FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Amalgamation & Modification cum Expansion of Eloquent Steel Pvt. Ltd. for 336,000 TPA Billet Production along with Rolling Mill for production of 210,000 TPA Rolled Product, Installation of 150,000 TPA Briquette Plant, 100,800 TPA Sinter Plant and addition of Pig Iron as product from the Existing Submerged Arc Furnace

at

Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal

Baseline Study Period: 1st December 2019 to 29th February 2020

[ToR Letter No.: F. No. J-11011/188/2011-IA.II(I) on Dated 11.11.2020

Environmental Monitoring Done by Vardan EnviroLab, Gurugram

(*NABL accreditation No. TC-6299 valid till 27.08.2022*)

Project Category- "A"



SUBMITTED TO:

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

APPLICANT

M/s Eloquent Steel Private Limited
Mouza: Nakrojoria, P.O: Salanpur,
District: Paschim Burdwan,
West Bengal: 713357
Ph: 9233331111

ENVIRONMENT CONSULTANT

VARDAN ENVIRONET

(QCI/NABET ACCREDITED NO. NABET/EIA/2023/SA 0158)

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DOCUMENT NO. 2020_VI_001
(December, 2022)

UNDERTAKING

I, **Deepak Kumar Agarwal**, Director, of M/s Eloquent Steel Pvt Ltd give this undertaking to the effect that conditions laid down in Standard ToR prescribed by MoEF&CC, New Delhi vide F.No. J-11011/188/2011-IA.II(I) dated 11th November, 2020 for preparation of EIA for obtaining environmental clearance for Amalgamation & Modification cum Expansion of Eloquent Steel Pvt. Ltd. for 336,000 TPA Billet Production along with Rolling Mill for production of 210,000 TPA Rolled Product, Installation of 150,000 TPA Briquette Plant, 100,800 TPA Sinter Plant and addition of Pig Iron as product from the Existing Submerged Arc Furnace located at Village: Nakrajoria, P.O.: Salanpur, District: Paschim Bardhaman, West Bengal have been complied in the FINAL EIA/EMP report.

In order to assess the likely impacts of the proposed expansion project, **M/s Eloquent Steel Pvt Ltd** authorities entrusted **Vardan Environet, Gurugram** to facilitate in the process of Environmental Impact Assessment (EIA) for various environmental attributes which are likely to be affected and to prepare detailed Environmental Management Plan (EMP).

Information and data on Project Technical Details, Land, Water, Fuel, Pollution Mitigation Measures, Stack Details, Project Cost, Project Layout and Location Maps used in this EIA Report has been given by M/s Eloquent Steel Pvt Ltd. The Report is approved by M/s Eloquent Steel Pvt Ltd for submission to MoEF&CC for Environmental Clearance.

I hereby submit this undertaking on 20.12.2022 to MoEF&CC (as per O.M. 11011/376/2010-IA.II(I) dated 9th October, 2018) that the contents and information submitted in this EIA report is owned by **M/s Eloquent Steel Pvt Ltd**. The EIA Report fully complies with all the points mentioned in the ToR prescribed by MoEF&CC. The data submitted in this EIA Report is true and factually correct.

For M/s Eloquent Steel Pvt Ltd

Date: 20.12.2022

Place: Kolkata, West Bengal

Deepak Kumar Agarwal

Director

REVIEW AND REVISION HISTORY

History of revisions of the present report:

Table I: History of the Revisions

Rev.	Date	Modifications	Remarks
Rev.01	19.12.2022	FINAL EIA REPORT	Report has been prepared by Team Vardan and all the comments of reviewers have been incorporated in FINAL EIA REPORT.

Document No. 2020_VI_001

Table II: Record of Review

Rev.	Date	Description	Review-1	Review-2	Approval
Rev.01	19.12.2022	FINAL EIA REPORT	Mr. Anshul Yadav	Mr. K. M. Khare	Mr. R.S. Yadav
			09.12.2022	13.12.2022	16.12.2022
-	-	-			

This Report has been prepared by **Vardan Environet** on behalf of and for the use of the **M/s ELOQUENT STEEL PVT LTD** with due consideration and skill as per our general terms and **c**onditions of business and terms of agreement with the **M/s ELOQUENT STEEL PVT LTD.**

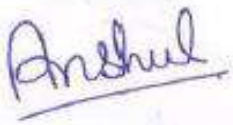
Declaration by Experts contributing to the EIA studies for M/s Eloquent Steel Pvt Ltd is an existing Steel and Ferro Alloy plant at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal.

We, hereby certify that we were a part of the EIA report team in the following capacity that developed the above EIA.

EIA coordinator:

Name:	Mr. K.M. Khare
Signature and Date:	
Period of involvement:	November 2019-Till Now
Contact information:	Vardan Environet, Plot No. 82A, Sector 5, IMIT Manesar, Gurugram (Haryana)-122052 Contact – 9051920308
Email Id:	kmkhare@vardan.co.in

Associate EIA Coordinator:

Name:	Mr. Anshul Yadav
Signature and Date:	
Period of involvement:	November 2019 - Till Now
Contact information:	Vardan Environet, Plot No. 82A, Sector 5, IMT Manesar, Gurugram, Haryana -122052 Contact – 9953147268
Email Id:	anshul@vardan.co.in

Functional area experts:

No	Functional areas	Name of the expert/s	Signature	Involvement (period and task**)
1	AP*	Mr. K.M. Khare (FAE – Cat. A) Mr. Shubham Tyagi (Team Member, FAE – Cat. B)	 	**December 2019-March 2020** a) Identifying the sources of emissions and mitigation measures. b) Inventorization of point Source Stacks emissions details. c) Site-specific Micro-Meteorology Monitoring and collection of secondary data. d) Air quality monitoring – location planning, supervision of AAQ monitoring, sample collection and preservation. e) Laboratory visit during analysis of samples f) Identification of air emission impacts from the project. g) Proposing mitigation measures along with budget for control of air pollution
2	WP*	Mr. K.M. Khare (FAE – Cat. A) Mr. Shubham Tyagi (Team Member, FAE – Cat. B)	 	**December 2019-March 2020** a) Surface water and ground water quality monitoring, Sampling, Preservation and assessment, impacts on Water environment and mitigations. b) Identification, characterisation of effluent streams and treatments there of c) Water balance and conservation measures d) Budget Allocation
3	AQ*	Ms. Surbhi Rohan Makhwana (FAE – Cat. A)		**December 2019-March 2020** a) Processing of site- specific micro-meteorological data b) Collection and use of inversion/mixing

No	Functional areas	Name of the expert/s	Signature	Involvement (period and task**)
		Mr. Dushyant Parashar (FAA)		Height data for modelling. c) Air dispersion modelling for prediction of GLCS due to PM10, S02 and NOx
4	NV*	Mr. K.M. Khare (FAE – Cat. A)		**December 2019-March 2020** a) Analysis of ambient noise quality data b) Impact due to plant noise and abatement measures
		Mr. Shubham Tyagi (Team Member, FAE – Cat. B)		
5	EB*	Dr. Niteesh Kumar (FAE – Cat. A)		**December 2019-March 2020** a) Biological environment status in respect of terrestrial faun and aquatic eco system b) Impact on ecological environment
6	HG*	Mr. R.S. Yadav (FAE – Cat. A)		**December 2019-March 2020** a) Ground water resource assessment b) Impact on ground water potential and mitigation measures for avoiding Ground water contamination.
		Mr. Ankush Sarange (FAE: Cat B)		
8	SE*	Ms. Shilpa Mishra (FAE – Cat. A)		**December 2019-March 2020** a) Determination of demographic profile including socio economy & livelihood b) Assessing the changes in socio economic pattern c)Budget Allocation
9	SHW*	Mr. S.K. Sharma (FAE – Cat. A)		**December 2019-March 2020** a) Non-hazardous solid wastes generation, recycling and disposal b) Storage and management of hazardous solid wastes c)Budget Allocation

No	Functional areas	Name of the expert/s	Signature	Involvement (period and task**)
10	SC*	Mr. S.K. Sharma (FAE – Cat. A) Mr. Dushyant Parashar (FAA)		**December 2019-March 2020** a)Sampling, analysis and characterization of soil b) Assessment of fertility/productivity of soil, nutrient availability c) Remediation of soil pollution/contaminated soils d) Controlling degradation of soil/soil conservation
11	LU*	Mr. Ankur Agarwal (FAE – Cat. A) Mr.Ankush Sarange (FAE: Cat B)		**December 2019-March 2020** a) Analysis of data related to land use pattern b) Land use map development. c) Impact on land environment in respect to land form change
12	RH*	Mrs. Ashwini Ganwir (FAE – Cat. A) TM – Shubham Tyagi		**December 2019-March 2020** a) Identification of hazardous prone areas b) Environment risk evaluation c) On-site and Off-site emergency planning

Declaration by the Head of the Accredited Consultant Organization

I, R.S. Yadav, hereby, confirm that the above mentioned experts prepared the EIA of **M/s Eloquent Steel Pvt Ltd** is an existing Steel and Ferro alloy plant at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal.

I certify that this report has been prepared by **'Vardan Environet'** with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

I also confirm that I shall be fully accountable for any misleading information mentioned in this statement.

Name: **R. S. Yadav**



Signature

Designation: **Managing Director**

NABET Certificate No. & Issue Date: NABET/EIA/2023/SA 0158 issued on 13.04.2022 and valid upto 05.05.2023

EXECUTIVE SUMMARY

For

Amalgamation & Modification cum Expansion of Eloquent Steel Pvt. Ltd. for 336,000 TPA Billet Production along with Rolling Mill for production of 210,000 TPA Rolled Product, Installation of 150,000 TPA Briquette Plant, 100,800 TPA Sinter Plant and addition of Pig Iron as product from the Existing Submerged Arc Furnace

At

M/s Eloquent Steel Pvt Ltd
Village: NakraJoria, P.O: Salanpur
District: Paschim Burdwan, West Bengal

Study Period: Winter Season
(1st December to 29th February 2020)

Applicant
Mr. Deepak Kumar Agrawal
Eloquent Steel Private Limited
Mouza: Nakrojoria, P.O: Salanpur, District: Paschim Burdwan
West Bengal: 713357
Ph: 9233331111.
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Environment Consultant
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EXECUTIVE SUMMARY

1.0 PROJECT NAME AND LOCATION

1.1 Project Name

Amalgamation & Modification cum Expansion of Eloquent Steel Pvt. Ltd. for 336,000 TPA Billet production along with installation of Rolling Mill for production of 210,000TPA Rolled Product, Installation of 150,000TPA Briquette Plant, 100,800 TPA Sinter Plant and addition of Pig Iron as product from the existing Submerged Arc Furnaces at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal.

1.2 Location of the Project

The project is located at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal on area of 9.089Ha between latitude ranging from 23°46'28.52"N to 23°46'43.04"N and longitude ranging from 86°51'33.15"E to 86°51'49.34"E. The entire project will be installed in vacant land of the existing plant. Project does not envisage additional land for the project. No forest land is involved. As per DFO Memo No. 5596/28-1 dated 02.03.2022 (enclosed as ***Annexure-14***), there are no national parks/Wildlife Sanctuary/Reserve forests within 10km radius. Nearest habitation is Dendua Village at 30meters distance from project site.

River Damodar is flowing at a distance of 3.75km in West direction and Maithon dam is located at a distance of 4.86 km in NW direction of project site. Project is having good connectivity through SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi Kolkata Highway) is at 0.91km & 4.64km road distance respectively connected to project site by Kalyaneshwari to Dendua Road. SH-5 is also located at 4.67km road distance. Also, Salanpur Railway station is 3.2kms from project site.

2.0 BACKGROUND

M/s Eloquent Steel Pvt. Ltd. **(ESPL)** has acquired two adjacently located Steel Plants of M/s Hira Concast Ltd. and M/s Impex Steel Ltd., with common boundary wall in the village: Nakrajoria, P.O. Salanpur, Dist: Paschim Burdwan, West Bengal. Possession of M/s Hira Concast Ltd was made through Auction from Official Liquidator of Hon'ble High Court, Calcutta on 01.09.2017. Possession of M/s Impex Steel Ltd was made through bidding in Auction Notice, issued by Stressed Asset Management Branch of State Bank of India, Kolkata. The unit was not in operation for about three years and was put up for auction by the authorities.

M/s Hira Concast Ltd. has initially installed 2x7 Ton Induction Furnaces for production of 53,000 TPA MS Ingots. Environmental Clearance (EC) for expansion of M/s Hira Concast Ltd. was granted by Ministry of Environment, Forest and Climate Change (MoEF&CC) vide F.No J-11011/533/2008-IA.II(I) dated on 11.12.2008 and F.No. J-11011/49/2010-IA.II(I) dated on 03.09.2012 for total production of 27,552 TPA Ferro Manganese and 20,735 TPA Silico Manganese through 1x7.5MVA and 1x5.5 MVA Submerged Arc Furnace (SAFs).

M/s Impex Steel Limited was also established for the production of 53,004 TPA MS Ingots

through 2x7 Ton Induction Furnaces after obtaining NOC from WBPCB on 24.04.2006. Company obtained EC for expansion from MoEF&CC for the production of 17,076 Ferro-manganese and 11,394 TPA Silico Manganese through SAF of capacity 2x7.5MVA vide F.No: J-11011/183/2008-IA.II(I) on 28.07.2008. Later on, the company further obtained EC from MoEF&CC for production of 31,500 TPA Ferro-manganese or 22,500 TPA Silico-manganese or 9,000 TPA Ferro-silicon by installation of additional 2x7.5 MVA SAFs and 300 TPD Sinter Plant for production of 90,000 TPA Mn Ore sinter vide F.No.: J-11011/188/2011-IA.II(I) on 20.09.2012. However, these additional facilities are not installed till date in the plant premises. West Bengal Pollution Control Board (WBPCB) awarded Consent to Establish (CTE) and Consent to Operate (CTO) time to time.

Further, M/s ESPL. is granted permission by WBPCB vide memo no. 124-2N-29/2019(E) – PT dated 05.03.2020 for change in product mix within overall production capacity of Ferro-Alloy plant without increase in pollution load as per the provision of MoEF&CC Notification No. S.O.3518(E) dated 23.11.2016 for production of:

- Ferro-Manganese - 59,052 TPA OR
- Silico-Manganese - 43,236 TPA OR
- Ferro-Silicon - 22,680 TPA OR
- Ferro-chrome - 59,052 TPA OR
- Ferro-Silicon-chrome - 33480 TPA OR in combination of any.

MoEF&CC on 15th October, 2020 has issued transfer of Environmental Clearances from M/s Hira Concast Ltd to M/s Eloquent Steel Pvt Ltd vide F.No. J-11011/49/2010-IA.II(I) and from M/s Impex Steel Ltd to M/s Eloquent Steel Pvt Ltd vide F.No. 11011/188/2011-IA.II(I) respectively.

CTO is issued by WBPCB vide memo no. 1534-WPBA/ Red (Bwn)/ Cont (591)/08 dated 28.06.18 to the M/s ESPL for production of 53,000 TPA MS Ingot, 27,552 TPA Fe-Mn and 20,736 TPA Si-Mn, is valid till 30.04.2023 for the units which were formally under M/s Hira Concast Limited. Another CTO is issued by WBPCB vide memo no. 1530-WPBA/Red(Bwn)/Cont(581)/07 dated 28.06.18 to the M/s ESPL for production of 53,004 TPA MS Ingot, 31,500 TPA Fe-Mn and 22,500 TPA Si-Mn, is valid till 30.06.2023 for the units which were formally under M/s Impex Steel Ltd.

3.0 THE PROJECT

M/s ESPL is now proposing amalgamation of above Environment Clearances transferred in the name of Eloquent Steel Pvt. Ltd. and seeking environment clearance for the proposed modification cum expansion for production of 336,000 TPA Billets through modification of existing 4x7 Ton Induction Furnace to 4x8 Ton, installation of new 2x8 Ton Induction Furnace with 1x8Ton LRF & 2x4/7m CCM and 2x25Ton Induction Furnaces with 1x25Ton LRF & 3x6/11m CCM and production of 210,000 TPA MS Rolled products (Long products- TMT Bar, MS Round & Wire Rod) by installation of 600TPD Rolling Mill along with 1x25TPH Reheating Furnace. Also, 1x25TPH Briquette plant for production of 150,000TPA Chrome Ore Briquettes, 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Sinter are also proposed under the proposed expansion with addition of "Pig

Iron' as product from the existing 3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces with maximum production capacity of 76,400 TPA within the existing premises of 9.089 Ha (22.46 acres).

Table 1: Units and Production Capacity of the Existing & Proposed Project

Plant	Existing installed Units and Capacity		Proposed Units		Total after Expansion	
	Unit	Capacity in TPA	Unit	Capacity in TPA	Unit	Capacity in TPA
Steel Melting Shop -1	4x7 Ton Induction Furnace -	106,004 MS Ingots -	Modification of existing 4x7 Ton IF to 4x8 Ton + Installation of 2x8 Ton IF with LRF (1x8T) and CCM (1x4/7)	164,500	6x8 Ton Induction Furnace with 1x8 Ton LRF and 2x4/7 m CCM	336,000 Billets
Steel Melting Shop-2	--	--	Installation of new 2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	171,500	2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	
Rolling Mill	-	-	600 TPD	2,10,000 Rolled Products	600TPD	210,000 Rolled Products
Reheating Furnace	-	-	1 x 25 TPH	-	1 x 25 TPH	-
Ferro-Alloy Plant with metal recovery Plant	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or	Proposed for production of Pig Iron without adding any additional facilities	Pig Iron-76400	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or
		Si. Mn-43,236, or				Si. Mn-43,236, or
		Fe Si – 22680, or				Fe Si – 22,680, or
		High Carbon Ferro Chrome – 59052, or				High Carbon Ferro Chrome – 59,052, or
		Ferro Silico Chrome – 33480				Ferro Silico Chrome – 33,480, or
		Or in combination of any				Pig Iron-76,400, or in combination of any
Briquette Plant	--	--	1x 25 TPH	150,000	1x 25 TPH	150,000
Sinter Plant	--	--	1x300 TPD	108,000	1x300 TPD	108,000

The project shall be implemented within 48 months after grant of all statutory clearances.

Cost of the Project

Project Cost is estimated as Rs. 120 Crs. Cost of the existing plant is Rs. 83.62 Crores. Hence, total approx. cost of the Plant after the proposed expansion will be Rs. 203.62 Crs.

4.0 PROJECT DESCRIPTION AND DESCRIPTIONS OF ENVIRONMENTAL SENSITIVITY IN 10 KM RADIUS FORM THE SITE. STATUS OF LAND AND ITS ACQUISITION, WATER BODY, POPULATION, FOREST, ECO-SENSITIVE ZONES, ACCESSIBILITY ETC

S.No.	Particulars	Details
1.	Site Location	Village- NakraJoria, P.O.- Salanpur, District- Paschim Burdwan, West Bengal
2.	Topo-sheet Nos. 10km Study area	73I/9, 73I/10, 73I/13 & 73I/14
3.	Center GPS Coordinates	Latitude: 23°46'43.10"N to 23°46'28.56"N Longitude: 86°51'33.19"E to 86°51'49.59"E
4.	Height above MSL	152 meters
5.	Interstate border	Jharkhand and West Bengal Border at 3.52kms
6.	Nearest Habitation	Dendua Village – 0.03Km
7.	Nearest Densely Populated Area	Salanpur- 1.4km
8.	Nearest Police Station	Salanpur- 2.01km
9.	Nearest Post Office	Salanpur Post Office - 1.52km
10.	Nearest Hospital	Dendua Hospital- 0.28km
11.	Nearest Education Facilities	Dendua Primary Govt. School- 0.66Km
12.	Monuments/Religious Place	Bajrangwali Temple at 0.27 km in North East
13.	Nearest River/Reservoir/Dam/etc	Barakar River at 3.75kms. in West Maithon dam at 4.86km NW direction
14.	Nearest Airport	Netaji Subhash Chandra Bose International Air Port -250 km
15.	Nearest Port	Haldia Port 370 kms
16.	Nearest National Highway/ State Highway	SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi Kolkata Highway) is at 0.91km & 4.64km road distance respectively connected to project site by Kalyaneshwari to Dendua Road. SH-5 is at 4.67km road distance.
17.	Nearest Railway Station	Salanpur Station at 2.15kms
18.	Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area	Not within 10 km radius of the project site
19.	Reserve Forest / Protected Forest	Only Protected Forest in 10km study area

5.0 THE PROJECT PROPONENT & ADDRESS FOR CORRESPONDENCE

Mr. Deepak Kumar Agrawal
Eloquent Steel Private Limited
Mouza: Nakrojoria, P.O: Salanpur,
District: Paschim Burdwan, West Bengal- 713357
Ph: 9233331111,
Email Id: esplmoef@shakambharigroup.in

6.0 MANUFACTURING PROCESS DESCRIPTION

The existing Plant is for production of 106,004TPA of MS Ingots through 4x7Ton Induction Furnace and production of either 59,052TPA of Ferro-manganese (Fe-Mn) or 43,236TPA Silico-manganese (Si-Mn) or 22,680TPA Ferro-Silicon (Fe-Si) or 59,052TPA Ferro-Chrome (Fe-Cr) or 33,480TPA Fe-Si-Cr Or in combination of any through installed 3x7.5MVA & 1x5.5MVA Submerged Arc Furnaces (SAF).

The present proposal is for;

Steel Melting Shop-1: Modification of existing 4x7 Tons Induction Furnaces to 4x8 Tons Furnaces and Installation of new 2x8 Ton Induction Furnace with 2x4/7 Billet caster and 1x8 Ton Ladle Refining Furnace for 164,500 Billet Production.

Steel Melting Shop-2: Installation of additional 2x25Ton Induction Furnaces with 1x25Ton Ladle Refining Furnace and 3x6/11m Billet caster for production of 171,500 TPA Billets.

Total Billet production from SMS-1 & SMS-2 will be 336,000 TPA.

Submerged Arc Furnace: No additional Submerged Arc Furnace shall be installed under the expansion. However, in addition to the production of 59,052 TPA of Fe-Mn Or 43,236 TPA Si-Mn Or 22,680 Fe-Si Or 59,052 TPA High Carbon Ferro Chrome Or 33,480 TPA Ferro Silico Chrome production or in combination of any, it has been proposed to produce 76,400 TPA Pig Iron from the existing 3x7.5MVA+1x5.5MVA SAFs. Ferro-alloy division has been provided with Metal Recovery plant from recovery of metals from the slag.

Rolling Mill: Installation of 600 TPD Rolling Mill for production of 210,000 TPA Rolled products (TMT Bar), MS Round & Wire Rod). It has been proposed to directly rolled the hot billets from CCM (Continuous Casting M/cs). However, 1x25 TPH Reheating furnace has been proposed to reheat the billets which couldn't be rolled directly.

Briquette Plant: Additionally, 1x25TPD Briquette Plant for production of 150,000 TPA briquettes from Ferro-Chrome fines shall be installed. Briquettes shall be used for production of Ferro-chrome.

Sinter Plant: 1x300 TPD Sinter Plant shall be installed for production of 108,000 TPA Sinter from iron ore fines, to be used in SAFs for production of Pig iron.

7.0 REQUIREMENTS

7.1 Raw Material Requirement

List of raw material required is presented in **Table 4.**

Table 4: Raw Material Requirement after the Proposed Expansion

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
A	**Ferro Division**						
A-01	Manganese ore	1,44,914	1,44,914	World Metals and Alloys, UAE Kolkata Port to plant	322 km	Ship and By Road	Invoice
A-02	Coke	33,955	33,955	Vivan Overseas, Assam	905 km	By Road	Purchase Order
A-03	Coke Breeze	-	8,640	Jai Maa Gayatri Enterprises, Dhanbad	58.6km	By Road	Purchase Order
A-04	Steam coal	-	16,810	Open Market	20km	By Road	Agreement will done with the source after grant of EC
A-05	Charcoal	6,700	6,700	G.M Coke Industries, Assam	890km	By Road	Agreement will done with the source after grant of EC
A-06	Quartzite	40,030	42,190	Durga Enterprises	267km	By Road	Purchase Order
A-07	Dolomite	5,188	15,988	Ma Bhuwneswari Traders, WB	552	By Road	Purchase Order
A-08	Limestone	-	28296	Odisha	--	Rail	Agreement will done with the source after grant of EC

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
A-09	Electrode paste	1,675	1,675	Hindalco Industries Ltd., Karnataka	2052km	Road	Purchase Order
A-10	Mill Scales	8,618	21,545	In-house	-	-	-
A-11	Chrome ore	19,840	19,840	Odisha	700 km	Rail/Road	Agreement will done with the source after grant of EC
A-12	Magnesite	2,953	2,953	Imported	--	Rail/Road	Agreement will done with the source after grant of EC
A-13	Iron ore Fines	-	70,200	Bravo Sponge Iron Pvt Ltd., Purulia	57km	Road	Purchase Order
A-14	Ferro Chrome Chips	18,748	18,748	Imported/ Odisha	/450 km	Ship/Road	Agreement will done with the source after grant of EC
A-15	Chrome Ore Fines	--	1,62,360	Imported/ Odisha	/450 km	Ship/Road	Agreement will be done once the source is finalized after EC
A-16	Fe Mn Slag	12,971	12,971	In-house	--	--	
A-17	Hydrated Lime	-	4,950	Shree Ram Chemical Works, WB	10km	Road	Agreement will done with the source after grant of EC

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
A-18	Molasses	-	7,920	Uttam Sugar Mills Limited, Uttarakhand	1483km	By Road	Agreement will done with the source after grant of EC
	Sub Total of "A"	**295592**	**620655**				
B	**Steel Division**						
B-01	Sponge iron	94,325	300,125	Shakambhari Ispat & Power Ltd., Purulia, WB	27.3km	Road	Purchase order
B-02	Pig Iron	20,644	65,684	Jai Balaji Industries Ltd..,WB	72km	Road	Purchase order
B-03	Scrap	13,615	43,326	Tata Steel Ltd., Jamshedpur	167 km	Road	Purchase order
B-04	Ferro Alloys	1,294	4,116	In-house	--	Conveyor	-
	Sub Total of "B"	**129,878**	**413,251**				
Total		**425,470**	**10,33,906**				

7.2 Water requirement

The total requirement of makeup water for industrial and domestic purposes after the proposed expansion will be 1970KLD. Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir.

7.3 Power Requirement

Existing power requirement for the operation of units is 30MW and the permission for the same has been obtained from Damodar Valley Corporation (DVC) vide letter dated 30.12.2021. At present power is being provided by DVC through 33KV Sub-station for operation of the plant. Permission for construction clearance for the up-gradation of supply voltage from 33KV to 132KV is also obtained from DVC vide letter dated 28.07.2021. Power requirement after the proposed expansion shall be 64MW and will be met from DVC and permission for the same shall be obtained.

7.4 Land Requirement

The proposed expansion project will be installed within the existing plant premises of 9.089 hectares. No additional land is required for the proposed expansion.

Table 3: Land Use Breakup of the Plant Area

S. No	Proposed Land Use	Existing Ha.	Proposed Ha.	Total Ha.
1.	Plant Area	2.047	2.246	4.293
3.	Electrical Sub Station	0.101	0.101	0.202
4.	RWH Pond, Waste Water Storage Tank, Reservoir Pond	0.401	-	0.401
5.	Parking and Internal Road	1.02	0.051	1.071
6.	Office, Store, Temple, Misc. Building	0.12	0.002	0.122
7.	Green Belt Development (33% of Total Area)	2.72	0.28	3.0
Total Land Area Required		**6.409**	**2.68**	**9.089**

7.5 Manpower Requirement

The existing manpower of the plant is 400. Direct employment due to the proposed expansion will be 400. Total employment after the expansion will be 800. Approx. 50 persons will be employed during construction phase. Potential for indirect employment is more due to the proposed expansion and is likely in Transportation, Travel, Packaging, Information Technology, Telecom, Automobile, Courier Sector etc.

8.0 BASELINE ENVIRONMENTAL DATA– AIR QUALITY, SURFACE AND GROUND WATER QUALITY, SOIL CHARACTERISTIC, FLORA AND FAUNA, SOCIO-ECONOMIC CONDITION OF THE NEARBY POPULATION

8.1 Baseline Environmental Study

To predict the impact of the proposed activities on the surrounding environment, the current baseline environmental status was studied by collecting the data and carrying out monitoring for the period of 1st December, 2019 to 29th February, 2020**.** The baseline data for ambient air quality, surface and ground water quality, noise and soil quality was collected and analyzed for various parameters are as per norms.

Table 5: Baseline data vis-à-vis Permissible Limits

Parameters	No. of Sites	Description	Permissible Level
Air Quality	8	• $PM_{2.5}$ 16.1 to 52.9 µg/m^3 • PM_{10} 32.2 to 86.7µg/m^3 • SO2 8.2 to 29.9 µg/m^3 • NO2 10.8 to 39.4 µg/m^3 • CO 0.36 to 1.09mg/m^3	60 µg/ m^3 100 µg/ m^3 80 µg/ m^3 80 µg/ m^3 4 mg/m^3
Ground Water Quality	8	• pH varies from to 7.15 to 8.22 • Total Hardness varies from 128.0 to 250.0mg/l • Total Dissolved Solids varies from 342 to 468 mg/l. • Chlorides varies from 53.8 to 97.42 mg/l • Fluoride varies from 0.22 to 0.48 mg/l	6.5-8.5 200-600 mg/L 500-2000 mg/L 250-1000 mg/L 1.0-1.5 mg/L
Surface Water Quality	8	• pH varies from 7.36 to 7.72 • Dissolved Oxygen varies from 4.99 to 6.2 mg/l. • BOD varies from 6.0 to 13.0 mg/l. • COD varies from 18.0 to 41.0 mg/l.	IS:2296 Class C Norms
Soil Quality	8	• pH varies from 6.2 to 6.49 • EC varies from 0.428 to 0.922 mS/cm • Potassium varies from 119.30 to 183.0 (Kg/ha) • Available nitrogen varies from 198.21 to 240.18 (Kg/ha) • Organic matter varies from 0.42% to 0.64%	----
Noise Level	1	• Day Time (6:00 a.m. to 10:00 p.m.) 67.5 Leq dB(A) • Night Time (10:00 p.m. to 6:00 a.m.) 56.2 Leq dB(A)	75 Leq dB (A) 70 Leq dB (A)
	7	• Day Time (6:00 a.m. to 10:00 p.m.) 45.1 Leq dB(A) and 53.9 Leq dB(A) • Night Time (10:00 p.m. to 6:00 a.m.) 34.9Leq dB(A) and 44.1 Leq dB(A)	55 Leq dB (A) 45 Leq dB (A)

9.0 LIKELY IMPACT OF THE PROJECT ON AIR, WATER, LAND, FLORA-FAUNA AND NEARBY POPULATION AND SUGGESTED MITIGATION MEASURES:

9.1 Impact on Air Environment and Mitigation Measures

During operational phase air pollution shall be from gaseous and dust emissions arising

from different activity like Raw Material Handling and other process in Steel Melting Shop, Reheating Furnace, SAF, Sinter Plant and Briquetting Plant.

Emission from Point Source (Stack)

Stack emissions will be from Steel Melting shop, Reheating Furnace, Submerged Arc Furnace, Sinter Plant, Briquetting Plant and DG sets.

Emission from Area Source (Fugitive Emission)

Fugitive emissions are expected during Material & Product Handling area, operation of Steel Melting Shop, SAF, Sinter Plant & Briquetting Plant and due to vehicular movement.

Details of existing and proposed pollution control facility are provided below in table. For adequate dispersion of gases, stacks of adequate height have been provided. For heat dissipation in the work zones arising from furnaces adequate ventilation systems has been provided.

Table 6: Details of the Air Pollution Control facilities with Existing and Proposed Units

Sl. No.	Unit	Type of Pollution Control Facility	Nos	Connected with Stack	Norms to met (mg/Nm^3)
1.	Induction Fce. 3x8T	Fume Extraction with spark arrester + Pulsejet type Bag Filter (Existing system will be augmented)	1	1	< 30
2.	Induction Fce. 3x8T + 1x8 T LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter (Existing system will be augmented)	1	1	< 30
3.	Induction Fce. 2x25T + 1x25 T LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
4.	SAF #1 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
5.	SAF #2 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
6.	SAF #3 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
7.	SAF #4 (5.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
8.	Reheating Fce. (25TPH)	Low NOx Burner + Recuperator	-	1	< 30
9.	Briquetting Plant (25TPH)	Pulse Jet Type Bag Filter	1	1	< 30
10.	Sinter Plant (300TPD)	Pulse Jet Type Bag Filter	1	1	< 30
Total number of Bag Filters and Stacks			**9**	**10**	
Material Handling Area		Dust Extraction system and Fog/Mist Sprinklers	All transfer points, screens, crushers, etc.		

9.2 Impact on Water Environment and Mitigation Measures

Wastewater generation shall take place in the form of blow downs from cooling towers, back wash from Softening Plant, wastewater from cooling of rollers in Rolling mill and domestic waste water. Water in the plant premises will be re-circulated for reuse after treatment by using below mentioned processes.

Process Wastewater: Neutralization Pit for treatment of backwash water from Softening Plant for SMS units, ETP of 100KLD capacity for Rolling Mill effluent shall be provided. Mill scales will be sent into sinter plant (in-house) and oil collected will be sold to authorized recycler. Wastewater streams comprising cooling tower blow down and Neutralization Pit will be collected and utilized in metal recovery plant, Sinter plant, dust suppression and slag cooling.

Domestic Wastewater: The sewage & sanitary wastewater generated from toilets, washrooms and canteen buildings in the plant will be conveyed to the Sewage Treatment Plant of capacity 25KLD. Sludge will be removed occasionally and shall be used as manure.

Total wastewater generation during operation of all existing and proposed units shall be **180 KLD,** break of which is provided in table below:

Table 7: Details of the Water Pollution Control facilities

Sl. No.	Unit	Type of Pollution Control System	Quantity (KLD)	Usages
1.	Softening Plant waste water from SMS	Neutralization Pit	10	Slag cooling, Metal Recovery Plant & Dust suppression
2.	Cooling Tower blow down from SMS	-	118	
~~3.~~	Rolling Mill	ETP	0	Recycled
~~4.~~	Softening Plant waste water from Ferro-alloys Plant	Neutralization Pit	4	Slag cooling, Metal Recovery Plant, Sinter Plant & Dust suppression
5.	Cooling Tower blow down from Ferro-Alloy Plant	-	30	
6.	Domestic waste water	STP	18	Plantation
Total Discharge			**180 KLD**	

Thus, no plant effluent will be discharged in to public water ways or drains. Hence, the plant will be designed for **Zero Liquid Discharges (ZLD).**

Storm Water Drainage: During heavy rains excess water is taken to the existing pond through the drains constructed around production facilities as well as all roads. The water enters in to the pond through silt traps pits preventing washed silt from plant to enter the pond.

9.3 Land Environment

Land contamination may occur due to unsystematic disposal of solid and hazardous waste or spillage of oil. Suitable solid wastes management plan will be adopted so that no

contamination of land is envisaged due to the project.

Solid waste generation and utilization from the existing and proposed plant is given in **Table 8.**

Table 8: Solid Waste Generation & Utilization for Existing and Proposed Plant

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
IF Slag	18,326	58,310	After metal recovery (approx. 12%), remaining slag shall be used as aggregates
IF Bag Filter Dust	3,773	12,005	Shall be used in Sinter Plant
Scale from Ingot Casting / CCM	1,400	2,100	Shall be used for production of Fe-Si or Fe-Si-Cr. Or will be used in Sinter Plant
End Cut / Crop from CCM	--	4,900	Will be charged in Induction Furnace as return scrap
Mill Scale from Rolling Mill	--	3,150	Shall be used for production of Fe-Si or Fe-Si-Cr.
End Cut / Cobbles Rolling Mill	--	5,250	Will be charged in Induction Furnace as return scrap
Fe-Mn Slag	59,052 (max.)	59,052 (max.)	Will be used for production of Si-Mn
Si-Mn Slag	36,750 (max.)	36,750 (max.)	Shall be used for construction or filling of low-lying area
Fe-Cr. Slag	53,147 (max.)	53,147 (max.)	• Chrome from Ferro-chrome slag will be recovered at chrome recovery plant. • After chrome recovery, the tailing material will be used as stone chips (8 to 25 mm) & land filling purpose (0 to 8 mm). • TCLP Test will be carried out all around the storage area on regular basis. • Will be supplied for Construction or will be sent to TSDF.
Fe-Si. Slag	1,134 (max.)	1,134 (max.)	Ferro Silicon Slag will be used for cement industries as a raw material & used for medium carbon silico manganese production purpose
Fe-Cr.-Si	1,674 (max.)	1,674 (max.)	Ferro Silico Chrome Slag will be used for cement industries as a raw material as well as for construction and Road filling material after undergoing TCLP Test.

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
Pig Iron Slag	--	38,200 (max.) or in any combination, not exceeding 59,052 TPA	Pig Iron Slag will be used for cement industries as a raw material
Bag Filter Dust from SAFs	1,358 (maximum)	1,358 (Maximum)	Ferro-chrome dust will be used in Briquette Plant. Fe-Mn & Fe-Si dust will be used in Sinter plant
Sinter Plant Dust from Pollution Control	---	5,940	Shall be recycled
Dust from Briquette Plant	--	8,250	Shall be recycled
Used Refractories	30	50	Shall be recycled

Hazardous Waste Management: Generation of 'Used Oil' after the proposed expansion shall be approx. 6.5 kiloliters per annum. Used oil will be collected in dedicated drums and stored on impervious concrete floor with bund wall along with oil collection system for maximum 90 days before disposal and will be sold to the registered recyclers.

Workers will be informed, kept aware and trained about occupational health hazards, due to any activity. Worker's health related problem if any, will be properly addressed.

Other Solid Waste: The Solid Waste generated other than the above-mentioned waste will be E-Waste, Plastic Waste

E- Waste is mostly generated from the discarded electrical parts that from the machineries or the Discarded computer parts. The plant almost produces 0.02TPA of Electrical waste that will be stored on impervious concrete floor for maximum of 180 days. The parts that can be reused will be recovered and the remaining will be sold to Authorized Recycler.

Plastic Waste is mostly generated from the packing unit and raw material unit. It is estimated that the Plastic waste that is generated in the plant will be 0.04TPA. This Plastic Waste will be sold to Authorized Recycler.

The Project Proponent will take initiative to reduce and reuse these types of waste generation so as to prevent pollution.

9.4 Greenbelt Development

Out of 9.089 Ha. area of the plant 3.0 Ha. area (33%) is covered under the plantation. Till date (25.06.2022), company has planted 7150 number of trees (including 150 number of trees planted on 05th June, 2022) covering the 3.0-hectare area within the plant premises

involving the total expenditure of Rs. 45.80 lakhs.

Company has a proposal for doing additional plantation of 600 trees for gap filling near the plant boundary. Company has also proposed to keep a capital budget of Rs. 2.40 Lakhs for additional plantation and a budget of Rs. 2.2 lakhs for yearly maintenance of green area, compensation plantation for non-surviving plants, etc.

9.5 Rain Water Harvesting

The project site is located is Paschim Burdwan district which lies in 'Safe' zone as per Ground water resources of India, 2013. The total volume of water generated in project premises from rooftop, road/paved, green belt and open area in a single storm on 30mm/hr peak rainfall intensity would be 1236.2 cubic meter. The existing pond of storage capacity 6400 m^3 and three additionally proposed underground rainwater storage tanks of capacity 337.5m^3 each will be utilized to accommodate the total rainwater harvested from plant area.

10.0 ANALYSIS OF ALTERNATIVES

The proposed project is an expansion of existing plant and will be installed in the existing premises; hence, alternatives sites were not examined.

The proposed project has adopted a technically viable and feasible and proven technology which is a superior in production of downstream facilities of plant. Hence, there was no need of any analysis of alternatives technology for the proposed project.

11.0 ENVIRONMENTAL MONITORING PROGRAM

To take timely action for protection of environment Monitoring of environmental samples will be done as per the guidelines provided by MoEFCC/CPCB/WBPCB. 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 Capital budget for Environmental Monitoring has been kept as Rs. 80 lakhs and recurring budget Rs.15.59 per year which include monitoring of efficiency of pollution control equipment, once in six months.

12.0 EMERGENCY PREPAREDNESS PLAN IN CASE OF NATURAL OR IN PLANT EMERGENCIES:

12.1 Emergency preparedness plan in case of natural or in plant emergencies:

On-site and Off-site Emergency Preparedness Plan has been developed to control emergency situations. The emergency control room and Assembly area shall be set up at a safe location and marked on the site plan and will be manned round the clock. The control room will be activated in case of an emergency to direct and co-ordinate the operations to handle the emergency. It will be furnished with external and internal telephone connections etc; list of essential telephone numbers; list of key personnel and their address; fire fighting system and site plan. Depending upon site requirements, additional control room will be considered.

12.2 Occupational Health & Safety (OH&S) Measures:

The project proponent strongly believes in the safety and health of the workers. The company will conduct regular medical checkup of the worker and on the safer side there will always be a rotation of the job for the worker who are exposed to dust and high noise. Safety being the first policy of the company.

M/s Eloquent Steel Pvt Ltd shall establish procedures and systems for reporting and recording of Occupational accidents and diseases and dangerous occurrences and incidents. All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses shall be investigated with the assistance of a person knowledgeable/competent in occupational safety.

Capital Budget of Rs. 17.5 lakhs and recurring budget of Rs. 10.0 lakhs is allocated to OH&S.

13.0 PROJECT BENEFITS

The growth of the Steel industry significantly contributes to economic growth as it generates employment both directly and also indirectly. 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.

- Direct employment to approx. 400 persons and indirect employment is expected to be much more in the area of transport, ancillary development etc
- Improvement in infrastructure like road, market, installation of hand pump, dug well etc
- Improvement in Education & Healthcare facilities
- Land is available with the project proponent, hence no procurement of land or displacement of people
- Revenue for the State
- Socio-economic benefits and consequent improvement in the living conditions of local population through planned activities to address issues raised during public hearing
- Company has been carrying various social activities like support for local schools and local groups, for education, health care, food, etc, in the recent past and will continue to do so in future under its Corporate Social Responsibility

Budget for commitments made to address issues raised during Public hearing:

Office Memorandum issued by Ministry of Environment, Forest & Climate Change on 30th September, 2020 states that EAC will deliberate on the commitments made by the project proponent to address the concerns raised during the Public Hearing. Therefore, action plan to address the issues raised in the public hearing along with its budget for implementation of the proposed activities have been prepared.

The total budget of **Rs. 180 Lakhs** has been kept to address the concerns raised during public hearing. All the activities proposed will be implemented within 36 months after obtaining necessary clearances.

Table 9: Budget Details of activities to be undertaken for addressing Public Hearing Issues

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
1	Establishment of Mechanical Tool Training Centre at Eloquent Steel Pvt Ltd. at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal	Construction of Mechanical Tool training centre	**10,00,000**	--	--	**50,00,000**
		Establishing Mechanical Tool Room by procuring Lathe M/cs, Shaping M/c, Drill M/c and Welding M/c	**--**	**20,00,000**	**20,00,000**	
2.	Procurement Water Tanker for water sprinkling on road.	Purchase of 2 No. of water tanker having water sprinkling system which will sprinkle water on the Kalyaneshwari Dendua road on daily basis as per requirement.	**12,00,000**	**12,00,000**	**--**	**24,00,000**
3	Village Road Maintenance at Nakrajoria	Road maintenance shall be done at Nakrajoria village of Dendua Village Panchayat	**2,00,000**	**2,00,000**	**2,00,000**	**6,00,000**
4.	Avenue plantation in vacant area available in surrounding villages under social forestry	Plantation of 2000 trees at available area in the Government Schools, Panchayat Office, govt. hospitals, community centers etc in village: Nakrajoria,	**--**	**10,00,000**	**--**	**10,00,000**

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
		No. of Plants: 2000				
5.	**Socio-economic development in Dendua Village Panchayat**					
i	Renovation of Primary School in Nakrajoria village of Dendua Village Panchayat with necessary infrastructure development for quality education.	Civil & Construction work for Class Room, providing necessary furniture, development of playground, and Painting/Coloring of building	**10,00,000**	--	--	**24,50,000**
		Providing Sports Material, computers and white boards and library materials.	--	**5,00,000**	--	
		Providing relevant Cupboards, Furniture, Computer sets and relevant accessories	--	--	**5,00,000**	
		Distribution of study materials to needy students.	**1,00,000**	**1,00,000**	**1,00,000**	
		Offering scholarship to meritorious students	**50,000**	**50,000**	**50,000**	
ii	Providing dedicated Ambulance to meet any health emergency situation in Dendua & Nakrajoria villages.	Providing Ambulance and equipments & machineries of Ambulance	--	--	**12,00,000**	**12,00,000**

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
iii	Installation of 5 Hand pumps at different location in Nakrajoria village under Dendua village panchayat.	Installation of 5 Hand pumps at different location Nakrajoria village under Dendua village panchayat.	**40,000**	**40,000**	**20,000**	**1,00,000**
iv	3 Water Purification unit at Primary school, Govt Hospital, Panchayat office, etc in Dendua village panchayat area.	3 Water Purification unit at Primary school, Panchayat office, etc. in Dendua Village Panchayat area.	**50,000**	**50,000**	**50,000**	**1,50,000**
v	Drainage system for sanitation in the village Nakrajoria of Dendua Village Panchayat	Roadside and street drain shall be made for sanitation in the village Nakrajoria of Dendua Village Panchayat	**2,00,000**	**2,00,000**	**2,00,000**	**6,00,000**
vi	Installation of 20 Solar powered Street Lights in Dendua Village Panchayat area.	Installation of 20 Solar street lights in Nakrajoria village of Dendua village panchayat.	**--**	**4,00,000**	**4,00,000**	**8,00,000**

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
vii	Renovation of Pond located at Nakrajoria Village and in Dendua Village panchayat area	Renovation/beautification of village pond along with making bathing ghat at Nakrajoria Village and in Dendua Village panchayat area to facilitate natural ground water recharge.	**5,00,000**	**5,00,000**	**5,00,000**	**15,00,000**
Viii	Construction of Separate Toilet for girls and boys in the Primary School	Construction of Separate Toilet for girls and boys in the Primary School of Nakrajoria village.	**4,00,000**	**--**	**--**	**4,00,000**
ix	Plantation of trees along the Kalyaneshwari Dendua road to act as barrier for the dust arising from the movement of heavy vehicles on road and enhance the green cover	Plantation of 500 number of plants on each side of road covering 1.5km stretch	**5,00,000**	**--**	--	**18,00,000**
		Plantation of 1500 number of plants on each side of road covering remaining 3.84 km stretch	**--**	**13,00,000**	--	
Grand Total in Rs.			**52,40,000**	**75,40,000**	**52,20,000**	**1,80,00,000**

14.0 IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN

M/s /s Eloquent Steel Pvt. Ltd. is responsible for implementation of all the mitigation and management measures. A separate department "Environmental Management Cell" (EMC) headed by EHS Head exists to look after all environmental related matters of the plant. The cell will act to ensure the suitability, adequacy and effectiveness of the Environment Management Program. Organization structure of EMC is given in Chapter-6, for implementation of EMPs and mitigation measures and to look after environmental monitoring program also.

The estimated capital expenditure for implementation of EMP during Construction will be Rs. 12.4 lakhs and recurring cost Rs. 2.5 lakhs/year and implementation of EMP during Operation will be Rs. 291.9 lakhs (excluding cost for activities to address public hearing issues) and recurring cost Rs. 49.29 lakhs/year.

TABLE OF CONTENTS

	Title	Page No.
A	**Undertaking**	i
B	**Review and Revision History**	ii
C	**Declaration of Consultant**	iii
D	**Executive Summary**	viii
E	**Table of Contents**	xxiii
F	**ToR Compliance**	xxxv
	VOLUME- I	
Chapter 1	**INTRODUCTION**	**1-15**
1.1	Introduction	1
1.2	Site History	3
1.3	Purpose of the Report	4
1.4	Identification of Project & Project Proponent	4
1.4.1	Project Details	4
1.4.2	Project Proponent	5
1.5	Brief Description of Nature, Size, Location of the Project and Its Important To The Country And Region	5
1.5.1	Nature of the project	5
1.5.2	Size of the project	5
1.5.3	Location of Project	6
1.5.4	Importance of project to the Country and Region	8
1.6	Scope of the Study- Details of Regulatory Scoping Carried Out (AS PER TOR)	8
1.6.1	Terms of Reference issued by MoEF & CC	9
1.6.2	Preparation of EIA	9
1.6.3	Laws Applicable to this Project	11
Chapter 2	**PROJECT DESCRIPTION**	**16-54**
2.1	The Project	16
2.2	Need & justification of the project	16
2.3	Location of Project (Maps Showing General Location, Specific Locations, Project Boundary and Project Site Layout)	17
2.3.1	Plant Layout	19
2.3.2	List of Industries	19
2.4	Size And Magnitude of Operation	28
2.5	Proposed Scheduled for Approval and Implementation	29
2.5.1	Schedule for Approval of the Project	29
2.5.2	Schedule for implementation of the Project	29
2.6	Technology and Process Description	30
2.6.1	Plant Technical Feature	30
2.6.2	Process Description	31
2.6.2.1	*Steel Melting Shop*	31
2.6.2.2	*Reheating Furnace*	34
2.6.2.3	*Rolling Mill*	34
2.6.2.4	*Ferro Alloy Plant*	36
2.7	Project Details	42
2.7.1	Raw Material requirement	42
2.7.2	Water Requirement	47
2.7.3	Power Requirement	49

	Title	Page No.
2.7.4	Manpower Requirement	49
2.7.5	Land Requirement & Land Use	49
2.7.6	Cost Estimate of the Project	50
2.7.7	Solid Waste Generation & Management	51
2.7.8	Hazardous Waste Management	52
2.7.9	Other Solid Waste (E-Waste and Plastic Waste)	52
2.8	Description of mitigation measure incorporated in to the project to meet environmental standard, environmental operating conditions or other EIA requirements	52
2.9	Summary Of Significant Impacts	53
Chapter 3	**DESCRIPTION OF THE ENVIRONMENT**	**56-130**
3.0	Introduction	56
3.1	Study Area	56
3.2	Study Period	57
3.2.1	Components & Methodology	57
3.3	Establishment of Baseline for Valued Environmental Components, As Identified in the Scope	58
3.3.1	Air Environment	59
3.3.1.1	*Micro-Meteorological data*	59
3.3.1.2	*Ambient Air Quality*	62
3.3.2	Noise Environment	68
3.3.3	Traffic Study	72
3.3.4	Water Environment	75
3.3.5	Soil Environment	81
3.3.6	Land Use and Land Cover	86
3.3.7	Geological and Geo-Hydrological Status of the Study Area	92
3.3.7.1	*Geomorphology and Soil Details*	92
3.3.7.2	*Hydrogeological Details*	92
3.3.7.3	*Site Specific Hydrogeology*	94
3.3.8	Socio-Economic Environment	96
3.3.8.1	*Demographic Structure of Study Area*	97
3.3.8.2	*Occupational Pattern in Study Area*	103
3.3.8.3	*Infrastructure Resource Base of the Study Area*	108
3.3.8.4	*Economic Resource Status of the Study Area*	111
3.3.8.5	*Cultural and Aesthetic Attributes in Study Area*	111
3.3.8.6	*Socio-Economic Survey*	111
3.3.8.7	*Employment Generation Potential of Project*	113
3.3.8.8	*Assessment of Quality of Life in Study Area*	113
3.3.9	Ecology and Biodiversity	115
3.3.9.1	*Objectives of Biological Study*	115
3.3.9.2	*General Features of Study Area*	117
3.3.9.3	*Terrestrial Ecology Assessment*	117
3.3.9.4	*Aquatic Diversity Assessment*	127
Cahpter 4	**ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES**	**130-191**
4.1	Introduction	130
4.2	Identification & Characterization of Impacts	131
4.2.1	Impacts and mitigation measures due to project location	131
4.2.2	Impacts and mitigation measures due to project design	131

	Title	Page No.
4.2.3	Impacts and mitigation measures during construction	131
4.2.4	Impacts and Mitigation measures during Operation phase	131
4.3	Impact Matrix	133
4.4	Land Environment- Impacts & Control Measures	145
4.4.1	During Construction Phase	145
4.4.2	During Operation Phase	145
4.4.2.1	Hazardous Waste Management	147
4.4.2.2	Other Solid Waste	147
4.4.2.3	Storage of Raw Material, Finished Product and Solid Waste Generated	147
4.5	Air Environment-Impacts & Control Measures	148
4.5.1	During Construction Phase	148
4.5.2	During Operational Phase	148
4.5.2.1	*Emission from Point Source (Stack)*	148
4.5.2.2	*Emission from Area Source (Fugitive Emission)*	148
4.5.3	Air Pollution Dispersion Modelling Studies	148
4.5.3.1	*Air Quality Models*	148
4.5.4	Air Quality Index	159
4.5.5	Mitigation Measures for Air Environment during Operation	163
4.5.6	Traffic Assessment -Impacts & Mitigation Measures	168
4.5.6.1	*Construction Phase*	169
4.5.6.2	*Operational Phase*	170
4.6	Water Environment -Impacts & Control measures	172
4.6.1	During Constructional Phase	172
4.6.2	During operational Phase	173
4.6.2.1	*Zero Liquid Discharge- Wastewater Generation & Management*	173
4.7	Noise Environment – Impacts & Mitigation measures	175
4.7.1	During Construction Phase	175
4.7.2	During Operational Phase	177
4.8	Ecology & Biodiversity – Impact & Mitigation Measures	179
4.8.1	During Construction Phase	179
4.8.2	During Operation Phase	180
4.9	Socio-Economic Environment	182
4.9.1	During Construction Phase	182
4.9.2	During Operation Phase	182
4.9.2.1	*Positive Impacts of the Project*	183
4.9.2.2	*Adverse Impacts due to project*	184
4.9.3	Mitigation Measures of Socio-Economic Environment	184
4.10	Occupational health Care	185
4.11	Greenbelt Development	185
4.12	Rain water Harvesting	187
4.12.1	Design of Rainwater Recharge Structure	189
Chapter 5	**ANALYSIS OF ALTERNATIVE TECHNOLOGIES**	**192-194**
5.1	Preamble	192
5.2	Selection Of Location	192
5.2.1	Environment Sensitivity of the Location	192
5.2.2	Resource Availability	193
5.3	Selection Of Technology	193
5.4	Environment Management	194

	Title	Page No.
Chapter 6	**ENVIRONMENTAL MONITORING PROGRAM**	**195-207**
6.1	Introduction	195
6.2	Parameters to be Monitored	195
6.2.1	Ambient Air Quality	196
6.2.2	Stack Emissions	196
6.2.3	Fugitive Emissions	197
6.2.4	Work-Zone Air Quality	198
6.2.5	Effluent Quality	198
6.2.6	Ground Water Quality	199
6.2.7	Noise Level Monitoring	199
6.2.8	Plantation	199
6.2.9	Occupational Health Monitoring - Surveillance of workers health	199
6.2.10	Socio-Economic Development - Interaction with Stakeholders	199
6.2.11	Monitoring of Effectiveness of Pollution Control Equipment	200
6.2.12	Accidents and Diseases Monitoring	200
6.3	Budget Allocation for Monitoring	200
6.4	Environment Management Cell	204
6.4.1	Monitoring & Responsibility	204
6.5	Summary	207
Chapter 7	**ADDITIONAL STUDIES**	**208-270**
7.1	Preamble	208
7.2	Socio-Economic Impact Assessment	208
7.2.1	Introduction	208
7.2.2	Objectives of Social Impact Assessment Study	208
7.2.3	Rehabilitation & Resettlement Plan	209
7.2.4	Survey of the Project Area	209
7.2.5	Analysis of Data and Reconnaissance Exercise	209
7.2.6	Details of Project Area	209
7.2.7	Public Consultation	213
7.3	Public Hearing	214
7.3.1	Public Hearing Advertisement	214
7.3.2	Public Hearing Photos	216
7.3.3	Public Hearing Proceedings	217
7.4	Schemes Along With Budget For The Commitments To Address Issues Raised During Public Hearing	227
7.5	Hazard Identification and Risk Assessment (HIRA)	233
7.5.1	Introduction	233
7.5.2	Common Causes of Accidents	233
7.5.3	Failures of Human Systems	234
7.5.4	Damage Criteria for Thermal radiation and Overburden impacts	234
7.5.5	Physical Hazards onsite	235
7.6	Risk Assessment	235
7.7	Mitigation Measures for Identified Hazard and Risks	246
7.7.1	Coal & Coke Handling Areas	246
7.7.2	Control Rooms	246
7.7.3	Electrical Safety	246
7.7.4	Furnace Safety	247

	Title		Page No.
	7.7.5	Fire Fighting Facility Inside The Plant	247
	7.7.6	Personal Protective Equipment	247
	7.8	Risk Assessment Summary	249
	7.8.1	Recommended Approach to Combat with the Possible Accidents	249
	7.9	Occupational Health and Safety Onsite	250
	7.9.1	Occupational Health Hazards at M/s. ESPL	250
	7.9.2	Airborne contaminants	251
	7.9.3	Iron oxide	251
	7.9.4	Evaluation for Specific Health Status of Workers	252
	7.9.5	Annual report of health status of workers with special reference to Occupational Health and Safety	253
	7.9.6	Plan and fund allocation to ensure the Occupational Health & Safety of all contract and casual workers	253
	7.10	Natural And Manmade Calamities Which Can Lead To Emergency	254
	7.10.1	Earthquake	254
	7.10.2	Storm	254
	7.10.3	Flood	255
	7.10.4	Air Raid	255
	7.10.5	Food and Water Poisoning	255
	7.11	Disaster Management Plan & Mitigation Measures	256
	7.11.1	Key Elements	256
	7.11.2	On-Site Emergency Plan	257
	7.11.2.1	*Disaster Control Management system at M/s ESPL*	257
	7.11.2.2	*Key Personnel and Their Roles and Responsibility*	259
	7.11.2.3	*Facilities Available For On-Site Emergency Plan*	263
	7.11.2.4	*Activation & Closing Procedure for On-Site Emergency*	266
	7.11.2.5	*Responsibility of Implementation of DMP*	267
	7.11.3	Off-Site Emergency Planning	267
	7.12	Conclusion	270
Chapter 8		**PROJECT BENEFITS**	**271-277**
	8.1	Introduction	271
	8.2	Employment Potential	271
	8.2.1	Direct Employment	271
	8.2.2	Indirect Employment	271
	8.3	Improvement In Infrastructure	272
	8.4	Education	272
	8.5	Activities To Address The Issues Raised During Public Hearing	273
	8.5.1	Activities done by M/s ESPL under CSR during the years 2020 to 2022	273
	8.5.2	Action Plan with Time Frame and Budget For Commitments To Address The Issues Raised During Public Hearing	276
	8.6	Other Tangible Benefits	277
Chapter 9		**ENVIRONMENTAL COST BENEFIT ANALYSIS**	**278**
	9.1	Environnemental Cost Benefit Analysis	278
Chapter 10		**ENVIRONMENT MANAGEMENT PLAN**	**279-286**
	10.1	Introduction	279
	10.2	Purpose of Environmental Management Plan	279

	Title	Page No.
10.3	Environment Management Policy & Environment Committee	279
10.3.1	The main aims under the said Policy are to	281
10.3.2	Hierarchical system for reporting of Non-conformance / Violation/ Deviations from the Environment Policy	281
10.3.3	SOP in case of any Violation is observed	282
10.3.4	Hierarchical system or administrative order of the company to deal with the environmental issues	282
10.4	Implementation Of Environment Management Plan	283
10.5	Budgetary Provision for EMP Implementation	283
Chapter 11	**SUMMARY AND CONCLUSION**	**287-313**
11.1	Background	287
11.1.1	The Project	288
11.2	Project Description	290
11.2.1	Location Details	290
11.2.2	Manufacturing Process	290
11.2.3	Project Requirement	291
11.2.3.1	*Raw Material Requirement*	291
11.2.3.2	*Land Requirement*	294
11.2.3.3	*Power Rquirement*	294
11.2.3.4	*Water Requirement*	294
11.2.3.5	Manpower Requirement	295
11.2.3.6	*Cost Estimate of Project*	295
11.3	Baseline Environmental Status	296
11.3.1	Meteorological Data	296
11.3.2	Ambient Air Quality Data	296
11.3.3	Ambient Noise Quality Data	296
11.3.4	Water Quality Data	296
11.3.5	Soil Quality Data	297
11.3.6	Land use/Land Cover	297
11.3.7	Hydrology	297
11.3.8	Traffic Study	298
11.3.9	Socio-Economic Status	298
11.3.10	Ecology and Biodiversity	298
11.4	Anticipation Environmental Impacts And Mitigation Measures	299
11.4.1	Land Environment	299
11.4.2	Air Environment	300
11.4.3	Traffic Scenario	301
11.4.4	Water Environment	302
11.4.5	Noise Environment	303
11.4.5	Solid Waste Mangement	305
11.4.6	Socio-economic Environment	307
11.4.7	Biological Environment	308
11.4.8	Greenbelt Development	308
11.4.9	Rain Water Harvesting	309
11.5	Analysis Of Alternatives	309
11.6	Environmental Monitoring Program	309
11.7	Additional Studies	309
11.7.1	Social Impact Assessment	309

	Title	Page No.
11.7.2	Hazard Identification and Risk management	310
11.7.3	Risk Analysis	310
11.7.4	Occupational Health and Safety	310
11.8	Public Hearing	311
11.8.1	Schemes Along With Budget For The Commitments To Address Issues Raised During Public Hearing	311
11.9	Project Benefits	312
11.10	Environmental Management Plan	312
11.11	Conclusion	312
Chapter 12	**DISCLOSURE OF CONSULTANT ENGAGED**	**314-316**
12.1	Introduction	314
12.2	Services Of Vardan Environet	314
12.3	Recognitions	315
12.4	List Of Software Models For Environmental Studies	315
12.5	Key Management Personnel Of Vardan	315
12.6	Eminent Clientele Of Vardan	315
12.7	Personnel Involved In Preparation Of M/S ESPL EIA Report	315
12.8	Certifications Of Vardan Group	316
VOLUME II		
ANNEXURES		
Annexure-1	Previous Environmental Clearances	317-337
Annexure -2	ToR Letter	338-346
Annexure -3	Lab Reports	347-410
Annexure -4	Consent to Establish & Consent to Operate	411-428
Annexure -5	Water Permission	429-446
Annexure- 6	Power Permission	447-450
Annexure- 7	Land Documents	451-452
Annexure- 8	TCLP Test Report	453-454
Annexure- 9	MoU for Solid Waste	455-456
Annexure-10	Environment Policy and Board Resolution	457-460
Annexure-11	Health Check-up Registre of ESPL Workers	461-511
Annexure-12	Public Hearing Advertisement	512-516
Annexure-13	Public Hearing Proceedings	517-525
Annexure-14	DFO Letter	526-530
Annexure-15	Certified Compliance Report of Enivormental Clearance	531-561
Annexure-16	No Court Case Undertaking by M/s ESPL	562

LIST OF TABLE

Table No.	Title	Page No.
1.1	Existing Plant Configuration and Production as per valid CTO	2
1.2	Existing and Proposed Project	7
2.1	Salient Feature of The Proposed Project	17
2.2	List of Industries in 10 Km Radius	19
2.3	Details of Existing and Proposed Facilities	28
2.4	Project Implementation Schedule	30
2.5	Induction Furnace Capacity (Existing & Proposed)	31
2.6	Raw Material Requirement Details for Steel Melting Shop, CCM & Rolling Mill	36
2.7	Raw Material Requirement Details for Ferro Alloys Production	40

Table No.	Title	Page No.
2.8	Raw Material Requirement (Consolidated)	43
2.9	Water Requirement for Existing and Proposed Units	47
2.10	Power Usage Breakup Details	49
2.11	Land Use Breakup of the Plant Area	50
2.12	Cost Breakup Details	50
2.13	Details of Solid Waste Generation, Handling and Utilization	51
3.1	Environmental Components and Their Sources/Methodologies	58
3.2	Onsite Meteorological Data (Period: 1st Dec to 29th Feb, 2020)	60
3.3	Secondary Meteorological Data for Bankura, West Bengal (1990-2007)	61
3.4	Ambient Air Quality Monitoring Locations	65
3.5	Techniques Adopted/Protocols for Ambient Air Quality Monitoring	65
3.6	Ambient Air Quality Data	66
3.7	Noise Level Monitoring Locations	71
3.8	Noise level data	71
3.9	Summarized Traffic data	74
3.10	Existing Traffic Scenario and LOS	75
3.11	Surface Water Sampling Locations	76
3.12	Ground Water Sampling Locations	76
3.13	Ground Water Quality Data	78
3.14	Surface water quality data	79
3.15	Soil Sampling Locations	82
3.16	Physico-chemical Properties of Soil	84
3.17	Land use/ land cover analysis	87
3.18	List of the Villages for Field Survey	96
3.19	Summarized Demographic Structure of the Study Area	97
3.20	Demographic structure of the villages in the study area (Rural Area)	98
3.21	Demographic structure of the villages in the study area (Urban Area)	100
3.22	Occupational Structure of the Study Area (Rural Area)	103
3.23	Occupational Structure of the Study Area (Urban Area)	105
3.24	Infrastructure Resource Base of the Study Area	108
3.25	Quality of Life Existing In Sampling Villages	115
3.26	Mode of data collection and parameters considered during the Survey	116
3.27	Agricultural Pattern and Productivity	118
3.28	Floral Diversity in the Study Area	120
3.29	Faunal Diversity observed along core and buffer zone	124
3.30	Common fish species in the Study Area	127
3.31	Wetland/Marshland Diversity of Study area	128
3.32	Aquatic Diversity of Study Area	129
4.1	Impact Identification Matrix	133
4.2 A	Characteristics of Environmental Impacts from Construction Phase	135
4.2 B	Characteristics of Environmental Impacts from Operational Phase	136
4.3	Details of Solid Waste Generation, Handling and Utilization	145
4.4	Stack Details	149
4.5	Predicted 24 Hourly GLC & Resultant Cumulative GLC of PM10 & PM2.5	151
4.6	Predicted 24 Hourly GLC & Resultant Cumulative GLC at AQM Stations	152
4.7	AQI Category based on pollutants concentration	160
4.8	Health impacts based on the AQI values	160
4.9	Sub-Index values for each air pollutant at selected sites	161
4.10	Cumulative effect of all pollutants based on AQI values	163

Table No.	Title	Page No.
4.11	Details of the Air Pollution Control facilities-SMS	164
4.12	Details of the Air Pollution Control facilities provided at SAFs	165
4.13	Details of the Air Pollution Control Facilities Provided at Briquette Plant	166
4.14	Details of the Air Pollution Control Facilities Provided at Sinter Plant	166
4.15	Details of the Air Pollution Control facilities for Existing and Proposed Units	166
4.16	PCU for Operation Phase	170
4.17	Existing and Proposed Operation Phase PCU's	171
4.18	LOS study of Proposed Project	171
4.19	Details of Waste Water Generation and Management	174
4.20	Water Pollution Control Treatment Facilities	174
4.21	Noise levels of Construction Equipment	176
4.22	Details of Noise levels during operation phase	177
4.23	Predicted Noise Propagation Values	178
4.24	Matrix of Qualitative Effects on Socio-economic Environment	182
4.25	Expected Quality of Life Post Implementation of EMP	184
4.26	Details of Greenbelt Development	186
4.27	Data Assumed and/or Available for Rain Water Harvesting	188
4.28	Calculations of Hourly Harvest Potential of Runoff Water	188
6.1	Ambient Air Quality – Frequency and Parameters	196
6.2	Total Stacks to be monitored after Implementation of Expansion	196
6.3	Fugitive Emission to be Controlled & Monitored	198
6.4	Monitoring of Effluent Quality	198
6.5	Monitoring of Noise Levels (Ambient & Work-zone)	199
6.6	Environmental Monitoring Program	201
7.1	Summarized Details of the Socio Economic Survey	210
7.2	Summary of the Issues Raised During Public Hearing and Action Plan	224
7.3	Budget Details of activities to be undertaken for addressing Public Hearing Issues	229
7.4	List of Damages Envisaged at Various Heat Loads	234
7.5	Associated Risk and Proposed Safety System for M/s ESPL	238
7.6	Details of Fire Fighting Facilities onsite	247
7.7	Summary of Recommended Personal Protective Equipment	248
7.8	PEL level Summary as per OSHA	252
7.9	OH&S Budget Breakup	253
10.1	Cost Breakup for Environmental Management Plan during Construction	283
10.2	Cost Breakup for Environmental Management Plan during Operation	284
11.1	Existing and Proposed Production Facilities	289
11.2	Raw Material Requirement	291
11.3	Land Use Break-up	294
11.4	Water Requirement for the proposed project (m3/day)	294
11.5	Cost Breakup of the Project	295
11.6	Details of Air Pollution Generation units and its Management	300
11.7	Details of the Wastewater Generation and Pollution Control facilities	303
11.8	Details of Solid Waste Generation, Handling and Utilization	305

LIST OF FIGURE

Figure No.	Title	Page No.
1.1	Digitized Map of the Study Area	6
2.1	Location Map of the Project Site	21

Figure No.	Title	Page No.
2.2	Topographic Map of 10 Km Radius Study Area	22
2.3	Route Map of Project Site	23
2.4	Google Map of 500m Radius Study Area showing Co-ordinates	24
2.5	Layout Map of Project Site	25
2.6	Photographs of Project Site & Greenbelt	27
2.7	Billet Production (IF-LRF-CCM Route) process flow	34
2.8	Rolled product Production process flow	35
2.9	Material balance Diagram	46
2.10	Water Balance Diagram	48
3.1	Primary Wind Rose Diagram, Project Site (December, 2019 to February, 2020)	60
3.2	Ombrothermic diagram based on IMD data	62
3.3	Annual Wind Rose Diagram for Asansol, West Bengal	63
3.4	Ambient Air Quality Monitoring Locations	64
3.5	Graphical representation of Particulate Pollutants	67
3.6	Graphical representation of Gaseous Pollutants	67
3.7	Graphical representation of CO pollutant	67
3.8	Noise Quality Monitoring Locations	70
3.9	Equivalent Noise Levels at Monitoring Locations	71
3.10	Transportation Map for M/s ESPL	73
3.11	Vehicular Traffic Distribution on Kalyaneshwari Dendua road, SH-15 & NH-19	74
3.12	Map showing Water Sampling Locations	77
3.13	Map showing Soil sampling locations	83
3.14	Methodology Used for Land use Classification and Mapping	87
3.15	Satellite imagery of 10 km study area	88
3.16	LULC map of 10 km Study Area	89
3.17	Contour map of 10 km Study Area	90
3.18	Digital Elevation Map of 10 km Study Area	91
3.19 (a)	Pre-Monsoon Water Level of Study Area	93
3.19 (b)	Post Monsoon Water Level Map of Study Area	93
3.20	Drainage map of 10 km Study area	95
3.21	Bar Diagram showing %Male and %Female Population in Study Area	101
3.22	Bar Diagram showing Sex Ratio and Child Sex Ratio in Study Area	101
3.23	Bar Diagram showing % SC, ST and others in Rural & Urban Area	102
3.24	Bar Diagram Showing Population Male and Female Literates in Study Area	102
3.25	Bar Diagram showing %Distribution of Main Workers under Different Category	107
3.26	Bar Diagram for %Distribution of Total Population under different Category	108
3.27	WLS Map for the Project Site	123
4.1	Windrose Plot of Study Area (1st October 2020 to 31st December 2020)	149
4.2	Isopleths for 24 Hr. Incremental Conc. (µg/m3) for PM10 (Failure)	153
4.3	Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for PM2.5 (Failure)	154
4.4	Isopleths for 24 Hr. Incremental Conc. (µg/m3) for PM10 (Control)	155
4.5	Isopleths for 24 Hr. Incremental Conc. (µg/m3) for PM2.5 (Control)	156
4.6	Isopleths for 24 Hr. Incremental Conc. (µg/m3) for NOx (Control)	157
4.7	Isopleths for 24 Hr. Incremental Conc. (µg/m3) for SO2 (Control)	158
4.8	Isopleths for 24 Hr. Incremental Conc. (µg/m3) for CO (Control)	159
4.9	Natural Ground Slope Pattern and Location of Rainwater Storage Tanks/Pond	190
4.9	Exiting Pond in the Plant premises	190
6.1	Organization chart of Environmental Monitoring Cell (EMC)	204
7.1	PH Advertisement Newspaper Cutting Photographs	215

Figure No.	Title	Page No.
7.2	Onsite DMP - Disaster Control / Management System	258
7.3	Various Organizations Involved During Emergency	268
10.1	Environment Policy of Eloquent Steel Pvt. Ltd.	280
10.2	M/s ESPL reporting system of any non-conformance / violation	282
10.3	M/s ESPL E-Cell organization structure	283

ABBREVIATIONS	
AAQM	Ambient Air Quality Monitoring
APCD	Air Pollution Control Devices
cm	Centimeter
CPCB	Central Pollution Control Board
dB	Decibel
DG	Diesel Generator
E	East
ECC	Emergency Control Centre
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
EMP	Environmental Management Plan
EPA	Environmental Protection Agencies
ESE	East of South East
STP	Sewage treatment plant
FCC	False Colour Composite
GIS	Geographical information system
GLC	Ground level concentration
GPS	Global Positioning System
IMD	Indian Meteorological Department
IRS	Indian Remote Sensing Satellite
ISCST	Industrial Source Complex, Short Terms
ISO	International Organization of Standardization
ISS	Indian Standard Specification
KLD	Kilo Litre Per Day
Km	Kilometer
KVA	Kilo Volt Ampere
KW	Kilo Watt
m	Meter
M bgl	Meter Below Ground Level
mg	Milligram
MoEF&CC	Ministry of Environment, Forest and Climate Change
mRL	Mean Reference Level
MSMEs	Micro, Small and Medium Enterprises
N	North
NE	North-East
SH	State Highway
NH	National Highway
NNE	North of North-East
NNW	North of North-West
NO_2	Nitrogen Dioxides
NW	North-West
OHSAS	Occupational Health & Safety Assessment

ABBREVIATIONS	
PPE	Personal Protective Equipment
PPM	Part Per Million
Pvt.	Private
QC	Quality Council
QCI	Quality Council of India
QRA	Quantitative Risk Assessment
R&R	Rehabilitation & Resettlement
RSPM	Respirable Suspended Particulate Matter
SE	South- East
SO_2	Sulphur Dioxide
SOI	Survey of India
SPM	Suspended Particulate Matter
SSE	South of South-East
SSW	South of South-West
TAC	Traffic Advisory Committee
TDS	Total Dissolve Solid
TOR	Terms of Reference
TPH	Tones Per Hour
TS	Total Solid
TSDF	Treatment, Storage and Disposal Facility
US EPA	United State Environmental Protection Agencies
$\mu g/m^3$	Micro gram per meter cube
w.e.f.	With Effective From
w.r.t.	With Reference To
WBPCB	West Bengal Pollution Control Board
W/W	Weight By Weight
WNW	West of North-West
WSW	West of South-West
ZLD	Zero Liquid Discharge

F. No. J-11011/188/2011-IA-II(I)

M/s Eloquent Steel Pvt Ltd. at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal

TERMS OF REFERENCE – STATUS OF COMPLIANCE

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
A.	**Generic ToR**				
1.	**Executive Summary**	Executive Summary is provided in EIA report.	-	-	viii
2.	**Introduction**				
i	Details of the EIA Consultant including NABET accreditation	**Vardan EnviroNet,** is an accredited by Quality Council of India/NABET certificate no. **NABET/EIA/2023/SA 0158 dated 13.04.2022.** NABET accreditation certificate is incorporated in the EIA Report.	12	12.8	316
ii	Information about the project proponent	M/s Eloquent Steel Pvt. Ltd. (ESPL) is incorporated in the year 2012 as per Certificate of Incorporation. Mr. Deepak Kumar Agarwal is Chairman cum Managing Director of the company is a commerce graduate. He has about 25 years of experience in various industries including coal trading, manufacturing of various Iron and Steel products like Sponge Iron, Billets, Gases, TMT, etc. and trading of iron and steel products and trading of petroleum products.	1	1.4.2	5

