control device
- vi. Cover the sides of shed to the maximum possible extent to avoid cross winds.

##### **Induction furnace**

- i. Use of Side Suction Hood for containment of dust emissions as it does not interfere during charging of raw materials with magnet & pusher.
- ii. Compartmentalized Pulse Jet Bag Filter (offline cleaning) with spark arrestor and ID fan to achieve the emission levels (SPM <150 mg/Nm<sup>3</sup>)

##### **Charging & Melting**

The best practice adopted for better and efficient operation of melting & charge as:

- Be clean (free from oil, grease, rust, paint etc.)
- Be as dense as possible for faster melt rate, lesser energy consumption and less pollution levels
- The furnace should be filled up to the desired coil height for effective & faster heat transfer leading to reduction in specific energy consumption (2-3%) with less pollution levels
- Be segregated for harmful ingredients like explosives
- The length of the scrap being charged into the furnace should be less than the size of the crucible.
- Have less sharp pointed edges, particularly in case of heavy and bulky scrap.

##### **Maintenance of Bag Filter**

- Check pressure drop after hood and before spark arrestor regularly.
- Maintain optimum pressure drop 3-6" across the bag house as the pressure drop in excess of 6" indicates choking of the bag filter and less of 3" indicates puncture of bags.
- The filter bags shall be inspected as per preventive maintenance schedule

- Maintained the temperature in the range of 100-120 °C as temperature in excess to 140 °C would lead to burning of the bags

### **Collection & Disposal of Dust**

- The rotary air lock to be provided in the hopper of spark arrestor, cyclone(s) and bag house for collection of dust.
- Dust should be removed periodically as per preventive maintenance schedule to prevent re-entrainment of dust.

<b>Preventive Maintenance Schedule for APCD</b>	
<b>Daily</b>	
1. Check visible suction at hood	
2. Check visible stack emissions	
3. Record differential pressure across filter bags, ID Fan, hood	
4. Check air filter clog indicator	
5. Dust collection from spark arrester & bag filter	
<b>Weekly</b>	
1. Record compressed air pressure	
2. Clean compressed air filter	
<b>Monthly</b>	
1. Check bag house for leaks	
2. Check flanges at duct joints / bends for leaks	
3. Check underground trench for cleaning	
<b>Semi-Annually</b>	
1. Check / replace oil filter & air filter of compressor as recommended running hours	
2. Check fan blades for dust build up	
3. Check condition of bags	
4. Check fan, V-belts etc.	
<b>Annually</b>	
1. Check duct for dust build up	

### **4.3.2 IMPACT ON WATER RESOURCES/WATER POLLUTION**

Total fresh water requirement after the expansion of project is estimated to be 90 KLD. Major portion of this water is utilized as make-up to the cooling water systems which will be drawn from

bore well. Wastewater generation from the operation will be due to blow downs from cooling towers and effluent from service water uses like plant washings, leakages, run-off from raw material handling areas, run-off from solid waste storage and handling areas. The wastewater from toilets, washrooms and canteen shall be treated in proposed STP of capacity 5 KLD.

#### **4.3.2.1 Mitigation Measures – Water Pollution**

The utilization of wastewater after treatment in the STP will be carried out in green area for horticulture purpose within project premises, hence zero discharge is maintained. Further, in order to compensate the use of ground water: pond has been adopted for rain water recharging. NOC has been taken for pond adoption from Village sarpanch and is attached as **Annexure 19**.

#### **4.3.3 IMPACT ON NOISE**

The noise levels near the sources such as raw material handling yard, Induction Furnace etc. will be higher during the operation phase. The noise levels at source like Induction Furnace are anticipated to go upto 85 dB(A). However, the noise levels will attenuate to the background values beyond the plant boundary and the levels are not expected to rise beyond 55 dB(A) in the study area. The damage risk criteria as enforced by OSHA and CPCB to reduce hearing loss, stipulates the noise levels up to 85 dB(A) as acceptable limits for 8 hour working shift per day. In case of the operation of heavy machinery/ cranes for scrap handling and storage, noise levels may exceed the prescribed limits in certain work places like scrap yard, material loading/unloading and feeding to furnace.

##### **4.3.3.1 Mitigation Measures - Noise**

All the workers engaged at and around high noise generating sources shall be provided with ear protection devices like ear mufflers/plugs. Their place of attending the work will be changed regularly so as to reduce their exposure duration to high levels. They will be regularly subjected to medical check-up for detecting any adverse impact on the ears in line with the existing plant. The existing green belt will also help to prevent noise generated within the plant from spreading beyond the plant boundary. Workplace ambient level is not expected to be beyond 85 dB (A) Leq which is much below the limit specified for 8 hours of exposure. Moreover, the noisy equipments will be provided acoustic enclosure, canopy and insulation of heavy noisy equipments can be done for control measures.

#### **4.3.4 IMPACT ON LAND ENVIRONMENT**

During operation phase, land environment will be affected by solid waste generation and due to change in land use pattern. Depending on the type of the industry, the problem of handling waste varies accordingly. However, solid waste treatment and disposal will not be applicable to the plant as all the solid wastes generated will be recycled in the process.

Induction Furnace-slag will be utilized in the block manufacturing unit after recovery of the metal. Some scrap material (waste) will also be generated in the CCM. Proper solid waste management plan will be devised for the management of all solid waste to prevent any impact on the environment.

##### **4.3.4.1 Domestic Waste**

Approximately, 13 kg/day of domestic solid waste is being generated from the existing project & after expansion approx. 18 kg/day of domestic waste will be generated, which will be properly collected and segregated into biodegradable and non-biodegradable waste. The solid waste is being disposed off as per Solid Waste Management Rules, 2016.

##### **4.3.4.2 Industrial Waste**

4 TPD of slag is being generated from existing industrial unit. However, after expansion, the slag produced is estimated to be 11 TPD which will be disposed off to vendor. Agreement has been done with M/s SH Infrastructure for utilization of slag for manufacturing of ready mix concrete. Copy of the agreement is attached as **Annexure13**.

#### **4.3.5 HAZARDOUS WASTE MANAGEMENT**

Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Authorization of hazardous waste has been obtained from PPCB and is valid till 31.03.2021; copy of the same is enclosed as **Annexure 5**. Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust. Copy of the same is enclosed as **Annexure 6**.

After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I category. Used oil generated will be sold to Authorized vendor of PPCB.

#### **4.3.6 IMPACT OF BIOLOGICAL ENVIRONMENT & MITIGATION MEASURES**

Though the project is located in fallow land, the impact zone is part of landscape involving rural areas. There is scarce growth of vegetation and meager presence of fauna. Impacts on biological environment will be negligible during the operational phase. The dust emission will affect the effective photosynthesis and biological processes by covering the plant/tree leaves by thin dust layer during dry months which however will be washed away in rainy months.

There are no eco sensitive sites in the vicinity of the project except Bir Amloh protected forest located at a distance of 6.5 km & Sirhind canal is located at a distance of 6 km. However, there are no endangered flora and fauna species in the region.

##### **4.3.6.1 Mitigation Measures-Biological Environment**

The project site is located within the Industrial Zone as per the Master Plan of Mandi Gobindgarh 2010-2031. Vehicular movement during night will be restricted to avoid adverse consequence to wildlife in the region. The project activities are restricted to the project location except the transportation of raw material and products. There is no discharge of solid or liquid wastes to the environment. Adequate green area has been provided within the project premises.

The study area is located in the industrial area. There is no doubt of the fact that accumulative impact of the operating industries on the ecosystem in future is inevitable. But, as the area at present does have any species under endemic or rare or endangered categories there will be least impact of the industry on the biosphere of the region.

Time to time monitoring of the plantation activities and proper management advice for maintenance of green cover is required from the regulating bodies in order to ensure least harm to the surrounding ecosystems.

#### **4.3.7 IMPACT ON SOCIO-ECONOMIC ENVIRONMENT & MITIGATION MEASURES**

Critically analyzing the existing environmental status of the socio-economic profile and visualizing the scenario with the project, the impacts of the project would be varied and may generate both positive and negative impacts of the proposed project in the region that are stated below:

##### **4.3.7.1 Positive Impacts**

###### **a) No Rehabilitation**

The expansion is for replacement of the existing Induction Furnace and no land is required for the expansion. Hence, Resettlement & Rehabilitation is not required as there is no land acquisition or

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displacement of any houses, habitation or livestock.

**b) Increase in Job Opportunities**

As per the survey it has been observed that the population in general do not have opportunities of earning from employment and the non-worker population is higher in the region so the project in general will help to provide direct and indirect job opportunities for auxiliary and ancillary works etc. The expansion of project will provide direct employment to 20 additional skilled and unskilled personnel. The only employment to depend on is agriculture which is seasonal. In the absence of any high employment potential activities, the people are economically backward.

**c) No burden in the existing Infrastructure Facilities**

Local work force will be given first preference in the activity due to which influx of the outsiders is not envisaged or minimized. Thus, there will not be the necessity of provision of housing facility for the local workers and not stressing on the existing civic amenities of the area. Hence no such burden to the existing infrastructure is anticipated due to the project.

**d) Improvement in Infrastructure**

The activity will benefit the local people due to provision of more infrastructural facilities such as development of approach routes within the village area, street light, health facilities etc.

**e) Agriculture**

The project is not going to cause any damage to the existing agricultural situation. Instead, it is likely to provide the farmers with non-farm activities. There is a possibility to increase in industrialization in the vicinity of the project area. This is likely to bring more skill diversification among local people.

**4.3.7.2 Adverse Impacts:**

**a) Impacts on Human Health**

The project site falls within the Industrial Zone as per the Master Plan of Mandi Gobindgarh 2010-2031 though the dust emissions may exert extra load on surrounding environment. The air emissions are controlled efficiently using air pollution control equipment and stacks are provided at adequate height.

**b) Impacts on Public Health and Safety**

The discharge of waste materials (stack emission, wastewater and solid wastes) from process

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operations can have potential impact on public safety and health. The impact from the discharge of waste products is not expected to be significant since, the adverse impacts on ambient air, water and soil quality are predicted to be low. It is predicted that the impacts on public safety will be very low, due to the effective safety system and safety management available in the plant.

**Table 4.5: Qualitative Effects on Socio-economic Environment**

Parameter	Local	Regional	Direct	Indirect	Reversible	Irreversible
Employment	+	•	+	+	•	+
Income	+	•	+	+	•	+
Transport	+	+	+	+	•	+
Education	+	•	+	•	•	+
Medical facilities	+	•	+	•	•	+
Communication	+	+	+	•	•	+
Sanitation	-	•	-	•	•	-
Housing	+	•	+	•	•	+
Health	-	•	-	-	•	-
Recreation	+	+	•	+	•	+
Agriculture	-	•	-	-	•	-
Cost of living	+	•	•	-	•	+
Business	+	+	+	•	•	+
Per Capita Income	+	+	+	•	•	+
Pollution	-	•	-	•	•	•

+ : Positive; - : Negative ; • : Insignificant

#### **4.3.7.3 Mitigation Measures of Socio Economic Environment**

- Adequate measures have been envisaged in project design to control air & noise pollution. Adequate & effective control measures will be provided which include dust suppression.
- Awareness programs shall be arranged on health, hygiene and sanitation.
- Periodic health checkup camps, distribution of medical aid and medicines shall be organized by project authority for villagers, contract laborers, employees and their family.
- Apart from the normal health check-up, emphasis will be given to prevent specific diseases originating due to emission of different pollutants such as respiratory ailments, skin problems, water borne diseases, hearing abilities etc.
- Job oriented training courses will be organized through industrial/ technical training institutions for educated youth like electrical, machine repairing, welding fabrication and other skill developing trades.

- Whenever necessary, collaboration between project authority and local bodies will be done on regular basis with an objective to build and maintain a good relationship which is necessary for smooth functioning of the project as well as progress and welfare of the people in the study area.
- Awareness programs will be taken to make people aware about the environmental protection, need of water conservation, importance & necessity of clean surroundings etc.
- At the work place, first aid facilities are maintained at a readily accessible place with necessary appliances including sterilized cotton wool etc. Ambulance facility shall also be provided during emergency.
- Sufficient supply of water fit for drinking shall be provided at suitable places.
- Sanitary facilities are provided at accessible place within work zone & kept in good condition.

**CER Activities** - Apart from the various environmental protection measures, project proponent is conscious of its social responsibility and as any good corporate citizen, it is to undertake following works in the surrounding areas of the project. Rs. 4.5 lakhs will be spent towards these activities. CER policy of the company needs to be comprehensive to deal with the various issues that concern the welfare of the local people. The interventions can be divided into two main categories-

- a) Employee Well-being
- b) Community Development

Under the above category focus shall be on the areas like healthcare, education, infrastructure development, livelihood and skill building, women empowerment, child care, environment, sanitation etc. This will help the local people stay healthy and help to gain local support. The participation of the people from the beginning will ensure greater sustainability of the efforts.

The following activities have been proposed to be covered under CER as given below:

S. No.	Activities	Annual Expenditure (in lakhs)	Timeline	Total Expenditure in 1 Year (in lakhs)
1.	<b>Education</b> Providing solar panels, RO for clean drinking water & uniform to the poor & needy students of Government Middle School located in the village Tooran	4.5	1 year	4.5

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## CHAPTER 5.0

### ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

#### 5.1 INTRODUCTION

Steel manufacturing unit namely M/s Punjab Steels has planned to expand its existing production capacity by replacing existing two numbers of Induction Furnaces of capacity 4 TPH and 6 TPH with 2 IF's of capacity 15 TPH each. However, the rolling mill remains same even after the expansion. The capacity of the industrial unit after expansion will become 330 TPD for manufacturing of Ingots/ TMT Bars.

Since, the expansion will be done with the same existing sheds and no major construction work is involved except construction of foundation for new furnaces.

Further, manufacturing of products is being done through Induction Furnace which is a well-established technology for meeting the objectives. This technology today is widely used not only for recycling of scrap (which was the original objective) but also for manufacture of steel from the primary raw materials.

Hence, no other alternative was recommended and examined in terms of Site and Technology.

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## **CHAPTER 6.0**

### **ENVIRONMENTAL MONITORING PROGRAMME**

#### **6.1 INTRODUCTION**

Environmental Monitoring is an essential tool for sustainable development and ensuring most effective implementation and monitoring of Environmental Management Plan and mitigation measures. The monitoring and evaluation of the management measures envisaged are critical activities in implementation of the project. Monitoring involves periodic checking to ascertain whether activities are going according to the plans. It provides the necessary feedback for project management to keep the program on schedule. The purpose of the environmental monitoring plan is to ensure that the envisaged purpose of the project is achieved and results in desired benefits.

To ensure the effective implementation of the proposed mitigation measures, the broad objectives of monitoring plan are:

- To evaluate the performance of mitigation measures proposed in the EMP.
- To evaluate the adequacy of Environmental Impact Assessment.
- To suggest improvements in management plan, if required.
- To enhance environmental quality.
- To implement and manage the mitigative measures defined in EMP.
- To undertake compliance monitoring of the proposed project operation and evaluation of mitigative measures.

A detailed monitoring of emissions and effluent sources for different environmental parameters is being carried out as per the present norms from Punjab Pollution Control Board (PPCB), Central Pollution Control Board (CPCB) and MoEF&CC. Monitoring methodologies will follow standard methods prescribed by Central Pollution Control Board (CPCB), Bureau of Indian Standards (BIS), USEPA etc.

#### **6.2 PARAMETERS TO BE MONITORED**

- Ambient Air Quality
- Stack Monitoring

- Ground Water Quality
- Noise Level
- Soil monitoring

### **6.2.1 AMBIENT AIR QUALITY**

Ambient air quality monitoring will be done at the project location as per the direction by PPCB/CPCB. The parameters monitored include the parameters as per National Ambient Air Quality Standard 2009.

**Table 6.1: Ambient Air Quality – No. of Stations and Parameters**

<b>Parameter</b>	<b>Description</b>	<b>Frequency</b>
<b>Ambient Air Quality</b>	Project location (1 No.)	Quarterly
<b>Parameters to be monitored</b>	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO, NH <sub>3</sub> , O <sub>3</sub> , C <sub>6</sub> H <sub>6</sub> , B(a)P, Pb, As, Ni	

### **6.2.2 STACK EMISSIONS**

Periodical monitoring of stack for SPM, SO<sub>2</sub>, NOx & CO will be done to assess performance of pollution control facilities installed at the unit as per IS-11255. Emissions from all stacks shall be monitored once a quarter using manually operated stack emissions monitoring equipment. However, frequency of monitoring may be increased if required in accordance with directions of PPCB/CPCB or other statutory authorities. Continuous online stack monitoring for parameters prescribed by regulatory authorities will be installed with direct connectivity to PPCB/CPCB.

### **6.2.3 GROUND WATER QUALITY**

Ground water will be sampled to check for possible contamination and to ascertain the trend of variation in the water quality, if any. In case any adverse trend is noticed, immediate remedial measures shall be taken. Single ground water sample will be collected quarterly from project location and will be compared with IS: 10500:2012 drinking water standards.

### **6.2.4 NOISE MONITORING**

Noise monitoring shall be carried out at near to the high noise generating areas once in six months and shall be compared with as per the requirement of Occupational Safety and Health

Administration (OSHA) Standards. Monitoring of Ambient noise levels will be monitored once every quarter during day time (6 AM to 10 PM) and night time (10 PM to 6 AM) as per Environment Protection Act GSR 1063(E) Schedule III at Industrial, Commercial, Residential and Silence Zone.

#### **6.2.5 DOMESTIC EFFLUENT QUALITY**

Approx. 2.5 KLD of domestic wastewater is being generated from the existing project which is being treated in the septic tank provided within the project premises. However, after expansion, the quantity of domestic wastewater generated is estimated to be 3.5 KLD and the same will be treated in the proposed STP of capacity 5 KLD. Two samples one from STP inlet & one from STP outlet will be collected quarterly and tested as per IS 3025 .

#### **6.2.6 SOIL SAMPLING**

Soil quality will be monitored from the project location six monthly twice a year.

#### **6.2.7 OCCUPATIONAL HEALTH & SAFETY MONITORING**

Occupational health and safety monitoring programs verify the effectiveness of prevention and control strategies. The selected indicators are representative of the most significant occupational, health and safety hazards and the implementation of prevention and control strategies. The performance and achievements of the OHSMS responsible for all management of all environment, Health & Safety aspects are re-assessed on annual basis. The occupational health and safety monitoring program includes:

- Punjab Steels carries out inspection and testing of all safety features and hazard control measures for plant operation. This includes regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment and tools used. The inspection verify that issued personal protective equipment (PPE) continues to provide adequate protection and is being worn as required.
- All instruments installed and recording of working environment parameters are regularly tested and calibrated and the respective records maintained;
- Surveillance of the working environment is carried out.

- Surveillance of workers health: When extraordinary protective measures are required, workers are provided appropriate and relevant health surveillance prior to first exposure and at regular intervals thereafter. M/s Punjab Steels is already providing and continues to provide appropriate and relevant health surveillance to workers with special emphasis to the dust prior to first exposure and at regular intervals thereafter.

### **6.2.8 INDUSTRIAL SAFETY TRAINING**

Various trainings to employees on safety, health and environmental aspects and technology and ergonomic issues will be provided time to time or as per requirements. Emergency exercises including fire drills will be documented adequately.

### **6.2.9 HOUSE KEEPING**

There is different stockyard for the raw materials, so that the working shed floor area will be kept clean. Proper maintenance and cleaning of the APCD's will be done as per requirement. Solid waste generated will be kept in specific area earmarked. Regular dust cleaning to be done on working platforms, equipments and machinery and connecting pathways and plant premises is recommended for proper housekeeping, effectiveness in working and preventing health hazard and breakthrough of diseases.

### **6.2.10 PERIODIC PREVENTIVE MAINTENANCE**

A detailed maintenance schedule will be prepared for all pollution control systems. Maintenance will be done strictly as per schedule and guidelines furnished by plant manufacturer. All pollution control, monitoring and safety equipment will be periodically checked and calibrated.

### **6.2.11 ACCIDENTS & DISEASES MONITORING**

These systems enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health. The systems and the employer further enable and encourage workers to report to management during.

- Occupational injuries;
- Suspected cases of occupational disease; and
- Dangerous occurrences and incidents.

All reported occupational accidents, occupational diseases, dangerous occurrences and incidents together with near misses are being duly investigated with the assistance of a person knowledgeable/competent in occupational safety and will continue doing the same for the proposed expansion project. The investigation shall:

- Establish what happened;
- Determine the cause of what happened
- Identify measures necessary to prevent a recurrence.

### **6.3 BUDGET AND PROCUREMENT SCHEDULE**

On regular basis, Environment Management Cell will inspect the necessity and availability of the materials, technologies, services and maintenance works. The Cell will make appropriate budget for the purpose. Regular record review for any change in financial requirement of environment management will be done and appropriate budgetary provisions will be made. Along with other budgets, environmental management budget will be prepared and revised regularly as per requirement. The budget will include provisions for:

- Environmental Monitoring Program
- Emergency Purchase of necessary material, equipment, tools, services
- Landscape development
- Social and Environmental Welfare and Awareness programs/ training including C.E.R.
- Annual Environmental Audit.

**Table 6.2: Cost of Environmental Monitoring details**

S. No.	Particulars	Parameters	Frequency	Methods of sampling	Approx. Recurring Cost/ Annum (in lakhs)
1.	<b>Ambient Air Monitoring</b>	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , CO & NO <sub>2</sub>	Quarterly; Project location	IS-5182 Pt-14	1.0
2.	<b>Stack Emission Monitoring</b>	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO, HC	Quarterly; DG sets, furnace stacks	IS-11255 Pt-1	0.5

3.	<b>Treated Effluent Monitoring</b>	pH, BOD, COD, Oil, Grease & Total Suspended solids	Daily; Outlet of STP	IS-3025 Pt-1	2.0
4.	<b>Noise Level Monitoring</b>	24 Hrs. Noise Level	Quarterly; Project location	IS-9989-1981	0.5
5.	<b>Water Quality Monitoring</b>	Drinking Water Specifications as per IS 10500	Quarterly; Project location	IS-3025 Pt-1	1.0
<b>Total</b>					<b>5.0 Lakhs</b>

## 6.4 SUMMARY

The environment monitoring plan enables environmental management system with early sign of need for additional action and modification of ongoing actions for environment management, improvement and conservation. The environmental monitoring points will be decided considering the environmental impacts likely to occur due to the operation of project as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action for protection of environment.

Monitoring of environmental samples will be done as per the guidelines provided by MoEF&CC/CPCB/PPCB. Separate records for water, wastewater, solid wastes, air emission and soil will be prepared and preserved regularly. Along with other budgets, environmental management budget will be prepared and revised regularly as per requirement.

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## **CHAPTER 7.0**

### **ADDITIONAL STUDIES**

#### **7.1 GENERAL**

The outline of the pre-project environmental status and the impact assessment of proposed expansion along with proper mitigation measures have been duly addressed in the previous Chapters. This Chapter briefly encompasses the additional aspects that were also dealt upon while conducting EIA study for the expansion of project.

#### **7.2 PUBLIC CONSULTATION**

Public hearing for the expansion in production capacity from 115 TPD to 330 TPD of Ingots/TMT Bars was conducted within the premises on 27.02.2019 by PPCB. The hearing was conducted at project location i.e. Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. Representative from Environmental Consultant on behalf of M/s Punjab Steels made a presentation in the beginning describing the details of the expansion plan of the project including environment status, pollution control measures, management plan and socio-economic development activities undertaken by the proponent. 74 people signed the attendance register and 2 people spoke during the hearing and raised some issues and made suggestions. The proceedings of public hearing are attached as **Annexure 20** and photographs of the public hearing are enclosed as **Annexure 21**. Therefore, summary of the complaints/queries raised by public hearing and action plan are given below in **Table 7.1**.

**Table 7.1: Summary of Public Hearing Proceeding**

S. No.	Name & address of the person	Detail of query/statement/information/clarification sought by the person present at the venue of hearing	Reply of the query/statement/information/clarification given by the project proponent	Action plan
1.	Sh. Gogi, Sarpanch, Village Tooran, District Fatehgarh Sahib.	He welcomed the additional Deputy Comissioner, Fatehgarh Sahib and public present. He asked the people of Village Tooran, present in the public hearing, to give suggestion, if any, for the project. He requested the owner of the factory to provide funds from time to time as reserved for CER activities as explained by the environmental consultant of the company. He demanded that two rooms may be constructed in the Govt. Middle School, Tooran.	Environmental Consultant of the industry informed that Rs. 4.5 Lacs have been reserved under the CER activities and the same will be spent with the consultation of Village Panchayat, Tooran. The Sarpanch expressed his satisfaction over the reply.	Construction of two rooms will be done in the Govt. Middle School of village Tooran, once the EC is granted to the project.

2.	Sh. Kamaljit Singh, Village Jassran, District Fatehgarh Sahib	He wanted to know as to whether, there will be any adverse affect on the drinking water with the expansion of the industry.	Environmental consultant of the industry informed that there will be only domestic effluent from the industry, which will be treated in the adequate capacity of STP and after its treatment, the same will be used for plantation within the industrial premises. No water will be discharged outside the premises of the industry. Further, no trade effluent will be generated. The querist expressed satisfaction over the reply given.	STP has been proposed of capacity 5 KLD to treat the wastewater generated after expansion. The treated water will be used for horticulture purpose on the green area provided within project premises.
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Rs. 3.0 lakhs will be spent on the public hearing action plan.

## **7.3 ENVIRONMENTAL RISK ASSESSMENT & DISASTER MANAGEMENT PLAN**

It is a systematic approach for identification, evaluation, mitigation and control of hazards that could occur as a result of failures in process, procedures, or equipment. Increasing industrial accidents, loss of life & property, public scrutiny, statutory requirements and intense industrial processes, all contribute to a growing need to ensure that risk and hazard management study is conducted and implemented.

### **7.3.1 OBJECTIVES OF ENVIRONMENTAL RISK ASSESSMENT**

As per the requirements stated in the Terms of Reference of the EIA study, the risk assessment study has been undertaken to address the following aspects:

- To identify hazards such as fire and explosion hazards arising from handling of molten metal as well as storage of chemicals
- To predict various credible scenarios and develop maximum credible accident scenarios with consequence
- To eliminate or reduce to as low as reasonably practical in terms of risk to human health, risk of injury, risk of damage to plant, equipment and environment, business interruption or loss etc.

### **7.3.2 TERMS ENVIRONMENTAL RISK**

- **Harm:** Damage to person, property or environment
- **Hazard Situation:** that poses a level of threat to life, health property or environment. A Hazardous situation that has come to pass is called incident. Hazard and possibility interact together to create risk. An environmental hazard is thus going to be a set of circumstances which leads to direct or indirect degradation of environment and damage to the life and property.
- **Risk:** The probability of harm or likelihood of harmful occurrence and its severity. Environmental risk is a measure of the potential threats to the environment, life and property.
- **Consequence:** Effect due to occurrence of the event which may endanger the environment permanently or temporarily and, or, loss of life and property.

### **7.3.3 IDENTIFICATION OF HAZARDS**

#### **7.3.3.1 Identification of hazards by fire and explosion index & toxicity index**

**Fire and Explosion Index (F&EI)** is an important technique employed for hazards identification process. Consequence analysis then quantifies the vulnerable zone for a conceived incident. Once vulnerable zone is identified for an incident, measures can be formulated to eliminate or reduce damage to plant and potential injury to personnel.

Rapid ranking of hazard of an entire installation, if it is small, or a portion of it, if it is large, is often done to obtain a quick assessment of degree of the risk involved. The Dow Fire and Explosion Index (F&EI) and Toxicity Index (TI) are the most popular methods for Rapid Hazard Ranking. These are based on a formal systematized approach, mostly independent of judgmental factors, for determining the relative magnitude of the hazards in an installation using hazardous (inflammable, explosive and toxic) materials.

The steps involved in the determination of the F & EI and TI are:

- Selection of a pertinent process unit
- Determination of the Material Factor (MF)
- Determination of the Toxicity Factor (Th)
- Determination of the Supplement to Maximum Allowable Concentration (Ts)
- Determination of the General Process Hazard Factor (GPH)
- Determination of the Special Process Hazard Factor (SPH)
- Determination of the F&EI value
- Determination of the TI value
- Determination of the Exposure Area

#### **7.3.3.2 Identification of hazards due to failure of Dust Control System/ Process**

Fugitive emissions of particulate dust are expected from the operation of Induction Furnaces during melting operations, loading or unloading and transportation of raw materials, scrap handling and storage and vehicular movements. Fugitive emissions from induction furnaces and other operations are to control using effective dust extraction system followed by bag filters as air pollution control device and effective stack heights, though the possibility APCD/ process

failure always lies. The main emission sources in the project are induction furnaces (2Nos.) each of 15 TPH, D.G. sets (2Nos.) each of 125 KVA and 37 Nos. of Trucks for raw materials and finished materials transportation. The extra load on the atmosphere by way of releasing particulate dust as PM<sub>10</sub> and PM<sub>2.5</sub> in case of worst case (failure of dust control system/ entire process) has been estimated using air quality modeling (AERMOD technique). Prediction of ground level concentration (GLC) was done based on two approaches as:

- GLC during normal controlled conditions (effective control measures of emissions) and
- GLC during Abnormal or worst case conditions (ineffective control measures or failure of APCD/ process)

**Table 7.2: Details of major emissions sources during operation**

S. No.	Input Parameter	Proposed I.F. No. 1		Proposed I.F. No. 2		Existing	After Expansion	
		Normal Cond. (APCD Functional)	Worst Cond. (APCD Failure)	Normal Cond. (APCD Functional)	Worst Cond. (APCD Failure)		DG No. 1	DG No. 2
1	Capacity	15 TPH	15 TPH	15 TPH	15 TPH	125 KVA	125 KVA	125 KVA
2	Stack height	18 m	18 m	18 m	18 m	9 m	9 m	9
3	I.D. at top (m)	1.1 m	1.1 m	1.1 m	1.1 m	0.20	0.20	0
4.	Exit Temperature (K)	120°C	120°C	120°C	120°C	120°C	120°C	120° C
5.	Ambient Temperature (K)	40°C	40°C	40°C	40°C	35°C	35°C	3 5 °
6.	Gas Exit velocity (m/s)	20 m/s	20 m/s	20 m/s	20 m/s	15m/s	15m/s	15m/s
7.	PM <sub>2.5</sub> (kg/hr)	2.2	35.1	2.2	35.1	0.05	0.05	0
8.	PM <sub>10</sub> (kg/hr)	3.7	60.2	3.7	60.2	0.08	0.08	0
9.	SO <sub>2</sub> (kg/hr)	2.5	2.5	2.5	2.5	0.11	0.11	0
10.	NO <sub>x</sub> (kg/hr)	15.7	15.7	15.7	15.7	1.02	1.02	1
11.	CO (kg/hr)	4.4	4.4	4.4	4.4	0.40	0.40	0
12.	Baseline Avg. PM <sub>2.5</sub>	73.94						
13.	Baseline Avg. PM <sub>10</sub>	133.54						
14.	Baseline Avg. SO <sub>2</sub>	11.39						

15.	Baseline Avg. NO <sub>x</sub>	25.66
16.	Baseline Avg. CO	BDL <1.5 mg/m <sup>3</sup>

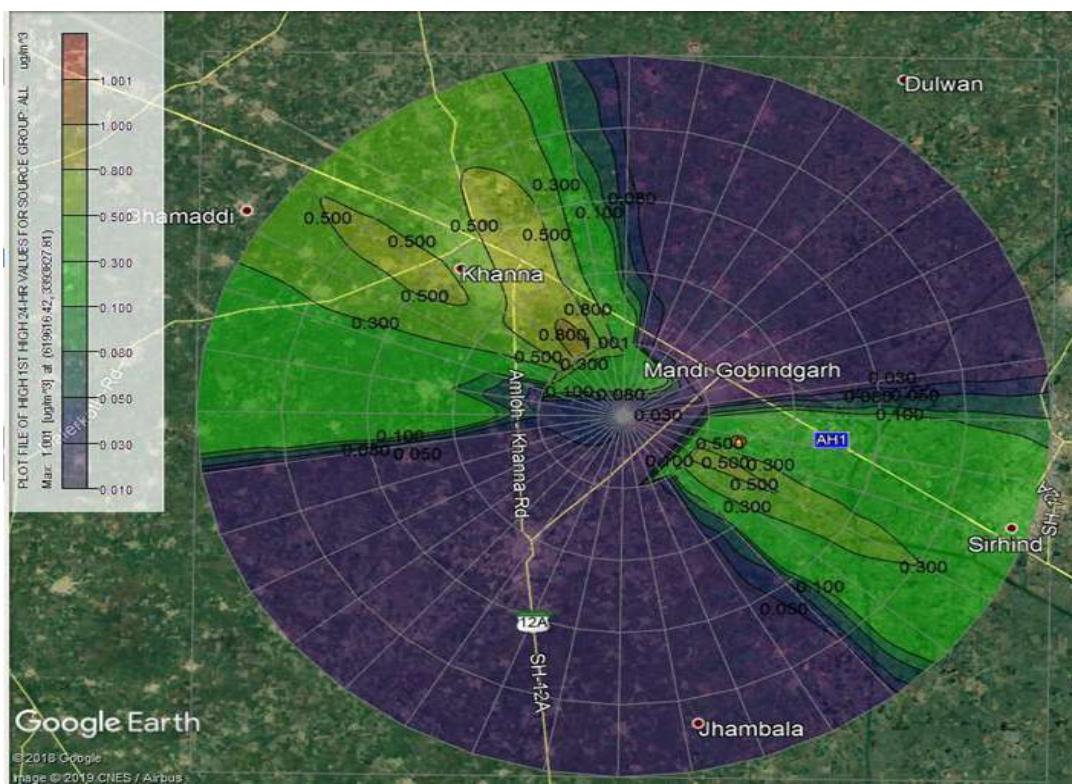
A comparative finding in both cases is elaborated as below:

**Table 7.3: GLC values during normal & worst conditions**

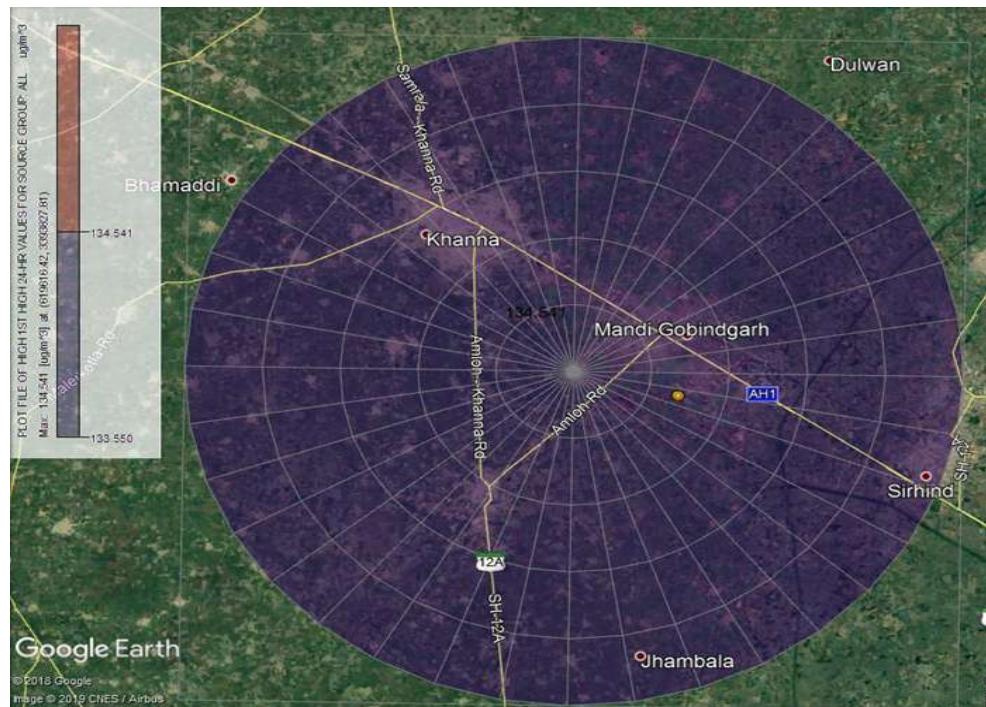
Parameters	GLC (Baseline + Incremental value) during normal controlled conditions (effective control measures of emissions)	GLC (Baseline + Incremental value) during Abnormal or worst case conditions (ineffective control measures of emissions or failure of APCD/ process)
PM <sub>10</sub> (µg/m <sup>3</sup> )	$133.5 + 0.064 = 133.564 \mu\text{g}/\text{m}^3$	$133.5 + 1.001 = 134.501 \mu\text{g}/\text{m}^3$
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	$73.9 + 0.038 = 73.938 \mu\text{g}/\text{m}^3$	$73.9 + 0.584 = 74.484 \mu\text{g}/\text{m}^3$

#### 7.3.3.2.1 Prediction of GLC for PM<sub>10</sub> (during worst conditions)

The maximum incremental concentration of PM<sub>10</sub> within 500 m of emission sources during project operation in case uncontrolled or worst case conditions (failure of APCD/ process) is 1.001 µg/m<sup>3</sup> and beyond 1500 m it rapidly decreasing to the ambient value. The baseline average value of PM<sub>10</sub> in ambient air is 133.5 µg/m<sup>3</sup> observed in 10 km influence zone slightly higher than the prescribed limit by CPCB as 100 µg/m<sup>3</sup> due to presence of industrial areas of Mandi Govindgarh and Khanna and other agro and biomass burning (after wheat harvesting) activities as predominant in the region. The cumulative value of PM<sub>10</sub> during project operation will be  $133.5 + 1.001 = 134.501 \mu\text{g}/\text{m}^3$  indicating no significant impact due to the project.



**Fig. 7.1: PM<sub>10</sub> Incremental value within 10km Influence zone (In case of APCD failure)**

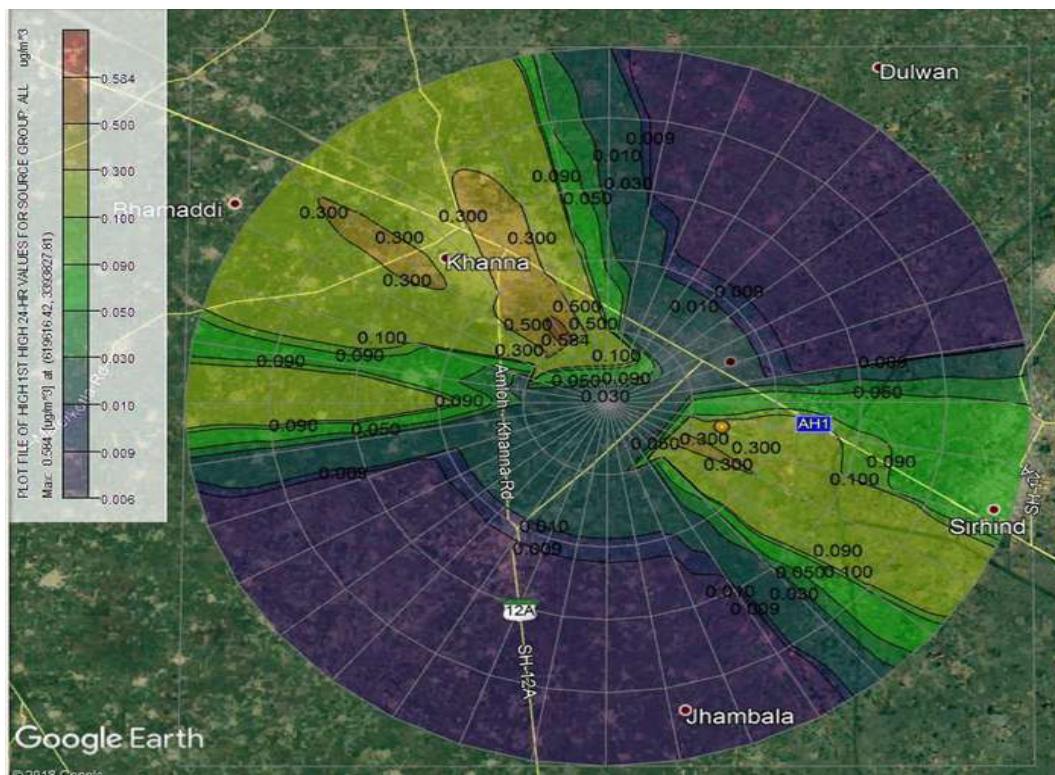


**Fig. 7.2: PM<sub>10</sub> Total value within 10km influence zone (In case of APCD failure)**

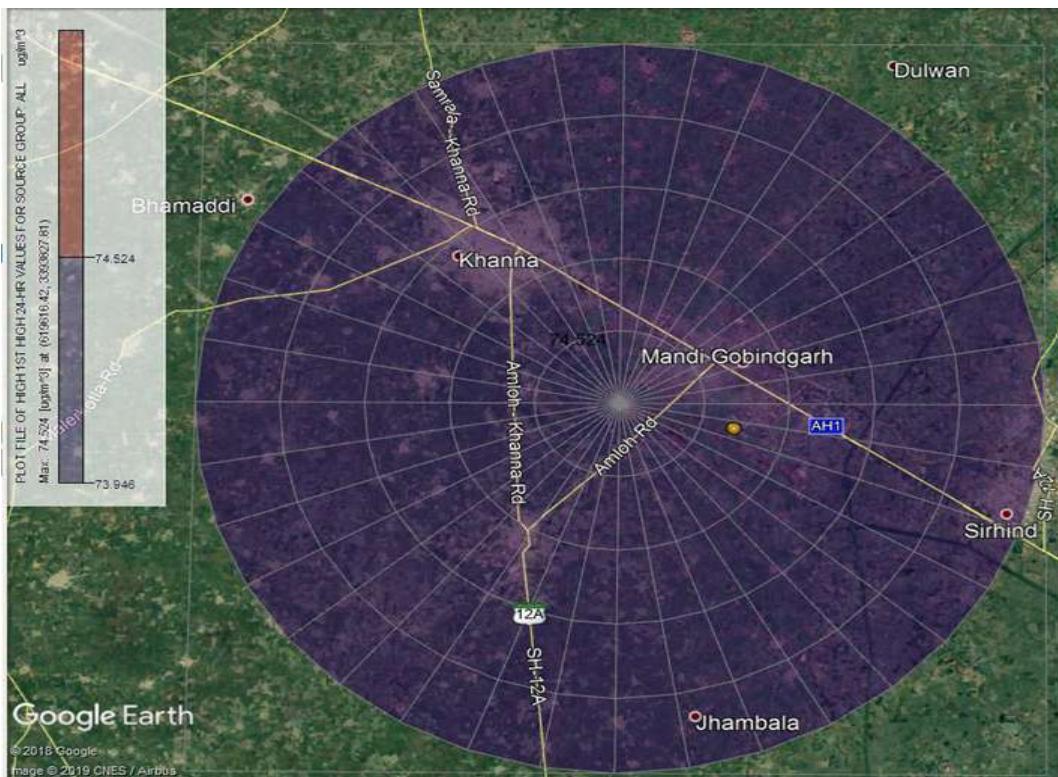
In worst conditions (APCD failure), the maximum incremental pollutant concentration near the source and within 500m is  $1.001 \mu\text{g}/\text{m}^3$ , beyond which is rapidly gets diffused. An Ambient value of  $134.541 \mu\text{g}/\text{m}^3$  is observed in 10km influence zone.

### 7.3.3.2.2 Prediction of GLC for PM<sub>2.5</sub> during worst conditions

The maximum incremental concentration of PM<sub>2.5</sub> within 500 m of emission sources during project operation in case uncontrolled or worst case conditions (failure of APCD/ process) is  $0.584 \mu\text{g}/\text{m}^3$  and beyond 2000 m it rapidly diffused to the ambient value. The baseline average value of PM<sub>2.5</sub> in ambient air is  $73.9 \mu\text{g}/\text{m}^3$  observed in 10 km influence zone slightly higher than the prescribed limit by CPCB as  $60 \mu\text{g}/\text{m}^3$  due to presence of industrial areas of Mandi Govindgarh and Khanna and other agro and biomass burning (after wheat harvesting) activities as predominant in the region. The cumulative value of PM<sub>2.5</sub> during worst case condition will be  $73.9 + 0.584 = 74.484 \mu\text{g}/\text{m}^3$  indicating no significant impact due to the project.



**Fig. 7.3: PM<sub>2.5</sub> Incremental value within 10km Influence zone (In case of APCD failure)**



**Fig. 7.4: PM<sub>2.5</sub> Total value within 10km influence zone (In case of APCD failure)**

In worst conditions (APCD failure), the maximum incremental pollutant concentration near the source and within 500m is  $0.584 \mu\text{g}/\text{m}^3$ , beyond which is rapidly gets diffused. An Ambient value of  $74.524 \mu\text{g}/\text{m}^3$ , is observed in 10km influence zone.

### 7.3.4 HAZARDOUS MATERIAL IDENTIFICATION METHODOLOGY

From the preliminary appraisal of Material Safety Data Sheet, it is observed that HSD diesel oil (HSD) is hazardous. F&EI and TI values have been computed for HSD storage tank.

In general, the higher is the value of material factor (MF), the more inflammable and explosive is the material. Similarly, higher values of toxicity factor (Th) and supplement to maximum allowable concentration (Ts) indicate higher toxicity of the material. The tabulated values of MF, Th and Ts are given in Dows Fire and Explosion Index Hazard Classification Guide.

For compounds not listed in Dow reference, MF can be computed from the knowledge of flammability and reactivity classification, Th can be computed from the knowledge of the National Fire Protection Association (NFPA) Index and Ts can be obtained from the knowledge

of maximum allowable concentration (MAC) values. The MF, Th and Ts values are respectively 10, 0 and 50 for HDO.

- General process hazards (GPH) are computed by adding the penalties applied for the various process factors.
- Special process hazards (SPH) are computed by adding the penalties applied for the process and natural factors.
- Both General process hazards and Special process hazards corresponding to various process and natural factors are used with MF to compute F&EI value and with Th and Ts to compute TI value.

### **7.3.5 F&EI COMPUTATION**

F&EI value computed for TPS and CTT from GPH and SPH values using the following formula

$$\text{F&EI} = \text{MF} \times [1 + \text{GPH (total)}] \times [1 + \text{SPH (total)}]$$

### **7.3.6 TOXICITY INDEX (TI)**

Toxicity index (TI) is computed from toxicity factor (Th) and supplement to maximum allowable concentrations (Ts) using the following relationship:

$$\text{TI} = (\text{Th} + \text{Ts}) \times [1 + \text{GPH (total)} + \text{SPH (total)}]/100$$

Calculation for F&EI as well as TI is given in table shown below for Natural gas, Mono

**Table 7.4: Conclusion for Fire, Explosion & toxicity Index**

<b>Applicable Fire and Explosion index range</b>	1-60 61-96 97-127 128-158 >159	Light Moderate Intermediate Heavy sever
<b>Conclusion for toxicity index</b>	1-5 6-9 above 10	Light Moderate High

### 7.3.7 HAZARDS RANKING

**Table 7.5 Hazard ranking**

S. No.	Event	Likelihood of occurrence	Likelihood of detection	Severity of consequences	Risk potential
1.	Unsafe disposal Oily Waste	High (4)	Low (4)	Moderate (8)	64
2.	Occurrence of static Electricity	Very Low (1)	Very Low (5)	High (10)	60
3.	Leakage of Acid/alkali	Low (2)	Very Low (5)	Moderate (8)	56
4.	Uncontrolled dust emission/ failure of emission control system	High (4)	Moderate (3)	Moderate (8)	56
5.	Wet scrubber running dry	Low (2)	Moderate (3)	High (10)	50
6.	Oil waste/ Oil sludge handling	Low (2)	High (2)	Moderate (8)	32
7.	Splashing of molten metal and slag	Low (2)	Very High (1)	High (10)	30
8.	Collapsing of Acid / Alkali storage tank	Very Low (1)	High (2)	High (10)	30

From above table it appears that some events carry risk potential above 50. These would be considered as hazardous events, where effective safe-design for operation and maintenance is highly essential to reduce the risk.

From the above index calculations and process analysis, various hazards identified from the project activities after expansion are as under:

#### 7.3.7.1 Hazards due to handling of molten metal

Wet material charging and failure of refractory are common cause of molten metal spillage / splashing in induction furnace. Wet charge materials are a serious safety hazard in all foundries. Water, moisture, or any Liquid-bearing material instantaneously turns to steam when coming in contact with molten metal expanding to 1,600 times its original volume and producing a violent explosion. This occurs without warning and throws molten metal and possibly high-temperature

solids out of the furnace, putting workers, the furnace itself, and nearby plant and equipment at risk.

A water/molten metal explosion can occur in any type of furnace. For an induction furnace, however, the aftereffects may be more serious, including the possibility of additional explosions caused by liquid in a ruptured cooling system coming in contact with molten metal in the bath. Molten metal need not be present in the furnace for a water/molten metal explosion to occur. Explosions also can occur if sealed drums or containers containing water are charged into an empty but hot furnace. In this case, the force of the explosion will eject the newly charged material and quite likely damage the refractory lining as well.

### **7.3.7.2 Bridging**

When charge material in the top portion of the furnace is not in contact with the molten metal below it, the dangerous condition known as bridging exists. When bridging occurs, charge material is no longer serving to moderate the temperature of the bath during the melting cycle. Also, the air gap between the molten metal and the bridge acts as an insulator. The molten metal below the bridge, under the impact of full melting power, will superheat .This superheating in an induction furnace will occur very rapidly and will raise the temperature of the molten bath above the maximum temperature rating of the refractory. Also, excessive metal stirring below the bridge, due to the small metal mass and high power density, will combine with the high metal temperatures to cause rapid lining erosion or possibly complete refractory failure.

Without immediate attention to a bridging condition, a run-out due to refractory failure may occur. If the run-out is through the bottom of the furnace, it can cause a fire under the furnace and in the pit area resulting in a loss of hydraulics, control power, and water cooling. If the run-out is through the side of the furnace, the coil may be compromised and when cooling water comes in contact with the molten metal, the water instantaneously turns into steam. If the water becomes trapped by the molten metal, this instantaneous expansion may produce an explosion which could cause injury or death and extensive damage to equipment. Bridging can occur in any induction furnace.