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
		Address of the Project Proponent: Mr. Deepak Kumar Agrawal Eloquent Steel Private Limited Mouza: Nakrojoria, P.O: Salanpur, District: Paschim Burdwan, West Bengal: 713357 Ph: 9233331111 Email Id: esplmoef@shakambharigroup.in			
iii	Importance and benefits of the project	Importance of the project is given in **Chapter-1** of the EIA Report and Benefits of the project is given in **Chapter-8**	1 8	1.5.4 -	8 277
3. Project Description					
I.	Cost of project and time of completion.	Estimated completion schedule of project is **48 months,** after getting CTE from WBPCB and EC from MOEF&CC. Estimated cost of proposed expansion project is Rs. 120 Crores.	2	2.5 2.7.6	29 50
II.	Product with capacities for the proposed project.	a. Billet Production – 336,000 TPA b. Rolled products (TMT Bar, MS Round & Wire Rod) - 210,000TPA c. Pig Iron-76400TPA (from the already installed facility of Ferro-alloys) d. Chrome Ore Briquettes – 150000TPA & Sinter – 108000TPA	2	2.4 Table 2.3	28
III.	If expansion project, details of existing products with capacities and	Existing: a. MS Ingots 106,004 TPA b. Fe-Mn 59,052TPA or Si-Mn 43,236TPA, or Fe-Si	2	2.4 Table 2.3	28

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	whether adequate land is available for expansion, reference of earlier EC if any.	22680TPA, or High Carbon Ferro Chrome 59052TPA, or Ferro Silico Chrome 33480TPA Or in combination of any The proposed expansion will take place within the existing plant premises of 9.089Ha which is sufficient for the proposed expansion. Eloquent Steel Pvt Ltd. acquired two adjacent plants namely Hira Concast and Impex Steel Ltd through auction. EC for the existing production capacity was obtained from MOEFCC by M/s Hira Concast Ltd and M/s Impex Steel Ltd which now has been transferred to M/s Eloquent Steel Pvt Ltd by MoEFCC vide lr no. J-11011/49/2010-IA-II(I) and J-11011/188/2011-IA-II(I) respectively dated on 15.10.2020.	2 1	2.7.5 1.1	50 1
IV.	List of raw materials required and their source along with mode of transportation.	The major raw materials required are Sponge Iron, Pig Iron, Scrap, Ferro Alloys, Mn Ore, Coke, Dolomite, Coke Breeze, Steam Coal, Charcoal, Quartzite, Limestone, Electrode Paste, Chrome Ore, Magnesite, Iron Ore Fines, Ferro Chrome Chips, Hydrated Lime and Molasses. Details of raw materials, their source and mode of transportation are incorporated in the EIA report.	2	2.7.1 Table 2.8	42 43
V.	Other chemicals and materials required with quantities and storage	No chemical used	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	capacities.				
VI.	Details of Emission, effluents, hazardous waste generation and their management.	**Emission:** Stack emissions will be from Induction Furnaces, Reheating Furnace, Submerged Arc Furnaces, Sinter Plant, Briquetting Plant and DG sets. Fume extraction system with spark arrestor and pulse jet bag filter are/shall be provided with Induction furnaces and Submerged Arc Furnaces. Pulse Jet Type Bag Filter with Sinter and Briquette Plant. Low NOx Burners and Recuperator will be installed with proposed Reheating furnace. **Effluents: -** In the form of blow downs from cooling towers, back wash from Softening Plant and wastewater from ETP of Rolling Mill. Domestic waste water from toilets, washrooms and canteen buildings in the plant. Total effluent discharge from the existing and proposed plant shall be used for slag cooling, Metal Recovery Plant, Sinter Plant, dust suppression and gardening. No plant effluent will be discharged in to public water ways or drains **Hazardous waste: -** Used oil after the proposed expansion shall be approx. 6.5 kilolitres per annum. It will be collected in dedicated drums and stored on impervious concrete floor. The same will be sold to the vendors authorized by MOEF/SPCB for recycling.	4	Table 4.15 Table 4.20 4.4.2.1	166 174 147

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
VII.	Requirement of water, power, with source of supply, status of approval, water balance diagram, manpower requirement (regular and contract)	Total water requirement after the proposed expansion of ESPL shall be 1970KLD. Water requirement and water balance diagram is given in Chapter-2 of the EIA Report.	2	Table 2.9 Fig. 2.10	47 48
		Source: Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir.	**Annexure -5**		429
		The company shall require total 64 MW of power after proposed expansion. Existing power requirement is of 30 MW.		2.7.3	49
		Source: Permission for 30MVA is available and permission for the remaining power shall be obtained from DVC Permission has been obtained for construction clearance from DVC for the up-gradation of supply voltage from 33KV to 132KV. Power requirement given in Chapter-2 of the EIA Report.	**Annexure -6**		447
		Manpower requirement for the expansion project is 400 Manpower requirement of the existing operation - 400 Total Manpower after expansion-800		2.7.4	49
VIII.	Process description along with major equipment and machineries, process flow sheet (Quantitative) from raw material to products to be provided.	Process description along with major equipment and machineries, process flow sheet (Quantitative) from raw material to products is given in EIA.	2	2.6.2	31
IX.	Hazard identification and details of	Hazard Identification and Risk Assessment (HIRA) is given	7	7.5	233

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	proposed safety systems.	in the EIA report.		7.6	235
X.	Expansion/modernization proposals:				
	a. Copy of all the Environmental Clearance(s) including Amendments there to be obtained for the project from MOEF&CC/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Regional Office of the Ministry of Environment, Forest and Climate Change as per circular dated 30th May, 2012 on the status of compliances of conditions stipulated in all the existing environmental clearance including Amendments shall be provide. In addition, status of compliance of Consent to Operate for the ongoing existing operation of the project from SPCB/PCC shall be attached with the EIA-EMP report.	M/s Hira Concast Ltd: Environmental Clearance (EC) was granted by MoEF&CC for Setting up Ferro Alloy plant for production of 15,225TPA Fe-Mn & 11,455TPA Si-Mn through 1x7.5MVA SAF vide F.No J-11011/533/2008-IA.II(I) dated on 11.12.2008. The plant had further expanded its capacity for production of 27,555 TPA Fe-Mn and 20,735 TPA Si-Mn by installation of additional 1x5.5MVA SAF. EC for the expansion was granted by MoEF&CC vide F.No. J-11011/49/2010-IA.II(I) dated on 03.09.2012. M/s Impex Steel Ltd: Company obtained EC from MoEF&CC for the production of 17,076 Ferro-manganese and 11,394 TPA Si-Mn through SAF of capacity 2x7.5MVA vide F.No: J-11011/183/2008-IA.II(I) on 28.07.2008. Later on, the company further obtained EC from MoEF&CC for production of 31,500TPA Fe-Mn or 22,500TPA Si-Mn or 9,000 TPA Fe-Si by installation of additional 2x7.5MVA SAFs and 300TPD Sinter Plant for production of 90,000TPA Mn Ore sinter vide F.No.: J-11011/188/2011-IA.II(I) on 20.09.2012. However, these additional facilities are not installed till date in the plant premises.	**Annexure -1**	-	317

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
		Eloquent Steel Pvt Ltd. has acquired above two adjacent plants through auction process. EC of M/s Hira Concast Ltd and M/s Impex Steel Ltd. now have been transferred in the name of M/s Eloquent Steel Pvt Ltd. by MoEFCC vide lr no. J-11011/49/2010-IA-II(I) and J-11011/188/2011-IA-II(I), respectively on 15.10.2020. Certified Compliance Report issued vide letter no. 102-455/12/EPE/269 dated 17.06.2022 and Corrigendum to it issued vide letter no. 102-455/12/EPE-273 on 24.06.2022 issued by Regional Officer from MoEF&CC, Kolkata after visit to plant on 02.06.2022 is enclosed as ***Annexure -15.***	**Annexure -15**		531
	b) 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 Notification 2006 shall be provided. Copies of Consent of 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.	Not applicable	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	Further, compliance report to the conditions of consents from the SPCB shall be submitted.				
4.	**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.	Project site is situated at Village- NakraJoria, P.O.- Salanpur, District- Paschim Burdwan, West Bengal. The project is the expansion of the existing plant; hence alternative site is not examined.	1	1.5.3	6
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)	Toposheet of the study area is included in EIA report.	2	Fig. 2.2	22
III.	Co-ordinates (lat-long) of all four corners of the site		2	Fig. 2.4	24

Point	Latitude	Longitude
A	23° 46'43.1"N	86°51'37.0"E
B	23° 46'40.7"N	86°51'38.9"E
C	23° 46'36.7"N	86°51'41.7"E
D	23° 46'37.3"N	86°51'49.3"E
E	23° 46'30.2"N	86°51'49.1"E

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
		F 23° 46'28.5"N 86°51'33.7"E G 23° 46'31.8"N 86°51'33.6"E H 23° 46'35.6"N 86°51'33.6"E I 23° 46'40.5"N 86°51'35.5"E			
IV.	Google map-Earth downloaded of the project site.	Google imaginary of project site downloaded from Google earth is given in EIA report.	2	Fig. 2.3	23
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 map of existing & proposed project site is given in the EIA report.	2	Fig. 2.5	25
VI.	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/ greenbelt, in particular	Photographs of the project site is provided in **Chapter-2**	2	Fig. 2.6	26 & 27
VII.	Land use break-up of total land of the project site (identified and acquired), government/ private-agricultural,	Total area of the plant is **9.089Ha.** Land use break-up of total land of the project site is given in the EIA Report.	2	2.7.5 Table 2.7	49 40

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	forest, wasteland, bodies, settlements, etc. shall be included. (not required for industrial area).				
VIII.	A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area.	A list of major industries with name and type within the Study area (10 km radius) is given in EIA report.	2	2.3.2 Table 2.2	19
IX.	Geological features and Geo-hydrological status of the study area shall be included.	**Geological Features:** In general the state of West Bengal is a flat terrain, crisscrossed with rivers except the Himalayan foothills in the north and Chotanagpur plateau in the south-west. The detailed study is given in chapter. **Hydrogeological Features:** At the site depth to water levels during pre-monsoon period (May 2020) and post Monsoon period (November 2020) varies from 3-6mbgl and 1.4-5 mbgl respectively. Geo-hydrological features is given in the Chapter-3 of EIA Report	3	3.3.7.1 3.3.7.2	92 92
X.	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	Drainage map of study area is provided in Fig. 3.18 No major river is within the 1 km from the project site, hence other conditions are not applicable Barakar River is at 3.75kms. in West direction of the project site.	3	Figure 3.20	95

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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)				
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.	No land acquisition is required. The proposed expansion will take place within the existing plant area of 9.089 Ha. Land Documents are provided as Annexure in EIA report.	2 **Annexure-7**	2.7.5 -	49 451
XII.	R&R details in respect of land in line with state Government policy.	Expansion Project within the existing plant area. Hence, Resettlement & Rehabilitation is not required as there is no displacement of any person or livestock.	-	-	-
5.	**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).	Not applicable. No Forest land involve in the project	**-**	**-**	**-**
II.	Land use map based on High resolution satellite imagery (GPS) of	Not applicable as no forest land is involve in the project. However, Land use map based on High resolution satellite	3	Figure 3.15	88

S.No.	TOR Point	Reply	Citation		
			Chapter No.	**Item No.**	**Page No.**
	the proposed site delineating the forestland (*in case of projects involving forest land more than 40 ha).*	imagery (GPS) of the proposed site is detailed in EIA Report.			
III.	Status of Application submitted for obtaining the stage-I 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 As per letter dated 19.03.2021 and Memo No. 5190/28-1 obtained from DFO, Durgapur Division there is no National Park/Wildlife Sanctuary within 10km of the project site.	**Annexure -14**	-	526
V.	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if	Not applicable As no Schedule-1 species are found in the 10km study area of the project site.	3	Table 3.29	124

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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.	Not Applicable	-	-	-
6.	**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.	The site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall are given in the EIA Report.	3	Table 3.2	60
II.	AAQ data (except monsoon) at 8 locations for PM_{10}, $PM_{2.5}$, SO_2, NO_X, 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	AAQ data collected for 8 locations. The monitoring stations are selected based on CPCB guideline and taken into account the pre-dominant wind direction, population zone and sensitive receptors etc.	3	3.3.1.2 Table 3.4	68 65

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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.	Raw data of all AAQ measurement is detailed in EIA/EMP report. Min., Max., Average and 98 percentile values for each of the AAQ parameters and for each location is given in the EIA Report. Lab report is enclosed in the EIA report as **Annexure**.	**Annexure -3** 3	- Table 3.6	347 66
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.	Surface water is collected from eight locations as per CPCB/ MoEF&CC guidelines from water bodies. Ponds and Rivers within the Study Area. Monitoring locations, monitoring data and Water Quality are given in ***Chapter-3.*** Lab report is enclosed in the EIA report as **Annexure.**	3 **Annexure -3**	Table 3.11	76 347
V.	Whether the site falls near to polluted stretch of river identified by the CPCB/ MoEF&CC.	Site is not falling near to polluted stretch of river identified by the CPCB/ MoEF&CC.	-	-	-
VI.	Ground water monitoring at minimum 8 locations shall be included.	8 nos. of ground water samples were collected from dug wells, tube wells with in the study area to assess the water quality	3 **Annexure**	Table 3.12	76 347

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
		Lab report is enclosed in the EIA report as **Annexure.**	**-3**		
VII.	Noise levels monitoring at 8 locations within the study area.	Ambient noise levels were measured at 8 locations using integrated sound level meter at 8 locations. Lab report is enclosed in the EIA report as **Annexure**	3 **Annexure -3**	Table 3.7	71 347
VIII.	Soil Characteristic as per CPCB guidelines.	Soil samples were collected from 8 locations from different land uses. Lab report is enclosed in the EIA report as **Annexure**	3 **Annexure -3**	Table 3.15	82 347
IX.	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project is provided in the EIA/EMP report. Level of Service (LOS) found "Very Good" for the existing traffic and traffic after expansion on Kalyaneshwari Dendua Road, SH-15 and NH-19	3	3.3.3	72
X.	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	Detailed Biological Environment survey was conducted by Functional Area Expert (Ecology & Biodiversity) of M/s Vardan Environet. The detail of flora and fauna (terrestrial and aquatic) existing in the study area is included in the EIA/EMP report.	3	3.3.9	115

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	Plan shall be prepared and furnished.	No Schedule-1 species found within the Study Area.			
XI.	Socio-economic status of the study area.	Socio-economic survey was conducted by Functional Area Expert (SE) of M/s Vardan Environet. The details are incorporated in EIA report.	3	3.3.8	96
7.	**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	The project is not located on a hilly terrain. Air quality Modeling has been done for determining cumulative impact of all sources of emission using AREMOD dispersion modeling software of the United States Environment Protection Agency (USEPA). The details are incorporated in EIA report.	4	4.5.3	148

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	location map showing the location of project site, habitation nearby, sensitive receptors, if any.				
II.	Water Quality modelling– in case, if the effluent is proposed to be discharged into the local drain, then Water Quality Modelling study should be conducted for the drain water taking into consideration the upstream and downstream quality of water of the drain.	Not applicable as the proposed project has adopted "Zero liquid effluent Discharge (ZLD)".	-	-	-
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.	Impact of the transport of the raw materials and end products on the surrounding environment is given in the EIA/EMP report.	4	4.5.6	168
IV.	A note on treatment of wastewater from different plant operations, extent recycled and reused for	Description on treatment of waste water from plant operation is given in Section 4.6.2.2 of Chapter-4. Treatment facilities, effluent flow and their usage is given	4	4.6.2.1	173

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.	in EIA report. Total Effluent discharge (industrial) will be 180 KLD. ETP of 100KLD capacity with Rolling Mill and Neutralization Pit at SMS proposed. Treated water shall be reused. The domestic waste water that is generated in toilets and canteens will be treated in STP of 25KLD capacity. 'Zero Effluent Discharge' shall be adopted.			
V.	Details of stack emission and action plan for control of emissions to meet standards.	Details of stack emission, source and treatment facilities are given in EIA Report.	4	Table 4.15	166
VI.	Measures for fugitive emission control	Sources of fugitive emissions and mitigation measures given in EIA Report.	4	4.5.5 (F)	167
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.	No hazardous waste generation, except 6.5 kiloliters per annum of 'Used Oil' after the proposed expansion Used oil will be collected in dedicated drums and stored on impervious concrete floor for maximum 90 days before sold to the registered recyclers. The hazardous waste will be stored and disposed as per Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2016.	4	4.4.2.1	147

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
VIII.	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.	Not Applicable.	-	-	-
IX.	Action plan for the greenbelt development 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 greenbelt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.	Out of 9.089 Ha. area of the plant 3.0 Ha. area (33%) is covered under the plantation. Till date (20.12.2022), company has planted 7,150 number of trees (including 150 number of trees planted on 05th June, 2022) covering the 3.0hectare area within the plant premises involving the total expenditure of Rs. 45.80 lakhs. Company has a proposal for doing additional plantation of 600 trees for gap filling near the plant boundary to increase the tree density to 2500 trees/ha. Company has also proposed to keep a capital budget of Rs. 2.40Lakhs for additional plantation in next two years and a budget of Rs. 2.20 lakhs for yearly maintenance of green area, compensation plantation for non-surviving plants, etc.	4	4.11	185
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 groundwater and also	Action Plan for Rain Water Harvesting, given in **Chapter-4** The project site is located is Paschim Burdwan district which lies in 'Safe' zone as per Ground water resources of India, 2013. The total volume of water generated in project	4	4.12	187

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	to use for the various activities at the project site to conserve freshwater and reduce the water requirement from other sources.	premises from rooftop, road/paved, green belt and open area in a single storm on 30mm/hr peak rainfall intensity would be 1236.2 cubic meter. The existing pond of storage capacity 6400m^3 and three additionally proposed underground rainwater storage tanks of capacity 337.5m^3 each will be utilized to accommodate the total rainwater harvested from plant area.			
XI.	Total capital cost and recurring cost/annum for environmental pollution control measures shall be included	The estimated capital expenditure for implementation of EMP during Construction will be Rs. 12.4 lakhs and recurring cost Rs. 2.5 lakhs/year and implementation of EMP during Operation will be Rs. 291.9 lakhs (excluding cost for activities to address public hearing issues) and recurring cost Rs. 49.29 lakhs/year.	10	Table 10.1 & 10.2	283 284
XII.	Action plan for post-project environmental monitoring shall be submitted.	Yes, the details are incorporated in EIA report. Estimated capital cost for post Environmental Monitoring is Rs. 80 lakhs and recurring cost is Rs. 15.59 Lakhs/year.	6	6.2	195
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	Disaster Management Plan is prepared with an aim of taking precautionary step to control the hazard or to avert disaster. Disaster Management Plan is linked with the Disaster Management Plan of the District.	7	7.11	256

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	with District Disaster Management Plan.				
8.	**Occupational health**				
I.	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.	Capital Budget of Rs. 17.5 lakhs and recurring budget of Rs. 10.0 lakhs is allocated to ensure safety of all Employees including contract & casual workers. Breakup of the OH&S budget is provided in Chapter 7 of EIA Report.	7	7.9.6	253
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 above mentioned parameters as per age, sex, duration of exposure and department wise.	Workers' health shall be evaluated by pre designed format, for chest X-rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other Ocular defect) ECG, during pre-placement and periodical examinations	7	7.9.4	252
III.	Details of existing Occupational &	Permissible Exposure Level (PEL) of different hazards is	7	Table	252

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	Safety Hazards. What are the exposure levels of 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.	given in Chapter-7 of EIA Suitable measures to bring PEL under permissible level is also given in Chapter-7	7	7.8 7.9.3	251
IV.	Annual report of health status of workers with special reference to Occupational Health and Safety	Annual report of health of ESPL given in EIA report.	**Annexure -11**	-	461
9.	**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.	Yes, the M/s Eloquent Steel Pvt Ltd has well laid down Environment Policy of the Company, approved by the Board of Directors. Environment Policy is given in the EIA Report	10 **Annexure -10**	Fig. 10.1	270 457
ii.	Does the Environment Policy prescribe for standard operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest	Yes, the policy has provided the direction and SOP has been developed under environment management system regarding reporting of any deviation/violation of the environmental or forest norms/conditions to the Board of Directors of the Company. Details are incorporated in the EIA report.	10	10.3.3	282

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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	Hierarchical system of the company is given in the EIA report, as approved by the Board of Directors of the Company, to deal with the environmental issues and for ensuring compliance.	10	Fig 10.3	283
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	The details are given in the EIA Report.	10	Fig. 10.2	282
10.	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	The following facilities will be provided in the plant: • First aid and rest rooms • Canteen and welfare center • Toilets and change rooms • Car parks and cycle/scooter stands.	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	operation phase.				
11.	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.	A total budget of **Rs. 180 Lakhs** has been allocated to address the issues raised during the public hearing. The activities that are undertaken such as establishment of Skill Development center, Renovation of School Building and School Grounds, Construction of separate toilets for boys and girls, Road Maintenance at Nakrajoria Village, Installation of Hand Pumps, Installation of Solar Street Lamps, Renovation of Village pond, Water Tanker to sprinkle water on the road, Provision of Ambulance with life supporting facilities and Plantation of Trees along the road and avenue plantation in vacant area available in Govt. Schools, Govt. Hospitals Panchayat Office, and Community Centre. These Activities will be done within a time frame of 36 months.	7	7.4	227
12.	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,	There is no court case pending against the project and/or any direction/order passed by any Court of Law. Undertaking for the same is attached as Annexure in EIA EMP Report.	**Annexure -16**	-	562

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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				
13.	A tabular chart with index for points wise compliance of above ToRs.	Complied	-	-	-
-	**The following general points shall be noted:**				
i	All documents shall be properly indexed, page numbered.	Complied	-	-	-
ii	Period/date of data collection shall be clearly indicated.	Complied	-	-	-
iii	Authenticated English translation of all material in Regional languages shall be provided.	All project related Documents/materials are provided in English only.	-	-	-
iv	The letter application for environmental clearance shall quote the MOEF&CC file No. and also attach a copy of the letter	Noted.	-	-	-
V	The copy of the letter received from the Ministry shall be also attached as an annexure to the final EIA-EMP	Noted.	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	Report.				
Vi	The index of the final EIA-EMP report must indicate the specific chapter and page no. of the EIA-EMP Report	Noted.	-	-	-
Vii	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MOEF&CC vide O.M. No. J- 11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry shall also be followed.	Complied	-	-	-
viii	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	Complied. **Vardan EnviroNet,** is an accredited by Quality Council of India/NABET certificate no. **NABET/EIA/2023/SA0158** and NABET accreditation certificate is incorporated in the EIA Report.	12	12.8	303

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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.				
Ix	ToRs' prescribed by the 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 IIIA 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	Complied	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	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 Ministry for obtaining environmental clearance.				
B.	**SPECIFIC TORs FOR EIA STUDIES FOR METALLURGICAL INDUSTRIES (FERROUS AND NON-FERROUS)**				
I.	Complete process flow diagram	Process flow diagram are provided in Chapter-2	2	2.6.2	31

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
	describing each unit, its processes and operations, along with material and energy inputs & outputs (material and energy balance).				
II.	Details on blast furnace/open hearth furnace/ basic oxygen furnace/ ladle refining, casting and rolling plants, etc.	Project not envisaged blast furnace/open hearth furnace/ basic oxygen furnace. Ladle Refining Furnace of 1x8Ton and 1x15Ton will be installed along with proposed new 2x8Ton &2x25Ton Induction Furnaces. In the proposed expansion, Ingot Casting will be replaced by Continuous Casting Machine. 2x4/7m and 3x6/11m Billet Casters have been proposed for Billets production of 336,000 TPA. Rolling Mill of 600TPD is proposed for production of 210,000 TPA long steel production. Details are in the EIA report.	2	2.6.2	31
III.	Details on installation/activation of opacity meters with recording with proper calibration system.	M/s ESPL has proposed for installation of 1 no. of CAAQMS with an investment of Rs. 80Lakhs under the expansion proposal.	6 10	Table 6.6 Table 10.2	190 284
IV.	Details on toxic metals including mercury, arsenic and fluoride emissions.	Not Applicable	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
V.	Details on stack height requirement for integrated steel plants.	Provided in Chapter-4	4	Table 4.4	149
VI.	Details on ash disposal and management- Non Ferrous metal	Not Applicable	-	-	-
VII.	Complete process flow diagram describing process of lead/zinc/copper/aluminum, etc	Not Applicable	-	-	-
VIII.	Raw material Substitution or elimination.	Not Applicable	-	-	-
IX.	Details on smelting, thermal refining, melting, slag fuming, and Waelz kiln operation.	Details are provided in Process description in Chapter 2	2	2.6.2	31
X.	Details on Holding and de-gassing of molten metal from primary and secondary aluminum, materials pre-treatment, and from melting and smelting of secondary aluminum.	Not Applicable	-	-	-
XI.	Details on solvent recycling	Not Applicable	-	-	-
XII.	Details on precious metals recovery	Not applicable	-	-	-

S.No.	TOR Point	Reply	Citation		
			Chapter No.	Item No.	Page No.
XIII.	Details on composition, generation and utilization of waste/fuel gases from coke oven plant and their utilization	Not Applicable	-	-	-
XIV.	Details on toxic metal content in the waste material and its composition and end use (particularly of slag).	TCLP report of slag generated during production process is attached as Annexure. No trace metal found.	**Annexure -9**	-	455
XV.	Trace metals Mercury, arsenic and fluoride emissions in the raw material	Not Applicable			
XVI.	Trace metal in waste material especially slag.	TCLP report of slag generated during production process is attached as Annexure. No trace metal found.	**Annexure-9**	-	455
XVII.	Plan for trace metal recovery.	Metal recovery plant of capacity 1x25TPH is already installed for the recovery of metal (Ferro-alloys) from Slag.	2	2.6.2 (IV)	33
XVIII.	Trace metals in water.	Detailed Water Quality Lab report is provided as Annexure in EIA report. No trace metal found.	**Annexure-3**	-	347

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

M/s Eloquent Steel Pvt. Ltd. (ESPL) is an existing Steel and Ferro Alloy Plant at village: Nakrajoria, P.O.- Salanpur, Dist: Paschim Burdwan, West Bengal for production of 106,004TPA MS Ingots through 4x7Ton Induction Furnace and production of either 59,052TPA of Ferro-manganese (Fe-Mn) or 43,236TPA Silico-manganese (Si-Mn) or 22,680TPA Ferro-Silicon (Fe-Si) or 59,052TPA Ferro-Chrome (Fe-Cr) or 33,480TPA Fe-Si-Cr Or in combination of any through installed 3x7.5MVA & 1x5.5MVA Submerged Arc Furnaces (SAF) in the plant area of 9.089Ha.

M/s Eloquent Steel Pvt. Ltd. (ESPL) was incorporated in the year 2012. For the purpose of setting up Steel Plant, ESPL has acquired two Steel Plants; one M/s Hira Concast Ltd. and another M/s Impex Steel Ltd., located adjacent to each other with common boundary wall in the village: Nakrajoria, P.O. Salanpur, Dist: Paschim Burdwan, West Bengal.

Possession of M/s Hira Concast Ltd. was made through Auction from Official Liquidator of Hon'ble High Court, Calcutta on 01.09.2017. The land registry in the name of Eloquent Steel Pvt Ltd. from Hira Concast Ltd. was done on 27.11.2017. Possession of M/s Impex Steel Ltd. was made through bidding in Auction Notice, issued by Stressed Asset Management Branch of State Bank of India, Kolkata. The land registry in the name of Eloquent Steel Pvt Ltd. from Impex Steel Ltd. was done on 12.04.2018. The unit was not in operation for about three years and was put up for auction by the authorities.

M/s Hira Concast Ltd. has initially installed 2x7Ton Induction Furnaces for production of 53,000TPA MS Ingots. Environmental Clearance (EC) was granted by Ministry of Environment, Forest and Climate Change (MoEF&CC) for setting up Ferro Alloy plant for production of 15,225TPA Fe-Mn & 11,455TPA Si-Mn through 1x7.5MVA SAFs vide F.No J-11011/533/2008-IA.II(I) dated on 11.12.2008. The plant had further expanded its capacity for total production of 27,555TPA Fe-Mn and 20,735TPA Si-Mn by installation of additional 1x5.5 MVA SAF. EC for the expansion was granted by MoEF&CC vide F.No. J-11011/49/2010-IA.II(I) dated on 03.09.2012. West Bengal Pollution Control Board (WBPCB) awarded Consent to Establish (CTE) and Consent to Operate (CTO) time to time.

M/s Impex Steel Limited was also established for the production of 53,004TPA MS Ingots through 2x7Ton Induction Furnaces after obtaining NOC from WBPCB on 24.04.2006. Company obtained EC from MoEF&CC for the production of 17,076TPA Fe-Mn and 11,394TPA Si-Mn through 2x7.5MVA SAF vide F.No: J-11011/183/2008-IA.II(I) on 28.07.2008. Later on, the company further obtained EC from MoEF&CC for production of 31,500TPA Fe-Mn or 22,500TPA Si-Mn or 9,000TPA Fe-Si by installation of additional 2x7.5MVA SAFs and 300TPD Sinter Plant for production of 90,000TPA Mn Ore sinter vide F.No.: J-11011/188/2011-IA.II(I) on 20.09.2012. However, these additional facilities are not installed till date in the plant premises.

CTE vide Memo no 1243A-WPBA/NOC/Red(301)Bwn/2018 dated 23.05.2018 was issued by West Bengal Pollution Control Board (WBPCB) for name Change from Impex Steel Pvt. Ltd. to the Eloquent Steel Pvt. Ltd.

CTE vide Memo no 2233-WPBA/NOC/Red(281)Bwn/17 dated 20.12.2017 was also issued by West Bengal Pollution Control Board (WBPCB) for name and ownership Change from Hira Concast Pvt. Ltd. to Eloquent Steel Pvt. Ltd.

CTO is issued by WBPCB vide memo no. 1534-WPBA/ Red (Bwn)/ Cont (591)/08 dated 28.06.2018 to the M/s ESPL for production of 53,000TPA MS Ingot, 27,552 TPA Fe-Mn and 20,736 TPA Si-Mn, is valid till 30.04.2023 for the units which were formally under M/s Hira Concast Limited.

Another CTO is issued by WBPCB vide memo no. 1530-WPBA/Red(Bwn)/Cont(581)/07 dated 28.06.18 to the M/s ESPL for production of 53,004 TPA MS Ingot, 31,500 TPA Fe-Mn and 22,500 TPA Si-Mn, is valid till 30.06.2023 for the units which were formally under M/s Impex Steel Ltd.

The existing plant configuration of M/s Eloquent Steel Pvt. Ltd. as per the valid CTO is as follows:

Table 1.1: Existing Plant Configuration and Production as per valid CTO

Unit	As per the last EC				As per valid CTOs of M/s Eloquent Steel				Existing Plant Configuration & Production	
	Hira Concast Ltd.		Impex Steel Ltd.		Earlier Hira Concast		Earlier Impex Steel		Configuration	Production in TPA
	Confug.	Prod. TPA	Confu.	Prod.	Confu.	Prod. TPA	Confu.	Prod. TPA		
Steel Melting Shop	IF 2x7 Ton	53000	IF 2x7 Ton	53,004	IF 2x7 Ton	53,000	IF 2x7 Ton	53,004	4x7 Ton Induction Fce.	106,004
Ferro-alloys Plant	1x7.5 MVA + 1x5.5 MVA	Fe-Mn. 27,555 Si-Mn 20,735	4x7.5 MVA	FeMn. 48,576 Si-Mn 22500 Fe-Si 9000	1x7.5 MVA + 1x5.5 MVA	Fe-Mn. 27,552 Si-Mn 20,735	2x7.5 MVA	Fe-Mn 31,500 Si-Mn 22,500	3x7.5MVA + 1x5.5MVA	Fe-Mn 59052 Si-Mn 43,235
Sinter Plant	--	--	300 TPD	90,000 Mn Ore	--	--	Not Installed		---	---

* 2x7.5 MVA SAFs and 300 TPD Sinter Plant under the last EC of Impex Steel were not installed

Further, M/s ESPL is granted permission by WBPCB vide memo no. 124-2N-29/2019(E) – PT dated 05.03.2020 for change in product mix within overall production capacity of Ferro-Alloy plant without increase in pollution load as per the provision of MoEF&CC Notification No. S.O.3518(E) dated 23.11.2016 for production of:

- Ferro-Manganese - 59,052 TPA OR
- Silico-Manganese - 43,236 TPA OR
- Ferro-Silicon - 22,680 TPA OR
- Ferro-chrome - 59,052 TPA OR
- Ferro-Silicon-chrome - 33480 TPA OR in combination of any.

MoEF&CC on 15th October, 2020 has issued transfer of Environmental Clearances from M/s Hira Concast Ltd. to M/s Eloquent Steel Pvt Ltd. vide F.No. J-11011/49/2010-IA.II(I) and from M/s Impex Steel Ltd. to M/s Eloquent Steel Pvt Ltd. vide F.No. 11011/188/2011-IA.II(I) respectively.

M/s ESPL is now requesting Amalgamation of above Environment Clearances transferred in the name of Eloquent Steel Pvt. Ltd. and seeking environment clearance for the proposed modification cum expansion for production of 336,000 TPA Billets through modification of existing 4x7 Ton Induction Furnace to 4x8 Ton, installation of new 2x8 Ton Induction Furnace with 1x8Ton LRF & 2x4/7m CCM and 2x25Ton Induction Furnaces with 1x25Ton LRF & 3x6/11m CCM and production of 210,000 TPA MS Rolled products (Long products- TMT Bar, MS Round & Wire Rod) by installation of 600TPD Rolling Mill along with 1x25TPH Reheating Furnace. Also, 1x25TPH Briquette plant for production of 150,000TPA Chrome Ore Briquettes, 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Sinter are also proposed under the proposed expansion with addition of "Pig Iron' as product from the existing 3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces with maximum production capacity of 76,400 TPA within the existing premises of 9.089 Ha (22.46 acres).

1.2 SITE HISTORY

For the purpose of setting up Steel and Ferro Alloys Plant, M/s Eloquent Steel Pvt. Ltd. (ESPL) has acquired two existing steel slants namely M/s Hira Concast Ltd. and M/s Impex Steel Ltd., located adjacent to each other with common boundary wall at village: Nakrajoria, P.O.- Salanpur, Dist: Paschim Burdwan, West Bengal. Possession of M/s Hira Concast Ltd. was made through Auction from Official Liquidator of Hon'ble High Court, Calcutta on 01.09.2017. Possession of M/s Impex Steel Ltd. was made through bidding in Auction Notice, issued by Stressed Asset Management Branch of State Bank of India, Kolkata. The units were not in operation for about three years and were put up for auction by the authorities.

Earlier to this the two companies Hira Concast Limited and Impex Steel Limited started in the year 2005 with the production of MS Ingots on the basis of CTE and CTO obtained from WBPCB. Since then the land use of the total area 9.089Ha acquired by both companies (now under ESPL) was changed from agricultural to Industrial.

Village Nakrajoria is located in the Dendua gram panchayat of Salanpur community development block, that forms an administrative division in Asansol subdivision of Paschim Bardhaman district. Livelihood in this region is coal-centred. The area does not produce

much of agricultural products. Permeability is found highest in this soil, so it is less suitable for cultivation. Main winter crop of the area is Aman Paddy. Pulses are also produced in some portions of the block.

1.3 PURPOSE OF THE REPORT

Report has been prepared for seeking amalgamation of environment clearances transferred in the name of Eloquent Steel Pvt. Ltd. and seeking environment clearance for the proposed modification cum expansion. The proposed project activity is listed at activity 3(a) Metallurgical industries (Ferrous & Non- ferrous) under Schedule of EIA Notification, 2006, issued by MoEF&CC, Government of India. As per the notification, prior Environmental Clearance (EC) from MoEF&CC is mandatory before installation of the facilities. The project is categorized as Category-A as per the notification. Hence, the industry has to follow procedure to obtain EC which includes application to MOEFCC for obtaining Terms of References (TOR) for conducting the EIA studies. Accordingly, the project proponents have submitted Form-1 along with Pre-Feasibility Report to the MOEF&CC, New Delhi on 21.05.2020 for seeking ToR for conducting the EIA Study. Standard ToR for the project was granted by MoEF&CC on 11.11.2020 vide F.No. J-11011/188/2011-IA.II(I), enclosed as ***Annexure-2***.

The objective of EIA study is to take stock of the prevailing quality of the environment, to assess the impacts of proposed industrial activity on the environment and to plan appropriate environmental control measures to minimize adverse impacts and to maximize beneficial impacts of expansion proposed. The following major objectives have been considered:

- Information for decision makers
- Internalizing the externalities

1.4 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

1.4.1 Project Details

The project is for seeking amalgamation of environment clearances transferred in the name of Eloquent Steel Pvt. Ltd. and environment clearance for the proposed modification cum expansion for production of 336,000 TPA Billets through modification of existing 4x7 Ton Induction Furnace to 4x8 Ton, installation of new 2x8 Ton Induction Furnace with 1x8Ton LRF & 2x4/7m CCM and 2x25Ton Induction Furnaces with 1x25Ton LRF & 3x6/11m CCM and production of 210,000 TPA MS Rolled products (Long products- TMT Bar, MS Round & Wire Rod) by installation of 600TPD Rolling Mill along with 1x25TPH Reheating Furnace. Also, 1x25TPH Briquette plant for production of 150,000TPA Chrome Ore Briquettes, 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Sinter are also proposed under the proposed expansion with addition of "Pig Iron' as product from the existing 3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces with maximum production capacity of 76,400 TPA within the existing premises of 9.089 Ha (22.46 acres).

1.4.2 Project Proponent

M/s Eloquent Steel Pvt. Ltd. (ESPL) is incorporated in the year 2012 as per Certificate of Incorporation. Corporate Identity Number is U 51909 WB 2012 PTC 185734, 2012-13 dated 11.09.2012 issued by the Registrar of Companies, Kolkata.

Mr. Deepak Kumar Agarwal, Chairman cum Managing Director, aged about 48 years, son of Mr. Ramabatar Agarwal is a commerce graduate. He has about 25 years of experience in various industries including coal trading, manufacturing of various Iron and Steel products like Sponge Iron, Billets, Gases, TMT, etc. and trading of iron and steel products and trading of petroleum products.

Address of the Project Proponent:
Mr. Deepak Kumar Agrawal
Eloquent Steel Private Limited
Diamond Prestige,
41A, A J C Bose Road, 8th Floor, Room No. 801,
Kolkata 700017, West Bengal
Ph: 9233331111
Email Id: esplmoef@shakambharigroup.in

1.5 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY AND REGION

1.5.1 Nature of the Project

The proposed project activity is listed at activity 3(a) Metallurgical industries (Ferrous & Non- ferrous) under Schedule of EIA Notification, 2006, issued by MoEF&CC, Government of India and falls under Category 'A'.

1.5.2 Location of the Project

The project is located at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal on area of 9.089Ha between latitude ranging from 23°46'28.52"N to 23°46'43.04"N and longitude ranging from 86°51'33.15"E to 86°51'49.34"E. The entire project will be installed in vacant land of the existing plant. Project does not envisage additional land for the project. No forest land is involved. As per DFO Memo No. 5596/28-1 dated 02.03.2022, there are no national parks/Wildlife Sanctuary/Reserve forests within 10km radius **(DFO letter is enclosed as Annexure - 14).** Nearest habitation is Dendua Village at 30meters distance from project site.

Interstate border of Jharkhand and West Bengal lies at the distance of 3.52kms. River Damodar is flowing at a distance of 3.75km in West direction and Maithon dam is located at a distance of 4.86 km in NW direction of project site. Project is having good connectivity through SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi Kolkata Highway) is at 0.91km & 4.64km road distance respectively connected to project site by Kalyaneshwari to Dendua Road. SH-5 is also located at 4.67km road distance. Also, Salanpur Railway station is 3.2kms

from project site. The 10km study area map showing key features of the study area is provided in **Figure 1.1**.

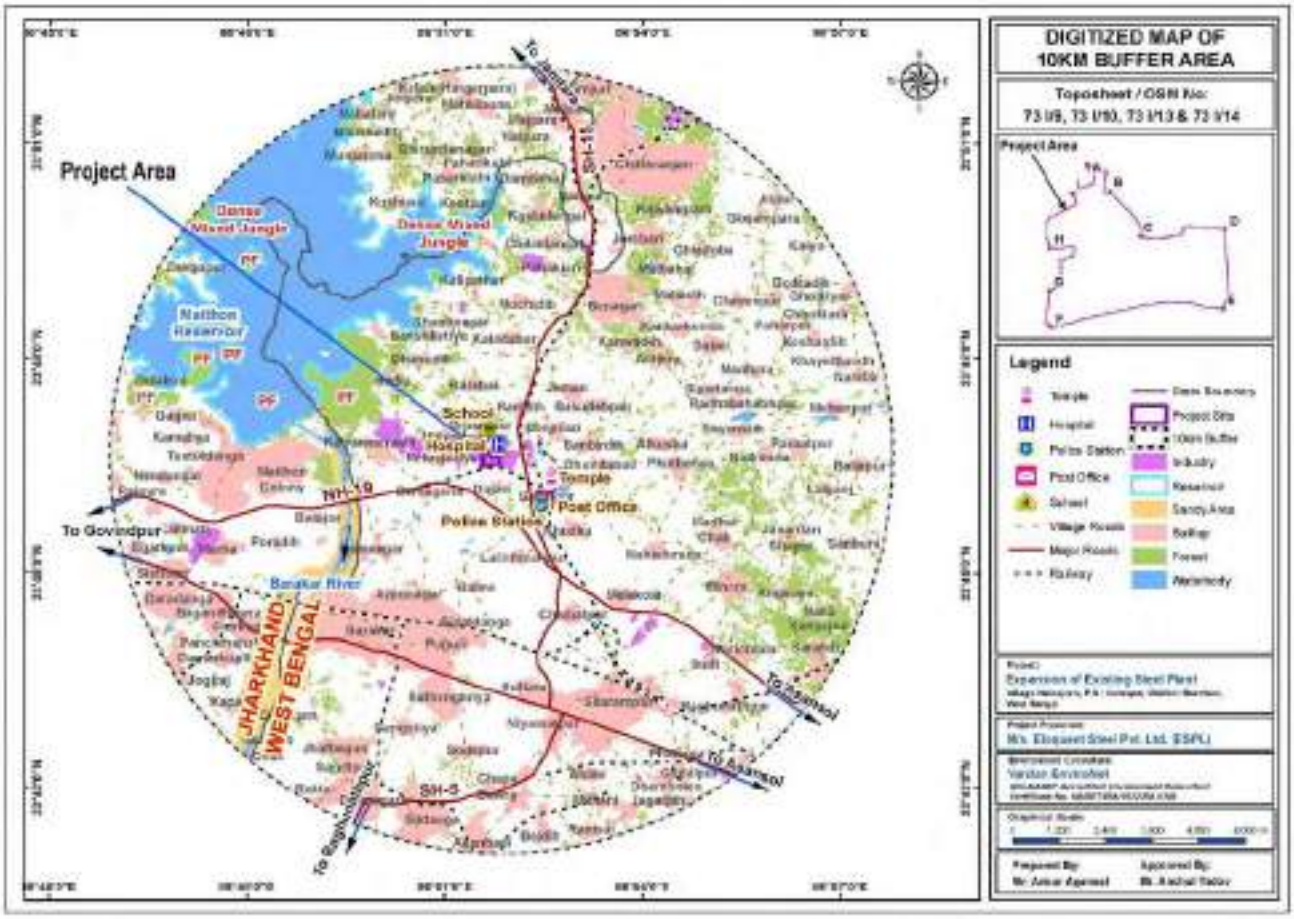


Fig 1.1: Digitized Map of the Study Area

1.5.3 Size of the Project

The existing plant is for production of 106,004 TPA of MS Ingots through 4x7 Ton Induction Furnace and 59,052 TPA of Ferro-manganese or 43,236 TPA of Silico-manganese or 22,680 TPA Ferro-Silicon or 59,052 TPA Fe-Cr. or 33,480 Fe-Si-Cr. through installed 3x7.5 MVA & 1x5.5 MVA Submerged Arc Furnace. The existing plant area is 9.089 Ha. Company is now seeking for fresh EC for the configuration as mentioned in **Table No. 1.2**.

Table 1.2: Existing and Proposed Project

Plant	Existing installed Units and Capacity		Proposed Units		Total after Expansion	
	Unit	Capacity in TPA	Unit	Capacity in TPA	Unit	Capacity in TPA
Steel Melting Shop -1	4x7 Ton Induction Furnace	106,004 MS Ingots	Modification of existing 4x7 Ton IF to 4x8 Ton + Installation of 2x8 Ton IF with LRF (1x8T) and 2x4/7m CCM	164,500	6x8 Ton Induction Furnace with 1x8 Ton LRF and 2x4/7 m CCM	336,000 Billets
Steel Melting Shop-2	--	--	Installation of new 2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	171,500	2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	
Rolling Mill	--	--	600 TPD	2,10,000 Rolled Products (TMT Bar, MS Round & Wire Rod)	600TPD	210,000 Rolled Products (TMT Bar, MS Round & Wire Rod)
Reheating Furnace	--	--	1 x 25 TPH	--	1 x 25 TPH	--
Ferro-Alloy Plant with metal recovery Plant	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or	Proposed for addition of Pig Iron production without adding any additional facilities	Pig Iron-76400	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or
		Si. Mn-43,236, or				Si. Mn-43,236, or
		Fe Si – 22680, or				Fe Si – 22,680, or
		High Carbon Ferro Chrome – 59052, or				High Carbon Ferro Chrome – 59,052, or
		Ferro Silico Chrome – 33480				Ferro Silico Chrome – 33,480, or
		Or in combination of any				Pig Iron-76,400, or in combination of any
Briquette Plant	--	--	1x 25 TPH	150,000	1x 25 TPH	150,000
Sinter Plant	--	--	1x300 TPD	108,000	1x300 TPD	108,000

1.5.4 Importance of the Project to the Country & Region

Domestic Demand

Steel is crucial to the development of any modern economy and is considered to be the backbone of the human civilization. India's annual per capital steel consumption is 74 kg which is one-third the global average (224.5kg). India currently utilizes less steel intensive construction methodologies for buildings, roads and bridges and hence does not fully utilize the numerous benefits of steel intensive construction. A transition to steel intensive construction will also support India's rise to a $5 trillion economy by 2024-25. The steel industry in India is well established and has recorded a steady growth over the past 5 years. The demand for finished steel has consistently grown at 5.6% over the past 5 years reaching 99 Tons in 2018-19. In accordance with this, crude steel capacity in the country has also increased to 142 TPA.

Considering the prospects for the development for Infrastructure, construction and Industrial activity in India in the years to come, large scope exists for increased consumption of long steel products.

Considering the demand for steel in these sectors M/s. Eloquent Steel Pvt Ltd. has planned to expand the production capacity of its existing plant at Village: NakraJoria, P.O.- Salanpur, Distt. – Paschim Burdwan, West Bengal. The finished product will be sold in the Steel Markets of Major states in India especially Bengal, Jharkhand, Bihar, Sikkim, Uttar Pradesh and North Eastern States. The products will be produced indigenously and will be consumed in the country and also outside the country as per the demand.

Regional Development

The State can be benefited from the project as there will be direct employment of large people in the Steel plant. Preference will be given to the people of the state possessing requisite skill and qualification criteria. And there will be lot of scope for indirect employment of the people of the state in and around the project site. Also, the CSR activity carried out by the company in the region will be benefitting the locals as well as whole of the surrounding area.

1.6 SCOPE OF THE STUDY- DETAILS OF REGULATORY SCOPING (AS PER TOR)

M/s Eloquent Steel Private Limited has entrusted **M/s Vardan Environet, Gurugram** to carry out the Environmental Impact Assessment (EIA) and preparation of EIA Report in order to obtain Environmental Clearance.

The Project is listed under activity 3(a) Metallurgical Industries (Ferrous & Non-ferrous) of EIA Notification, 2006 and falls under Category 'A'. Hence, the industry has to follow procedure to obtain EC which includes application to MOEFCC for obtaining Terms of References (TOR) for conducting the EIA studies.

1.6.1 Terms of Reference issued by MoEF&CC

Standard ToR for the project was granted by MoEF&CC on 11.11.2020 vide F.No. J-11011/188/2011-IA.II(I) for preparation of EIA/EMP Report for obtaining Environmental Clearance for the proposed project. The aim of the study is to establish the existing baseline environmental conditions, predict impacts of the project, suggest Environmental Management Plan and develop a post-study monitoring program.

As per the scoping of project, it is required to submit a formal EIA Report with public hearing details for consideration of the project for grant of Environmental Clearance.

The identification of impacts requires one to first describe and understand the conditions of the environment prior to the proposed activity. The baseline data has been collected for the period 1st December 2019 to 29th of February 2020.

The scope of the study includes a detailed characterization of the environment in an area of 10 Km. radius of the project site for various environmental parameters like, Air, Water, Soil and Noise, Ecological and Socio-economic aspects.

1.6.2 Preparation of EIA

This EIA Report is prepared in accordance with the EIA Notification, 2006 and has been divided into twelve chapters (in addition to The Executive Summary) as briefed here under:

Chapter 1 – Introduction

The chapter provides description of project background, site and surroundings, objectives, scope and organization of the study and format of this report.

Chapter 2 – Project Description

This chapter provides information on project and capacity; need for the project; location; size or magnitude of operation; technology and process description; maps showing project layout, component of projects etc..

Chapter 3 – Description of the Environment

This chapter deals with the methodology and findings of field studies undertaken with respect to meteorology, ambient air quality, water quality, soil characteristics, noise levels and ecology to define the various existing environmental status in area of the project. This also deals with the infrastructural development as a part of project and sources of pollution from the proposed project.

Chapter 4 – Anticipated Environmental Impacts and Mitigation Measures

In this chapter, the potential impacts of the proposed activities, which have caused significant environmental concerns, are identified and discussed. This discussion has formed the basis for environmental management activities.

Chapter 5 – Analysis of Alternatives (Technology and Site)

This chapter has included a comparison of alternatives to determine the best method of achieving the project objectives with minimum environmental impacts and suggest the most environmentally friendly and cost-effective options, if any.

Chapter 6 – Environmental Monitoring Program

This chapter has ascertained the environmental impacts; state of pollution within the plant area and in its vicinity; planning for predictive or corrective actions in respect of pollution to keep it within permissible limits.

Chapter 7 – Additional Studies

This chapter will include outcomes of Public consultation, Identification of hazards and assessment of risks, Social impact assessment, R&R action plan, biodiversity conservation plan, watershed management etc..

Chapter 8 – Project Benefits

This chapter deals with improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits due to proposed project activity.

Chapter 9 – Environmental Cost Benefit Analysis

This chapter not recommended at scoping stage – thus no detailed analysis carried out separately in this EIA/EMP report.

Chapter 10 – Environmental Management Plan

This chapter will include the description of administrative aspects of ensuring that the mitigation measures suggested are implemented and their effectiveness is monitored, after approval of the EIA.

Chapter 11 – Summary

This will constitute the summary of EIA Report.

Chapter 12 – Disclosure of Consultant

This will include the names of the consultants engaged in preparation of EIA and nature of consultancy rendered.

1.6.3 Laws Applicable To This Project

Legal Channel	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
The Water (Prevention & Control of Pollution) Acts1974/ Rules1975	CPCB, SPCB	The prevention and control of water pollution and also maintaining or restoring the wholesomeness of water	• Not to discharge any effluent, not confirming to standards, prescribed by WBPCB into any stream, well, sewers or land • Not to discharge air pollutant(s) in excess of standards, prescribed by the State PCB • Obtain 'Consent to Establish' prior to establish any process, operation or treatment system • Obtain 'Consent to Operate' prior to operation of system which is likely to discharge effluent • Apply for renewal of the 'Consent to Operate' before the expiry • Comply with conditions as prescribed under consents
The Air (Prevention & Control of Pollution) Acts1981/ Rules1982	CPCB, SPCB	The prevention, control and abatement of air pollution	
The Environment (Protection) Acts1986/Rules 1986 The Environmental Impact Assessment (EIA) Notification, 2006	MoEF&CC, CPCB, SPCB	Protection and Improvement of the Environment	• Prevent discharge or emission of environment pollutants in excess of the prescribed standards • Submit 'Environmental Statement' every year • Obtain prior "Environmental Clearance' from MoEF&CC in case of new project or for Modernisation / Expansion
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	MoEF&CC, CPCB, SPCB	Management & Handling of hazardous wastes in line with the Basel convention	• It is the responsibility of the occupier to identify the hazardous wastes in their units and ensure proper handling and disposal • Company to take all steps to contain contamination, prevent accident and limit consequences on human being and environment

Legal Channel	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
			• Obtain authorization from WBPCB and comply with the conditions. • Maintain records of Hazardous Waste generated in Form-3 and submit yearly return for generation, treatment, recycling, disposal etc.., to SPCB in Form-4 • Used Oil to be send / sold to the registered recycler, re-processor, registered authorized facility • Shall be transported in accordance with the rule. • Site storage is allowed for 90 days only
Factories Act, 1948 (as amended till 1987)	Ministry of Labour, DGFASLI and Directorate of Industrial Safety and Health/Factories Inspectorate	Control of workplace environment, and providing for good health and safety of workers	• Obtain and renew factory license and obtain permission for the site from State Government or the Chief Inspector of Factories in case of new or extension of any Factory. • Ensure health, safety and welfare of all workers while they are at work in the Factory as far as reasonably practicable. • Ensure effective and adequate ventilation of work place and adequate measures to be taken to protect workers particularly in the processes involving excessive temperature. • Ensure effective and adequate ventilation of work place and adequate measures to be taken to protect workers particularly in the processes involving excessive temperature.
The Central Motor Vehicle Rules, 1989	Ministry of Shipping, Road	To consolidate and amend the law relating to motor	• Ensure compliance to safety provisions in the transport vehicle carrying dangerous and hazardous substances

Legal Channel	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
	Transport and Highways	vehicles including to regulate the transportation of dangerous goods with a view to prevent loss of life or damage to the environment	inside works • Display of emergency information panels at front, back and both side of vehicle • Every transporter to ensure safe transportation of dangerous/ hazardous goods. • Earthing chain for grounding, any prevalent static charge. • All motor vehicle entering the works shall have properly maintained brakes, lights, signal system for brakes, blinkers and registration number displayed, and valid Pollution under Control Certificate.
The Solid Waste Management Rules, 2016	CPCB, SPCB	To manage/ utilize the generated solid waste without damaging the environment and surroundings	• Segregate waste in to three streams, Wet (Biodegradable), Dry (Plastic, Paper, metal, wood, etc..) and domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc..) and handover segregated wastes to authorized rag-pickers or waste collectors or local bodies.
Batteries (Management and Handling) Rules, 2001.	SPCB, CPCB and MoEF&CC	To control the hazardous waste generation (lead waste) from used lead acid batteries	• It is the responsibility of the generator to ensure, used batteries are not disposed of in any manner other than depositing with dealer, manufacturer, importer, re-conditioner registered recycler or at designated collection centre • Submit half yearly return for disposal of used batteries to State PCB by 30th June & 31st December, every year • In case of auction, ensure batteries are auctioned to the

Legal Channel	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
			registered recycler only • File half yearly return for the auction • Maintain record for such auction
E-Waste (Management) Rules, 2016	SPCB, CPCB and MoEF&CC	To recycle/manage the electronic waste from the industry	• Shall make provisions for collection of e-waste generated from 'end of life' of their products and shall ensure that such e-wastes are channelized to registered dismantler or recycler, In line with the principle of 'Extended Producer Responsibility'. • Create Awareness
The Boiler Acts 1923 & Rules 1950	State Government, District magistrate	To register the boilers used in industry	• Ensure availability and effective functioning of steam vents, safety valve, drain valve, monitoring instruments of critical parameter through regular checks and maintain records for the same. • Obtain authorization for boilers and their renewal prior to due date and / or when an accident occurs to the boiler / when any structural alteration / addition / renewal is made. • Ensure mandatory registration of boilers. • Ensure to obtain prior approval before taking any alteration and renewals to steam pipes after submitting plan and report. • Ensure to obtain prior approval before taking structural alteration, addition and renewal to boilers from Chief Boiler Inspectors. • Ensure prior examination of boiler by Inspector during & after any repair/shut down and maintain record for

Legal Channel	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
			the same. • Report accident / incident or any severe damage to property, human life within 24 hours giving details of occurrence.
Noise Pollution (Regulation and Control) Rules, 2000 and its amendments	CPCB, SPCB, MoEF&CC	To maintain the noise levels with respect to the place/equipment/ Industry	• Noise Quality Monitoring & submission of reports on weekly/monthly basis. • Providing Ear plugs and Muffs to the workers working in noise prone areas. • Dampening the source noise level or making the noise characteristics less annoying by providing suitable enclosures and barriers.

CHAPTER - 2
PROJECT DESCRIPTION

2.1. THE PROJECT

M/s Eloquent Steel Pvt. Ltd. (ESPL) is an existing Steel and Ferro Alloy Plant at village: Nakrajoria, P.O.- Salanpur, Dist: Paschim Burdwan, West Bengal for production of 106,004TPA of MS Ingots through 4x7Ton Induction Furnace and production of either 59,052TPA of Ferro-manganese (Fe-Mn) or 43,236TPA Silico-manganese (Si-Mn) or 22,680TPA Ferro-Silicon (Fe-Si) or 59,052TPA Ferro-Chrome (Fe-Cr) or 33,480TPA Fe-Si-Cr Or in combination of any through installed 3x7.5MVA & 1x5.5MVA Submerged Arc Furnaces (SAF) in the plant area of 9.089Ha.

Considering the potential of long Steel products and the experience gained by the group in this sector, M/s ESPL is now seeking amalgamation of Environment Clearances transferred in the name of Eloquent Steel Pvt. Ltd. and seeking environment clearance for the proposed modification cum expansion project for production of 336,000 TPA Billets through modification of existing 4x7 Ton Induction Furnace to 4x8 Ton, installation of new 2x8 Ton Induction Furnace with 1x8Ton LRF & 2x4/7m CCM and 2x25Ton Induction Furnaces with 1x25Ton LRF & 3x6/11m CCM and production of 210,000 TPA MS Rolled products (Long products- TMT Bar, MS Round & Wire Rod) by installation of 600TPD Rolling Mill along with 1x25TPH Reheating Furnace. Also, 1x25TPH Briquette plant for production of 150,000TPA Chrome Ore Briquettes, 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Sinter are also proposed under the proposed expansion with addition of "Pig Iron' as product from the existing 3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces with maximum production capacity of 76,400 TPA within the existing plant area of 9.089 Ha (22.46 acres).

The proposed project activity is listed at activity 3(a) Metallurgical industries (Ferrous & Non- ferrous) under Schedule of EIA Notification, 2006, issued by Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India and falls under Category 'A'.

The project proponents have submitted prescribed Form-1 along with Pre-Feasibility Report to the MOEF&CC, New Delhi on 21.05.2020 for seeking ToR for conducting the EIA Study. Standard ToR for the project was granted by MoEF&CC on 11.11.2020 vide F.No. J-11011/188/2011-IA.II(I), enclosed as ***Annexure-2***.

2.2. NEED & JUSTIFICATION OF THE PROJECT

Steel is crucial to the development of any modern economy and is considered to be the backbone of the human civilization. The level of per capita consumption of steel is treated as one of the important indicators of socio-economic development and living standard of the people in any country. All major industrial economies are characterized by the existence of a strong steel industry and the growth of many of these economies has been largely shaped by the strength of their steel industries in their initial stages of

development. It has been observed that a combination of small, medium and large capacity steel plants can contribute in big way in achieving the national interest of self-reliance.

According to Ministry of Steel reports, the total production of Crude Steel in India has been 118 million tons in 2020-21 as compared to 74.29 million tonnes in 2010-11 indicating an increase of 59% in the last 10 years (i.e. annual growth rate of above 5.9%).

Considering the prospects for the development for Infrastructure, construction and Industrial activity in India in the years to come, large scope exists for increased consumption of long steel products. The projections made by the Ministry of Steel in its Vision-2020 document, there is a significant domestic demand for steel in the Country. In order to meet the increasing steel demand, new steel plants shall be established.

Considering the demand for steel in these sectors M/s. Eloquent Steel Pvt. Ltd. has planned to expand the production capacity of its existing plant at Village: NakraJoria, P.O.- Salanpur, Distt. –Paschim Burdwan, West Bengal. Also, instead of selling MS Ingots to Rolling Mills of other Units, it is now proposed to set-up its own Rolling Mill to produce Thermo-Mechanically Treated (TMT) High Strength Steel Reinforcement Bars, MS Road and Wire Rod in a most energy efficient and cost effective manner. These Rebars are always in high demand in the construction sector.

The State can be benefited from the project as there will be direct employment of large people in the Steel plant. Also there will be lot of scope for indirect employment of the people of the state in and around the project site.

2.3. LOCATION OF PROJECT (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATIONS, PROJECT BOUNDARY AND PROJECT SITE LAYOUT)

The project is located at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal. Proposed expansion will be done in the vacant land within the existing 22.46 acres (9.089 Ha) of land already under possession of ESPL. The Raw materials and products can easily be transported to the proposed site as it is having a good connectivity through the National Highway and Eastern Railway line. Asansol & Purulia are the nearest cities where market facilities are available. River Damodar is flowing at a distance of 3.75km in West direction. As per DFO Memo No. 5596/28-1 dated 02.03.2022, there are no national parks/Wildlife Sanctuary/Reserve forests within 10km radius.

The salient features of the project are given in **Table No. 2.1**.

Table 2.1: Salient features of the Proposed Project

S.No.	Particulars	Details
1.	Site Location	Village- NakraJoria, P.O.- Salanpur, District- Paschim Burdwan, West Bengal
2.	Topo-sheet Nos. of Project Site	73I/13

S.No.	Particulars	Details
3.	Topo-sheet Nos. for 10 km Study area	73I/9, 73I/10, 73I/13 & 73I/14
4.	Center GPS Coordinates	Latitude: 23°46'43.10"N to 23°46'28.56"N Longitude: 86°51'33.19"E to 86°51'49.59"E
5.	Height above MSL	152 meters
6.	Interstate border	Jharkhand and West Bengal Border at 3.52kms in West (aerial Distance)
7.	Nearest Habitation	Dendua Village at 30 meters in NE (aerial distance)
8.	Nearest Densely Populated Area	Salanpur at 1.4km in SW (aerial distance)
9.	Nearest Police Station	Salanpur at 3.83km in SW
10.	Nearest Post Office	Kalyenshwari Sub Post Office at 3.06km in NW
11.	Nearest Hospital	Dendua Hospital at 0.28km in NE (aerial distance)
12.	Nearest Education Facilities	Govt. Primary School, Dendua at 0.66Km in NE (aerial distance)
13.	Monuments/Religious Place	Bajrangwali Temple at 0.27 km in NE (aerial distance)
14.	Nearest River/Reservoir/Dam/etc.	Barakar River at 3.75km in West (aerial distance) Maithon dam at 4.86km NW (aerial distance)
15.	Nearest Airport	Birsa Munda Airport at 201.6km
16.	Nearest Port	Haldia Port 322 kms
17.	Nearest National Highway/ State Highway	SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi Kolkata Highway) is at 0.91km & 4.64km road distance, respectively connected to the project site by Kalyaneshwari to Dendua Road. SH-5 is at 4.67km road distance.
18.	Nearest Railway Station	Salanpur Station at 3.2kms in SW
19.	Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area	Nil within 10 km radius of the project site
20.	Reserve Forest / Protected Forest	No Reserve Forest Only Protected Forest in 10km study area
21.	Total Power Requirement	Existing: 30 MW, Proposed: 34MW

S.No.	Particulars	Details
		Total: 64 MW, Source: DVC DG set 2x250 KVA has been installed. 2x500 KVA DG Set has been proposed to be installed. **Fuel** HSD for DG Set: 68.328Kl/year LDO/LSHS for Reheating Fce. & Briquetting Plant: 2646.6Kl/year
22.	Manpower Requirement	Existing: 400, Proposed: 400, Total: 800
23.	Land Requirement	Expansion will be within the existing plant premises of 9.089 Ha. (22.46 Acres)
24.	Project Cost	Existing: Rs.83.62 Crs., Proposed: Rs. 120 Crs. Total: Rs. 203.62 Crs.

2.3.1 Plant Layout

The major considerations which have influenced the development of the plant general layout are described below:

- The disposition of main production units in such a way that ensures smooth and unidirectional flow of materials through the process line
- Optimization of movement from the raw material stage to the finished product
- Assembly points for the emergency situation
- Uninterrupted movements of ambulance and fire fighting vehicles in case of any
- Greenbelt all along the plant boundary to act as barrier to dust and noise going out of plant

2.3.2 List of Industries in the Study Areas

The proposed expansion project is located in the area of Paschim-Burdwan district. Many industries are in the vicinity of the project site.

Table 2.2: List of Industries in 10 Km Radius

List of Industries	Distance	Direction	Type of Industry
Maithan Steel & Power Ltd..	0.1	E	Integrated Steel Plant
Balaji Glass factory	0.7	E	Glass
Maithan Alloys Ltd..	1.9	W	Ferro Alloy Plant
BMA Stainless Ltd..	2.8	W	Steel Plant
Impex Ferrotech Pvt. Ltd..	2.8	W	Ferro Alloy Plant
Bonjemehari Collery OCM	0.9	NE	Open Cast Mine
Fulberia OCM	4.5	ENE	Open Cast Mine

List of Industries	Distance	Direction	Type of Industry
Borira OCM	1.2	SSW	Open Cast Mine
Rajpura Collery OCM	8.3	WSW	Open Cast Mine
Anjaney Ferro Pvt. Ltd..	5.6	N	Ferro Alloy Plant
Natural Refractories	1.2	E	Refractory

The Location map, 10km Topographic map, 10 km & 500m Google map is shown in Fig. 2.1, 2.2, 2.3 and 2.4 respectively. The general plant layout is shown in Fig. No. 2.5. The project site photographs are shown in Fig. 2.6.

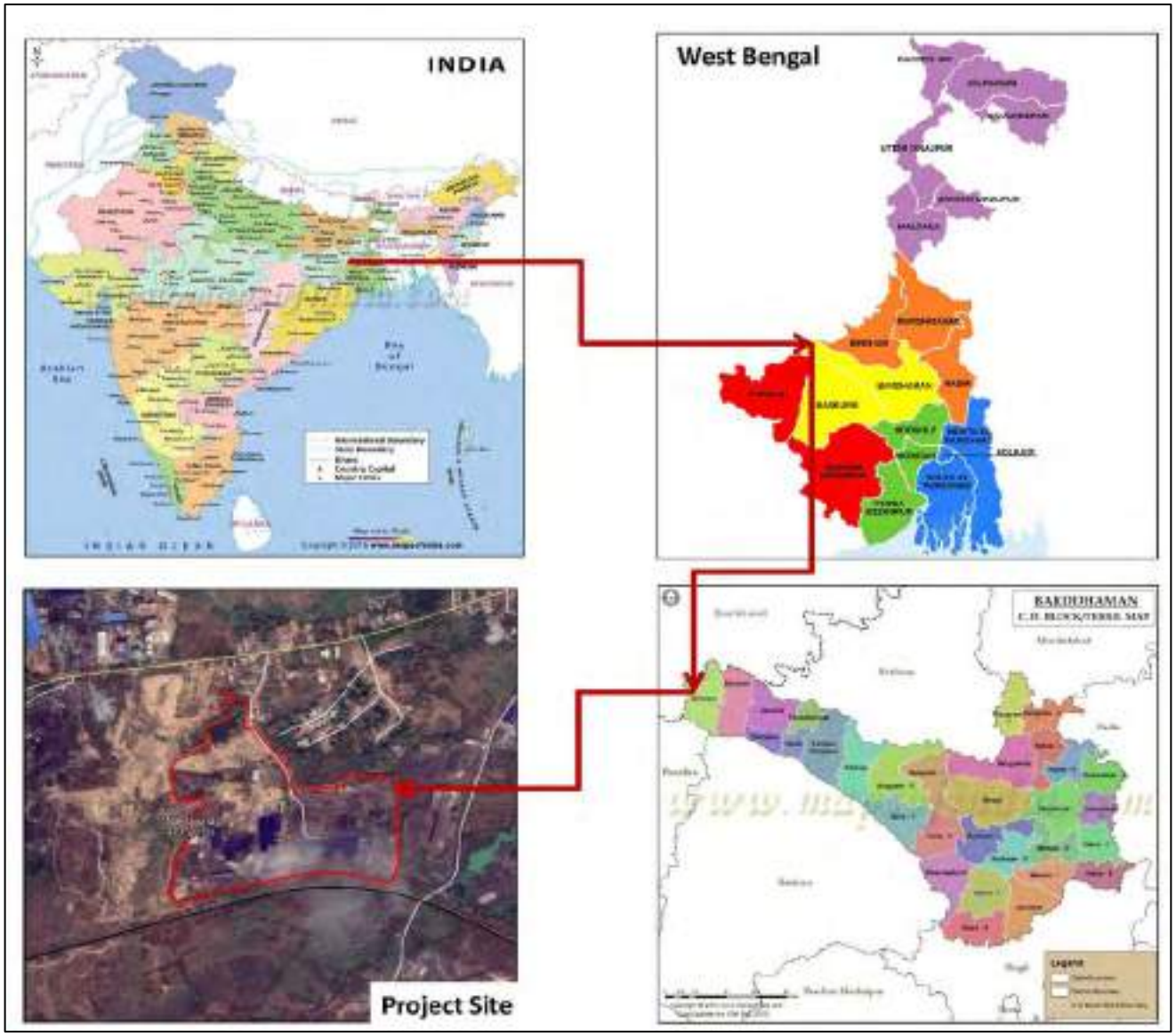


Fig 2.1: Location Map of the Project Site

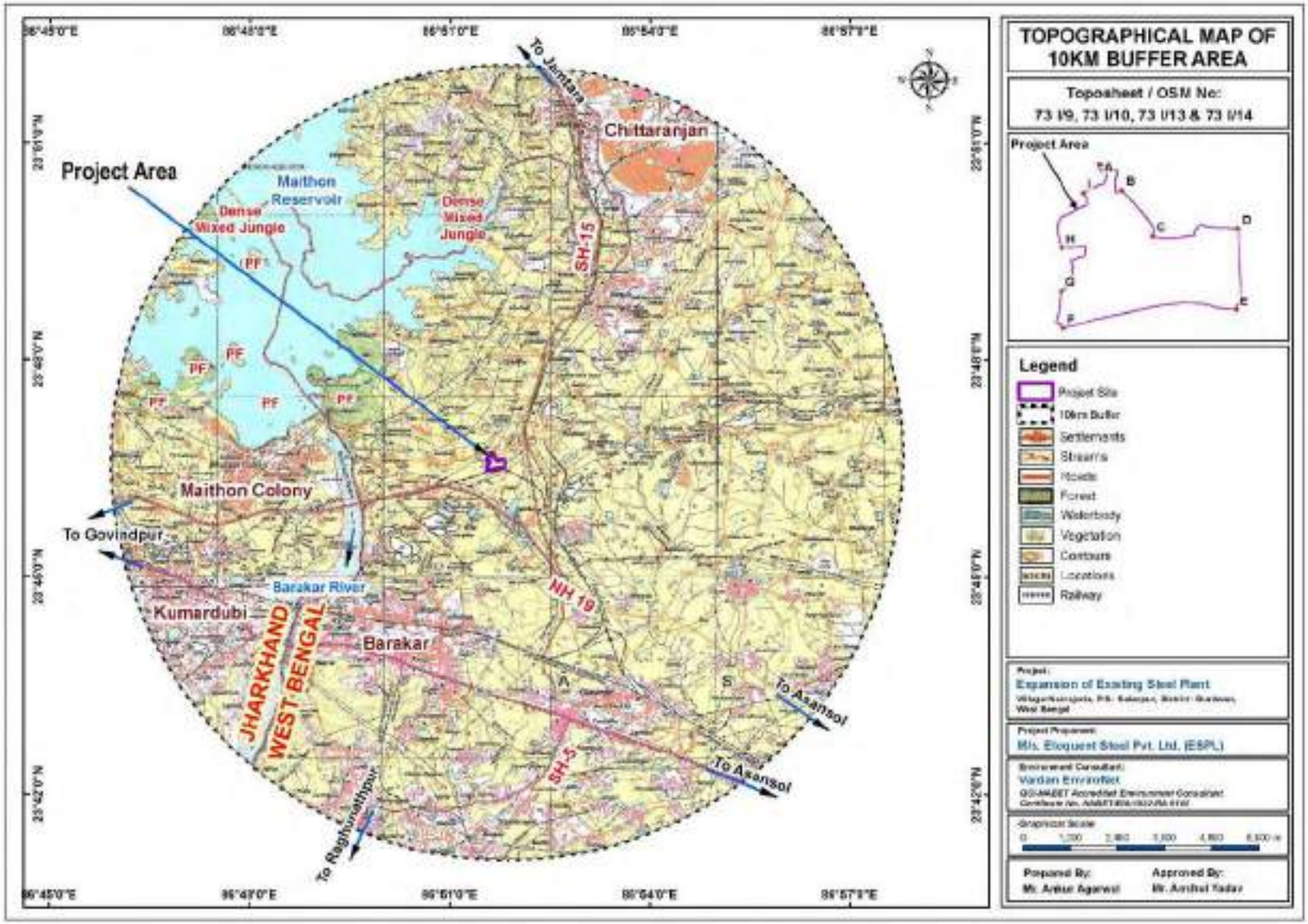


Fig 2.2: Topographic Map of 10 Km Radius Study Area

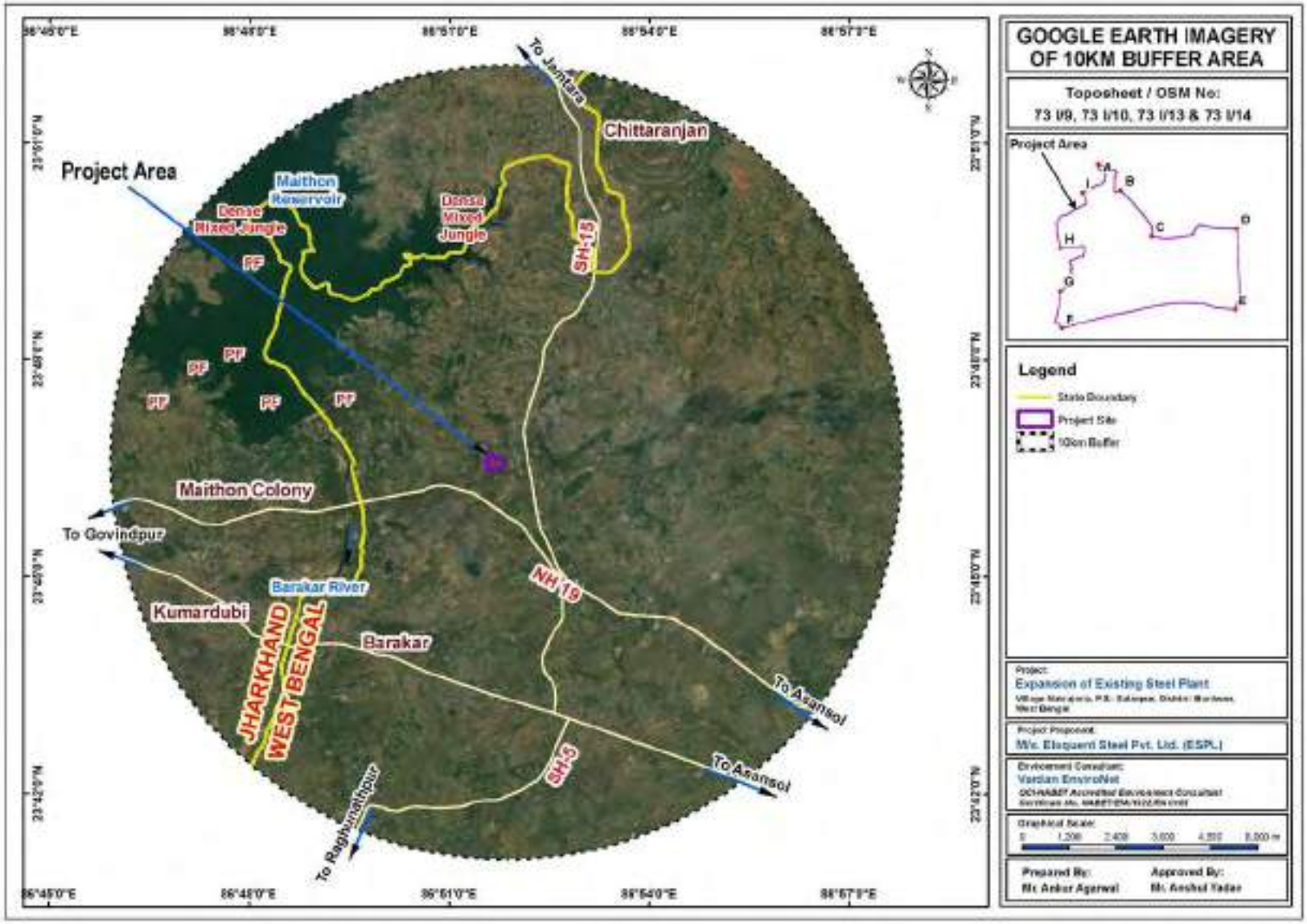


Fig 2.3: Google Map of 10 Km Radius Study Area

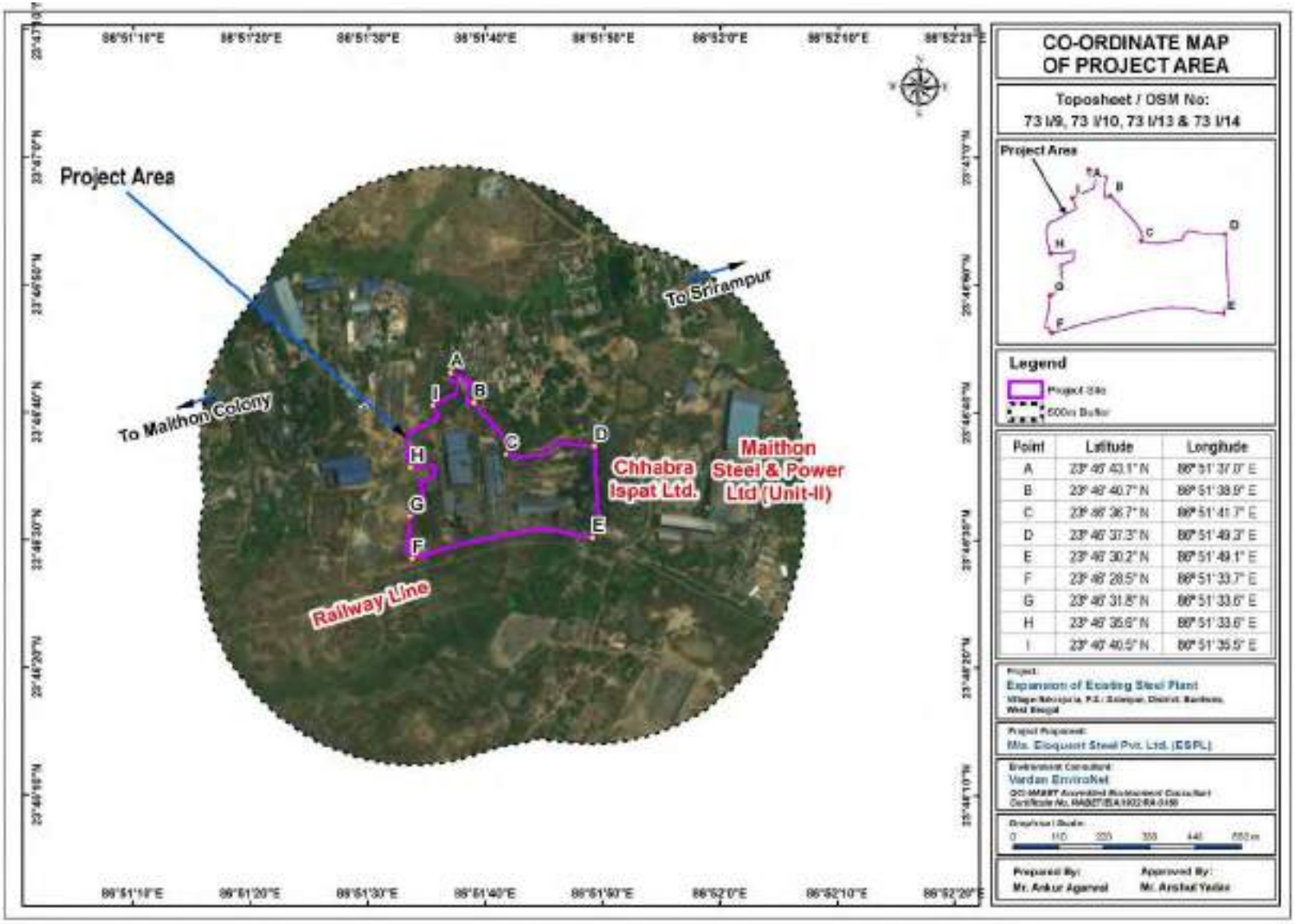


Fig 2.4: Google Map of 500m Radius Study Area showing Co-ordinates

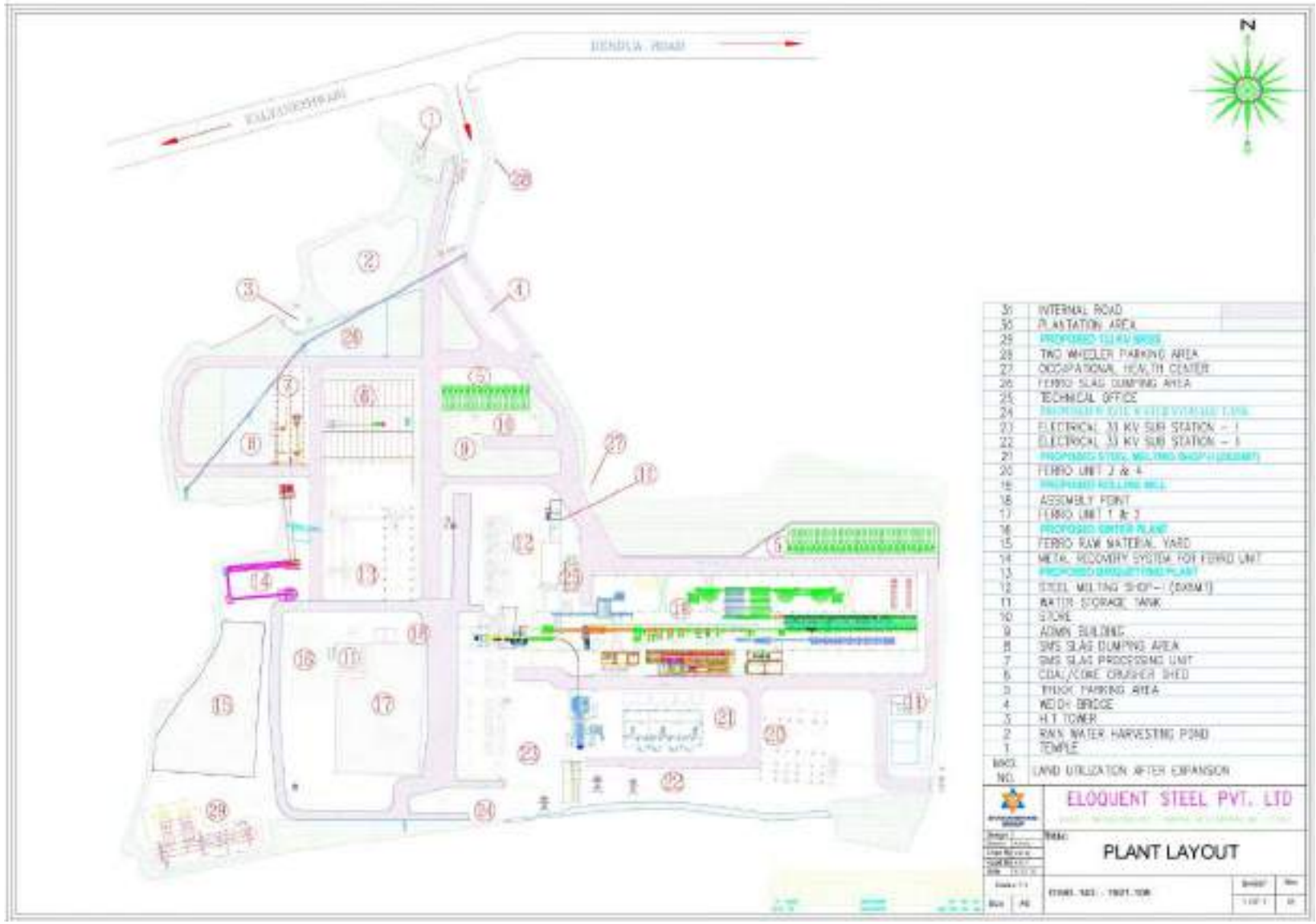


Fig 2.5: Layout Plan of the Project Site



Main Entry Gate



Admin Building



Weigh Bridge



Hot Metal Pouring Facility



CCM Facility



SAF

		
Green Belt	**Green Belt**	**Green Belt**
		
Occupational Health Centre	**Pollution Control Equipment**	**Existing RWH Pond**

Fig 2.6: Photographs of Project Site & Greenbelt

2.4. SIZE AND MAGNITUDE OF OPERATION

Table 2.3: Existing and Proposed Production Facilities

Plant	Existing installed Units and Capacity		Proposed Units		Total after Expansion	
	Unit	Capacity in TPA	Unit	Capacity in TPA	Unit	Capacity in TPA
Steel Melting Shop -1	4x7 Ton Induction Furnace	106,004 MS Ingots	Modification of existing 4x7 Ton IF to 4x8 Ton + Installation of 2x8 Ton IF with LRF (1x8T) and 2x4/7m CCM	164,500	6x8 Ton Induction Furnace with 1x8 Ton LRF and 2x4/7 m CCM	336,000 Billets
Steel Melting Shop-2	--	--	Installation of new 2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	171,500	2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	
Rolling Mill	--	--	600 TPD	2,10,000 Rolled Products (TMT Bar, MS Round & Wire Rod)	600TPD	210,000 Rolled Products (TMT Bar, MS Round & Wire Rod)
Reheating Furnace	--	--	1 x 25 TPH	--	1 x 25 TPH	--
Ferro-Alloy Plant with metal recovery Plant	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or	Proposed for addition of Pig Iron production without adding any additional facilities	Pig Iron-76400	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or
		Si. Mn-43,236, or				Si. Mn-43,236, or
		Fe Si – 22680, or				Fe Si – 22,680, or
		High Carbon Ferro Chrome – 59052, or				High Carbon Ferro Chrome – 59,052, or
		Ferro Silico Chrome – 33480				Ferro Silico Chrome – 33,480, or
		Or in combination of any				Pig Iron-76,400, or in combination of any
Briquette Plant	--	--	1x 25 TPH	150,000	1x 25 TPH	150,000
Sinter Plant	--	--	1x300 TPD	108,000	1x300 TPD	108,000

2.5. PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION

2.5.1 Schedule for Approval of the Project

The tentative project schedule for the entire process of obtaining Environmental Clearance is given below:

Status of Activity	Activity	Date
Activities completed	Submission of Online application (Form-1/PFR)	21.05.2020
	Standard ToR granted by MoEF&CC	11.11.2020
	Draft EIA submitted to WBPCB	05.08.2021
	Advertisement of Public Hearing in Newspaper	09.09.2021
	Public Hearing conducted by WBPCB	03.11.2021
Tentative Activities	Final EIA submitted to client for Review	28.06.2022
	Final EIA submitted to MoEF&CC	04.07.2022

2.5.2 Schedule for implementation of the Project

Typically, project has four core dimensions viz:

a) Engineering: This directly impacts the smooth operations of the plant over its entire life

b) Procurement: This is critical on account of the impact that it has on investment and performance benchmarks and also in ensuring the choice of appropriate technology.

c) Construction: It is critical in terms of its impact on completion quality and duration of the project phase.

d) Project Management: Other than its obvious impact on project time it also contributes to risk management for the promoter.

The implementation of the project will be taken up after Environmental clearance from the Ministry of Environment, Forests and Climate Change (MOEF&CC), Government of India and Consent to Establish from West Bengal Pollution Control Board (WBPCB).

Schedule of implementation of the project is the most reasonable time during which the proposed project can be implemented. This takes into account the time required for various activates i.e. detailed engineering of the unit including structural designs, civil construction Procurement of equipment and machinery including utilities and services, equipment test and trial runs etc.

The major activities involved in the implementation and construction of the projects has been developed on the basis of the estimated quantum of Civil and Structural Works to be executed at site, expected delivery schedule of the various equipment proposed to be installed and expected time period for the erection, testing and commissioning of equipment.

It is estimated that the procurement of equipment, engineering, laying of foundations, erection of equipment, piping and cabling work shall be completed in a period of 38 months from the day "go-ahead" signal is given (during CTE period). Another 10 months will be required for conducting the Cold and Hot Trials. There after the commercial production shall commence. Thus, overall, **48 months** shall be needed for completion of the project after the permission from MoEF&CC and WBPCB.

Table 2.4: Project Implementation Schedule

Particulars	Start	Completion month
Civil Work	Zero date	30th month
Receiving of final equipment/motors/drives etc.	Zero date	31st month
Erection & Installation	31st month	38th month
Trial Production & De-Bottlenecking	39th month	48th month
Commercial Production		48th month onwards

2.6. TECHNOLOGY AND PROCESS DESCRIPTION

2.6.1 Plant Technical Feature

The existing Plant is having 4x7Ton Induction Furnace for production of 106,004TPA MS Ingots and 3x7.5MVA & 1x5.5MVA SAF for production of Ferro Alloys (59,052 TPA of Ferro-manganese or 43,236 TPA of Silico-manganese or 22,680 TPA Ferro-Silicon or 59,052 TPA Fe-Cr. or 33,480 Fe-Si-Cr).

The present proposal is for;

- Amalgamation of two environmental clearance transferred in the name of Eloquent Steel Pvt. Ltd from M/s Hira Concast Ltd. vide F.No. J-11011/49/2010-IA.II(I) and from M/s Impex Steel Ltd. vide F.No. 11011/188/2011-IA.II(I), respectively.
- Modification of existing 4x7T Induction Furnaces with 4x8T Furnaces and Installation of new 2x8T Induction Furnace with 1x8T LRF & 2x4/7m CCM (SMS-I) for production of 164,500 TPA Billets and 2x25T Induction Furnaces with 1x25T LRF & 3x6/11m CCM (SMS-II) for production of 171,500TPA Billets (Total Billet Production from both SMS I & II - 336,000 TPA Billets)
- Installation of 600TPD Rolling Mill for production of 210,000TPA MS Rolled products (TMT Bar, MS Round & Wire Rod). Reheating Furnace of 1x25TPH will be provided to reheat the billets, if required, for rolling
- Installation of 1x25TPH Briquette Plant for production of 150,000TPA Chrome ore Briquettes from Ferro-Chrome fines. Briquettes shall be used for production of Ferro-chrome

- Installation of 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore fines Sinter, to be used in SAFs for production of Pig iron
- It has also been proposed to add production of 76,400TPA Pig Iron from the existing Submerged Arc Furnaces

2.6.2 Process Description

2.6.2.1 Steel Melting Shop

It has been proposed to produce total of 336,000TPA MS Billets by modification of existing 4x7T Induction Furnace to 4x8 Ton and installation of additional 2x8T Induction Furnace with LRF (1x8T) and 2x4/7m CCM in SMS-I and installation of 2x25T Induction Furnace with 1x25T LRF and 3x6/11m CCM in SMS-II.

I. <u>Induction Furnace</u>

Induction Furnace is basically furnaces meant for use of Sponge Iron as major raw material to produce mild steel. These furnaces work on the principal of electromagnetic induction. After the furnace is switched on, current start flowing at a high rate and comparatively low voltage through the induction coil of the furnace, producing an induced magnetic field inside the central space of the coils where the crucible is located. The induced magnetic field thus generated cut through the packed charge in the crucible. As the magnetic flux cut through the scrap/pig iron and complete the circuit, they generate an induced current in the scrap. The induced current as it flows the highly resistive path of scrap mix, generate tremendous amount of heat and melting the scrap. When these additives have melted completely, the power input may be increased to bring the temperature of metal up to the point most desirable for pouring. The current is then turned off and the furnace is tilted for pouring into the ladle. As soon as pouring has ceased, the crucible is cleaned completely from any slag or metal droplets adhering to the wall of the crucible and the furnace is now ready for charging again. An induction crucible furnace differs from arc furnace in the ways, which are important metallurgically, though both types of furnaces are used for making steel from scrap and alloys. Induction furnace do possess the following characteristics:

- High relatively, narrow melting vessel
- Low Crucible wall thickness
- Relatively small area of metal in contact with slag
- Low slag temperature
- No carburizing during melting down
- Powerful bath motion

Table 2.5: Induction Furnace Capacity (Existing & Proposed)

Parameters	Existing	Total after proposed Expansion
Furnace capacity	4x7 Tons =28Ton	6x8 Ton + 2x25 Ton = 98 Ton
Tap-to-tap cycle time/min	120 ~130	120 ~130

Number of heat / days	11	10
No. of operating days	350	350
Ingots / Billet Production	**106,004 (Ingots)**	**336,000 (Billets)**

It may be seen from Table above that tap-to-tap time has been aimed at approx. 120 – 130 minutes enabling production of approx. 10 heats per day from each Induction Furnace. The Induction Furnace lining will require repair / replacement after about 15-16 heats. Lining repair will be done in-situ. In order to ensure uninterrupted operations a second crucible, lined and ready should be available. Thus, each furnace station will consist of two crucibles complete with all fitting and auxiliaries installed adjacent to each other.

II. Ladle Refining Furnace (LRF)

A Ladle Refining Furnace (LRF) is used for secondary refining operations, and its primary functions are:

- Reheating of liquid steel through electric power conducted by graphite electrodes
- Homogenization of steel temperature and chemistry through inert gas stirring
- Formation of a slag layer that protects refractory from arc damage, concentrates and transfers heat to the liquid steel, trap inclusions and metal oxides, and provide the means for desulphurization

Secondary functions that can be included with a ladle furnace are:

- Alloy additions to provide bulk or trim chemical control
- Cored wire addition for trimming or morphology control
- Provide a means for deep desulphurization
- Provide a means for dephosphorization
- Act as a buffer for down-stream steelmaking equipment

The function of the porous plug is to provide gas stirring of the molten metal to promote homogenization. Normal stirring operations are performed by percolating argon gas through a purge plug arrangement in the bottom of the ladle. A top lance mechanism serves as a back-up means for bath stirring in the event the plug circuit in the ladle is temporarily inoperable. The gas supply connection to the ladle is automatically made when the ladle is placed on the transfer car.

Fumes and particulates generated during heating and alloying operations at the LRF will exit the water-cooled ladle roof through the various openings in the roof. These emissions will be captured (i.e. entrained) in ambient air drawn into a lateral draft type fume collection hood mounted on supporting structures above the ladle roof. The ladle roof is typically a water-cooled design with a refractory center or delta section and is configured to coordinate with existing ladles such that the roof will completely cover the top portion of the ladle when in the operating (i.e. fully lowered) position.

It has been proposed to install 1x8T LRF with 2x8T Induction Furnaces and 1x25T LRF with 2x25T Induction Furnace.

III. Metal Recovery from Induction Furnace Slag

The processing of the steelmaking slag is normally carried out by,

(i) solidifying and cooling of the hot liquid slag,

(ii) crushing and magnetic separation treatment of the slag to recover the scrap,

As steel making slag is formed, it is in a molten or red-hot state. This slag is immediately subjected to the cooling process upon removal. Usually, this is performed in a cooling yard by air cooling and moderate water sprinkling.

Steel making slag contains metal which comes from the refining process or from some of the processing vessel (e.g. steel teeming ladle, or tundish). It is advantageous to separate this metal from the slag for the purpose of recycling the recovered metal in the primary steelmaking process. Hence, after cooling, the slag is crushed and the metal is recovered by magnetic separation. Further in order to increase the metal recovery ratio and to improve the quality of metal recovered, the crushing and magnetic separation process is repeated.

IV. Continuous Casting Machine

In the proposed expansion, Ingot Casting will be replaced by Continuous casting. 2x4/7m and 3x6/11m Billet Casters have been proposed for Billets production of 336,000 TPA. The ladle containing liquid steel is placed on the turret and brought over the tundish. The tundish act as a buffer and enable the liquid steel to move homogeneously down through nozzles, provided at the bottom of the tundish into moulds. The automatic mould level controller controls the steel level in the mould. The subsequent primary and secondary cooling transform the liquid steel into billets of the required dimensions and is drawn out with the help of a withdrawal and straightener unit and cut into required length by the shear provided in each strand. Once a ladle is emptied another ladle is brought into the casting position and the casting continues. The billets are gradually shifted to the cooling beds and then stacked orderly at the dispatch end for outside dispatch. The details about the cast number and quality of billets are marked on the billet stack.

Majority of Billets will be directly sent from CCM to Rolling Mill. Billets from Reheating Furnace are fed to the Rolling Mill when there is no feed from CCM.

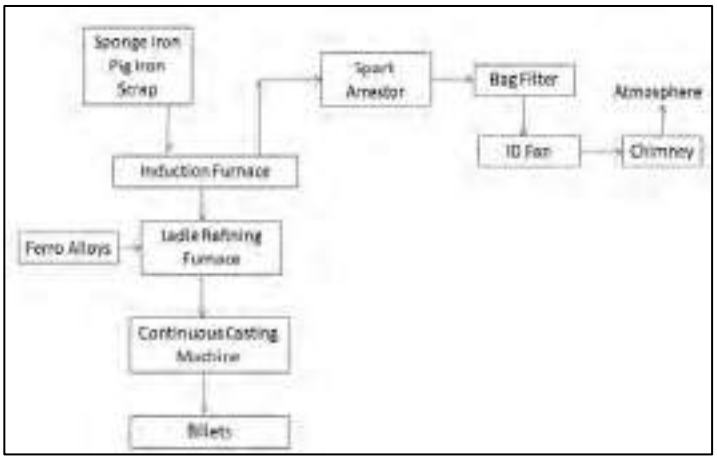


Fig. 2.7: Billet Production (IF-LRF-CCM Route) process flow

2.6.2.2 Reheating Furnace

Reheating furnace is used for heating of billets before hot rolling in Rolling Mill. A Pusher Type Reheating Furnace of capacity 25TPH will be installed. LDO/LSHS will be used as fuel in reheating furnace. Billets will be heated temperature up to 1020^0C. Mostly, billets will be directly fed from CCM to the Rolling Mill bypassing the Reheating Furnace. Reheating Furnace will be used only when there is no feed from CCM or in case of shut down of SMS for maintenance.

2.6.2.3 Rolling Mill

The company proposes to install additional 1x600TPD Hot Rolling Mill for the production of 210,000TPA MS Rolled Products (TMT Bar, MS Round & Wire Rods of different diameters). Red hot billet from CCM will be directly fed to Rolling mill. Production of Billets from the proposed plant will be approx. 336,000TPA from which approx. 218,400TPA will be fed to the Rolling Mill and balance approx. 117,600 TPA Billets will be sold in the market.

Rolling Mill consists of set of equipment together will produce the said quantity. Rolling Mill will primarily comprise of roughing and finishing strand, one pendulum type bar and cobble shear, one high pressure de-scaling station, run out roller table equipped with turnover cooling bed along with auxiliary facilities and roll shop equipment.

TMT Process: By adopting thermo mechanically treatment process higher strength of TMT bars is obtained. In this process, steel bars get intensive cooling immediately after rolling. When the temperature is suddenly reduced to make surface layer hard, the internal core is hot at the same time. Due to further cooling in atmosphere and heat from the core, the tempering takes place. This process is expected to improve properties such as yield strength, ductility and toughness of TMT bars. With above properties, TMT steel is highly economical and safe for use. TMT steel bars are more corrosion resistant than other steel.

Operating parameters

The net operating hours of the mill are affected by various factors considering integrated direct linked operation with furnaces, ladle furnace and bloom caster unit, such as relining of furnaces, breakdown and mismatching of operational requirements between the units.

Product weighing station: A product weighing station will be included to provide weight output to computer tracking and logging systems and print out a tag for attachment to the finished coil.

Product marking machine: A marking machine will be provided to print bar data on outer wrap of the coil. The machine will comprise of the frame, print head, ink system, etc. The signals for marking data will be fed through PC and received through PLC / microprocessor system.

Roll grinding and bearing inspection facilities: The roll grinding and bearing inspection facilities will be installed in a separate roll shop which will be located adjacent to the main mill bay.

Shop layout: The proposed mill equipment and other associated facilities will be housed in multibay building consisting parallel bays for mill and roll grinding and bearing inspection facilities. The main equipment of the mill and storage area will be located in a bay of 25m width having about 300 m length. This bay will be served by EOT cranes. All technological basements like oil cellars, hydraulic pump accumulator stations, strip cooling pump house, etc. will be located in the mill bay. The water circulation system including scale pit will be located outside the main mill building.

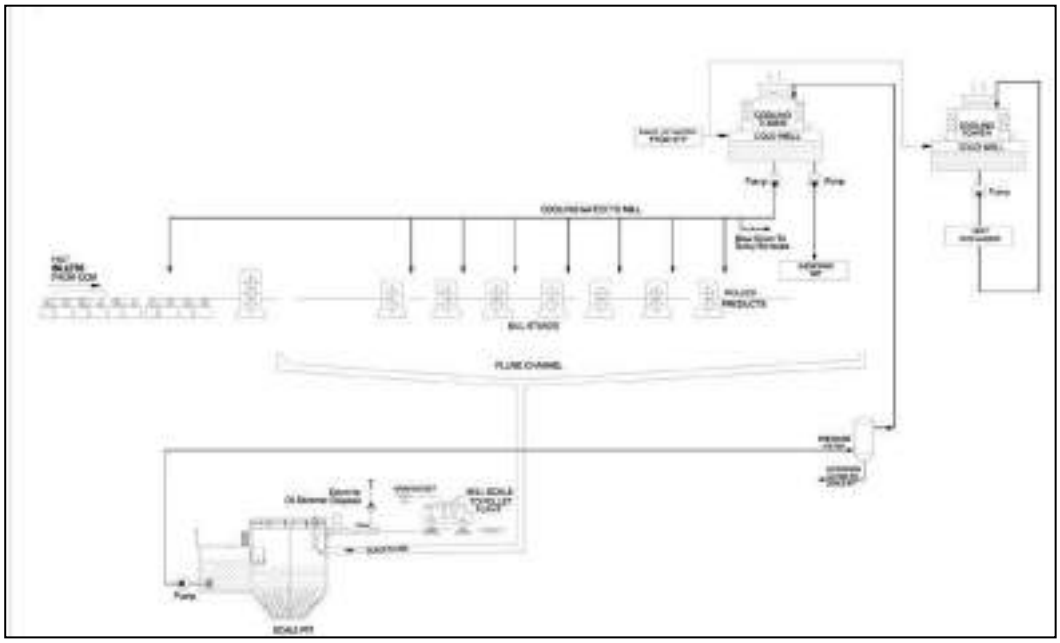


Fig. 2.8: Rolled product Production process flow

Table 2.6: Raw Material Requirement Details for Steel Melting Shop, CCM & Rolling Mill

Sl. No.	Item	Existing Requirement in TPA	Proposed Requirement in TPA	Total Requirement in TPA
SMS- I Induction Furnace (Liquid Steel-Existing 107,800 TPA, After Expansion 168,000)				
1.	Sponge Iron	94,325	52,675	147,000
2.	Pig Iron	20,644	11,526	32,170
3.	Scrap	13,615	7,606	21,221
4.	Ferro-alloys	1,294	722	2,016
Total		**129,878**	**72,532**	**202,409**
SMS-I CCM (Existing – 106400 Ingot, After Expansion - Billets – 164500TPA)				
1.	Liquid steel	107,800	60,200	168,000
SMS- II Induction Furnace (Liquid Steel- 175,000TPA)				
1.	Sponge Iron	---	153,125	153,125
2.	Pig iron	---	33,511	33,511
3.	Scrap	---	22,105	22,105
4.	Ferro-alloys	---	2,100	2,100
Total		**---**	**210,841**	**210,841**
SMS-II CCM (Billets – 171500 TPA)				
1	Liquid Steel	----	175,000	175,000
ROLLING MILL - Rolled Product (210,000TPA)				
1.	MS Billets	--	218,400	218,400

2.6.2.4 Ferro Alloy Plant

Company has proposed to add 76,400TPA Pig Iron production, in addition to already approved Si-Mn 43,236TPA or Fe-Mn 59,052TPA or Fe-Si 22,680TPA or High Carbon Fe-Cr 59,052TPA or Fe-Si-Cr 33,480TPA or Combination of any with maximum of 76,400TPA through existing 3x7.5MVA & 1x5.5MVA SAFs along with Metal Recovery Plant of 1x25TPH. Proposal also involves installation of 1x25TPH Briquetting Plant and 1x300TPD Sinter plant for Ferro Alloys division.

I. Submerged Arc Furnaces

The furnaces are equipped with charge feeding hoppers, chutes, transformer, electrodes and gas cleaning plant. Entire facilities of Ferro Alloy Plant are already in operation and there is only proposal to add Pig iron production from the available facilities.

Furnace Tapping and Casting: The furnaces are tapped at an interval of about two and half hours considering eight numbers of heats per day. The tap hole is opened by tap hole drilling machine. Oxygen lancing will be resorted for piercing the solidified metal/slag in the tap hole for proper flow of metal and slag from the furnace. Tap hole closing device has been envisaged for closing the tap hole after tapping. Skimmer/ladle tapping arrangement will be provided. The liquid metal is being casted

in moulds or in sand bed. The slag from the furnace will be collected, cooled and disposed at suitable area allocated for slag disposal.

Production of Pig Iron: Instead of procuring the Pig Iron required for Induction Furnace, M/s ESPL is considering production of Pig iron from SAFs. Maximum 76,400 TPA Pig iron can be produced from 3x7.5 MVA + 1x5.5 MVA SAF.

The process of manufacturing of Pig Iron in SAF includes smelting of various raw materials in SAF. Mill scale, Iron ore / Sinter with reducing agents and fluxing materials are charged into the furnace from the top. High current at low voltage is passed through the raw materials charged with the help of electrodes. Raw material mix charged into the furnace gets heated up due to I^2R effect of high current passing through the charge through the electrodes. When temperature of charge reaches to chemical reaction temperature, carbon present in reductants gets reacted with oxides of iron ore, mill scale and quartz. Thus, metallic iron and Silicon are extracted as metal from the ores. Unreacted materials, impurities and residual oxides formed as slag. Metal and slag in molten form gets collected at the bottom of the Furnace after each interval of 3-4 hours. Tapped molten mass consists of mixture of metal and slag. Metal is separated from slag by gravity separation method.

Production process is continuous. Load of Furnace during smelting and tapping process remains same.

Following chemical reactions take place;

$$Fe_2O_3 + 3C \longrightarrow 2Fe + 3CO$$

$$FeO + C \longrightarrow Fe + CO$$

Oxides in the iron present in the ore get reduced to metallic iron with the help of carbon from reducing agents and Carbon Monoxide is liberated.

Silicon is present in the raw materials in the form of SiO_2. SiO_2 present in iron ore, reducing agents, quartz, etc.., Silicon is smelted from SiO_2 as per the following equation:

$$SiO2 + 2C \longrightarrow Si + 2CO$$

Thus, in smelted molten metal, Fe and Si are present in molten form. Metal, so smelted is called Pig Iron. Thus, metal contains some carbon in dissolved state as carbides of metal. Certain amount of phosphorous is also present in the metal. This is smelted from the phosphates present in iron ore and reducing agents.

It may be noted that entire oxides of iron do not get reduced to metallic iron. Certain amount of iron in FeO from remains unreacted and forms a part of slag. Similarly, certain amount of SiO2 remains unreacted and forms a part of slag. Dolomite and Limestone is added to provide proper fluidity of slag. Thus, CaO and MgO of these fluxing materials are also part of slag.

II. Briquette Plant

1x25TPH Briquetting plant has been envisaged for Ferro chrome production only. The chrome ore fines will be used to make briquette. Additionally, lime and molasses will be needed as binder. The green briquette formed from briquetting press will be cured naturally, in briquetting shed at the raw materials storage area for ferro chrome inside the ferro alloy plant.

Blending: The Briquette quantity, grade and ratio are received from Operation head of Ferro- chrome Plant. Requirement of desired grade is designed with available grade and ratio of virgin chrome ore fines. Respective quantity of various grade of Chrome ore fines are issued from R/M storage yard to blend yard through Weigh Bridge. Blending is prepared in open yard using heavy earth movers (Proclaine, Payloader, JCB etc.).

Feeding to Under Ground Bunker: The bended fines are loaded to tippers and sent to underground bunker (hopper) feed after weighment at Weigh Bridge. Over size chrome ore lumps (Boulders) are handpicked at Grizzly of the Feed Hopper. The hoppers discharge onto a common belt leading to +15mm screen house. Then (-15mm) size feed in and conveyed to a rotary dryer.

Drying: The drying process is a solid-state physical preparatory process for the removal of superficial water from the solid ore fines/concentrates by thermally induced evaporation. This is achieved by passing a forced draught of hot air from burning fossil fuel (LSHS) through a cylindrical 9meter long vessel of double shell construction and rotating about its longitudinal axis. Fines are turned over continually by the rotation of the dryer.

Screening: The dry ore fines are feed to a closed screen of +6mm size and the – 6 mm size is conveyed to a Pan-mixer through weigh hopper.

Mixing: The chrome ore fines discharged from the weigh hopper are mixed with lime and Molasses, in order to provide binding effect to ore, to facilitate the briquetting process. The mixture material is feed to a Hydraulic Briquetting Press.

Briquetting: Chrome ore is briquetted under pressure by passing the mixture over a set of rolls equipped with segment pockets. The resulting briquette (70mm long, 45mm wide and 22-28mm thick) is screened; the undersize is recycled in a closed circuit while the oversize is warehoused in a shed.

Curing: Curing of briquettes occurs in a shed over a 96-hour period during which lime sets in to confer long-term strength on the briquette. The briquette stockpiles ought not to exceed 1-2m in height as this may allow for high heat retention with the consequent loss of molasses' binding ability. The compressive strength of the briquette is tested at the point of manufacture and thereafter at 24 hourly intervals for four days. The briquettes take between 72 - 96 hours to attain complete strength that exceeds the levels necessary for transportation and feeding into a submerged

electric arc furnace. After curing the briquettes retain their strength, and feed to furnace for production of High carbon Ferro Chrome. During furnace feeding the lower size particles are separated through a vibrating screen. The under-size material (usually called Return Fines) is again subjected to go through the Briquetting Process.

III. Sinter Plant

The sintering technology was developed for the effective utilization of the waste fines of Ores, coke and dust generated in processes. The process of sintering is an agglomeration technique for fine ore that relies on heat to melt the surface of smaller particles together to form larger agglomerates. As on today, sinter has become widely accepted and preferred burden material in SAF. The maximum utilization/consumption of sinter in SAF brings commercial benefits and technical suitability for SAF operations.

Sinter plant consists of a number of sequential operating units with the sinter strand at the heart of the plant. Raw materials such as Iron ore fines, coke breeze, dust, dolomite, quartzite and limestone will be collected on a common platform from the respective metal yard through weighment and then mixed homogeneously in a muller mixer machine. This mix is then feed on sinter machine. Generally, raw mix bed height is 550mm and will be adjusted based on quality of the raw material. The bed will be taken to ignition front. The raw mix undergoes through the ignition platform and there is a negative suction from bottom. As soon as suction takes place, hot products of combustion are sucked through the bed and transfer its heat to the next layer of the bed keeping it ready for the combustion. After completion of the sintering process, sinter cake will be crushed and manually it will go to SAF as raw material for pig iron production.

Setting up of 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Fines Sinter has been considered under expansion proposal.

IV. Metal Recovery Plant (Jigging Plant)

Ferro-Alloy slag consist some portion of valuable Ferro-alloys which can be obtained in directly saleable condition and can be sold at reasonably good market rates as compared to the main Ferro-alloys products. Metal Recovery Plant of 1x25TPH is being used to recover this valuable portion of metal. Ferro-alloy slag is sent to the Metal Recovery Plant wherein it is crushed as to extract good quality of Ferro-alloys from the slag waste. This process involves following 3 steps:

- Crushing & Screening of metal containing slag
- Separation of metal from slag
- Re-crushing of middling to release additional metal

Crushing & Screening: This circuit produces a crushed slag which would aid the metal liberation in further stages. Cone crusher is used to maximize shear at metal-slag interphases. Wherever, possible, the multiple cycles of crushing are maintained in a

close circuit so that minimum crushed size is achieved. To minimize fines, the reduction ratio is kept as low as possible.

Separation of Metal from Slag: This involves two – stage recovery jigging process; known as the 'Coarse Jigging' and 'Fine Jigging'. During the course jigging stage, the cut density is set with an aim to recover clean metal and not with a focus on recovery. The coarse fraction is crushed to have an output in the form of saleable coarse alloy. An under-bed air pulsated jig with a float control system is on the discharge gates. A hydro-dynamically stable float is positioned in the jigging bed.

Later during the Fine Jigging, the cut density is lowered to focus on recovery. Since the material is fine, a strongly pulsed Jig is not required here. Only a single stage is required to utilize 'through the bed' Jigging, as the material quantity reaching this stage is only about 5% of the total feed. The output of this stage is in form of fine tailings and slimes. The final disposed middling from coarse jigging and very fine metal from fine jigging are used for furnace feed.

Re-crushing of Middling: The re-crushed middling is returned for re-jigging to recover additional material. The throughput material (slag) requirement in an MRP (Metal Recovery Plant) is 3 times of its output. i.e 3 MT of slag needs to be fed to achieve 1 MT of saleable ferrochrome. The feed size specifications are provided by the technology supplier based on the final equipment design parameters.

Settling Pit has been installed at Jigging Plant. Clear water from the Jigging Plant is recycled and settled fines will be reused.

The standard composition of High Carbon Ferro chrome (HCFC) is Chromium -57% to 63%, Carbon - 6-8%, Silicon - 4%, Phosphorus - 0.0025-0.03%, Sulphur - 0.03% Max.

Referring below mentioned Table for mass balance of Ferro Division, material is required in any or in combination of "either" or "or" basis.

Table 2.7: Raw Material Requirement Details for Ferro Alloys Production

Sl. No.	Item	Existing Requirement in TPA	Proposed Requirement in TPA	Total Requirement in TPA
Ferro-Manganese - 59,052TPA OR				
1.	Mn Ore	144,914	--	144,914
2.	Coke	33,955	--	33,955
3.	Dolomite	2,953	--	2,953
4.	Electrode Paste	1,063	--	1,063
Total		**182,884**	**--**	**182,884**
Silico-Manganese - 43,236TPA OR				
1.	Mn-ore	85,607	--	85,607
2.	Fe Mn Slag	12,971	--	12,971
3.	Coke	27,239	--	27,239
4.	Quartz	10,377	--	10,377

Sl. No.	Item	Existing Requirement in TPA	Proposed Requirement in TPA	Total Requirement in TPA
5.	Dolomite	5,188	--	5,188
6.	Electrode Paste	865	--	865
Total		**142,246**	**--**	**142,246**
Ferro-Silicon - 22,680TPA OR				
1.	Coke	28,463	--	28,463
2.	Quartzite	40,030	--	40,030
3.	Mill scale	8,618	--	8,618
4.	Electrode Paste	1,089	--	1,089
Total		**78,200**	**--**	**78,200**
High Carbon Ferro-Chrome - 59,052 TPA OR				
1.	Briquettes	114,230	--	114,230
2.	Chrome Ore (Friable)	19,840	--	19.840
3.	Magnesite	2,953	--	2,953
4.	Quartzite	10,038	--	10,038
5.	Coke	31,887	--	31,887
6.	Electrode Paste	825	--	825
Total		**179,773**	**--**	**179,773**
Ferro-Silico Chrome - 33,480TPA OR				
1.	Ferro-chrome Chips	18,750	--	18,750
2.	Coke	14,230	--	14,230
3.	Charcoal	6,700	--	6,700
4.	Mill Scale	3,350	--	3,350
5.	Quartz	35,990	--	35,990
6.	Electrode Paste	1,675	--	1,675
Total		**80,695**	**--**	**80,695**
Pig Iron - 76,400 TPA OR in combination of any				
1.	Sinter	----	100,850	100,850
2.	Mill Scale	----	21,545	21,545
3.	Coke	----	26,740	26,740
4.	Steam Coal	----	16,810	16,810
5.	Limestone	----	6,695	6,695
6.	Electrode Paste	----	1,530	1,530
Total		----	**174,170**	**174,170**
Briquette Plant -150,000TPA				
1.	Chrome Ore Fines	----	162,360	162,360
2.	Hydrated Lime	----	4,950	4,950
3.	Molasses	----	7,920	7,920
Total		----	**175,230**	**175,230**

Sl. No.	Item	Existing Requirement in TPA	Proposed Requirement in TPA	Total Requirement in TPA
Sinter Plant- 108,000 TPA				
1.	Iron Ore Fines	---	70,200	70,200
2.	Return Sinter	---	7,560	7,560
3.	Coke Breeze	---	8,640	8,640
4.	Limestone	---	21,600	21,600
5.	Dolomite	---	10,800	10,800
6.	Quartzite	---	2,160	2,160
Total		**----**	**120,960**	**120,960**

2.7 PROJECT DETAILS

2.7.1 Raw Material Requirements

The Raw materials and products can easily be transported to the proposed site as it is having a good connectivity through the National Highway and Eastern Railway line. SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi-Kolkata Highway) is at 0.91km & 4.64km road distance respectively connected to project site by Kalyaneshwari to Dendua Road. Also, SH-5 is at 4.67km road distance from project site. Railway connectivity is present through Salanpur Railway Station present at a distance of 3.2kms. Raw material requirement of Ferro division is arrived on maximum basis.

Storage of Raw Material: The Raw material that is used in the plant will be stored in a Closed Storage Area and all the storage area will provided with impervious flooring and shall be equipped with water spray system for dust suppression. The Storage area shall also be provided with garland drains and catch pit to trap off the materials.

Table 2.8: Raw Material Requirement (Consolidated)

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
A	**Ferro Division**						
A-01	Manganese ore	1,44,914	1,44,914	World Metals and Alloys, UAE Kolkata Port to plant	322 km	Ship and By Road	Invoice
A-02	Coke	33,955	33,955	Vivan Overseas, Assam	905 km	By Road	Purchase Order
A-03	Coke Breeze	-	8,640	Jai Maa Gayatri Enterprises, Dhanbad	58.6km	By Road	Purchase Order
A-04	Steam coal	-	16,810	Open Market	20km	By Road	Agreement will done with the source after grant of EC
A-05	Charcoal	6,700	6,700	G.M Coke Industries, Assam	890km	By Road	Agreement will done with the source after grant of EC
A-06	Quartzite	40,030	42,190	Durga Enterprises	267km	By Road	Purchase Order
A-07	Dolomite	5,188	15,988	Ma Bhuwneswari Traders, WB	552	By Road	Purchase Order
A-08	Limestone	-	28296	Odisha	--	Rail	Agreement will done with the source after grant of EC
A-09	Electrode paste	1,675	1,675	Hindalco Industries Ltd., Karnataka	2052km	Road	Purchase Order
A-10	Mill Scales	8,618	21,545	In-house	-	-	-
A-11	Chrome ore	19,840	19,840	Odisha	700 km	Rail/Road	Agreement will done

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
							with the source after grant of EC
A-12	Magnesite	2,953	2,953	Imported	--	Rail/Road	Agreement will done with the source after grant of EC
A-13	Iron ore Fines	-	70,200	Bravo Sponge Iron Pvt Ltd., Purulia	57km	Road	Purchase Order
A-14	Ferro Chrome Chips	18,748	18,748	Imported/ Odisha	/450 km	Ship/Road	Agreement will done with the source after grant of EC
A-15	Chrome Ore Fines	--	1,62,360	Imported/ Odisha	/450 km	Ship/Road	Agreement will be done once the source is finalized after EC
A-16	Fe Mn Slag	12,971	12,971	In-house	--	--	
A-17	Hydrated Lime	-	4,950	Shree Ram Chemical Works, WB	10km	Road	Agreement will done with the source after grant of EC
A-18	Molasses	-	7,920	Uttam Sugar Mills Limited, Uttarakhand	1483km	By Road	Agreement will done with the source after grant of EC
	Sub Total of "A"	**295592**	**620655**				
B	**Steel Division**						
B-01	Sponge iron	94,325	300,125	Shakambhari Ispat & Power Ltd., Purulia, WB	27.3km	Road	Purchase order

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
B-02	Pig Iron	20,644	65,684	Jai Balaji Industries Ltd..,WB	72km	Road	Purchase order
B-03	Scrap	13,615	43,326	Tata Steel Ltd., Jamshedpur	167 km	Road	Purchase order
B-04	Ferro Alloys	1,294	4,116	In-house	--	Conveyor	-
	Sub Total of "B"	**129,878**	**413,251**				
Total		**425,470**	**10,33,906**				

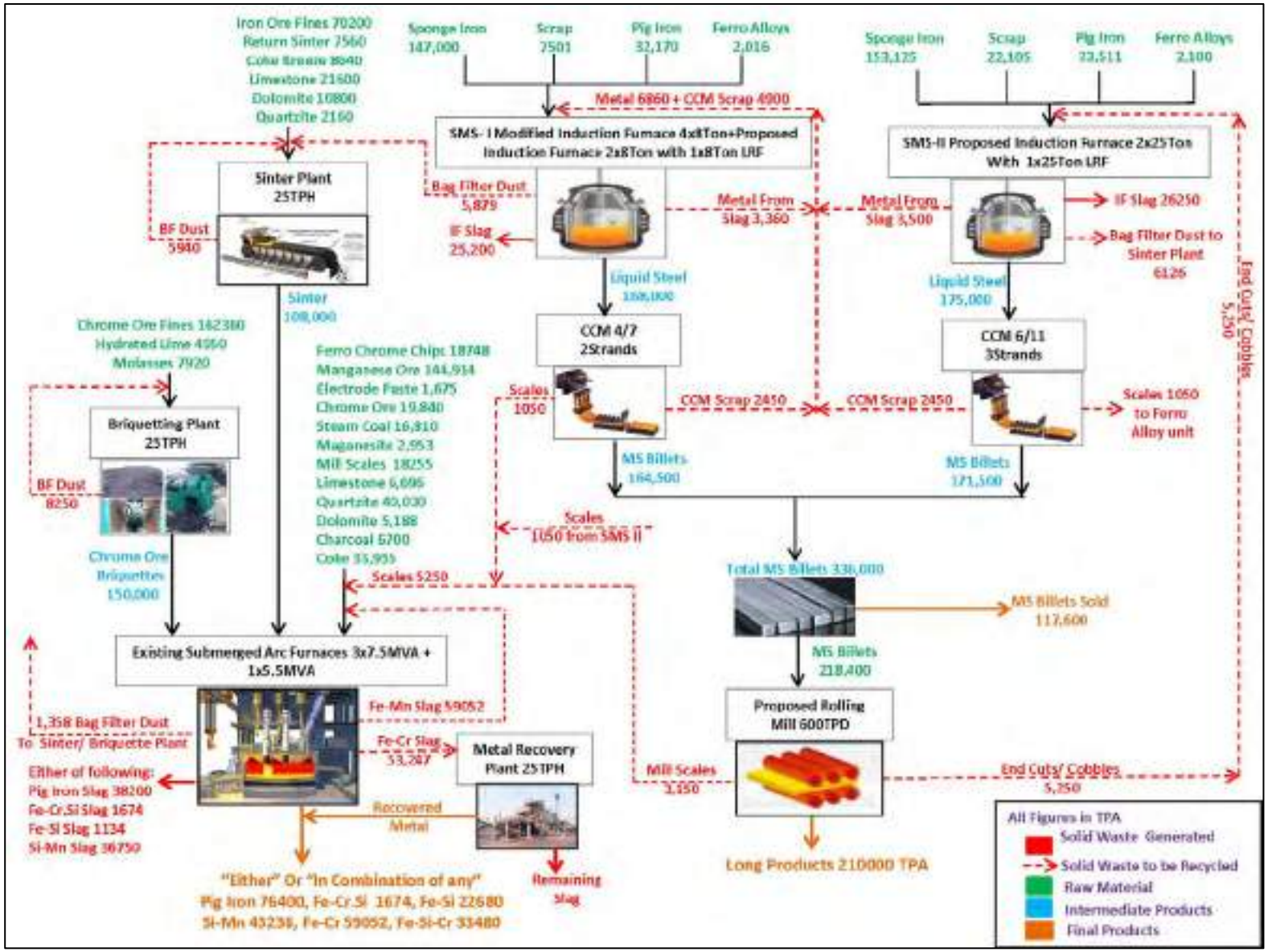


Fig. 2.9: Material Balance Diagram

2.7.2 Water Requirement

Water is most important raw material required for any Steel/Ferro Alloy Plant. The plant requires industrial water on continuous basis for cooling purposes and to meet the process needs. Potable water is required for plant personnel. In order to minimize consumption of fresh water from the source, industrial water is recycled after cooling and suitable treatment. Make up water will be added to compensate for the losses in recirculation system.

The total requirement of makeup water for industrial and domestic purposes after the proposed expansion will be 1970KLD. Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir *(enclosed as **Annexure-5**).*

The industry has adopted recirculating systems which permit reuse of cooling water. Use of heat exchanger-based systems is maximized. These facilities provide excellent control over the machine cooling and avoid loss of water. Necessary treatment facilities are provided for ensuring the requisite quality. Total water requirement for the plant is given below:

Table 2.9: Water Requirement for Existing and Proposed Units

Unit	Make-up water requirement after Expansion (m^3/day)	Recycle Water (m^3/day)
Steel Melting Shop #1	535	0
Steel Melting Shop #2	540	0
Rolling Mill	480	0
Softening Plant	135	0
Ferro Alloy Plant	240	0
Sinter Plant for FA Division	-	10
Dust Suppression	-	52
SMS Slag Cooling	-	50
Ferro-alloys Plant Slag Cooling	-	40
Ferro-alloys Plant – Metal Recovery Plant	-	10
Domestic	40	0
Plantation	-	18
Total Water Requirement	**1970**	**180**

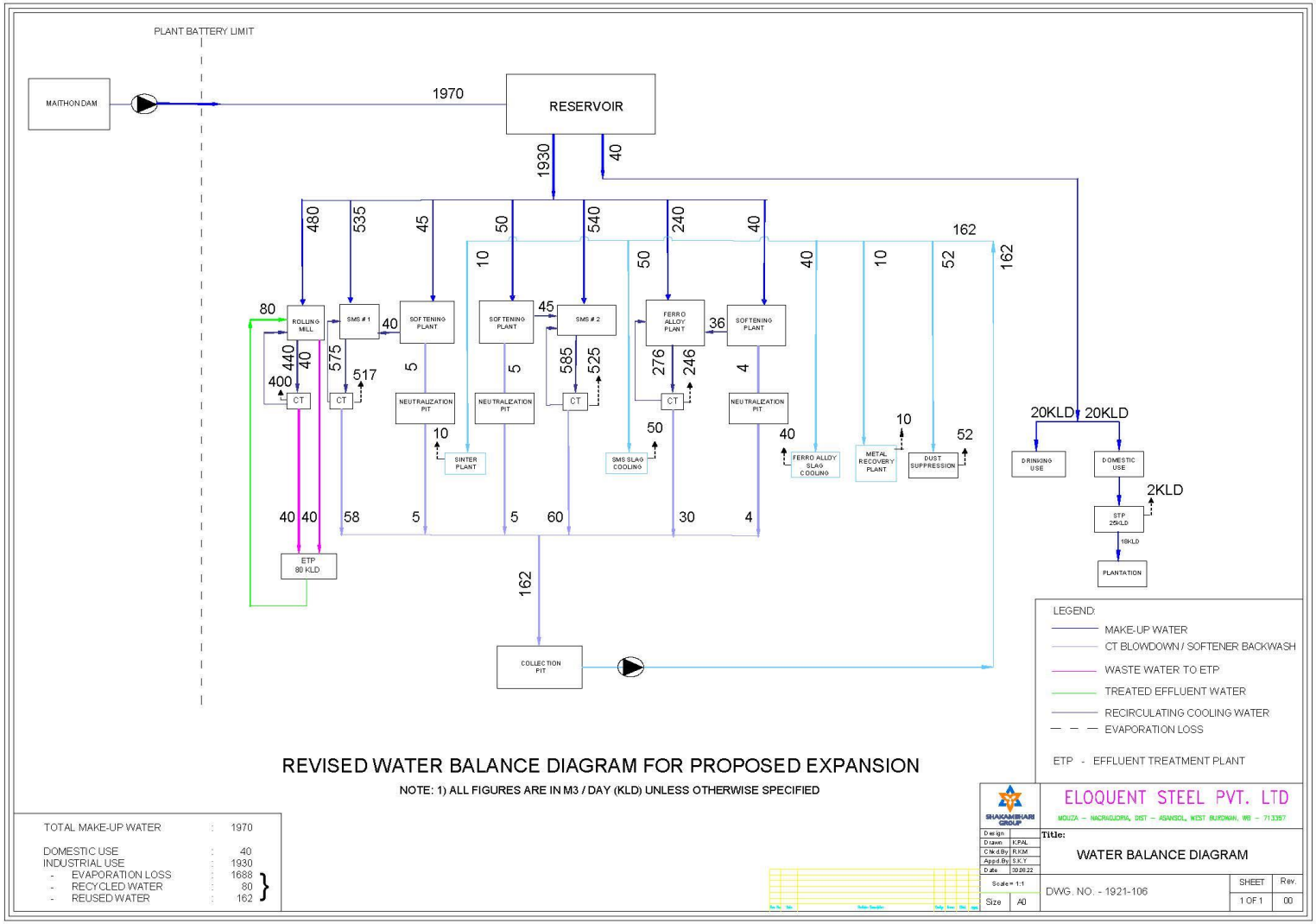


Fig 2.10: Water Balance Diagram

2.7.3 Power Requirement

Existing power requirement for the operation of units is 30MW and the permission for the same has been obtained from Damodar Valley Corporation (DVC) vide letter dated 30.12.2021. At present power is being provided by DVC through 33KV Sub-station for operation of the plant. Permission for construction clearance for the up-gradation of supply voltage from 33KV to 132KV is also obtained from DVC vide letter dated 28.07.2021. Power requirement after the proposed expansion shall be 64MW and will be met from DVC and permission for the same shall be obtained. *(Power permission and construction clearance is attached as **Annexure-6**)*

Table 2.10: Power Usage Breakup Details

Unit	Existing Requirement (MW)	Total Requirement after the proposed Expansion (MW)
Steel Melting Shop	21.0	34.0
Rolling Mill	--	3.0
Ferro-alloy Plant	9.0	25.0
Briquette Plant	--	1.5
Sinter Plant	--	0.5
Total	**30.0**	**64.0**

Emergency Back-up Power: 2 nos. of 250 KVA silent type DG set have been installed to provide power to the auxiliaries of plant when DVC power is not available. Another 2x500 KVA will be installed under the expansion. This will also be useful for emergency power to take care of safe shut down of important auxiliaries of plant. During total power failure, above DG set will also support for Emergency lighting for personnel movement in some main location of steel plant.

2.7.4 Manpower Requirement

Existing manpower of the plant is 400. The estimated additional direct manpower required for the proposed expansion will be 400, comprising administrative, technical, non-technical, skilled and unskilled workforce. Approx. 50 persons will be employed during construction phase. The manpower will be recruited from the local area and surroundings during the construction period. In addition to direct employment proposed project will generate numbers of indirect job opportunities on local and regional basis.

2.7.5 Land Requirement and Land Use

The company has 22.46 acres (9.089 Ha.) of land, out of which the existing and proposed plant area will be 15.048 acres (6.089 Ha.) of land and 7.412 acres (3 Ha.) shall be used for 33% Green Belt. Area for installation of proposed units 2x8Ton + 2x25

Ton Induction Furnaces along with 1x8Ton & 1x25Ton LRF, 1x4/7+1x6/11m Continuous Casting M/cs, Rolling Mill, Reheating Furnace, Briquetting Plant and Sinter Plant is available within the existing plant area. Therefore, no additional land shall be required for the proposed expansion.

Breakup of land use after proposed expansion is as follows:

Table 2.11: Land Use Breakup of the Plant Area

S. No	Proposed Land Use	Existing Ha.	Proposed Ha.	Total Ha.
1.	Plant Area	2.047	2.246	4.293
3.	Electrical Sub Station	0.101	0.101	0.202
4.	RWH Pond, Waste Water Treatment Tank	0.401	-	0.401
5.	Parking and Internal Road	1.02	0.051	1.071
6.	Office, Store, Temple, Misc. Building	0.12	0.002	0.122
7.	Green Belt Development (33% of Total Area)	2.72	0.28	3.0
Total Land Area Required		**6.409**	**2.68**	**9.089**

2.7.6 Cost Estimate of the Project

Total cost for the proposed expansion is estimated as Rs. 120 Crs. Cost of the existing plant is Rs. 83.62 Crores. Hence, total cost of the Plant after the proposed expansion will be Rs. 203.62 Crs.

Table 2.12: Cost Breakup Details

Sl. No.	Unit Name	Cost (Rs. in Crores)
a.	**Existing Plant**	**83.62**
b.	**Proposed Plant**	
1.	2x8T IF with LRF & CCM	12.0
2.	2x25T IF with LRF & CCM	35.0
3.	Rolling Mill	48.0
4.	Briquetting Plant	7.0
5.	Sinter Plant	1.0
6.	132 kV Substation	15.0
7.	Miscellaneous	2.0
	Total Cost of Proposed plant	**120.0**
	TOTAL COST	**203.62**

2.7.7 Solid Waste Generation and Management

Table 2.13: Details of Solid Waste Generation, Handling and Utilization

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
IF Slag	18,326	58,310	After metal recovery (approx. 12%), remaining slag shall be used as aggregates
IF Bag Filter Dust	3,773	12,005	Shall be used in Sinter Plant
Scale from Ingot Casting / CCM	1,400	2,100	Shall be used for production of Fe-Si or Fe-Si-Cr. Or will be used in Sinter Plant
End Cut / Crop from CCM	--	4,900	Will be charged in Induction Furnace as return scrap
Mill Scale from Rolling Mill	--	3,150	Shall be used for production of Fe-Si or Fe-Si-Cr.
End Cut / Cobbles Rolling Mill	--	5,250	Will be charged in Induction Furnace as return scrap
Fe-Mn Slag	59,052 (max.)	59,052 (max.)	Will be used for production of Si-Mn
Si-Mn Slag	36,750 (max.)	36,750 (max.)	Shall be used for construction or filling of low-lying area
Fe-Cr. Slag	53,147 (max.)	53,147 (max.)	• Chrome from Ferro-chrome slag will be recovered at chrome recovery plant. • After chrome recovery, the tailing material will be used as stone chips (8 to 25 mm) & land filling purpose (0 to 8 mm). • TCLP Test will be carried out all around the storage area on regular basis. • Will be supplied for Construction or will be sent to TSDF.
Fe-Si. Slag	1,134 (max.)	1,134 (max.)	Ferro Silicon Slag will be used for cement industries as a raw material & used for medium carbon silico manganese production purpose
Fe-Cr.-Si	1,674 (max.)	1,674 (max.)	Ferro Silico Chrome Slag will be used for cement industries as a raw material as well as for construction and Road filling material after undergoing TCLP Test.
Pig Iron Slag	--	38,200 (max.) or in any combination, not exceeding 59,052 TPA	Pig Iron Slag will be used for cement industries as a raw material
Bag Filter Dust from SAFs	1,358 (maximum)	1,358 (Maximum)	Ferro-chrome dust will be used in Briquette Plant. Fe-Mn & Fe-Si dust will be

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
			used in Sinter plant
Sinter Plant Dust from Pollution Control	---	5,940	Shall be recycled
Dust from Briquette Plant	--	8,250	Shall be recycled
Used Refractories	30	50	Shall be reused

2.7.8 Hazardous Waste Management

Generation of 'Used Oil' after the proposed expansion shall be approx. 6.5 kiloliters per annum from the use of HSD in DG Set, LSHS as fuel in Reheating Furnace and in Briquetting Plant. Used oil will be collected in dedicated drums and stored on impervious concrete floor for maximum 90 days before disposal and will be sold to the registered recyclers.

2.7.9 Other Solid Waste

The Solid Waste generated other than the above mentioned waste will be E-Waste, Plastic Waste:

E- Waste is mostly generated from the discarded electrical parts that from the machineries or the Discarded computer parts. The plant almost produces 0.02TPA of Electrical waste that will be stored on impervious concrete floor for maximum of 180 days. The parts that can be reused will be recovered and the remaining will be sold to Authorized Recycler.

Plastic Waste is mostly generated from the packing unit and raw material unit. It is estimated that the Plastic waste that is generated in the plant will be 0.04TPA. This Plastic Waste will be sold to Authorized Recycler.

The Project Proponent will take initiative to reduce and reuse these types of waste generation so as to prevent pollution.

2.8 DESCRIPTION OF MITIGATION MEASURE INCORPORATED IN TO THE PROJECT TO MEET ENVIRONMENTAL STANDARD, ENVIRONMENTAL OPERATING CONDITIONS OR OTHER EIA REQUIREMENTS

- Dust suppression systems in Raw material handling areas, at crushers, transfer points, storage bins, etc. This will result in reduction in fugitive dust emission
- Fume extraction system with spark arrestor and Pulse Jet Bag filters with Induction Furnaces and Submerged Arc Furnaces to control primary & secondary emissions and to keep stack emissions within norm
- Continuous Emission Monitoring System has been installed with the process stacks
- Neutralization Pit for treatment of Softening plant back wash

- ETP of 100KLD Capacity for Rolling Mill waste water treatment
- Cooling water shall be recycled in the process after cooling in Cooling Towers. Blow down water from Cooling Towers shall be used in Sinter Plant, Metal Recovery Plant, for slag cooling and dust suppression. Zero Liquid discharge (ZLD) shall be maintained.
- Sewage Treatment Plant of capacity 25KLD will be provided for treatment of Domestic Waste. Effluent, if any, shall be used for plantation.

2.9 SUMMARY OF SIGNIFICANT IMPACTS

Process involved in the manufacturing of Long Steel product and Ferro Alloys has a number of impacts on the environment like Air emissions, Noise pollution, Water pollution, Solid and Hazardous waste generation. The major environmental impacts from the project are mentioned below:

Emissions to Air

There will be impact on environment due to air emissions during installation of the proposed facilities like Induction Furnaces, Rolling Mill, Sinter Plant and Briquette Plant. Impact on air environment due to operation of facilities like Induction Furnace, Submerged Arc Furnaces, Rolling Mill, Briquette Plant and Sinter Plant has been predicted and mitigation measures have been discussed in ***Chapter-4,*** to keep the impact on the environment, low.

Water Pollution

Process waste water shall be used in Sinter Plant, Metal Recovery Plant, for slag cooling and dust suppression. Neutralization Tank shall be installed for treatment of waste water from Softening plant and effluent shall be used for slag cooling. ETP of 100 KLD is proposed for the treatment of waste water from Rolling Mill. Domestic waste water will be treated in STP of 25KLD capacity. Water shall be recycled after treatment. Zero Effluent Discharge from the Plant will be maintained. Proper management plan has been discussed in the ***Chapter-4*** of the EIA.

Noise Pollution

Industrial noise is complex and varies with the design, direction of movement of working parts and the method of mounting machines. Noise generating sources are Rotating equipment like ID Fans, DG Sets and Compressors etc.. Suitable management plan has been discussed in ***Chapter-4***.

Solid Waste Generation

The solid waste generated from the industry mainly consists of IF slag, SAF slag and dust collected from air pollution control devices. If these wastes are not used or disposed-off suitably will have impact on environment. Suitable solid waste management plan has been developed and discussed in ***Chapter-4.***

Ecology and Bio-Diversity

No Reserve Forest/ Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area is falling within 10 km. radius of the plant site. Only few protected forests are present in buffer zone of the project site. No forest land has been used for the project or for any other allied purpose including approach road.

CHAPTER - 3
DESCRIPTION OF THE ENVIRONMENT

3.0 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, traffic pattern and density, land environment, biological environment and Socio-Economic environment.

The monitoring of environmental parameters has been conducted within the core zone and buffer zone (10km radial distance) from project site at village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal, in accordance with the guidelines issued by the Ministry of Environment, Forests and Climate Change, CPCB, and SPCB during the study period (1st Decemeber,2019 to 29th February, 2020).

Baseline Environmental status in and around the Eloquent Steel Private Limited 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 site 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

After delineation of the above for the present case the following studies were conducted:

- Baseline data generation/establishment of baseline for different environmental components
- Baseline status of the existing plant site operating facilities
- Traffic density at the inter-phase of project site and study area

3.1 STUDY AREA

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

radius around the project site.

3.2 STUDY PERIOD

The baseline environmental study has been done for the period of 1st Dec 2019 to 29th of Feb 2020 by M/s. Vardan Envirolab, Gurgaon, NABL Accredited Lab, Certificate No. TC-6299, in accordance with the Guidelines for EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and CPCB, New Delhi. Secondary data also collected from different sources.

3.2.1 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 Vardan Enviro Lab, Gurgaon (NABL Accredited Lab). Micrometeorological data at site was recorded using automatic weather station. Long term meteorological data recorded at the nearest IMD station, Bankura, West Bengal (65 km from the site) was sourced for corelation. 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. For 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 habilitation and other sensitive areas present in the vicinity of the proposed project site
- Representative areas for baseline conditions
- Accessibility for sampling

The scoping and the extent of data generation were formulated based on interdisciplinary team discussions, and professional judgment keeping in view of TOR assigned by MOEF&CC. The baseline studies started with reconnaissance survey and the site 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 generation. The various parameters surveyed and studied for the baseline study are tabulated in **Table No. 3.1**.

Table 3.1: Environmental Components and Their Methodologies

S.No.	Environmental components	Parameters	Sources/Standard Codes for Methodology Used
1.	Air	Meteorology (Temp., RH, WS, WD, RF)	USEPA (Meteorological Monitoring guidance for regulatory modeling applications)
		Ambient Air Quality (PM10, PM2.5, SO2, NOx, CO)	IS-5182, CPCB (Guidelines for measurement of Ambient Air Pollutants).
2.	Water	Water Quality (Surface & Ground)	Standard limits: Surface-IS:2296 Ground-IS 10500 Sampling Methodology-IS: 3025
3.	Noise	Ambient Noise Quality (Lmax, Lmin, Leq)	IS:9989 (Assessment of noise with respect to community response)
4.	Soil	Soil Quality (pH, EC, BD, Infiltration, Texture, SAR, Key nutrients, OM, OC, Fe, Zn and Cu)	Sampling Methodology and Analysis-IS: 2720
5.	Land Use	Land use types, Land schedules, Satellite imagery	Bhuvan, NRSA
6.	Ecology	Ecology studies (Floristic diversity, Terrestrial ecosystem sustainability, Green belt development, sinking capacity of pollutants)	Field Study / Secondary Data
7.	Socio Economic	Demography and Occupational details, agricultural situation etc.	Census, District report Public Consultation by Questionnaire survey
8.	Hydrology & Geology	Geological, hydrological, geomorphologic studies	Geological Survey of India, NRSC
9.	Traffic Study	PCU/hr, LOS	IRC 64:1990

3.3 ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS, AS IDENTIFIED IN THE SCOPE

The scope of the study is as per Standard TOR issued by MoEFCC vide File no. J-11011/188/2011-IA.II(I) and dated 11th November, 2020 to the project for the preparation of EIA Report.

3.3.1 Air Environment

Dispersion of different air pollutants released into the atmosphere has significant impacts on the neighborhood air environment and forms an important part of impact assessment study. The ambient air quality of the study zone of 10 km radial distance from the plant site will form the base line information over which the predicted impacts due to the proposed expansion project can be super imposed to find out the net impacts on air environment. From the final impacts a viable Environmental Management Plan (EMP) has been prepared based on the predicted impact on the air environment. The baseline ambient air quality can be assessed thorough scientifically designed ambient air quality monitoring network. The design of monitoring network is based on the following considerations:

- Meteorological conditions on synoptic scale
- Topography of the study area
- Representation of regional background levels
- Representation of plant site
- Representation of cross sectional distribution in the downward direction
- Influence of the existing sources if any, are to be kept at minimum
- Inclusion of major distinct villages to collect the baseline status

3.3.1.1 Micro-Meteorological data

Assessment of the micro and macro meteorology is important from the standpoint of understanding of the nature and extent of air pollution in the study area

I. Paschim Burdwan District

The climate of Paschim Burdwan district is tropical. The average annual temperature of the district is 26.3°C. April is the warmest month of the year. The temperature in April averages 30.9°C. The lowest average temperatures in the year occur in January, when it is around 19.4°C. The district receives adequate Rainfall from the Southwest Monsoon which sets in the later half of June and withdraws by the middle of October. The driest month is December, with 2mm of rain. The greatest amount of precipitation occurs in July, with an average of 309mm. Average Annual Rainfall of the district is 1313mm.

II. Primary Data

The micrometeorological data of the project site recorded during baseline period is very useful for proper interpretation of the baseline information as well as for input, to predictive models for air quality impacts.

For collection of Primary data an Automatic Weather Station was installed at the plant site for three months (1st December, 2019 to 29th February, 2020) and it recorded hourly observation for the parameters like Maximum and Minimum Temperatures (ºC), Relative Humidity (%), Wind Speed (km/hr), Wind Direction and Rainfall. The

hourly-recorded observations (wind velocity and wind directions) during 12 weeks study period are used in computing percentage frequencies and are depicted in the form of "Wind Roses" **(Fig 3.1)**. The summarized meteorological data is provided in **Table No. 3.2**.

Table 3.2: Onsite Meteorological Data (Period: 1st Dec to 29th Feb, 2020)

Month	-	Temp. (°C)	RH (%)	WS *(kmph)*	WD	RF (mm)
December	Min	14	15	0	N,NW	1.16
	Max	35	64	3.76		
	Avg.	22.54	33.03	1.65		
January	Min	13.6	21	0	NNW,N	5.6
	Max	28.5	90	5.69		
	Avg.	20.26	45.46	2.00		
February	Min	14.7	16	0	NW,NNW	6.04
	Max	30.9	81	5.36		
	Avg.	22.58	37.14	1.77		

(Source: Automatic Weather Station)

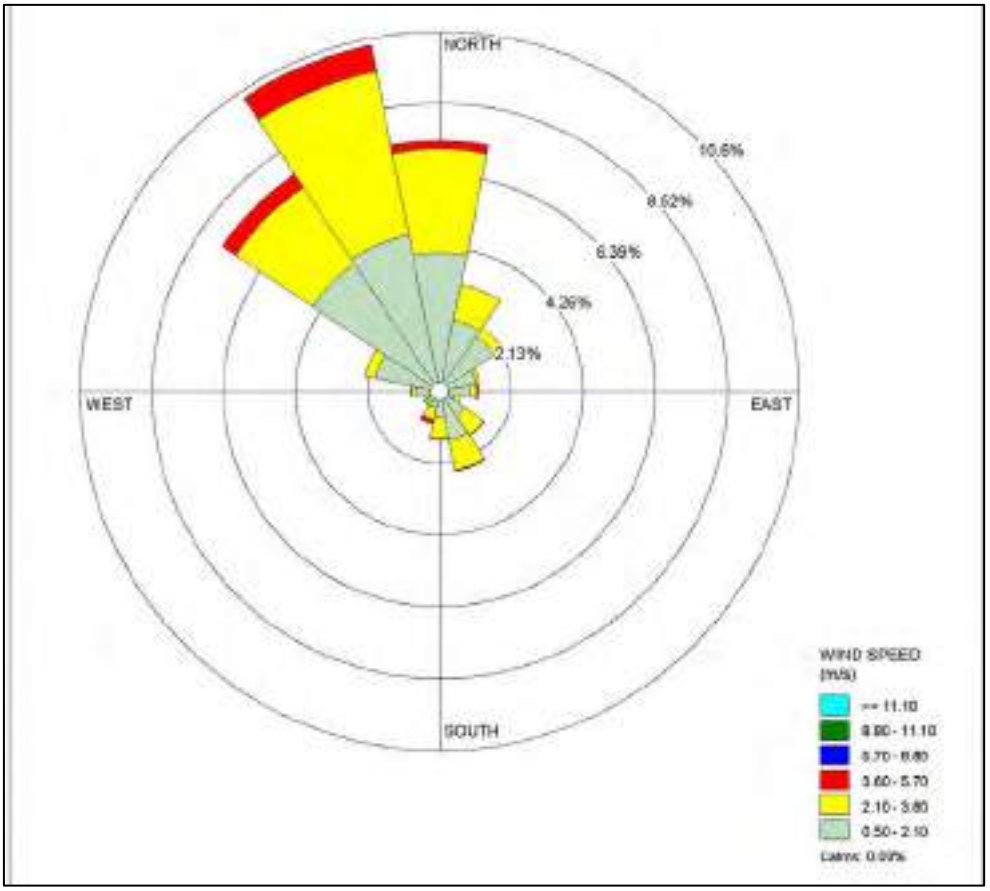


Fig 3.1: Primary Wind Rose Diagram, Project Site
(Study Period: December, 2019 to February, 2020)

III. Secondary Data

Historical data on meteorological parameters also plays an important role in identifying the general meteorological status of the region. The data generated in the field is compared with the historical data in order to identify changes, which may have taken place during the course of time.

The latest and updated secondary data for 17 years (1990-2007) of Bankura, WB is procured from the IMD, New Delhi for observing parameters like Temperature, Relative Humidity, Rainfall, Wind Speed and Wind direction in the Paschim Burdwan district of West Bengal. The IMD data for Bankura is given in **Table 3.3** and its Ombrothermic diagram is shown in **Fig 3.2**.

Table 3.3: Secondary Meteorological Data for Bankura, West Bengal (1990-2007)

Month	Air Temperature ^{o}C		Humidity %		Monthly Rainfall Total, mm	Mean Wind Speed kmph	Wind Direction
	Daily Max.	Daily Min.	0830 IST	0530 IST			
January	25.1	11.4	77	61	18.2	0.4	N,W,NW
February	29.1	15.8	71	55	20.4	0.9	N,NE,W
March	34.4	20.3	63	45	32.1	1.6	N, NE, NW
April	37.3	24.9	69	53	40.7	2.7	S, N, SE
May	37.4	26.3	72	59	100.9	2.6	S, SE, N
June	35.7	26.6	79	72	271.0	2.9	S, E, SE
July	32.8	26.4	85	82	363.0	2.4	S, E, SE
August	32.5	26.3	86	82	352.3	1.9	E, S, NE
September	32.4	25.5	87	83	253.4	1.7	S, E, W
October	31.8	23.3	84	79	86.8	0.7	S, N, W
November	29.4	17.9	81	71	16.0	0.3	N, S, NE
December	26.2	12.9	80	67	9.1	0.6	W, N, S
Annual	**32.0**	**21.5**	**69**	**68**	**1564.0**	**1.6**	**S, N, E**

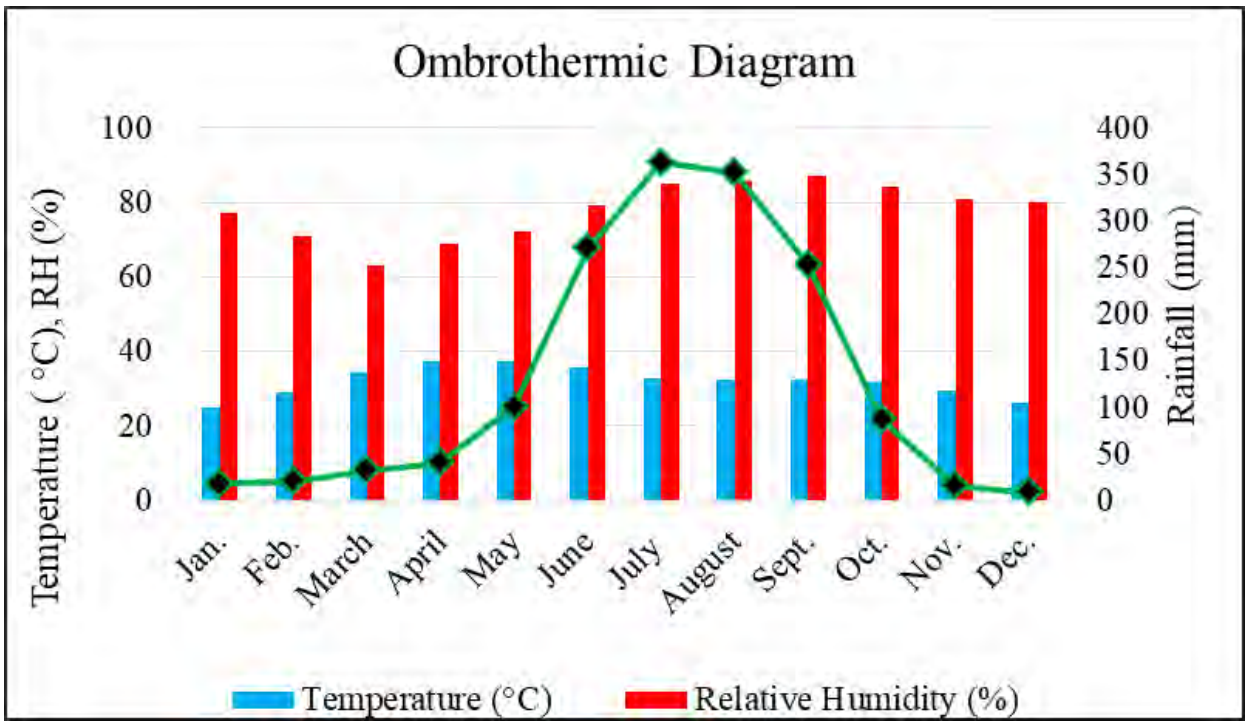


Fig 3.2: Ombrothermic diagram based on IMD data

Comparison of Primary Meteorological data with IMD data

The meteorological data recorded on site using Automatic Weather Station is compared with the available IMD data of Bankura IMD Station for consistency check. The maximum and minimum temperature obtained during the monitoring period was found to be 35°C and 13.6°C respectively and follows the similar trends as observed in secondary data. For the study period, obtained predominant wind direction (i.e NNW followed by North west) was same in both primary as well as secondary data. The total rainfall was observed during monitoring period was 12.8mm which was found to be less in secondary data for the same duration.