### **7.3.7.3 Physical damages to refractory**

Metal run-out ranks among the most severe accidents that can occur during melting and holding operations. Run-outs occur when molten metal breaks through the furnace lining. If cooling, electrical, hydraulic or control lines become damaged, there is danger of a fire or water/molten metal explosion. The sudden or cumulative effects of physical shocks and mechanical stress can lead to failure of refractory lining. Most refractory materials tend to be brittle and weak in tension. Bulky charge material dropped into an empty furnace can easily cause the lining to crack upon impact. If a crack goes unnoticed, molten metal may penetrate, leading to a run-out with the possibility of water/molten metal explosion.

Physical damages to refractory during installation

- Mechanical stress caused by the difference in thermal expansion rates of the charge and refractory material can be avoided by assuring charge material does not become jammed within the furnace.
- In Induction furnaces, refractory linings and crucibles are subject to regular wear from the scraping of metal on the furnace walls, largely because of the induction stirring action caused by the furnace's electromagnetic field. In theory, refractory wear should be uniform, but in practice this never occurs. The most intense wear occurs: at the slag/metal interface; where sidewalls join the floor; and, at thin spots caused by poor lining installation.
- Thermal shock also can be caused by excessive heating or improper cooling. If furnace operating conditions heat or cool the lining beyond its specified range, the resulting thermal shock can damage the integrity of the lining.

Highly abrasive materials, slag and dross erode lining near the level of the molten metal. It is not uncommon for this part of the furnace, above the molten metal line, to be patched between scheduled relining. In extreme circumstances, this erosion may expose the induction coil, creating the risk of a water/molten metal explosion.

#### **7.3.7.4 Precaution against Molten metal spillage and splashing**

- Diligently examining and treating scrap, following induction furnace safety procedures, properly training and retraining personnel, and use of automated melt shop equipment, founders can be confident their operations are as safe as possible.
- Bridging can be minimized by using proper charge material and by making sure the different sizes of charge material are added correctly. If a bridge occurs, power must be turned off and the melt deck and surrounding areas evacuated immediately until enough time has elapsed to allow the molten metal to solidify.
- Bridging may reveal itself with several warning signs. The clearest warning sign that bridging has occurred is that the melt is taking longer than calculated. Rather than increase the power, the operator should switch off power immediately. Under no circumstance should the operator increase power.
- Many serious Induction Furnace accidents occur during furnace charging, when workers come in close proximity to the molten bath. Splashes caused by dropping large pieces of scrap and water/molten metal explosions caused by wet or damp scrap can be reduced through the use of drying and preheating systems and remotely controlled charging systems.
- Appropriate Personal Protective Equipment (PPE) protects melt shop workers from both metal splash and radiant heat do not allow water or hydraulic fluid to accumulate in the pit. It is designed to hold molten metal in case of an emergency and must be kept clean and dry.
- Choosing appropriate refractory lining material and their additives / bonding material.
- Proper installation of the lining is as important as selection of the right material. If the material is inadequately compacted during installation, voids or areas of low density may form, creating a weak spot easily attacked by molten metal. If the crucible is created with a lining form that is improperly centered, or one that has been somehow distorted during storage or shipment, lining thickness will be uneven. As a result, the lining may fail before the end of its predicted service life.

- The refractory manufacturer's procedures for installation, drying and sintering must be followed. If sufficient time is not allowed for refractory materials to bond, the lining will be more prone to molten metal and slag attack.
- The entire furnace should be visually inspected whenever it is emptied. Special attention should be paid to the high wear areas described above. Observations should be logged.
- Follow refractory manufacturer's instructions for lining inspection and maintenance.
- Operators should be properly trained to identify unevenness in operation through Visual inspection.
- Attainment of maximum power at a lower than normal applied voltage.
- In a fixed-frequency power supply, an increase in the number of capacitors needed to be switched into the circuit to maintain unity power factor.
- In a variable-frequency power supply, running at a higher than normal frequency. Useful though they may be, changes in electrical characteristics must never be thought of or used as a substitute for physical inspection of the lining itself.
- A magnetic contact thermometer attached to the steel shell of a channel furnace will indicate lining wear by revealing the position of a hot spot. Infrared thermometers make it possible to remotely measure temperature by looking at a furnace through the eyepiece of a device resembling a hand-held video camera. State-of-the art, automatic lining-wear detection systems that display the lining condition graphically are available also.
- Bulky material should be lowered into the furnace. If it must be "dump charged," be sure there is adequate charge material beneath the charge to cushion its impact.
- In the event of a prolonged power failure, a loss of coolant or other prolonged furnace shutdown, the furnace must be emptied.
- Avoid excessive superheating of the molten bath providing controller for temperature when working with a cold holding furnace, be sure it is properly preheated to the refractory manufacturer's specifications before filling it with molten metal to avoid thermal shock.
- Ground leak detection system should be provided.

### **7.3.8 OTHER PRECAUTIONS**

Following precautions related to safety would be taken while installing the machine:

- It will be ensured that there is ready access to the Grease Nipple.
- Sufficient clearance will be kept between ground and discharge chutes for fitting of discharge conveyor.
- It will be ensured that the side door is accessible and does not foul on surrounding structure.
- V belts will be tightened as specified.
- A magnetic separator will be provided to avoid ingress of any non-crushable material.
- Like any other transmission machinery, belt conveyors present risk of injury. Experience shows that conveyor accidents often involve fatal or very serious injuries and severe damage to property.
- As conveyor systems are vital links in the production chain, their stoppage due to accidents or breakdowns can lead to serious business interruption loss.
- In bulk material transportation systems, excessive spillage represents wastage of material, and emission of dust can present occupational safety and health problems. Most personal injury accidents with belt conveyors occur when hands of persons are trapped in inadequately guarded nip points and pinch points near pulleys and idlers. Mechanical failure of conveyor components due to deficiencies in design and operational and maintenance procedures also render the conveyor systems hazardous. Spillage of materials, fires from friction, overheating, static charge and other electrical sources are the other typical hazards encountered in belt conveyor systems.

### **7.3.9 GROUNDING AND LIGHTNING PROTECTION**

The grounding requirement of the power plant is divided into the following two main categories:

- System grounding
- Equipment grounding

The system grounding is adopted to facilitate ground fault relaying and to reduce the magnitude of transient over-voltage. The system grounding involves primarily the grounding of the generators and transformer neutrals. High impedance grounding is envisaged for 13.8 KV system

generator neutrals, which would be achieved through neutral grounding Transformer. The 6.6 KV system will be operated with medium resistance grounded. 220 KV and 415 V systems will be solidly grounded and the 220V DC system will be ungrounded. The equipment body grounding (at least two numbers) is to be adopted to provide protection to personnel and equipments from potentials caused by ground fault currents and lightning discharges.

A stable ground grid will be provided for grounding of equipment and structures maintaining the step and touch potentials within safe limits. An earth mat would be laid in and around the power plant. This mat would be buried at a suitable depth below the ground and provided with ground electrodes at suitable spacing. All non-current carrying metallic parts of equipment will be connected to the grounding mat. Buildings, structures, transmission towers will also be connected to the grounding mat. Lightning protection system will be installed for protection of the buildings/ structures and equipment against lightning discharge. This will be achieved by providing lightning masts, down conductors on buildings/structures, towers in switchyard and connecting these with ground grid.

Besides this, for outdoor equipment exposed to atmosphere, protection against lightning surges will be provided with lightning surge arresters at suitable locations, over and above the shielding wires and lightning masts to safeguard the equipment.

Name of possible hazard	Its source & reason	Its effects on person, property	Its source, reason environment & place of effect	Control measures provided
Building collapse Earthquake	Any natural Calamities, Week structure Over loading	Injuries & Fatalities Building damage	All building & sheds of the company as given in the site layout	Structure stability is by competent person for all structure. No overloading of structures and building.
Electrical Installation failure like Transformer, PCC etc.	Fire Suffocation of persons inside the plant	Overload Loose Contacts, Short circuit	Electrical transformer, switch yard, Electrical MCC rooms & Power plant	Installation as per electricity rules. Other Controls Provided Rubber mat. Provided Earthing provision.

### **7.3.10 RISK MANAGEMENT MEASURES**

The risk management measures for the project activities require adoption of best safety practice at respective construction zones within the works boundary. In addition, the design and engineering of the proposed facilities would take into consideration proposed protection measures for air and water environment

#### **7.3.10.1 Electrical safety**

Adequately rated quick-response circuit breakers, aided by reliable, selective digital/microprocessor-based electro-magnetic protective relays would be incorporated in the electrical system design for the proposed Project. The metering instruments would be of proper accuracy class and scale dimensions. Appropriate use of ELCBs shall be ensured for all construction related low voltage work.

#### **7.3.10.2 Fire prevention**

In addition to the yard fire hydrant system, sheds are provided with fire and smoke detection alarm system along with the portable fire extinguishers. Fire detection system would be interlocked with automated water sprinklers. Trained manpower is available for Firefighting, regular mock drill is conducted.

### **7.3.11 DISASTER AND EMERGENCY RESPONSE MANAGEMENT**

Disaster, in this context, means a sudden, accidental event that causes many deaths and injuries. Most disasters also result in significant property damage. Common natural causes of disasters include earthquakes, floods, hurricanes and typhoons, and tornadoes. Tsunamis (popularly, but incorrectly, known as tidal waves), volcanic eruptions, wildfires, and landslides and avalanches rank among the other natural forces that sometimes create disasters.

Not all disasters are produced by the forces of nature. The “man-made” disasters can be traced to explosions, fires, uncontrolled release of hazardous substances/chemicals, acts of war and terrorism, etc., unintentionally or intentionally, triggered by humans.

The disaster management approach entails a National Disaster Framework (a roadmap) covering institutional mechanisms, disaster prevention strategy, early warning system, disaster mitigation, preparedness and response, and human resource development.

Major hazards can be generally associated with the potential of fire, flood, or earthquake. Hazard control system is meant to ensure the avoidance of the hazards, or in case of any mis-happening minimum possible impact on residents and surrounding environment. Disaster, in this situation, may include incidences of flood, earthquake, fire, or disruptive incidents of human extremism. While the incidences of natural disaster are remote, these may result in significant loss of life and property.

Disaster, in this situation, may include incidences of flood, earthquake, fire, or disruptive incidents of human extremism. While the incidences of natural disaster are remote, these may result in significant loss of life and property. The project is fire sensitive and accordingly all the suitable arrangements would be made to contain the incident without any damage, if it happens at any time. Adequate, fire-fighting arrangement at micro level will be provided by the management.

### **7.3.11.1 Category of emergency**

- **Level 1 Emergency** (a local incident with a likely impact only to immediate surroundings of local site, where the impact radius may not be more than 15 m, such as, local fire, etc.). On site emergency management will meet the exigency created due to all Level 1 emergencies.
- **Level 3 Emergency** (an incident with likely impact area extending beyond the boundary limits of the project area, such as, floods, earthquakes, etc.). Level 3 emergencies need off-site management plan.

The construction specifications to be adopted by the promoters would significantly incorporate fire-retarding properties. Adequate, firefighting arrangement at micro level will be provided by the promoter. In case of mishap, suitable provisions for emergency evacuation will be incorporated.

Regarding earthquakes, the structures of the project will be designed to include earthquake resistant features. These will be appropriately incorporated while erection of the structures. To contain the retrospective effects, only government authorities and agencies, at local and state level got to be adequately prepared in its mechanism to contain or minimize the losses arising thereof.

### **7.3.11.2 Planning for disaster**

The management system, at industry level shall include;

- a) Prevention and control at the onset
- b) Setting up an authority, a core group, and control structure
- c) Training and capacity building
- d) Emergency planning for actions on site
- e) Emergency planning for actions off site
- f) Preparing a checklist of periodic requirements
- g) Resource allocation

### **7.3.11.3 Prevention and control**

Identification of hazards is the starting point for a system of prevention and control. The causes and sources need to be delineated. The probability and extent (magnitude) of their likelihood will also be estimated. With this background information, every effort will be made to have a safest possible system, under the given constraints. The identified hazards need to be taken care of by;

- a) Incorporating safety and precautionary features at design, execution, and commissioning stages of development.
- b) Identifying and setting early warning indicators.
- c) Carrying out preventive measures periodically.
- d) Identification and regular monitoring of the potentially accident/hazard prone domains

Additionally, selection/design of vessels, machinery, equipments, pipelines, etc., must take care of the following;

- a) Strict adherence to applicable standards and codes regarding performance and safety
- b) Selection of appropriate MOC
- c) Adequate indicators, proper instrumentation and control system with warning and safety triggering mechanisms.

### **7.3.11.4 Response planning and management**

The overall objectives of an emergency plan are;

- a) To localise the emergency, and, if possible, eliminate it.
- b) To minimize the effects of the disaster on people and property.

Emergency plans are separate for on-site and off-site matters, but that are consistent to each other. On-site emergency plan includes the following issues;

- Formulation of the plan and of emergency services
- Alarm and communication mechanisms
- Appointment of personnel and definition of duties.
- Emergency control centre.
- Voluntary organizations
- Chemical/material information
- Action on site
- Rehearsing emergency procedures
- Plan appraisal and updating

An off-site emergency plan will include the detailed information on following aspects;

- a) Organization – details of command structure, warning systems, implementation procedures, emergency control centres, details of the key officers.
- b) Communications – identification of personnel involved, communication centre, call signs, networks, list of telephone numbers, etc.
- c) Specialized emergency equipment
- d) Specialized knowledge
- e) Meteorological information
- f) GIS based database
- g) Humanitarian arrangements
- h) Public information
- i) Assessment

### **7.3.11.5 Fire protection system**

In an Induction Furnace process, the main cause of fire can be due to sparking in electrical substations or cable networks laid down around the factory premises. The risk of fire in substations has been historically low, but the possible impacts of a fire can be catastrophic. The hazard created by mineral-oil-insulated equipment such as transformers is, that the oil is a significant fuel supply that can be ignited by an electrical failure within the equipment.

Infiltration of water, failure of core insulation, exterior fault currents, and tap-changer failures are some of the causes of internal arcing within the mineral insulating oil that can result in fire. It is very important to learn and educate the officials and the workers in the factory about these hazards and remedial actions to be taken in case of such fires. The following shall be taken care of while designing the electrical substation systems in the factory;

1. Every oil-filled apparatus, such as transformer, having an individual or aggregate oil capacity of 2000 litres or more shall be housed in a locked, weather and fire resistant building and shall be properly ventilated to the outside of the building only.
2. The building housing the oil-filled apparatus shall be separated by a distance of not less than 6 m from all other buildings.
3. If the building housing the transformer is within 6 m of the surrounding building there shall not be any door or window opening in the substation or the surrounding building. If the building or compartment housing oil-filled apparatus is communicating with another building or compartment, the substation shall be segregated by separating walls of 355 mm thick brick wall or 230 mm thick RCC, carried up to roof level with door openings therein protected by single fireproof doors of 2 hour rating.

The following systems of fire protection are proposed to be provided for the Electrical Substation:

- a) Fire alarm system
- b) Fire containment
- c) Hydrant system for the entire plant
- d) Carbon dioxide portable fire extinguishers.

### **Fire alarm system**

A fire alarm system shall be installed to provide visual and audible alarm in the plant for fire detection at the incipient stage. This system shall comprise of manual call points located at strategic locations in areas which are normally manned, and automatic smoke and heat *detectors* located at important points such as the cable vault, the control room, switchgear room etc., to detect fire at an early stage, and provide visual and audible alarm.

## **Fire containment**

Strategic areas around the substation would be separated by adequately rated firewalls. All openings for switchgears and cable entry have been sealed by fireproof seals to prevent spread of fire from one area to another.

## **Hydrant system**

The hydrant system would comprise of the following:

- a) Two motor driven pumps will be provided to keep both the hydrants pressurized. These pumps will take the suction from the water storage tank.
- b) External hydrants around the substation premises will be provided.

## **CO<sub>2</sub> Flooding System**

Carbon dioxide or CO<sub>2</sub> is a colorless, odorless, electrically non-conductive gas that is highly efficient as a fire suppression agent. Carbon dioxide gas has a high rate of expansion, which allows fire protection system to work fast. When applied to a fire, CO<sub>2</sub> provides a heavy blanket of gas that reduces the oxygen level to a point where combustion cannot occur. It is proposed to provide wall/column mounted type portable fire extinguishers around the substation walls. The access to these extinguishers will be made easy to facilitate the use during emergency.

## **Lightening protection**

- Identifying and setting early warning indicators
- Carrying out preventive measures periodically
- Identification and regular monitoring of the potentially accident/hazard prone domains

Additionally, selection/design of vessels, machinery, equipments, pipelines, etc., must take care of the following;

- a) Strict adherence to applicable standards and codes regarding performance and safety
- b) Selection of appropriate MOC
- c) Adequate indicators, proper instrumentation and control system with warning and safety triggering mechanisms.

### **7.3.12 ON –SITE EMERGENCY PLAN**

Emergency planning is an integral part of the environment and safety management of an organization. Emergency may arise due to manmade reasons resulting in heavy leakage, fire, explosion, failure of critical control system, design deficiency, unsafe acts, etc. and natural causes like earthquake, flood, cyclone, excessive rain, etc. It is crucial for effective management of an accident to minimize the losses, to the people and property within the plant premise

The vital aspect in emergency management is to prevent accidents and losses by technical and organizational measures. Emergency planning demonstrates the organizational commitment to the safety of employees and adds to the organization's safety awareness implementation.