3.3.1.2 Ambient Air Quality

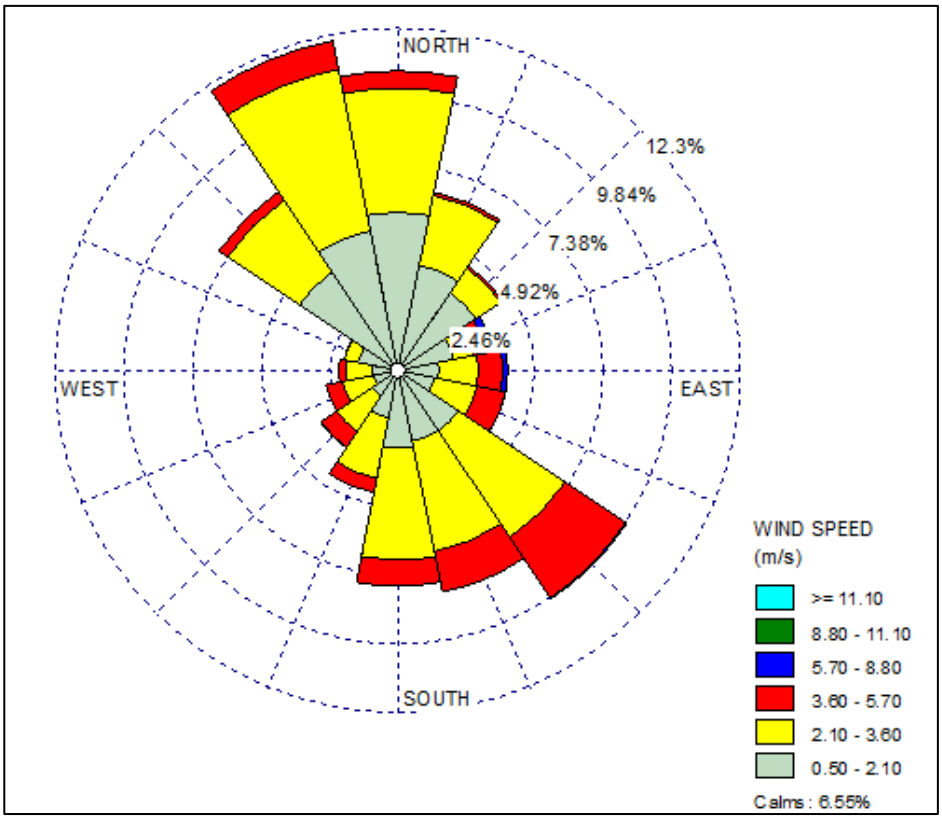
Ambient air quality monitoring is done to determine the general background concentration levels. The prime objective of the ambient air quality study is to assess the existing air quality of study area and to establish the existing ambient air quality within the study area and its conformity to NAAQS.

Selection of Sampling Locations

The sources of air pollution in the region are industrial emissions, vehicular traffic, dust arising from unpaved village roads and domestic fuel burning.

Eight (8) numbers of monitoring stations were set up to assess the existing air quality of the study area. One station was located inside the proposed project site (core zone) and the seven others, outside (buffer zone) the proposed project site. The locations of the monitoring stations were based on the annual wind directions pattern as observed from

the wind rose prepared from the annual IMD data of Asansol, West Bengal (at an aerial distance of 13km from project site) for the year 2018. The windrose helps in siting the stations as close as feasible to the anticipated maximum pollutant deposition areas, moreover, duly considering human habitation and proximity to sensitive zones within the study area. The due consideration during the selection of sampling locations was given to the likely affected zones during construction and operation of the plant. Logistic considerations as ready accessibility, security, availability of reliable power supply etc. were examined while finalizing the monitoring locations. The wind rose of Asansol and Ambient Air Quality Monitoring locations have been presented in **Figure 3.3 and 3.4** respectively**.**



(Source: IMD data Asansol, Year 2018)

Fig 3.3: Annual Wind Rose Diagram for Asansol, West Bengal

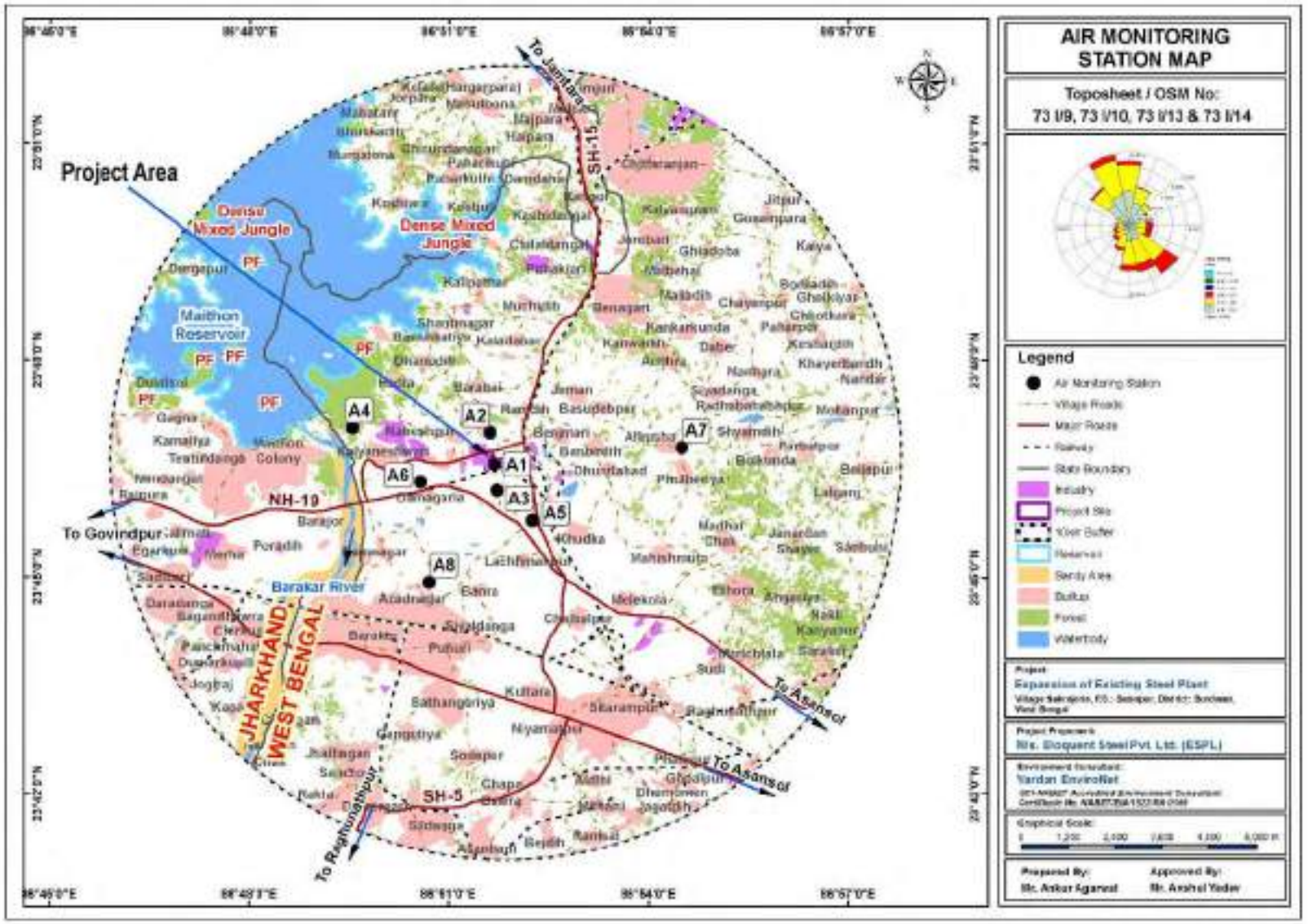


Fig 3.4: Ambient Air Quality Monitoring Locations

Table 3.4: Ambient Air Quality Monitoring Locations

Code	Location	Latitude	Longitude	Dist. (Km)	Dir.	Remark
A1	Project Site	23°46'33.8"N	86°51'40.6"E	--	--	-
A2	Shrirampur	23°47'00.3"N	86°51'36.7"E	0.5	N	Upwind
A3	Digari	23°46'12.1"N	86°51'42.6"E	0.6	S	Downwind
A4	Near Maheshpur	23°47'04.0"N	86°49'32.7"E	3.5	WNW	Upwind
A5	Sabanpur	23°45'47.5"N	86°52'15.3"E	1.5	SSE	Downwind
A6	Dobipur	23°46'19.0"N	86°50'34.1"E	1.7	W	Crosswind
A7	Alkusha	23°46'47.4"N	86°54'30.2"E	4.5	E	Crosswind
A8	Lalbazar	23°44'55.4"N	86°50'42.2"E	3.2	SW	Near Dense Habitation

Methodology

As per the scope of work, 8 ambient air quality monitoring stations were monitored for specific air pollutants during the study period. All the instruments (samplers) were installed between 1 to 4 m above ground level which was free from obstructions. The sampling and analysis of the required parameters were carried out as per IS: 5182 methodology entitled "Methods of Measurement of Air Pollution" and AWMA entitled "Methods of Air sampling and analysis". Following are the parameters monitored during the study period.

1. Particulate Matter (PM_{10} and $PM_{2.5}$)
2. Sulphur dioxide (SO_2)
3. Nitrogen dioxide (NO_2)
4. Carbon Monoxide (CO)

Table 3.5: Techniques Adopted/Protocols for Ambient Air Quality Monitoring

S.No.	Parameters	Techniques	Technical Protocol
1.	Sulphur Dioxide (SO_2)	West & Gaeke	IS:5182 (P2)
2.	Nitrogen Dioxide (NO_2)	Jacob & Hochheiser	IS:5182 (P6)
3.	Particulate Matter PM_{10}	Gravimetric	IS:5182 (P15)
4.	Particulate Matter $PM_{2.5}$	Gravimetric	-
5.	Carbon-monoxide as CO	NDIR	IS: 5182 (P-10)

Data Analysis

The Ambient Air Quality survey has been carried out at 8 locations within 10 km radius around the project site. Measurement of Particulate matter (PM_{10} & $PM_{2.5}$), SO_2, NO_X and CO levels helps to understand the existing environmental scenario. The monitoring for PM_{10}, $PM_{2.5}$, SO_2, NO_X was carried 24-hourly twice a week and for CO it was 8-hourly twice a week. The results of PM_{10}, $PM_{2.5}$, SO_2, NO_X are expressed in $\mu g/m^3$ whereas the results of CO are expressed in mg/m^3. The detailed air quality reports are given in **Annexure-3**. The results of all the locations were further computed for statistical parameters like Minimum, Maximum concentrations, Arithmetic mean (AM) and 98 percentiles. The results are shown in **Table No.3.6.** The graphical representations of the

results are depicted in **Fig No.3.5, 3.6 & 3.7**.

Table 3.6: Ambient Air Quality Data

Pollutant	Location Codes	Max.	Min.	Avg.	98th Percentile	NAAQS
PM10 ($\mu g/m^3$)	A1	79.8	65.1	75.3	79.7	100
	A2	69.4	53.1	59.4	67.9	
	A3	86.7	72.5	80.2	86.2	
	A4	58.8	32.2	49.1	58.5	
	A5	78.2	65.2	73.3	78.2	
	A6	69.2	52.1	60.0	68.9	
	A7	74.1	59.4	68.3	74.0	
	A8	78.4	65.1	71.2	77.6	
PM2.5 ($\mu g/m^3$)	A1	49.8	34.5	44.3	49.8	60
	A2	47.1	26.9	35.5	46.4	
	A3	52.9	44.2	48.9	52.6	
	A4	38.8	16.1	29.6	38.0	
	A5	46.7	36.5	43.0	46.2	
	A6	47.8	31.1	37.8	46.7	
	A7	45.8	30.7	39.0	45.4	
	A8	43.9	35.6	41.0	43.9	
NOx ($\mu g/m^3$)	A1	38.8	28.4	32.2	37.8	80
	A2	28.4	17.5	23.1	28.1	
	A3	39.4	25.8	35.4	39.4	
	A4	25.1	10.8	20.2	24.6	
	A5	32.4	25.4	30.0	32.2	
	A6	38.7	12.8	26.9	37.7	
	A7	32.8	17.6	26.0	31.5	
	A8	31.4	21.9	27.2	31.1	
SO2 ($\mu g/m^3$)	A1	24.8	20.1	21.8	24.4	80
	A2	20.0	10.0	14.9	19.6	
	A3	29.9	16.5	23.5	28.2	
	A4	19.4	8.2	11.4	18.8	
	A5	26.2	10.2	19.2	24.9	
	A6	18.9	14.2	16.7	18.7	
	A7	21.8	10.4	17.3	21.0	
	A8	20.2	9.2	17.6	20.2	
CO (mg/m^3) 8 Hourly	A1	1.05	0.54	0.78	1.03	04
	A2	0.82	0.36	0.58	0.77	
	A3	1.09	0.53	0.79	1.08	
	A4	0.45	0.34	0.42	0.45	
	A5	0.97	0.61	0.75	0.97	
	A6	0.87	0.53	0.69	0.83	
	A7	0.73	0.54	0.64	0.73	
	A8	0.87	0.58	0.71	0.85	

(Source: Vardan EnviroLab)

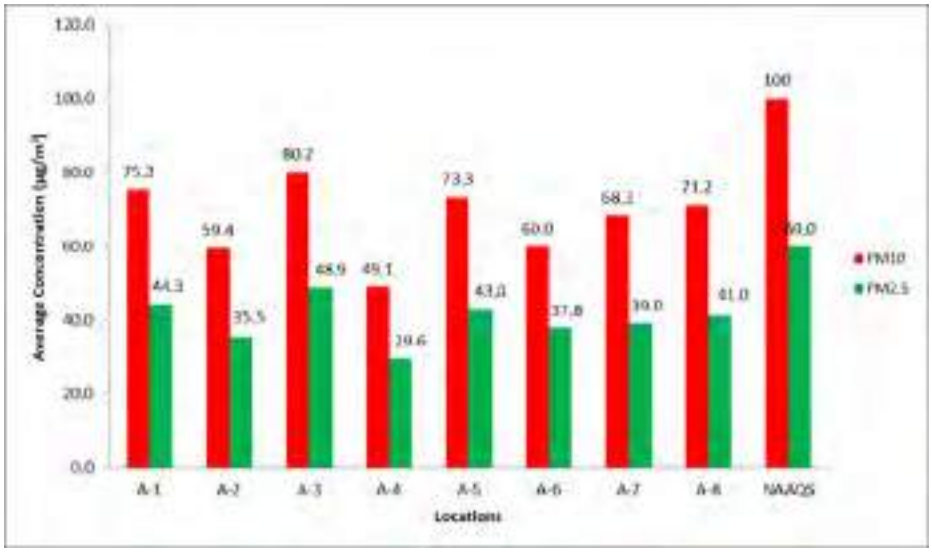


Fig 3.5: Graphical representation of Particulate Pollutants

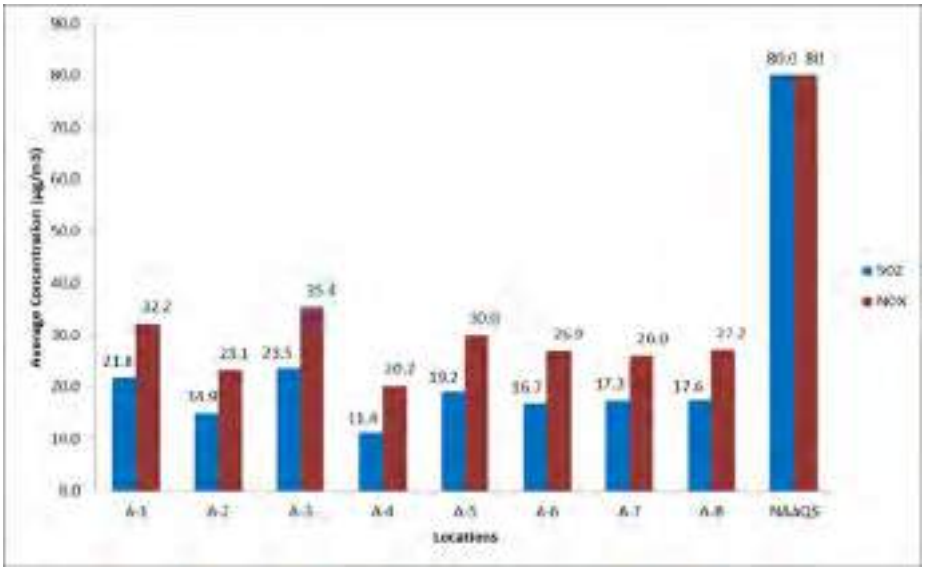


Fig 3.6: Graphical representation of Gaseous Pollutants

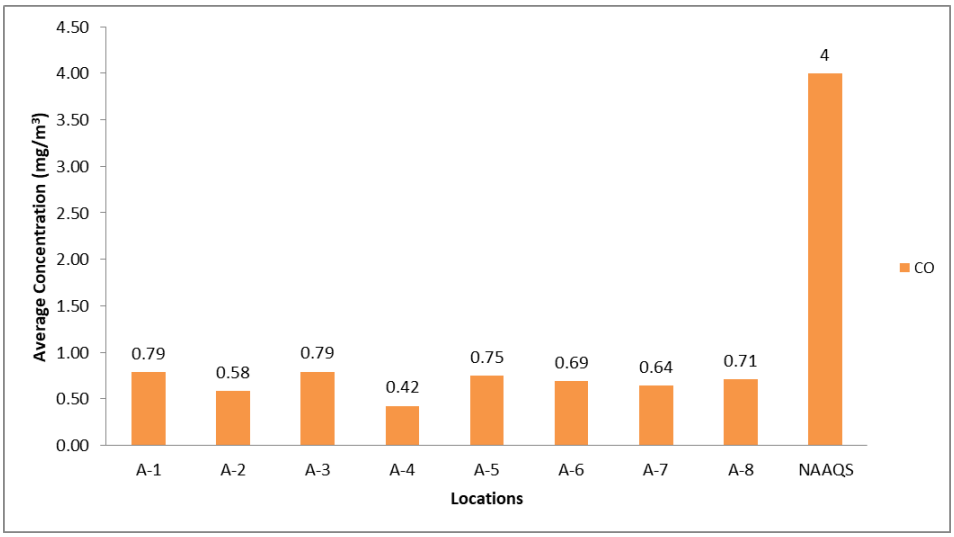


Fig 3.7: Graphical representation of CO Pollutant

Interpretation

- Ambient Air Quality Monitoring for all the 8 AAQM stations reveals that the minimum and maximum value of concentrations of:
  - PM_{10} and $PM_{2.5}$ were found between 32.2 to 86.7µg/m^3 and 16.1 to 52.9µg/m^3 respectively,
  - SO_2 and NOx were found to be between 8.2 to 29.9 µg/m^3 and 10.8 to 39.4µg/m^3 respectively,
  - CO were found between 0.36 to 1.09 mg/m3
- Values obtained for PM_{10}, $PM_{2.5,}$ NOx, SO_2 and CO were found to be highest at A3 (Digari) which may be attributed to presence of Iron & Steel Plants, Brick Manufacturing plant and coal mines within 500 m distance from station. Vehicular traffic on nearby passing NH-19, SH-15 and railway siding may also cummulate to the value.
- At the monitoring station A4 very low concentration values were obtained due to the presence of Mixed Jungle Area and Maithon Reservoir in vicinity.
- As per the present expansion proposal, there will be increment in the air emissions which will have an effect on nearby habitations and ecology of surrounding areas.
- As per the analytical reports of the project site and the surrounding areas, the ambient air quality is well below the NAAQS limits, so to maintain the ambient air quality of the area, the latest / modern air pollution control measurements along with suitable EMP will be adopted, which will be elaborated in detailed in ***Chapter-4*** of the report.
- The baseline data for air quality was compared with WBPCB (Asansol, at a distance of 12kms in SW direction) air quality monitoring data base and was found to be in low levels than WBPCB data.

3.3.2 Noise Environment

Noise often defined as unwanted sound, interferes with speech communication, causes annoyance, distraction from work; disturb sleep, thus deteriorating quality of human environment. Noise Pollution survey has therefore been carried out. The acoustical environment varies dynamically in magnitude and character throughout most communities.

In order to know the baseline noise levels, in and around the project site, noise levels were measured at the project site and also at villages in the study area.

3.3.2.1 Methodology of Noise Measurement

For noise measurement calibrated and integrated sound level meter Lutron (SL-4001) was used. SLM was mounted on a tripod as per the standard methodology for noise measurements. Special care was taken for not making noises while taking the measurement and ensuring the least amount of reflective surface is exposed from our

body to the meter.

Noise levels were recorded at 8 locations by Sound Level Meter in dB (A). Noise levels were recorded as per IS: 9989 entitled "Assessment of noise with respect to community response" methodology. Noise levels were recorded at approximately 1.5 meter above the ground level and about 3 m away from walls, buildings or other sound reflecting sources. The measurements were carried out 1 m away from the sources and 1 m away from the edge of the roads. In order to reduce the disturbances from standing waves, the noise levels measurements were averaged over + 0.5 m each of at least three positions. The mean values were taken for reporting. Ambient noise levels were compared with the Noise Pollution (Regulation & Control) Rules, 2000 and subsequent amendments.

Equivalent Sound Pressure Level (Leq) of Day and Night

The Leq is the equivalent continuous sound level, which is equivalent to the same sound energy as the actual fluctuating sound measured in the same period. This is necessary because sound from noise source often fluctuates widely during a given period of time.

This

$$L_{eq}=10\log_{10}[1/100\sum f_i 10^{Li/10}]$$

Where,

Li = Sound Level in dB(A)

fi = Function of time interval measured for the sound levels

Lday is defined as the equivalent noise level measured over a period of time during day (6 am to 10 pm). Lnight is defined as the equivalent noise level measured over a period of time during night (10 pm to 6 am). Hourly noise recorded data and Lday values (16 hours) Lnight (8 hours) and Ldn (24 hours) are computed and tabulated.

Data Analysis

The statistical analysis is done for recorded noise levels at 8 locations. The locations of Noise Quality Monitoring stations are depicted in **Fig 3.8** and provided in **Table No. 3.7.** The lab results are given in ***Annexure-3***. The parameters are analyzed for Lday, Lnight and Ldn and are represented in **Table No 3.8** and the Leq values are plotted in the graph (**Fig 3.9**).

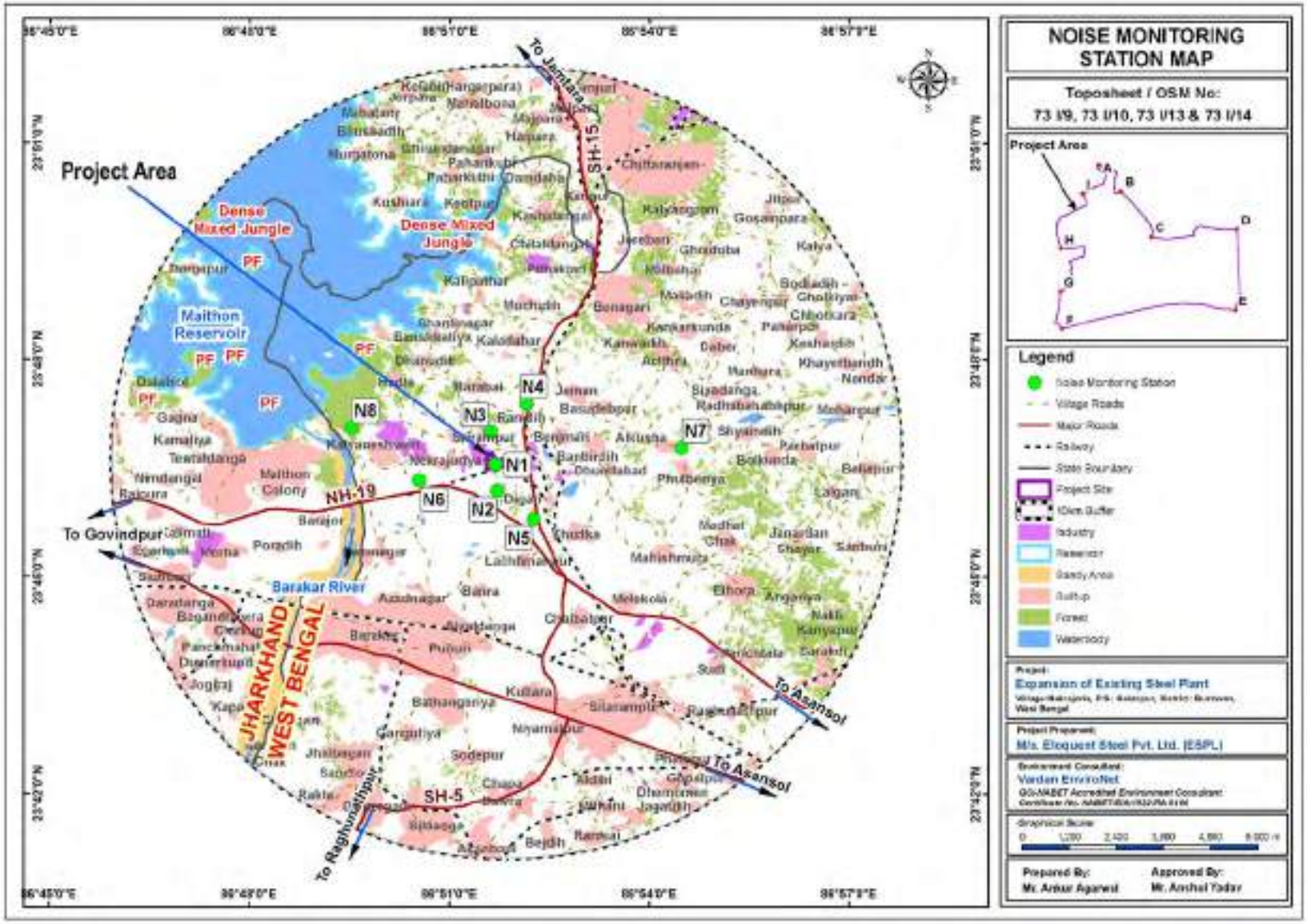


Fig 3.8: Noise Quality Monitoring Locations

Table 3.7: Noise Level Monitoring Loactions

Code	Location	Latitude	Longitude	Dist (Km)	Dir.	Remark
N1	Project Site	23°46'33.8"N	86°51'40.6"E	--	--	Industrial Site
N2	Digari	23°46'12.1"N	86°51'42.6"E	0.6	S	Nearby Village
N3	Shrirampur	23°47'00.3"N	86°51'36.7"E	0.5	N	Near High School
N4	Ramdih	23°47'23.3"N	86°52'09.8"E	1.5	NNE	Village near SH-15
N5	Sabanpur	23°45'47.5"N	86°52'15.3"E	1.5	SSE	Village Between NH-19 & SH-15
N6	Dobipur	23°46'19.0"N	86°50'34.1"E	1.7	W	Village near NH-19
N7	Alkusha	23°46'47.4"N	86°54'30.2"E	4.5	E	Near High School
N8	Near Maheshpur	23°47'04.0"N	86°49'32.7"E	3.5	WNW	Near PF

Table 3.8: Noise Level Data

(All Data is expressed in dB (A))

S.No.	Locations	Lmax		Lmin		Leq	
		Day	Night	Day	Night	Day	Night
N1	Project Site (Industrial)	82.4	67.4	52.9	41.9	67.5	56.2
N2	Digari (Residential)	79.2	60.1	45.2	35.8	53.1	43.7
N3	Shrirampur (Residential)	64.3	51.2	37.4	31.4	48.7	39.8
N4	Ramdih (Residential)	71.5	58.8	43.7	34.4	52.6	41.1
N5	Sabanpur (Residential)	81.4	65.2	46.4	38.6	53.9	44.1
N6	Dobipur (Residential)	74.7	58.9	44.7	35.1	52.8	42.7
N7	Alkusha (Residential)	68.1	56.9	42.3	33.9	51.7	40.9
N8	Near Maheshpur Residential)	58.2	43.5	35.1	29.7	45.1	34.9

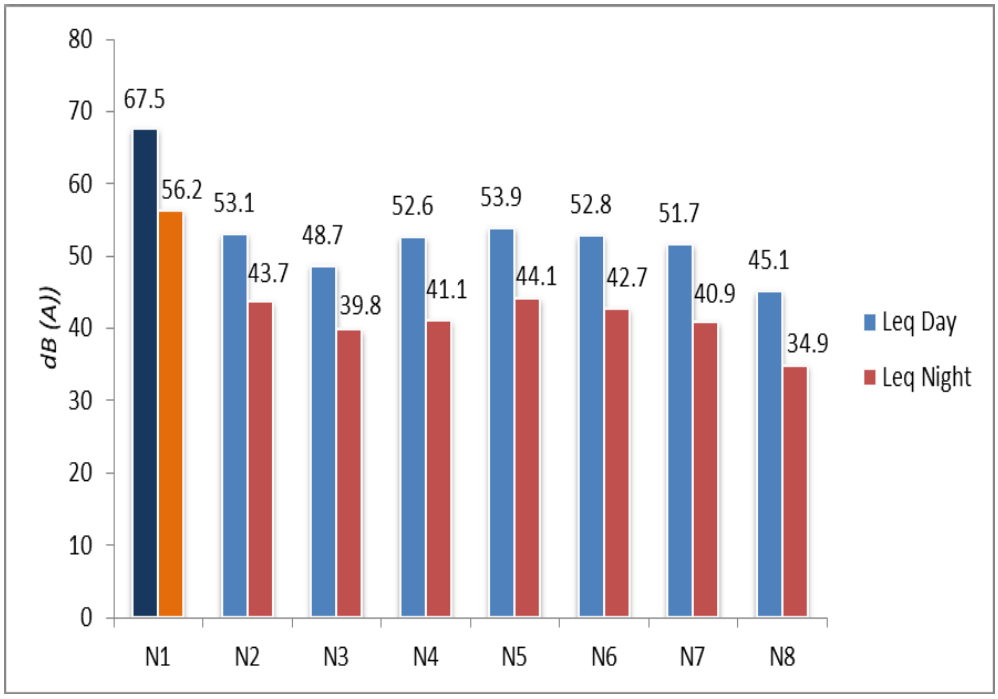


Fig 3.9: Equivalent Noise Levels at Monitoring Locations

Ambient Air Quality Standards in respect of Noise

Category of Zones	Categorization of locations	Leq in dB(A)	
		Day	Night
Industrial	N1	75	70
Residential	N2,N3,N4,N5,N6,N6,N7,N8	55	45
Silence Zone	-	50	40

Interpretation

- Out of all 8 locations measured for noise levels, the Leq at the plant site (N1) was found to be on slightly higher side as it depicts the industrial activity inside the existing plant and in the adjacent steel industries. Presence of railway siding adjacent to the boundary of plant add on to the noise levels. The Leq values at this location for day and night time was observed to be 67.5 and 56.2 dB(A), respectively. However, the recorded noise levels were found to be within the industrial zone limits (75 dB(A) & 70 dB(A)).
- Out of all remaining monitoring station (under residential category), the noise levels recorded at Sabanpur Village (N5) were found to be on highest which can be attributed to continuous day and night vehicular movement on NH-19, SH-15 as well as on nearby railway line. The Leq values at this location for day and night time was observed to be 53.9 and 44.1 dB(A) respectively. However, these noise levels were also found to be well within the permissible residential limits (55 dB(A)) during day time.
- Noise levels obtained at location N2 are due to the adjacent colliery activity. Vehicular traffic on NH-19 & SH-15 contributes to the noise values at location N6 and N4 respecively. The noise levels are measured to be least at N8 location among all as it quite isolated from industries and heavy road & railway network.
- The noise levels recorded at all locations were within the Ambient Noise standards as per the Noise Pollution (Regulation & Control) Rules, 2000.
- With the increase in capacity and additional units, the noise levels inside the project site will have some impacts on the nearby areas.
- However, with suitable control measures and EMP, the noise levels will be reduced and the impacts will be minimized.

3.3.3 Traffic Study

Traffic analysis is a study carried out to predict the magnitude and effects that the proposed project may have on the existing transportation network. Traffic analysis can also be used to evaluate whether the existing transportation facility is appropriate or needs an improvement for the proposed developmental project. Therefore traffic study is conducted on the roadway that will be used by the industry for transportation of construction material and labour during construction phase and of raw materials &

Products during operation phase.

The three main types of automobile vehicles being used in the country are:

- Passenger cars powered by four strokes gasoline engines.
- Motor cars, scooters and auto rickshaws powered mostly by small two stroke diesel engines.
- Large trucks and buses powered by mostly 4 stroked engines.

Data Analysis

The traffic study was carried out for 24 hours at three locations namely:

a. Kalyaneshwari to Dendua Road (KD Road): Metaled road having 5.5m width and connecting NH-19 & SH-15 to project site,

b. SH-15 (Asansol-Chittaranjan) Road at 0.91km road distance and

c. NH-19 (Delhi-Kolkata) Road at 4.64km road distance

These roads are near to the project site and are to be used as medium for transportation of construction or raw material and final products to & from the industry. The transporation map showing the three roads under study is provided in **Fig. 3.10**. The result of the traffic study is shown in **Table 3.9** and the pie chart representation of total vehicles during baseline studies for the highways is depicted in **Fig 3.11**.

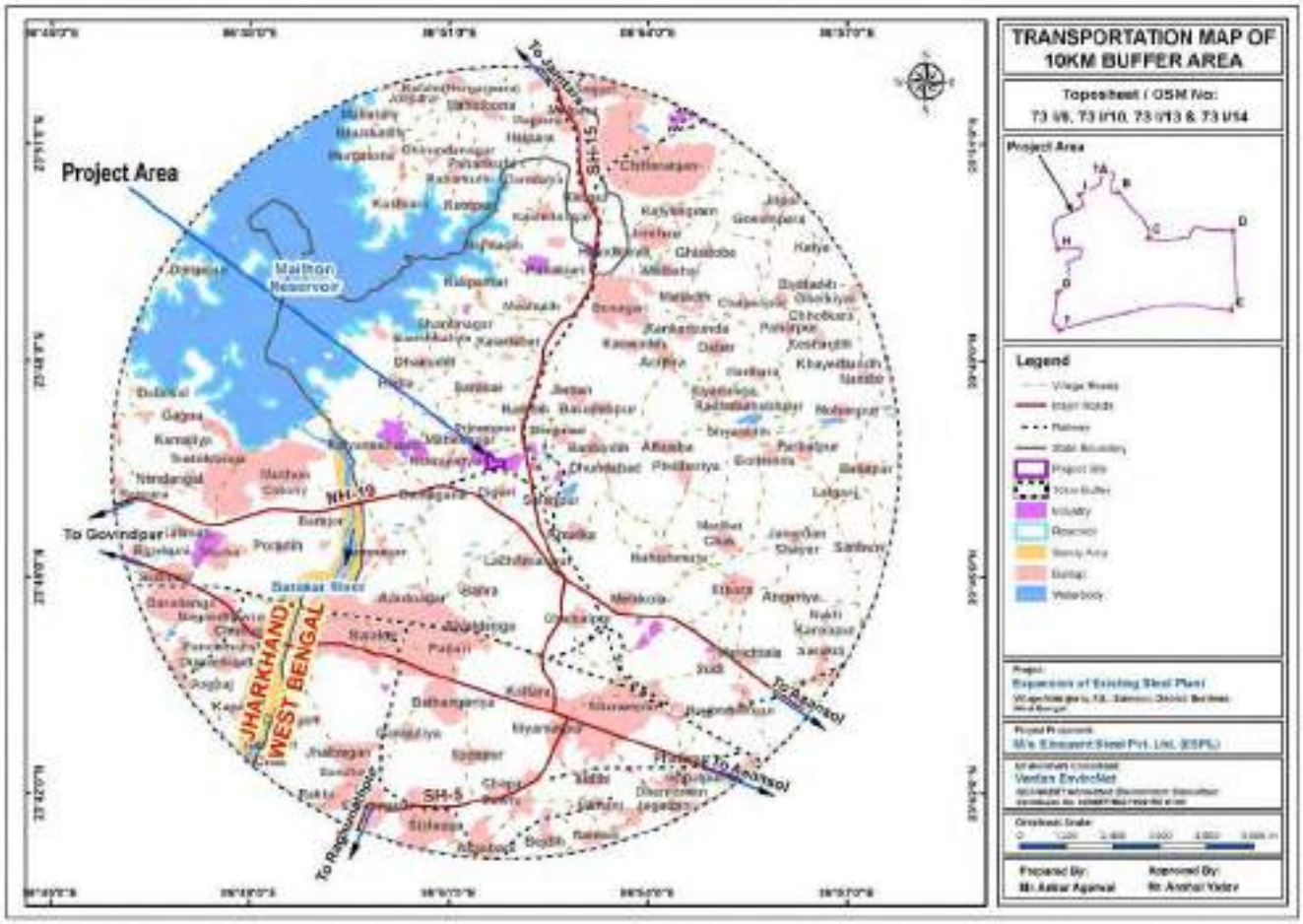


Fig 3.10: Transportation Map for M/s ESPL

Table 3.9: Summarized Traffic Data

Type of Vehicles	No. of Vehicles			Equivalent PCU	PCU/day		
	KD Road	SH-15	NH-19		KD Road	SH-15	NH-19
Trucks	196	470	503	3	588	1410	1509
Agriculture tractors/LCV	108	189	286	1.5	162	283.5	429
Bus	76	310	467	3	228	930	1401
Cars	289	475	524	1	289	475	524
3 Wheeler	143	321	287	1	143	321	287
2 Wheeler	412	532	705	0.5	206	266	352.5
Total	**1224**	**2297**	**2772**		**1616**	**3685.5**	**4502.5**

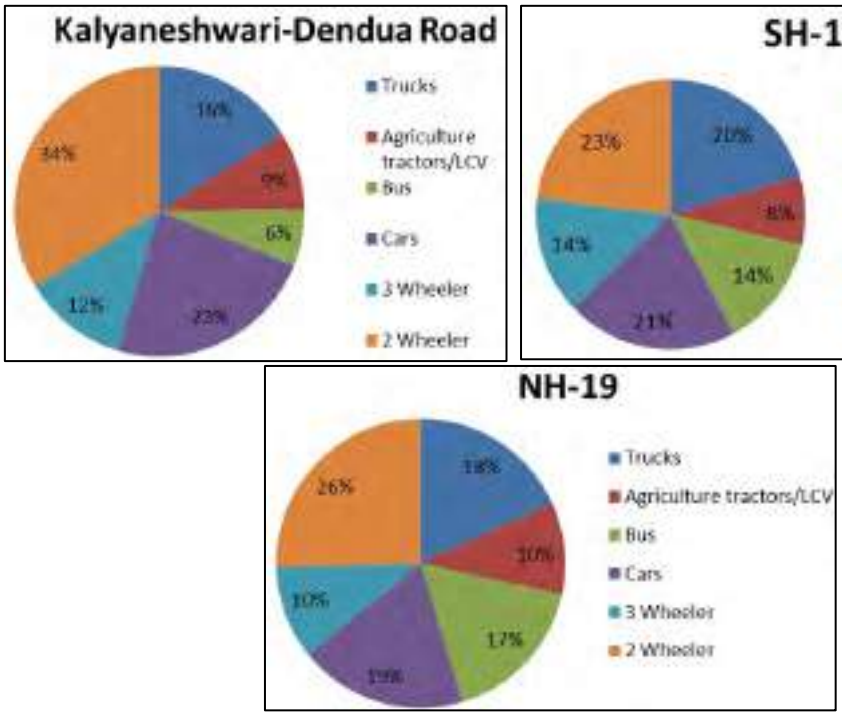


Fig 3.11: Vehicular Traffic Distribution on Kalyaneshwari Dendua road, SH-15 & NH-19

Existing Traffic Scenario

The Level of Service (LOS) and the capacity of the Roadway segments computed is based on the Indian Roads Congress (IRC) standards sourced from Guidelines for Capacity of Roads in Rural Areas IRC 64-1990. Following table provides the LOS standards adopted based on the volume to capacity (V/C) ratios at the intersections and its performance.

V/C	LOS	Performance
0.0-0.2	A	Excellent
0.2-0.4	B	Very Good
0.4-0.6	C	Good/ Average/ Fair
0.6-0.8	D	Poor
0.8-1.0	E	Very Poor

Table 3.10: Existing Traffic Scenario and LOS

Road	V (Volume in PCU/day)	C (Capacity in PCU/day)	Existing V/C Ratio	LOS
Kalyaneshwari Dendua Road	1616.0	6000	0.27	B
SH-15	3685.5	15000	0.25	B
NH-19	4502.5	15000	0.30	B

Interpretation

- Existing traffic scenario cam out to be "**Very Good**" falling under **LOS 'B'** for the three roads on which traffic study was done, indicating stable flow zone which affords reasonable freedom to drivers in terms of speed selection and manoeuvers within the traffic stream.
- As Kalyaneshwari to Dendua road is approx. 5.5km metalled 5.5m wide road between two villages and. There are several industries set up on either side of this road. Higher numbers of two wheelers and cars is due to movement of villagers & factory workers largely in daytime. This road also serves as connecting road between SH-15 and NH-19 which leads to the movement of trucks.
- The difference of heavy vehicle movement on SH-15 & NH-19 both day and night time was very marginal. The density of Agricultural vehicles was comparatively low due larger industrial setup in the nearby area.
- Majority raw material and product coming to and going out from project site will be transported through NH-19 and SH-15, connected to project site by Kalyaneshwari to Dendua Road. Therefore due to the expansion of proposed project the traffic density will increase on these three roads under study.
- Suitable traffic management plan will be adopted to minimize any impact on the traffic scenario of these roads.

3.3.4 Water Environment

Water of high quality essential to human life, and water of acceptable quality is essential for agricultural, industrial, domestic and commercial uses; in addition, most recreation is water based; therefore, major activities having potential effects on surface water are certain to be of appreciable concern to the consumers.

The hydrological environment is composed of two interrelated phases; ground water and surface water. Impacts initiated in one phase eventually affect the other. For example, a ground water system may charge one surface water system and later be recharged by another surface water system. The complete assessment of an impact dictates consideration of both ground water and surface water. Thus, pollution at one point in the system can be passed throughout, and consideration of only one phase does not characterize the entire problem.

Methodology

8 ground water and 8 surface water samples were collected from the study area to assess the water quality during the study period (**Fig 3.12 and Table No. 3.11 & 3.12**). Samples were collected as per IS: 3025 (Part 1) methodology. Necessary precautions were taken while collecting, preserving and transporting. The parameters like pH, temperature and DO were measured at the site while collecting the sample. For analyzing other parameters, the samples were brought to Head Laboratory situated in Gurugram. All the parameters were analyzed as per "Methods of Sampling and Test (Physical and Chemical) for water and waste water" IS: 3025 and 'Standard Methods for the Examination of Water and Wastewater' APHA. The results were then compared with the standards (IS 10500 & IS 2296) for assessing the quality of water.

The ground water samples were drawn from the hand pumps and open wells being used by the villagers for their domestic needs. Surface water sampling was carried out from Rivers/Ponds present within 10 Km of the project site.

Table 3.11: Surface Water Sampling Locations

Code	Location	Latitude	Longitude	Distance (Km)	Direction
SW1	Pond Near Dendua	23°46'50.2"N	86°51'51.3"E	0.4	N
SW2	Pond Near Banbirdih	23°46'40.3"N	86°52'52.7"E	1.7	E
SW3	Pond Near Banra	23°45'31.0"N	86°51'57.6"E	1.8	S
SW4	Barakar River Near Duburdih	23°46'03.3"N	86°49'38.7"E	3.3	WSW
SW5	Maithon Reservoir Near Shantinagar	23°48'26.8"N	86°50'42.8"E	3.5	NW
SW6	Pond Near Kortsal	23°45'03.5"N	86°55'22.9"E	6.5	SE
SW7	Pond Near Amkura	23°46'17.2"N	86°48'29.0"E	5.2	W
SW8	Pond Near Barakar	23°44'07.1"N	86°50'21.5"E	4.8	SSW

Table 3.12: Ground Water Sampling Locations

Code	Location	Latitude	Longitude	Distance (Km)	Direction
GW1	Project Site	23°46'33.8"N	86°51'40.6"E	--	--
GW2	Digari	23°46'12.1"N	86°51'42.6"E	0.6	S
GW3	Shrirampur	23°47'00.3"N	86°51'36.7"E	0.5	N
GW4	Dobipur	23°46'19.0"N	86°50'34.1"E	1.7	W
GW5	Near Maheshpur	23°47'04.0"N	86°49'32.7"E	3.5	WNW
GW6	Alkusha	23°46'47.4"N	86°54'30.2"E	4.5	E
GW7	Ramdih	23°47'23.3"N	86°52'09.8"E	1.5	NNE
GW8	Sabanpur	23°45'47.5"N	86°52'15.3"E	1.5	SSE

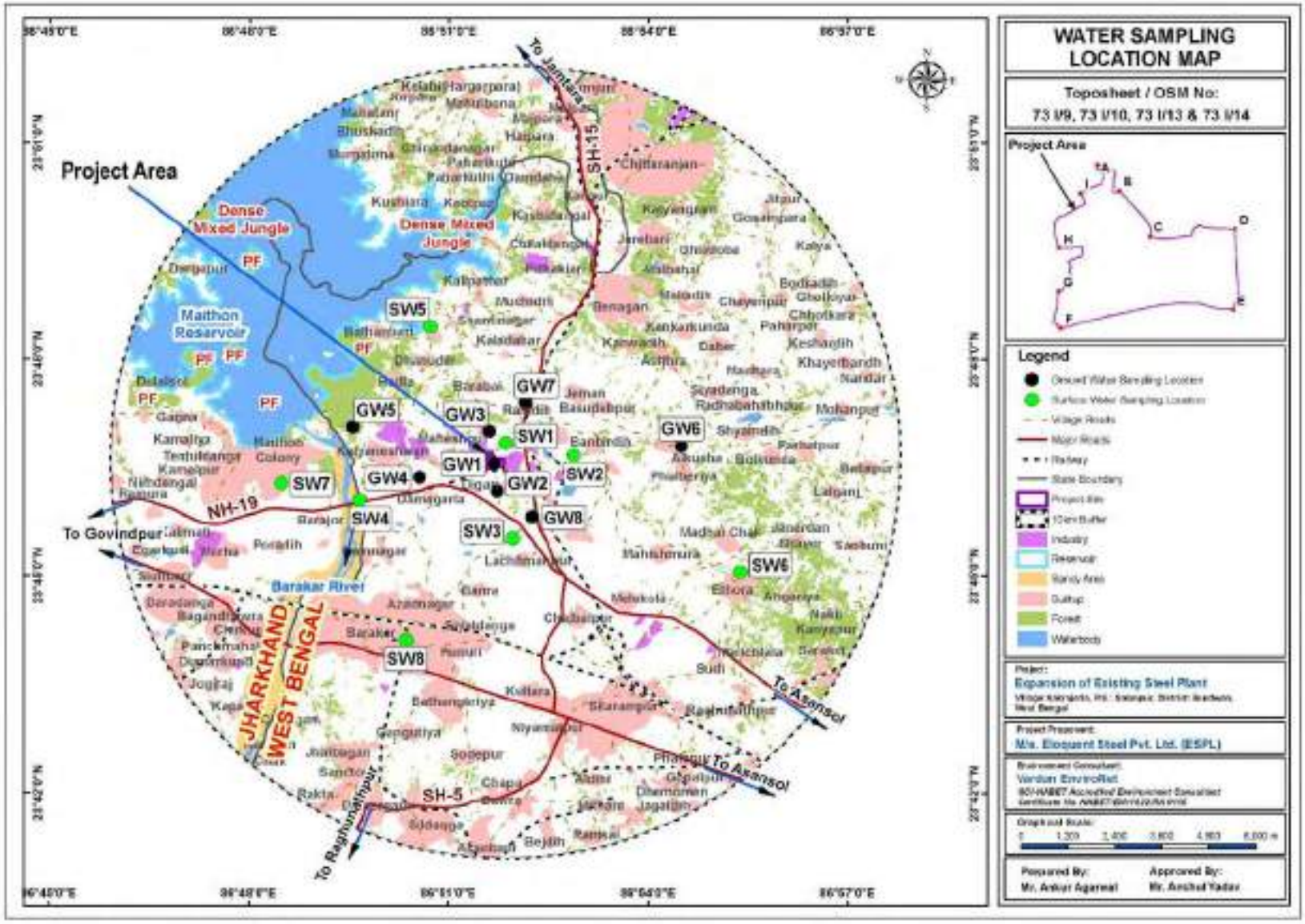


Fig 3.12 Map showing Water Sampling Locations

Table 3.13: Ground Water Quality Data

S.No	Parameter	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	Acceptable Limit	Permissible Limit
1.	pH (at 25 ^{0}C)	8.13	8.22	7.15	7.43	7.38	7.19	7.51	7.58	6.5 to 8.5	No Relaxation
2.	Colour (Hazen)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5	15
3.	Turbidity (NTU)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	5
4.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$ (mg/L)	250.0	192.00	218.00	213.00	210.0	205.0	192.00	128.0	200	600
7.	Calcium as Ca (mg/L)	83.30	63.10	59.10	64.00	68.0	65.90	61.42	38.20	75	200
8.	Alkalinity as $CaCO_3$ (mg/L)	188.00	176.00	191.00	174.00	220.0	191.00	298.00	258.00	200	600
9.	Chloride as Cl (mg/L)	97.42	58.00	53.8	59.00	78.0	56.00	57.82	72.00	250	1000
10.	Magnesium as Mg (mg/L)	10.24	8.39	17.14	12.95	9.82	9.86	9.41	7.94	30	100
11.	Total Dissolved Solids(mg/L)	410.0	434.00	468.00	436.00	380.0	342.00	450.00	420.00	500	2000
12.	Sulphate as SO_4 (mg/L)	24.0	23.00	24.00	24.50	16.00	19.50	18.90	32.00	200	400
13.	Fluoride as F (mg/L)	0.22	0.24	0.27	0.25	0.41	0.25	0.22	0.48	1.0	1.5
14.	Nitrate as NO_3(mg/L)	9.01	11.0	11.05	12.67	18.05	14.02	13.67	4.58	45	No Relaxation
15.	Iron as Fe (mg/L)	0.24	0.21	0.20	0.23	0.24	0.26	0.27	0.34	0.3	No Relaxation
16.	Electrical Conductivity(µS/cm)	683	723	780	726	633	570	750	700	-	-
17.	Zinc as Zn (mg/L)	1.30	1.38	1.35	1.42	1.40	0.39	1.08	1.08	5	15
18.	Copper as Cu (mg/L)	0.42	0.52	0.50	0.40	0.47	0.41	0.30	0.32	0.05	1.5
19.	Total Coliform (MPN/100ml)	<2	<2	<2	<2	<2	<2	<2	<2	-	10.00
20.	E.coli (MPN/100ml)	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Colour, Turbidity, Cynaide, Aluminium, Boron, Hexa Chromium, Phenolic Compounds, Mineral Oil, Anionic Detergents, Selenium, Arsenic, Mercury, Lead, Cadmium and Manganese were found to be Below Detection Limits.

Table 3.14: Surface water quality data

S.No.	Parameter	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
1	pH (at 25 ^{0}C)	7.72	7.64	7.36	7.50	7.72	7.51	7.70	7.36
2	Colour (Hazen)	15	12.40	18.00	22.30	20.00	25.00	19.80	17.30
3	Turbidity (NTU)	27.00	26.00	27.00	28.00	25.00	24.00	27.00	26.00
4	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Total Hardness as $CaCO_3$ (mg/L)	276.00	248.00	251.00	264.00	236.00	215.00	246.00	265.00
6	Calcium as Ca (mg/L)	73.50	70.42	73.10	74.80	72.98	68.50	76.00	76.20
7	Alkalinity as $CaCO_3$ (mg/L)	241.50	221.00	238.00	283.00	210.46	189.00	221.10	238.00
8.	Chloride as Cl (mg/L)	69.01	64.20	68.40	64.00	69.40	61.12	69.50	64.00
9.	Magnesium as Mg (mg/L)	22.50	17.56	16.67	18.80	13.10	10.71	13.70	18.19
10.	Total Dissolved Solids (mg/L)	450.00	410.00	493.00	508.00	486.00	481.00	440.00	487.00
11.	Total Suspended solids (mg/L)	72.00	68.00	108.00	85.00	112.00	82.00	121.00	102.00
12.	Dissolved Oxygen (mg/L)	6.2	6.2	4.99	5.6	5.9	5.9	5.6	6.1
13.	Sulphate as SO^4 (mg/L)	28.50	25.60	26.02	21.50	20.45	28.05	23.45	12.98
14.	Fluoride as F (mg/L)	0.50	0.48	1.41	1.24	1.28	0.58	1.24	0.23
15.	BOD (3 Days at 27^{0}C) (mg/L)	10.00	9.00	9.00	12.00	9.00	13.00	12.00	6.00
16.	COD (mg/L)	30.00	27.00	39.00	36.00	34.00	41.00	36.00	18.00
17.	Conductivity (µs/cm)	750	683	821	846	810	801	733	811
18.	Nitrate as NO_3 (mg/L)	7.45	4.30	6.32	15.48	13.90	25.20	20.85	21.45
19.	Sodium as Na (mg/L)	35.20	42.20	52.90	45.20	44.03	12.80	12.62	12.60
20.	Potassium as K (mg/L)	9.45	12.08	15.50	22.68	21.50	6.42	4.45	3.45
21.	Iron as Fe (mg/L)	*BDL(**DL 0.02 mg/l)	0.22	0.28	0.24	0.23	0.32	0.34	0.32
22.	# Aluminium as Al (mg/L)	0.42	*BDL(**DL 0.03 mg/l)	*BDL(**DL 0.03 mg/l)	*BDL(**DL 0.03 mg/l)	*BDL(**DL 0.03 mg/l)	*BDL(**DL 0.03 mg/l)	*BDL(**DL 0.03 mg/l)	*BDL(**DL 0.03 mg/l)
23.	Boron (mg/L)	*BDL(**DL 0.01 mg/l)	0.41	0.52	0.51	0.50	0.45	BDL	BDL
24.	Zinc as Zn (mg/L)	1.24	1.22	1.24	2.34	1.22	1.31	1.10	1.18
25.	Copper as Cu (mg/L)	0.62	0.60	0.54	0.50	0.54	0.34	0.40	0.42
26.	Total Coliform (MPN/100ml)	1600	1500	1450	1400	1500	1400	1750	1200
27.	Fecal Coliform (MPN/100ml)	900	800	800	800	800	800	850	700

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Residual Free Chlorine, Cyanide, Chromium, Phenolic Compounds, Mineral oils, Anionic Detergents, Manganese and Cadmium are found to be Below Detection Limits.

Interpretation

- Analysis results of ground water from sampling locations reveal the following:

Parameter	Unit	Maximum	Minimum	Remark
pH	NA	8.22	7.15	Within acceptable limits
Fluoride	mg/l	0.48	0.22	
Chloride	mg/l	97.42	53.8	
Zinc	mg/l	1.42	0.39	
TDS	mg/l	468.0	342.0	
Hardness	mg/l	250.0	128.0	More than Acceptable but less than Permissible limit

- All the physical parameters like colour, turbidity, odour & taste and pH were found to be well within the desirable limit as per IS 10500:2012
- Nitrate values at all locations were below the acceptable limit for drinking purpose as per IS 10500:2012 indicating no domestic waste intersection with the groundwater. Absence E-coli at all sampling locations depicts that no interception of untreated sewage in the groundwater table within the study area
- Fluoride, chloride and Zinc values at all were below acceptable limit for drinking purpose as per IS 10500:2012 indicating no intersection of industrial waste effluent with the groundwater
- Total hardness value of GW1, GW3, GW4, GW5 & GW6 and alkanity values for GW7 & GW8 were found to be exceeding the acceptable limits of IS 10500 but within the permissible limits
- All the Toxic substances like Selenium, Arsenic, Cadmium, Lead, cyanide, Mercury were found below the detection limits indicating water free from any industrial pollution
- Based on the comparission of above lab data analysis with acceptable limits and the permissible limits of IS: 10500 it can be inferred that for all locations (except N1) water can be directly used for drinking purpose. However, at N1 location the values of Hardness and Calcium are in excess to those mentioned under 'Acceptable Limits' however, these can be tolerated in the absence of an alternative source.

- Analysis results of surface water reveal the following:

Parameter	Unit	Maximum	Minimum
pH	NA	7.72	7.36
DO	mg/l	6.20	4.99
BOD	mg/l	13.0	6.0
COD	mg/l	41.0	18.0
Total Coliform	MPN/100ml	1750	1200

- Based on the comparission of data obtainded after lab analysis of surface water samples with IS 2296 (*Tolerance limits of parameters are specified as per classified use of water*) it can be inferred that the surface water samples falls under Class 'C' classification, which means that water from all the sampling sources can used for drinking pupose after conventional treatment and disinfection

- In study area, it has been observed that water quality does not to vary much between the sampling locations. In case of groundwater samples, mostly the parameters fall within the permissible limits of drinking water standards. The detailed water quality reports are given in ***Annexure-3***
- For consistency check, the baseline results of ground and surface water samples were compared with the data for Paschim Burdwan provided by CGWA/WRD and were found to be in course with the same

3.3.5 Soil Environment

After the division of Bardhaman District, agrarian part now falls under Purba Bardhaman due to the presence of extensively cultivated soil while the industrial hub is in Paschim Bardhaman having rocky undulating topography with extreme lateritic type soil (unfit for cultivation).

Methodology

Soil Sampling was carried out at eight sites to understand the soil quality. Meticulous attention was paid to collect adequate amount of composite soil samples for analysis. After removing the surface vegetation cover, visible roots, plant litter, gravel, plastic materials and other foreign materials. Samples were collected by using Agar at a depth of 50, 150 and 300 cm and mixed thoroughly and analyzed as a single unit sample. The samples were packed in dependable, waterproof zip lock pouch bag and was marked specifically, accurately and distinctly and brought to the laboratory for testing. This will establish the baseline characteristics and facilitate to identify contamination if any.

Data Analysis

The soil samples were collected from eight locations around the 10 km radius of proposed project. The samples were analyzed and the results were obtained. The detailed soil quality reports are given in **Annexure-3.** The samples were collected from the selected locations **(Fig. 3.13).** The results of all the specified parameters at each location are given in **Table 3.15.**

Table 3.15: Soil Sampling Locations

Code	Location	Latitude	Longitude	Dist (Km)	Direction	Remark
S1	Project Site	23°46'33.8"N	86°51'40.6"E	--	--	Project Site
S2	Village Digari	23°46'12.1"N	86°51'42.6"E	0.6	S	Near Indutrial and Mining Area
S3	Village Maheshpur	23°46'48.7"N	86°49'37.7"E	3.29	WNW	Near Maithon PF
S4	Village Dobipur	23°46'19.0"N	86°50'34.1"E	1.7	W	Agricultural
S5	Village Alkusha	23°47'6.35"N	86°54'2.41"E	3.86	E	Near Coal Mine
S6	Village Ramchandrapur	23°48'49.5"N	86°51'08.7"E	3.9	NNW	Barren Land
S7	Village Ethora	23°44'50.4"N	86°55'04.3"E	4.7	S	Dense Habitation
S8	Village Barakar	23°43'55.8"N	86°51'10.8"E	6.3	SE	Open Scrub

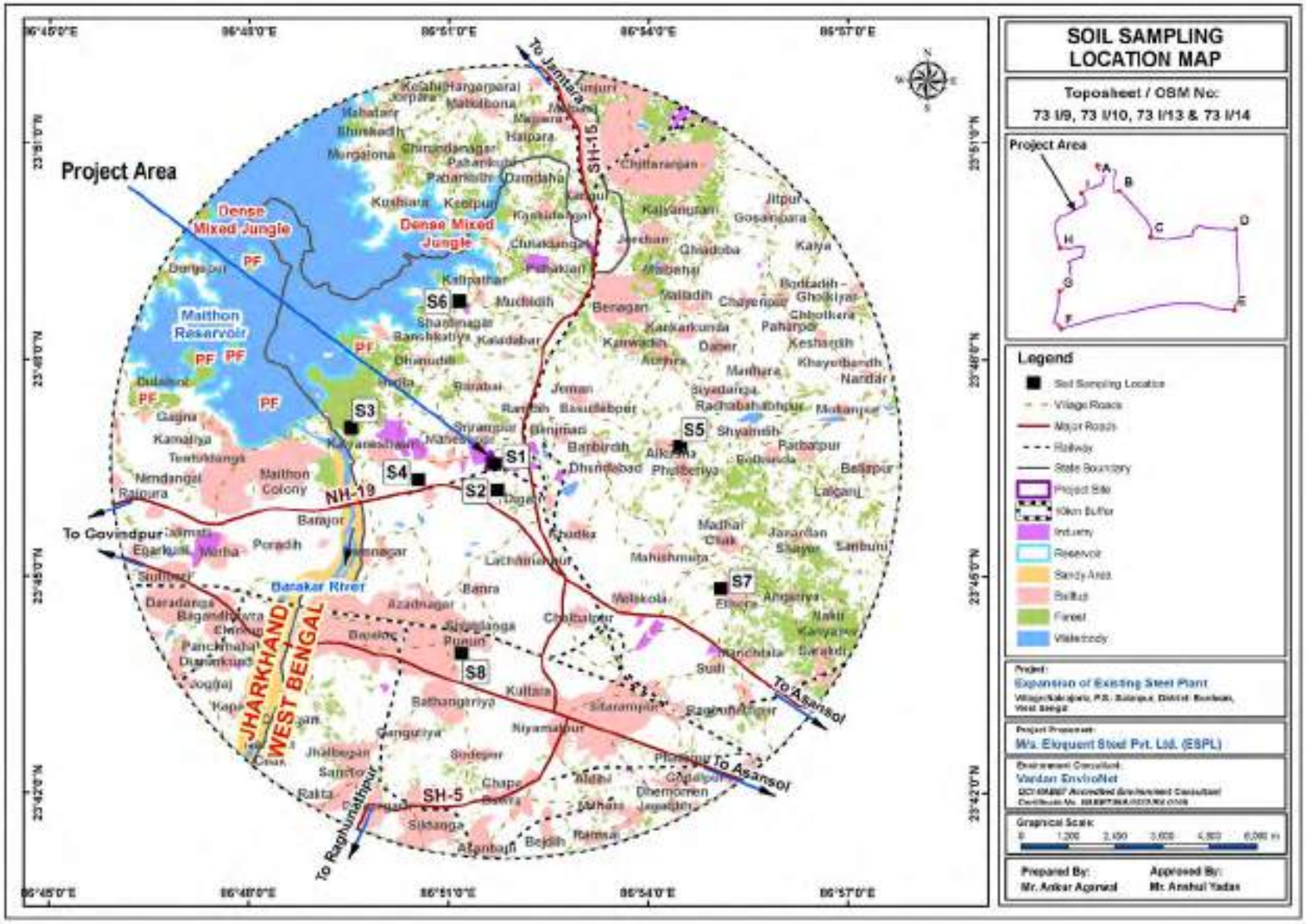


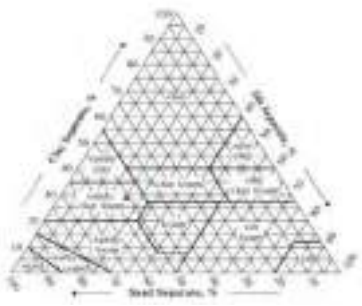
Fig 3.13: Map showing Soil Sampling Locations

Table 3.16: Physico-Chemical Properties of Soil

S.No.	Parameters	Unit	S1	S2	S3	S4	S5	S6	S7	S8
1.	pH (at 25 ^{0}C)	--	6.2	6.3	6.24	6.32	6.49	6.42	6.42	6.38
2.	Conductivity	mS/cm	0.583	0.502	0.922	0.902	0.476	0.428	0.598	0.682
3.	Soil Texture	--	Sandy – 52 Silt – 20 Clay -28	Sand-46 Silt -20 Clay-34	Sand-47 Silt-23 Clay-30	Sand – 50 Silt- 18 Clay -32	Sand- 52 Silt – 25 Clay- 23	Sand – 52 Silt - 22 Clay -26	Sand-53 Silt -22 Clay-25	Sand-52 Silt -21 Clay-27
4.	Color	--	Brownish	Brownish	Brownish	Brownish	Yellowish	Yellowish	Brownish	Brownish
5.	Water holding Capacity	%	31.80	30.08	36.12	39.20	29.48	29.26	32.63	37.45
6.	Bulk density	gm/cc	1.58	1.32	1.25	1.42	1.45	1.80	1.40	1.45
7.	Chloride as Cl	mg/100g	59.02	38.02	58.08	54.18	44.02	38.20	48.03	50.91
8.	Calcium as Ca	mg/100g	49.82	56.82	51.20	52.34	40.10	42.68	41.91	44.20
9.	Sodium as Na	mg/kg	43.20	40.26	30.45	31.98	41.56	30.26	32.91	35.40
10.	Potassium as K	kg/hec.	130.0	122.22	183.0	176.0	120.49	119.30	128.30	140.26
11.	Organic Matter	%	0.49	0.45	0.62	0.64	0.42	0.48	0.54	0.56
12.	Magnesium as Mg	mg/100g	4.38	3.90	20.85	22.56	3.74	3.30	8.20	8.92
13.	Available Nitrogen (N)	kg./hec.	212	209	240.18	238.22	202.22	198.21	226.14	232.31
14.	Available Phosphorus	kg./hec.	16.04	14.05	20.20	19.00	10.02	9.66	12.24	17.23
15.	Zinc (as Zn)	mg/kg	1.24	1.23	1.40	1.42	0.91	0.92	1.22	1.09
16.	Manganese (as Mn)	mg/kg	3.72	3.60	4.83	5.21	3.10	3.92	3.20	3.42
17.	Lead (as Pb)	mg/kg	0.42	0.34	0.32	0.22	0.32	0.65	0.26	0.22
18.	Cadmium (as Cd)	mg/kg	0.20	0.14	0.14	0.14	0.12	0.74	0.23	0.18
19.	Chromium (as Cr)	mg/kg	0.64	0.60	0.56	0.65	0.49	0.61	0.50	0.42
20.	Copper (as Cu)	mg/kg	0.36	0.76	2.61	3.12	0.42	0.78	0.45	0.98

(Source: Vardan EnviroLab)

Interpretation of Soil Samples Analysis

S. No	Parameter	Interpretation
1.	Soil Texture	The analysis of soil samples collected from the study area shows soil to be Sandy clay Loam. 
2.	pH	pH Value found between 6.2 to 6.49 which shows the soil of entire study area is Slightly Acidic in nature.
3.	Organic Matter	Organic Matter found in the study area from 0.42% to 0.64% which shows overall less organic matter. Generally at least 2 % to 3% percent of Organic matter is soil is suitable for growing lawns whereas for garden a slightly greater proportion of organic matter, or about 4 percent to 6 percent is the soil, is preferable. Samples collected from Project site (S1), near industrial and mining area (S2 & S5), barren land (S6) or from built-up area (S7) shows less amount of Organic matter presence in the soil as compared to samples collected from agricultural land (S4), near PF (S3) or from open scrub area (S8).
4.	Nitrogen	Nitrogen found in entire study area is ranging from 198.21 to 240.18 Kg/ha shown presence of Nitrogen from less to moderate proportion in the soil. Samples collected from from agricultural land (S4), near PF (S3) or from open scrub area (S8) possess sufficient amount of nitrogen for plant growth. Therefore, some nitrogen fixation crops or plants shall be grown in these area for increasing the production or greencover.
5.	Phosphorus	Value of Phosphorus is entire study area found ranging from 9.66 to 20.20 Kg/Ha. Least Value of Phosphorus is obtained at S6 which is a barren land and highest value is obtained at S3 and S4 whicha are from area near PF and agricultural land respectively.
6.	Potassium	Potassium value found ranging from 119.30 to 183.0 kg/ha falling under less to medium range. Samples collected from barren land or from area dominated by built-up structure show less amount of Potassium whereas samples collected from agriculture field are showing higher value of Potassium. This is due to use of variety of fertilizer in the crop field.
7.	Colour	Soil color found in overall study area is Yellowish to Brownish. These soils low water holding capacity and hence effect the plant growth.
8.	Conductivity	Conductivity found below 1.0mS/cm which is good for germination. If

		value found above 1.0mS/cm to 3.0mS/cm then it became harmful for germination and crops.

Comparision of primary soil data with the Soil Classification from Hand Book of Agriculture, Indian Council of Agricultural Research indicates that soil quality of samples collected from area near PF, from Agricultural area and other area is comparatively good for crop and plantation. Soil quality in and around the project site is not suitable for plantation work due to the presence of number of industries and mining sites in its vicinity.

Project authority shall be adding Vermi-Compost to soil before and during plantation work at the project site. It is an organic fertilizers and act as soil conditioners as it enhances plant growth, suppresses disease in plants, increases porosity and microbial activity in soil, and improves water retention and aeration. Vermicompost also benefits the environment by reducing the need for chemical fertilizers and decreasing the amount of waste going to landfills.

Also, PP may take initiatives in giving awareness and technical support to farmers for practicing crop rotation or planting nitrogen fixing crops once in two years and for using Vermicompost under its CSR initiatives. This will help the locals while doing agriculture practices.

3.3.6 Land Use and Land Cover

Data Used

United States Geological Survey Satellite Data: Landsat 8 cloud free data has been used for Land use /Land cover analysis, Satellite Sensor–OLITIRS multi-spectral digital data has been used for the preparation of land use/ land cover map of present study. Survey of India reference map on 1:50,000 scales have been used for the preparation of base map and geometric correction of satellite data. Ground truthing has been carried out to validate the interpretation accuracy and reliability of remotely sensed data, by enabling verification of the interpreted details and by supplementing with the information, which cannot be obtained directly on satellite imagery.

Methodology Adopted for Thematic Data Extraction from the Satellite Imageries

ERDAS image processing 10.0 software and ARC/GIS 10.0 were used for the project. ERDAS 10.0 image processing software was used for digital processing of the spatial data.

Digital image processing techniques were applied for the mapping of the land use land cover classes of the provided area from the satellite data. Methodology Used for Land use Classification and Mapping is presented in **Fig. 3.14.**

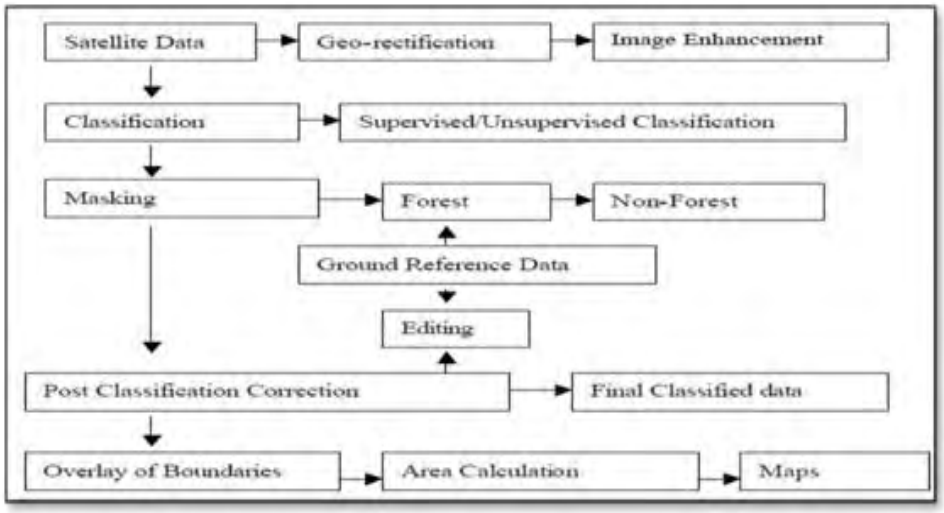


Fig 3.14: Methodology Used for Land use Classification and Mapping

Results: A standard False Color Composite (FCC) image has also been generated on the same scale. The proposed project site is located on land with scrub land use class. Results are given in **Table 3.17.**

Table 3.17: Land Use/ Land Cover analysis

Land use	Area (in Hectares)	% Area
Sandy Area	299	0.9
Waterbody	3941	12.2
Builtup	4829	14.9
Agriculture Land	11536	35.7
Fallow Land	2936	9.1
Forest	2889	8.9
Open Scrub	3477	10.8
Rocky Land	1355	4.2
Wasteland	783	2.4
Industrial	267	0.8
Total Area	**32312**	**100**

(*Source: Land Use Map)*

Conclusion: The proposed study area consisting 35.7% (11536 ha.) of Agriculture land, 14.9% (4829 Ha.) of Builtup Area, 12.2% (3941 Ha.) area as waterbody, 10.8% (3477 Ha.) of open scrub area and 9.1% (2936 Ha.) of Fallow Land. The landscape of the study area represents a complex of rural habitation, emerging industrial establishment, conversion of agricultural land in to residential area.

The detailed satellite imagery and Land use and land cover map is given in Fig. 3.15. & 3.16. The Contour map and Digital elevation map of the study area is given in Fig 3.17 and Fig 3.18 respectively.

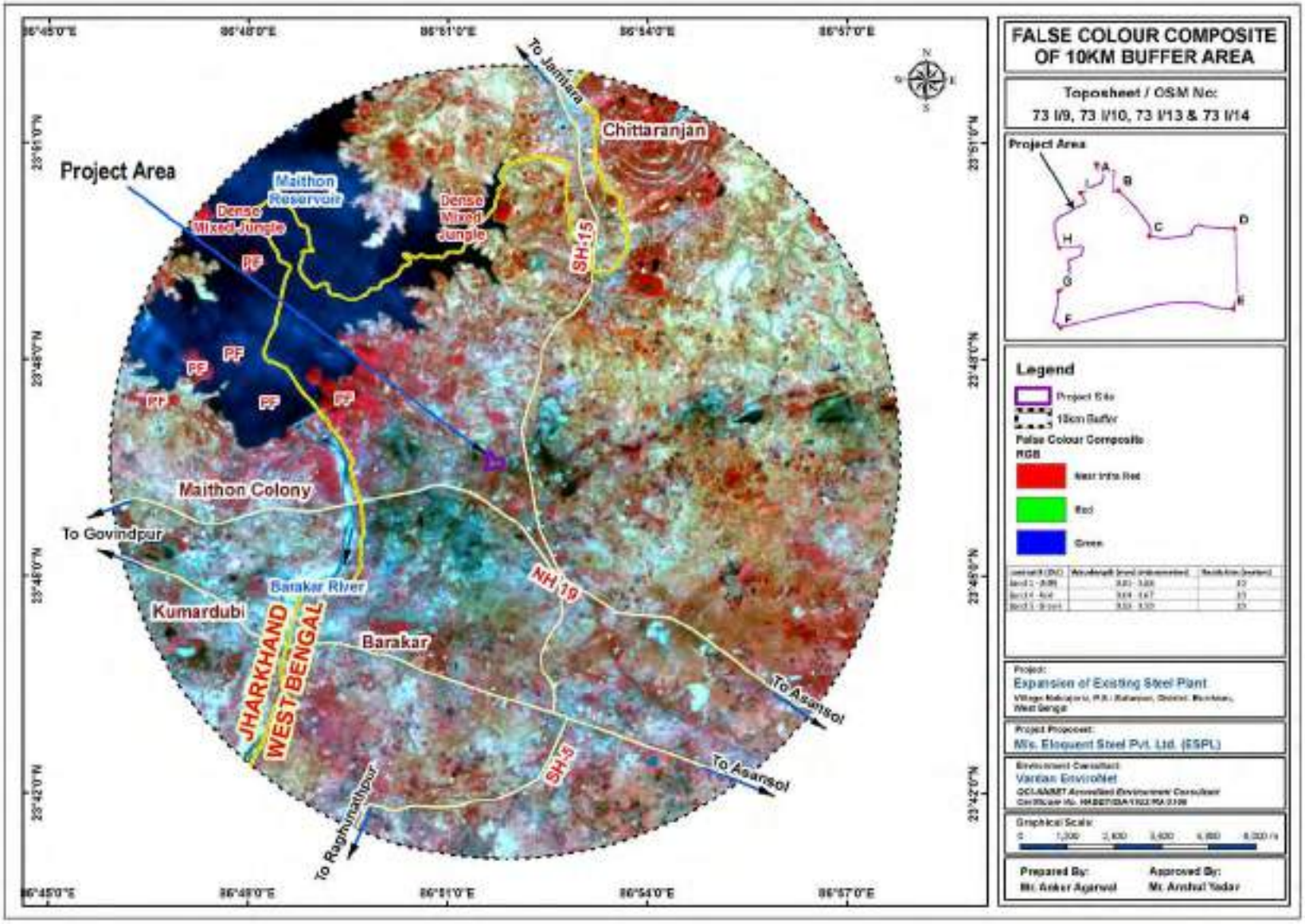


Fig 3.15: Satellite imagery of 10 km Study Area

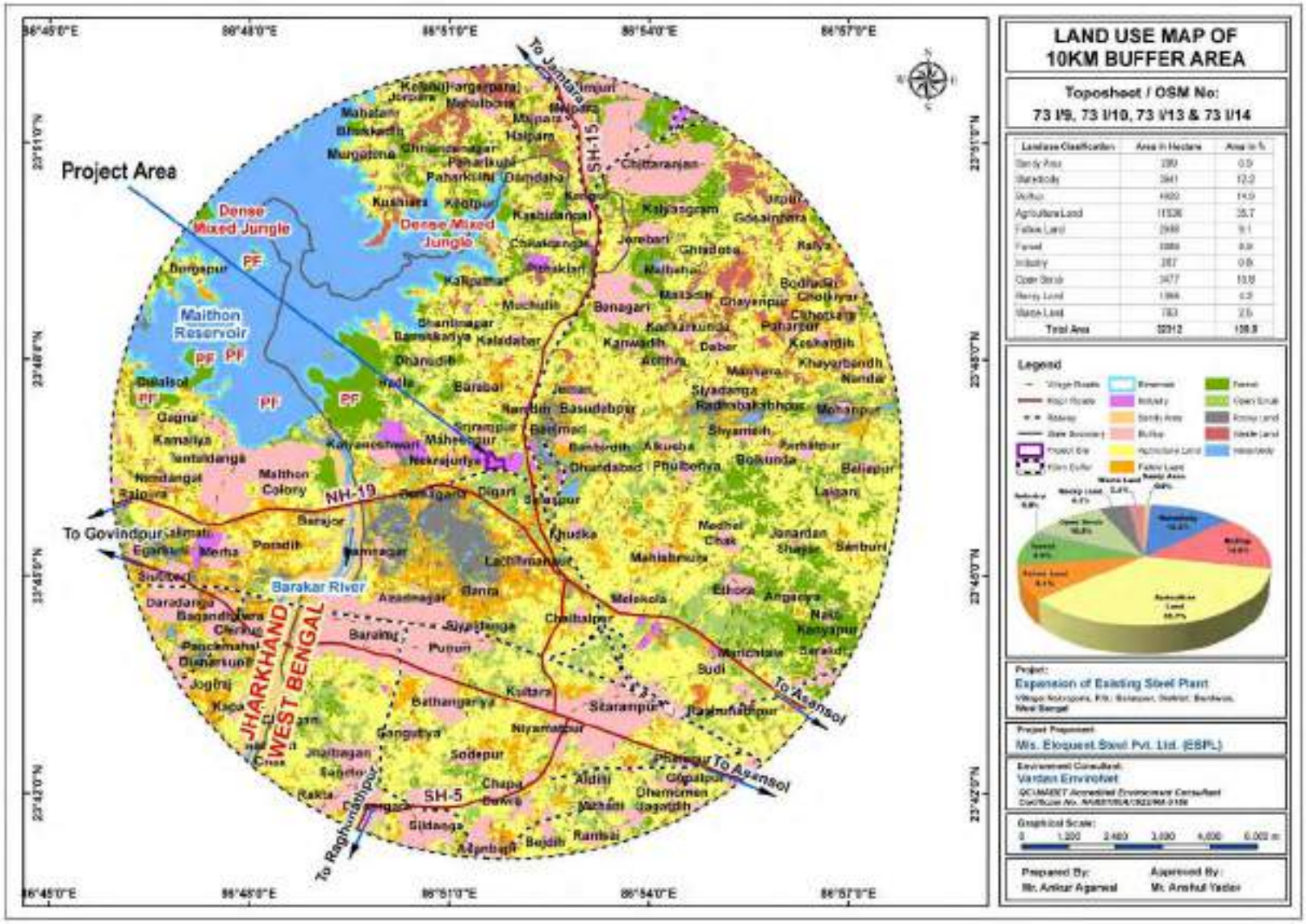


Fig 3.16: LULC map of 10 km Study Area

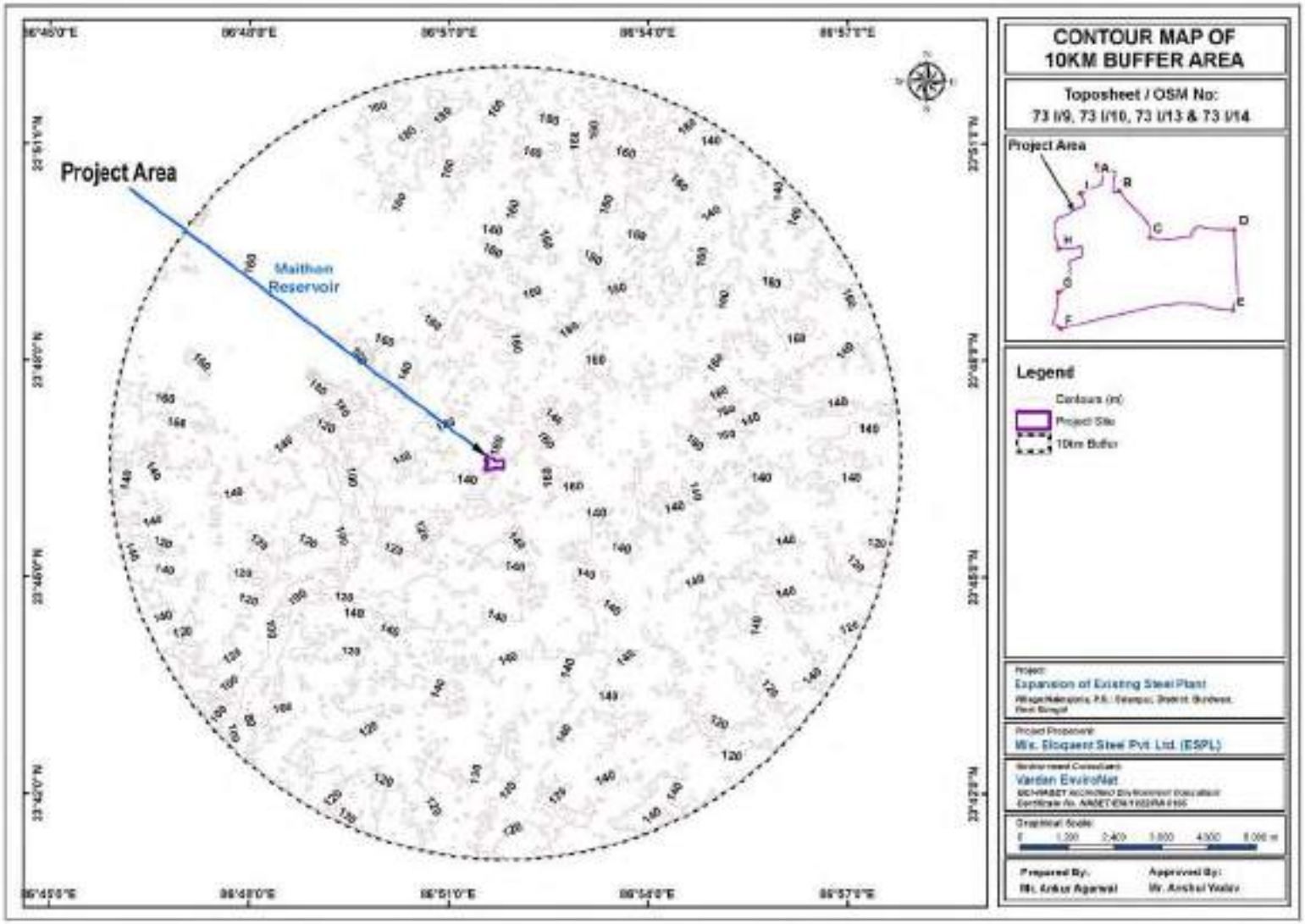


Fig. 3.17: Contour map of 10 km Study Area

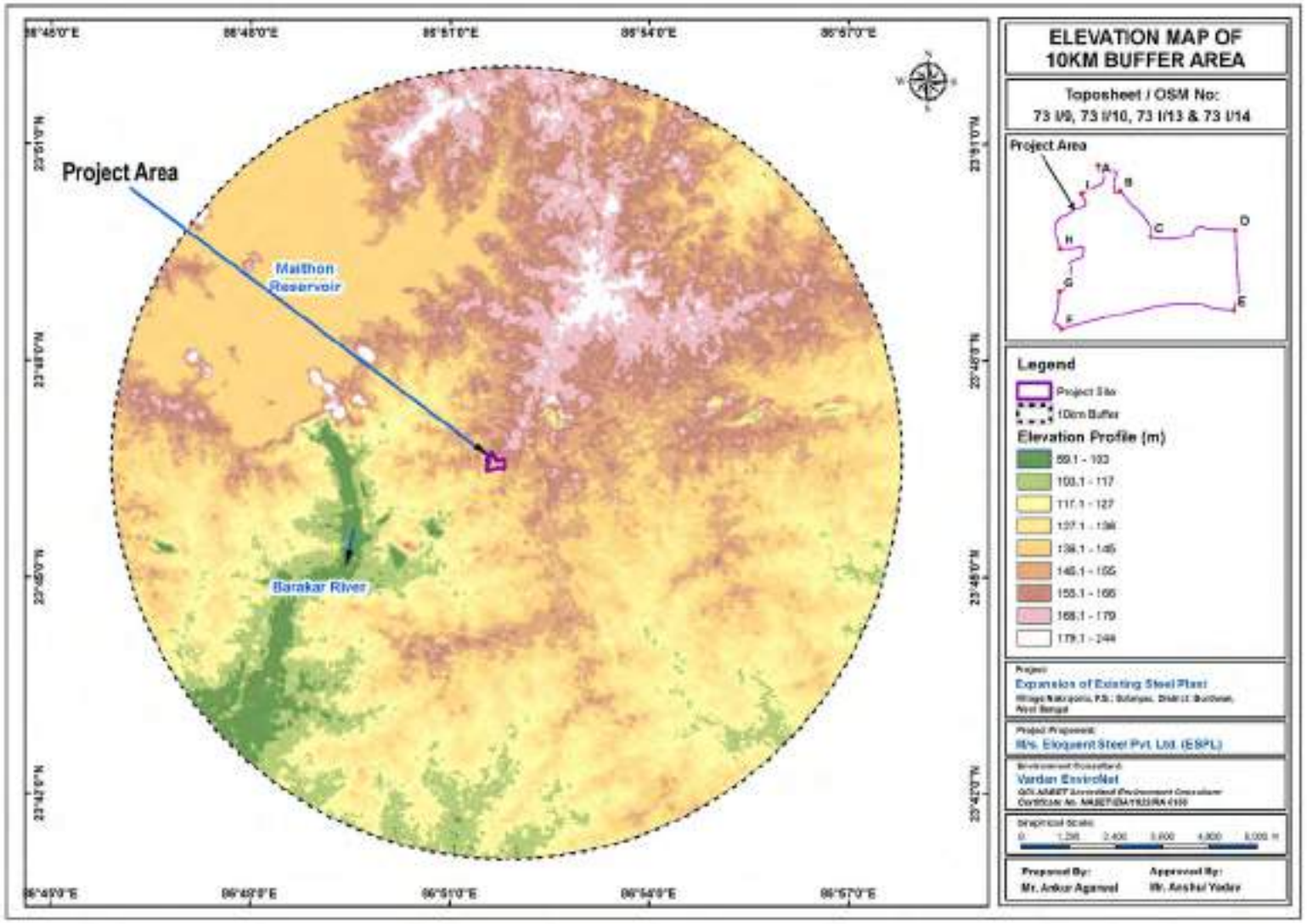


Fig. 3.18: Digital Elevation Map of 10 km Study Area

3.3.7 Geological and Geo-Hydrological Status of the Study Area

3.3.7.1 Geomorphology and Soil Details

In general, the state of West Bengal is a flat terrain, crisscrossed with rivers except the Himalayan foothills in the north and Chotanagpur plateau in the south-west. Southern flowing Ganga River and its numerous tributaries & distributaries mainly drain the State. The Ganga River system encompasses the catchment areas of the Mahananda, Jalangi, Bhairab etc. in the eastern part and the Mayurakshi, Ajoy, Damodar, Dwarakeshwar and Kasai in the western part. The Teesta, Torsa and Jaldhaka streams of the Brahmaputra river system originate in the Himalayas and drain the northern part of the State. Beside these, there is a small independent river basin, namely Subarnarekha basin covering southwestern part of the State in Medinipur district. Physiographically, the area incorporates extra – peninsular region of the north, peninsular mass of the south – west, and alluvial and deltaic plains of the south and south-east.

3.3.7.2 Hydrogeological Details

The southern part of the district is underlain by Granite-gneiss of Achaean age forming the basement. These occur as large batholiths and are intruded by basic rocks. In the central and northern part of the district the rocks of Barakar formation consisting of feldspathic sandstones, shales and coal seams overlying the metamorphics are exposed. In the western and northern part of the district alluvial cover of moderate thickness, caps the Archaean crystallines and the Gondwana sedimentaries.

In the major part of the district, ground water occurs in thick unconsolidated Quatrnaries & Tertiaries deposited under fluviatile environment; the sand and/or gravel in different proportions of this formation constitute the main aquifers and they occur down to 295m bgl in the central and eastern part of the district. Deeper aquifers occur under semi-confined to confined condition. Palaeozoic- Mesozoic-Tertiary sequence of Gondwana supergroup of sedimentarias occurs under both unconfined and confined conditions down to 150.35m bgl. Groundwater in the extreme northwestern small part of Salanpur Block occupied by the archaeanmetamorphics occurs down to a depth of about 82m bgl under both unconfined and confined conditions down to 150.35m bgl. It mainly occurs under unconfined condition in the dug well zone and under semi-confined toconfined condition in the deeper horizons

Aquifer characteristics: Tube wells in the central & eastern part constructed tapping both semi-confined and confined aquifers are characterized generally medium duty (50-150 m^3/hr) to heavy duty (>150 m^3/hr) yieldwith nominal drawdown of 4-5m. Transmissivity (T) values ranges from 30.77-1700 m2 /day and the storativity ranges from $2.0x10^{-4}$ to $188x\ 10^{-4}$. The aquifers of Gondwana sedimentaries and archaean metamorphics show Transmissivity values ranging from 40 to 50m^2 /day and Storativity value is about$14x10^{-4}$.

Depth of Water Levels Pre-Monsoon & Post Monsoon

During Pre Monsoon period (May 2020), the depth to water levels ranged from 2.8 to 19.03 m bgl. Depth to ground water levels during the post monsoon period (November 2020) varied between 1.03 to 15.00 mbgl.

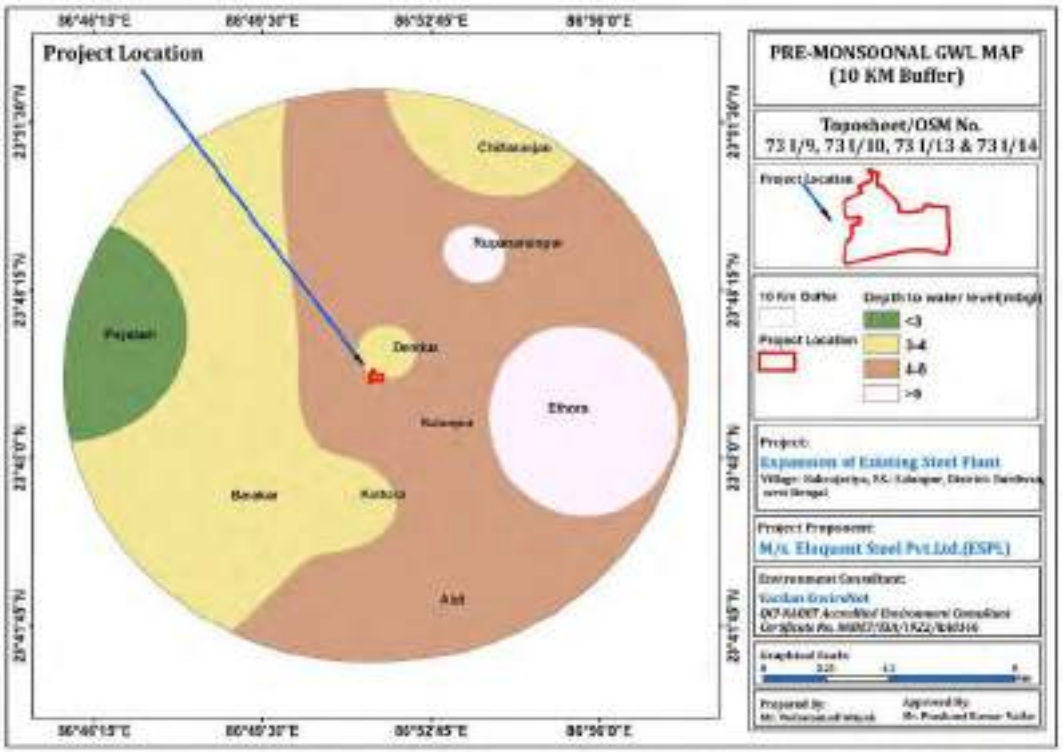


Fig 3.19(a): Pre-Monsoon Water Level of Study Area

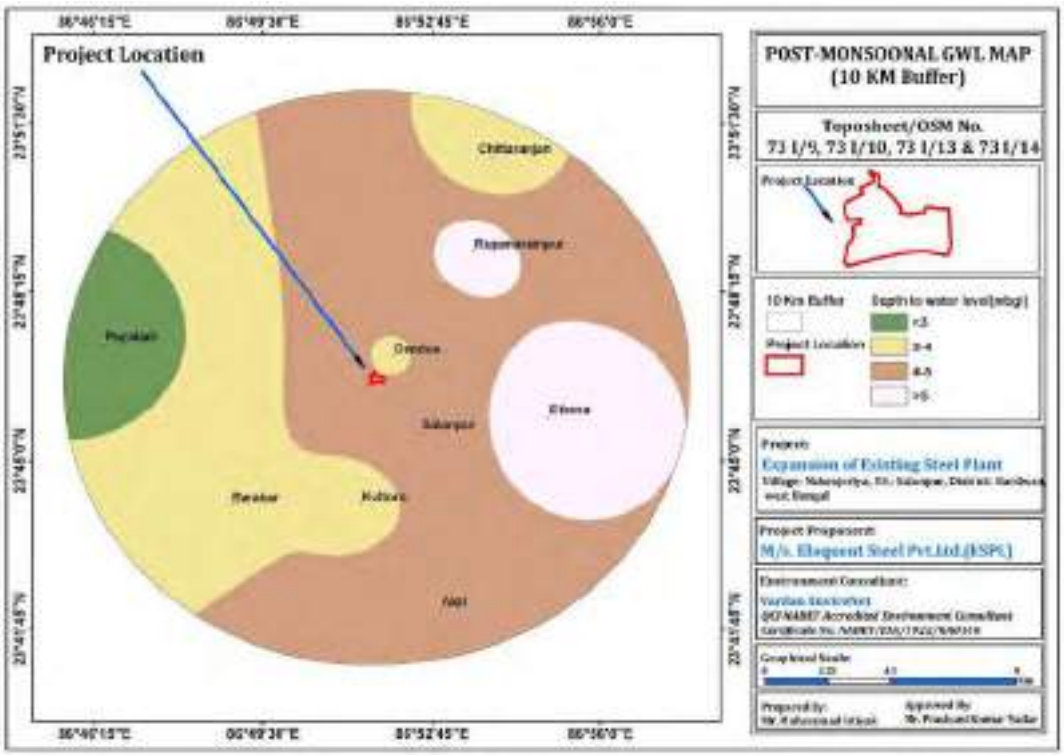


Fig 3.19(b): Post Monsoon Water Level Map of Study Area

3.3.7.3 Site Specific Hydrogeology

According to CGWB, 2013 report the occurrence of aquifer and potentiality of this block generally lies between in the depth ranges of 2–32mbgl and 34-82mbgl with transmissivity ranges between 40-50 m^2/day and Storativity is 14 x 10^{-4}.

At the site depth to water levels during pre-monsoon period (May 2020) and post Monsoon period (November 2020) varies from 3-6mbgl and 1.4-5 mbgl respectively.

Maithion Reservoir: Maithan Reservoir's catchment (C: 6572 km^2) comprises moderately fertile river valley including deciduous forest cover. It is the second largest reservoir after Panchet under Damodar Valley Corporation (DVC), impounded to serve the very purposes of flood control, irrigation, water supply and hydroelectricity.

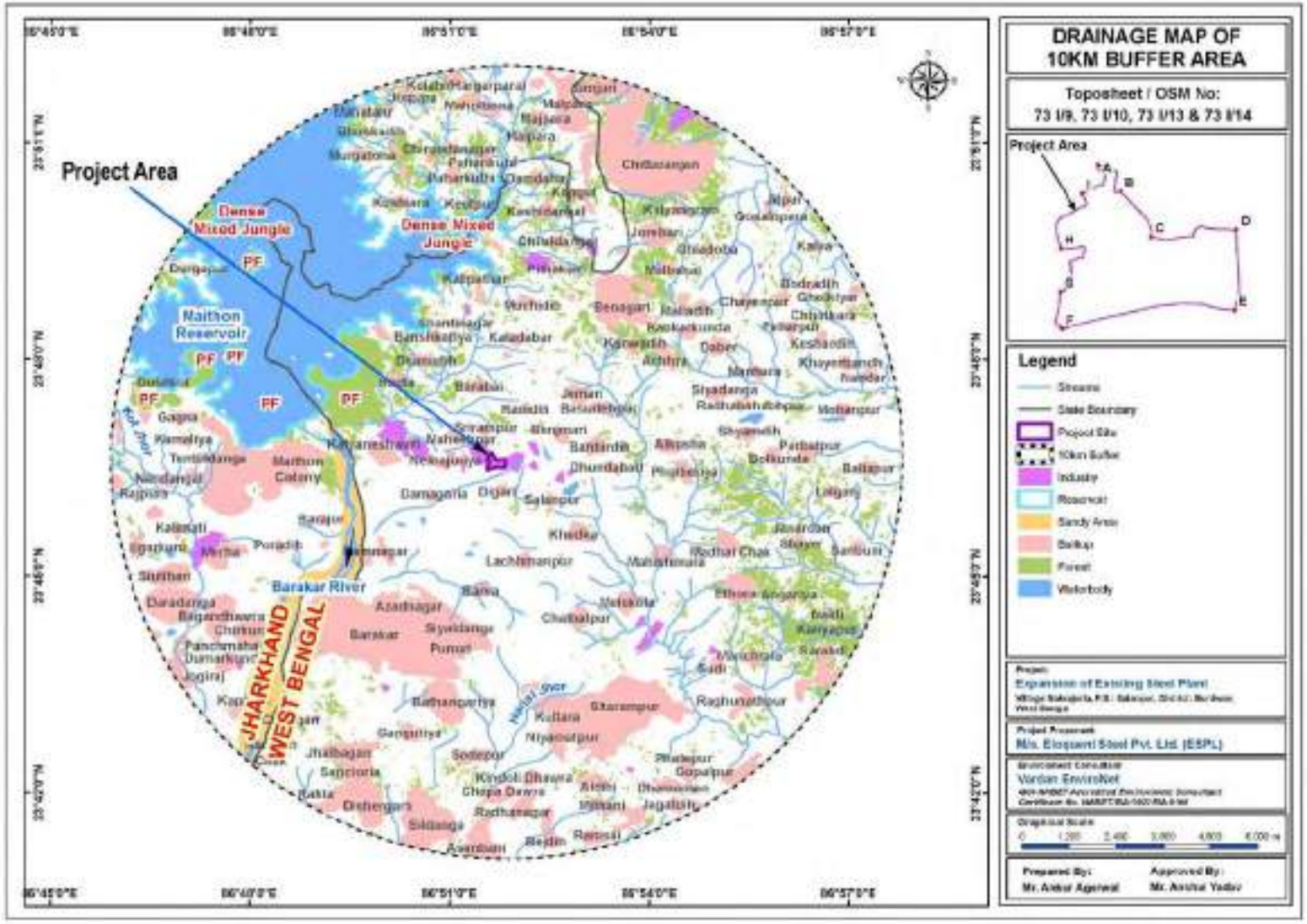


Fig 3.20: Drainage Map of Study Area

3.3.8 Socio-Economic Environment

Any developmental activity exerts a direct impact on the socio-economic environment of the region. Usually, the beneficial impacts such as better job opportunities, improved education, communication, energy, housing, health, transportation facilities etc. outweighs the adverse impacts, if any.

The study of socio-economic component of environment is incorporating various facets, viz. demographic structure, availability of basic amenities such as housing, education, health and medical services, occupation, water supply, sanitation, communication and power supply, prevailing diseases in the region as well as features such as places of tourist attraction and monuments of archaeological importance. The study of these parameters helps in identifying predicting and evaluating the likely impacts due to project activity in the surrounding region.

Baseline data such as demographic pattern, occupational status, educational, health and other amenities as existing in the study area have been studied.

Baseline Status

The latest available data has been complied to generate the existing socio-economic scenario of the study area. Information on socio-economic profile was collected from the Primary Census Abstract CD 2011 including the population details of the region.

The Socio-Economic Status of the study areas is mentioned below and the villages surveyed are enlisted in **Table 3.18.**

Table 3.18: List of the Villages for Field Survey

S.No.	Villages
1.	Nakrajuria
2.	Salanpur
3.	Khudika
4.	Dendua
5.	Hadla
6.	Maheshpur
7.	Miliakhola
8.	Gagna
9.	Jemari
10.	Kulti

Study Area

The study area was defined as an area within 10 km radius around the project site which includes total 84 villages and 11 urban areas that are from Salanpur and Barabani Tehsil

of Bardhaman District, of West Bengal and Nirsa Cum Chirkunda Tehsil of Dhanbad District of Jharkhand state.

3.3.8.1 Demographic Structure of Study Area

Rural Area

Demographic structure of the study area was estimated for the selected parameters as households, population, sex ratio, scheduled caste, scheduled tribes, literacy from primary census abstract, CD 2011 of West Bengal State. The summarized demographic structure of the study area with rural and urban area is presented in **Table 3.19**.

Table 3.19: Summarized Demographic Structure of the Study Area

Sl. No.	Parameter	Study Area	
		Rural	Urban
1.	No. of Villages	84	11
2.	Households	20,963	87,867
3.	Household Ratio	5.0	5.1
4.	Total Population	105,858	456,523
5.	Male Population	54,539 (51.52%)	237,859 (52.10)
6.	Female Population	51,319 (48.47%)	218,664 (47.89)
7.	Population (0-6 Years.) %	13,411 (12.66)	50,854 (11.13)
8.	Sex Ratio	940	919
9.	Child Sex Ratio	941	914
10.	Scheduled Caste %	31,921 (30.15)	97,361 (21.32)
11.	Scheduled Tribes %	17,206 (16.25)	19,640 (4.30)
12.	Literates %	64,347 (66.78)	314,089 (68.80)
13.	Main Workers %	23,194 (21.91)	110,490 (24.20)
i.	Cultivators	1,512 6.51)	1,549 (1.41)
ii.	Agricultural Labourers	1,618 (6.97)	1,245 (1.13)
iii.	Household Labourers	413 (1.78)	1,850 (1.67)
iv.	Other Workers	19,651 (84.72)	105,846 (95.79)
14.	Marginal Workers %	11,240 (10.61)	25,319 (5.54)
15.	Non-Workers %	71,424 (67.47)	320,714 (70.25)

(Source: Source: PCA Census 2011, West Bengal State& Jharkhand)

Table 3.20: Demographic Structure of the Study Area (Rural Area)

Sr.No.	Villages	Households	Total Population	Population 0-6 Years	Scheduled Caste	Scheduled Tribes	Literates
West Bengal State							
Bardhaman District							
Salanpur Tehsil							
1.	Nakrajuria	509	2746	417	912	515	1522
2.	Salanpur	885	4739	658	1711	194	2909
3.	Khudika	725	3630	385	1467	0	2376
4.	Dendua	441	2297	272	338	16	1606
5.	Barabai	228	1259	177	0	1072	659
6.	Dhanudi	65	417	70	0	0	234
7.	Hadla	524	2479	328	182	300	1696
8.	Maheshpur	195	1184	170	268	784	644
9.	Srirampur	84	505	79	0	0	189
10.	Dhundabad	220	1002	85	452	0	665
11.	Banbirdi	283	1312	151	464	0	949
12.	Basudebpur	587	3098	392	1204	17	2057
13.	Jemari	795	4321	683	2007	104	2255
14.	Dhaminberia	48	261	42	261	0	65
15.	Amjharia	58	271	49	271	0	80
16.	Harishadi	507	2328	229	242	11	1840
17.	Patal	187	908	100	366	0	601
18.	Mahishmura	167	941	132	0	0	577
19.	Bara Pattabara	----------Uninhabitated----------					
20.	Miliakhola	323	1532	170	802	0	927
21.	Dharmma	0	0	0	0	0	0
22.	Ethora	904	4547	513	1922	288	2731
23.	Angaria	129	576	34	46	0	464
24.	Paharpur	162	766	79	97	106	388
25.	Manahara	164	972	103	413	280	606
26.	Malladih	123	626	79	75	369	322
27.	Kankurkunda	41	229	35	107	115	147
28.	Achhra	546	2583	336	1190	99	1593
29.	Dabar	478	2443	326	985	337	1490
30.	Alkusha	306	1420	229	833	160	677
31.	Phulberya	423	1918	198	589	4	1340
32.	Sadhna	68	343	34	175	0	178
33.	Lohat	168	930	121	369	0	569
34.	Radhaballavpur	490	2422	390	1207	539	1365

Sr.No.	Villages	Households	Total Population	Population 0-6 Years	Scheduled Caste	Scheduled Tribes	Literates
35.	Shyamdi	674	3265	431	1915	68	1920
36.	Pahargara	186	966	158	568	153	372
37.	Mohanpur	33	181	29	132	0	99
38.	Parbbatpur	235	989	123	359	0	618
39.	Bolkunda	326	1351	136	557	10	971
40.	Bolkunda	326	1351	136	557	10	971
41.	Barbakpur	----------Uninhabitated----------					
42.	Madhaichak	93	521	52	0	513	249
43.	Kallya	140	703	119	196	197	327
44.	Seakulberia	99	556	72	19	451	272
45.	Kirtanshala	172	811	95	527	56	580
46.	Kalisanko	219	1127	134	193	280	698
47.	Chayenpur	133	783	99	345	0	527
48.	Dharaspur	132	759	97	232	110	504
49.	Keshardi	81	396	53	210	165	187
50.	Pithakiari	557	2782	250	782	288	1843
51.	Majhladi	106	518	78	0	0	343
52.	Muchidi	215	1048	130	77	701	510
53.	Pratappur	147	697	73	7	346	437
54.	Alladi	473	2384	302	34	21	1604
55.	Bathanbari	139	941	110	0	345	577
56.	Sidhabari	148	745	113	244	147	357
57.	Banskatia	108	553	54	0	550	275
58.	Ramchandrapur	220	1111	129	272	192	627
59.	Kalipathar	307	1513	221	0	237	933
60.	Brindabani	154	761	116	126	84	304
61.	Damdaha	191	952	121	210	243	553
62.	Dhanguri	274	1318	148	1156	82	926
63.	Ghiadoba	738	3388	289	252	1050	2417
Total		**17459**	**87475**	**10934**	**27925**	**11609**	**53722**
Barabani Tehsil							
64.	Taldanga (B)	155	768	85	9	440	422
65.	Lalganja (B)	569	2667	321	895	297	1671
66.	Janarddan Sayer (B)	49	216	14	27	0	193
67.	Kanyapur (B)	282	1593	213	724	197	995
Total		**1055**	**5244**	**633**	**1655**	**934**	**3281**
Dhanbad District							
Nirsa-Cum-Chirkunda Tehsil							

Sr.No.	Villages	Households	Total Population	Population 0-6 Years	Scheduled Caste	Scheduled Tribes	Literates
68.	Kalimati	369	1832	250	578	572	1022
69.	Kesharkural	239	1376	200	220	464	830
70.	Kamaliya	278	1538	249	595	389	916
71.	Puyaladi	195	977	179	0	210	518
72.	Gagna	299	1682	200	106	1146	945
73.	Raghunathpur	25	157	16	0	156	68
74.	Durgapur	45	278	49	0	272	156
75.	Majhiladi	38	168	31	0	168	88
76.	Chelyagi	----------Uninhabitated----------					
77.	Bankata	----------Uninhabitated----------					
78.	Dhabkol	----------Uninhabitated----------					
79.	Beliyad	241	1350	183	272	737	604
80.	Barajar	112	608	50	0	245	277
81.	Baramuri	39	170	23	22	114	33
82.	Jagrad	364	2009	281	548	14	1196
83.	Rangametya	28	178	32	0	27	111
84.	Talberia	177	816	101	0	149	580
Total		**2449**	**13139**	**1844**	**2341**	**4663**	**7344**
Grand Total		**20963**	**105858**	**13411**	**31921**	**17206**	**64347**

(Source: PCA Census 2011, West Bengal & Jharkhand State)

Table 3.21: Demographic Structure of the Study Area (Urban Area)

Sr.No.	Villages	Households	Total Population	Population 0-6 Years	Scheduled Caste	Scheduled Tribes	Literates
West Bengal							
Barddhaman District							
1.	Kulti (M)	58358	313809	35385	69290	13622	209952
2.	Maithon (CT)	3717	18830	1822	2830	1128	14611
3.	Chirkunda (NP) WARD NO.-0019	379	1853	219	481	24	1170
4.	Dumarkunda (CT)	2146	11434	1574	4083	686	6401
5.	Panchmahali (CT)	913	4832	664	1145	1	2996
6.	Siuliban (CT)	4550	24125	3299	2502	279	16062
7.	Mera (CT)	1375	7051	932	1885	236	4435
8.	Maithon (CT)	3717	18830	1822	2830	1128	14611
9.	Egarkunr (CT)	2338	11829	1704	3670	743	7254
10.	Panchmahali (CT)	913	4832	664	1145	1	2996
11.	Chittaranjan (CT)	9461	39098	2769	7500	1792	33601
Total		**87867**	**456523**	**50854**	**97361**	**19640**	**314089**

(Source: PCA Census 2011, West Bengal & Jharkhand State)

i. Household and Population

Total number of households in the study area of rural region is about 20,963 with total population of about 105858 in rural with male population about 54,539(51.52%) and female population is 51,319(48.47%). While the number of households in the urban area coming in the study area is about 87,867 with total population of about 456,523 and the male population is about 237,859(52.10%) and Female Population of about 218,664 (47.89%). The average family size i.e persons per family is about 5.0 in rural area and 5.1 in urban area.

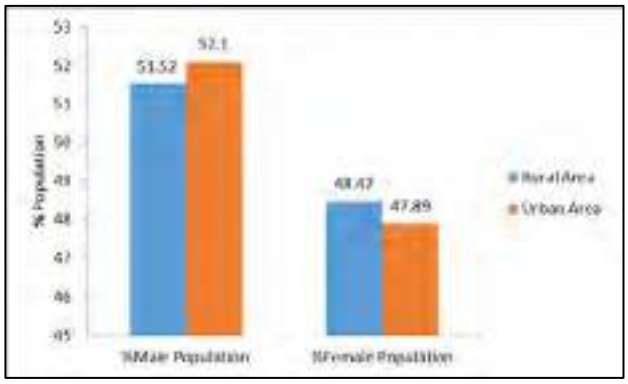


Fig 3.21: Bar Diagram showing %Male and %Female Population in Study Area

ii. Population 0-6 Age-Group

Out of the total population, the population of children within the age of 0-6 age-group in rural area is about 13,411 (12.66%) and in urban area is 50,884 (11.13%).

iii. Sex Ratio & Child Sex Ratio

Sex ratio (No. of females per 1000 males) is 940 in rural area and 941 in urban area of the study area which indicates that females are less in number than their male counterpart in rural and urban area. But it can be inferred that the female population higher in urban area than the rural area. Child Sex ratio is 919 in rural area and 914 in urban area i.e no.of female child per 1000 male child. It can be concluded from the data that adult female is lower than the female child population in the rural area while the adult sex ratio is higher in the urban area. The graphical presentation of the distribution of population is given in fig below:

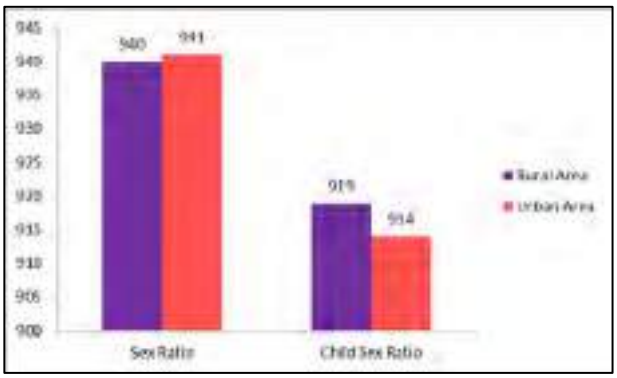


Fig 3.22: Bar Diagram showing Sex Ratio and Child Sex Ratio in Study Area

iv. Scheduled Caste and Scheduled Tribes Population

Scheduled caste population in study area is about 31921 i.e 30.15% in rural area and 97361(21.32%) in urban area. Scheduled tribe population in study area is about 17206 i.e 16.25% in rural area and 19,640 (4.30%) in urban area.

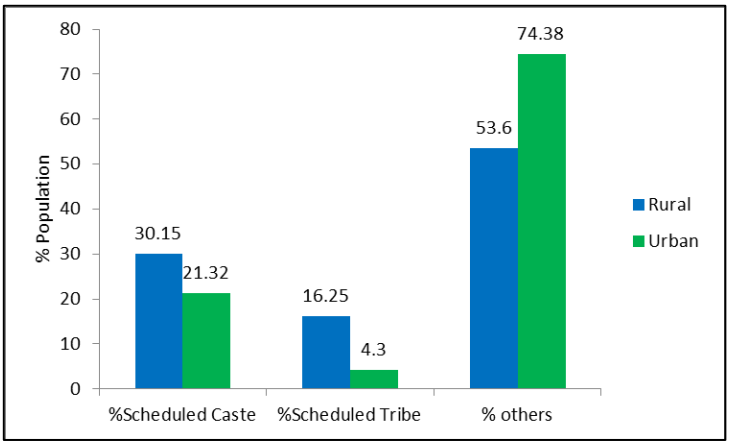


Fig 3.23: Bar Diagram showing % SC, ST and others in Rural & Urban Area

v. Literacy Rate in the Study Area

Out of the total population 64,347 i.e 66.78% literates are from rural area. Male population are more literates (58.98%) than female literates are very low about (41.01%) while the literacy status in urban area is about 314,089 i.e 68.80% with male literates about 178,459 (56.81%) and female literates about 135,630 (43.18%) in the study area.

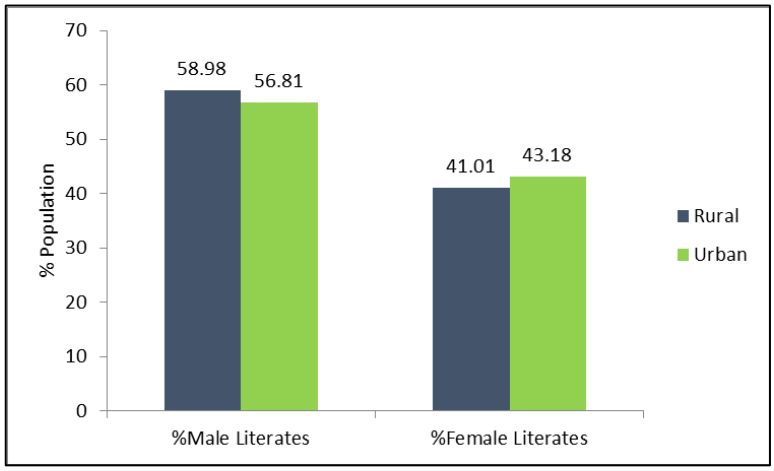


Fig 3.24: Bar Diagram Showing Population Male and Female Literates in Study Area

It can be inferred from the demographic data obtained that the study area is densely populated and has child female population more as compared to adult female population. Also, the literacy level of the region is low and literacy rate need to be enhcanced. Scheduled tribe population covers near about half of the total population and scheduled caste population is less in the area.

3.3.8.2 Occupational Pattern in the Study Area

'Work' has been defined as participation in any economically productive activity. Such participation may be physical or mental. Persons on leave and under training are also treated as workers. However, rent receivers and pensioners are not treated as workers.

Total Workers

Occupational pattern of the rural and urban area within 10 km is given in **Table 3.22 and 3.23.** Occupational pattern of any region mainly depends upon its economically active group i.e. the working populations involved in different economically productive activities. The total workers further categorized as main worker, marginal and the non-working population.

Table 3.22: Occupational Structure of the Study Area (Rural Area)

Sr. No.	Villages	Total Main Workers	Main Workers				Marginal Workers	Non-Workers
			Cultivators	Agricultural Laborers	Household Laborers	Other Workers		
West Bengal State								
Barddhaman District								
Salanpur Tehsil								
1.	Nakrajuria	472	2	0	5	465	383	1891
2.	Salanpur	1147	30	16	16	1085	320	3272
3.	Khudika	984	71	43	10	860	238	2408
4.	Dendua	686	5	47	0	634	35	1576
5.	Barabai	378	141	11	5	221	225	656
6.	Dhanudi	10	0	0	0	10	100	307
7.	Hadla	461	4	2	3	452	281	1737
8.	Maheshpur	329	4	158	1	166	92	763
9.	Srirampur	51	1	0	1	49	94	360
10.	Dhundabad	217	1	2	2	212	94	691
11.	Banbirdi	397	29	4	8	356	85	830
12.	Basudebpur	503	40	37	15	411	356	2239
13.	Jemari	1024	14	12	5	993	205	3092
14.	Dhaminberia	61	0	0	0	61	14	186
15.	Amjharia	74	0	0	0	74	18	179
16.	Harishadi	708	23	0	1	684	59	1561
17.	Patal	167	43	9	3	112	138	603
18.	Mahishmura	37	1	0	0	36	265	639
19.	Bara Pattabara	0	0	0	0	0	0	0
20.	Miliakhola	246	9	11	6	220	215	1071
21.	Dharmma	0	0	0	0	0	0	0
22.	Ethora	851	107	126	18	600	697	2999
23.	Angaria	206	33	1	2	170	28	342
24.	Paharpur	249	9	0	0	240	6	511
25.	Manahara	106	77	1	0	28	367	499
26.	Malladih	229	24	5	1	199	4	393

Sr. No.	Villages	Total Main Workers	Main Workers				Marginal Workers	Non-Workers
			Cultivators	Agricultural Laborers	Household Laborers	Other Workers		
27.	Kankurkunda	76	21	33	0	22	6	147
28.	Achhra	644	56	124	7	457	135	1804
29.	Dabar	350	12	12	18	308	454	1639
30.	Alkusha	368	11	9	3	345	114	938
31.	Phulberya	303	45	2	10	246	342	1273
32.	Sadhna	80	3	20	0	57	45	218
33.	Lohat	125	6	4	0	115	184	621
34.	Radhaballavpur	664	8	1	6	649	81	1677
35.	Shyamdi	546	7	31	7	501	508	2211
36.	Pahargara	184	41	27	0	116	150	632
37.	Mohanpur	20	3	4	1	12	47	114
38.	Parbbatpur	215	19	73	0	123	221	553
39.	Bolkunda	318	7	0	1	310	132	901
40.	Bolkunda	318	7	0	1	310	132	901
41.	Barbakpur	0	0	0	0	0	0	0
42.	Madhaichak	192	46	1	0	145	10	319
43.	Kallya	190	5	43	0	142	22	491
44.	Seakulberia	23	2	0	1	20	114	419
45.	Kirtanshala	37	0	0	2	35	201	573
46.	Kalisanko	158	31	24	2	101	217	752
47.	Chayenpur	229	6	3	12	208	39	515
48.	Dharaspur	211	36	4	6	165	61	487
49.	Keshardi	3	0	0	0	3	96	297
50.	Pithakiari	587	25	38	5	519	187	2008
51.	Majhladi	145	8	106	0	31	4	369
52.	Muchidi	285	23	4	11	247	69	694
53.	Pratappur	193	2	5	5	181	11	493
54.	Alladi	633	43	10	15	565	99	1652
55.	Bathanbari	185	2	1	5	177	95	661
56.	Sidhabari	186	17	1	8	160	17	542
57.	Banskatia	2	2	0	0	0	66	485
58.	Ramchandrapur	166	5	0	5	156	143	802
59.	Kalipathar	282	6	3	2	271	174	1057
60.	Brindabani	239	1	0	13	225	5	517
61.	Damdaha	206	13	1	3	189	126	620
62.	Dhanguri	367	15	46	1	305	66	885
63.	Ghiadoba	651	23	5	103	520	530	2207
Total		**18974**	**1225**	**1120**	**355**	**16274**	**9222**	**59279**
Barabani Tehsil								
64.	Taldanga (B)	173	13	17	0	143	22	573
65.	Lalganja (B)	431	10	10	4	407	495	1741
66.	Janarddan Sayer (B)	32	4	2	0	26	25	159

Sr. No.	Villages	Total Main Workers	Main Workers				Marginal Workers	Non-Workers
			Cultivators	Agricultural Laborers	Household Laborers	Other Workers		
67.	Kanyapur (B)	270	5	8	2	255	286	1037
Total		**906**	**32**	**37**	**6**	**831**	**828**	**3510**
Dhanbad District								
Nirsa-Cum-Chirkunda Tehsil								
68.	Kalimati	514	26	3	4	481	20	1298
69.	Kesharkural	310	11	144	7	148	245	821
70.	Kamaliya	312	40	5	5	262	194	1032
71.	Puyaladi	171	2	13	2	154	124	682
72.	Gagna	489	2	10	2	475	168	1025
73.	Raghunathpur	86	26	15	0	45	6	65
74.	Durgapur	147	18	53	3	73	14	117
75.	Majhiladi	97	4	41	0	52	3	68
76.	Chelyagi	0	0	0	0	0	0	0
77.	Bankata	0	0	0	0	0	0	0
78.	Dhabkol	0	0	0	0	0	0	0
79.	Beliyad	339	39	110	2	188	64	947
80.	Barajar	28	8	0	1	19	180	400
81.	Baramuri	7	2	0	0	5	70	93
82.	Jagrad	544	7	5	26	506	80	1385
83.	Rangametya	46	11	0	0	35	0	132
84.	Talberia	224	59	62	0	103	22	570
Total		**3314**	**255**	**461**	**52**	**2546**	**1190**	**8635**
Grand Total		**23194**	**1512**	**1618**	**413**	**19651**	**11240**	**71424**

*(*Source: PCA Census 2011, West Bengal & Jharkhand State *)*

Table 3.23: Occupational Structure of the Study Area (Urban Area)

Sl. No.	Villages	Total Main Workers	Main Workers				Marginal Workers	Non-Workers
			Cultivators	Agricultural Laborers	Household Laborers	Other Workers		
West Bengal State								
Barddhaman District								
1.	Kulti (M)	74722	1069	814	1350	71489	19643	219444
2.	Maithon(CT)	4070	25	28	49	3968	1280	13480
3.	Chirkunda (NP)	507	1	1	9	496	43	1303
4.	Dumarkunda (CT)	2749	350	145	8	2246	494	8191
5.	Panchmahali (CT)	1421	6	21	5	1389	51	3360
6.	Siuliban (CT)	6095	15	80	172	5828	780	17250
7.	Mera (CT)	1675	3	39	52	1581	328	5048
8.	Maithon(CT)	4070	25	28	49	3968	1280	13480
9.	Egarkunr(CT)	2890	27	46	81	2736	656	8283
10.	Panchmahali	1421	6	21	5	1389	51	3360

	(CT)							
11.	Chittaranjan (CT)	10870	22	22	70	10756	713	27515
Total		**110490**	**1549**	**1245**	**1850**	**105846**	**25319**	**320714**

*(*Source: PCA Census 2011, West Bengal State & Jharkhand*)*

i. Main Workers

Main workers are those who have worked for a major part of the year (i.e. at least six months or 183 days). Main activity of a person who was engaged in more than one activity was reckoned in terms of time disposition. Out of the total population, 23194 (21.91%) in rural area and 110490 i.e 24.20% comes under the main workers category. Main workers are further classified into 4 categories viz., cultivators, agricultural laborers and household workers and other main workers

a) Cultivators

The person who is engaged either as employer, single worker or family worker in cultivation of land is recognized as a cultivator. In the study area the cultivator population in rural area is 1512(6.51%) and only 1549(1.41%) cultivators in urban area.

b) Agricultural Laborers

Persons working on land owned by others for wages or share in the yield have been treated as agricultural laborers. Out of the total main worker category the agricultural laborers population in rural and urban is about 1618(6.97%) and 1245(1.13%).

In view of the labor intensive nature of agricultural economy, a large number of women are required to participate in work especially during the peak seasons of agricultural operations like sowing & harvesting which are to be carried out in a short span of time covering large areas in each village.

c) Laborers in Household Industry

The laborers engaged in household activity are quite low in all the study area. Among the total main worker only 413(1.78%) workers from rural area and 1850(1.67%) are engaged in Household activity.

d) Other Workers

All main workers i.e. those who have been engaged in some economic activity during the last one year and who are neither cultivators nor agricultural laborers or household industry workers are classified as other main workers. The type of workers that come under this category includes factory workers, plantation workers, those in trade, commerce, business, transport, construction, political or social works, all government servants, municipal employees, teachers, priests, entertainers, artists etc. The other worker category can be seen higher in study area in rural area which is about 19651 (84.72%) in rural area and 105846(95.79%) in urban area.

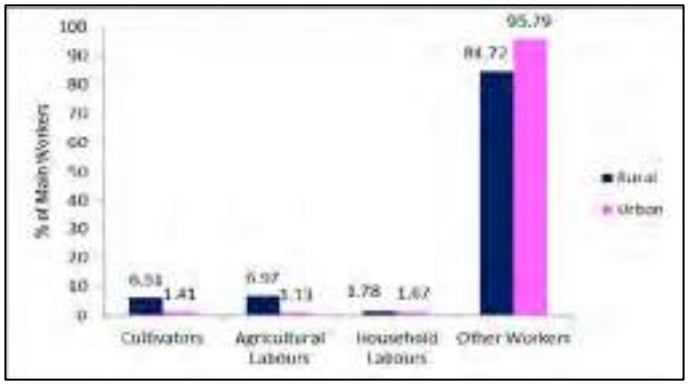


Fig 3.25: Bar Diagram showing %Distribution of Main Workers under Different Category

It can be concluded that maximum population in the study area are engaged in other activity which may be attributed to fact that study area has number of iron/steel/ ferro alloy industries operating and large area under mining activity.As the soil quality is suitable for cultivation only in small patches of study area so majority of people work in others field as agricultural labour.The proportion of female main worker population is high as compared to their male worker counterpart because in general rural areas offer more opportunities for men & women to work in agriculture & animal husbandry etc.

ii. Marginal Workers

Marginal workers are those who have worked any time in the year for less than six months or 183 days but have not worked for a major part of the year. The population of marginal workers within the rural area comprises of about 13.16% of the total population.

iii. Non-Workers

A person who did not work at all in any economically productive activity during last one year preceding the date of enumeration are treated as non-workers. This category includes students, person engaged in household duties, dependents, pensioners, beggars, etc provided they are not engaged in any economically productive activity during the last one year preceding the date of enumeration.

The non-worker population in rural area is observed to be almost about 67.47% in rural area and 70.25% in urban area. It can be concluded from the data that the non-worker population is high in the urban area.

The economy of the study area is primarily based on both industry and agriculture. Different types of workers in total worker population may be classified and described below while presented in **Fig 3.26.**

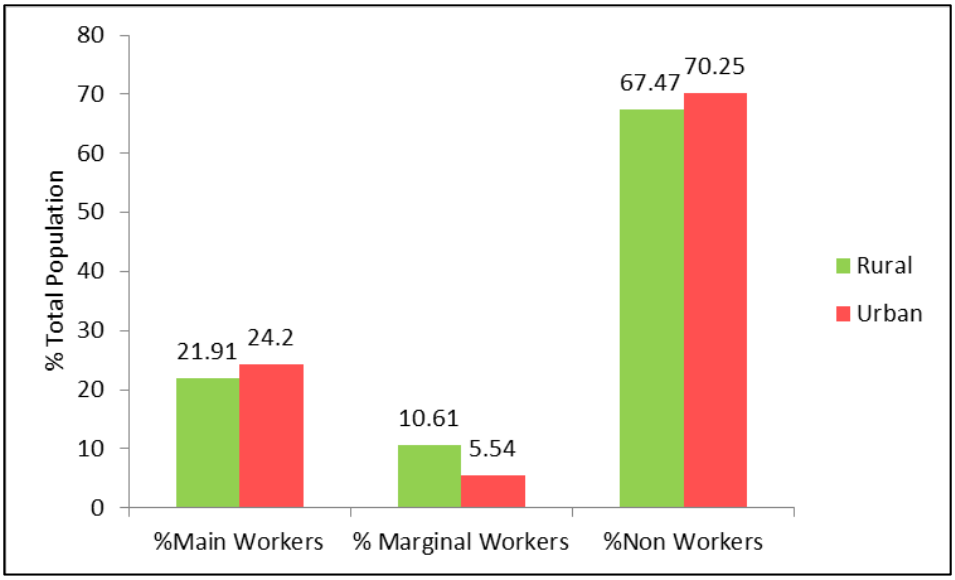


Fig 3.26: Bar Diagram for %Distribution of Total Population under different Worker Category

The economy of the study area is fortunate in terms of development in industry sector. This conclusion made is supported by the results obtained: firstly the list of more than 10 number of large industries operating in total 10km radius study area and the presence of large area under mining activity; secondly in soil analysis done in the study area during baseline study showing soil fit for agriculture only in dedicated regions and; and thirdly from abovementioned data that major portion of the working force is enagaged as either agricultural labours or other workers working directly or indirectly for industries. Proposal for introduction of new or expansion of existing industries always bring a huge potential of employemt generation along with them. Thus, the unemployed population in study area can have a good opportunity for getting employed from the proposed expansion project.

3.3.8.3 Infrastructure Resource Base of the Study Area

The details of infrastructure resources base of the study area with reference to education, medical facility, water supply, post and telegraph, transportation, communication facility, power supply, existence of nearest town etc. are presented in **Table 3.24**.

Table 3.24: Infrastructure Resource Base of the Study Area

S.No.	Amenities	Availability in Number
1.	Education Facility	P(74), PvtP(5),M(20),S(5), Ssc(4)
2.	Medical Facility	CHC(1),PHC(5), PHS(19), D(1),MCW(4),MHC(5)
3.	Drinking Water Facility	T (43) , UnT(12), CW(8),UCW(68),HP(61),TW(33),TK(68)
4.	Drainage Facility	OD(63), CD(9)
5.	Communication Facility	M(63)
6.	Transportation Facility	RS(4), BS(21)
7.	Approach Road	KR(80),PR(54)
8.	Power Supply	ED(77).EAG(18)

Source: Village amenities 2011, West Bengal & Jharkhand

Abbreviations:

Educational Institutions			**Medical Facilities**			**Drinking Water Supply**			**Communication**		
P	:	Primary School	PHC	:	Primary health Centre	T	:	Tap Water	PO	:	Post Office
M	:	Middle School	PHS	:	Primary health sub centre	CW	:	Covered Well Water	PH	:	Phone connections
S	:	Secondary School	D	:	Dispensary	UCW	:	Uncovered Well Water	**Drainage Facility**		
						HP	:	Hand pump	OD	:	Open Drainage
									CD	:	Covered Drainage
Power Supply			**Approach Road**			**Transportation**					
ED	:	Electricity for domestic purpose	PR	:	Pucca Road	BS	:	Bus			
			KR	:	Kuccha road	RS	:	Railway Station			

The significant features of these important parameters for each study area are discussed as below:

i. <u>Educational Facility</u>

The numbers of educational institution in the study area are 74 government primary schools, 5 private primary school, 20 government middle schools, 5 Secondary schools and only 4 senior secondary school in the study area. Villages of the study area avail the higher education facility and College from the nearest town that is Maithon, Chittaranjan, Asansol, Kulti and Dhanbad town.

ii. <u>Drinking Water Facility</u>

The numbers of major sources of drinking water in the study area is through uncovered Wells in 68 villages, Hand Pump facility in 61 villages and treated Tap water in only in 43 villages, untreated tap water in only 12 villages, covered well in only 8 villages, Tube Well facility in 33 villages and 68 villages have tank water facility.

iii. <u>Medical Facility</u>

Medical institutions in rural parts of the region are inadequate, as per the data recorded in the village amenities CD 2011 there are Primary health centre in only 5 villages, Primary health sub-centre (PHS) in 19 villages, Maternal and Child Welfare centre in 4 villages and Mobile Health Hospital in 5 villages.

iv. <u>Sanitation & Drainage Facility</u>

Sanitation facility is poor in the villages of the study area. Only 9 villages have the closed drainage system while 63 villages have the open drainage system. It can be concluded that only 10% villages in the study area have proper drainage facility.

v. Communication Facility

Communication facility is available in the form of Post office is available in villages and telephone connections are available in all 63 villages. At the present time most of the villagers have mobile phones for communication.

Name of the Schools	Villages
Educational Facility	Dendua primary school
	Dhabani Pathik Vidyalaya
	Primary school Chaptoria
	Salanpur Primary School
	Basudevpur Primary School, Jemari - Basudevpur Rd
	Khudika Junior Basic School
	Ethora Girls' Primary School
	Belrui N.G Institution ,Sitarampur Rd,Neamatpur
	Old Debipur Primary School,Kalyaneshwari to Dendua
	Madwadi Vidyala Barakar,Baramuri
	Panchmohali(Government School)
	Primary school Dishergarh , Maithan Rd
	Harisadi Primary School, Chittaranjan
	Primary school English Medium Harishadi,
	M S K Nakrajuria School
	Barabhuin F P School ,Barabai
	Manberia F P School,Barakar
	Sishu Niketan (Bengali Medium School)
	Punuri School,Kulti
	Priyadarshini Public School, Kulti,Burdwan
Medical Facility	Dendua Hospital, Nakrajuria
	ECL Hospital,Burdwan
	Banbirdi health centre
	Community health centre,Miliakhola
	Pithaikiari Health Centre - Community health centre Pratappur
	Upa Sasthya Kendra, Rangamati (Sub Health Center)
Police Station	Salanpur Police Station
	Sub Police Station,Chittaranjan,Neamatpur Rd
	Kulti Police Station
	Barakar Fari, Police department, Station Rd,Barakar
Railway Station	Salanpur Train station
	Rupnarayanpur Train station, Mihijam
	Barakar Train station
	Chittaranjan Train station
	Kumardubi Railway station
	Sitarampur Junction Train station
	Kulti Train station
Post Office	Salanpur Post Office
	Kalyaneshwari Sub Post Office
	Post office Asansol ,Chittaranjan Rd
	Post office Hindusthan Cables Town

Name of the Schools	Villages
	Neamatpur Post Office
	Sitarampur Sub Post Office
	Rupnarayanpur Post Office(New)

3.3.8.4 Economic Resource Base of the Study Area

I. Agricultural Scenario in the Study Area

Rice is the most important crop of the district. Paddy covers maximum of the gross cropped area and is grown both in Kharif and Rabi season. Other crops grown in the region include jute (summer), potato (early Rabi) and oilseeds (Rabi). Rice is the most important crop of the district and in the alluvial plains to the east little else is grown. The rice grown with its numerous varieties can broadly grouped under the three primary classes distinguished from one another by distinct characteristics and there are : The Aus or autumn, the Aman or winter and the Boro or the summer rice. Paddy covers maximum of the gross cropped area. Among commercial crops Jute, Mesta and Sugarcane, potato, oil seeds are cultivated in marginal area.

II. Industrial Scenario in the Study Area

The study area has a huge industrial setup which has led to generation of large number of direct and indirect employment for the locals. There are number of iron/steel/alloys and Glaas manufacturers, etc. Also, there are 8 mining sites in the study area. List of nearby industries is provided in chapter 2.

3.3.8.5 Cultural and Aesthetic Attributes

As such no culturally and aesthetically important places are located within the 10 kms radius of the study area.

3.3.8.6 Socio-Economic Survey

In order to access and evaluate likely impacts arising out of any development projects on socio economic environment, it is necessary to gauge the apprehensions of the people in the study areas.

Methodology applied for selection of Sample & Data Collection

A judgmental and purposive sampling method was used for choosing respondents of various sections of the society i.e. Sarpanch, adult males and females, teachers, medical practitioners, businessmen, agriculture laborers, unemployed group etc. Judgmental and purposive sampling method includes the right cases from the total population that helps to fulfill the purpose of research needs. is depicted below:

For the process of data collection through primary source i.e gathering data through field survey for socio-economic environment methods were:

i. Field Survey and Observations

Field survey and observations is made at each sampling village and the socioeconomic status of that region is studied. Visits are made at hospitals, primary health centers and sub-centers to know the health status of the region. Various governmental organizations such as statistical department, department of census operations are visited to collect the population details of that region.

ii. Interview Method

Structured interview method is used to collect data regarding the awareness and opinion from the samples selected of the various socio- economic sections of the community. Structured interviews involve the use of a set of predetermined project questions that includes fixed and alternative questions. The questionnaire mainly highlights the parameters such as income, employment and working conditions, housing, food, water supply, sanitation, health, energy, transportation and communication, education, environment and pollution to assess the standard of living of that particular region and general awareness, opinion and expectation of the respondents about the proposed project. Interview method helps to collect more correct and accurate information as the interviewer is present during the field survey.

Socio-economic survey was conducted in the villages within the study areas located in all directions with reference to the study area. 10 villages were surveyed from study area.

The respondents were asked for their awareness / opinion about the existing plant and also of their opinion about the impacts of the project which are an important aspect of socio-economic environment, viz. job opportunities, education, health care, housing, transportation facility and economic status.

Salient Observations of Socio-Economic Survey in the Study Areas

I. Housing pattern: The types of housing pattern in the study area varied from kuccha to pucca (pakka) houses.40% houses were in pucca form, 20% in semi pakka and 40% houses were observed in kuccha form.

II. Employment: Main occupation in the study area is categorized into other activity that includes labour work, small business; private jobs etc. The labours were getting daily wags in the range of Rs. 250-300 per day.

III. Fuel: The primary sources of cooking fuel were firewood, cow dung cake, coal etc. Very few villagers were using LPG facility

IV. Main crops: The principal crops grown in agricultural farm were Wheat, Rice Maize, Mustard, Pulses, onion, potato and Vegetables etc.

V. Sanitation: Toilet facility is one of the most basic facilities required in a house. It has been observed that more than 60% of the households were not having toilet facilities in there is no proper drainage facility in the villages mostly the villagers have open drainage system and open nallas in the study area.

VI. Drinking water Facilities: During the survey it was observed various sources of drinking water supply in villages. Major source of drinking water in the study area is through uncovered well, Hand Pumps and Tap water. During survey people from some villages in core zone stated that there is shortage of water in summer season

VII. Education facilities: Most of the villages had education facilities in the form of anganwadi and primary schools. Higher education facilities were available in the Dhanbad, Maithan, Chittaranjan, Asansol and Kulti town.

VIII. Transportation facility: For transportation purpose auto, jeep and private bus services were available in the study area; however villagers reported that transportation facilities were not frequently available. Private vehicles like bicycles & motor cycles were also used by villagers for transportation purpose

IX. Road connectivity: Most of the roads were pucca and the very few pucca roads are in poor condition in need of repair and maintenance

X. Communication facilities: For communication purpose mainly mobile phones & post offices are present in the villages of study area

XI. Medical facilities: In some of the villages primary health sub centres were available. Hospitals and other better health centres were available in the range of 5-10 km at town place

XII. Electricity: All villages were availing electricity facility for domestic and agriculture purposes.

3.3.8.7 Employment Generation Potential of Project

Existing manpower of the plant is 400. The estimated additional direct manpower required after the proposed expansion shall be 400, comprising administrative, technical, non-technical, skilled and unskilled workforce. Approx. 50 persons will be employed during construction phase. The total requirement of manpower in the plant will be available without much difficulty as the area has industrial exposure in Iron & steel sector. However, specialized training for operation and maintenance will have to be given to selected candidates well in advance before commissioning of the plant. In addition to this there shall be indirect requirement of manpower in transportation sector for transportation of raw material. Development of nearby industries also envisaged for supply of additional requirement of Sponge Iron and Pig Iron.

3.3.8.8 Assessment of Quality of Life in Study Area

Definition of Quality of life (QoL)- Quality of life (QoL) is a term, which indicates overall status of socio-economic environment in a given area. Quality of life (QoL) is defined as a function between “objective conditions” and “subjective attitudes” involving a defined “area” of concern.

The **“objective conditions”** are defined as numerically measurable artifacts of a physical, sociological event or economic event. Objective conditions may be defined as any number, which stands for a given quantity of a variable of interest so long as it is

independent of subjective opinion. **Subjective attitude"** is primarily concerned with affective and cognitive dimensions. It is specifically concerned with 'how aspects of cognition vary with variation in objective conditions.



Maslow's Hierarchy Of Needs

As per the Maslow's Hierarchy of Needs, the needs of human being are measured into different categories which help to determine the satisfaction level of people and are the indicators to assess the quality of life.

The Socio-economic Indicators for QoL Assessment are:

1. Income, Employment and Working Condition
2. Housing
3. Food
4. Clothing
5. Water Supply and Sanitation
6. Health
7. Energy
8. Transportation and Communication
9. Education
10. Environment and Pollution
11. Recreation
12. Social Security
13. Human Rights

The Subjective Quality of Life ($QoL_{(S)}$), Objective Quality of Life ($QoL_{(O)}$) and Quality of Life (Cumulative Index)($QoL_{(C)}$) indices prior to commissioning of the project are presented in **Table 3.25.**

Table 3.25: Quality of Life Existing In Sampling Villages

S.No.	Villages	$QoL_{(S)}$	$QoL_{(O)}$	$QoL_{(C)}$
1.	Nakrajuria	0.55	0.58	0.56
2.	Salanpur	0.62	0.64	0.63
3.	Khudika	0.57	0.58	0.57
4.	Dendua	0.6	0.62	0.61
5.	Hadla	0.61	0.62	0.61
6.	Maheshpur	0.6	0.62	0.61
7.	Miliakhola	0.59	0.61	0.6
8.	Gagna	0.56	0.58	0.57
9.	Jemari	0.54	0.55	0.54
10.	Kulti	0.63	0.64	0.63
Average		**0.58**	**0.60**	**0.59**

The average QoL index value for the study area is leaning towards satisfactory level due to good economic status like income, employment and also availability of basic needs, viz. food, clothing, housing.The area lacking with medical, educational facilities and social security, besides water scarcity, lack of sanitation, which are subjective conditions and are not much satisfactory as compared to objective conditions.

3.3.9 ECOLOGY AND BIODIVERSITY

Floral and faunal surveys conducted for assessing the biological diversity and its status over a period of time that forms an integral part of Impact Assessment Techniques. The present study is highlighting the various issues pertaining to floristic diversity and the faunal wealth including Ethno-botany and silvicultural issues in the submergence area and also the area beyond the limit of the submergence. Accordingly, for the Environmental Impact Assessment (EIA) studies, the total area has been sub-divided into the following areas;

- Core Zone: i.e. Project Site of **M/s. Eloquent Steel Pvt Ltd**
- 10 km radius buffer zone
- Natural vegetation in the study area (Core & Buffer Zone).
- Forest area (Protected/Reserved)
- Rivers and Ponds in vicinity

3.3.9.1 Objectives of Biological Study

The biological study of the area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment. The main objectives of biological study were:

Terrestrial Ecology

The study was undertaken with a view:

- To assess nature and distribution of the vegetation in the area.
- To evaluate the dominant species of plant and animal. To list the endangered species of flora and fauna.
- To mark the wetlands and other ecologically sensitive areas such as national parks/ sanctuaries.
- To assess the effect of construction and operation of the project on existing ecology.
- To Asses the spawning and feeding habitats of aquatic species with respect to time and location.

Aquatic Ecology

The study was carried out in the project site aiming at:

- Inventorization of different aquatic species (plankton (phyto & zoo), benthos, fishes).
- To identify the feeding and breeding grounds of economically important fishes.
- To assess the existing status of endangered species.

Table 3.26: Mode of data collection and parameters considered during the Survey

S. No.	Aspect	Data	Mode of Data collection	Parameters monitored	Remarks
1.	Terrestrial Biodiversity	Primary data collection	By field survey	Floral and Faunal diversity	**For Floral Diversity:** Random survey, sapling survey/ forest inventory, walking transect, collection and identification with the help of relevant literature. **For Faunal Diversity:** direct and indirect sampling, walking transects, point sampling and nest sampling etc.
2.		Secondary data collection	From authentic sources like Forests department and available published literatures from ZSI, BSI etc.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Data collected from the working plan of the region, forest types from the authentic literature of Champion & Seth.
3.	Aquatic Biodiversity	Primary data	By field survey	Floral and Faunal diversity	**For Plankton Study-** Lackey's drops method and light microscope

S. No.	Aspect	Data	Mode of Data collection	Parameters monitored	Remarks
					For other aquatic- Random survey, opportunistic observations
4.		Secondary data collection	From authentic sources like Forests department.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Desktop literature review to indentify the representative spectrum of threatened species, population and ecological communities.

3.3.9.2 General Features of Study Area

The Study area falls under the climatic zone "Tropical wet and dry" (Koppen Classification), under agro-climatic zone "Eastern Plateau and Hills Region" and under agro-ecological zone **"**Eastern Plateau and Hill regions - hot sub-humid eco-region characterized by hot dry sub-humid ecosystem with Red and Lateritic soils and Length of Growing Period (LGP) 150-180 days.

The type of forest cover found in West Bengal state consists of the district categories, namely tropical moist deciduous, tropical dry deciduous and subtropical broad-leaved hill forest. The vegetation type is tropical dry deciduous forest. The forest belongs to category 5B of group 5 and is represented by types C1/1C, C2, DS1, E5, E7 and 2S1, on the basis of the composition of species found in the forest. It can be divided into four categories, namely, coppice sal, open shrub forest with scattered sal forest, bushes and plantations.

The area is sparsely populated and is undulated and interspersed with small hillocks and hilly terrain. The biotic environment can be described under following heads:

A. Agriculture Land
B. Barren Land
C. Vegetation around Human Settlements
D. Natural & Forest Area/Floral Diversity
E. Location of National Parks & Wildlife Sanctuaries
F. Wildlife & Avifauna/Faunal Diversity
G. Endangered Species

3.3.9.3 Terrestrial Ecology Assessment

i. <u>Floral Diversity</u>

Methodology

An extensive survey was done by line transect with quadrate method for quantitative analysis and recording the observed vegetations for estimation of floral composition.

The dominant tree species, shrubs, herbs, climbers and major crops were enumerated and documented during this base line study. Inventory Methodology was adapted to the baseline data of floral diversity from the buffer area in a corridor of 10 km radius of project site.

Forest inventory methodology was adopted for the qualitative analysis of vegetation from the study area. A forest inventory is **"an attempt to describe the quantity and quality of forest trees and many of the characteristics of the land area upon which the trees are grown."** The objective this floral inventory of the study area, is to provide complete checklist of floristic structure from the buffer area in a corridor of 10 km radius of project site for formulating effective management and conservation measures. The tree species, shrubs, herbs and climbers observed in the study area are represented in the **Table 3.28.**

Interpretation

A. Agriculture: Agriculture is produced at small scale with major products grown here are Paddy, Wheat and a little number of vegetables like brinjal, ladies finger, tomato etc. for household consumption.

Table 3.27: Agricultural Pattern and Productivity

Crop Variety	Family	Botanical Name	Trade Name
Agriculture Crops			
Vegetable	Solanaceae	*Capsicum fruitiscens*	Chilli
	Solanaceae	*Solanum melongena*	Brinjal
	Solanaceae	*Lycopersicon lycopersicum*	Tomato
	Liliaceae	*Allium cepa*	Onion
Cereals	Poaceae	*Oryza sativa*	Rice
Horticulture Crops			
Fruits	Caricaceae	*Carica papaya*	Papaya
	Myrtaceae	*Psidium guajava*	Guava
	Myrtaceae	*Syzygium cumini*	Jamun
	Anacardiaceae	*Mangifera indica*	Mango
	Moraceae	*Artocarpus heterophyllus*	Jack Fruit

B. Forest Types: The forests are mainly on the open ridges and in the undulating valleys and can primarily be categorized as reserved and protected. There are no national park/Wildlife sanctuary/Reserve Forest present in 10km study area of the project. The study area is situated in the extended Chota Nagpur Plateau in the North-East. The vegetation type is tropical dry deciduous forest. The forest belongs to category 5B of group 5 and is represented by types C1/1C, C2, DS1, E5, E7 and 2S1, on the basis of the composition of species found in the forest. Four principal vegetation types within the study area were recognized during survey:

i. Dense mixed jungle (PF)
ii. Dense mixed jungle
iii. Open Scrub
iv. Plantation of Acacia, and Eucalyptus.

Vegetation in Forest Area**:** Natural vegetation follows climatic and edaphic factors. According to the *Bengal Gazetteer*, this area was previously known as *Jangalmahal* (Bayley 1813), a Hindi term that means 'dense, forest-covered area'. The periphery of the study area is basically rural in nature. The major water bodies in the study area are Barakar River and Maithon Reservoir.

C. Grasslands: No prominent grass land ecosystem has been found in core and buffer zone of the project. However the grass lands were mixed with natural vegetation in low lands and cultivable waste lands are now being utilized as grazing grounds to the livestock species: Goat, Cow, Ox and Buffalo. The grass species and sedges of buffer zone are listed below with the natural vegetation of buffer zone.

D. Vegetation in Non-Forest Area: Trees in the non-forest areas are tropical dry mixed deciduous in nature. There are many avenue trees present along the road sides and in urban plantations. The main species are Siris *(Albizia procera),* Kachnar *(Bauhinia variegata),* Amaltas *(Cassia fistula),* Banyan *(Ficus benghalensis),* Pipal *(Ficus religiosa),* Teak *(Tectona grandis),* Arjuna *(Terminalia arjuna),* Jacaranda *(Jacaranda mimosifolia),* Subabul *(Leucaena leucocephala),* etc. All these species are economically important as well as providing green canopy cover across the study area. Common shrubs randomly distributed within the non-forest areas such as barren lands, waste lands, and periphery of water bodies. The main species are Aak (*Calotropis procera),* Arni (*Clerodendrum phlomidis),* Ber (*Ziziphus jujuba),* Punarnava (*Cassia tora*), Amaltash (*Cassia fistula),* Dhatura *(Datura stramonium),* Vasaka (*Adhatoda vasica)* etc.

E. Floristic Structure and Composition of the Study Area: The phyto-ecological structure of vegetation shows three different strata i.e. Top, Middle and Ground. Top storey covered by *Acacia arabica, Azadirachta indica, Eucalyptus camaldulensis, Ficus religiosa, Pithecellobium dulce, Syzygium cumini, Phoenix sylvestris, Tamarindus indica* etc. Middle storey in this region comprises of *Dalbergia sissoo, Dalbergia latifolia, Calotropis procera, Vitex negundo, Lantana camara, Ziziphus mauritiana* etc. The dominant herbs in the ground vegetation are *Achyranthus aspera, Alternanthera sessilis, Argemone mexicana, Solanum nigrum, Solanum xanthocarpum, Cassia tora, Parthenium hysterophorus, Sida rhombifolia, Tridax procumbens* etc. Grasses like *Cynodon dactylon* and *Heteropogon contortus* are generally found in the area. The list of floral vegetation in the study area is given in **Table 3.28**.