So it will require to-update 'On site-Emergency plan with additional suitable hands. New manual will be implemented after due training and mock drills.

**Accident Statistics:** The safety and ergonomics department deals with emergency records, events of both minor and major accidents, listing all the details such as place, date & time, duration, probable cause, extent of damage, personnel affected, man-hours lost, medical assistance provided etc. to analyze these data for drawing up necessary corrective measures.

**Safety Inspections:** Monthly safety inspection of all departments is carried out by the respective Department. Additionally, half-yearly Environmental, Health and Safety Audit is performed including all aspects of Environment, Occupational Health & Safety for all the areas.

### **7.3.13 OFF-SITE EMERGENCY PLANNING**

The off-site emergency plan is also an integral part of any major hazard control system. This particular plan relates to only those accidental events, which could affect people and the outside the plant boundary. Incidents, which would have very severe consequences, yet have a small probability of occurrence, would be in this category.

**M/s Punjab Steels** preparedness and disaster management plan shall cover the following, similar to one exiting for old plant

- Identification of local authorities like Industries Deptt., civil defense, police, district commissioner, their names, addresses and communication links.
- Details of availability and location of heavy duty equipment like bull dozers, fire-fighting equipment etc.

- Details of specialist agencies, like hospitals, fire stations stakeholders upon whom it may be necessary to call.
- Details of voluntary organization.
- Meteorological information.
- Humanitarian arrangements like transport, evacuation centers, first aid, ambulance, community kitchen etc.
- Public information and communication through media, informing relatives, public address system etc.

### **7.3.14 EXISTING OCCUPATIONAL & SAFETY HAZARDS**

Details of existing Occupational and safety Hazards are given below. Furnaces differ widely in the technique and rate of melting. Induction melting is a relatively quiet and non turbulent method in which scrap is loaded into a molten bath, into which it gradually sinks as it melts. Fume generation is light to moderate. Following occupational health and safety issues are specific to Induction Furnace plant activities will arise during project work Lot of activities are involved such as construction, erection, testing, commissioning, operation and maintenance:

- Physical hazards
- Radiation hazards
- Respiratory hazards
- Electrical hazards
- Noise
- Burial hazard
- Entrapment hazards
- Fire and explosions

#### **7.3.14.1 Physical Hazards**

Industry specific physical hazards are discussed below:

Potential physical hazards in plant are related to handling heavy mechanical transport (e.g. Trucks) and work at heights (e.g. platforms, ladders, and stairs).

### **7.3.14.2 Heavy Loads/Rolling during construction phase**

Lifting and moving heavy loads at elevated heights using hydraulic platforms and cranes presents a significant occupational safety hazard. Recommended measures to prevent and control potential worker injury include the following;

- Clear signage in all transport corridors and working areas;
- Implementation of specific load handling and lifting procedures, including:
  - Description of load to be lifted (dimensions, weight, position of center of gravity)
  - Specifications of the lifting crane to be used (maximum lifted load, dimensions)
  - Trained staff in the handling of lifting equipments and driving mechanical transport devices.
- The area of operation of fixed handling equipment (e.g. cranes, elevated platforms) should not cross above worker and pre-assembly areas; Material and product handling should remain within restricted zones under supervision;
- Regular maintenance and repair of lifting, electrical, and transport equipment should be conducted.
- Use appropriate PPE (e.g. insulated gloves and shoes, goggles to protect against radiation, and clothing to protect against heat radiation and liquid metal splashes);
- Install cooling ventilation to control extreme temperatures;

Physical hazards in Induction furnace operations may be related to handling of large, heavy, and hot raw materials and product (e.g. charging of furnaces); accidents related to heavy mechanical transport (e.g. trains, trucks and forklifts); injuries from grinding and cutting activities (e.g. contact with scrap material ejected by machine-tools); and injuries due to falls from elevation (e.g. high platforms, ladders, and stairs).

### **7.3.14.3 Product Handling**

Prevention and control of injuries related to handling, grinding and cutting activities, and use of scrap, include the following:

- Locate machine-tools at a safe distance from other work areas and from walkways.
- Individual, enclosed workplaces should be provided to prevent accidents resulting from fettling or the use of grinders;

- Conduct regular inspection and repair of machine-tools, in particular protective shields and safety devices / equipments;
- Provide rails along the transfer plate with interlocked gates that open only when machine is not in use;
- Train staff to properly use machines-tools, and to use appropriate personal protection equipment (PPE).

#### **7.3.14.4 Heat and Hot Liquid Splashes**

High temperatures and direct infrared (IR) radiation are common hazards in foundries. High temperatures can cause fatigue and dehydration. Direct IR radiation also poses a risk to sight. Contact with hot metal or hot water may result in severe burns. Recommended measures for prevention and control of exposure to heat and hot liquids / materials include the following:

- Shield surfaces where close contact with hot equipment or splashing from hot materials is expected e.g. , induction melting ladles, and casting;
- Implement safety buffer zones to separate areas where hot materials and items are handled or temporarily stored. Rail guards around those areas should be provided, with interlocked gates to control access to areas during operations;
- Use appropriate PPE (e.g. insulated gloves and shoes, goggles to protect against IR and ultraviolet radiation, and clothing to protect against heat radiation);

#### **7.3.14.5 Radiation hazards**

Workers may be exposed to gamma rays and related ionizing radiation exposure risks. The following techniques may be used to limit the worker exposure risk:

- Gamma ray testing should be carried out in a controlled, restricted area using a shielded collimator. No other activities should be undertaken in the testing area;
- All incoming scrap should be tested for radioactivity prior to use as feedstock material;
- If the testing area is near the plant boundary, ultrasonic testing (UT) should be considered as an alternative to gamma ray techniques;
- Regular maintenance and repair should be conducted on testing equipment, including protective shields.

#### **7.3.14.6 Respiratory Hazards**

Dust generated in foundries includes iron and metallic dusts, which are present in melting, casting and finishing shops;

- Source of dust and gases should be separated and enclosed;
- Design facility ventilation to maximize air circulation. Outlet air should be filtered before discharge to the atmosphere;
- Exhaust ventilation should be installed at the significant point sources of dust and gas emissions, particularly the melting shop;
- Use automated equipment, especially in the fettling process;

#### **7.3.14.7 Electrical Hazards**

Workers are exposed to electrical hazards due to the presence of heavy-duty electrical equipment in plant.

#### **7.3.14.8 Noise**

In process generates noise from various sources, including scrap handling, furnace melting, transportation and ventilation systems. Recommended noise management techniques include the following:

- Enclose the process buildings and / or insulate them;
- Cover and enclose scrap storage and handling areas, as well as shake out and fettling processes;
- Enclose fans, insulate ventilation pipes and use dampers;
- Implement management controls, including limitation of scrap handling and transport during nighttime.
- Noise abatement measures should achieve the ambient noise levels.

#### **7.3.14.9 Explosion and Fire Hazards**

Handling of liquid metal may generate a risk of explosion, melt run out, and burns, especially if humidity is trapped in enclosed spaces and exposed to molten metal. Other hazards include fires caused by melted metal, and the presence of liquid fuel and other flammable chemicals. In addition, iron foundry slag may be highly reactive if calcium carbide is used to desulfurize the

iron. Recommended techniques to prevent and control explosion and fire hazards include the following:

- Design facility layout to ensure adequate separation of flammable gas and oxygen pipelines, and storage tanks, away from heat sources;
- Separate combustible materials and liquids from hot areas and sources of ignition (e.g. electrical panels);
- Protect flammable gas and oxygen pipelines and tanks during “hot work” maintenance activities;
- Emergency preparedness and response.

#### **7.3.14.10 Permissible Exposure level (PEL)**

Whether Exposure level are with in Permissible level. So far no permissible Exposure Levels have been specified and exposure levels in this Industry are low to moderate level and measures are taken to safeguard the exposure levels.

### **7.3.15 OCCUPATIONAL HAZARDS & PREVENTIVE SAFETY MEASURES**

#### **7.3.15.1 First aid measures**

Following first aid measures are taken:

**Eye Contact:** Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns

**Skin Contact:** Wash with cool water and a pH neutral soap or a milk skin detergent. Seek medical attention for rash, burns, irritation and dermatitis.

**Inhalation:** Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms.

**Ingestion:** Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical consultation.

#### **7.3.15.2 Exposure controls and personal protection**

##### **Exposure Controls**

- Control of dust through implementation of good housekeeping and maintenance;

- Proper fume and dust extraction system to control fume/dust emission in work zone.
- Use of PPE, as appropriate (e.g. masks and respirators)
- Use of mobile vacuum cleaning systems to prevent dust build up on paved areas;

### **Personal Protective Equipment (PPE)**

As a supplementary protection against exposure to hazardous conditions in the production of iron and steel where the safety of workers cannot be ensured by other means, such as eliminating the hazard, controlling the risk at source or minimizing the risk, suitable and sufficient PPE, having regard to the type of work and risks, and in consultation with workers and their representatives, shall be procured and used by the workers and provided for specified period.

- Workers shall make regular use of the PPE provided, and maintain it in good condition, consistent with their training and be provided with the proper means for doing so.
- Respiratory Protection: When the dust level is beyond exposure limits or when dust causes irritation or discomfort use Respirator.
- Eye Protection: Wear Safety goggles to avoid dust contact with the eyes. Contact lenses should not be worn when handling the materials.
- Skin Protection: Wear impervious abrasion and alkali resistant gloves, boots, long sleeved shirt, long pants or other protective clothing to prevent skin contact.

#### **7.3.16 OTHER SAFETY MEASURES**

- Safety training to the workers are being given.
- PPE are being provided to the workers.
- The maintenance and cleaning of bag filters will be carried out regularly.
- The dust removal efficiency of bag filters will be checked regularly.
- Work place environment monitoring will be carried out regularly and records will be maintained. The monitoring of dust in the work place will be carried out.
- Good housekeeping is being implemented in the plant.
- First aid box is provided.
- The industry provides adequate lighting facility inside the plant premises.
- General dilution ventilation is provided to control dust levels below applicable exposure limits.

- Fire extinguishers are provided to withstand the fire or explosion condition.

### **7.3.17 IDENTIFICATION OF HAZARDOUS PROCESS/AREA**

- Induction Furnace: Hot metal spillage, explosion, Fire & Electrocution.
- Continuous Casting Plant: Hot metal spillage Re-heating Furnace: Fire and explosion
- Fuel Oil tanks: Fire & Spillage
- Electrical Rooms: Fire & Electrocution
- Transformer area: Fire & Electrocution

### **7.3.18 OCCUPATIONAL HEALTH MONITORING PLAN**

All the potential occupational hazardous work places shall be monitored regularly. The health of employees working in these areas would be monitored periodically for early detection of any ailment due to exposure. For Occupational Health monitoring following plan shall be implemented:

#### **7.3.18.1 Medical Surveillance:**

All employees should be medically examined by Factory Medical officers once in two years to ascertain the health status of all workers in respect of Occupational Health hazard to which they are exposed. Medical officer will prepare a list of hazardous area both area wise and trade wise. Specific tests are performed for identification of such occupational hazard. No person is employed to operate a crane, locomotive or work-lift or give signals unless his eye sight and colour vision have been examined by qualified ophthalmologist. The industry will provide training program for the employees to inform them of the following aspects; hazards of operations, proper usage of noise mask and earplugs, the importance of engineering controls and work practices associated with job assignment(s).

#### **7.3.18.2 List of Tests to be conducted and recorded every two years:**

- Eyes
- Respirator system
- Abdomen
- Locomotor System

- Hernia
- Urine
- Audiogram
- Ears
- Circulatory system (Blood Pressure)
- Nervous System
- Skin
- Hydrocele
- Blood for ESR Report
- Chest X Ray

#### **7.3.18.3 Schedule of medical examination:**

The following schedule for medical checkup will be followed:

1. Comprehensive Pre-employment medical checkup for all employees.
2. Chest X- Ray once a year for employees working in hazards area
3. Chest X- Ray for all other employees once every 3 years.
4. Spirometry & Lung function test for all employees once every 6 months.
5. Clinical examination of all employees once every 6 months.
6. Comprehensive medical examination of all the employees after retirement and all those employees with more than 5 years of service leaving the company

#### **7.3.18.4 Report of schedule medical examination:**

Report of schedule medical examination shall be published within the company and also report to higher management with safety & health magazines published within the company. Also workers whose schedule examinations are pending to be intimated through their respective department heads to avoid any worker / employee left out for schedule medical examination.

### **7.3.19 CONCLUSION**

Risk assessment and hazard management study for expansion of M/s Punjab Steels has covered the process description, applicability of rules and description of hazardous chemicals. Fire and explosive index (F and EI), Toxicity Index (TI). Material Identification Methodology, F & EI

computation. This leads to Hazard Ranking and identification of hazards, and hazard assessment done, from there, consequences analysis done. Mitigation measures have been given in details to minimize the impact. From analysis and details given in mitigation measures, it is established that hazards in induction furnace working can be safe enough to Environment.

## **7.4 REHABILITATION AND RESETTLEMENT (R&R) PLAN**

The proposed expansion involves replacement of existing 2 induction furnaces and no additional land is required for the proposed expansion. Hence, Resettlement & Rehabilitation is not required as there is no land acquisition or displacement of any houses, habitation or livestock.

## **7.5 TRAFFIC STUDY**

### **7.5.1 METHODOLOGY ADOPTED**

Traffic analysis is basically the process of intercepting and examining the number of vehicles on the road and deducing the pattern of traffic movement. Manual counting was done so as to count the vehicles in the form of cycle, scooter, car, bus, truck, jeep, etc. The safe and time efficient movement of the people and goods is dependent on Traffic flow, which is directly, connected to the traffic characteristics. For better understanding of the present status of traffic flow at the junction, traffic survey is conducted. Thereafter, value of Passenger Car Units (PCU's) is calculated for different vehicular types and accordingly value of LOS is calculated for existing scenario. In order to calculate the traffic load after expansion of project, additional traffic is assumed based on projects that are being expanded. Subsequently, modified PCUs are calculated and LOS is being checked whether it is sufficient to cater the load after expansion.

### **7.5.2 TRAFFIC STUDY EXISTING & AFTER EXPANSION**

Traffic study measurements were performed to assess the impact on local transport infrastructure due to the increase in capacity of project namely "M/s Punjab Steels" Village Tooran, Amloh Road, Tehsil Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. The project is connected to Amloh Road via village road.

The traffic data count was done at significant points at Amloh Road to the road connecting the village Tooran i.e. at 2 different locations namely A & B. Google Earth Image showing location of project and its existing approach road along with locations wherein traffic study was conducted is shown below in **Fig. 7.5.**



**Fig. 7.5: Google Earth Image showing existing approach road along with location on which traffic study was conducted**

Traffic data was collected continuously for 3 days on 24 hr. basis by visual observation and counting of vehicles. Two teams having skilled persons were under the supervision of Mr. Baljit Singh were deployed simultaneously at two stations i.e. point A & B during each shift for counting the traffic load. Photographs depicting traffic study is shown below in **Fig. 7.6**.



**Fig 7.6: Photographs of Traffic study**

At the end of each hour, fresh counting and recording was undertaken. Traffic count data on different two locations are given below from **Table 7.6(a) to Table 7.6(f)**.