Table 3.28: Floral Diversity in the Study Area

Sl. No.	Botanical Name	Local Name	Family
Trees			
1.	*Acacia arabica*	Babul	Mimosaceae
2.	*Acacia catechu*	Khair	Mimosaceae
3.	*Alstonia scholaris*	Chatim	Apocynaceae
4.	*Aegle marmelos*	Bel	Rutaceae
5.	*Anogeissus latifolia*	Dhawra	Combretaceae
6.	*Albizia lebbeck*	Siris	Mimosaceae
7.	*Albizia odoratissima*	Kala Siris	Leguminosae
8.	*Albizia procera*	Safed Siris	Mimosaceae
9.	*Azadirachta indica*	Neem	Meliaceae
10.	*Bauhinia vahlii*	Mahul	Sapotaceae
11.	*Bauhinia variegata*	Kachnar, Papri	Leguminosae
12.	*Bombax ceiba*	Semal	Bombaceae
13.	*Butea monosperma*	Dhak, Palah	Fabaceae
14.	*Cochlospermum gossypium*	Galgal	Bixaceae
15.	*Cassia angustifolia*	Indian senna	Fabaceae
17.	*Cassia fistula*	Amaltas	Fabaceae
18.	*Cordia myxa*	Bahuar	Boraginaceae
19.	*Diospyros melanoxylon*	Kendu	Ebenaceae
20.	*Dalbergia latifolia*	Kala Shisham	Fabaceae
21.	*Dalbergia sissoo*	Shisham	Fabaceae
22.	*Delonix regia*	Gulmohar	Fabaceae
23.	*Enterolobium cyclocarpum*	Elephant ear	Mimosaceae
24.	*Erythrina variegata*	Indian coral tree	Fabaceae
25.	*Erythrina suberosa*	Dhaul, Padiara	Fabaceae
26.	*Eucalyptus globulus*	Eucalyptus	Myrtaceae
27.	*Flacourtia indica*	Indian Plum	Flacourtiaceae
28.	*Ficus benghalensis*	Bar, Bargad	Moraceae
29.	*Ficus glomerata*	Gular	Moraceae
30.	*Ficus religiosa*	Peepal	Moraceae
31.	*Gmelina arborea*	Gamhar	Lamiaceae
32.	*Holarrhena antidysenterica*	Kutaja	Apocynaceae
33.	*Jacaranda mimosifolia*	Jacaranda	Bignoneaceae
34.	*Lagerstroemia speciosa*	Banaba	Lythraceae
35.	*Lagerstroemia parviflora*	Sidha	Lythraceae
36.	*Leucaena leucocephala*	Subabul	Fabaceae
37.	*Mangifera indica*	Aam	Anacardiaceae
38.	*Melia azadirachta*	Bakain	Meliaceae
39.	*Moringa oleifera*	Sanjna	Moringaceae
40.	*Pithecellobium dulce*	Jangli jalebi	Fabaceae
41.	*Phoenix sylvestris*	Kahjur	Arecaceae
42.	*Polyalthia longifolia*	Mast tree	Annonaceae
43.	*Pongamia pinnata*	Karanj	Papilionaceae

44.	*Shorea robusta*	Sal	Dipterocarpaceae
45.	*Schleichera oleosa*	Kusum	Sapindaceae
46.	*Syzygium cumini*	Jamun	Myrtaceae
47.	*Tamarindus indica*	Imli	Fabaceae
48.	*Tectona grandis*	Teak	Lamiaceae
49.	*Terminalia arjuna*	Arjun	Combretaceae
50.	*Terminalia bellirica*	Bahera	Combretaceae
51.	*Terminalia alata*	Asan	Combretaceae
52.	*Ziziphus mauritiana*	Ber	Rhamnaceae
Bamboo			
53.	*Bambusa arundinacea*	Kanta bans	Poaceae
54.	*Dendrocalamus strictus*	Bamboo	Poaceae
SHRUBS			
55.	*Alangium salvifolium*	Ankula	Alangiaceae
56.	*Abutilon indicum*	Kanghi	Malvaceae
57.	*Adhatoda vasica*	Vasaka	Acanthaceae
58.	*Agave americana*	Ram Ban	Agavaceae
59.	*Calotropis procera*	Shet-akanda	Asclepiadaceae
60.	*Calotropis gigantea*	Akanda	Asclepiadaceae
61.	*Cassia sophera*	Kolokasunda	Caesalpiniaceae
62.	*Chromolaena odorata*	Christmas bush	Asteraceae
63.	*Clerodendrum phlomidis*	Aarni	Lamiaceae
64.	*Cleistanthus collinus*	Garrar	Euphorbiaceae
65.	*Combretum decandrum*	Combretums	Combretaceae
66.	*Dodonaea viscosa*	Mehndar	Sapindaceae
67.	*Duranta erecta*	Duranta	Verbenaceae
68.	*Euphorbia sp.*	Euphorbia	Euphorbiaceae
69.	*Eupatorium cannabinum*	Ayapana	Asteraceae
70.	*Gossypium herbaceum*	Kapas	Malvaceae
71.	*Hibiscus rosa-sinensis*	Jaba	Malvaceae
72.	*Ipomoea carnea*	Bara Kalmi	Convolvulaceae
73.	*Indigofera pulchella*	Kathi, Nil	Fabaceae
74.	*Jatropha glandulifera*	Lal-bharenda	Euphorbiaceae
75.	*Jatropha gossypifolia*	Verenda	Euphorbiaceae
76.	*Leonotis nepetifolia*	Lal guma	Lamiaceae
77.	*Lantana camara*	Chotra	Verbenaceae
78.	*Meyna laxiflora*	Mayna	Rubiaceae
79.	*Mimosa rubicaulis*	Karingan	Fabaceae
80.	*Ocimum gratissimum*	Ramotulsi	Lamiaceae
81.	*Polygonum capitatum*	Smartweed	Polygonaceae
82.	*Ricinus communis*	Rehri	Euphorbiaceae
83.	*Sida cordifolia*	Berela	Malvaceae
84.	*Sida rhombifolia*	Lal berela	Malvaceae
85.	*Tabernaemontana divaricata*	Tagar	Apocynaceae
86.	*Urena lobata*	Bon okra	Malvaceae
87.	*Vitex negundo*	Bana	Lamiaceae

HERBS			
88.	*Achyranthes aspera*	Apang	Amaranthaceae
89.	*Acalypha indica*	Muktajhurih	Euphorbiaceae
90.	*Ageratum conyzoides*	Dochunty	Asteraceae
91.	*Amaranthus spinosus*	Katanotey	Amaranthaceae
92.	*Anisomeles indica*	Bhuta-airi	Lamiaceae
93.	*Andrographis paniculata*	Kalmegh	Acanthaceae
94.	*Argemone mexicana*	Seyalkanta	Papaveraceae
95.	*Barleria prionitis*	Daskaranta	Acanthaceae
96.	*Boerhavia diffusa*	Punarnaba	Nyctaginaceae
97.	*Boerhavia repens*	Ghodapuruni	Nyctaginaceae
98.	*Centella asiatica*	Thankuni	Umbelliferae
99.	*Cleome viscosa*	Hurhure	Cleomaceae
100.	*Commelina benghalensis*	Kansiri	Commelinaceae
101.	*Croton bonplandianum*	Kbon-tulsi	Euphorbiaceae
102.	*Cassia tora*	Chakundo	Caesalpiniaceae
103.	*Cyperus rotundus*	Motha	Cyperaceae
104.	*Crotalaria retusa*	Atasi	Papilionaceae
105.	*Datura stramonium*	Dhatura	Solanaceae
106.	*Dentella repens*	Bhuipat	Rubiaceae
107.	*Eclipta prostrata*	Kesutti	Asteraceae
108.	*Eicchornia crassipes*	Kachuripana	Pontedeniaceae
109.	*Euphorbia hirta*	Boro-karni	Euphorbiaceae
110.	*Hyptis suaveolens*	Vilayti Tulsi	Lamiaceae
111.	*Hygrophila longifolia*	Kantakalia	Acanthaceae
112.	*Heliotropium indicum*	Hatisur	Boraginaceae
113.	*Ixora coccinea*	Rangan	Rubiaceae
114.	*Limnophila indica*	Karpur	Scrophulariaceae
115.	*Lippia nodiflora*	Bhui okra	Verbenaceae
116.	*Leonurus sibiricus*	Raktadrones	Lamiaceae
117.	*Leucas aspera*	Shetadrones	Lamiaceae
118.	*Mimosa pudica*	Lajjabati	Mimosaceae
119.	*Musa x paradisiaca*	Kanch-kala	Musaceae
120.	*Musa balbisiana*	Kodoli	Mosaceae
121.	*Nymphaea pubescens*	Saluk	Nymphaeaceae
122.	*Ocimum sanctum*	Tulasi	Lamiaceae
123.	*Physalis minima*	Bon-tepari	Solanaceae
124.	*Phyllanthus urinaria*	Hazarmani	Phyllanthaceae
125.	*Ruellia tuberosa*	Popping pod	Acanthaceae
126.	*Solanum nigrum*	Kakmachi	Solanaceae
127.	*Tridax procumbens*	Tridaksha	Asteraceae
128.	*Typha elephantina*	Hogla	Typhaceae
CLIMBERS			
129.	*Asparagus racemosus*	Satamuli	Liliaceae
130.	*Bauhinia vahlii*	Gront	Caesalpiniaceae
131.	*Combretum roxburghii*	Punk	Combretaceae

132.	*Coccinia grandis*	Telakucha	Cucurbitaceae
133.	*Dioscorea bulbifera*	Gachalu	Dioscoriaceae
134.	*Dioscorea oppositifolia*	Shora-alu	Dioscoriaceae
135.	*Mukia maderaspatana*	Bilavi	Cucurbitaceae
GRASSES			
136.	*Apluda varia*	Chunkarki	Poaceae
137.	*Aristida depressa*	Lambi	Poaceae
138.	*Chrysopogon fulvus*	Dholu	Poaceae
139.	*Chrysopogon gryllus*	Dholu	Poaceae
140.	*Chrysopogon montanus*	Dholu	Poaceae
141.	*Cynodon dactylon*	Dhoob	Poaceae
142.	*Eragrostis tenella*	Bharbusi	Poaceae
143.	*Eragrostis unioloides*	Kush	Poaceae
144.	*Heteropogon contortus*	Lamb, Sariala	Poaceae
145.	*Imperata cylindrica*	Oolu	Poaceae
146.	*Pennisetum orientale*	Fountain Grass	Poaceae
147.	*Thysanolaena maxima*	Phulijharu ghas	Poaceae

F. Rare, Endemic and Endangered Floral Species: The IUCN has assigned “rare" and “endangered” plant species categories as defined in the "Red list". None of the plant species observed in the study area can be considered as ‘rare’ and ‘endangered’ as per the IUCN Red list. Among the recorded plant species, none can be assigned the status of endemic plant of this region.

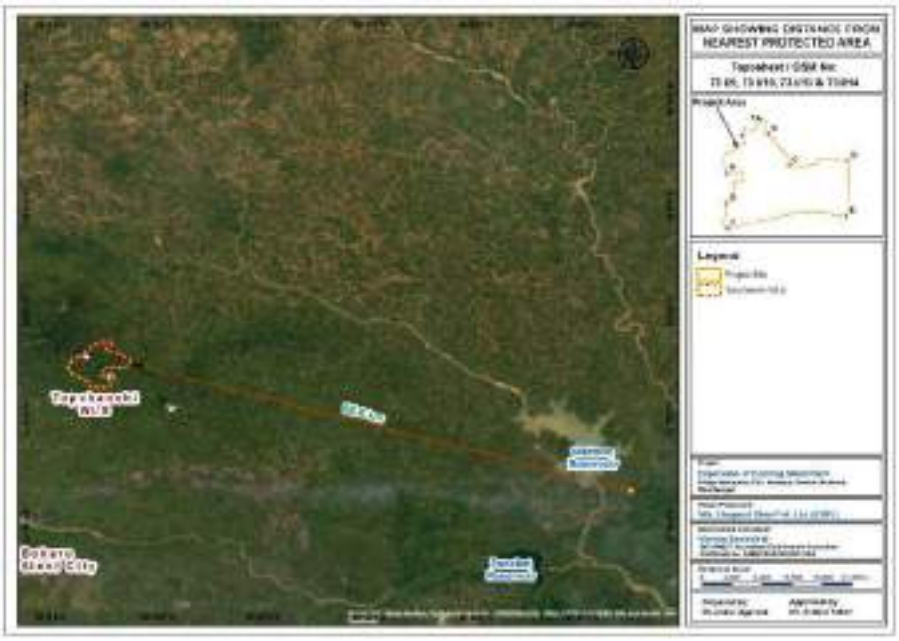


Fig 3.27: WLS Map for the Project Site

ii. <u>Faunal Diversity</u>

To prepare a detailed report on the status of wildlife biodiversity within 10 km radial area from the project site to assess the impacts due to the project activity and evolve suitable mitigation measures to protect and conserve wildlife biodiversity following

components were studied:

a) Wildlife Survey (Diversity)
b) Habitat Study (Feeding, Breeding and Roosting areas)
c) Distribution/Status of Birds
d) Rare & Endangered species of Fauna
e) Specific local characteristics of biodiversity in the study area

Methodology

A linear transect of 1.0 km each was chosen for sampling at each site. Each transect was trekked for 1.5 hr for the sampling of faunal diversity through following methods for different categories. For the sampling of butterflies, the standard 'Pollard Walk' method was employed and all the species recorded daily. Voucher specimens of the species that could not be identified in the field were collected using a butterfly net besides photographing them.

For bird's sampling, 'Point Sampling' along the fixed transect (Foot trails) was carried out. All the species of birds were observed through a binocular and identified with the help of field guide book and photographs.

For the sampling of mammals, direct count on open width (20m) transect was used. In addition, information on recent sightings/records of mammals by the villagers/locals was also collected. For carnivores, indirect sampling was carried out and the mammals were identified by foot marks, faeces and other marks/sign created by them. In case of reptiles mainly lizards were sampled by direct count on open width transects.

The study of fauna takes substantial amount of time to understand the specific faunal characteristic of area. The assessment of fauna has been done by extensive field survey of the area. During survey, the presence of wildlife was also inhabitants depending on animal sightings and the frequency of their visits in the project area which was later confirmed from forest department, Wildlife Department etc.

Interpretations

The domestic animals observed in the study area are mainly mammals and aves as listed in the **Table 3.29**.

Table 3.29: Faunal Diversity observed along core and buffer zone

Sl. No.	Scientific Name	Common Name	Status
AVIFAUNA			
1.	*Accipiter badius*	Shikra	Schedule IV
2.	*Acridotheres ginginianus*	Bank Myna	Schedule IV
3.	*Acridotheres tristis*	Common Myna	Schedule IV
4.	*Alcedo atthis*	Small Blue Kingfisher	Schedule IV
5.	*Anhinga melanogaster*	Indian Darter	Schedule IV
6.	*Apus affinis*	House Swift	Schedule IV
7.	*Apus apus*	Common Swift	Schedule IV

Sl. No.	Scientific Name	Common Name	Status
8.	*Ardeola grayii*	Pond Heron	Schedule IV
9.	*Bubo bubo*	Owl	Schedule IV
10.	*Bubulcus ibis*	Cattle Egret	Schedule IV
11.	*Ceryle rudis*	Pied Kingfisher	Schedule IV
12.	*Chloropsis aurifrons*	Golden Fronted Leaf-Bird	Schedule IV
13.	*Clamator jacobinus*	Pied Cuckoo	Schedule IV
14.	*Columba livia*	Rock Pigeon	Schedule IV
15.	*Coracias benghalensis*	Indian Roller	Schedule IV
16.	*Corvus splendens*	House Crow	Schedule IV
17.	*Coturnix coturnix*	Bater	Schedule IV
18.	*Cuculus micropterus*	Indian Cuckoo	Schedule IV
19.	*Dendrocitta vagabunda*	Tree Pie	Schedule IV
20.	*Dicrirus macrocercus*	Black Drongo	Schedule IV
21.	*Dicrurus paradiseus*	Racket Tailed Drongo	Schedule IV
22.	*Egretta garzetta*	Little Egret	Schedule IV
23.	*Emberiza bruniceps*	Red Headed Bunting	Schedule IV
24.	*Eudynamys scolopacea*	Asian Koel	Schedule IV
25.	*Gallinula chloropus*	Indian Moorhen	Schedule IV
26.	*Gallus gallus*	Red Jungle Fowl	Schedule IV
27.	*Halcyon smyrnensis*	White Breasted Kingfisher	Schedule IV
28.	*Haliastur Indus*	Brahminy Kite	Schedule IV
29.	*Hierococcyx varius*	Common Hawk Cuckoo	Schedule IV
30.	*Ixobrychus minutes*	Common Little Bittern	Schedule IV
31.	*Megalaima zeylanica*	Brown Headed Barbet	Schedule IV
32.	*Meropus orientalis*	Green Bee Eater	Schedule IV
33.	*Meropus persicus*	Blue Cheeked Bee Eater	Schedule IV
34.	*Merops philippinus*	Blue Tailed Bee Eater	Schedule IV
35.	*Microcarbo niger*	Little Cormorant	Schedule IV
36.	*Milvus migrans*	Black Kite	Schedule IV
37.	*Nectarinia asiatica*	Purple Sun Bird	Schedule IV
38.	*Nectarinia minima*	Small Sun Bird	Schedule IV
39.	*Orthotomus sutorius*	Tailor Bird	Schedule IV
40.	*Parus major*	Grey Tit	Schedule IV
41.	*Passer domesticus*	House Sparrow	Schedule IV
42.	*Phalacrocorax carbo*	Great Cormorant	Schedule IV
43.	*Ploceus philippinus*	Baya	Schedule IV
44.	*Pseudibis papillosa*	Indian Black Ibis	Schedule IV
45.	*Psittacara holochlora*	Green Parakeet	Schedule IV
46.	*Psittacula krameri*	Rose Ringed Parakeet	Schedule IV
47.	*Pycnonotus cafer*	Red Vented Bulbul	Schedule IV
48.	*Saxicola caprata*	Pied Bush Chat	Schedule IV
49.	*Saxicoloides fulicata*	Indian Robin	Schedule IV
50.	*Streptopelia chinensis*	Spotted Dove	Schedule IV
51.	*Streptopelia decaocta*	Ring Dove	Schedule IV
52.	*Upupa epops*	Common Hoopoe	Schedule IV

Sl. No.	Scientific Name	Common Name	Status
53.	*Tadorna ferruginea*	Brahminy Duck	Schedule IV
54.	*Turdoides caudatus*	Common Babbler	Schedule IV
55.	*Turdoides striatus*	Jungle Babbler	Schedule IV
56.	*Vanellus indicus*	Red Wattled Lapwing	Schedule IV
MAMMALS			
57.	*Cynopterus sphinx*	Short Nosed Indian Fruit Bat	Schedule-V
58.	*Pteropus giganteus*	Indian Fruit Bat	Schedule-V
59.	*Felis chaus*	Jungle Cat	Schedule-II
60.	*Sus scrofa*	Wild Boar	Schedule-III
61.	*Funambulus pennantii*	Five Striped Palm Squirrel	Schedule-IV
62.	*Suncus murinus*	Indian House Shrew	Schedule-IV
63.	*Hystrix indica*	Indian Porcupine	Schedule-IV
64.	*Axix axis*	Chital	Schedule-III
65.	*Munticacus munrjak*	Barking deer	Schedule-III
66.	*Lepus nigricolis*	Hare	Schedule-IV
67.	*Macaca mulatta*	Monkey	Schedule-II
68.	*Rattus rattus*	Rat	Schedule-V
69.	*Herpestes edwardsii*	Mongoose	Schedule-II
REPTILES & AMPHIBIANS			
70.	*Calotes versicolor*	Garden Gecko	Schedule-IV
71.	*Chamaeleo zeylanicus*	Indian Chameleon	Schedule-II
72.	*Hemidactylus leschenaultia*	Leaf Toad Gecko	Schedule-IV
73.	*Nabix stolata*	Bamhuni	Schedule-II
74.	*Bungarus caeruleus*	Common Indian Krait	Schedule-IV
75.	*Ptyas mucosus*	Indian Rat Snake	Schedule-II
76.	*Vipera russelli*	Russel Viper	Schedule-II
77.	*Naja naja*	Indian Kobra	Schedule-II
78.	*Hemidactylus flaviviridis*	House Lizard	Schedule-II
79.	*Rana hexadactyla*	Indian pond frog	Schedule-IV
80.	*Duttaphrynus melanostictus*	Common Indian Toad	Not Listed
81.	*Hoplobatrachus tigerinus*	Indian Bull Frog	Schedule-IV
82.	*Euphlyctis cyanophlyctis*	Indian Skipper Frog	Schedule-IV
83.	*Bufo stomaticus*	Marble Toad	Not Listed
BUTTERFLIES			
84.	*Ixias Marianne*	White orange tip	Common
85.	*Papilio demoleus*	Lime butterfly	Common
86.	*Euploea core*	Common crow	Common
87.	*Cyrestis thyodamas*	Common map	Common
88.	*Papilio polytes*	Common mormon	Common
89.	*Eurema hecabe*	Common Grass Yellow	Fairly Common
90.	*Danaus genutia*	Stripped Tiger	Common
91.	*Hypolimanas misippus*	Danaid Egg Fly	Common
92.	*Mycalesis perseus*	Common Bush Brown	Common

Endemic Fauna of the Study Area: No schedule-I fauna as per reconnaissance survey has been found from the study area.

3.3.9.4 Aquatic Diversity Aessement

The biological species such as fishes etc are the best indicators of environmental quality. Baseline survey was conducted on the Maithon Reservoir to have existing aquatic environmental conditions in and around the proposed Project and the following data's were generated:

i. Maithon Reservoir

Reservoirs constitute the prime inland fishery resource of India by virtue of their vast area and huge production potential. The Maithon reservoir (Lat: 23047′ N, Long: 86049′ E) is impounded on river Barakar- the main tributary to river Damodar, having water spread 10,716 ha, mean depth i.e. 9.1 m with productive area 6,680 ha sprawling over West Bengal and Jharkhand. The catchment (C: 6572 km2) comprises moderately fertile river valley including deciduous forest cover. It is the second largest reservoir after Panchet under Damodar Valley Corporation (DVC), impounded to serve the very purposes of flood control, irrigation, water supply and hydroelectricity.

Table 3.30: Common fish species in the Study Area

Sl. No.	Local Name	Scientific Name
1.	Rohu	*Labeo rohita*
2.	Katla	*Catla catla*
3.	Calbasu	*Labeo calbasu*
4.	Cat fish	*Mystus cavasius*
5.	Mosquito fish	*Gambusia affinis*
6.	Black Fish	*Barbus chilinadea*
7.	Singi	*Clarias batrachus*
8.	Bronze Feather Back	*Notopterus notopterus*
9.	Ganges River Gizzard Shad	*Gonialosa manmina*
10.	hilsa	*Tenualosa ilisha*
11.	Chelluah	*Aspidoparia morar*
12.	Barna Baril	*Barilius barna*
13.	Chaguni	*Chagunius chagunio*
14.	Common Carp	*Cyprinus carpio*

ii. Wetland Diversity & Marsh Lands

Wetlands are very useful to us. By producing resources, enabling recreational activities and controlling flood and pollution, they contribute to the national and local economies and environmental consequences. Wetlands provide important and incredible services to society, these services can neither be sold nor do they have the market value and tried to give wetlands an economic value.

Table 3.31: Wetland/Marshland Diversity of Study area

Family	Botanical Name	Local Name
Salviniaceae	*Azolla pinnata*	Mosquito Fern
Asteraceae	*Caesulia axillaris*	Maka
Ceratophyllaceae	*Ceratophyllum demersum*	Hornwort
Poaceae	*Chrysopogon zizanioides*	Vetiver
Poaceae	*Coix lacryma-jobi*	Adlay Millet
Araceae	*Colocasia esculenta*	Taro
Commelinaceae	*Commelina benghalensis*	Kana
Cyperaceae	*Cyperus alternifolius*	Umbrella Sedge
Dryopteridaceae	*Dryopteris filix-mas*	Fern
Dryopteridaceae	*Dryopteris sieboldii*	Fern
Poaceae	*Echinochloa colona*	Shama
Pontederiaceae	*Eichhornia crassipes*	Jal Kumbhi
Asteraceae	*Grangea maderaspatana*	Madras Carpet, Mustaru
Acanthaceae	*Hygrophila salicifolia*	---
Convonvulaceae	*Ipomea aquatic*	Kalmi Shak
Lemnaceae	*Lemna minor*	Duck Weed
Onagraceae	*Ludwigia adscendens*	Water Primrose
Marsileaceae	*Marsilea quadrifolia*	Four Leaf Clover
Sterculiaceae	*Melochia corchorifolia*	Bilpat
Nelumbonaceae	*Nelumbo nucifera*	Lotus, Kamal
Nymphaeaceae	*Nymphaea pubescens*	White Lotus
Oxalidaceae	*Oxalis corniculata*	Amrul
Pandanaceae	*Pandanus odoratissimus*	Keora
Urticaceae	*Pilea microphylla*	Gun Powder Plant
Polygonaceae	*Polygonum hydropiper*	Marsh Pepper Knot Weed
Portulacaceae	*Portulaca oleracea*	Little Hog-Weed
Potamogetonaceae	*Potamogeton natans*	Floating Pond Weed
Lythraceae	*Trapa natans*	Water Chest Nut
Ranunculaceae	*Ranunculus sceleratus*	Aglaon
Polygonaceae	*Rumex dentatus*	Ambavati
Typhaceae	*Typha angustata*	Patera
Lentibulariaceae	*Utricularia gibba*	Floating Bladderwort
Plantaginaceae	*Veronica anagallis-aquatica*	Water Speedwell

iii. Inland Water Diversity

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20µ mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the

qualitative analysis was carried out for phytoplankton and zooplankton (**Table 3.32**). The standard flora and other literature were followed for the qualitative evaluation of Plankton.

Table 3.32: Aquatic Diversity of Study Area

PHYTOPLANKTONS		ZOOPLANKTONS	
Family	**Species**	**Group**	**Species**
Bacillariophyceae	*Cymbella sp.*	**Copepod**	*Cyclops sp*
	Cyclotella sp.		*Nauplius larva*
	Diatoma sp.		*Diaptomus sp*
	Gomphonema sp.	**Cladocera**	*Daphnia sp*
	Navicula sp.		*Ceriodaphnia sp*
	Nitzschia sp.		*Diaphnosoma sp*
Chlorophyceae	*Ankistrodesmus sp*		*Bosmina sp*
	Chlorococcum sp	**Rotifer**	*Asplanchna sp*
	Cholera sp		*Brachionus sp*
	Closterium sp		*Filinia sp*
	Coelastrum sp		*Keratella sp*
	Eudorina sp		
Cyanophyceae	*Anabaena sp*		
	Anacystis sp		
	Lyngbya sp		
	Merismopedia sp		
	Phormidium sp		
Euglenophyceae	*Euglena sp*		
	Phacus sp		

Interpretation

- The area is sparsely populated and is undulated and interspersed with small hillocks and hilly terrain
- Agriculture is produced at small scale with major products grown here are Paddy, Wheat and a little amount of vegetables like brinjal, ladies finger, tomato etc. for household consumption
- The study area is situated in the extended Chota Nagpur Plateau in the North-East. The vegetation type is tropical dry deciduous forest
- The dominant herbs in the ground vegetation are *Achyranthus aspera, Alternanthera sessilis, Argemone Mexicana, Solanum nigrum, Solanum xanthocarpum, Cassia tora, Parthenium hysterophorus, Sida rhombifolia, Tridax procumbens* etc
- The forest in the region is tropical dry deciduous forest but excessive biotic influences have caused retrogression to tropical Thorny scrubs
- None of the plant species observed in the study area can be considered as 'rare' and 'endangered' as per the IUCN Red list. Among the recorded plant species, none can be assigned the status of endemic plant of this region

- No schedule - I fauna as per reconnaissance survey has been found from the study area. Although some Schedule-II species, which are very common species and found in every locality, even in villages, certain steps, should be taken to conserve the critical wild life.
- Baseline survey was conducted on the Maithon Reservoir to have existing aquatic environmental conditions in and around the proposed Project.

CHAPTER - 4

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 impact of the 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 proposed 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 qualify and predict the impact of project on environmental attributes such as water, air, noise, land ecological socio-economic. Such predictions are superimposed over baseline environmental status to derive post project scenario with respect to air, water and soil quality, traffic assessment, Eco-biological and socio-economic parameters of the project location.

The resultant (post-project) quality of environmental parameters is reviewed with respect to the permissible limits. Based on the impacts thus predicted, preventive and mitigation measures were formulated and incorporated in the environmental management plan to minimize adverse impacts on environmental quality during and after 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 and Socio-economic status. The projected impact may be broadly divided into two phases:

- During construction phase: These may be regarded as temporary or short term and ceases with implementation of the project.
- During operation phase: These impacts are continuous warranting built in permanent measures for mitigation and monitoring.

Construction and operation phase of the project comprises of various activities, each of which will have an impact on some or other environmental parameters. Impacts on environmental parameters during construction and operational phase have been studied to estimate the impacts on environment. The impacts have been predicted for the proposed project assuming that the pollution due to the existing activities has already been covered under baseline environmental monitoring.

4.2 IDENTIFICATION & CHARACTERIZATION OF IMPACTS

The 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 proposed expansion 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 and mitigation measures due to project location

The proposed expansion shall be carried out within the existing plant area of 9.089 Hectares (22.46 Acres) which is already in procession of the plant authority. No additional land shall be required for the project. Thus, no person will be displaced or made landless for the proposed expansion.

Hence, no significant impact on the environment is envisaged due to project location as no change in land use (industrial earlier also) and no displacement of person will be carried.

4.2.2 Impacts and mitigation measures due to project design

The proposal is for augmentation of production capacities of the existing units and change in product mix to produce economically viable finished product. The project also envisaged installation of Briquette Plant and Sinter Plant for utilization of Chrome fines and iron ore fines as a step towards resource conservation. The proposed expansion plan has envisaged state of art technology, presently available and widely used in the country and thus no impacts are envisaged due to project design.

4.2.3 Impacts and mitigation measures during Construction

Within the existing premises the required infrastructure for expansion will be installed. The major activities during construction phase are given below:

Project Activities

1. Foundation laying
2. Fabrication
3. Vehicular movement
4. Loading and unloading construction items and plant machineries
5. Storage of construction items & plant machineries
6. Erection & Installation of structures and machineries
7. Maintenance of construction machinery
8. Power supply

9. Appropriate Disposal of generated solid wastes

4.2.4 Impact and Mitigation measure during Operation Phase

The major activities in the operational phase of M/s Eloquent Steel Pvt Ltd. involve Steel Making, Billet Casting, Rolling, Ferro Alloys & Pig Iron Production, Chrome Ore Briquetting and Sinter production. These activities may affect the environment in varying degrees through natural resources depletion viz. water consumption, release of pollutants (particulates and gaseous emissions), effluent discharge, solid/hazardous waste generation, etc. Air, water and noise may be affected due to these activities. Associated activities, e.g. transportation of materials, operations of Softening Plant, Jigging Plant, ETP and Canteen etc., may also affect air, water and noise environment. Greenbelt development will have a positive impact not only on flora and fauna but also on the air quality, noise and soil characteristics. Positive impacts on socio-economic environment are expected due to employment, infrastructure development and also due to developmental activities to be taken up by the project management. The major project activities and the affected environmental parameters are given below:

Project Activities

1. Operations of various plant units e.g. Steel Melting Shop, Reheating Furnace, Rolling Mill, Submerged Arc Furnaces, Briquetting unit and Sinter plant
2. Storage and handling of raw material and products
3. Transportation of raw materials, products and personnel
4. Water supply, storage and treatment
5. Solid wastes management
6. Wastewater management
7. Gaseous emission management from the plant

Pollution Sources

1. Fugitive emissions during operation of Steel Melting Shop, SAF, Sinter Plant Briquetting Plant and material handling areas
2. Stack emission from Steel Melting Shop, Reheating Furnace, SAF and Briquetting Plant
3. Noise from SMS, Billet Caster, Rolling Mill, SAF, Briquetting Plant, Sinter Plant and DG Set, etc
4. Waste water generation from Softening Plant, Rolling Mill, Jigging Plant, Domestic Waste, etc
5. Storage, handling and disposal of solid wastes / hazardous wastes

Affected Environmental Parameters

1. Air quality
2. Water quality

3. Noise quality
4. Soil quality
5. Biological environment
6. Socio-economic conditions

4.3 IMPACT MATRIX

Environmental impacts could be positive or negative, direct or indirect, local or regional and also reversible or irreversible. The primary function of an environment impact assessment study is to predict and quantify the magnitude of these impacts, evaluate and assess the importance of the identified changes, present information and monitor actual changes. The activities of the proposed project are studied. The impacts of various activities of the proposed project are identified and presented as matrix in **Table 4.1**. Further the characteristics of these impacts have been evaluated and they are presented as matrix in **Table 4.2A, 4.2B**.

Table 4.1: Impact Identification Matrix

No.	Activities	Environmental Attributes						
		Air	Noise	Water	Land & Soil	Ecology	Socio-Economic	Aesthetics
Construction phase								
1.	Storage of Raw materials	√	√		√			√
2.	Ready-mix concrete preparation	√	√		√			
3.	Transportation of raw materials	√	√					
4.	Construction activities	√	√		√	√		
Operational phase								
1.	Transportation of Raw materials	√	√		√			
2.	Charging of Raw Materials in IF	√	√			√		
3.	Operation of IF	√	√	√	√			√
4.	Operation of CCM	√	√	√			√	√
5.	Operation of	√	√					

No.	Activities	Environmental Attributes						
		Air	Noise	Water	Land & Soil	Ecology	Socio-Economic	Aesthetics
	Reheating Furnace							
6.	Operation of Rolling Mill	√	√	√	√			√
7.	Charging of Raw materials in Submerged Arc Furnace	√	√		√			√
8.	Operation of Submerged Arc Furnace	√	√	√	√			√
9.	Handling and Transportation of Ferro-alloys	√	√	√	√			√
10.	Operation of the Sinter Plant	√	√		√			√
11.	Operation of Briquette Plant	√	√		√			√
12.	Operation of Domestic utilities	√		√				√
13.	Operation of the DG Sets	√	√		√			
14.	Development of Greenbelt					√	√	√
15.	Employment generation						√	

Table 4.2A Characteristics of Environmental Impacts from Construction Phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Transportation of construction material to Site	Air Pollution (Dust)	Transportation of construction material in trucks	Direct Negative	Short Term	Reversible	Medium, Water sprinkling shall be practiced.
	Air Pollution (Gases)	Transportation of construction material in trucks	Direct Negative	Short Term	Reversible	Medium, Regular emission checks shall be performed.
	Noise Pollution	Noise generated from vehicles	Direct Negative	Short Term	Reversible	Insignificant, Regular vehicle maintenance shall be done.
Construction activities / laying of roads	Air Pollution (Dust & Gases)	Operation of construction machineries, welding & others	Direct Negative	Short Term	Reversible	Insignificant. PPE shall be provided to workers
	Noise Pollution	Generation from construction activities and use of earth moving machineries	Direct Negative	Short Term	Reversible	Insignificant. PPE shall be provided to workers
	Land use	Storage of spares, Refractory	Direct Negative	Short Term	Reversible	Storage is temporary and during construction period only
	Ecology	Loss of vegetation	Direct Negative	Short Term	Reversible	Insignificant, No cutting of trees. Green belt development is envisaged.
Disposal of waste material	Air Pollution (Dust & Gases)	Due to movement of Vehicles	Direct Negative	Short Term	Reversible	Significant. PPE shall be provided to workers
	Noise Pollution	Due to loading / unloading	Direct Negative	Short Term	Reversible	Insignificant. Regular vehicle maintenance and pollution check shall be done. PPE shall be provided to workers

Table 4.2 B Characteristics of Environmental Impacts from Operational Phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Transportation of the Coal & other raw materials from the Mines/Suppliers to the Site						
Handling & Transportation of Raw materials	Air Pollution (Dust & Gases)	Dust emission from raw material transported in the trucks and from the unpaved road. Gaseous emission from the vehicular exhaust	Direct Negative	Short Term	Reversible	*Insignificant* • Water sprinkling shall be done on haul road • Regular vehicle maintenance and pollution check shall be done • Raw material will be covered with tarpaulin during transportation • Greening and paving to arrest soil erosion and dust pollution • Besides, the management will ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust • Water sprinklers/Mist system shall be installed at raw material storage area (at the transfer points)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Noise Pollution	Noise generation while unloading of raw material and vehicle movement	Direct Negative	Short Term	Reversible	*Insignificant* • The unloading will be done in covered area from low height • Regular vehicle maintenance shall be done • Proper usage of the Ear plug/muff provided to the employees working in that area
	Water and Soil Pollution	Material mixing in Runoff or through groundwater percolation	Direct Negative	Short Term	Reversible	*Insignificant* • Garland drains around the stock yards to trap the runoff material • All stockyards shall have impervious concrete flooring
Steel Melting Shop - Induction Furnace						
Charging of Material in IF	Air Pollution (Fugitive emission)	Fugitive emission due to charging	Direct Negative	Short Term	Reversible	*Insignificant,* Fume extraction system shall be provided and connected with Bag filter of flue gas
Operation of IF	Air Pollution (Dust & Gaseous emissions)	Generation of flue gas and fugitive emissions during melting of sponge iron, scrap & pig iron.	Direct Negative	Long Term	Reversible	*Significant,* Fume extraction system *with* Spark Arrester and Pulse jet Bag Filter to control emissions shall be augmented with the existing IFs and installed with the new IFs to keep particulate matter emissions from stack below 30mg/Nm^3 and to control the fugitive emissions

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Water Pollution	Backwash water from Softening Plant	Direct Negative	Long Term	Reversible	*Insignificant,* Neutralization Pit shall be installed to treat the waste water and shall be used for slag quenching, dust suppression, sinter plant and MRP.
	Noise Pollution	Due to operation of Furnace	Direct Negative	Long Term	Reversible	*Insignificant*, Management will ensure proper usage of the Ear plug/muff provided to the employees working in that area
	Solid waste generation	During liquid steel making process slag will be generated	Direct Negative	Long Term	Irreversible	*Insignificant*, After metal recovery, remaining slag (non-hazardous in nature) will be used as aggregates after crushing within the plant site
		Bag Filter Dust	Direct Negative	Long Term	Reversible	*Insignificant,* Bag Filter dust shall be used in Sinter Plant.
Continuous Casting Machine						
Casting of Billets	Resource Depletion (Water) & Water Pollution	Cooling of billets	Direct Negative	Long Term	Irreversible	*Significant,* Water will be recycled back after cooling in Cooling Towers, for reuse. Only make-up water will be added thereafter. Cooling Tower Blow down used for slag quenching, dust suppression, sinter plant and MRP.
	Solid waste generation	Generation of Scale	Direct Negative	Long Term	Reversible	*Insignificant*, Scales will be removed time to time from the settling Pits provided. Scales collected will be used in sinter plant or Shall be used for production of Fe-Si or Fe-Si-Cr.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
		Generation of End Cuts (scrap)	Direct Negative	Short Term	Reversible	*Insignificant*, End cuts shall be collected and will be charged back into Induction Furnace as revert scrap
	Noise pollution	Caster rollers (rolling noise)	Direct	Short Term	Reversible	*Insignificant*, Ear plug/muff shall be provided to the employees working in that area
Rolling Mill – Long Products						
Rolling of Billets	Resource Depletion (Water) & Water Pollution	Cooling of rollers and flushing of scales	Direct Negative	Short Term	Reversible	*Insignificant*, Water having oil, grease and mill scales shall be taken to ETP and treated water shall be recycled in the process again
	Noise Pollution	Rolling operation	Direct Negative	Short Term	Reversible	*Insignificant*, Proper lubrication and maintenance of Rollers shall be done. Ear plug/muff shall be provided to the employees working in that area
	Solid Waste Generation	Oil used for lubrication of rollers	Direct Negative	Long Term	Irreversible	*Significant,* oil will be removed in oil collection system provided. Oil collected shall be sold to the registered recycler
		Mill scale	Direct Negative	Short Term	Reversible	*Insignificant*, Scales shall be used for production of Fe-Si or Fe-Si- Cr
		End Cut / Cobbles Rolling Mill	Direct Negative	Short Term	Reversible	*Insignificant*, End cuts shall be collected and will be charged back into Induction Furnace as revert scrap

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Submerged Arc Furnace						
Operation of SAF	Air Pollution (Fugitive emission & Stack Emission)	Charging of raw materials	Direct Negative	Short Term	Reversible	*Insignificant,* Dust extraction system consisting of Bag filter to control dust emission
		Stack emission	Direct Negative	Short Term	Reversible	*Insignificant,* The gases from the SAF will be taken out through Fume extraction system with Spark Arrester and Pulse Jet Bag Filter and then the cleaned gas will be let out from stack
	Noise Pollution	Due to Furnace operation	Direct Negative	Short Term	Reversible	*Insignificant*, Management will ensure proper usage of the Ear plug/muff provided to the employees working in that area
	Water Resource Depletion & Pollution	Backwash water from Softening Plant and Furnace Cooling Water	Direct Negative	Long Term	Reversible	*Significant,* Softening Plant waste water shall be sent for treatment in Neutralization Pit and then shall be used for slag quenching, dust suppression, sinter plant and MRP. Water will be recycled back after cooling in Cooling Towers, for reuse. Cooling Tower Blow down used for dust suppression and plantation.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Solid Waste Generation	Slag Generation during production of alloys	Direct Negative	Long Term	Irreversible	*Insignificant,* • Fe-Mn slag will be used In-house as raw material for Si-Mn production • Si-Mn slag will be used for land filling in low lying areas • Fe-Si slag will be used for cement industries as a raw material • Fe-Si-Cr Slag will be used for cement industries as a raw material as well as for construction and Road filling material • Pig Iron Slag will be used for cement industries as a raw material • Fe-Cr slag: After chrome recovery, the tailing material will be used as stone chips (8 to 25 mm) & land filling purpose (0 to 8 mm)
		Bag Filter Dust	Direct Negative	Long Term	Reversible	*Insignificant,* Bag Filter dust shall be feed into Sinter Plant
Metal Recovery Plant (Recovery of Ferro-chrome)						
Crushing & Screening of Slag	Air Pollution (Fugitive dust emission)	Crushing & Screening of slag	Direct Negative	Long Term	Reversible	*Insignificant,* Dust suppression system shall be installed to control fugitive emission

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Jigging of slag	Water Pollution	Air pulsations	Direct Negative	Long Term	Reversible	*Insignificant,* Settling Pit has been installed at Jigging Plant. Clear water from the Jigging Plant is recycled and settled fines will be reused
Briquetting Plant						
Blending of Chrome Ore fines	Air Pollution (Fugitive emission)	Mixing with Pay loader on ground	Direct Negative	Short Term	Reversible	*Insignificant,* water sprinkling shall be done for dust suppression.
Drying of Fe-Cr fines	Air Pollution (Flue gas)	Burning of LSHS for drying	Direct Negative	Short Term	Reversible	*Insignificant,* Bag Filter shall be installed with stack for control of emissions
Screening of Ore	Air Pollution (Fugitive emission)	Screening of dried Fe-Cr ore	Direct Negative	Short Term	Reversible	*Insignificant*, Dust extraction system connected with the same Bag Filter for flue gas
Mixing of Cr Ore, lime and molasses	Air Pollution (Fugitive emission)	Dust generation due to mixing	Direct Negative	Short Term	Reversible	*Insignificant*, No pollution control equipment considered
Sinter Plant						
Transportation of raw material to the Bunkers in Sinter plant	Air Pollution	Fugitive Emission	Direct Negative	Short Term	Reversible	*Insignificant*, Closed conveyor and dust suppression system shall be used to avoid material spillage and fugitive dust emission

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Preparation of Sinter Mix	Air Pollution	Fugitive Emission	Direct Negative	Short Term	Reversible	*Insignificant*, Dust Extraction System shall be provided and connected with same Bag Filter of flue gas
Sinter making	Air Pollution (Stack emission)	Flue gas generation	Direct Negative	Short Term	Reversible	*Insignificant*, GCP with Pulse jet bag filter shall be installed
	Solid Waste generation	Bag Filter dust	Direct Negative	Short Term	Reversible	*Insignificant*, it will be recycled in the process
Crushing & Screening of Sinter	Air Pollution (Fugitive emission)	Sizing & Crushing of Sinter	Direct Negative	Short Term	Reversible	*Insignificant*, Dust extraction system shall be provided at Crusher and screen and connected with the same Bag Filter system
DG Set						
Operation of the DG Set	Air Pollution	Flue gas emission	Direct Negative	Short Term	Reversible	Insignificant, The DG will be operated in case of power failure only. Green DG sets shall be installed
	Noise Pollution	Generation of noise during DG Set operation	Direct Negative	Short Term	Reversible	Insignificant, The DG Sets will have acoustic enclosure to minimize the noise.
Domestic Waste						
Operation of Domestic utilities	Water Pollution	Operation of Washroom, toilets – Wastewater generation	Direct Negative	Long Term	Reversible	Insignificant. The sewage will be treated in STP of 25 KLD

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Green Belt Development						
Development and maintenance of Greenbelt	Reduction in Air Pollution and Noise Pollution	Plantation of trees within premises to cover 33% of the area	Direct Positive	Long Term	Reversible	Positive Impact due to development of a proper greenbelt along the periphery of the premises. This will act as barrier for air emission and noise
Socio-economic Development						
Employment Generation			Direct Positive	Long Term		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.

4.4 LAND ENVIRONMENT – IMPACT & CONTROL MEASURES

4.4.1 During Construction Phase

The proposed expansion shall be carried out within the existing plant area of 9.089 Hectares which is already in procession with the plant authority. No additional land shall be required for the project. As the proposed expansion is carried out within the existing plant premises so no major change in land use is envisaged. There are no major trees or crops in the site.

The common anticipated wastes are concrete, empty paint cans, plastic bags and metal scrap, etc. Improper disposal of solid waste generated will create negative impact on surrounding environment.

Mitigation Measures

As the proponent is going for expansion, existing infrastructure will be utilized to the maximum extent. The laborer's will be taught as how and where to disposal of waste materials. Wet and dry waste bins will be supplied to them. Waste generated from constructional labor will be handed over to municipal authorities. Metal scrap generated, will be utilized in the existing plant as raw material. The concrete waste will be kept separately and used for filling in the low-lying areas. Cans and bags will be given to authorized recyclers.

4.4.2 During Operation Phase

Land contamination may occur due to unsystematic disposal of solid and hazardous waste or spillage of oil. Suitable solid wastes management plan will be adopted so that no contamination of land is envisaged due to the project.

All solid wastes generated during operation phase shall be disposed as per Solid Wastes Management Rules, 2016 and hazardous wastes as per as per Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016. All the raw materials, products and solid waste generated shall be stored in covered and on impervious concrete flooring to avoid land contamination and leaching.

Solid waste generation and utilization from the existing and proposed plant is given below:

Table 4.3: Details of Solid Waste Generation, Handling and Utilization

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
IF Slag	18,326	58,310	After metal recovery (approx. 12%), remaining slag shall be used as aggregates

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
IF Bag Filter Dust	3,773	12,005	Shall be used in Sinter Plant
Scale from Ingot Casting / CCM	1,400	2,100	Shall be used for production of Fe-Si or Fe-Si-Cr. Or will be used in Sinter Plant
End Cut / Crop from CCM	--	4,900	Will be charged in Induction Furnace as return scrap
Mill Scale from Rolling Mill	--	3,150	Shall be used for production of Fe-Si or Fe-Si-Cr.
End Cut / Cobbles Rolling Mill	--	5,250	Will be charged in Induction Furnace as return scrap
Fe-Mn Slag	59,052 (max.)	59,052 (max.)	Will be used for production of Si-Mn
Si-Mn Slag	36,750 (max.)	36,750 (max.)	Shall be used for construction or filling of low-lying area
Fe-Cr. Slag	53,147 (max.)	53,147 (max.)	• Chrome from Ferro-chrome slag will be recovered at chrome recovery plant. • After chrome recovery, the tailing material will be used as stone chips (8 to 25 mm) & land filling purpose (0 to 8 mm). • TCLP Test will be carried out all around the storage area on regular basis. • Will be supplied for Construction or will be sent to TSDF.
Fe-Si. Slag	1,134 (max.)	1,134 (max.)	Ferro Silicon Slag will be used for cement industries as a raw material & used for medium carbon silico manganese production purpose
Fe-Cr.-Si	1,674 (max.)	1,674 (max.)	Ferro Silico Chrome Slag will be used for cement industries as a raw material as well as for construction and Road filling material after undergoing TCLP Test.
Pig Iron Slag	--	38,200 (max.) or in any combination, not exceeding 59,052 TPA	Pig Iron Slag will be used for cement industries as a raw material
Bag Filter Dust from SAFs	1,358 (maximum)	1,358 (Maximum)	Ferro-chrome dust will be used in Briquette Plant. Fe-Mn & Fe-Si dust

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
			will be used in Sinter plant
Sinter Plant Dust from Pollution Control	---	5,940	Shall be recycled
Dust from Briquette Plant	--	8,250	Shall be recycled
Used Refractories			Shall be recycled

4.4.2.1 Hazardous Waste Generation

Generation of 'Used Oil' after the proposed expansion shall be approx. 6.5 kiloliters per annum. Used oil will be collected in dedicated drums and stored on impervious concrete floor with bund wall along with oil collection system for maximum 90 days before disposal and will be sold to the registered recyclers.

4.4.2.2 Other Solid Waste

The Solid Waste generated other than the above mentioned waste will be E-Waste, Plastic Waste.

E- Waste is mostly generated from the discarded electrical parts that from the machineries or the Discarded computer parts. The plant almost produces 0.02TPA of Electrical waste that will be stored on impervious concrete floor for maximum of 180 days. The parts that can be reused will be recovered and the remaining will be sold to Authorized Recycler.

Plastic Waste is mostly generated from the packing unit and raw material unit. It is estimated that the Plastic waste that is generated in the plant will be 0.04TPA. This Plastic Waste will be sold to Authorized Recycler.

The Project Proponent will take initiative to reduce and reuse these types of waste generation so as to prevent pollution.

4.4.2.3 Storage of Raw Material, Finished Product and Solid Waste Generated

All the material that is stored in the plant will be stored in stockyards that will be provided with impervious flooring and shall be equipped with water spray system for dust suppression. Stock yards will also be provided with garland drains and catch pits to trap run off material.

4.5 AIR ENVIRONMENT – IMPACT & CONTROL MEASURES

4.5.1 During Construction Phase

During construction phase, dust is expected to be the main pollutant, which is associated with general construction activity including excavation, leveling and material handling. In this case, pollution emission sources are not distributed throughout the project site but fall under the category of area source. Concentration of SO_2, NO_X and CO may slightly increase due to increased vehicular traffic. The impact of such activities would be temporary and restricted to the constructed phase. The approach roads will be paved or tarred and vehicles will be kept in good condition to minimize the dust emissions due to vehicular traffic. Materials like cement, paints and bricks etc., will stored at an identified areas with proper shelters. Temporary barricading structures shall also be provided to reduce carryover of particulates away from the construction area. Vehicles will be kept in good condition in order to minimize the dust pollution due to vehicular traffic. Proper upkeep and maintenance of vehicles, sprinkling of water on roads and construction site, providing sufficient vegetation all-around are some of the measure that would greatly reduce the impacts during the construction phase. Thus, it is inferred that minor negative impact within a few 100 meters from the source (within the site) would occur on the ambient air quality under the worst conditions, which are mitigated by implementing environmental management plan. However, no significant impacts are expected on the overall ambient air quality due to construction activities, at the sensitive receptors outside the project premises.

4.5.2 During Operation Phase

During operational phase air pollution shall be from gaseous and dust emissions arising from different activity like Raw Material Handling and other process in Steel Melting Shop, Reheating Furnace, SAF, Sinter Plant and Briquetting Plant.

4.5.2.1 Emission from Point Source (Stack)

Stack emissions will be from Steel Melting shop – Induction Furnaces, Reheating Furnace, Submerged Arc Furnaces, Sinter Plant, Briquetting Plant and DG sets.

4.5.2.2 Emission from Area Source (Fugitive Emission)

Fugitive emissions are expected during Material & Product Handling area, during melting operation in Steel Melting Shop, SAF, Sinter Plant & Briquetting Plant and due to vehicular movement.

4.5.3 Air Pollution Dispersion Modeling Studies

4.5.3.1 Air Quality Models

Emissions were analyzed for their impacts on the GLC for various distances using the dispersion modeling guidelines given by the Central Pollution Control Board, New Delhi and the dispersion modeling software AREMOD of the United States Environment

Protection Agency (USEPA).

Model Input Parameters

I. Meteorological Data

The meteorology of the project area plays very important role in dispersion of pollutants and buildup of pollution within the atmosphere. In the present study, one season (December 2019 – February 2020) meteorological data (Hourly data on wind speed, wind direction, calm, atmospheric temperature, etc.) has been taken to find the dispersion of pollutant concentration. The mixing height for study period and area is built-in the software. Wind rose diagrams prepared using the meteorological data obtained from Automatic Weather Station installed at the project site and used for modelling clearly states that predominant wind direction for December to February season was NNW followed by North. Windrose diagram obtained for Dec to Feb is given below as **Fig. 4.1**.

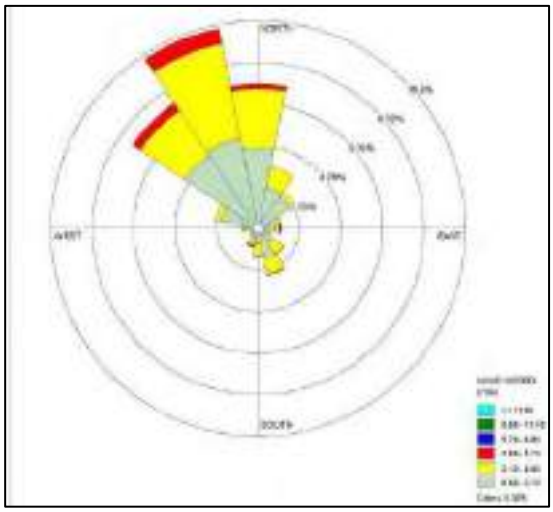


Fig 4.1: Windrose Plot of Study Area (Dec 2019- Feb 2020)

II. Process Emission Data

Stack emission data & reports were considered for modeling. The stack details are given below:

Table 4.4: Stack Details

Stack Attached to	Stack Temp (K)	Vel (m/s)	Stack Height (m)	Stack Dia (m)	Failure of Control Equipment		Controlled Scenario (Bag Filter @ 98% efficiency)			
					PM2.5 (g/s)	PM10 (g/s)	PM2.5 (g/s)	PM10 (g/s)	NO2 (g/s)	SO2 (g/s)
Induction Fce. 3x8Ton	333	9	30	0.8	0.390	0.976	0.039	0.098	0.068	0.008
Induction Fce. 3x8Ton	333	9	30	0.8	0.390	0.976	0.039	0.098	0.068	0.008

Stack Attached to	Stack Temp (K)	Vel (m/s)	Stack Height (m)	Stack Dia (m)	Failure of Control Equipment		Controlled Scenario (Bag Filter @ 98% efficiency)			
					PM2.5 (g/s)	PM10 (g/s)	PM2.5 (g/s)	PM10 (g/s)	NO2 (g/s)	SO2 (g/s)
Induction Fce. 2x25Ton	333	9	30	0.8	0.586	1.465	0.059	0.146	0.103	0.012
SAF #1 (7.5MVA)	373	8	36	1.4	1.393	3.482	0.139	0.348	0.112	0.021
SAF #2 (7.5MVA)	373	8	36	1.4	1.771	4.428	0.177	0.443	0.112	0.026
SAF #3 (7.5MVA)	373	8	36	1.4	1.495	3.738	0.150	0.374	0.112	0.305
SAF #4 (5.5MVA)	373	8	36	1.4	1.438	3.595	0.144	0.360	0.132	0.322
Reheating Furnace (25TPH)	423	7	30	0.8	0.021	0.052	0.002	0.005	0.052	0.104
Briquetting plant (25TPH)	403	7	30	0.6	0.021	0.052	0.002	0.005	0.052	0.003
Sinter Plant	403	7	30	0.8	0.012	0.030	0.001	0.003	0.003	0.058

Modeling Case-Scenarios

- **Scenario – 1: (Failure of Control Equipment)** Control equipment such as Fume extraction system with spark arrestor and bag filters have been provided / proposed with Induction Furnaces and Submerged Arc Furnaces. Bag filters will be provided with Briquette Plant and Sinter Plant to control emission of particulate matters. Simultaneous failure all equipment is not possible. Hence, incremental GLC due to the proposed expansion has been predicted in case of failure of pollution control equipment, considering failure of one pollution control facility, taking the worst-case scenario. It is assumed that the failure take place for 1 day before the unit is shut down for repair/maintenance.
- **Scenario – 2: (Under Controlled Conditions)** Under controlled conditions, all pollution control equipment are expected to operate at desired emission levels.

Modeling Result

Scenario 1 (**Failure of Control Equipment):** Under failure condition resultant maximum cumulative GLC (24-hour average) of PM_{10} was 96.125µg/m³, whereas it was 58.063µg/m³ for PM2.5 at A3 location. The resultant cumulative GLC (24-hour average) of PM_{10} & $PM_{2.5}$ at all the baseline monitoring locations are presented in **Table 4.5**. The graphical & spatial distribution of PM_{10} & $PM_{2.5}$ dispersion in 10 km study area is presented in **Fig. 4.2 & Fig. 4.3**.

Table 4.5: Predicted 24 Hourly GLC & Resultant Cumulative GLC of PM10 & PM2.5 (Case: Failure of Control Equipment)

	Village	Max Baseline Conc.		Predicted GLC		Cumulative GLC	
		PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
A1	Project Site	79.8	49.8	2.478	1.386	82.278	51.186
A2	Shrirampur	69.4	47.1	3.895	2.145	73.295	49.245
A3	Digari	86.7	52.9	9.425	5.163	96.125	58.063
A4	Near Maheshpur	58.8	38.8	0.512	0.291	59.312	39.091
A5	Sabanpur	78.2	46.7	2.298	1.270	80.498	47.970
A6	Dobipur	69.2	47.8	1.336	0.672	70.536	48.472
A7	Alkusha	74	45.8	0.174	0.100	74.174	45.900
A8	Lalbazar	78.4	43.9	2.218	1.258	80.618	45.158

Scenario 2 (Under Controlled Conditions): The predicted maximum incremental GLC (24-hour average) values, under controlled condition for PM_{10}, $PM_{2.5}$, NOx, SO_2 & CO were 4.993 µg/m³, 1.661µg/m³, 1.494µg/m, 0.706µg/m³ & 0.0004310mg/m^3 , respectively, at location A3, whereas under uncontrolled condition the resultant maximum cumulative GLC (24-hour average) of PM_{10} was 91.693 µg/m³ and for $PM_{2.5}$ was 54.561µg/m³ at location A3 (Digari). The predicted maximum incremental GLC (24-hour average) and predicted cumulative GLC at baseline air quality monitoring locations are presented in **Table 4.6.** The spatial distribution of PM_{10}, $PM_{2.5}$, NO_2 and SO_2 GLC in 10 km study area are presented in **Fig. 4.4** to **Fig 4.7**.

Table 4.6: Predicted 24 Hourly GLC & Resultant Cumulative GLC at AQM Stations

(Case: Under Control Condition)

Village	Max Baseline Concentrations					Predicted GLC – AERMOD					Cumulative GLC				
	PM_{10}	$PM_{2.5}$	NO_2	SO_2	CO	PM_{10}	$PM_{2.5}$	NO_2	SO_2	CO	PM_{10}	$PM_{2.5}$	NO_2	SO_2	CO
	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	(mg/m^3)
Project Site (A1)	79.8	49.8	38.8	24.8	1.05	1.341	0.443	0.383	0.183	0.0003203	81.141	50.243	38.983	25.183	1.0503203
Shrirampur (A2)	69.4	47.1	28.4	20.0	0.82	2.071	0.692	0.619	0.291	0.0003213	71.471	47.792	28.691	20.619	0.8203213
Digari (A3)	86.7	52.9	39.4	29.9	1.09	4.993	1.661	1.494	0.706	0.0004310	91.693	54.561	40.106	31.394	1.090431
Near Maheshpur (A4)	58.8	38.8	25.1	19.4	0.45	0.286	0.094	0.078	0.037	0.0000609	59.086	38.894	25.137	19.478	0.4500609
Sabanpur (A5)	78.2	46.7	32.4	26.2	0.97	1.248	0.409	0.372	0.175	0.0002571	79.448	47.109	32.575	26.572	0.9702571
Dobipur (A6)	69.2	47.8	38.7	18.9	0.87	0.604	0.219	0.207	0.097	0.0001880	69.804	48.019	38.797	19.107	0.870188
Alkusha (A7)	74.0	45.8	32.8	21.8	0.73	0.099	0.032	0.027	0.013	0.0000390	74.099	45.832	32.813	21.827	0.730039
Lalbazar (A8)	78.4	43.9	31.4	20.2	0.87	1.238	0.405	0.340	0.162	0.0001120	79.638	44.305	31.562	20.540	0.870112

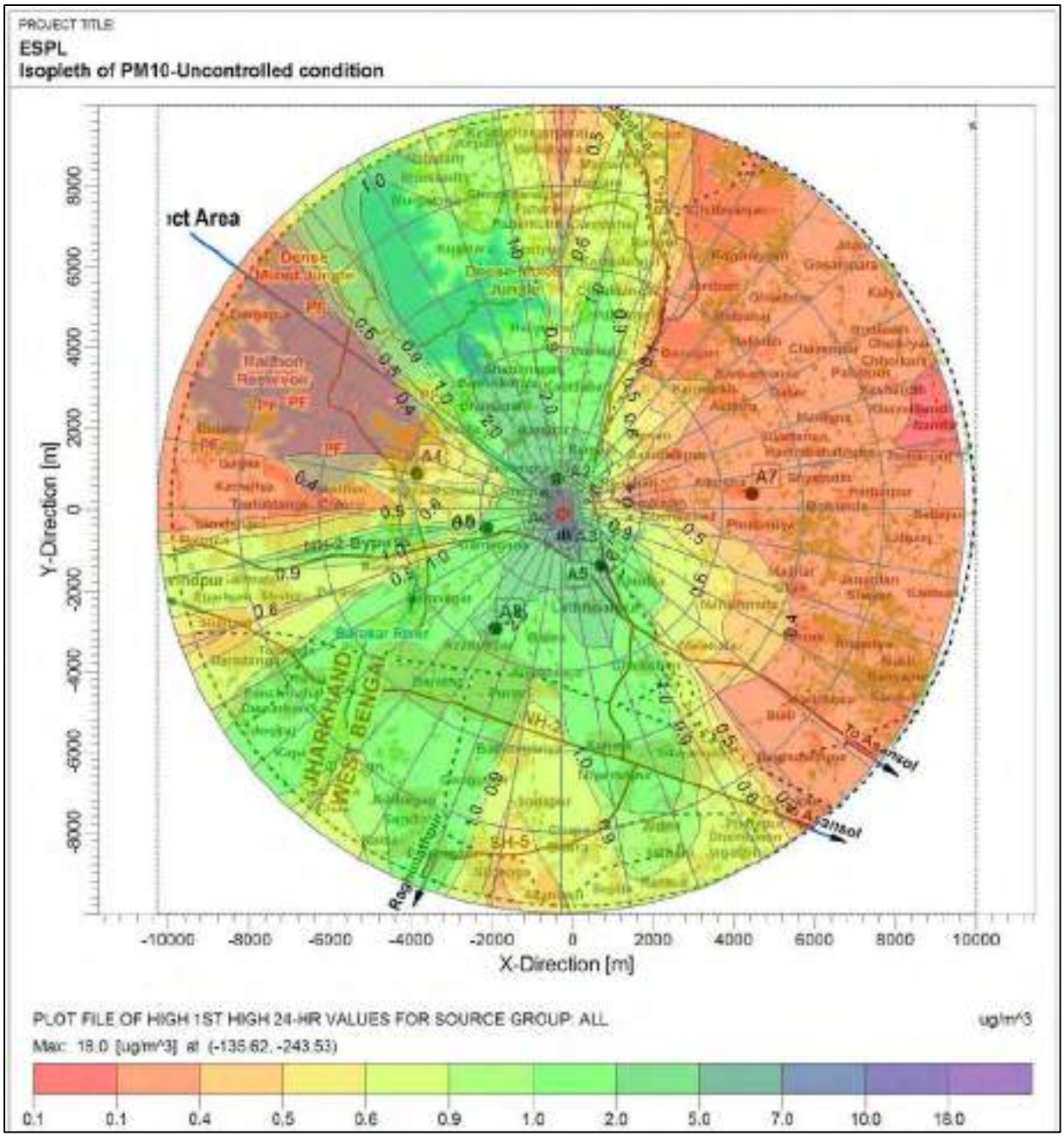


Fig 4.2: Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for PM10

(Scenario: Failure of Control Equipment)

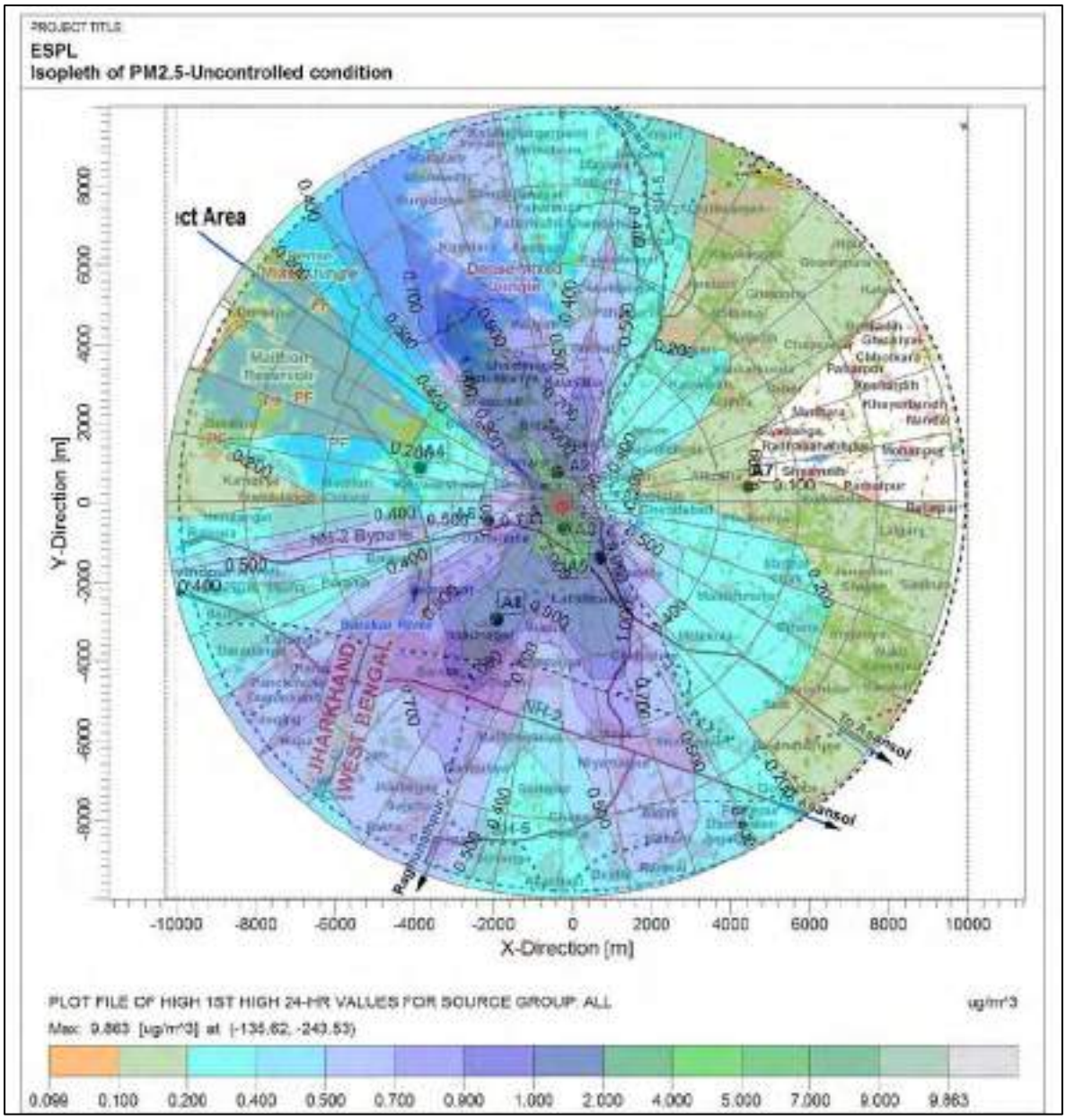


Fig 4.3: Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for PM2.5
(Scenario: Failure of Control Equipment)

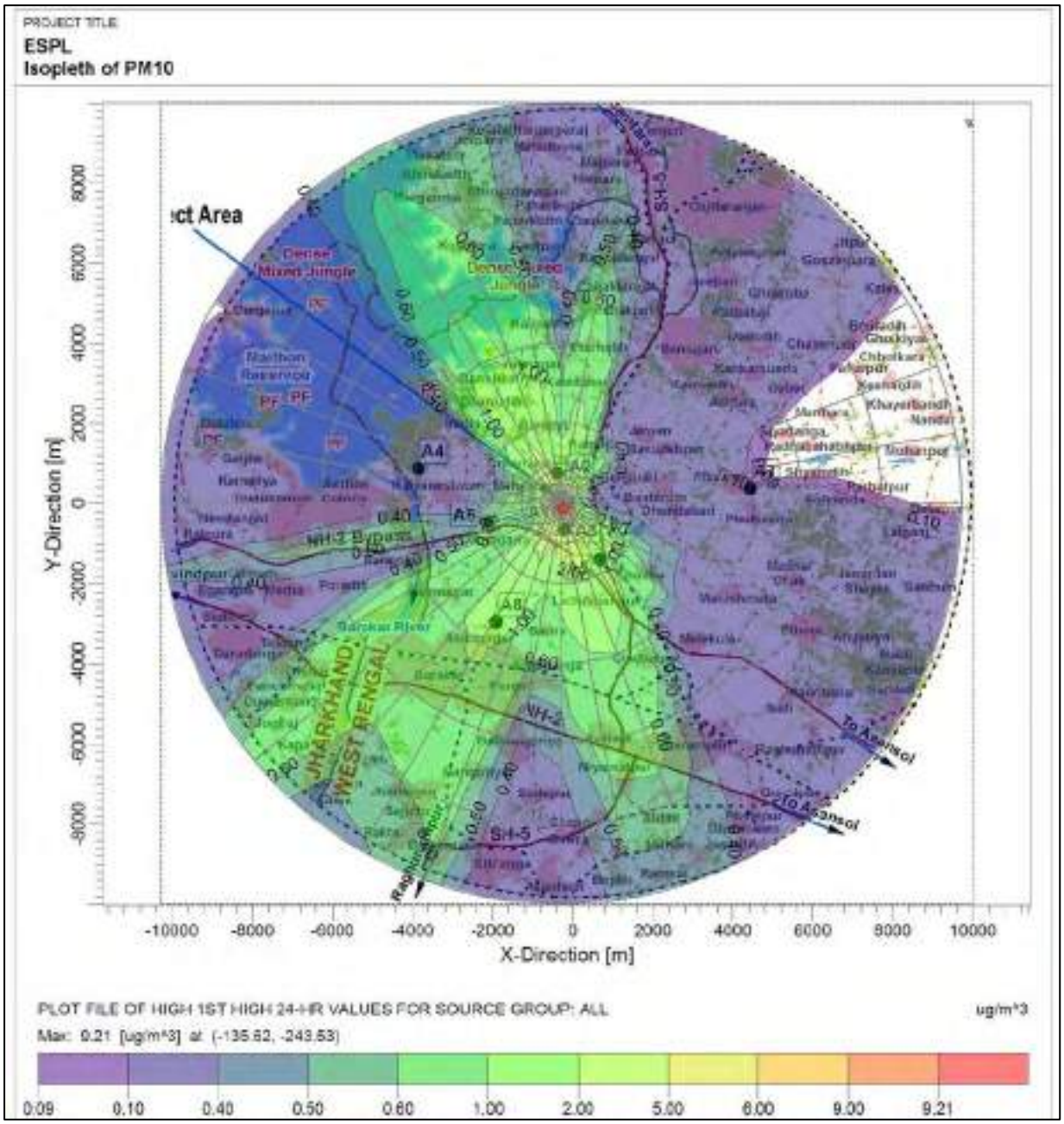


Fig 4.4: Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for PM10
(Scenario: Controlled Condition)

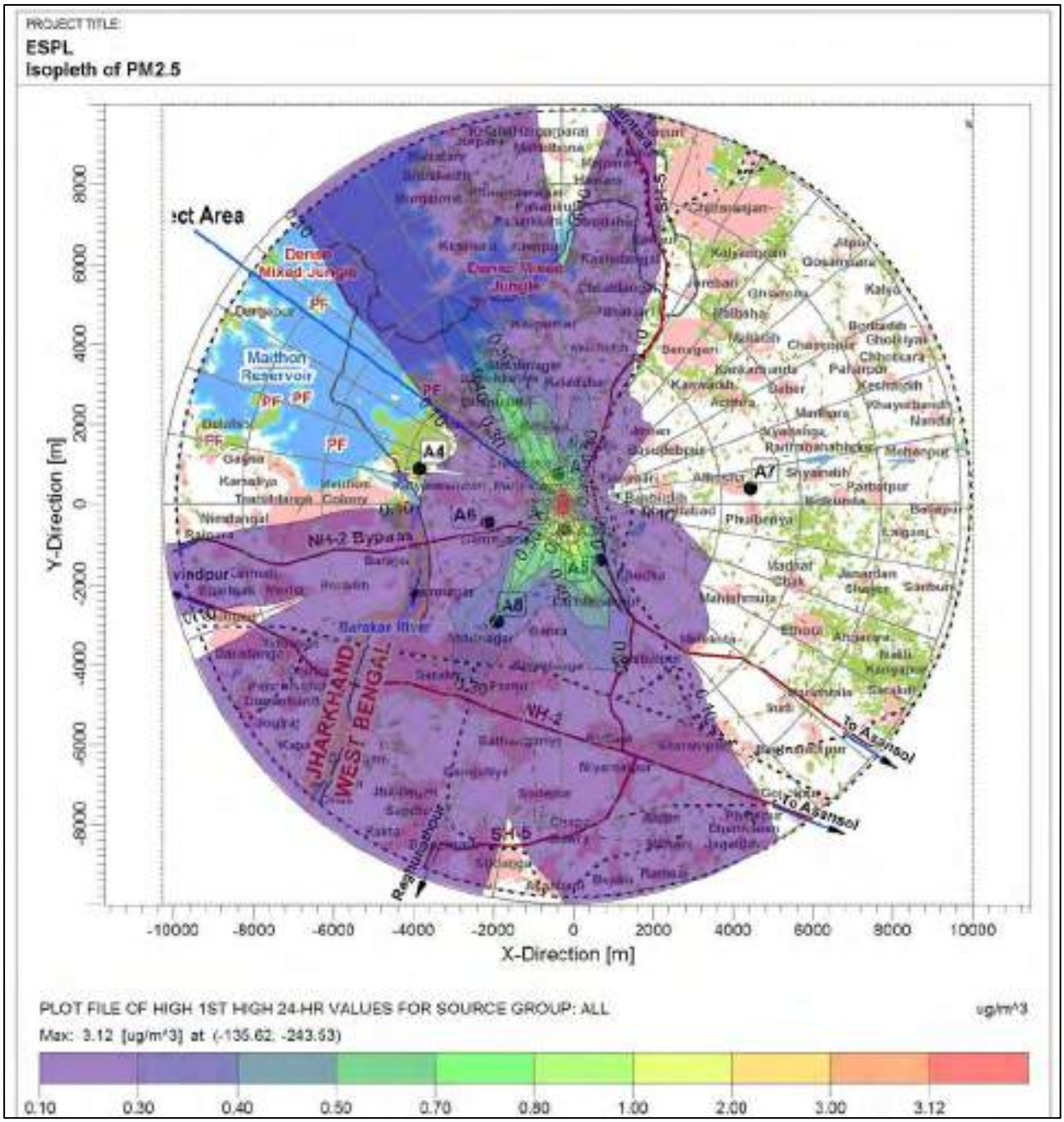


Fig 4.5: Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for PM2.5

(Scenario: Controlled Condition)