**Table 7.6(a): Traffic survey on existing road at Location A Amloh Road on dated****22.07.2019**

Type of Vehicles	Total no. of Vehicles	Equivalency factor	Equivalent PCU/day*
Motor Cycle/Scooter/Cycle	10,581	0.50	5,290.5
Passenger Car/Pickup van/Auto rickshaw	4,157	1	4,157
Agricultural Tractor/Light Commercial Vehicle	235	1.5	352.5
Cycle-Rickshaw	144	2	288
Truck/Bus/Hand Cart	1,622	3	4,866
Horse-drawn Vehicle	17	4	68
Truck-Trailer/Agricultural Trailer/Slow Vehicles	49	4.50	220.5
Bullock Cart	0	8	0
<b>Total</b>	<b>16,805</b>		15,242.5

**Table 7.6 (b): Traffic survey on existing road at Location B approach road to village****Tooran on dated 22.07.2019**

Type of Vehicles	Total no. of Vehicles	Equivalency factor	Equivalent PCU/day*
Motor Cycle/Scooter/Cycle	192	0.50	96
Passenger Car/Pickup van/Auto rickshaw	58	1	58
Agricultural Tractor/Light Commercial Vehicle	17	1.5	25.5
Cycle-Rickshaw	7	2	14
Truck/Bus/Hand Cart	39	3	117
Horse-drawn Vehicle	2	4	8
Truck-Trailer/Agricultural Trailer/Slow Vehicles	0	4.50	0
Bullock Cart	0	8	0
<b>Total</b>	<b>315</b>		318.5

**Table 7.6(c): Traffic survey on existing road at Location A Amloh Road on dated****23.07.2019**

Type of Vehicles	Total no. of Vehicles	Equivalency factor	Equivalent PCU/day*
Motor Cycle/Scooter/Cycle	10,671	0.50	5,335.5
Passenger Car/Pickup van/Auto rickshaw	4,402	1	4,402
Agricultural Tractor/Light Commercial Vehicle	282	1.5	423
Cycle-Rickshaw	144	2	288
Truck/Bus/Hand Cart	1,776	3	5,328
Horse-drawn Vehicle	26	4	104
Truck-Trailer/Agricultural Trailer/Slow Vehicles	54	4.50	243
Bullock Cart	0	8	0
<b>Total</b>	<b>17,355</b>		<b>16,123.5</b>

**Table 7.6 (d): Traffic survey on existing road at Location B approach road to village****Tooran on dated 23.07.2019**

Type of Vehicles	Total no. of Vehicles	Equivalency factor	Equivalent PCU/day*
Motor Cycle/Scooter/Cycle	254	0.50	127
Passenger Car/Pickup van/Auto rickshaw	73	1	73
Agricultural Tractor/Light Commercial Vehicle	18	1.5	27
Cycle-Rickshaw	12	2	24
Truck/Bus/Hand Cart	38	3	114
Horse-drawn Vehicle	3	4	12
Truck-Trailer/Agricultural Trailer/Slow Vehicles	0	4.50	0
Bullock Cart	0	8	0
<b>Total</b>	<b>398</b>		<b>377</b>

**Table 7.6(e): Traffic survey on existing road at Location A Amloh Road on dated  
24.07.2019**

Type of Vehicles	Total no. of Vehicles	Equivalency factor	Equivalent PCU/day*
Motor Cycle/Scooter/Cycle	10,813	0.50	5,406.5
Passenger Car/Pickup van/Auto rickshaw	4,649	1	4,649
Agricultural Tractor/Light Commercial Vehicle	350	1.5	525
Cycle-Rickshaw	133	2	266
Truck/Bus/Hand Cart	1,908	3	5,724
Horse-drawn Vehicle	32	4	128
Truck-Trailer/Agricultural Trailer/Slow Vehicles	67	4.50	301.5
Bullock Cart	0	8	0
<b>Total</b>	<b>17,952</b>		<b>17,000</b>

**Table 7.6(f): Traffic survey on existing road at Location B approach road to village Tooran on dated 24.07.2019**

Type of Vehicles	Total no. of Vehicles	Equivalency factor	Equivalent PCU/day*
Motor Cycle/Scooter/Cycle	249	0.50	124.5
Passenger Car/Pickup van/Auto rickshaw	83	1	83
Agricultural Tractor/Light Commercial Vehicle	18	1.5	27
Cycle-Rickshaw	18	2	36
Truck/Bus/Hand Cart	41	3	123
Horse-drawn Vehicle	3	4	12
Truck-Trailer/Agricultural Trailer/Slow Vehicles	0	4.50	0
Bullock Cart	0	8	0
<b>Total</b>	<b>412</b>		<b>405.5</b>

The above data gives the volume of the road as per the existing scenario. The available capacity of the roads has been taken from IRC 64: Guidelines for Capacity of Roads in Rural area by Indian Roads Congress. The V/C ratio has been calculated in order to calculate the LOS (Level of service) as given in **Table 7.7** below.

**Table 7.7: Existing Traffic Scenario & LOS at different locations**

Locations	V (Volume in PUC/day)	C (Capacity in PUC/day)*	Existing V/C ratio	LOS
A	<ul style="list-style-type: none"> <li>• 15,242.5</li> <li>• 16,123.5</li> <li>• 17,000</li> <li><b>16,122 (average)</b></li> </ul>	36,000	0.44	C
B	<ul style="list-style-type: none"> <li>• 318.5</li> <li>• 377</li> <li>• 405.5</li> <li><b>367 (average)</b></li> </ul>	1,900	0.19	A

\*IRC 64: Guidelines for Capacity of Roads in Rural area by Indian Roads Congress.

#### Conclusion for the existing traffic load:

- The V/C ratio is found to be between 0.4-0.6 for location A which means that the performance of road is good.
- The V/C ratio at location B is between 0.0-0.2 which means that the performance of road is excellent.

**Table 7.8: Details of trucks used for transportation of raw materials and final products**

S. No.	Project	Details	Description	Production capacity	No. of trucks per day#
1.	Punjab Steels	Existing	Raw Materials	122 TPD	6
			Final Products	115 TPD	6
		Proposed	Raw Materials	241 TPD	12
			Final Products	215 TPD	11
<b>Traffic load</b>					<b>(6+6+12+11) x 2 = 70</b>

# Considering an average capacity of truck as 20 MT.

**Table 7.9 Additional traffic load due to proposed expansion**

S. No.	Vehicles Distribution	Number of Vehicles Distribution/Day	Passenger Car Unit (PCU)	Number of Vehicles Distribution/Day
		Road Connecting the project		Road Connecting the project
1.	Trucks	70+2*	3	216
2.	Two-wheelers	40	0.5	20
<b>Total</b>				<b>236 PCU/day</b>

\* 2 Trucks has been considered for carrying slag as well as APCD dust.

**Table 7.10: Modified Traffic Scenario & LOS at different locations (after expansion)**

Locations	V (Volume in PUC/day)	C (Capacity in PUC/day)*	V/C ratio	LOS
A	16,122 + 236 = 16,358	36,000	0.45	C
B	367 + 236 = 603	1,900	0.31	B

\* IRC 64: Guidelines for Capacity of Roads in Rural area by Indian Roads Congress

#### Conclusion for the traffic load after expansion:

- The V/C ratio is found to be between 0.4-0.6 for location A which means that the performance of road will be good i.e. same even after expansion.
- The V/C ratio at location B is between 0.2-0.4 which means that the performance of road will be very good.

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## **CHAPTER 8.0**

### **PROJECT BENEFITS**

#### **8.1 INTRODUCTION**

The development of industrial projects plays a key role in the economic growth of any country. Iron is the most important metal to the mankind, which is widely used for domestic, agricultural, industrial and defense purposes. Per capita steel consumption is a major indicator of economic status of any country. The growth of the steel industry significantly contributes to economic growth as it generates employment both directly and also, due to development of downstream industries. Peripheral development takes place and due to more influx of money through the area, overall importance of the area increases and overall the infrastructure improves.

#### **8.2 EMPLOYMENT POTENTIAL**

##### **8.2.1 DIRECT EMPLOYMENT**

Employment scenario of the study area is largely dependent on the agriculture and Industrialization of the area. The present expansion project has employment generation potential by way of recruiting local people directly for different activities of the project.

Estimated manpower requirement after the proposed expansion shall be 80. Both skilled & unskilled workers will be employed by the industry. At present workforce of 60 are working in the existing unit. These persons are on company payroll. From unloading of raw materials to loading of finished goods, one or more labor contracts will be awarded to local contractors. Local people will be given the opportunity in employment as per their capability and expertise. Priority will be given to scheduled tribe families and women. This will enhance the present socio economic status of the local people.

##### **8.2.2 INDIRECT EMPLOYMENT**

Indirect employment and income effects of any steel plant are non-marginal and usually remain widespread across a long region. Over the years M/s Punjab Steels has caused generation of income and employment opportunities the ancillaries and service unit switch came in the vicinity of the steel plant, specifically ancillary, transport and manufacturing sectors. It is expected that

substantial portion of the investment in this project will trickle down to the local people in the form of employment and income.

A part of this increase in employment potential may be attributed to the existing plant and other industries in the vicinity. As the expansion will take place, indirect employment is likely to grow further. The project is expected to generate substantial indirect employment in other sectors such as service units etc. Employment and income effects indicate that the project has strong positive direct as well as indirect impact on employment and income generation of the area. Since, the infrastructure for maintenance of the specialized plant and machinery may not be readily near site, adequate maintenance facilities for day-to-day and minor plant maintenance including a well-equipped workshop and trained technicians shall be developed for the project.

### **8.3 IMPROVEMENT IN INFRASTRUCTURE**

M/s Punjab Steels intended to provide the following infrastructure in the study area of 10 km radius:

#### **a) Road Transport**

There will be improved road communication due to expansion of the project and maintenance will also be done time to time.

#### **b) Market & Economy**

Need for the products are based on the demand and supply gap in the current market. With increasing utilization of the products, in future, to cater the requirement of all the products, it is essential to expand the manufacturing unit.

### **8.4 EDUCATION**

The local people interest towards education will increase due to the expectation of getting jobs, especially from non-agricultural sources such as the industries in the vicinity of industrial unit. The project is expected to increase such aspirations by bringing opportunities of some direct and indirect employment for the local people. The general awareness towards the importance of education is expected to increase as a result of the expansion. The project will have positive impact on the level of education of the people.

## **8.5 CORPORATE ENVIRONMENT RESPONSIBILITY**

Mr. Rajesh Kumar Mittal (Partner) of M/s Punjab Steels will be responsible for implementation of CER (Corporate Environment Responsibility). The cost of proposed project is Rs. 4.56 Crores. Thus, Rs. 4.56 lakhs (@ 1 % of proposed cost) is required for CER activities as per Office Memorandum vide F. No. 22-65/ 2017-IA.III dated 01.05.2018. The following activities have been proposed to be covered under CER as mentioned in **Table 8.1**.

**Table 8.1: CER activities to be undertaken**

S. No.	Activities	Total Expenditure (in lakhs)	Timeline (Starting from date of grant of EC)	Total Expenditure in 1 Year (in lakhs)
1.	<b>Education</b> Providing solar panels, RO for clean drinking water & uniform to the poor & needy students of Government Middle School located in the village Tooran	4.5	1 year	4.5

## **8.6 OTHER TANGIBLE BENEFITS**

Steel plants by nature serve as the nuclei for development of small-scale industries in the areas around them. These small-scale units usually have input-output linkages with the steel plants. The demand for spares, assemblies and sub-assemblies by steel plants are generally met through the supply (of these items) from small-scale units located nearby.

The present project is likely to accelerate such industrialization through “Bubble Effects” in the study area. It is important to note that the small-scale units are usually labour-intensive and high-priority industries from social point of view. This is expected to play a major role in the future economic and social development of this area.

After expansion, project is expected to serve as Centre of significant small-scale industrial economy around it complemented by the services sector. This is expected to play a major role in the future economic and social development of this area.

- Project will further encourage industrial growth of this sector specifically in formulation units in the region.

- The company will cater more needs of the domestic market.
- The company will have more market growth of its own brands name in various States.

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## **CHAPTER 9.0**

### **ENVIRONMENTAL COST BENEFIT ANALYSIS**

#### **9.1 INTRODUCTION**

As per EIA Notification dated 14<sup>th</sup> September, 2006 and its amendments, chapter on “Environmental Cost Benefit Analysis” is applicable only if the same is recommended at the Scoping Stage.

As per the ToR points issued by SEIAA, Punjab vide letter no. SEIAA/2018/875 dated 16<sup>th</sup> July, 2018 for expansion of steel manufacturing unit, the Environmental Cost Benefit analysis is not required.

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## **CHAPTER 10**

### **ENVIRONMENTAL MANAGEMENT PLAN**

#### **10.1 GENERAL**

Environment Management Plan (EMP) in a project is prepared to mitigate the possible adverse effect of various activities on the existing environmental factors during operational stage 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 everybody it becomes our 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. Environment Management Plan for this project has been prepared keeping in view the existing conditions and likely changes which may occur due to the expansion of project. The implementation and monitoring of different control measures have also been covered.

#### **10.2 PURPOSE OF ENVIRONMENTAL MANAGEMENT PLAN**

Environment management plan is prepared with a view to facilitate effective environment management of the project, in general and implementation of the mitigation measures in particular. EMP provides a delivery mechanism to address potential adverse impacts and to introduce standards of good practice to be adopted. For each stage of the program, the EMP lists all the requirements to ensure effective mitigation of every potential biophysical and socio-economic impact identified in the EIA. For each operation, which could otherwise give rise to impact, following information is presented:

- To treat and dispose-off all the pollutants viz. liquid, gaseous and solid waste so as to meet statutory requirements (Relevant Pollution Control Acts) with appropriate technology.
- To support and implement work to achieve environmental standards and to improve the methods of environmental management.
- To promote green-belt development.
- To encourage good working conditions for employees.
- To reduce fire and accident hazards.

- Budgeting and allocation of funds for environment management system.
- To adopt cleaner production technology and waste minimization program.

## **Control Measures for Dust Emissions**

### **Raw Material Handling**

The industry will implement the following recommendations to make the containment system effective:

- i. Use shredded scrap for uniformity of size
- ii. Bundling/pressing the scrap to increase bulk density
- iii. Provide side suction hood in place of canopy hood
- iv. Stop the use of man-cooler
- v. Up-grade existing air pollution control device
- vi. Cover the sides of shed to the maximum possible extent to avoid cross winds.

### **Induction furnace**

- i. Use of Side Suction Hood for containment of dust emissions as it does not interfere during charging of raw materials with magnet & pusher.
- ii. Compartmentalized Pulse Jet Bag Filter (offline cleaning) with spark arrestor and ID fan to achieve the emission levels (SPM <150 mg/Nm<sup>3</sup>)

### **Charging & Melting**

The best practice to be adopted for better and efficient operation of melting & charge as:

- Be clean (free from oil, grease, rust, paint etc.)
- Be as dense as possible for faster melt rate, lesser energy consumption and less pollution levels
- The furnace should be filled up to the desired coil height for effective & faster heat transfer leading to reduction in specific energy consumption with less pollution levels
- Be segregated for harmful ingredients like explosives
- The length of the scrap being charged into the furnace should be less than the size of the crucible.
- Have less sharp pointed edges, particularly in case of heavy and bulky scrap.

## **Maintenance of Bag Filter**

- Check pressure drop after hood and before spark arrestor regularly.
- Maintain optimum pressure drop 3-6" wc across the bag house as the pressure drop in excess of 6" indicates choking of the bag filter and less of 3" indicates puncture of bags.
- The filter bags shall be inspected as per preventive maintenance schedule
- Maintaine the temperature in the range of 100-120°C as temperature in excess to 140 °C would lead to burning of the bags

## **Collection & Disposal of Dust**

- The rotary air lock to be provided in the hopper of spark arrestor, cyclone(s) and bag house for collection of dust.
- Dust should be removed periodically as per preventive maintenance schedule to prevent re-entrainment of dust

<b>Preventive Maintenance Schedule for APCD</b>	
<b>Daily</b>	
1. Check visible suction at hood	
2. Check visible stack emissions	
3. Record differential pressure across filter bags, ID Fan, hood	
4. Check air filter clog indicator	
5. Dust collection from spark arrester & bag filter	
<b>Weekly</b>	
1. Record compressed air pressure	
2. Clean compressed air filter	
<b>Monthly</b>	
1. Check bag house for leaks	
2. Check flanges at duct joints / bends for leaks	
3. Check underground trench for cleaning	
<b>Semi-Annually</b>	
1. Check / replace oil filter & air filter of compressor as recommended running hours	
2. Check fan blades for dust build up	
3. Check condition of bags	

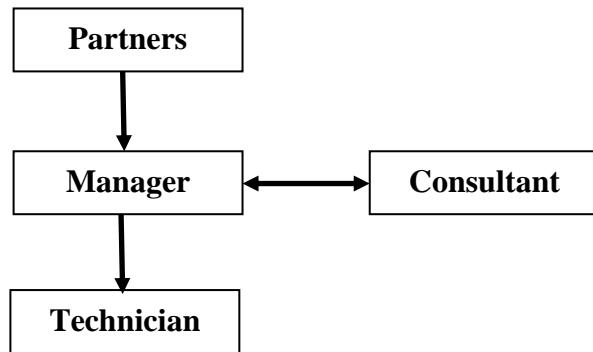
4. Check fan, V-belts etc.
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<b>Annually</b>
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1. Check duct for dust build up
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### **10.3 ENVIRONMENT MANAGEMENT POLICY & ENVIRONMENT COMMITTEE**

Company is very much oblivious of its responsibility in protecting the Environment. Thus, various mitigation measures as given in the report shall be taken-up and effort will be made to nullify the effect of the project on the Environment, if any. Any action or effort remains incomplete, if it is not monitored properly at regular intervals and corrective measures taken, wherever necessary. Regular monitoring has thus been provided. Company has a well-defined policy to keep the environment clean. The management has decided that all effective steps shall be taken to prevent deterioration of the existing environment. Environment Management Committee will be constituted for this cause. The Committee will consist of following persons as given in **Fig. 10.1**.



**Fig. 10.1: Environment Management Cell of the Company**

The purpose for formation of the Environment Committee is to:

- Violations if any will be brought to notice of the Top Management. It will also be intimated to concerned regulatory authorities and corrective measures will be undertaken.
- Conduct reviews of our operations to monitor environmental performance.
- Comply with all relevant environmental laws and regulations to minimize risks to health, safety and environment.

- Work with local government, regulatory authorities and communities to ensure safe handling, use and disposal of all materials, resources and products.