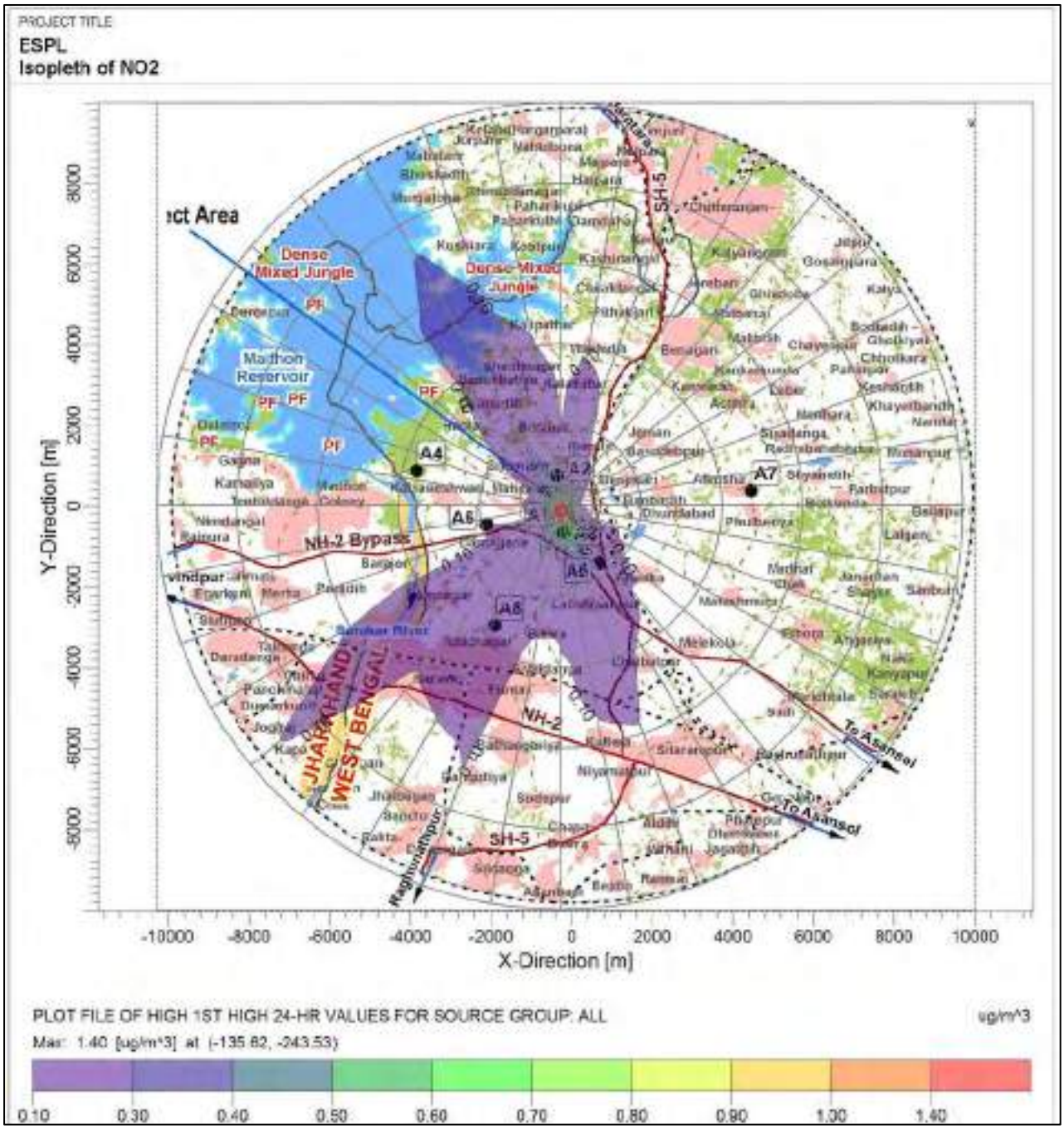


Fig 4.6: Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for NOx
(Scenario: Controlled Condition)

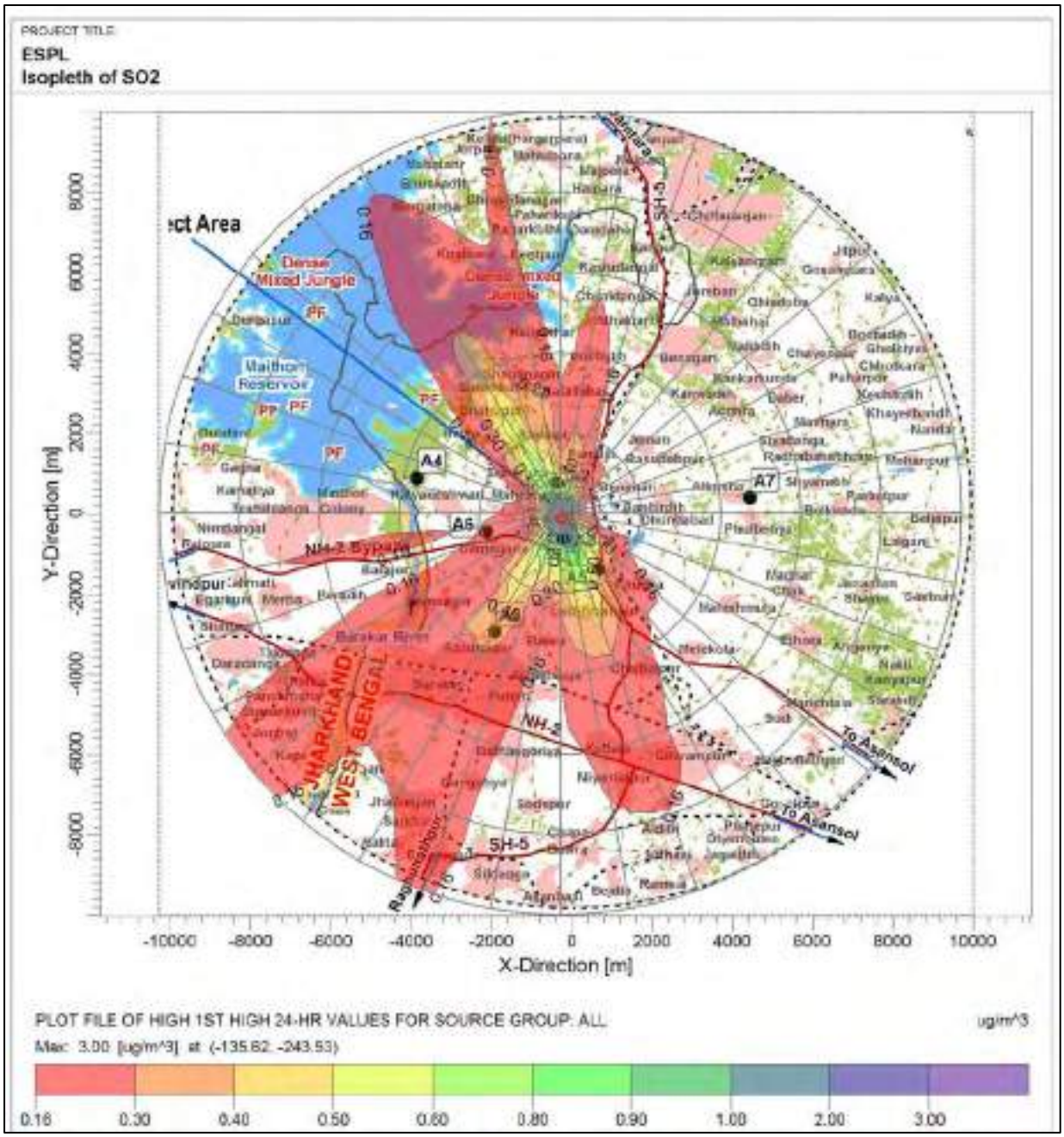


Fig 4.7: Isopleths for 24 Hr. Incremental Conc. (µg/m^3) for SO_2

(Scenario: Controlled Condition)

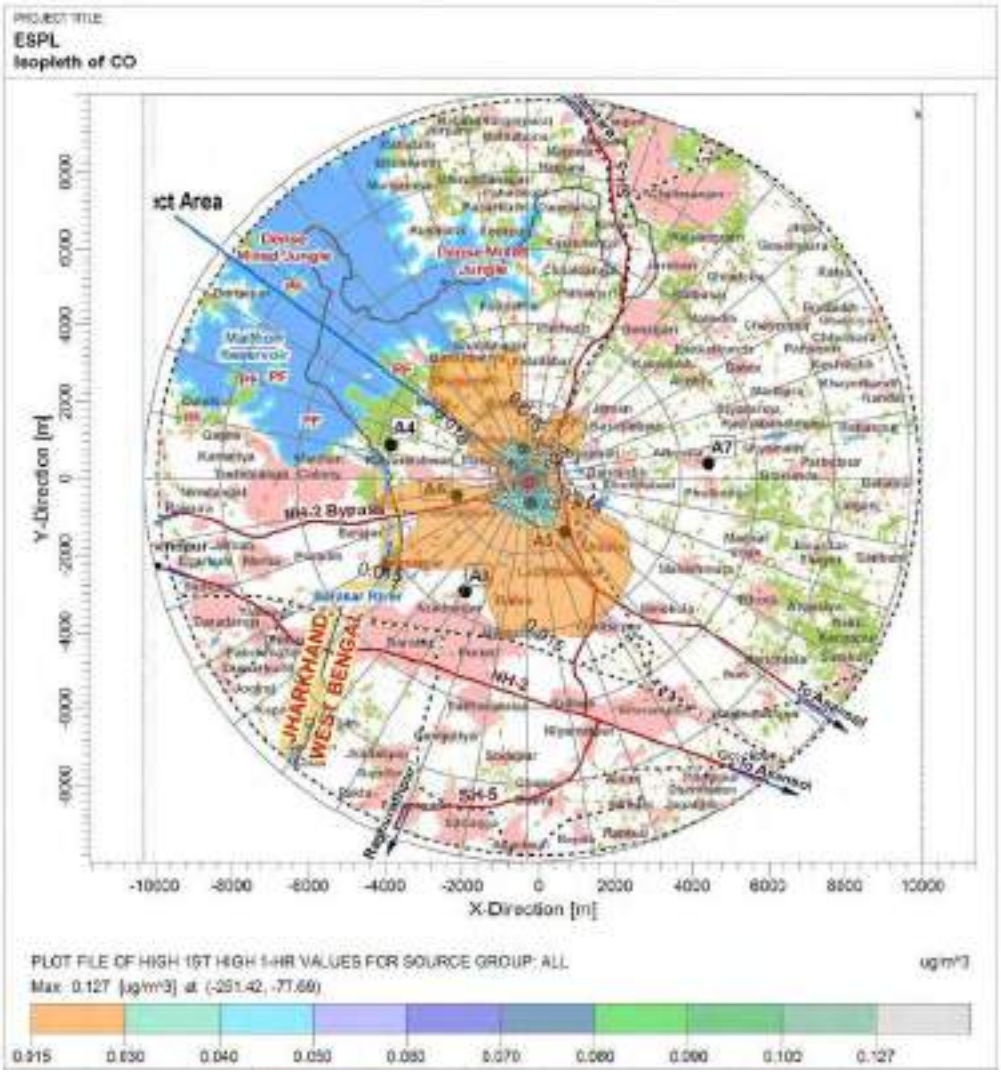


Fig 4.8: Isopleths for 24 Hr. Incremental Conc. (µg/m3) for CO (Scenario: Controlled Condition)

Result & Discussion

- When all pollution control equipment with operating units are in working condition the maximum incremental concentration of PM_{10}, $PM_{2.5}$, NO_x, SO_2, and CO is 4.993 µg/m³, 1.661µg/m³, 1.494µg/m^3, 0.706µg/m^3 & 0.0004310mg/m^3 predicted at A3 location which is in downwind side at a distance of 600m from the project site. Suitable measures will be adopted under EMP for reduction of impacts.
- As distance from source increases, the incremental concentration of PM_{10} drops drastically due to settling of PM_{10} & $PM_{2.5}$ particles under gravity.

4.5.4. Air Quality Index

An air quality index (AQI) is a number used by government agencies to communicate to the public how polluted the air currently is or how polluted it is forecast to become. As the AQI increases, an increasingly large percentage of the population is likely to experience increasingly severe adverse health effects. There are six AQI categories,

namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. The AQI for proposed project will consider five pollutants (PM_{10}, $PM_{2.5}$, NO_2, SO_2 and CO) for which short-term (up to 24-hourly averaging period) National Ambient Air Quality Standards are prescribed. Based on the measured ambient concentrations, corresponding standards and likely health impact, a sub-index is calculated for each of these pollutants. The worst sub-index reflects overall AQI.

AQI will be calculated by using the following formula.

$$I = [I_{high} - I_{low} / C_{high} - C_{low}] (C - Clow) + I_{low}$$

Where,

I - The Air Quality Index

C - The pollutant concentration

C_{low} *- The concentration breakpoint that is ≤ C*

C_{high} *- The concentration breakpoint that is ≥ C*

I_{low} *- The index breakpoint corresponding to* C_{low}

I_{high} *- The index breakpoint corresponding to* C_{high}

The AQI values and corresponding ambient concentrations (health breakpoints) as well as associated likely health impacts for the identified eight pollutants are as follows

Table 4.7: AQI Category Based on Pollutants Concentration

AQI Category, Pollutants and Health Breakpoints								
AQI Category (Range)	**PM_{10} 24-hr**	**$PM_{2.5}$ 24-hr**	**NO_2 24-hr**	**O_3 8-hr**	**CO 8-hr**	**SO_2 24-hr**	**NH_3 24-hr**	**Pb 24-hr**
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5 –1.0
Moderately (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430 +	250+	400+	748+*	34+	1600+	1800+	3.5+

(*Ref: Table Info acquired from Ministry of Environment, Forests & Climate Change)*

Table 4.8: Health impacts based on the AQI values

AQI	Associated Health Impacts
Good (0-50)	Minimal Impact

Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people.
Moderate (101-200)	May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults.
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure, and discomfort to people with heart disease
Very Poor (301-400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases.
Severe (401-500)	May cause respiratory impact even on healthy people, and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during light physical activity.

(Ref: Associated health effects taken by the MoEF&C)

In the present study only 5 parameters are taken such as PM_{10}, $PM_{2.5}$, SO_2, NO_2 and CO. By considering the above 5 pollutants the calculated AQI at 8 locations are given.

Table 4.9: Sub-Index Values for Each Air Pollutant at Selected Sites

Site	Conc.	Sub-Index	Category	Color	Health Impact
PM_{10} (µg/m^3)					
A1	75.5	76	Satisfactory	Light green	May cause discomfort to sensitive people
A2	59.4	59	Satisfactory	Light green	May cause discomfort to sensitive people
A3	81.1	81	Satisfactory	Light green	May cause discomfort to sensitive people
A4	49.1	49	Satisfactory	Light green	May cause discomfort to sensitive people
A5	73.3	73	Satisfactory	Light green	May cause discomfort to sensitive people
A6	60.0	60	Satisfactory	Light green	May cause discomfort to sensitive people
A7	68.2	68	Satisfactory	Light green	May cause discomfort to sensitive people
A8	71.2	71	Satisfactory	Light green	May cause discomfort to sensitive people
$PM_{2.5}$ (µg/m^3)					
A1	44.5	74	Satisfactory	Light green	May cause discomfort to sensitive people
A2	35.5	59	Satisfactory	Light green	May cause discomfort to sensitive people
A3	49.2	82	Satisfactory	Light green	May cause discomfort to sensitive people
A4	29.6	49	Good	Green	Minimal Impact
A5	43.0	72	Satisfactory	Light green	May cause discomfort to sensitive people
A6	37.8	63	Satisfactory	Light green	May cause discomfort to sensitive people

Site	Conc.	Sub-Index	Category	Color	Health Impact
A7	39.0	65	Satisfactory	Light green	May cause discomfort to sensitive people
A8	41.0	68	Satisfactory	Light green	May cause discomfort to sensitive people
SO_2 ($\mu g/m^3$)					
A1	21.8	27	Good	Green	Minimal Impact
A2	14.9	19	Good	Green	Minimal Impact
A3	23.4	29	Good	Green	Minimal Impact
A4	11.4	14	Good	Green	Minimal Impact
A5	19.3	24	Good	Green	Minimal Impact
A6	16.7	21	Good	Green	Minimal Impact
A7	17.3	22	Good	Green	Minimal Impact
A8	17.8	22	Good	Green	Minimal Impact
NO_2 ($\mu g/m^3$)					
A1	32.1	40	Good	Green	Minimal Impact
A2	23.1	29	Good	Green	Minimal Impact
A3	35.4	44	Good	Green	Minimal Impact
A4	20.2	25	Good	Green	Minimal Impact
A5	30.0	38	Good	Green	Minimal Impact
A6	26.9	34	Good	Green	Minimal Impact
A7	26.0	33	Good	Green	Minimal Impact
A8	27.2	34	Good	Green	Minimal Impact
CO (mg/m^3)					
A1	0.98	49	Good	Green	Minimal Impact
A2	0.72	36	Good	Green	Minimal Impact
A3	1.07	54	Satisfactory	Light green	May cause discomfort to sensitive people
A4	0.52	26	Good	Green	Minimal Impact
A5	0.93	47	Good	Green	Minimal Impact
A6	0.85	43	Good	Green	Minimal Impact
A7	0.79	40	Good	Green	Minimal Impact
A8	0.88	44	Good	Green	Minimal Impact

After assessing the impacts from each pollutant, the cumulative effect of all 5 pollutant AQI values and their health impacts for each site is summarized in following **Table 4.10**

Table 4.10: Cumulative effect of all pollutants based on AQI values

Site	AQI value	Category	Color	Health Impact
A1	76	Satisfactory	Light green	May cause Discomfort to sensitive people
A2	59	Satisfactory	Light green	May cause Discomfort to sensitive people
A3	82	Satisfactory	Light green	May cause Discomfort to sensitive people
A4	49	Good	Green	Minimal Impact
A5	73	Satisfactory	Light green	May cause Discomfort to sensitive people
A6	63	Satisfactory	Light green	May cause Discomfort to sensitive people
A7	65	Satisfactory	Light green	May cause Discomfort to sensitive people
A8	71	Satisfactory	Light green	May cause Discomfort to sensitive people

Conclusions

From the above interpretation of Air Quality Index for study area, responsible parameter for air pollution is PM_{10}, $PM_{2.5}$ and CO. As per the data obtained during baseline study, AQI for all the locations (except A4) in the study area falls under 'Satisfactory' category i.e. minor breathing discomfort only to sensitive people. AQI of the project site calculated on the basis of baseline data collected for Dec to Feb 2020 was 76. This AQI value was compared with AQI of nearest Central Pollution Control Board (CPCB) Station- Kulti (at a distance of 5.7km in SSW) was found to be slightly more (i.e. 110 for Dec to Feb 2020).

4.5.5 Mitigation Measures for Air Environment

Air Pollution control devices shall be provided to control the gaseous emissions during steel melting operation, Ferro Alloy production, Briquetting and Sintering process. Measures shall also be taken to ensure control on fugitive emissions arising during raw material handling, production processes, vehicular movement, etc. For adequate dispersion of gases, stacks of adequate height have been provided. For heat dissipation in the work zones arising from Furnaces adequate ventilation systems has been provided. Details of APCDs and other steps taken to control air pollution form the proposed project are mentioned below:

A. Steel Melting Shop

i. Induction Furnace

In the existing plant, 4 nos. of 7 Ton Induction Furnaces are provided with 2 sets of Fume extraction system with spark arrestor and Bag filters, connected with 2 stacks (2 nos. of 7 Ton Induction Furnaces are connected with one Fume extraction with spark arrester and Bag Filter and connected with one stack).

Under the expansion, existing 4 nos. of 7Ton Induction Furnaces will be augmented to 8Ton Induction Furnaces and additional 2x8Ton Induction Furnaces will be installed with

1x8 Ton Ladle Refining Furnace. Now, these total 6x8T Induction Furnaces and 1x8T Ladle Refining Furnaces will be connected with the augmented 2 sets of Fume Extraction with Spark Arrester and Pulse Jet Bag Filter connected with two stacks. Exiting Bag Filter system shall be augmented to keep emission below 30mg/Nm^3

Additional 2x25Ton Induction Furnaces and 1x25Ton Ladle Refining Furnace shall be provided with additional Fume extraction system with spark arrestor and Pulse Jet Bag filter, connected with a separate stack. Flue gas from Induction Furnace is at a temperature of 250-300°C will pass through the Fume extraction system and spark arrester before entering to pulse Jet type bag filter at around 100°C and let out from single stack. The hood is located centrally over the Furnace within about one to two feet from the Furnace top. Dust content at stack outlet shall not exceed 30 mg/Nm^3.

Table 4.11: Details of the Air Pollution Control facilities-SMS

Sl. No.	Unit	Type of Pollution Control System	Nos.	Connected with Stack (nos.)	Emission Level to met (mg/Nm^3)
1.	3x8 Ton Induction Furnace	Existing Fume Extraction with spark arrester + Pulsejet type Bag Filter system shall be augmented	1	1	<30
2.	3x8 T Induction Furnace + 1x8 Ton LRF	Existing Fume Extraction with spark arrester + Pulsejet type Bag Filter system shall be augmented	1	1	<30
3.	2x25 T Induction Furnace+1x25Ton LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	<30
Total number of Bag Filters and Stacks			**3**	**3**	

B. Submerged Arc Furnace

Under the proposed expansion, neither any additional Submerged Arc Furnace will be installed nor is any change in the size/capacity of the existing SAF is envisaged. Under the expansion there will be change in product mix by addition of Pig Iron production from the existing SAFs.

The submerged arc Furnaces are electrically operated. The nature of emissions from Submerged Arc Furnace is primary & secondary (fugitive and flue gases).

Fugitive dust emissions confine to area of emission source and its spread to further areas is limited. Hence the impact of the fugitive dust is confined to the maximum of 50 meters around the source at a lower height of 5–10 meters.

The oxides of iron, manganese, silicon, and phosphorus etc., contained in the ore are reduced by coke / carbon in smelting in electric Furnaces. The reduction of these oxides is

attended by evolution of gases at the Furnace-top. The flue gases with a temperature of about 140^{o}C will be de-dusted in the Pulse Jet Bag filter designed for an outlet concentration of less than 50 mg/Nm^3. The gas is let off into the atmosphere through stack via ID fan. Four numbers of Fume Extraction system with spark arrestor and Bag Filters have been provided, one with each SAF and connected with 4 (four) nos. of stacks to control the outlet dust emission SAF below 50 mg/Nm^3.

Dust is also generated in material handling areas at discharge and transfer points, dust extraction systems connected with process stacks and water sprinklers shall be provided at all dust generating point.

Table 4.12: Details of the Air Pollution Control facilities provided at SAFs

Sl. No.	Unit	Type of Pollution Control Facility	Nos.	Connected with Stack	Norms to met (mg/Nm^3)
1.	SAF #1 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	<30
2.	SAF #2 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	<30
3.	SAF #3 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	<30
4.	SAF #4 (5.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	<30
Total number of Bag Filters and Stacks			**4**	**4**	
Material Handling Area		Dust suppression system	All transfer points, screens etc.		

C. Reheating Furnaces

Hot rolling of billets has been proposed. It is envisaged that hot billets coming out from billet caster at 950-1000^{0}C will be directly rolled without re-heating in Rolling Mill for production of TMT Bar. However, 1 nos. of reheating Furnaces of capacity 25 TPH has been proposed for heating of billets which couldn't rolled directly. Reheating Furnaces will be used for heating the Billets to temperatures of around 1200°C. LSHS will be as a fuel in Reheating Furnace. Flue gases will be let out from stack of 30 meters height. Low NOx Burners will be installed at Reheating Furnace for control of Gaseous emissions generated while using LSHS as fuel.

Sl. No.	Unit	Type of Pollution Control Facility	Nos.	Connected with Stack	Norm to met (mg/Nm3)
1.	Reheating Furnace 1x25TPH (Rolling Mill)	Low NOx Burners and Recuperator	-	1	<30

D. Briquetting Plant

LSHS will be used as fuel in Kiln to generate hot air for drying process. Also fugitive emissions will be there during screening of raw materials. A Bag Filter system shall be provided to control flue gas emissions generated during drying process and fugitive emissions during Screening.

Table 4.13: Details of the Air Pollution Control Facilities Provided at Briquette Plant

Sl. No.	Unit	Type of Pollution Control Facility	Nos.	Connected with Stack	Norm to met (mg/Nm^3)
1	Briquette Plant	Pulse Jet Type Bag Filter	1	1	<30

E. Sinter Plant

Raw materials such as iron ore fines, coke breeze, dolomite, quartzite, BF dust and limestone are batched and conveyed to a blending system and then feed on sinter machine. The bed will be taken to ignition front. The raw mix undergoes through the ignition platform and there is a negative suction from bottom. After completion of the sintering process, sinter cake will be crushed and will go to SAF.

Dust extraction system and water sprinkling shall be provided at Sinter Crusher and Sinter Screen area. Fugitive dust from these areas along with flue gas from combustion will pass through GCP followed by Pulse jet Bag Filter system.

Table 4.14: Details of the Air Pollution Control Facilities Provided at Sinter Plant

Sl. No.	Unit	Type of Pollution Control Facility	Nos.	Connected with Stack	Norm to met (mg/Nm^3)
1	Sinter Plant	Pulse Jet Type Bag Filter	1	1	<30

Table 4.15: Details of the Air Pollution Control facilities for Existing and Proposed Units

Sl. No.	Unit	Type of Pollution Control Facility	Nos	Connected with Stack	Norms to met (mg/Nm^3)
1.	Induction Fce. 3x8T	Fume Extraction with spark arrester + Pulsejet type Bag Filter (Existing system will be augmented)	1	1	< 30
2.	Induction Fce. 3x8T + 1x8 T LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter (Existing system will be augmented)	1	1	< 30
3.	Induction Fce. 2x25T + 1x25 T LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
4.	SAF #1 (7.5MVA)	Fume Extraction with spark arrester	1	1	< 30

Sl. No.	Unit	Type of Pollution Control Facility	Nos	Connected with Stack	Norms to met (mg/Nm^3)
		+ Pulsejet type Bag Filter			
5.	SAF #2 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
6.	SAF #3 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
7.	SAF #4 (5.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
8.	Reheating Fce. (25TPH)	Low NOx Burner + Recuperator	-	1	< 30
9.	Briquetting Plant (25TPH)	Pulse Jet Type Bag Filter	1	1	< 30
10.	Sinter Plant (300TPD)	Pulse Jet Type Bag Filter	1	1	< 30
Total number of Bag Filters and Stacks			**9**	**10**	
Material Handling Area		Dust Extraction system and Fog/Mist Sprinklers	All transfer points, screens, crushers, etc.		

F. Fugitive Emissions- Mitigation Measures

Following measures are/shall be taken by company to mitigate the impact of fugitive emissions:

a) Proper covered vehicle shall be used while transport of materials
b) All internal roads in the premise shall be Pucca road and paving/greening of vacant area shall be done to arrest soil erosion and dust pollution from exposed soil surface
c) Haulage roads shall be sprinkled with water at regular intervals, for which water tankers with sprinkler arrangement shall be deployed in premises
d) Speed limit of 10 km/h is enforced for vehicles in the plant premises to prevent road dust emission
e) Water sprinkling shall be practiced at all loading unloading locations
f) Fog/Mist Sprinklers at all on bulk raw material storage area (at the transfer points) like Iron Ore fines, Mn Ore, Chrome ore fines, Bag Filter Dust and similar solid waste storage areas
g) The conveyors shall be suitably covered with hood or enclosures to control fugitive emissions
h) Dry fog dust suppression systems shall be provided at all transfer points of Conveyors
i) Green belt and greenery development shall be carried around storage yards, around plants, either side of roads and around the periphery of the industry.

j) 24 Numbers of water sprinklers will be installed on the boundary wall of the plant facing towards Digari and Salanpur Village at 0.6km and 1.4km, respectively in South Direction of the plant area.

k) 1 Number of Vehicle mounted (Water Sprinklers) will be provided to sprinkle water within the plant premises and on the approach road.

G. General Mitigation Measures

a) All pollution control equipment shall be checked on half yearly basis and suitable repair/maintenance shall be carried out

b) Performance test shall be conducted on all pollution control systems once in six months

c) System shall be put in place to report pollution control equipment failure immediately

d) Emergency plan shall be laid out to tackle pollution control equipment failures. All equipment failures shall be reported to CPCB/SPCB on 6 (Six) monthly basis with investigation report and corrective actions take

e) Online stack monitoring systems for Induction Furnaces and Submerged Arc Furnaces are installed and monitoring report are submitted to the Regional Office of the MoEF&CC along with the six-monthly compliance report

f) Fugitive emissions shall be monitored at the locations given in GSR 277 (E) dated 31.03.2012 and comply with the standards prescribed under the standard.

g) Continuous Ambient Air Quality Monitoring System shall be installed near main gate or any other convenient location

h) The site environmental/designated officer shall certify the emission data on daily basis. The records shall be maintained and submitted as part of half yearly compliance report

i) Green DG Sets shall be provided

j) For vehicle movement - due to the proposed expansion, the traffic density will increase as all the raw material and finished product will be transported through the road being used for transportation. Suitable traffic management plan will be adopted to minimize the impacts on the traffic of the area

4.5.6 Traffic Assessment Study

The traffic study is conducted to assess the impact of the increased traffic with reference to road safety and carrying capacity of roads. This will help in deciding the geometric design feature and traffic control for safe and efficient traffic movements.

The site has good road connectivity through Kalyaneshwari to Dendua Road (KD Road), SH-15 (Asansol-Chittaranjan) Road and NH-19 (Delhi-Kolkata). During the baseline study it was observed that the traffic density on the roads is much less than its allowable limits

for which existing traffic scenario came out to be "Very Good" falling under Level Of Service 'B'.

Due to construction and production activities at ESPL, traffic volume on the abovementioned roads will increase due to movement of medium and heavy vehicles considering the overall size and nature of the Project. Vehicles used for transportation of construction or raw materials as well as finished product would be trucks. Other vehicles used for various purposes would be Jeeps, cars and 2 wheelers.

4.5.6.1 Construction Phase

Impacts

Construction activities in urban environments often have negative impacts on the communities surrounding the construction site, such as delay, congested traffic, safety and economic losses. These adverse impacts include;

- Delays and traffic congestion caused by the additional traffic volume of construction traffic.
- Loss of parking spaces
- Additional traffic at conflict points, at construction access and egress gates.
- Safety hazards associated with movement of heavy equipment and oversized loads.

Although avoiding these impacts may not be possible, they must be mitigated for the construction activity of project to earn an acceptable rating both environmentally and socially.

Mitigation Measures

Traffic management will be implemented during construction period which are as follows:

- To conduct a survey of the road network surrounding the construction site. The purpose of this survey is to obtain sufficient detail on the network, including load restrictions, height restrictions, road widths, parking availability, and their effects on current traffic flows, to make an informed decision on the selection of appropriate routes for construction traffic associated with the project.
- To organize transport and delivery of construction materials, and equipment to the construction site and removal of surplus items and waste materials from the site in such a way to minimize and control the project's impact on road users, neighbors, the surrounding community and on the environment.
- To organize the movement of the construction workforce onto and off of the site on a daily basis, minimizing the impact on the available parking spaces on the roads around the site, minimizing the impact on traffic volumes and congestion, and encouraging the use of public transportation.

- To control construction vehicle movements on the site, maintaining both construction worker safety and road user safety by minimizing the interaction, wherever possible, between road user traffic and construction worker traffic and by segregating pedestrian routes and vehicle routes.

4.5.6.2 Operation Phase

Impacts

To assess the impact on the traffic scenario of the roads under study due to increased production at ESPL after the expansion, predicted increment in traffic volume is calculated below and change in '*LEVEL of SERVICE (LOS)*' for the same roads has been worked out.

Table 4.16: PCU for Operation Phase

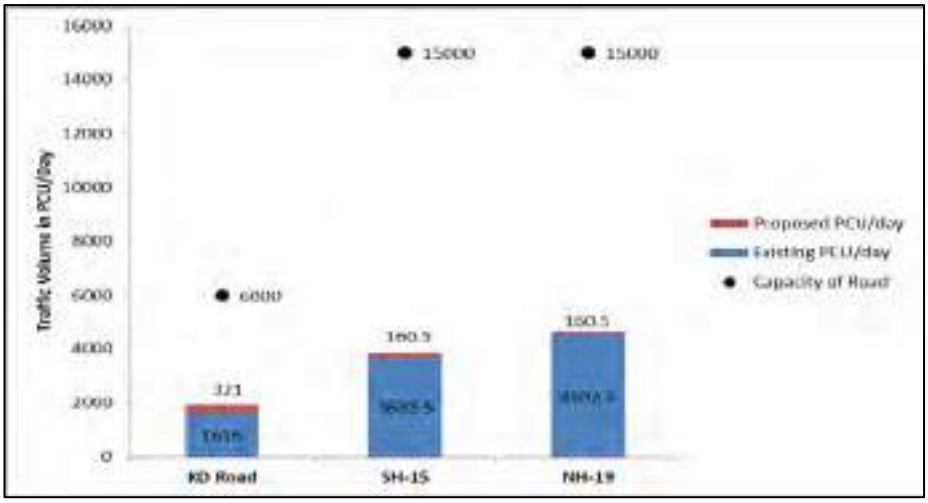
Sl. No.	Material for Transportation	Existing	Proposed	Total	Working Days	TPD	Truck Capacity	Number of Trucks	PCU/Day
1	Mn Ore	1,44,914	0	1,44,914	350	0	25	0	0
2	Coke	33,955	0	33,955	350	0	25	0	0
3	Coke Breeze	0	8,640	8,640	360	24	25	1.0	3
4	Steam Coal	0	16,810	16,810	350	48.02	25	2.0	6
5	Charcol	6,700	0	6,700	350	0	25	0.0	0
6	Quartz	40,030	2,160	42,190	360	6	25	1.0	3
7	Dolomite	5,188	10,800	15,988	350	30.85	25	2.0	6
8	Limestone	0	28,296	28,296	350	80.84	25	4.0	12
9	Electrode Paste	1,675	0	1,675	350	0	25	0.0	0
10	Chrome Ores	19,840	0	19,840	350	0	25	0.0	0
11	Magnesite	2,953	0	2,953	350	0	25	0	0
12	Iron Ore Fines	0	70,200	70,200	360	195	25	8.0	24
13	Ferro Chrome Chips	18,748	0	18,748	350	0	25	0	0
14	Chrome Fines	0	1,62,360	1,62,360	350	463.88	25	19.0	57
15	Hydrated Lime	0	4,950	4,950	350	14.14	25	1.0	3
16	Molasses	0	7,920	7,920	350	22.62	25	1.0	3
17	Sponge iron	94,325	2,05,800	3,00,125	350	588	25	24.0	72
18	Pig Iron	20,644	45,040	65,684	350	128.68	25	5.0	15
19	Scrap	13,615	29,711	43,326	350	84.88	25	4.0	12
20	MS Billets	1,06,004	11,596	1,17,600	350	33.13	25	2.0	6
21	Ferro Alloys	59,052	76,400	76,400	360	212.22	25	9.0	27
22	Long Products	0	2,10,000	210,000	360	583.33	25	24.0	72
	Total	**567,643**	**890,683**	**1,399,274**		**2,515.65**		**107.0**	**321**

Table 4.17: Existing and Proposed Operation Phase PCU's

Operation Phase PCU's	Kalyaneshwari Dendua Road	SH-15	NH-19
Existing PCU/day	1616.0	3685.5	4502.5
Proposed PCU/day (Distributed 100% increased PCU/day on connecting road to SH & NH and 50% on the NH & SH each)	321.0	160.5	160.5
Total PCU/day	**1937.0**	**3846.0**	**4663.0**

Table 4.18: LOS study of Proposed Project

Road	V (Volume in PCU/day)	C (Capacity in PCU/day)	V/C Ratio	LOS
Kalyaneshwari Dendua Road	1937	6000	0.32	B
SH-15	3846	15000	0.26	B
NH-19	4663	15000	0.31	B



Result & Discussion

- Increase in traffic volume and in V/C ratio for roads (KD Road, SH-15 & NH-19) is being observed by inclusion of proposed expansion project when compared to that obtained during analysis of baseline study data.
- However, the increased traffic volume will be less than the design capacities of same roads as prescribed by IRC and 'Level of Service' also remains 'Good'
- Proper traffic management plan will be adopted to maintain the same LOS and minimize the impending impacts, if any.

Mitigation Measures

The increase in traffic will not have any significant effect. A traffic management plan for the area will be developed to ease the situation. The following arrangement would be made to ease the situation:

- The roads will be strengthened, if required, for transportation of material, goods etc.
- Drivers of trucks / dumpers engaged in construction work will be instructed to give way to passenger buses, cars etc.
- Transport of construction materials and machineries will be carried out during lean traffic period of the day or during night.
- All trucks are to be used for transportation will be covered with tarpaulin, maintained, optimally loaded and have PUC certificates.
- All vehicles and their exhausts would be well maintained and regularly tested for emission concentration.
- Truck/tippers shall be parked in designated parking area only.
- Minimize use of roads at any particular time by planning vehicles movements.
- Road crossings to be used will be well marked.

From above statements, it can be concluded that proposed expansion will have insignificant effect on the traffic and proper management plan will further reduce the negative impacts.

4.6 IMPACT ON WATER RESOURCE AND CONTROL MEASURES

Water is most important raw material required for any steel Plant. Potential impacts of withdrawal of water and wastewater discharges from the proposed expansion on water body are an important factor in EIA Studies. The qualitative and quantitative information of usage of water and wastewater generated due to various processes in the project are described in further sections of this chapter. The information also includes the existing/proposed built-in facilities and measures for treatment and disposal of wastewater in the project.

4.6.1. During Construction phase

Construction activities for the proposed development can have minor impact on hydrology and ground water quality of the area if the construction waste leaches into the ground water source. Potential sources of impacts on the hydrology and quality of surface-water source, if any or groundwater during the construction phase are as follows:

- Soil runoff from the site leading to off-site contamination (mainly during rainy season)
- Improper disposal of construction debris leading to off-site contamination of water resources

- Spillage of oil and grease from the vehicles and wastewater generated on site activities such as vehicles washing, workshop, etc.
- Utilization of water for constructional activity

Mitigation Measures

Following precautions and preventive measure will be taken at the site during construction to avoid any ground and surface water contamination.

- Construction Material (aggregates, oil, paints, etc) to be stored over pucca platform with raised boundary to avoid flowing of material along runoff.
- Proper concrete drains for storm water are already constructed to divert storm run-off from flowing over the construction areas and minimize soil erosion. Not allowing water to leave the construction site
- Due to civil construction activities, during rainy season the surface runoff may contain more of eroded soil and other loose matter. As far as possible, construction activities will be avoided during rainy days to mitigate the small impacts on soil/water quality caused due to construction activity
- Disposal of construction debris in approved areas and disposal as per C&D Management Rules, 2016
- Installing oil and grease traps in construction workshop
- Toilets are already available at site for construction workers.

The overall impacts on water environment during construction phase due to proposed activity shall be temporary and marginal.

4.6.2. During Operation Phase

The total requirement of makeup water for industrial and domestic purposes after the proposed expansion will be 1970KLD. Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir *(enclosed as **Annexure-5**)*.

The water will be mainly used for Furnace cooling and domestic purpose only. Potable water is required for plant personnel. In order to minimize consumption of fresh water from the source, ESPL has adopted recirculating systems which permit reuse of cooling water. Make up water will be added to compensate for the losses in recirculation system. Thus, the plant has been designed based on maximum recycling hence, will have less impact on water hydrology in this region.

4.6.2.1 Zero Liquid Discharge- Wastewater Generation & Management

Wastewater generation shall take place in the form of blow downs from cooling towers, back wash from Softening Plant, wastewater from cooling of rollers in Rolling Mill and domestic waste water. Domestic waste water will be generated from toilets, washrooms and canteen buildings in the plant. Water in the plant premises will be re-circulated for

reuse after treatment by using below mentioned processes. Total wastewater generation during operation of all existing and proposed units and from the domestic use shall be **180 KLD.**

Steel Melting Shop: Softening plant shall be provided for use of soft water in Induction Furnaces and Submerged Arc Furnaces. Softening Plant back wash water shall be treated in Neutralization Pit and shall be mixed with Cooling Tower discharge and will be used for Slag cooling, Metal Recovery Plant, Sinter Plant & Dust suppression.

Rolling Mill: Water use for cooling of rollers shall be treated in ETP of 100 KLD Capacity and recycled back in the process. The oil and grease in the contaminated water is collected by an Oil Skimmer in the Scaled Pit, and filled in oil barrels. Used oil will be sold to the registered recyclers. Mill scale collected in Settling Pond shall be used for production of Fe-Si and Fe-Si-Cr.

Table 4.19: Details of the Water Pollution Control facilities

Sl. No.	Unit	Type of Pollution Control System	Quantity (KLD)	Usages
1.	Softening Plant waste water from SMS	Neutralization Pit	10	Slag cooling, Metal Recovery Plant & Dust suppression
2.	Cooling Tower blow down from SMS	-	118	
3.	Rolling Mill	ETP	0	Recycled
4.	Softening Plant waste water from Ferro-alloys Plant	Neutralization Pit	4	Slag cooling, Metal Recovery Plant, Sinter Plant & Dust suppression
5.	Cooling Tower blow down from Ferro-Alloy Plant	-	30	
6.	Domestic waste water	STP	18	Plantation
Total Discharge			**180 KLD**	

Table 4.20: Proposed Water Pollution Control Devices

Neutralization Pit for Softening Plant	3 Nos.	The back wash water from Softening Plant will be pumped to a neutralization pit. The neutralization pit will have acid resistant brick lining. Depending on the quality of water, either an alkaline medium or acidic medium will be pumped to the pit to neutralize the water.
Effluent Treatment Plant with Rolling Mill	1 no.	Effluent from Rolling Mill shall be treated in ETP of 100 KLD Capacity and shall be recycled after cooling in Cooling Tower
Settling Pit at Metal Recovery	1 No.	Settling Pit has been installed. Clear water from

Plant in Ferro Alloy unit		the Jigging Plant is recycled and settled fines will be reused.
Sewage Treatment Plant	1 No	Sanitary waste from toilets estimated at approx. 20m^3/day shall be taken to taken to Sewage Treatment Plant of 25KLD (proposed)

Storm Water Drainage: During heavy rains excess water is taken to the existing pond/proposed storage tanks through the drains constructed around production facilities as well as all roads. The water enters in to the pond/proposed storage tanks through silt traps pits preventing washed silt from plant to enter into it.

Thus, no plant effluent will be discharged in to public water ways or drains. Hence, the plant will be designed for **zero liquid discharges (ZLD).**

4.7 NOISE ENVIRONMENT – IMPACT & MITIGATION MEASURES

4.7.1. During Construction Phase

The major source of noise generation during the construction phase are civil works such as trenching, foundation casting, steel fabrication, mechanical works, loading and unloading activities, vehicular traffic, construction equipment like dozers, scrapers, concrete mixer, cranes, generators, compressors, vibrators etc. The operation of these equipment will generate noise ranging between 70-85 dB (A). The noise produced during the construction will have significant impact on the existing ambient noise levels. The peak noise levels from some of the construction equipment for non-continuous construction activity may be as high as 90 dB (A). The construction equipment has high noise levels which can affect the personnel operating the machines.

Construction Phase

At the peak of the construction, marginal increase in noise levels is expected to occur but they are temporary. During the construction phase, noise generated from various construction activities are listed below:

- Movement of vehicles carrying materials and loading & unloading activities.
- Excavation machines, concrete mixer and other construction machines including pneumatic tools and compressors.
- Operation of DG sets.
- Concreting, hammering.
- Mechanical operations, like, drilling, fitting, etc.

All the above-mentioned sources will be intermittent and would be experienced occasionally. It may also be noted that, most of the construction activities will be carried out only during the daytime. The expected noise levels from these activities are as per given hereunder.

Table 4.21: Noise levels of construction equipment

Description	Noise Levels dB(A)	Combined Effective Noise levels dB(A)
Earth Movers		
Front End Loaders	78	84
Tractors	82	
Scrapers, Graders	76	
Pavers	72	
Material Handlers		
Concrete mixers	77	84
Concrete pumps	75	
Cranes (movable)	80	
Trucks	81	
Stationary Equipment		
Pumps	65	79
Generators	76	
Compressors	77	
Total		**87**

The resultant maximum noise level for the above sources as calculated using combined equivalent noise equation is 87dB(A) at source. Sound pressure level generated by construction activities decreases with increasing distance from the source due to wave divergence. An additional decrease in sound pressure level from the source is expected due to atmospheric effect or its interaction with objects in the transmission path.

The noise produced during construction phase will have temporary impact on the existing ambient noise levels at the project site but restricted to small distance.

Mitigation Measures

- Provision of rubber padding/noise isolators/silencers to modulate the noise generated by machinery/equipment, wherever possible. Selection of low noise generating machinery/equipment
- Preventive maintenance of machinery/equipment and vehicles
- The high noise zones at site will be demarcated and provided with enclosures & barriers
- Persons working in high noise areas have been provided with ear plug / ear muff
- Major construction work will be carried during the day time
- Greenbelt development will be undertaken from the construction stage itself

- Appropriate training and education will be given to the workers
- Regular monitoring of ambient noise level as per monitoring plan shall be carried out

The peak noise levels from continuous construction activity may be about 75 dB (A). Since the nearest habitation is 50m away from the proposed site, the noise levels are considered to have insignificant impact. Overall impact of noise generated on the environment is likely to be insignificant and localized in nature and mainly confined to the day hours.

4.7.2. During Operation Phase

Any industrial complex in general consists of several sources of noise in clusters or single. This clusters/single source may be housed in buildings of different dimensions made of different materials or installed in open or under sheds. The material of construction implies different attenuation co-efficient. All these sources will generate continuous noise. During operation, the major noise generating sources from various units of the plant are;

- Submerged Arc Furnace
- Induction Furnaces
- ID Fans
- Rolling Mill
- DG Set
- Compressor etc.

Prediction of anticipated noise levels resulting from operation of the proposed plant has been computed using the geometric attenuation method. For computing the noise levels at various distances with respect to the plant site, the sound pressure levels at increasing distances were calculated.

Table 4.22: Details of Noise levels during operation phase

Sl. No	Source	Noise levels at 1 m distance
1	Compressor House	77
2	Rolling Mill	85
3	Furnaces	87
4	DG Set	75
Lp (Total)		**85**

During the operation phase, the noise anticipated from the proposed project shall be confined only within the plant boundary and more precisely within the source area. The level shall be further minimized when the noise reaches the plant boundary and the nearest residential areas beyond the plant boundary, as elaborate green belt development is envisaged for attenuation of noise. However, the noise transmitted

outside the plant boundary will be low because most of the noise generating equipment will be in closed structures provided with acoustic enclosure.

For an approximate estimation of dispersion of noise in the ambient from the source point, a standard mathematical model for sound wave propagation is used. Based on the model, calculations are made and the estimated noise levels from the proposed activities at different distances are shown in **Table No. 4.23.**

$$Lp_2=Lp_1-20Log(r_2/r_1)–AE–AM$$

Where,

Lp_2 and L p_1 are the Sound Pressure Levels (SPL) at points located at a distances of r_2 and r_1 from the source. AE & AM are attenuations due to Environmental conditions (E) and Machine correction (M). The combined effect of all the sources can be determined at various locations by the following equation.

$$Lp(total)= 10Log (10 (Lpa)/10 + 10(Lpb)/10 + 10 (Lpc)/10 +. . ……)$$

Where,
Lpa, Lpb, Lpc are noise pressure levels at a point due to different sources.

Table 4.23: Predicted Noise propagation values

Sl. No.	Noise Levels dB(A)	Distance from source (m)
1	85	1
2	80	2
3	74	4
4	68	8
5	62	16

The predicted noise level generated from the proposed plant (Lp(total)) is 85 dB(A) and from the noise propagation formula it has been estimated that the reduced noise level is 62 dB(A) at distance of 16 m from the source. Therefore, there will not be any significant impact on surrounding environment due to the activities of the proposed project.

Mitigation Measures

Noise control will form an integral part of the plant design. Care will be taken during selection of the equipment and other machinery so that noise generation is not exceed 85 dB (A) at a distance of 1.0 m. In addition to this, effective ear plugs will be provided and their use is made obligatory in specified areas where noise level is high and unavoidable. The general mitigation measures for the attenuation of noise are given below:

- Noise proof cabins will be provided for operators wherever possible
- Inlet and outlet mufflers shall be provided wherever required

- Ear plugs/muffs will be provided to personnel working at high noise areas
- Design/installation will be taken as specified by the manufacturers with respect to noise control and will be strictly adhered
- Process air blower, pneumatic valves etc., shall be provided with Silencers
- Noise shall be reduced by preventing leakages from compressed air lines and other high-pressure equipment
- Rubber mounting shall be used for Water pump and Compressor
- All rotating equipment / parts will be well lubricated and provided with enclosures as far as possible to reduce noise transmission.
- DG Set house with acoustic paneling – 2 nos. and Compressor House with acoustic paneling – 2 nos. shall be provided
- The high noise zones, risks of exposure to high noise levels and the appropriate control measures are also displayed at various places in the workplace.
- Suitable isolators will be provided at required locations to avoid rattling due to vibration
- Sound attenuation panels will be installed wherever required around noise generating equipment.
- Regular maintenance of all the machineries and equipment shall be done
- Regular ambient noise level checks shall be carried out at the site
- Greenbelt development inside the plant premises shall be carried which will serve as a buffer between the peripheries and the industry, there by controlling noise levels

4.8 ECOLOGY & BIODIVERSITY – IMPACT & MITIGATION MEASURES

4.8.1 During Construction Phase

Construction activities at the site involving human and vehicular movement may disturb aerial and wild animals in the area. terrestrial micro flora and fauna at the site. However, the adverse effects are reduced by shortening the construction phase period and development of greenery along the plant boundary. Further, there are no sensitive locations within the study area. Hence, no significant adverse impact is expected on biological environment.

Mitigation Measures

- Construction vehicles, machinery and equipment will remain confined within their designated areas of movement and the company staff will be strictly directed not to damage any vegetation such as trees, shrubs or bushes.
- The fugitive dust generated during construction phase shall be controlled by sprinkling of water.

4.8.2 During Operation Phase

Impact on flora

Air emissions and increase in dust levels during the operational phase may result in restricted growth, less regeneration and degradation of sensitive vegetation. These emissions will be continuous and long term thus will have direct impact on the nearby vegetation.

The increase in vehicular movement due to the expansion might increase the risk of introducing obnoxious or exotic species. This impact shall mostly remain insignificant as there is already a road network and existing traffic in the region. The increase in population may result in tree cutting, lopping and grazing in the nearby regions.

Impact on Fauna

The fauna might be impacted due to noise generated during the operational phase. The increase in human activity may also pose a threat due to illegal hunting and poaching in the nearby areas. The air emissions might reduce the abundance of sensitive species like butterflies and birds. The increased traffic may result in road kills of wildlife while crossing. The vehicular movement and road traffic may result in the introduction of unwanted species. These alterations will have low impacts in the future course of proposed development, thus the impacts will be low from ecosystem functioning point of view.

Impacts on Ecosystem

The proposed activity may result in degradation of surrounding habitat, introduction of weeds, increased road traffic, habitat fragmentation and wildlife poaching and forest fires. These activities may act at the larger level and reduce ecosystem resilience. Ecosystem resilience is the overall diversity of the habitat, which helps to resist the adverse conditions and or calamities that may seriously damage that particular habitat. The proposed project area may impose negative ecological attributes and might result in overall reduction in ecosystem resilience of the habitat if the activities are not managed properly. Since the proposed project is expansion within the existing project area, the overall impacts are predicted to be low.

Cumulative Impacts on Eco-system

It is important to take into account a holistic view for better representation of the predicted impacts of the proposed project. This requires a consideration of cumulative impacts of existing and past developmental activities in the vicinity of the project. The addition of present proposed project with the earlier large and small-scale activities shall give cumulative impacts. This may further be analyzed by adding the proposed and predicted developmental activities in the near future if known. Existence of other industries and projects in the region attribute to overall high disturbance to the

ecosystems. Further the secondary impacts that occur are due to increase in human pressure resulting in tree cutting lopping/cattle grazing, poaching and removal of large mature trees. These alterations will have low impacts in the future course of proposed development/thus the impacts will be low from ecosystem functioning point of view.

The proposed activity may result in degradation of surrounding habitat, introduction of weeds, increased road traffic, habitat fragmentation and wildlife poaching and forest fires. These activities may act at the larger level and reduce ecosystem resilience. Ecosystem resilience is the overall diversity of the habitat, which helps to resist the adverse conditions and or calamities that may seriously damage that particular habitat.

Mitigation measures

Flora

The fugitive dust generated during construction phase and in operation phases. The raw materials handling areas and parking area will be regularly sprinkled with water. Loss of vegetation during construction will be compensated by greenbelt development. Tall trees with thick canopy will be planted along the boundary area to help reduce the fugitive dust emission from the plant and gaseous emission. Construction vehicles, machinery and equipment will remain confined within their designated areas of movement and the company staff will be strictly directed not to damage any vegetation such as trees, shrubs or bushes.

- Pollution control equipment like Bag filers shall be installed for effective control on the pollution sources. Hence, insignificant impact on the nearby vegetation.
- The fugitive dust generated during operation phases shall be controlled by sprinkling of water.
- Tall trees with thick canopy will be planted along the boundary area to reduce fugitive dust emission and gaseous emission.

Fauna

- To minimize the impact due to noise generated during the operational phase clear instruction will be given to the vehicles entering in the project site not to use pressure horns during night time as it may distract the fauna or animals near the site.
- Hunting, poaching and harassing of wild animals will be strictly prohibited. Boundary wall is erected at plant site to check the entry of animals in search of eatables.
- Wastes of the camps will be properly disposed-off to prevent the chances of eating by wild animals, which may become hazardous to them.
- Special measures will be adopted to minimize impacts on the wild animals, birds such as avoiding noise generating activities during the critical periods of breeding.

Ecosystem

- Since the proposed project is expansion within the existing project area and most of it within the existing shades, the overall impacts are predicted will be insignificant.

4.9 SOCIO-ECONOMIC ENVIRONMENT

4.9.1 During Construction Phase

The construction phase induces employment opportunities for the local people. In addition to the opportunity of getting employment in construction work, the local population would also have employment opportunities in related activities like small commercial establishments, small contracts and supply of construction materials etc. The dwelling of construction workers at the site may cause sanitation and other problems. As the majority of workers shall be nearby villagers so the construction workers may not be required to stay at the project site and no influx of people is envisaged. Safety and health care of workers is also an important factor to be considered during construction phase. Hazards expected are electrocution, vehicular accident, fall of personnel from overhead works, high level noise due to construction machinery, centering failure and exposure of eyes to dust and welding rays. Constructional and occupational safety measures will be adopted during construction phase of the industry.

4.9.2 During Operation Phase

Critically analysing 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.

Table 4.24: Matrix of 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	+	•	+	+	•	+

Parameter	Local	Regional	Direct	Indirect	Reversible	Irreversible
Business	+	+	+	•	•	+
Per Capita Income	+	+	+	•	•	+
Pollution	-	•	-	•	•	•

+ : Positive - : Negative • : Insignificant

4.9.2.1 Positive Impacts of the Project

I. No Rehabilitation

As the proposed expansion will take place within the existing plant premises. Therefore, neither villages nor any part of village or any hamlet will be disturbed during the project. As the project operations will not disturb or relocate any village or settlement, no adverse impact is anticipated on any human settlement.

II. 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 proposed expansion project may provide employment to 400 personnel directly. Demands of community services and commercial development also create additional employment for the poor strata of society by way of security guard, driver, maid/servant, sweeper, gardener etc.

In the absence of any high employment potential activities, employment in the region is mainly due to industries; therefore, expansion of the project will be beneficial for the economically backward or unemployed people.

III. 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 it will be very minimal. 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. Also, during Socio survey, it was found maximum population from the villages are engaged in other activities which means either in service, labourer or business activity so there will be no difficulty for manpower.

If at all sufficient number of local workers will not be available, then workers from outside will be engaged. For the outside workers if any, housing arrangement and the facilities will be arranged in the nearby area which also a source of income to locals.

IV. Improvement in Infrastructure

The activity will benefit the local people due to provision of more infrastructural development of facilities which may be Medical, Educational, approach and internal road network, sanitation, solar lights, water conservation, commercials as well as daily need

shops, as development of some is covered under activites to address public hearing issues and others might be covered under CSR.

V. Expected Change in Cumulative Quality of Life after implementation of EMP

It is expected that the quality of Life in the study area will improve and increase after the proper implementation of Environment Management Plan and after the execution of measures to be undertaken by the project proponent in the study area in order to address the concerns raised during public hearing of the project *(Details given in Chap-7).*

Table 4.25: Expected Quality of Life Post Implementation of EMP

Sr. No.	Villages	$QoL_{(S)}$ Existing	$QoL_{(c)}$ after implementation of EMP and welfare measure
1.	Nakrajuria	0.55	0.56
2.	Salanpur	0.62	0.63
3.	Khudika	0.57	0.57
4.	Dendua	0.6	0.61
5.	Hadla	0.61	0.61
6.	Maheshpur	0.6	0.61
7.	Miliakhola	0.59	0.6
8.	Gagna	0.56	0.57
9.	Jemari	0.54	0.54
10.	Kulti	0.63	0.63
Average		**0.58**	**0.59**

4.9.2.2 Adverse Impacts due to project

I. Impacts on Human Health

During construction phase, increase level of dust and other air pollutants may lead to respiratory diseases. Vehicular traffic and construction activities may create noise pollution. The impact due to air emissions shall be negligible as sufficient number of pollution control equipment will be installed for effective control systems at all the identified sources of emission. The air emissions from stacks will be well within the prescribed limits set forth by CPCB. The proponents of this facility will adopt.

II. Impacts on Agriculture

Productivity of crops may be deteriorated affecting the agriculture-based livelihood due to the pollution arising out of the project activity, if proper mitigation measures are not implemented.

4.9.3 Mitigation Measures of Socio-Economic Environment

- Adequate measures have been envisaged in the project design to control air, water and noise pollution. Proposed adequate & effective control measures will be provided which include dust suppression, closed shades, Effluent Treatment Plant, etc.

- Awareness programs shall be arranged on health, hygiene and sanitation.
- Periodic health checkup camps, eye check-up camp shall be organized by project authority for villagers, contract laborers, employees and their family.
- Apart from the normal health check-up, emphasis shall also be given to prevent specific diseases originating due to emission of different pollutants such as respiratory alignments, skin problems, water borne diseases, hearing abilities, etc.
- Job oriented training courses must be organized through industrial/technical training institutions for educated youth like electrical, tailoring, plumbing, type writing, shorthand and 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 etc.
- At the work place, first aid facilities shall be 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 with maintained hygiene shall be provided at accessible place within the work zone

4.10. OCCUPATIONAL HEALTH CARE

No major occupational health hazards are envisaged in plant after proper safety and environmental protection measures. Personnel will be trained to take sufficient precautionary measures for safety and hygiene. Project activities are not likely to cause changes in occurrence of disease or affect disease vector. Though, medical check-up of workers will be regularly done as per statute.

Also, the operating and maintenance personnel will be provided with all the necessary safety equipment such as hand gloves, gum boots, aprons, helmets, dust mask, protective glasses, ear muffs etc. Worker's training will focus on reduction of wastes, utilization of wastes and generally maintaining a clean and healthy environment.

4.11 GREENBELT DEVELOPMENT

Out of 9.089 Ha. area of the plant 3.0 Ha. area (33%) is covered under the plantation. Till date (20.12.2022), company has planted 7,150 number of trees (including 150 number of trees planted on 05th June, 2022) covering the 3.0 hectare area within the plant premises involving the total expenditure of Rs. 45.80 lakhs.

Company has a proposal for doing additional plantation of 600 trees for gap filling near the plant boundary to increase the tree density to 2500 trees/ha. Company has also proposed to keep a capital budget of **Rs. 2.40** Lakhs for additional plantation in next two years and a budget of **Rs. 2.20 lakhs** for yearly maintenance of green area, compensation plantation for non-surviving plants, etc.

Table 4.26: Details of Greenbelt Development

S.No	Greenbelt Details	
1.	Total greenbelt area to be covered as per ToR	3.0 hectare (7.412 Acres)
2.	Area already covered	3.0 hectare (7.412 Acres)
3.	Total plantation till 5th June'2022	7150
4.	Total amount spent for greenbelt development	45.80 lakhs
5.	Proposed Additional Plantation for gap filling	600
6.	Capital Budget for additional plantation	Rs. 2.40 lakhs
7.	Yearly budget for maintenance	Rs. 2.20 lakhs













The selection of trees planted will be done judiciously keeping in mind the adaptability of trees to the climate of the region. As mentioned in ***Chapter 3***, the trees which are native and found in relative abundance as compared to the other species & species with proven survival rate were preferred. In view of the effective greenbelt development to reduce pollution load in ambient air, consultation with the forest officers and experts in the field were considered to identify the exact species to be planted and these were obtained from the nurseries/forest department in the nearby areas.

4.12 RAIN WATER HARVESTING

Rainwater harvesting is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to runoff. Rainwater can be collected from surface runoffs or roofs, and in many places and the water collected is redirected to a deep pit (well, shaft, or borehole), a reservoir with percolation, or collected from dew or fog with nets or other tools. Depending upon the available contours at detailed engineering stage, the number of drainage outfall and extent of open drains etc. is designed so as to discharge the water to the rainwater harvesting pond for reuse in dust suppression & greenbelt development. The calculation of rainwater endowment is presented here which shows the total rain water harvesting potential of the plant area.

Design of Rainwater Recharge Structure

Three most important components, which need to be evaluated for designing a rainwater harvesting structure, are:

- Hydrogeology of the area including nature and extent of aquifer, soil cover, topography, depth to water table and quality of ground water. This part is been discussed in detail in **Chapter 3.**

- Area contributing to runoff i.e., total area and land use pattern, whether industrial, residential or green belts and general built-up pattern of the area. Details of the areas contributing are given below in **Table 4.27.**
- Hydro meteorological characters viz. rainfall duration, general pattern of intensity of rainfall. Details of rainfall are given in the **Table 4.27.**

In order to design the recharge structure, hourly intensity of rainfall is considered to be 30mm/hr. Based on the Runoff Coefficient the water harvesting potential of a site could be estimated using the formula given below:

Water harvesting potential in m^3/year = Annual Rainfall (m) x Area of catchment (m^2) x Runoff coefficient.

Table 4.27: Data Assumed and/or Available for Rain Water Harvesting

S.No.	Details	Values
1.	Roof top Area (Plant &Storage area+ Administrative offices, canteen, security, etc) (m^2)	46,170
2.	Paved Area (Roads+ Floor+ Parking) (m^2)	10,710
3.	Green Belt Area (m^2)	30,000
4.	Open Area (m^2)	4,010
5.	Average Annual rainfall (mm) for Paschim Burdwan District & surrounding areas *(Source: Indian Metrological Dept.)*	1,313
6.	Hourly Rainfall intensity (m)	0.030
7.	Runoff coefficient for roof top 0.80-0.90	0.85
8.	Runoff coefficient for yard & paved area 0.60-0.65	0.65
9.	Runoff coefficient for green belt 0.10-0.20	0.15
10.	Runoff coefficient for open area 0.10-0.15	0.20

Table 4.28: Calculations of Hourly Harvest Potential of Runoff Water

S. No.	Details	Calculation (Hourly Rainfall (m) x Area(m^2) x Run-off coefficient)	Total Runoff (m^3/hr)
1.	Roof top	0.03 x 46170 x 0.85	1177.34
2.	Paved Area	0.03 x 10710 x 0.65	208.85
3.	Open Area	0.03 x 4010 x 0.20	24.06
4.	Green belt	0.03 x 30000 x 0.15	135
Total Runoff water quantity/hour (m^3/hr)			**1545.25**
Potential harvested water (considering 20% loss due to evaporation, spillage, etc)			**1236.2**

4.12.1 Design of Rainwater Harvesting Scheme

Under the expansion proposal M/s ESPL has proposed to harvest the rainwater from rooftop area, paved area around production facilities, roads, substations, etc and utilize the stored water within the plant premises for dust suppression, washing and greenbelt during lean season.

For the design of rainwater harvesting structure the natural available ground slope of the plant area will be utilized. Plant will be provided with four number of water storage facilities (Tank or Pond) to collect the harvested water from the total plant area. Rainwater will be collected from each available rooftop area i.e. Sheds, Admin building, Store, Occupational Health Centre and Technical Office and will be taken through a pipes into collection pit provided at ground level. Water from these intermediate storage pits will be taken to water storage tanks through pipes utilizing the natural available ground slope.

Runoff from paved area and around other production facilities and structures during the heavy storm in monsoons period will be carried by garland drains (under construction around existing production facilities as well as all along roadside) into the water storage tanks. Before discharging, water will be allowed to pass through silt traps pits and screens to prevent washed silt and any other item from plant to enter into the tanks.

Water Storage Facilities (Pond/Tanks): At present there is an existing natural pond within the plant premises and company shall be constructing three number of additional water storage tanks in three different plant slope direction.

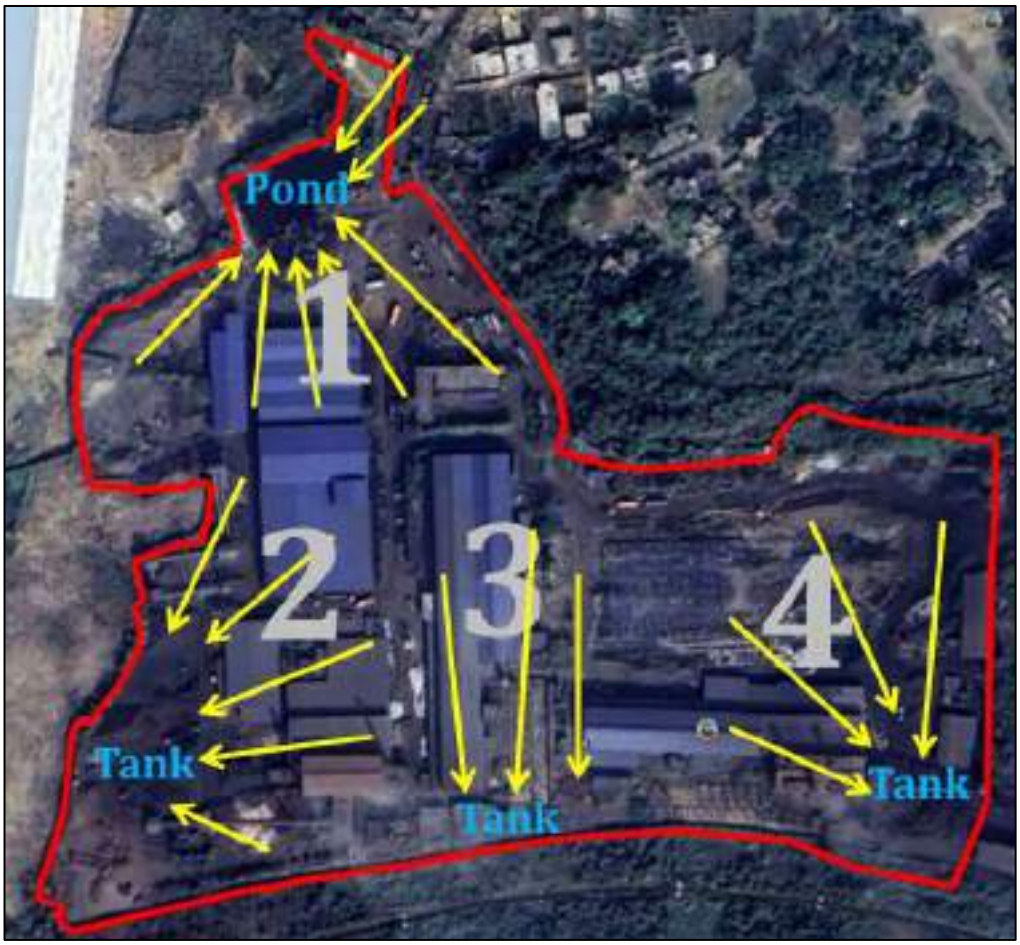


Fig 4.9: Natural Ground Slope Pattern and Location of Rainwater Storage Tanks/Pond

I. **Existing Pond:** Existing pond (dimension 2000m^2 X 3.2m) is having storage capacity of 6400m^3 volume of water and is present adjacent to the entry gate of the company. Pond also receives the rain water directly through its catchment. Collected water after suitable treatment shall be used in different processes within the plant, thereby reducing the fresh water requirement during monsoon period. As the pond is not having concrete lining on sides as well as at the bottom, therefore the water collected in the pond will naturally recharge the groundwater through percolation process. Proposal also involves the maintenance of the existing pond like stone pitching on side walls, plantation and fencing around the pond.



Fig. 4.10: Exiting Pond in the Plant premises

II. **Proposed Rainwater Storage Tanks:** Three (3) number of underground water storage tanks of concrete having dimension 15mx15mx1.5m and capacity of 337.5m^3 each shall be constructed to accommodate the collected rainwater. The water stored shall be utilized within the plant premises for dust suppression, washing and greenbelt during lean season as per the requirement.

Conclusion

- The project site is located is Paschim Burdwan district which lies in 'Safe' zone as per Ground water resources of India, 2013
- The total volume of water generated in project premises from rooftop, road/paved, green belt and open area in a single storm on 30mm/hr peak rainfall intensity would be 1236.2 cubic meter.
- The existing pond of storage capacity 6400m^3 and three (3) additionally proposed underground water storage tanks of capacity 337.5m^3 each will be utilized to accommodate the total rainwater harvested from plant area.

CHAPTER - 5

ANALYSIS OF ALTERNATIVES TECHNOLOGIES

5.1 PREAMBLE

M/s Eloquent Steel Pvt Ltd. is now seeking amalgamation of Environment Clearances transferred in the name of Eloquent Steel Pvt. Ltd. and seeking fresh Environment Clearance for production of 336,000 TPA Billets through modification of existing 4x7 Ton Induction Furnace to 4x8 Ton, installation of new 2x8 Ton Induction Furnace with 1x8Ton LRF & 2x4/7m CCM and 2x25Ton Induction Furnaces with 1x25Ton LRF & 3x6/11m CCM and production of 210,000 TPA MS Rolled products (Long products- TMT Bar, MS Round & Wire Rod) by installation of 600TPD Rolling Mill along with 1x25TPH Reheating Furnace. Also, 1x25TPH Briquette plant for production of 150,000TPA Chrome Ore Briquettes, 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Sinter are also proposed under the proposed expansion with addition of "Pig Iron' as product from the existing 3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces with maximum production capacity of 76,400 TPA within the existing plant area of 9.089 Ha (22.46 acres).

- Project location
- Environmental Sensitivity
- Technology

5.2 SELECTION OF LOCATION

Selection of location in this case is not applicable as the project is for expansion of existing Plant and shall be installed within the existing plant area. Still the location assessment on factors like environmental sensitivity and resource availability has given positive inferences:

5.2.1. Environment Sensitivity of the Location

Environment sensitivities present in the study area of 10 km around the proposed project site are given in **Chapter 3.0**.

1. There is no Wildlife Sanctuary/National Park/Bio-sphere Reserve/Habitat of Migratory birds within 10 km radius from the project site.
2. There is no Tiger Reserve / Elephant Reserve / Turtle Nesting Ground within 10 km radius from the project site.
3. There is no Archeological Monument / Defense installation within 10 km radius from the project site.
4. There is no Forest land in the project site

The location is having following advantages

I.) Proximity to the electricity grid.

II.) Access to markets.

III.) Both skilled and unskilled labour is available near the site.

IV.) Good connectivity for transportation of inward and outward materials.

V.) Already established industrial environment and necessary infrastructure.

5.2.2 Resource Availability

A good number of industrial units of Sponge iron and Induction furnaces are already operating in the areas surrounding the proposed site. Private carriers are available in plenty to take care of the transportation. The source of power at present is DVC and permission for additional requirement shall be obtained from the same. Water is sourced from DVC permission for the total requirement is already obtained.

5.3 SELECTION OF TECHNOLOGY

The technological route used for the production of TMT bars, Ferro Alloys, Pig Iron by M/s Eloquent Steel Pvt Ltd is well-established and technically viable. The technological facilities used to achieve good quantity and quality of aforementioned product is described briefly in the following sections:

- Induction Furnace along LRF and CCM route is to be adopted for the production of MS Steel Billets. In India about 56% of the total steel production is made using electric route. Out of this 56%, 22% of steel was made on electric arc furnace and rest by induction furnace furnaces. Use of Induction Furnace technology helps in recycling of scrap (which was the original objective) and manufacturing of steel from the primary raw materials (in the form of DRI, HBI, SI, IC etc.)
- Considering the large scope in India for the consumption of long steel products company has planned to set-up its own Rolling Mill of capacity 600TPD to produce Thermo-Mechanically Treated (TMT) High Strength Steel Reinforcement Bars, MS Road and Wire Rod in a most energy efficient and cost effective manner
- Ferro Alloys production will be done through smelting in Submerged Arc Furnace (SAF) which is the most common and technically viable technology. Entire facilities of Ferro Alloy Plant are already in operation and there is only proposal to add Pig iron production from the available facilities
- Also, company has proposed to setup Sinter plant of 300TPD for effective utilization of the waste fines of Iron Ores, coke and dust generated in processes. Consumption of sinter in SAF brings commercial benefits and technical suitability for SAF operations and 1x25TPH Briquette Plant to utilise Chrome fines

- Metal Recovery Plant with Jigging facility has been proposed for recovery of metals from Ferro Alloy slag

M/s Eloquent Steel Pvt Ltd is committed to use best technology available for controlling, treating and disposing of all type of waste to be generated during the operation of proposed plant. The details of air emission, waste water and solid wastes proposed to be generated and their disposal during operation phase are given in **Chapter 2.0** and in **Chapter-4.** All statutory requirements, guidelines and recommendations of WBPCB/CPCB/MOEF shall be complied.

5.4 ENVIRONMENT MANAGEMENT

The key production and emissions control practices that will lead to compliance with the above guidelines are summarized below.

I. All statutory requirements, guidelines and recommendations of WBPCB/CPCB/MOEF shall be complied
II. Use low-NOx technology and other combustion modifications to reduce emissions of nitrogen oxides at Reheating Furnace. Also, recuperator will be provided as a waste heat recovery unit to realize high thermal efficiency and energy conservation
III. Several measures shall be taken to control fugitive emissions
IV. Air emission shall be controlled by providing adequate pollution control equipment
V. Waste water shall be treated and used within the plant premises (re-circulating cooling systems). No waste water shall be discharged outside the premises i.e adopting 'Zero effluent discharge'
VI. Solid waste to be generated shall either be utilized or disposed-off in environment friendly manner so as to minimize environmental impacts—especially the migration of toxic metals, if present, to the nearby surface and groundwater bodies.
VII. Continuous efforts shall be made for improvement of the socio-economic status of the surrounding area.

CHAPTER - 6
ENVIRONMENTAL MONITORING PROGRAM

6.1 INTRODUCTION

Environmental Monitoring is an essential tool for sustainable development and ensuring effective most 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 will be carried out as per the present norms and any further notification /direction from West Bengal Pollution Control Board (WBPCB), 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, AWWA etc.

6.2 PARAMETERS TO BE MONITORED

- Ambient Air Quality,
- Stack Emission
- Work zone Air quality,
- Surface water and Ground Water Quality
- Noise Level
- Performance of pollution control equipment.
- Plantation
- Housekeeping
- Accidents and Diseases

6.2.1 Ambient Air Quality

Presently ambient air quality is being monitored regularly in accordance with CPCB/ WBPCB guidelines. It is necessary to monitor the air quality at the boundary of the plant specifically with respect to PM10 and PM2.5. Under proposed expansion proposal, proponent shall be installing one (1) no. of Continuous Ambient Air Quality monitoring station in the downwind of the annual predominant wind direction of the plant works.

Ambient air quality monitoring in and around the premises will be done manually at 6 locations (4 in the project site and 2 in Village Denuda and Salanpur at a distance of 0.03Km and 1.4Km respectively) for the parameters given above or as directed by West Bengal Pollution control Board (WBPCB). The results shall be compared with the norms given in the National Ambient Air Quality Standard, 2009.

Table 6.1: Ambient Air Quality – Frequency and Parameters

Description	Number of Monitoring Stations	Frequency
Ambient Air Quality	6	Quaterly (twice in a week as per NAAQ Standard)
Parameters – PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, O_3, Pb, NH3, C6H6, BAP, As, Ni.		