The main aims under the said Policy are to:

- Effectively manage, monitor, improve and communicate the environmental performance.
- Take all reasonable steps to prevent pollution.
- Set realistic and measurable objectives and targets for continual improvement of the environmental performance.
- Ensure that all employees and contractors are trained to understand their environmental responsibilities and create an environment that adheres to the Company's Policies, procedures and applicable regulations.
- Minimize waste and increase recycling within the framework of waste management procedures.
- Comply fully with all relevant legal requirements, codes of practice and regulations.
- Identify and manage environmental risks and hazards.
- Hold leadership accountable for good environment performance of our operations and projects. Inherent in that accountability will be the commitment of management to provide resources and successfully create an appropriate environment.
- Reduce, recycle and reuse resources.
- The project proponent shall regularly review this policy and ensure that corrective and preventative actions are taken in order to ensure continual improvement.
- To treat all the pollutants viz. liquid and gaseous, which contribute to the degradation of the environment, with appropriate technologies.
- To comply with all regulations stipulated by the Central/State Pollution Control Boards related to air emissions and liquid effluent discharge as per Air & Water pollution control laws.
- To handle hazardous wastes as per the Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016 of the Environment (Protection) Act, 1986.
- To encourage support and conduct developmental work for the purpose of achieving

environmental standards and to improve the methods of environmental management.

- To make continuous efforts to improve environment.
- The system of reporting of Non-conformances/violation of any Environmental Law/ Policy will be as per the management system.

Environmental Policy of the company is attached as **Annexure 11**.

#### **10.4 BUDGETARY PROVISION FOR EMP IMPLEMENTATION**

**Table 10.1: Cost of EMP in the Plant**

S. No.	Environmental Protection Measures	Capital Cost (Rs. in lakhs)	Recurring Cost (Rs. in lakhs/year)
1.	Air Pollution Control (Installation of APCD)	40	0.5
2.	Water Pollution Control (STP)	10	2.0
3.	Noise Pollution Control (Including cost of landscaping & green belt)	4.5	1.5
4.	Solid Waste Management	2.5	1.0
5.	Environment Monitoring & Management	3.0	5.0
6.	Health, Safety & Risk Assessment	3.0	0.5
7.	Rain Water Recharging outside the project premises	1.0	0.5
8.	Miscellaneous	1.0	0.5
<b>Total</b>		<b>65</b>	<b>11.5</b>

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## **CHAPTER 11.0**

### **SUMMARY & CONCLUSION**

#### **11.1 INTRODUCTION**

M/s Punjab Steels is a Private company established in the year 1998. It is classified as Non-Govt. Company. The existing industrial unit deals with the manufacturing of Ingots/ TMT bars having production capacity of 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and rolling mill. Now, they have proposed expansion within the existing unit so as to increase their production capacity to 330 TPD of Ingots/ TMT bars by replacing the existing two Induction Furnaces with 2 no's Induction Furnaces of capacity 15 TPH each. However, the rolling mill remains even after expansion. The steel industries in general are on priority list as they contribute in overall development of the country and in particular will produce steel and steel products at economic cost and also have export potential to earn/save foreign exchange.

The TOR letter was issued by SEIAA, Punjab vide Letter No. SEIAA/2018/875 dated 16<sup>th</sup> July, 2018

#### **11.2 PROJECT DESCRIPTION**

<b>S. No.</b>	<b>Parameters</b>	<b>Description</b>
1.	<b>Project</b>	Expansion of steel manufacturing unit namely “Punjab Steels” falls under schedule 3(a) as per EIA Notification dated 14 <sup>th</sup> September, 2006 and its subsequent amendments.
2.	<b>Project Proponent</b>	Mr. Rajesh Kumar Mittal (Partner)
3.	<b>Brief description of nature of the project</b>	Existing industrial unit deals with the manufacturing of Ingots/ TMT Bars having production capacity 115 TPD with two Induction Furnaces of capacity 4 TPH and 6 TPH and one rolling mill. Expansion of the existing steel manufacturing unit will be done by replacing the existing two no's Induction Furnace with 2 Induction Furnaces of 15 TPH each and rolling mill remain same
4.	<b>Salient Features of the Project</b>	
4.1	<b>Overall plant capacity</b>	The overall production capacity of the plant will

S. No.	Parameters	Description																	
		become 330 TPD comprising of Ingots/ TMT Bars with 2 IF's of capacity 15 TPH each and one rolling mill.																	
4.2	<b>Total Plot Area</b>	5.60 acres (or 22,483.27 sq.m.); Expansion of project is within the existing land only.																	
4.3	<b>Location</b>	<p>Project boundary coordinates of all corners are given below:</p> <p>A: 30°38'47.00"N and 76°16'18.36"E  B: 30°38'48.61"N and 76°16'13.52"E  C: 30°38'53.96"N and 76°16'13.74"E  D: 30°38'53.46"N and 76°16'18.70"E</p> <p>The project and its study area falls in the Survey of India, Toposheet No. <b>H43K6 &amp; H43K2</b>.</p>																	
4.4	<b>Water requirement</b>	<p>Total consumption of water after expansion will be 90 KLD. Out of which, fresh water demand will be 86.5 KLD. The break-up of the same is given below:</p> <table border="1"> <thead> <tr> <th>Details</th><th>Existing Water Demand (KLD)</th><th>Water Demand After Expansion (KLD)</th></tr> </thead> <tbody> <tr> <td>Make up water demand for Cooling</td><td>16</td><td>44.5</td></tr> <tr> <td>Domestic Water Demand</td><td>3</td><td>4.5</td></tr> <tr> <td>Green area water demand</td><td>1</td><td>41</td></tr> <tr> <td><b>Total</b></td><td><b>20</b></td><td><b>90</b></td></tr> </tbody> </table> <p><b>Source:</b> Ground water.  Application has been submitted to CGWA for fresh water demand of 86.5 KLD through two existing bore wells provided within the project premises.</p>			Details	Existing Water Demand (KLD)	Water Demand After Expansion (KLD)	Make up water demand for Cooling	16	44.5	Domestic Water Demand	3	4.5	Green area water demand	1	41	<b>Total</b>	<b>20</b>	<b>90</b>
Details	Existing Water Demand (KLD)	Water Demand After Expansion (KLD)																	
Make up water demand for Cooling	16	44.5																	
Domestic Water Demand	3	4.5																	
Green area water demand	1	41																	
<b>Total</b>	<b>20</b>	<b>90</b>																	
4.5	<b>Wastewater</b>	<p>Approximately, 2.5 KLD of domestic wastewater is being generated from the existing unit which is being treated in the septic tank provided within the project premises.</p> <p>However, after expansion 3.6 KLD of domestic wastewater will be generated which will be treated in</p>																	

S. No.	Parameters	Description
		the STP of capacity 5 KLD to be installed within project premises. Further, no industrial effluent is generated from the existing industrial unit and even, after expansion also no industrial effluent will be generated.
4.6	<b>Man Power</b>	<b>Existing</b> Manpower including both technical & non-technical: 60 persons; out of which 5 are residing. <b>Total manpower after expansion</b> will becomes: 80 persons (both technical & non-technical); out of which 10 will be residing within project premises.
4.7	<b>Power requirement</b>	Existing Power Demand: 8,249.733 KW which is being supplied by Punjab State Power Corporation Limited (PSPCL). Permission for power load is enclosed as <b>Annexure 18</b> . Additional Power Demand: 4,000 KW will be required for expansion which will be supplied by Punjab State Power Corporation Limited (PSPCL). Presently, industry is having load of 8,249.733 KW which is sufficient to run one Induction Furnace of capacity 15 TPH & rolling mill in Phase I. Total Power Requirement after expansion is: 12,249.733 KW.
4.8	<b>Land form, Land use and Land ownership</b>	Total land area of the proposed unit is 5.60 acres (or 22,483.27 m <sup>2</sup> ). The land documents are attached along as <b>Annexure 1</b> .

### 11.3 BASELINE ENVIRONMENTAL STATUS

#### 11.3.1 METEOROLOGICAL DATA

Meteorological data was obtained for the summer season monitoring period i.e. March to May, 2018. The predominant winds are mainly flowing towards North-West direction, with the secondary wind direction being from the South-East.

#### 11.3.2 AMBIENT AIR QUALITY DATA

PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>2</sub> levels (Criteria Pollutants) as well as NH<sub>3</sub> and O<sub>3</sub> were monitored at eight locations in the 10 km study area and at project site. Sites of the monitoring stations were kept keeping in view of the dominant wind direction. On an average, the observed levels are as

follows: PM<sub>10</sub> from 50.4 µg/m<sup>3</sup> to 228.9 µg/m<sup>3</sup>, PM<sub>2.5</sub> from 28.7 µg/m<sup>3</sup> to 130.5 µg/m<sup>3</sup>, SO<sub>2</sub> from 6.9 µg/m<sup>3</sup> to 23.9 µg/m<sup>3</sup> and NO<sub>2</sub> from 13.7 µg/m<sup>3</sup> to 31.1 µg/m<sup>3</sup>. The results when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) for "Industrial/ Residential/ Rural and Other Areas", it was observed that except PM<sub>10</sub> & PM<sub>2.5</sub> all the values of SO<sub>2</sub>, NO<sub>2</sub>, CO and PAH were within prescribed limits. Mass levels of particulate dust as PM<sub>10</sub> & PM<sub>2.5</sub> were quite higher than 24 hours average NAAQ standards of 100 µg/m<sup>3</sup> and 60 µg/m<sup>3</sup> respectively. This indicates air quality deterioration in study area due to presence of industries in areas of Mandi Gobindgarh and Khanna and other agro and biomass burning (after wheat harvesting) activities as predominant in the region.

### **11.3.3 AMBIENT NOISE QUALITY DATA**

Ambient noise levels were measured at 5 locations within the project location and 7 locations outside near the project. Noise levels varied from 56.6 dB(A) to 68.2 dB(A) during the day time and were 49 dB(A) to 54.4 dB(A) during the night time in the study area. The obtained noise levels are well within prescribed limits for industrial area whereas marginally higher to prescribed limits for residential areas indicating annoying environment for population and sensitive receptors. Noisy environmental conditions are mainly associated to industrial activities in Mandi Gobindgarh and Khanna industrial hubs, heavy traffic movement on road network (national highways, state highways and connecting roads) and other agro and domestic activities in the region

### **11.3.4 WATER QUALITY DATA**

The ground water test results indicate that water is good in quality and safe for drinking purpose and fit for cooling water requirement. In the study area, since the samples have been collected from different sites at isolated places, the level of concentration and different elements vary quite considerably which may be due to small aquifers. However, the levels of the various components are within acceptable/ permissible norms for drinking water.

As no effluent will be generated from the industry after the commissioning of the industry. Hence, surface water quality will not be affected due to the industry.

### **11.3.5 SOIL QUALITY DATA**

The above observations show that in the study area soil are generally alkaline in nature and Sandy loam texture with medium class of fertility.

### **11.3.6 LAND USE/LAND COVER**

The majority of land in the 10 km study area is used by agriculture purpose (47.91%), followed by fallow land (8.94 %), settlement (20.61%), scrub land (12.67 %), grass land (8.66%) and water body (1.20 %).

### **11.3.7 ADDITIONAL STUDIES**

#### **11.3.7.1 TRAFFIC STUDY**

Traffic study measurements were performed at two locations starting from Amloh road to the approach road to the Village Tooran to assess impact on local transport infrastructure due to expansion of the project. From the study, it has been concluded that the LOS value from the project vary from good to very good for both the locations. So the additional load on the carrying capacity of the concern roads is not likely to have any significant adverse effect.

#### **11.3.7.2 SOCIO-ECONOMIC STATUS**

The sociological aspects of the project area have been studied that include human settlements, demographic, socio economic aspects among others. The economic aspects include agriculture, industry and occupational structures of workers. The demographic and socio - economic details are described in the following sections:

1. There are around 82 villages within 10 km radius of the project area, with 11 villages falling under Ludhiana District headquarters and 71 villages under Fatehgarh Sahib District headquarters (as per administrative division). As per the latest Census of India data (2011), total no. of households in the project area is 19,298 (in no.) with total rural population of 98,679 (in no.) in the 83 identified villages. Further, of total population of 98,769 (in no.) 53.43% is male population and 46.56% is female population while, only 40.38% belong to Scheduled Caste, with no identified scheduled tribes in the 10 km radius of project area.

2. There are around 19 government pre-primary schools and 18 private pre-primary schools within 10 km radius of the project area. As per the latest Census of India (2011) data total no. of Government Primary School are 78, Private Primary School are 18, Government Secondary School are 8, Private Secondary School are 5, Government Middle school are 30 and Private Middle school are 13 respectively within 10 km radius of the project area. There are around 2 (in no.) Government Senior Secondary School and 3 (in no.) Private Senior Secondary school within 10 km vicinity of the project area. There are around 1 Private Art and Science Degree College, 1 Government Engineering College and 1 Private Engineering College within 10 km of the project location while there are no identified Medical Colleges and Management Institute within 10 km radius of the project area. As per Latest Census of India data, total no. of community Health center are 4, Primary Health center are 3 and Primary Health sub center are 13.
3. Out of 82 villages, 48 villages are under Total Sanitation Campaign (ISC) Scheme whereas, only two of the villages within 10 km radius of the project area have community toilet complex (including Bath) for general public. Around 51 villages have community waste disposal system (house to house collection) and 2 villages of Fatehgarh Sahib District have the community Bio-gas or recycling of waste for production use. Majority of the villages have access to the telephone landline except 3 villages; all the villages have the telephone landline system. On the other hand, 82 villages with 10 km radius of the project area have the mobile phone coverage. 32 of 82 villages have the Public Bus Service facility available with them, except 43 village of Fatehgarh Sahib District and 7 villages of Ludhiana District; all the villages have Black Topped (Pucca) Roads. Except 2 villages of Fatehgarh Sahib District, none of the other villages have Commercial Banks available. 49 of the 82 villages have Self-help Groups (SHG) in their villages. All the villages within 10 Km radius of the project area have access to Power Supply for Domestic Use.

### **11.3.8 ECOLOGY AND BIODIVERSITY**

The faunal and floral diversity observed during the field survey does not claim considerable attention as most of the species observed are common throughout the region and no Rare, Endangered and Threatened species or endemic species were present. The area also does not

possess the capacity to support such ecologically important species and their conservation. The impact of the project activities thus is understood to be negligible on the biological environment which is already disturbed and diminished because of previous industrial activities. As a measure to minimize the prevailing and forthcoming environmental impacts due to industrial pollution and activities, it is advisable to increase green areas through plantations in the available land so that the local faunal and floral biodiversity may increase.

## **11.4 ANTICIPATION ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

### **11.4.1 LAND ENVIRONMENT**

During operation phase, land environment will be affected by solid waste generation and due to change in land use pattern. Depending on the type of the industry, the problem of handling waste varies accordingly. However, solid waste treatment and disposal will not be applicable to the plant as all the solid wastes generated will be recycled in the process.

Induction Furnace-slag will be utilized in the concrete manufacturing unit after recovery of the metal. Some scrap material (waste) will also be generated in the CCM. Proper solid waste management plan will be devised for the management of all solid waste to prevent any impact on the environment.

### **11.4.2 AIR ENVIRONMENT**

The major pollutants from the project will be particulate matter (PM) emissions and controlled using Side Suction Hood, Compartmentalized Pulse Jet Bag Filter with duct & ID fan will be restricted within 150 mg/Nm<sup>3</sup>. The efficient Air Pollution Control Devices will enhance environment clearance. Therefore, impact on the surrounding environment will be minimal.

### **11.4.3 NOISE ENVIRONMENT**

The noise levels near the sources such as raw material handling yard, Induction Furnace etc. will be higher during the operation phase. The noise levels at source like Induction Furnace are anticipated to go upto 85 dB(A). However, the noise levels will attenuate to the background values beyond the plant boundary and the levels are not expected to rise beyond 55 dB(A) in the study area. The damage risk criteria as enforced by OSHA and CPCB to reduce hearing loss, stipulates the noise levels up to 85 dB(A) as acceptable limits for 8 hour working shift per day. In case of the operation of heavy machinery/ cranes for scrap handling and storage, noise levels

may exceed the prescribed limits in certain work places like scrap yard, material loading/unloading and feeding to furnace.

#### **11.4.4 WATER ENVIRONMENT**

Domestic wastewater will be treated in the proposed STP of 5 KLD capacity to be installed within the project premises. No wastewater will be discharged outside the plant premises (under normal operating conditions). The storm water drain will be kept separate from wastewater drains. As no Industrial effluent is generated from the project, hence, the quality of the surface water will not be affected.

#### **11.4.5 SOLID WASTE**

##### **11.4.5.1 Domestic waste**

Approximately, 13 kg/day of domestic solid waste is being generated from the existing project & after expansion approx. 18 kg/day of domestic waste will be generated, which will be properly collected and segregated into biodegradable and non-biodegradable waste. The solid waste is being disposed off as per Solid Waste Management Rules, 2016.

##### **11.4.5.2 Industrial waste**

4 TPD of slag is being generated from existing industrial unit which is disposed of in a low lying area. However, after expansion, the slag produced is estimated to be 11 TPD which will be sold to M/s SH Infrastructure for manufacturing of ready mix concrete. Copy of the agreement is enclosed as **Annexure 13**.

##### **11.4.5.3 Hazardous waste**

Hazardous waste produced from the existing industrial unit is 0.02 TPD of exhaust air or gas cleaning residue under Category 35.1 of Schedule I. Hazardous Waste Authorization has been obtained from PPCB and is valid till 31.03.2021; copy of the same is enclosed as **Annexure 5**. Agreement has been done with M/s Madhav Alloys Pvt. Ltd. for disposal of APCD dust. Copy of the same is enclosed as **Annexure 6**.

After expansion, hazardous waste produced from the industrial unit is estimated to be 1 TPD in the form of exhaust air or gas cleaning residue under Category 35.1 Schedule I. Further, 0.20 KL/annum of used oil will be generated which will be sold to Authorized vendor by PPCB.

## **11.5 GREENERY DEVELOPMENT**

Adequate green area is provided inside the plant premises. Locally available types of trees which are resistant to pollutants will be planted. Tree plantation around the plant helps to arrest the effects of particulate matter and gaseous pollutants in the area besides playing a major role in environmental conservation efforts. The green belt would;

- Mitigate gaseous emissions
- Have sufficient capability to arrest accidental release
- Effective in wastewater reuse
- Maintain the ecological balance
- Control noise pollution to a considerable extent
- Prevent soil erosion
- Improve the Aesthetics

All the species suggested are pollution tolerant, besides having an aesthetic appeal.

## **11.6 ENVIRONMENTAL MONITORING PROGRAM**

The environment monitoring plan enables environmental management system with early sign of need for additional action and modification of ongoing actions for environment management, improvement and conservation. The environmental monitoring points will be decided considering the environmental impacts likely to occur due to the operation of proposed expansion as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action for protection of environment Monitoring of environmental samples will be done as per the guidelines provided by MoEF&CC/CPCB. Separate records for water, wastewater, solid wastes, air emission, soil and manure/ compost will be prepared and preserved regularly. Along with other budgets, Budget for environmental monitoring will be prepared and revised regularly as per requirement. The estimated yearly budget for Environmental Monitoring has been kept as Rs. 5 lakhs which include monitoring of efficiency of pollution control equipment, once in four months.

## **11.7 RISK MITIGATION MEASURES**

Even with all precautions, disasters may take place. As such, an Emergency Plan will be formulated to take care of any disaster in the plant and surrounding areas. In order to prevent occurrence of any disaster, the plant will be provided with various safety and disaster control facilities. In addition to these, numerous material handling systems, heavy road transport, high-tension electric lines, overhead cranes and various other handling and transport systems always have chances of accidents.

## **11.8 PUBLIC CONSULTATION**

Public hearing for the proposed project was conducted on 27.02.2019 by PPCB at project location i.e. Village Tooran, Amloh Road, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab. The public hearing was attended by the 74 persons who were mainly from nearby villages and issues related to the expansion of the project were addressed and their reply along with its subsequent action plan has been prepared.

Issues raised during Public Hearing are:

- Infrastructure
- Pollution Control measures

## **11.9 PROJECT BENEFITS**

The project will overcome the demand and supply gap of steel product in the country. The expansion of the project will also generate additional revenue for the State Government. The steel availability will boost the infrastructure sector and overall economic scenario of the country. The project will create additional direct/indirect employment for people. Local people will be preferred for employment

## **11.10 CORPORATE ENVIRONMENT RESPONSIBILITY**

Mr. Rajesh Kumar Mittal (Partner) of M/s Punjab Steels will be responsible for implementation of CER (Corporate Environment Responsibility). The cost of proposed project is Rs. 4.56

Crores. Thus, Rs. 4.56 lakhs (@ 1 % of proposed cost) is required for CER activities as per Office Memorandum vide F. No. 22-65/ 2017-IA.III dated 01.05.2018.

## **11.11 ENVIRONMENTAL MANAGEMENT PLAN**

Environment Management Department will implement the EMP of the project. All recommendations given in the EIA report including that of occupational health, risk mitigation and safety will be complied. Capital cost for the pollution control equipment for project is estimated to be Rs. 65 lakhs and recurring cost per year will be Rs. 11.5 lakhs. EMD will ensure that all air pollution control devices and water re-circulating systems function effectively. Schemes for resource conservation (raw materials, water etc.) and rainwater harvesting will be taken up by EMD. Greenbelt and greenery development inside and outside the plant premises will be intensified by the EMD. Guidelines issued by the Central Pollution Control Board (CPCB) on greenbelt development will be followed. Environmental awareness programs for the employees will be conducted. EMD will also ensure cleanliness inside the plant.

## **11.12 CONCLUSION**

Environmental Impact Assessment study reveals that M/s Punjab Steels will successfully implement a well – designed Environmental Management Plan and it will comply with Environmental Norms/ Guidelines issued by PPCB/CPCB/MoEF&CC.

The region shall also be benefited from expansion of the project as there will be direct employment of people in the Steel plant. Preference will be given to the people of the state possessing requisite skills and qualification criteria. Also, there will be lot of scope for indirect employment of the people of the state in and around the project like in transportation sector.

In view of the above, expansion of steel manufacturing unit namely M/s Punjab Steels will be technically feasible and financially viable.

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## **CHAPTER 12.0**

### **DISCLOSURE OF CONSULTANT ENGAGED**

#### **12.1 INTRODUCTION ABOUT CONSULTANT**

Eco Group is having reputed business house working in the field of environment in North India since 1999. To achieve mission of the organization “Preventing pollution with purpose- Bringing profit and goodwill in equal measure” we aim at that our customers achieve effective compliance with legislation including a better public image and earn from waste.

LABORATORY SERVICES DIVISION is known for excellence in monitoring and analysis of environmental parameters. ENVIRONMENT SERVICES DIVISION undertakes various activities as - Environmental Impact Assessment/Environmental Clearances; Environmental Audits; Pollution Control Systems Engineering & Design Services; Performance Evaluation of Pollution Control Systems; Benchmarking and Environment due diligence Consent Management/Feasibility Reports for various pollution control Boards including Punjab, Haryana, Himachal, Chandigarh, J&K, UP, Uttarakhand, Delhi etc.

Eco Laboratories & Consultants Pvt. Ltd. is accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL), Department of Science & Technology, Government of India vide Certificate No. TC-7477 dated 22.06.2018 and valid till 21.06.2020 in the field of water, wastewater, air and noise testing as well as Biological & Mechanical testing. It is also accredited by QCI-NABET vide Certificate No. NABET/EIA/1720/IA0032 dated 11<sup>th</sup> April, 2018. Laboratory is approved by Ministry of Environment, Forest & Climate Change (MoEF&CC) as Environmental Laboratory under the Environment (Protection) Act, 1986. Further, laboratory is approved by Punjab Pollution Control Board vide letter Lab/32-27907 dated 30.06.2017 and Haryana State Pollution Control Board. The unit is also ISO-9001:2008, ISO-14001:2004 and ISO 18001:2007 certified.

It operates from an independent 10,000 square feet built-up area on three levels each in Mohali, Punjab (India). A dedicated team of thirty engineers, scientists along with the support staff qualified in areas as environment, civil, electrical, mechanical, chemical engineering, biotechnology, chemistry and microbiology oversees the various activities.

Sister concern namely Eco Paryavaran Engineers and Consultants Private Limited is a 9001:2008 organization, that provides engineering and turnkey solutions for pollution control and recycling including- Sewage Treatment Plants/Effluent Treatment Plants; Ultra Filtration-RO Combination Systems for Effluent recycling; Wastewater Treatment Equipments & Components- Aeration Systems; Disinfection systems-Ozone/UV based; Sludge Handling Systems-Filter Press/Bags; Air Pollution Control Systems; Noise Attenuation; Solid Waste Management Systems.

It also undertakes capacity building programs through NGO- Environment Matters, registered under Societies Registration Act.

The Environment Impact Assessment of Steel Manufacturing Plant namely M/s Punjab Steels Village Tooran, Amloh Road, Teh. Amloh, Mandi Gobindgarh, Distt. Fatehgarh Sahib, Punjab has been carried out by Eco Laboratories & Consultants Pvt. Ltd.

## **12.2 RECOGNITIONS/ ACCREDITATIONS OF CONSULTANT**

- QCI NABET vide Certificate No. NABET/EIA/1720/IA0032 dated 11<sup>th</sup> April, 2018.  
Copy of certificate is shown in **Figure 12.1**.
- Ministry of Environment, Forest & Climate Change, Govt. of India under Environmental Protection Act 1986 vide F.No. Q-15018/14/2016-CPQ dated 2<sup>nd</sup> August, 2017.
- Lab Approved by NABL in the field of Testing vide Certificate No. TC-7477 dated 22.06.2018.
- ISO 14001:2015, ISO 9000:2015, ISO 18001:2007.
- Approved by Punjab Pollution Control Board vide Letter No. Lab/32-23639 dated 06.08.2018.

All the above mentioned approvals are enclosed as **Annexure 15**.



**Fig. 12.1: Accreditation Certificate from QCI-NABET**

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**EDS Reply**

**Proposal No: SIA/PB/IND/22215/2018**

S. No.	Detail of the Document	Submitted/ Not Submitted/ Not applicable	Reply
1.	<p>As the case is at security stage and project proponent submitted the application on 21/08/2019 as per web portal, the project proponent is required to deposit EC fee @ Rs. 10,000 per crore of total project cost as per the Notification No 10/167/2013-STE(5)/1510178/1 dated 27/06/2019.</p> <p>Cost of the project in Crores- Rs. 13.93 Crore, thus Rs. 1,39,300/- is required to be deposited through NEFT/RTGS on the following detail:</p> <p><b><u>Account Detail</u></b></p> <p>Punjab State Council for Science &amp; Technology Corporation Bank, Sector 8, Chandigarh Account No. 520101262451298 IFSC Code No CORP0000319.</p>	<p>Not Submitted. Please submit EC fee Rs. 1,39,300/-</p>	<p>Processing fees for Environmental Clearance i.e. Rs. 1,39,300/- has been submitted vide UTR No. NEFT-000073909256/ CORP 0000319 dated 23.09.2019. Copy of the cheque submitted is enclosed as <b>Annexure 24</b>.</p>
2.	<p>a) Properly filled form 2 along with signed attached in the hard copy.</p> <p>b) Co-ordinates of all four corners.</p>	<p>Please submit the hard copy. Attached in EIA.</p>	<p>a) Signed copy of the application is being submitted in hard copy.</p> <p>b) The co-ordinates of all corners of the project boundary are given below:</p>

			A: 30°38'47.00"N and 76°16'18.36"E B: 30°38'53.46"N and 76°16'18.70"E C: 30°38'53.96"N and 76°16'13.74"E D: 30°38'48.61"N and 76°16'13.52"E Google Earth image showing the corner co-ordinates is enclosed as <b>Drawing 11</b> .									
3.	<p>a) In case(s) where land has already been purchased/acquired: Proof of ownership of land (existing owner) such as copy of latest Jamabandi (not more than one month old) and credible document showing status of land acquisition w.r.t project site as prescribed in OM dated 07.10.2014 issued by MoEF&amp;CC).</p> <p>b) In case where land is yet to be purchased/ acquired.</p>	<p>Please provided the details as under:</p> <table border="1"> <thead> <tr> <th>Khasra no.</th> <th>Area in ha</th> <th>ownership</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Khasra no.	Area in ha	ownership							<p>a) The total land of the project is 22,483.27 sq.m (or 5.60 acres). The land detail of the project mentioning the khasra No., area and ownership details as per table is enclosed as <b>Annexure 25</b>.</p> <p>b) No additional land has been purchased or acquired for proposed expansion.</p>
Khasra no.	Area in ha	ownership										
4.	Coloured Layout plan duly approved by the Competent Authority/ Conceptual Plan of the project on A1 Sheet.	Attached but not readable- Attach readable colored layout plan.	Coloured readable copy of the layout plan of the project is attached along as <b>Drawing 5</b> . However, same is being in hard copy also.									
5.	Location plan showing the exact location of the project site w.r.t. some permanent/ important features of the area and site plan of the project showing the following: <ol style="list-style-type: none"><li>1. Location of STP, ETP and APCD</li><li>2. Solid waste storage area and Slag</li></ol>	Legend not mentioned on the layout plan	1. Layout plan showing the location of APCD, slag storage area, hazardous waste storage area, first aid room, green area, parking area, DG sets and transformer room is enclosed as									

	<p>area</p> <ol style="list-style-type: none"> <li>3. Hazardous waste storage area</li> <li>4. Green belt with marking of tree</li> <li>5. Parking space</li> <li>6. Firefighting equipment layout</li> <li>7. First aid room</li> <li>8. Location of Tubewells</li> <li>9. DG sets and Transformers</li> <li>10. Any other utilities</li> </ol>		<p><b>Drawing 5.</b></p> <ol style="list-style-type: none"> <li>2. Services plan showing the location of proposed STP, existing septic tank and two bore wells is enclosed as <b>Drawing 12.</b></li> <li>3. Firefighting layout plan showing the fire-fighting measures is enclosed as <b>Drawing 13.</b></li> </ol> <p>However, Landscape plan showing the existing &amp; proposed green area is enclosed as <b>Drawing 9.</b> Parking layout plan showing the traffic movement, parking of trucks and cars is enclosed as <b>Drawing 14.</b></p>
6.	Acknowledgement along with set of application filed to CGWA/ Competent Authority for obtaining permission for abstraction of ground water.	Not Attached	Application has been submitted to CGWA regarding abstraction of ground water for fresh water demand of 86.5 KLD vide application No. 21-4/5544/PB/IND/2019 dated 9.10.2019; copy of the acknowledgement is enclosed as <b>Annexure 26.</b>
7.	<p>Analysis reports of ambient air, ground water and noise levels from NABL/MoEF Accredited laboratories as per detail below:</p> <ol style="list-style-type: none"> <li>i. The field data sheets as prescribed by SEIAA, Punjab which are available on the official website of SEIAA, Punjab along with exact location of sampling/ monitoring point marked on the layout map should be filled at the time of sample collection/ monitoring by the Lab</li> </ol>	<ol style="list-style-type: none"> <li>i. Field data sheet is not attached.</li> </ol>	<ol style="list-style-type: none"> <li>i. Field data sheet were signed during the time of sampling. However, field data sheets of one day monitoring at project location for ambient air, noise, soil and ground water is enclosed as <b>Annexure 27.</b></li> </ol>

	<p>and should be attached with the water, air, noise &amp; soil monitoring reports.</p> <p>ii. Water, air, noise &amp; soil monitoring reports more than 6 months old or prior to date of signing of consent letters/agreement with the land owner shall not be accepted w.e.f. June, 1<sup>st</sup> 2015 onwards.</p> <p>iii. Atleast one groundwater sample from the shallow/ first aquifer and in case groundwater is to be abstracted for drinking purposes then atleast one groundwater sample from the said aquifer should be monitored and reports be attached accordingly.</p>	<p>ii. Test reports of April/May 2018 of M/s Jogindra Castings etc. attached. Please explain for data is old more than six months. Please attach the index for the monitoring reports:</p> <table border="1"> <thead> <tr> <th>Report No.</th><th>Name of the customer</th><th>Date/Type of sample</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </tbody> </table>	Report No.	Name of the customer	Date/Type of sample							<p>ii. The test reports showing the customer name and sampling location of M/s Jogindra Castings Pvt. Ltd. etc. have been attached because some sampling monitoring locations are common for other projects also which falls within the 10 km study area. The detail as per table is enclosed as <b>Annexure 28</b>. Monitoring was done for period March to May, 2018; after which draft EIA was submitted and public hearing was conducted. Further, data is valid till 3 years from the date of monitoring as per the Office Memorandum No. J-11013/41/2006-IA-II(I) (Part) dated 29.08.2017. Copy of the same is enclosed as <b>Annexure 29</b>.</p>
Report No.	Name of the customer	Date/Type of sample										
8.	Energy Conservation measures, quantification of energy saved and renewable energy devices used.	Not provided	LED's lights have been provided within the industry for lighting purpose. Further, new proposed Induction Furnace will be more energy efficient.									
9.	Action plan for green belt development a) Percentage of the area to be developed.	a) 33% mentioned	a) 33% green area has been proposed within the project premises. Landscape plan showing the existing and proposed green area is enclosed as <b>Drawing 9</b> .									

	b) Maintenance plan for 3 years indicating cost to be incurred	b) Not provided	b) Maintenance plan of green area for 3 years mentioning the cost involved is enclosed as <b>Annexure 30</b> .
10.	i. Traffic Circulation System and connectivity with a view to ensure adequate parking, conflict free movements. ii. Parking requirement with provision made.	Not provided to be marked on layout plan.	Parking layout plan showing the traffic movement, parking of trucks and cars is enclosed as <b>Drawing 14</b> .