6.2.2 Stack Emissions

Periodical monitoring of stack for PM, SO_2, NOx & CO in case of process stacks of Steel Melting Shop, Submerged Arc Furnace, Briquette Plant and Sinter Plant shall be done to assess the performance of pollution control facilities that will be installed at these units. Incase emissions are found to exceed the norms, the 'on duty' personnel shall check the relevant process parameters and take appropriate corrective action. Emissions from all the stacks shall be monitored once in a quarter using the manually operated stacks emissions monitoring equipment. However, the frequency of monitoring may be increased if required in accordance with the stipulations of WBPCB or other statutory authorities.

Online Continuous Emissions Monitoring System (OCEMS) has been installed with all the 4 stacks of connected to SAFs. Performance test shall be conducted on all pollution control system every year.

Table 6.2: Total Stacks to be monitored after Implementation of Expansion

Sl. No.	Unit	Type of Pollution Control Facility	Nos.	Connected with Stack	Frequency
1.	Induction Fce. 3x8T	Existing Fume Extraction with spark arrester + Pulsejet type Bag Filter system shall be	1	1	Quarterly

Sl. No.	Unit	Type of Pollution Control Facility	Nos.	Connected with Stack	Frequency
		augmented			
2.	Induction Fce. 3x8T + 1x8 T LRF	Existing Fume Extraction with spark arrester + Pulsejet type Bag Filter system shall be augmented	1	1	Quarterly
3.	Induction Fce. 2x25T + 1x25 T LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	Quarterly
4.	SAF #1 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	Quarterly
5.	SAF #2 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	Quarterly
6.	SAF #3 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	Quarterly
7.	SAF #4 (5.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	Quarterly
8.	Reheating Fce. (25TPH)	Low NOx Burners and Recuperator	-	1	Quarterly
9.	Briquetting Plant (25TPH)	Pulse Jet Type Bag Filter	1	1	Quarterly
10.	Sinter Plant (300TPD)	Pulse Jet Type Bag Filter	1	1	Quarterly
Total number of Bag Filters and Stacks			**9**	**10**	
Material Handling Area		Dust Extraction system and Fog/Mist Sprinklers	All transfer points, screens, crushers, etc.		

6.2.3 Fugitive Emissions

Fugitive emissions is being controlled with dust suppression systems at bulk raw material handling areas, storage area, all loading unloading locations, haulage roads, etc. Fugitive emissions shall be measured at five (5) locations at a distance of about 5-10 meters, once in a Quarter from the source of fugitive emissions, once in a quarter and values shall be compared with the standard notified under GSR 277(E).

Table 6.3: Fugitive Emission to be monitored

S.No	Area	Monitoring Location
1.	Raw Material Handling Area (2)	Screen, Transfer Points, Stock Bin area
2.	Near to Induction Furnaces and SAFs (2)	5-10 meters distance from IFs or SAFs on Operation Platform
3.	Metal Recovery Crusher (1)	At 5 meters distance

6.2.4 Work-Zone Air Quality

Work-Zone shall be monitored as per Factory's Act at all locations to measure the Permissible Exposure Level (PEL) and compared with TLV values given under Factory's Act.

6.2.5 Effluent Quality

The plant will be designed for zero liquid discharges (ZLD). Wastewater streams comprising cooling tower blow down and Neutralization Pit backwash water will be utilized in Metal Recovery Plant, Sinter Plant, slag cooling and for Dust suppression. Domestic effluent will be utilized for plantation. No plant effluent will be discharged in to public water ways or drains. The storm water drains will be segregated and channelized to water harvesting pond.

Water quality shall be monitored at following Six (6) locations after the treatment facilities to check their conformance with Effluent Discharge Quality norms under Schedule–VI of Environmental (Protection) Rules, 1986 for the relevant parameters and will be maintained so as to meet the requirements of West Bengal Pollution Control Board.

Table 6.4: Monitoring of Effluent Quality

Unit	Point of Measurement of Effluent quality	Frequency
Neutralization Pit	At the outlet (3 location)	Once in a Quarter
Blow down from Cooling Towers from IF and SAFs	At the outlet (3 location)	
Sewage Treatment Plant (STP)	At the outlet (1 location)	Once in a Quarter
Total locations	**7 (Seven)**	
Parameters to be monitored – pH, Temp., SS, O&G, NH_3, BOD, COD, Chloride, sulphate will be monitored quarterly or as directed by WBPCB.		

6.2.6 Ground Water Quality

Ground water shall be sampled from up gradient and down gradient of the proposed slag bank to check for the 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.

A total of two samples shall be collected and will be compared with IS 10500 drinking water standards, once in six months.

6.2.7 Noise Monitoring

Monitoring of Ambient noise levels will be done once every quarter during day time (6 AM to 10 PM) and night time (10 PM to 6 AM) at Four (4) locations, two inside plant premises and two in nearby villages (Dendua & Nakrajoria) as per the Noise Pollution (Regulation and Control) Rules, 2000, Schedule III at Industrial, Commercial, Residential and Silence Zone. Work zone noise shall be monitored once every quarter at Four (4) locations in plant near SAF, near SMS, near Sinter Plant and near Rolling Mill area.

Table 6.5: Monitoring of Noise Levels (Ambient & Work-zone)

Description	Number of Monitoring Stations	Frequency
Ambient Noise Levels	4	Quarterly Day time (6 AM to 10 PM) and Night time (10 PM to 6 AM)
Work Zone Noise Levels	4	Quarterly

6.2.8 Plantation

Plant growth, its maintenance and survival rate will be monitored. Additional/Replacement plantation will be carried.

6.2.9 Occupational Health Monitoring - Surveillance of workers health

M/s ESPL is already providing and shall continue to provide appropriate and relevant health surveillance to workers with special emphasis to the pollutants, prior to first exposure and at regular intervals thereafter.

6.2.10 Socio-Economic Development - Interaction with Stakeholders

The setting up of the plant has improved the socio-economic conditions in the surrounding area. The expansion plan will further improve the infrastructure, and economic conditions. The communities, benefited by the plant, are the key stakeholders of the ESPL plant. Company has already done various society welfare activities under CSR like Food Material distribution, Education support, drinking water facilities, etc on the account of interaction with local public.

It is further suggested that M/s ESPL should have structured interactions with the community to disseminate the measures taken by the plant and also to elicit suggestions for overall development of the area.

6.2.11 Monitoring of Effectiveness of Pollution Control Equipment

Efficiency of Pollution Control shall be evaluated once in six months and detailed maintenance schedule shall be drawn for all pollution control systems. The maintenance shall be done strictly as per schedule and guidelines furnished by the manufacturer.

6.2.12 Accidents and Diseases Monitoring

M/s ESPL has established procedures and systems for reporting and recording of Occupational accidents and diseases and dangerous occurrences and incidents.

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 shall further enable and encourage workers to report to management all:

- Occupational injuries and near misses;
- 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 ALLOCATION FOR MONITORING

In order to maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary. For this the project proponent has constituted an Environmental Management Cell. 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, Budget for environmental monitoring will be prepared and revised regularly as per requirement.

Table 6.6: Environmental Monitoring Program

S. No	Parameters	Measurement Methodology	Frequency	No. of Location	Standard	Fixed Cost, INR	Recurring Budget in INR	Implement ation	Supervision
1 (a)	Ambient air monitoring of parameters specified by GPCB consents from time to time (PM_{10}, $PM_{2.5}$, SO_2, NOx, CO)	IS 5182 & CPCB Guidelines Vol. 1 (Gravimetric Method)	Continuous over 24 hours, twice in a week, once in a Quarter.	6 locations	National Ambient Air Quality Standard, 2009		Rs. 5000 per location x 6 x 4 x 2 = Rs. 240,000 per annum	EMC / Pollution Monitoring Agency,	Top Management
1 (b)	Installation Continuous Ambient Air Monitoring Station	--	--	1 location	--	80,00,000	500,000	EMC	Head – Environment, Health & safety
2	Stack monitoring of parameters specified by WBPCB consents from time to time	Stack monitoring by Isokinetic sampling IS: 11255.	Once in a Quarter	All flue gas and process stack (10 Stacks)	Limits specified by MoEFCC in EC, G.S.R. 277 (E) and SPCB in consents	-	Rs. 2250 per Stack X 10 Stack X 4 = Rs. 90,000 per annum	EMC / Pollution Monitoring Agency,	Top Management
3	Fugitive dust emission monitoring	IS 5182 & CPCB Guidelines Vol. 1 (Gravimetric Method)	Once in a Quarter	5 locations	Comparison with G.S.R 414 (E) and G.S.R. 277 (E)	-	Rs. 3000 per location X 5 locations X 4 = Rs. 60,000 per annum	EMC / Pollution Monitoring Agency,	Top Management
4	Work-Zone Monitoring	IS 5182 & CPCB Guidelines Vol. 1 (Gravimetric Method)	Once in Six months	All Plant area	TLV under Factory's Act	-	Rs. 3000 per location X 6 locations X 2 = Rs. 36,000 per annum	EMC / Pollution Monitoring Agency,	Top Management

S. No	Parameters	Measurement Methodology	Frequency	No. of Location	Standard	Fixed Cost, INR	Recurring Budget in INR	Implement ation	Supervision
5	Monitoring of Industrial and Domestic effluent	APHA: 23rd Edition, 2017	Once in a Quarter	Out let of ETP and Cooling Towers (6 locations)	Comparison with Schedule – VI of Environmental (Protection) Rules, 1986	-	Rs. 2000 per sample x 7 x 4 = Rs. 56,000/- per annum	EMC / Pollution Monitoring Agency,	Top Management
6	Monitoring of groundwater	APHA: 23rd Edition, 2017	Once in Six Months	Changes in ground water quality will be monitored in the up-gradient and down gradient of the plant including slag dump will be monitored	IS: 10500:2012 drinking water standards.	-	Rs. 2500 per sample X 2 X 2 = Rs.10,000/- per annum	EMC / Pollution Monitoring Agency,	Top Management
7	Ambient Noise level	IS 9989: 1981	Once in a Quarter	4 locations at Site	Comparison with the Noise Pollution (Regulation & Control) Rules, 2000	-	Rs. 1000 X 4 x 4 = Rs. 16,000 per annum	EMC / Pollution Monitoring Agency,	Top Management
8	Work Zone Noise monitoring	SLM	Once in a Quarter	By rotation, 4 locations in a Quarter	Comparison with OSHA Standard for Work-zone noise	-	1000 X 4 X 4 = 16,000/- per annum	EMC / Pollution Monitoring Agency,	Top Management

S. No	Parameters	Measurement Methodology	Frequency	No. of Location	Standard	Fixed Cost, INR	Recurring Budget in INR	Implement ation	Supervision
9	TCLP Test of Slag	USEPA 1311	Once in Six months	Induction Furnace & SAF Slag	-	-	2500 per sample X 2 x 2 = 10,000 per annum	EMC / Pollution Monitoring Agency,	Top Management
10	Monitoring of Greenbelt	As per CPCB Guideline	Regular	At site	Survival rate, maintenance of 33% greenbelt	-	150,000 per annum	Horticultural Deptt. / EMC	GM (Plant)
11	Socio-economic Development	Structured interactions with the community to disseminate the measures taken by the steel plant and also to elicit suggestions for overall improvement for the development of the area				--	75,000 per annum	Personnel Deptt. / EMC	Top Management
12	Occupational Health Monitoring - Surveillance of workers health	Health surveillance to workers with special emphasis to the pollutants, prior to first exposure and at regular intervals thereafter.				--	200,000	OHS / Safety Deptt.	Top Management
13	Efficiency Monitoring of Pollution Control Equipment	Will be provided by the agency, engaged	Once in six months	At Site	Efficiency of the pollution control equipment shall be checked and compared with the designed efficiency	--	100,000	EMC / Pollution Monitoring Agency,	EMC
14.	Accidents and Diseases Monitoring	Reporting and recording of Occupational accidents and diseases and dangerous occurrences and incidents				In-house		Plant Medical Unit	Top Management
TOTAL						**80,00,000**	**15,59,000**		

6.4 ENVIRONMENTAL MANAGEMENT CELL

M/s ESPL Ltd is responsible for implementation Environmental Monitoring Program. A separate department "Environmental Management Cell" (EMC) headed by EHS Head exists in the company to look after all environmental related matters of the plant. The EMC supervise the activities time to time for smooth implementation of Environmental Monitoring Program and will take necessary actions if required. The cell will act to ensure the suitability, adequacy and effectiveness of the Environment Management Program and will also ensure to meet all the Statutory Requirements. The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions is presented below:

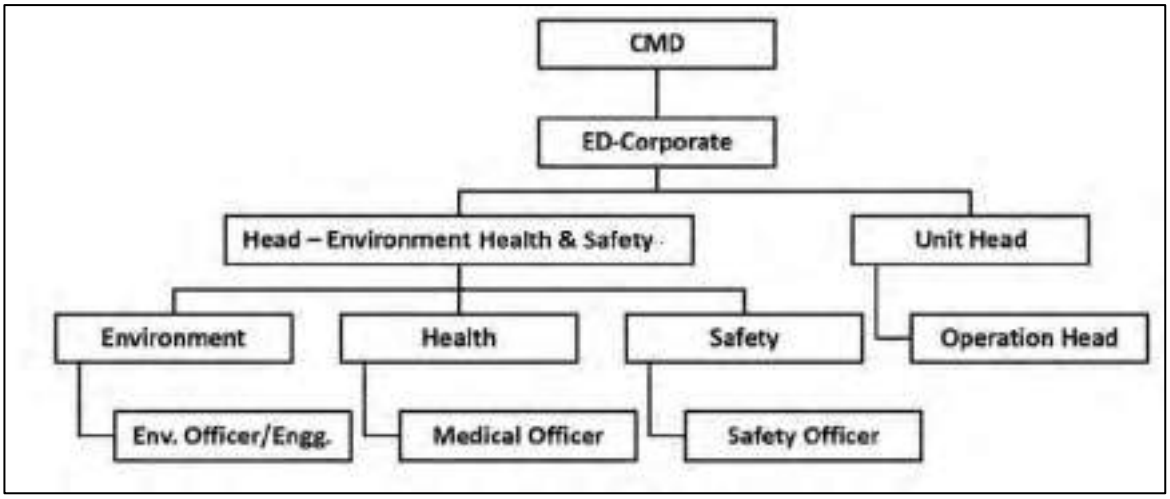


Fig 6.1: Organization Chart of Environmental Monitoring Cell

6.4.1 Monitoring & responsibility

The cell will be responsible for monitoring of the plant environment related requirements which include**:**

I. Interaction with the State Pollution Control Board

EMC shall be in regular touch with WBPCB and shall send them environmental monitoring reports regularly in the prescribed format, as per the prevailing practice. Any new regulations considered by State/Central Pollution Control Board for the Industry shall be taken care of by EMC.

II. Provide Training

EMC would be responsible for the implementation of the EMP, needs to be trained on the effective implementation of the environmental issues. To ensure the success of the implementation set up proposed, there is a high requirement of training and skill up-gradation. For the proposed expansion project, additional training facilities

will be developed for environmental control. For proper implementation of the EMP, the officials responsible for EMP implementation will be trained accordingly.

To achieve the overall objective of pollution control it is essential not only to provide latest pollution control and monitoring systems but also to provide trained man power resources to operate and maintain the same. So far, the practice with many plants is to utilize the plant operations and maintenance crew for operation of systems. This has shown adverse results due to lack of specialized knowledge in addition to priority selection. Therefore, apart from the EMC, specific training will be provided to personnel handling the operation and maintenance of different pollution control equipment.

In-plant training facilities will be developed for environmental control. Specialized courses at various Research / Educational institutes will be organized. The training will be given to employees to cover the following fields:

- Awareness of pollution control and environmental protection to all
- Operation and maintenance of specialized pollution control equipment
- Organize field monitoring, maintenance and calibration of pollution monitoring instruments
- Laboratory testing of pollutants
- Repair of pollution monitoring instruments
- Occupational health/safety
- Disaster management
- Environmental management
- Afforestation / plantation and post care of plants
- Knowledge of norms, regulations and procedures
- Risk assessment and Disaster Management

III. Plant safety

- Checking of safety related operating conditions.
- Visual inspection of safety equipment
- Preparation of a maintenance plan and documentation of maintenance work specifying different maintenance intervals and the type of work to be performed

IV. Responsibilities of the cell w.r.t Environment Management System:

- Identification of any problem in implementation of EMP and mitigation measures
- In such cases (non-compliance/deviation/violation/major accident) Head of Environment Department will do immediate reporting to the Executive Director-Corporate, Directors and Chairman of the Company

- Initiating or providing solutions to those problems through designated channels and verification of the implementation status
- Control of activities inside the plant, until the environmental problem has been corrected
- Suitably make modifications or alterations in the plan to meet regulatory standards as amended from time to time
- Ensure the implementation of Policy on environment at plant level and review the status with respect to stipulated norms Prevention of incidents/accidents that might result from abnormal operating conditions
- Conducting regular safety drills and training programs to educate employees on safety practices. A qualified and experienced safety officer will be responsible for the identification of the hazardous conditions and unsafe acts of workers and advise on corrective actions, organize training programs and provide professional expert advice on various issues related to occupational safety and health
- Conducting safety and health audits to ensure that recommended safety and health measures are followed
- Establish appropriate management system for environment management and ensure regular auditing to verify compliance

V. Other responsibilities of the cell will include:

- WBPCB registered agency will be retained to generate the environment quality data in respect of air, water, noise, soil and meteorology and prepare the Environmental report
- Submitting environmental monitoring report to WBPCB. The cell will also take mitigative or corrective measures as required or suggested by the Board.
- Timely renewal of Consents & Authorization will be taken care of.
- Comply with the conditions prescribed under the Consents and Authorization
- Conduct and submit annual Environmental Statement to WBPCB.
- Prepare and submit six monthly report on the compliance with the conditions of the environmental clearance
- Keeping the management updated on regular basis about the findings / results of monitoring activities and proposes measures to improve environmental performance.
- Ensure conducting third party environmental monitoring through certified bodies to evaluate prevailing environmental condition with respect to statutory norms.
- Formally review environment performance of the company and report environmental performance to the Board of Directors of the company through CMD once every quarter.

- Review environment performance on monthly basis and recognize exemplary performance
- Ensure the statutory environmental compliances

6.5 SUMMARY

The environment monitoring program enables environmental management system with early sign of need for additional action and modification of the ongoing actions for environment management. The environmental monitoring program will be decided considering the environmental impacts likely to occur due to the operation of proposed project. Main objective 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/WBPCB. 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 management will be prepared and revised regularly as per requirement.

CHAPTER - 7
ADDITIONAL STUDIES

7.1 PREAMBLE

In this chapter followings have been discussed:

- Social Impact assessment Study
- Public consultation / Public Hearing
- Hazard Identification and Risk Management

7.2 SOCIAL IMPACT ASSESSMENT

7.2.1 Introduction

The term "Social Impact" means all social and cultural consequences, including changes of people's life, production, social relations and organization pattern, brought about by any private or public activity, as well as cultural impacts, including changes of people's behavior, the view of value and religion.

The objective of a Social Impact Assessment (SIA) is to assess the possible social impacts that may be brought about by a development project, to understand, manage and control changes to formulate, implement mitigation measures to minimize adverse social impacts or prevent from extension. In the assessment, the most important key is to carry out social intervention to settle, mitigate and eliminate the adverse impacts and manage the social impacts rationally.

Social Impact Assessment is carried out, based on impacts to all the properties and assets identified along the project site. The socio-economic survey in the project area was carried out and the detailed relevant information.

7.2.2 Objectives of Social Impact Assessment Study

The main objective of conducting social survey is to provide inputs of social concerns and to avoid or minimize the adverse social impacts with the best possible solutions at minimum cost. The social reconnaissance exercise is intended to assess the negative impacts (direct, indirect or cumulative) and to suggest mitigating measures to avoid or at least minimize the adverse impacts on nearby communities and people. To minimize and or avoid the adverse impacts through suggested appropriate measures that can be adopted during the operation of the project.

The above objectives can be summarized as follows:

- To identify Socio economic status of the study area;
- To collect base line demographic and socio-economic characteristics of the study area
- To gather from the villager's information on the awareness and opinion about of the project

- To know the perceptions and expectations of the respondents from the project authority
- To suggest an appropriate action plan for improving/ restoring the living standards of people in the study area

7.2.3 Rehabilitation & Resettlement Plan

This is the expansion project within the existing plant premises, hence does not involve any displacement of persons and no rehabilitation or resettlement is required.

7.2.4 Reconnaissance Survey of the Project Area

The study team carried out extensive visits to collect social features within the study area. Other primary data has been collected by using structured and semi-structured questionnaires. Socio Economic survey was been carried out in all the directions within the 10 km radius of the study area to know their socio-economic status that includes the basic amenities like education, health, communication and transportation, drinking water facility, sanitation facility and their views, expectation and perceptions about the project.

The consultations were carried out with both individuals and groups during the reconnaissance survey involving local people, directly and indirectly affected persons, public consultation involved information dissemination i.e. informing the people about the details of the project and to invite their suggestions and comments.

7.2.5 Analysis of Data and Reconnaissance Exercise

The data collected through the above steps were compiled to develop the social scenario of the project area and the sensitive components within that. The collected data was analyzed, tabulated, summarized and accordingly socio-economic features of the project area were assessed. The analysis will indicate the feasibility of the project and will help in suggesting various socially viable options and suggested mitigation measures to make the project socio-economically acceptable.

7.2.6 Details of Project Area

Study Area

The study area was defined as an area within 10 km radius around the project site which includes total 84 villages and 11 urban areas that are from Salanpur and Barabani Tehsil of Bardhaman District, of West Bengal and Nirsa Cum Chirkunda Tehsil of Dhanbad District of Jharkhand state.

The details of the facilities available in the 10 sampling villages are given in **Table No. 7.1**

Table 7.1: Summarized Details of the Socio-Economic Survey

S.No.	Village Name	Survey Details
1.	Nakrajuria	The total geographical area of village is 221.04 hectares. Nakrajuria has a total population of 2,746 peoples. There are about 509 houses in Nakrajuria village. There is 1 Govt. Primary School, Untreated Tap water & Hand Pump as drinking water facility, Open drainage system and community toilet available in the village. There is no Govt Medical Facility available in the village. Asansol is nearest town to Nakrajuria which is approximately 10km away. Public Bus Service and Private Bus Service is available within village while the Railway Station is available within 5kms distance.
2.	Dendua	Total village area is 46 hectares. Total population is 2297 and number of houses are 441. Government and private Pre Primary, Primary Schools are available in this Village. 4 MBBS Doctor Practices, 4 Medical Shops are available in this village. Paddy, Corns and Vegetables are agriculture commodities grown in this village. House Building and Materials products are available in this village. 9-hours agricultural power supply in summer and 10 hours agricultural power supply in winter is available in this village. Overall village is having has a power supply of 20 hours in summers and 22 hour in winters. Sports facilities and Polling station are the other amenities in the village Untreated Tap Water Supply all-round the year is available. Un-covered Well, Hand Pump and Tube Wells/Boreholes are other Drinking Water sources. Partially open drainage system available in this village. This village is covered under Total Sanitation scheme and there is system to collect garbage on street. Internet Centre is also available in this village. Man pulled Cycle Rickshaws, Autos, Tractors and Animal Driven Carts available in this Village. District Road passes through this village. Somewhere Kuccha Road and Foot Path are available within the village. Commercial Bank available in this village. Nearest Cooperative Bank is in less than 5 km. Mandis/Regular Market and Weekly Haat/santha are available in this village.
3.	Kulti	Kulti municipal area had a total population of 313,809, of which 163,193 (52%) was males and 150,616 (48%) was females as per Population Census 2011. The education facility is available in the form of primary and middle school while no government medical facility is present in village only medical shops are available. The primary source of drinking water is untreated tap water and Hand Pump. The sanitation facility is very poor in the village and people are unsatisfied with the condition.
4.	Khudika	Khudika is a large village located in Salanpur Block of Barddhaman district, West Bengal with total 725 families residing. Public Bus Service is available within <5 km distance, Private Bus Service is available within

S.No.	Village Name	Survey Details
		<5 km distance and the Railway Station is available within 7km distance. The education facility is available in the form of primary and middle school while no government medical facility is available in village. The primary source of drinking water is untreated tap water and Hand Pump. The sanitation facility is very poor in the village and people are unsatisfied with the condition.
5.	Maheshpur	Maheshpur village is located in Salanpur Tehsil of Barddhaman district. It is situated 2.8km away from sub-district headquarter Salanpur and 125km away from district headquarter Barddhaman. As per 2009 stats, Dendua is the gram panchayat of Maheshpur village. The total geographical area of village is 168.51 hectares. Maheshpur has a total population of 1,184 peoples. There are about 195 houses in Maheshpur village. Asansol is nearest town to Maheshpur which is approximately 10km away. Public Bus Service is available within <5 km distance, private Bus Service is available within <5 km distance and Railway Station is available within 10km distance. There is 1 Govt. Primary School, no Govt Medical Facility, Untreated Tap water & Hand Pump as drinking water facility, Open drainage system and community toilet available is observed throughout the village.
6.	Salanpur	Salanpur village has 885 number of houses. Govt Pre Primary, Private Pre Primary, Govt Primary, Govt Middle and Govt Secondary Schools are available in this Village. Nearest Govt Arts and Science Degree College is in Chittaranjan. Nearest Govt Medical College is in Burdwan. Nearest Govt Disabled School, Private Engineering College, Govt MBA college, Govt Polytechnic College and Govt ITA College are in Asansol. 1 Primary Health Sub-Centre , NA MBBS Doctor Practice , 1 RMP doctor , NA Faith Healer , NA Medical Shop are available in this village. Paddy is agriculture commodities grow in this village. Covered Well, Tube Well and Hand Pump are Drinking Water sources. Open Drainage System Available in this Village. This village Covered Under Total Sanitation. Community Toilet Complex Available in this village. There is system to collect garbage on street. Drain water is discharged directly into water bodies. Sub Post Office is available in this Village. Landline is available in village. Mobile Coverage is available. Public Bus service and Private Bus service and Railway station is available in this village. Cars, Autos and Tractors are available in this village. Most of the roads are Pucca road & Macadam Road but somewhere kuccha road & Foot Path facility was also observed.
7.	Hadla	Hadla is a village located in Salanpur Block of Barddhaman district, West Bengal with total 524 families residing. Public Bus Service and Private Bus Service is available within village. Village is not having any medical & education facility and villagers have to go to nearby town area for any medical assistance and schooling.

S.No.	Village Name	Survey Details
8.	Gagna	Gagna village is located in Nirsa Cum Chirkunda Tehsil of Dhanbad district in Jharkhand, India. It is situated 9km away from sub-district headquarter Nirsa and 36km away from district headquarter Dhanbad. As per 2009 stats, Kalimati is the gram panchayat of Gagna village. The total geographical area of village is 217 hectares. Gagna has a total population of 1,682 peoples. There are about 299 houses in Gagna village. Tap water, uncovered well, Hand Pump and Tube well are the drinking water sources. There is only Primary school and no middle school facility in the village; people prefer to go to Chirkunda town for education. Chirkunda is nearest town to Gagna. Public Bus Service and Private Bus Service is available within 5 - 8km distance and Railway Station is available within 10 km distance from the village.
9.	Miliakhola	Miliakhola village is located in Salanpur Tehsil of Barddhaman district. It is situated 7.3km away from sub-district headquarter Salanpur and 116km away from district headquarter Barddhaman. Salanpur is the gram panchayat of Miliakhola village. The total geographical area of village is 125.33 hectares. Miliakhola has a total population of 1,532 peoples. There are about 323 houses in Miliakhola village. There are 2 numbers of Primary schools and 1 number of Middle schools in the village. Village has lack of sanitation and Garbage collection system. Neamatpur is nearest town to Miliakhola which is approximately 5km away. Public Bus Service, Private Bus Service and Railway Station is available within <5 km distance.
10.	Jemari	Jemari village is located in Salanpur Tehsil of Barddhaman district. It is situated 4.9km away from sub-district headquarter Salanpur and 123km away from district headquarter Barddhaman. As per 2009 stats, Basudevpur Jemari is the gram panchayat of Jemari village. The total geographical area of village is 151 hectares. Jemari has a total population of 4,321 peoples. There are about 795 houses in Jemari village. Salanpur is nearest town to Jemari. Public Bus Service is available within <5 km distance, Private Bus Service is available within <5 km distance and Railway Station is available within 10km distance.

(Source: Socio Economic survey by FAE- SE)

7.2.7 Consultation with Stakeholders

As part of the participatory approach, the project has been designed in due consultation with all the stakeholders. The aim is to make the stakeholders aware about the developmental activities being undertaken and to incorporate their views for making sustainable plan during the design and to have successful completion of the project.

Methods of Stakeholder Consultation

Informal and formal consultations in the project area were conducted which adopted the following methodology:

(i) Walk over survey and informal discussion with people
(ii) Individual interviews with villagers.
(iii) Conducting focused group discussions.

As per the data generated through the survey it is observed that the quality of life of the surveyed village is on an average and with lack of basic amenities such as medical facility in some villages. Drinking water facility is also not satisfactory. Project proponent should work in certain area for improvement in the quality of life of the region.





Key Findings of the Consultation

The key findings of the consultation on various issues such as, general perception, expectation from the project and suggestions to mitigate any damage are given below:

Issues/Points Discussed with the Villagers	Opinion and Expectations from Project Authority
Issues Discussed: • The Project Background, Environmental, Social issue and benefit from the project were explained to the Stakeholders. • The Main issue of villagers during public consultation was discussed. • Perceptions of the villagers	• Most of the respondents are aware about the steel plant but they are not aware about the expansion project. • As the main problem faced by most of the villagers from Nakrajuria and Kulti village is of open drains so they are expecting that proponent must help them in getting covered drainage system in their villages. • Villagers from Nakrajuria, Salanpur, Hadla and Miliakhola villages are expecting that the project proponent should organize Health camp for the villagers

Issues/Points Discussed with the Villagers	Opinion and Expectations from Project Authority
were discussed • Expectations of the respondent from the project proponent were discussed to know their priority needs and requirements	from time to time. • Pollution control measures should be adopted to reduce the pollution level in the areas. • Educational and skill development trainings to be provided for the villagers. • Toilet shall be constructed in primary schools of the village • Most of the respondents from Dendua village are expecting that the job opportunities may be increase due to project work mainly during construction work. • Villagers opined that the proposed expansion project may increase the traffic level in the area as the flow of Trucks in the area has increased. so project proponent must adapt necessary measures to mitigate the traffic congestion in the area.

(Source: Socio Economic Survey by Mrs. Silpa Mishra, FAE-SE)

7.3 PUBLIC HEARING

Public hearing is a very significant part of the process of public participation envisaged under guidelines issued by MoEF&CC, Government of India. It facilitates involvement of all the stake holders of the project which is essential for ensuring smooth running of project and benefitting all section of society in the process of economic development of the region.

7.3.1. Public Hearing Advertisement

Information of the Public Hearing for the project entitled "Expansion of Eloquent Steel Pvt. Ltd. for 336,000 TPA Billet Production along with Rolling Mill for production of 210,000 TPA Rolled Product, Installation of 150,000 TPA Briquette Plant, 108000 TPA Sinter Plant and addition of Pig Iron as product from the Existing Submerged Arc Furnace at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal" was published in the daily newspaper "AajKaal", "Sanmarg" and "Millennium Post" on 09.09.2021 (more than one month prior). Photograph of the advertisement is provided in **Figure 7.1**.



NOTICE

West Bengal Pollution Control Board

सूचना

पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड

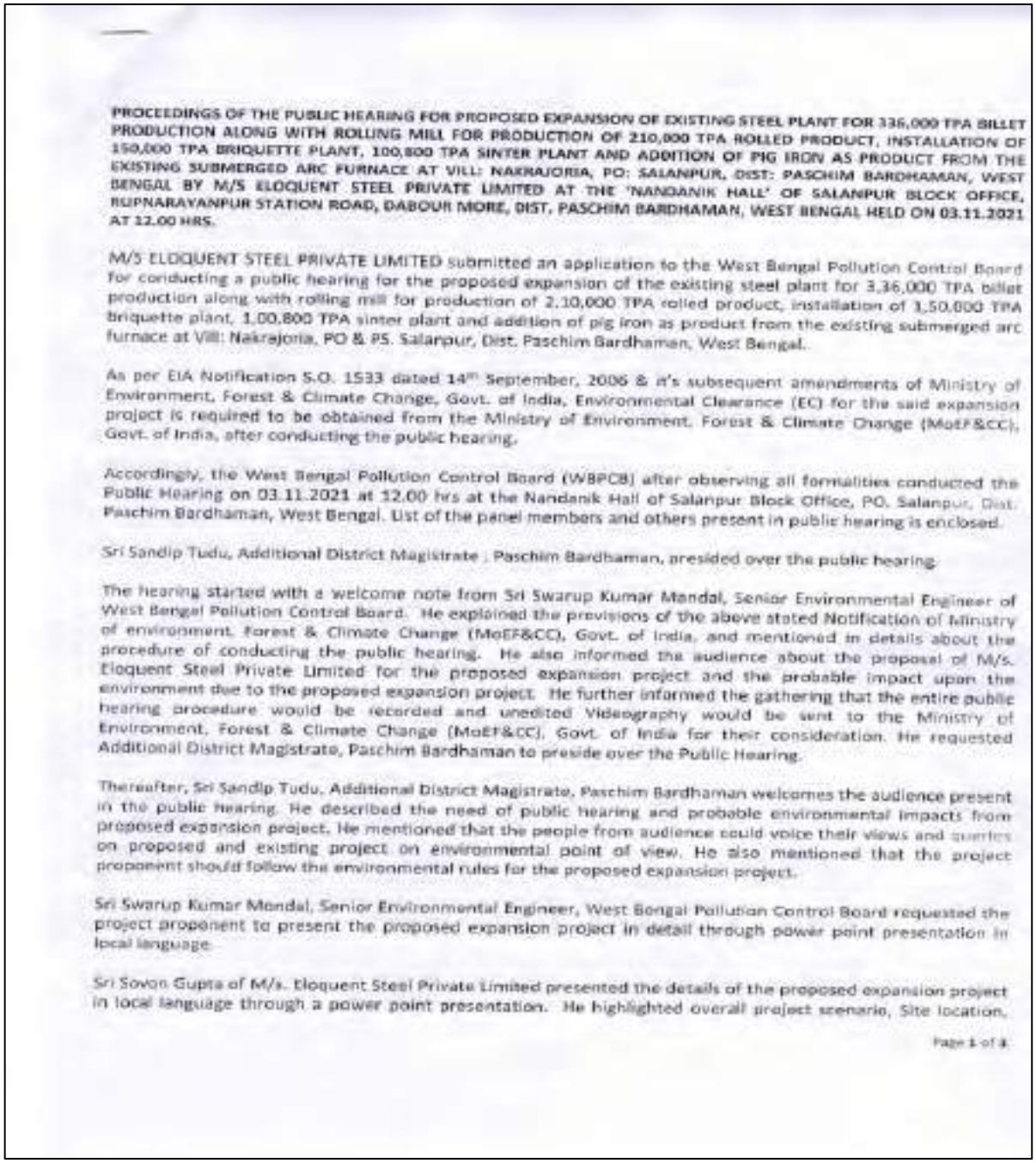
Fig. 7.1: PH Advertisement Newspaper Cutting Photographs

7.3.2. Public Hearing Photos



7.3.3. Public Hearing Proceedings

The Public hearing was conducted on 03.11.2021 at Nandanik Hall of Salanpur Block Office, Rupnarayanpur Station Road, Dabour More, District: Paschim Bardhaman, West Bengal. Public hearing was presided by Shri Sandip Tudu, Additional District Magistrate, Paschim Bardhman, West Bengal and was attended by 93 people from nearby villages. Details of Public Hearing is given, below:



PROCEEDINGS OF THE PUBLIC HEARING FOR PROPOSED EXPANSION OF EXISTING STEEL PLANT FOR 336,000 TPA BILLET PRODUCTION ALONG WITH ROLLING MILL FOR PRODUCTION OF 210,000 TPA ROLLED PRODUCT, INSTALLATION OF 150,000 TPA BRIQUETTE PLANT, 100,800 TPA SINTER PLANT AND ADDITION OF PIG IRON AS PRODUCT FROM THE EXISTING SUBMERGED ARC FURNACE AT VILL: NAKRAJORIA, PO: SALANPUR, DIST: PASCHIM BARDHAMAN, WEST BENGAL BY M/S ELOQUENT STEEL PRIVATE LIMITED AT THE 'NANDANIK HALL' OF SALANPUR BLOCK OFFICE, RUPNARAYANPUR STATION ROAD, DABOUR MORE, DIST. PASCHIM BARDHAMAN, WEST BENGAL HELD ON 03.11.2021 AT 12.00 HRS.

M/S ELOQUENT STEEL PRIVATE LIMITED submitted an application to the West Bengal Pollution Control Board for conducting a public hearing for the proposed expansion of the existing steel plant for 3,36,000 TPA billet production along with rolling mill for production of 2,10,000 TPA rolled product, installation of 1,50,000 TPA Briquette plant, 1,00,800 TPA sinter plant and addition of pig iron as product from the existing submerged arc furnace at Vill: Nakrajoria, PO & PS. Salanpur, Dist. Paschim Bardhaman, West Bengal.

As per EIA Notification S.O. 1533 dated 14th September, 2006 & it's subsequent amendments of Ministry of Environment, Forest & Climate Change, Govt. of India, Environmental Clearance (EC) for the said expansion project is required to be obtained from the Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India, after conducting the public hearing.

Accordingly, the West Bengal Pollution Control Board (WBPCB) after observing all formalities conducted the Public Hearing on 03.11.2021 at 12.00 hrs at the Nandanik Hall of Salanpur Block Office, PO. Salanpur, Dist. Paschim Bardhaman, West Bengal. List of the panel members and others present in public hearing is enclosed.

Sri Sandip Tudu, Additional District Magistrate , Paschim Bardhaman, presided over the public hearing.

The hearing started with a welcome note from Sri Swarup Kumar Mandal, Senior Environmental Engineer of West Bengal Pollution Control Board. He explained the provisions of the above stated Notification of Ministry of environment, Forest & Climate Change (MoEF&CC), Govt. of India, and mentioned in details about the procedure of conducting the public hearing. He also informed the audience about the proposal of M/s. Eloquent Steel Private Limited for the proposed expansion project and the probable impact upon the environment due to the proposed expansion project. He further informed the gathering that the entire public hearing procedure would be recorded and unedited Videography would be sent to the Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India for their consideration. He requested Additional District Magistrate, Paschim Bardhaman to preside over the Public Hearing.

Thereafter, Sri Sandip Tudu, Additional District Magistrate, Paschim Bardhaman welcomes the audience present in the public hearing. He described the need of public hearing and probable environmental impacts from proposed expansion project. He mentioned that the people from audience could voice their views and queries on proposed and existing project on environmental point of view. He also mentioned that the project proponent should follow the environmental rules for the proposed expansion project.

Sri Swarup Kumar Mandal, Senior Environmental Engineer, West Bengal Pollution Control Board requested the project proponent to present the proposed expansion project in detail through power point presentation in local language.

Sri Sovon Gupta of M/s. Eloquent Steel Private Limited presented the details of the proposed expansion project in local language through a power point presentation. He highlighted overall project scenario, Site location,

Page 1 of 4

Project Highlights, Plant layout, Rain Water Harvesting, Proposed Air Pollution Control Measures, Waste Water Management, solid Waste Management, and Cost of proposed Pollution Control Measures, Environmental Base Line Data, Environmental Study Area, Impact Assessment on Air, Water etc., Green Belt Development, Project Benefit and Corporate Social Responsibilities (CSR).

Thereafter, Sri Swarup Kumar Mandal, Sr. Environmental Engineer, West Bengal Pollution Control Board requested the audience present in the public hearing to raise their suggestions / queries related to the proposed expansion project.

During the discussion the following audience present in the public hearing made queries/suggestions with respect to the proposed expansion project which are noted below.

Sri Shankar Ghosh of Vill Nakrajoria, enquired about employment of local people in proposed expansion project & installation of necessary machineries for prevention of pollution.

Sri Akshay Layek Vill-Kalyaneswari, enquired about the role of project proponent regarding development of schools in surrounding areas.

Sri Somnath Maji of Vill-Dendua, welcomed the proposed expansion project and expressed his concern regarding development of surrounding villages.

Sri Hari Hasda of Vill-Maheshpur, expressed his concern regarding emission of dust & smoke generated due to movement of heavy transport and enquired about the steps to be taken by the Project Proponent to overcome this problem.

Sri Sajal Mandal of Vill-Sidnabari, asked the project proponent about the height of the chimney & the steps to be taken for prevention of environmental pollution.

Sri Arvind Kumar Balmiki of Vill-Left Bank, asked the project proponent about safety measures to be taken for workers.

Sri Pradyut Banerjee of Vill-Dendua, welcomed the proposed expansion project and requested project proponent to look after the employment of local people. He also expressed his deep concern regarding local area development under CSR.

Thereafter, Sri Swarup Kumar Mandal, Sr. Environmental Engineer WBPCB requested the project proponent to address isssues raised by the audience present in the public hearing.

Sri Sanjeev Kumar Sachan, Executive Director-Corporate of M/s Eloquent Steel Private Limited, addressed the gathering present in the public hearing. He assured that all commitments regarding local employment, abetment of pollution, road development, control fugitive emission during heavy vehicle movement, safety of manpower, corporate social responsibility (CSR), development of local area including schools etc. will be undertaken.
He mentioned that after completion of expansion of the proposed project, unskilled & skilled worker to be employed and preference shall be given to local people according to their skill & qualifications. Training center to be set up for skill development program.

Page 2 of 3

He also mentioned that equipment will be installed for proper pollution control measures to minimize all kind of pollution. To stop air pollution bag filters will be used. Zero discharge policy will be taken against water pollution. To minimize dust from heavy vehicle, concrete road & water sprinkling arrangements shall be made.

He also mentioned that medical camp shall be organized time to time for the health benefit of local villagers. Ambulance facility to be provided for emergency medical issue.

He assured the present audience that safety is the first priority of the company and it will follow all the standard procedures to save workers, machine and materials from any accident or untoward incident as per standard rules and regulations.

Md Armaan, Karmadhyakhya, Zilla Parisad, Paschim Bardhaman said that Govt. of West Bengal encourages growth of industries to provide local employment. Corporate Social Responsibility & pollution control as per the guidelines of WBPCB should be given the top most priority by the Project Proponent. He has requested the Project Proponent to adopt local village for development.

Smt. Falguni Karmakar Ghasi, Sabhapati, Salanpur Panchyat Samity expressed her whole hearted help towards the proposed expansion project and expected to generate local employment, follow guidelines of WBPCB and CSR activity simultaneously.

Sri Bidyut Mishra, Saho Sabhapati, Salanpur Panchayat Samity expressed his wishes for local area development, to follow WBPCB guidelines and plantation in surrounding areas.

Sri Sandip Tudu, Additional District Magistrate, Paschim Bardhaman, mentioned that the District Paschim Bardhaman is a favorable place for Industrial development. He asked the project proponent to comply with all the statutory provisions for abatement of environmental pollution. He also added that apart from 33% greenery within the industries premises the project proponent should take effective steps toward greenery development in the surrounding area. He asked the project proponent & local authority for proper parking arrangement of heavy vehicles.

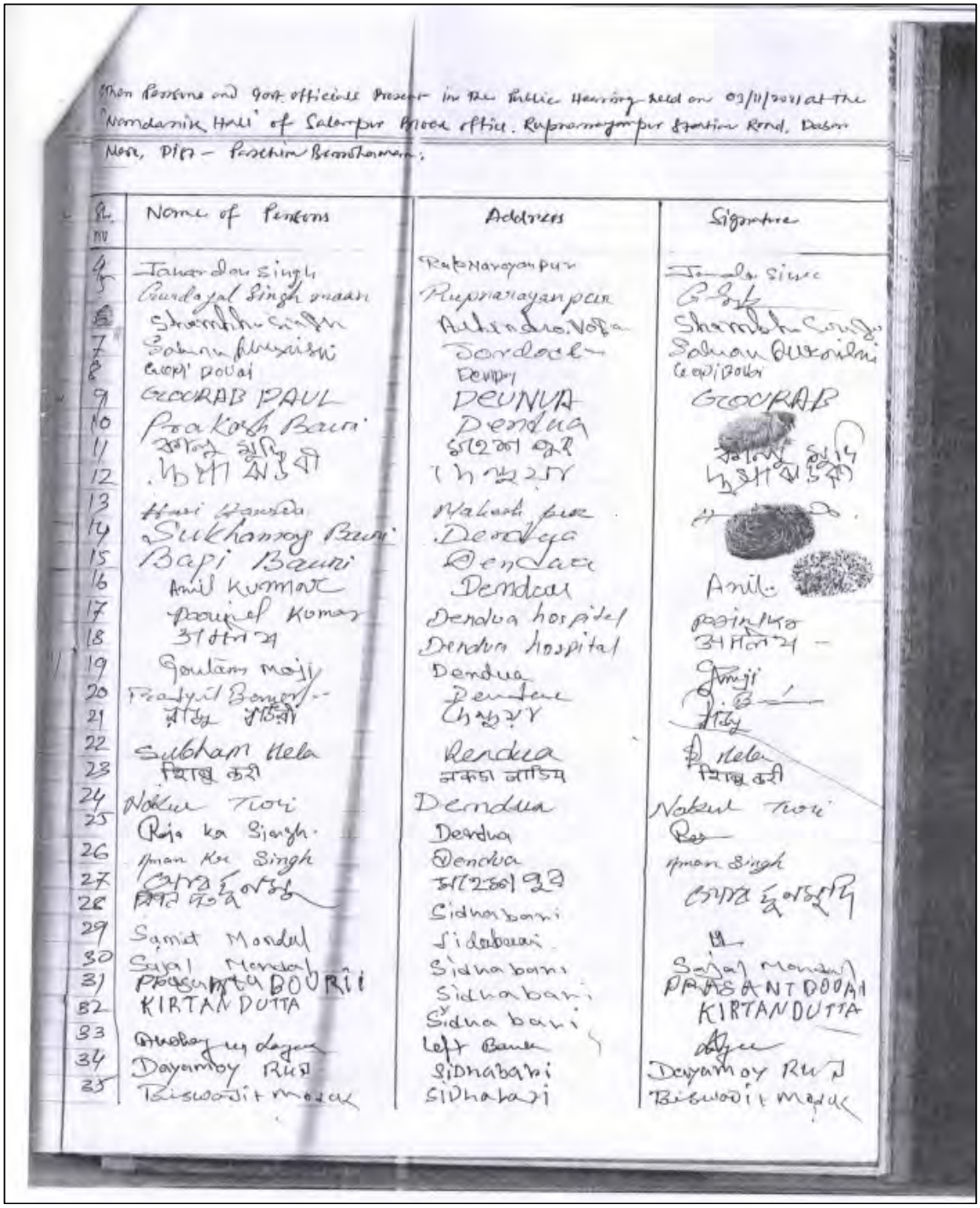
He expected that all the commitments made by the project proponent must be fulfilled. He also expressed his hope that the proposed expansion project will lead to overall socio-economic development of the project surrounding area.

Finally, Sri Swarup Kumar Mandal, Sr. Environmental Engineer, West Bengal Pollution Control Board with due permission from Additional District Magistrate, Paschim Bardhaman concluded the public hearing.

(Swarup Kumar Mandal)
Senior Environmental Engineer
West Bengal Pollution Control Board

(Sandip Tudu)
Additional District Magistrate
Paschim Bardhaman

Page 3 of 3



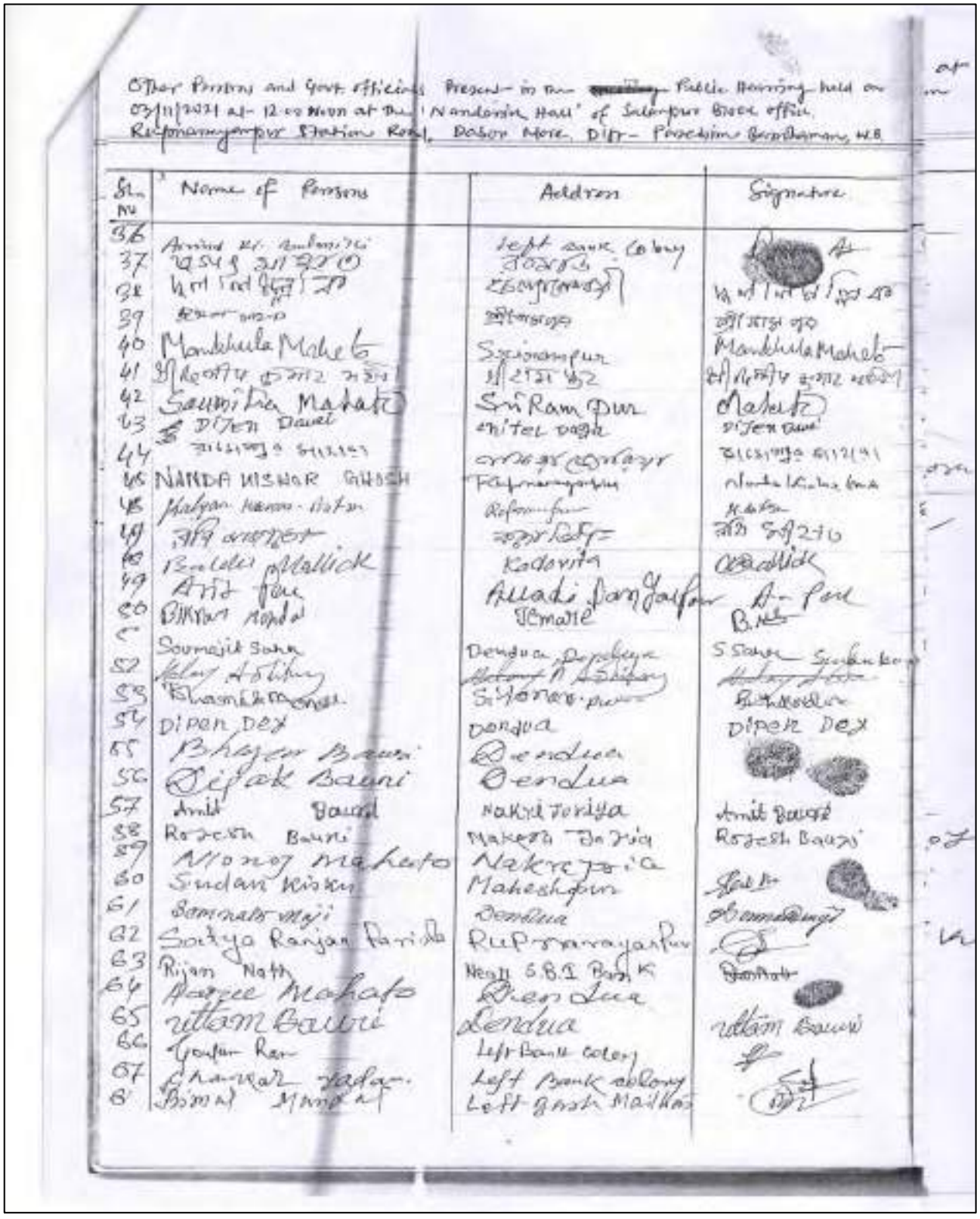
Other Persons and Govt. officials Present in the Public Hearing held on 03/11/2021 at the 'Nomdarnik Hall' of Salanpur Block office, Rupnarayanpur Station Road, Dasm Mor, Dist – Paschim Bardhaman.

Sl. no	Name of Persons	Address	Signature
4	Jawardan Singh	Rake Narayanpur	
5	Gurdayal Singh	Rupnarayanpur	
6	Shambhu Singh	Ardradeo Vill	
7	Sahan Bhuiyan	Dordoch	
8	Gopi Dolai	Dendua	
9	GOGRAB PAUL	DEUNA	GOGRAB
10	Prakash Bauri	Dendua	
11			
12			
13	Hari Hansda	Nakash pur	
14	Sukhamay Bauri	Dendua	
15	Bapi Bauri	Dendua	
16	Amil Kumar	Dendua	Amil
17	Pravinkumar	Dendua hospital	
18		Dendua hospital	
19	Goutam Majji	Dendua	
20	Pradyut Banerjee	Dendua	
21			
22	Subham Hela	Dendua	Hela
23			
24	Nakul Tiri	Dendua	Nakul Tiri
25	Raja Ka Singh	Dendua	
26	Aman Kr Singh	Dendua	Aman Singh
27			
28			
29	Samit Mondal	Sidhabani	
30	Sajal Mondal	Sidhabani	Sajal Mondal
31	Prasanta Bouri	Sidhabani	PRASANT BOURI
32	KIRTAN DUTTA	Sidhabani	KIRTAN DUTTA
33		Left Bank	
34	Dayamoy Rudra	Sidhabani	Dayamoy Rudra
35	Biswajit Mandal	Sidhabani	Biswajit Mandal

Statement of attendance of Panel Members of the Public Hearing for the Proposed expansion of 336,000 TPA Billet Production alongwith Rolling Mill for Production of 210,000 TPA Rolled Product, installation of 150,000 TPA Briquette Plant, 100,800 TPA Sinter Plant and addition of Pig Iron as Product from the existing Submerged Arc Furnace at Vill - NAKRAJORIA, P.O - Salanpur, Dist - Paschim Bardhaman, West Bengal by M/s Eloquent Steel Private Limited.

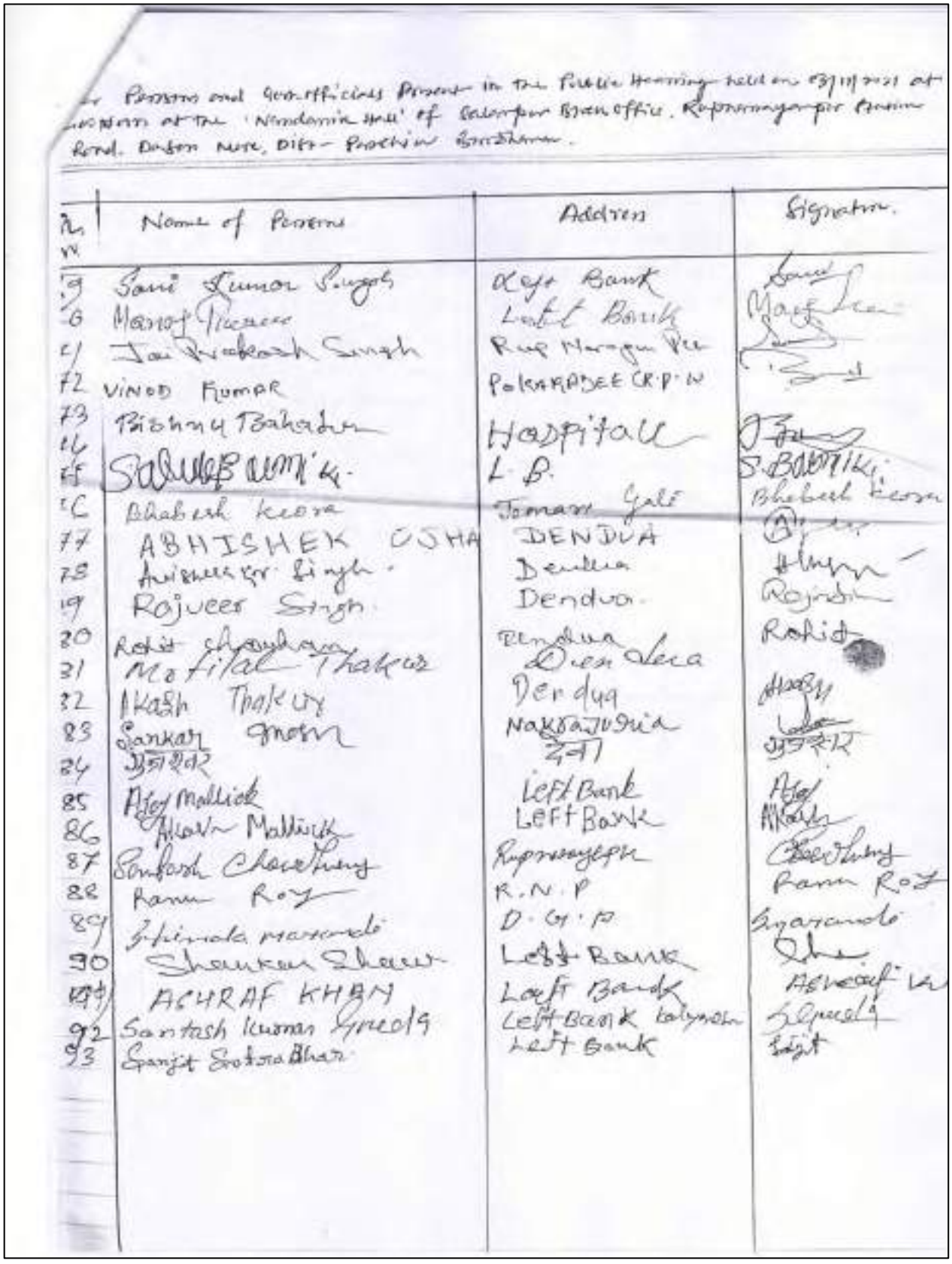
Public Hearing will be held on 03/11/2021 at 12.00 noon at the 'Nandanik Hall' of Salanpur Block office Rupnarayan Station Road. Dubori More, Dist - Paschim Bardhaman.

Sl. No	Name of Panel members	Signature
01.	SANDIP TUDU, ADDL. DISTRICT MAGISTRATE, PASCHIM BARDHAMAN	
02.	SWARUP KR MANDAL SEE, WBPCB	03.11.2
03.	ANJAN FOUZDAR EE, WBPCB ~~Pradeep Bose~~	03/11/21



Other Persons and Govt. officials Present in the ~~meeting~~ Public Hearing held on 03/11/2021 at 12:00 Noon at the 'Nandini Hall' of Salanpur Block office, Ramnarayanpur Station Road, Dasor More, Dist- Paschim Bardhaman, W.B

Sl. No	Name of Persons	Address	Signature
36			
37			
38			
39			
40	Mankhula Mahato	Salanpur	Mankhula Mahato
41			
42	Soumitra Mahato	Sri Ram Pur	Mahato
43	Dipen Dawri	Chitel Dagha	Dipen Dawri
44			
45	NANDA KISHOR GHOSH	Ramnarayanpur	
46		Ramnarayanpur	
47			
48		Kadamita	
49		Alladi Sanjaipur	
50			
51	Soumajit Saha	Dendua Bazar	S Saha
52			
53		Salanpur	
54	Dipen Dey	Dendua	Dipen Dey
55	Bhajan Bauri	Dendua	
56	Dipak Bauri	Dendua	
57	Amit Bauri	Nakrajoria	Amit Bauri
58	Rajesh Bauri	Nakrajoria	Rajesh Bauri
59	Money Mahato	Nakrajoria	
60	Sudan Kisku	Maheshpur	
61	Samaras Maji	Dendua	
62	Sanjay Ranjan Panda	Ramnarayanpur	
63	Bijan Nath	Near SBI Bank	
64	Pappu Mahato	Dendua	
65	Uttam Bauri	Dendua	Uttam Bauri
66	Gautam Ram	Left Bank Colony	
67	Ganesh Yadav	Left Bank colony	
68	Bimal Mahato	Left Bank Maithan	



Persons and Govt. officials Present in the Public Hearing held on 03/11/2021 at [illegible] at the 'Nandanik Hall' of Salanpur Block office, Kapisthanpur Road, Durgapur Near, Dist- Paschim Bardhaman.

Sl. No.	Name of Persons	Address	Signature
59	Sanjay Kumar Gupta	Axis Bank	
60	Manoj Pandey	Left Bank	
61	Jai Prakash Singh	Rup Narayanpur	
62	VINOD KUMAR	Pokharbee CR.P.N	
63	Bishnu Bahadur	Hospital	
64	[illegible]	L.B.	
65	Shahabuddin	Jamam Gate	
66	Bhabesh Kisku	Dendua	
67	ABHISHEK OSHA	Dendua	
68	Awadhesh Singh	Dendua	
69	Rajveer Singh	Dendua	
70	Rohit Chauhan	Dendua	
71	Motilal Thakur	Dendua	
72	Akash Thakur	Dendua	
73	Sankar [illegible]	Nakrajoria	
74	[illegible]	[illegible]	
75	Ajay Mallick	Left Bank	
76	Akash Mallick	Left Bank	
77	Santosh Chowhan	Rupnarayanpur	
78	Ram Roy	R.N.P	
79	Srikanta Marandi	D.G.P	
80	Shankar Shaw	Left Bank	
81	ACHRAF KHAN	Left Bank	
82	Santosh Kumar Gupta	Left Bank Kalyan	
83	Sanjit Sahara Bhar	Left Bank	

Table 7.2: Summary of the issues raised during Public Hearing and Action Plan

S. No.	Name & Village of Participant	Issues Raised	Action Plan		Budget
			Commitment	Time Frame	
1.	Shri Shankar Gosh Village: Nakrajoria, Shri Pradyut Banerjee Village: Dendua Md. Armaan, Karmadhyakkhya, Zilla Parisad, Paschim Bardhaman, Smt. Falguni Karmakar Gahsi Sabhapati, Salanpur Panchayat Samity	Employment of local people in the proposed expansion	• For the proposed expansion project, priority for employment will be given to the local people based on their academic qualification and skill. • Skill development programs shall be organised for unemployed local youths from nearby villages through National Skill Development Corporation, Govt. of India Scheme. For this Purpose, mechanical tool trainings will be organised by the company.	36 months	Budget of approx. Rs. 50 lakhs has been kept for establishment of mechanical training center under PH Action Plan
2.	Shri Shankar Gosh Village: Nakrajoria, Shri Sajal Mandal Village: Sidnabari, Md. Armaan, Karmadhyakkhya, Zilla Parisad, Paschim Bardhaman	Prevention of pollution	• Adequate Pollution Control facilities like Bag Filters with stacks of adequate height shall be installed to keep emissions below 30 mg/Nm3. • Suitable personal protective equipment (PPE) like ear muffs/ear plugs, dust masks etc. shall be provided to the workers working in high noise areas and dusty areas. • Criteria to comply with the stipulated limit of 85dB(A) shall be incorporated during procurement of the equipment. • Reduction of noise levels shall be achieved by installation of the acoustic silencers enclosures • For control of fugitive emission, closed conveyor	--	Capital Budget of Rs. 2.77 Crores and recurring budget of Rs. 0.48 Crs. per year have been proposed for Environment Management Plan

S. No.	Name & Village of Participant	Issues Raised	Action Plan		Budget
			Commitment	Time Frame	
			are/shall be installed and all transfer points are/shall be properly covered with dust extraction system or dust suppression systems. • Roads for raw materials and products transportation shall be concreted/paved		
3.	Shri Akshay Layek Village: Kalyaneswari	Development of Schools in surrounding areas	• Renovation of Primary Schools by Development of Classrooms, Development of Playground, Providing Sports Material, Computer and White Board, Library Materials, Study Material, Offering Scholarship to the meritorious student, Water Purification system and Construction of Separate Toilets for Boys and Girls.	36 Month	Budget of Rs 30 lakhs will be allocated for infrastructure Development of Schools. Details are provided under Action Plan
4.	Shri Somnath Maji Village: Dendua, Shri Pradyut Banerjee Village: Dendua Md. Armaan, Karmadhyakkhya, Zilla Parisad, Paschim Bardhaman, Smt. Falguni Karmakar Gahsi Sabhapati, Salanpur Panchayat Samity, Shri Bidyut Mishra, Saho Sabhapati, Salanpur	Development of Surrounding Villages	• Road maintenance shall be done at Nakrajoria village of Dendua Village Panchayat • Installation of 5 Hand pumps at different location Nakrajoria village under Dendua village panchayat. • Roadside and street drain shall be made for sanitation in the village Nakrajoria of Dendua Village Panchayat • Installation of 20 Solar Street lights in Nakrajoria village of Dendua village panchayat. • Renovation/beautification of village pond along with making bathing ghat at Nakrajoria Village and in Dendua Village panchayat area to facilitate natural ground water recharge.	36 Months	Budget of Rs. 36 Lakhs has been kept under CSR-for renovation of Pond Budget of Rs. 1.5 Cost has been kept under CSR for Providing Water cooler.

S. No.	Name & Village of Participant	Issues Raised	Action Plan		Budget
			Commitment	Time Frame	
	Panchayat Samity				
5.	Shri Hari Hasda Village: Maheshpur	Dust generated due to movement of heavy vehicles	It has been proposed to procure 2 no. of water tanker for sprinkle water on the Kalyaneshwari Dendua road, which is being used for transportation of materials during dry weather.	12 Months	Rs. 24 lakhs. Details provide under PH Action Plan
6.	Shri Arvind Kumar Balmiki Village: Left Bank	Safety Measures for workers	• All safety measures are being taken in the existing plant. Personal protective equipment (PPEs) like shoes, gloves, googles is being /will be provided to the workers. • Tool Box Training is being conducted on regular basis according to the nature of job for necessary safety precaution and awareness	--	Rs. 17.5 Lakhs for capital investment and Rs.10.0 lakhs/annum for recurring expenses under OH&S budget
			• 1 No of Ambulance with life supporting facilities i.e. Oxygen supply unit with necessary accessories and Nebulizer along with stretchers for the patient will be provided for villagers of Dendua, Nakrajoria	24months	Budget of Rs. 12 lakhs is kept for ambulance. Activity proposed under PH Action Plan
7.	Shri Bidyut Mishra, Saho Sabhapati, Salanpur Panchayat Samity	Plantation in surrounding Areas	• Company will be doing avenue plantation in vacant area available in the govt. schools, panchayat Office, govt. hospitals, community centers, etc. under social forestry. • Plantation of trees along the Kalyaneshwari Dendua road covering stretch of 5.34kms	36 months	Budget of Rs. 28.0 Lakhs has been allocated for Plantation of Trees

7.4 SCHEMES ALONG WITH BUDGET FOR THE COMMITMENTS TO ADDRESS ISSUES RAISED DURING PUBLIC HEARING

Company is responsible for carrying out social activities under CSR and encourages a positive impact on the stakeholders. Plant authorities have provided support to local schools and local groups, for health care, sports, water supply, job opportunities, etc. in the past and will continue to do so in future.

As per Ministry's OM dated 30/09/2020, the Ministry has decided that EAC will deliberate on the commitments made by the project proponent to address the concerns raised during the Public Hearing. Accordingly, M/s ESPL has made the detailed action plan for the commitments made during the Public hearing held on 03.11.2021 (as given in the Table above).

In the Public Hearing, issues like employment, pollution, development of schools in surrounding areas, development of surrounding villages including development of roads, safety measures for workers, generation of dust & smoke due to movement of heavy vehicles and plantation were raised.

Action Plan as per MoEF&CC OM dated 30.09.2021

a. Establishment of Mechanical Tool training center at Eloquent Steel Pvt Ltd. at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal
b. Renovation of Primary Schools by Development of Classrooms, Development of Playground, Providing Sports Material, Computer and White Board, Library Materials, Study Material, Offering Scholarship to the meritorious student, Water Purification system and Construction of Separate Toilets for Boys and Girls.
c. Procurement of 2 no. of water tanker for sprinkle water on the Kalyaneshwari Dendua road, which is being used for transportation of materials during dry weather.
d. Ambulance with life supporting facilities i.e. Oxygen supply unit with necessary accessories and Nebulizer along with stretchers for the patient will be provided for villagers of Dendua, Nakrajoria
e. Company will be doing avenue plantation in vacant area available in the govt. schools, panchayat Office, govt. hospitals, community centers, etc. under social forestry aAnd Plantation of trees along the Kalyaneshwari Dendua road covering stretch of 5.34kms
f. Development Activities such as Road maintenance shall be done at Nakrajoria village of Dendua Village Panchayat, Installation of 5 Hand pumps at different location Nakrajoria village under Dendua village panchayat., Roadside and street drain shall be made for sanitation in the village Nakrajoria of Dendua Village Panchayat, Installation of 20 Solar street lights in Nakrajoria village of Dendua village panchayat. And Renovation/beautification of village pond along with making bathing ghat at

Nakrajoria Village and in Dendua Village panchayat area to facilitate natural ground water recharge.

Estimated expenditure for implementation of the proposed action plan will be **Rs. 180 Lakhs.** Detailed plan for implementation of the above schemes (along with time schedule and budget) is given below in **Table No. 7.3.**

Table 7.3: Budget Details of activities to be undertaken for addressing Public Hearing Issues

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
1	Establishment of Mechanical Tool Training Centre at Eloquent Steel Pvt Ltd. at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal	Construction of Mechanical Tool Training Center	**10,00,000**	--	--	**50,00,000**
		Establishing Mechanical Tool Room by procuring Lathe M/cs, Shaping M/c, Drill M/c and Welding M/c	**--**	**20,00,000**	**20,00,000**	
2.	Procurement Water Tanker for water sprinkling on road.	Purchase of 2 No. of water tanker having water sprinkling system which will sprinkle water on the Kalyaneshwari Dendua road on daily basis as per requirement.	**12,00,000**	**12,00,000**	**--**	**24,00,000**
3	Village Road Maintenance at Nakrajoria	Road maintenance shall be done at Nakrajoria village of Dendua Village Panchayat	**2,00,000**	**2,00,000**	**2,00,000**	**6,00,000**
4.	Avenue plantation in vacant area available in surrounding villages under social forestry	Plantation of 2000 trees at available area in the Government Schools, Panchayat Office, govt. hospitals, community centers etc in village: Nakrajoria,	**--**	**10,00,000**	**--**	**10,00,000**

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
		No. of Plants: 2000				
5.	**Socio-economic development in Dendua Village Panchayat**					
i	Renovation of Primary School in Nakrajoria village of Dendua Village Panchayat with necessary infrastructure development for quality education.	Civil & Construction work for Class Room, providing necessary furniture, development of playground, and Painting/Coloring of building	**10,00,000**	--	--	**24,50,000**
		Providing Sports Material, computers and white boards and library materials.	--	**5,00,000**	--	
		Providing relevant Cupboards, Furniture, Computer sets and relevant accessories	--	--	**5,00,000**	
		Distribution of study materials to needy students.	**1,00,000**	**1,00,000**	**1,00,000**	
		Offering scholarship to meritorious students	**50,000**	**50,000**	**50,000**	
ii	Providing dedicated Ambulance to meet any health emergency situation in Dendua & Nakrajoria villages.	Providing Ambulance and equipments & machineries of Ambulance	--	--	**12,00,000**	**12,00,000**

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
iii	Installation of 5 Hand pumps at different location in Nakrajoria village under Dendua village panchayat.	Installation of 5 Hand pumps at different location Nakrajoria village under Dendua village panchayat.	**40,000**	**40,000**	**20,000**	**1,00,000**
iv	3 Water Purification unit at Primary school, Govt Hospital, Panchayat office, etc in Dendua village panchayat area.	3 Water Purification unit at Primary school, Panchayat office, etc. in Dendua Village Panchayat area.	**50,000**	**50,000**	**50,000**	**1,50,000**
v	Drainage system for sanitation in the village Nakrajoria of Dendua Village Panchayat	Roadside and street drain shall be made for sanitation in the village Nakrajoria of Dendua Village Panchayat	**2,00,000**	**2,00,000**	**2,00,000**	**6,00,000**
vi	Installation of 20 Solar powered Street Lights in Dendua Village Panchayat area.	Installation of 20 Solar street lights in Nakrajoria village of Dendua village panchayat.	--	**4,00,000**	**4,00,000**	**8,00,000**

S. No	Activities	Physical Targets	Year of Implementation (Budget in INR)			Total Expenditure (Rs.)
			1st Year	2nd Year	3rd Year	
vii	Renovation of Pond located at Nakrajoria Village and in Dendua Village panchayat area	Renovation/beautification of village pond along with making bathing ghat at Nakrajoria Village and in Dendua Village panchayat area to facilitate natural ground water recharge.	**5,00,000**	**5,00,000**	**5,00,000**	**15,00,000**
Viii	Construction of Separate Toilet for girls and boys in the Primary School	Construction of Separate Toilet for girls and boys in the Primary School of Nakrajoria village.	**4,00,000**	**--**	**--**	**4,00,000**
ix	Plantation of trees along the Kalyaneshwari Dendua road to act as barrier for the dust arising from the movement of heavy vehicles on road and enhance the green cover	Plantation of 500 number of plants on each side of road covering 1.5km stretch	**5,00,000**	**--**	--	**18,00,000**
		Plantation of 1500 number of plants on each side of road covering remaining 3.84 km stretch	**--**	**13,00,000**	--	
Grand Total in Rs.			**52,40,000**	**75,40,000**	**52,20,000**	**1,80,00,000**

7.5 HAZARD IDENTIFICATION

7.5.1 Introduction

Hazard analysis involves the identification and quantification of the various hazards (unsafe conditions) that exist in the project site. In this chapter, an attempt has been made towards hazard identification and risk assessment with regards to the incident leading towards losses and to prioritize the action for either eliminating the hazard or minimizing the effect of it along with the disaster management plan.

The metallurgical industry is labour intensive and uses large scale and potentially hazardous manufacturing processes. These hazards mainly impact on those working within the industry, however, can also impact on local communities.

Some examples of such hazards likely to occur in Induction Furnace Area, Submerged Arc Furnace area, Electrical System, Sinter Plant area, etc at M/s Eloquent Steel Pvt Ltd are given below:

- Fire at Lubrication, Hydraulic & fuel oil installations
- Fire/explosion at Coal/Coke/LDO/ Diesel handling area
- Coal dust explosion
- Physical Hazards due conveyor system, material handling
- Fugitive Dust of Raw Material Handling at charging bay, storage yard,
- Collapse of Structures/Fall of Material, stacking failure
- Loading/ Unloading failures
- Electrocution/ Electrical Hazards
- Fire hazards/Slippage hazard due to waste oil generated in plant
- Mechanical Hazards

7.5.2 Common Causes of Accidents

Based on the analysis of past accident information, common causes of accidents are identified as:

- Poor housekeeping;
- Improper use of tools, equipment, facilities;
- Unsafe or defective equipment facilities;
- Lack of proper procedures;
- Failure to follow prescribed procedures;
- Jobs not understood;
- Lack of awareness of involved hazards;
- Lack of guides and safety devices;
- Lack of protective equipment and clothing.

7.5.3 Failures of Human Systems

Major causes of human failures reported are due to:

- Stress induced by poor equipment design,
- unfavourable environmental conditions, fatigue, etc.;
- Lack of training in safety and loss prevention;
- Indecision in critical situations;
- Inexperienced staff being employed in hazardous situations.

Often, human errors are not analysed while accident reporting and accident reports only provide information about equipment and/or component failures. Hence, a great deal of uncertainty surrounds analysis of failure of human systems and consequent damages.

7.5.4 Damage Criteria for Thermal radiation and Overburden impacts

A flammable hydrocarbon (High Speed Diesel HSD/Coal/LDO) can undergo combustion. Tank fire will occur if the radiation intensity is high on the peripheral surface of the tank leading to increase in internal tank pressure. Pool fire will occur when fuel collected in the dyke due to leakage gets ignited.

This releases heat based on the heat of combustion and the burning rate of the fluid. A part of the heat is radiated while the rest is convicted away by rising hot air and combustion products. The radiations can heat the contents of a nearby storage or process unit to above its ignition temperature and thus result in a spread of fire. The radiations can also cause severe burns or fatalities of workers or fire fighters located within a certain distance. Hence, it will be important to know beforehand the damage potential of a flammable fluid likely to be created due to leakage or catastrophic failure of a storage or process equipment. The damage effects on people and equipment due to thermal radiation intensity and explosion are presented in following tables.

Fire load is expressed in terms of thermal radiation and explosion is expressed in terms of overpressure waves

Table 7.4: List of Damages Envisaged at Various Heat Loads

Sl. No.	Heat Loads (kW/m^2)	Type of Damage Intensity	
		Damage to Equipment	Damage to People
1.	37.5	Damage to process equipment	100% lethality in 1 min. 1% Lethality in 10 s-
2.	25.0	Minimum energy required to ignite wood	50% Lethality in 1 min. Significant injury in 10 sec

Sl. No.	Heat Loads (kW/m²)	Type of Damage Intensity	
		Damage to Equipment	Damage to People
3.	19.0	Maximum thermal radiation intensity allowed on thermally unprotected Equipment	--
4.	12.5	Minimum energy required to melt plastic tubing	1% lethality in 1 min
5.	4.0	--	First degree burns, causes pain for exposure longer than 10 sec
6.	1.6	--	Causes no discomfort on long exposures

***Source**: World Bank (1988). Technical Report No. 55: Techniques for Assessing Industrial Hazards. , Washington, D.C: The World Bank.*

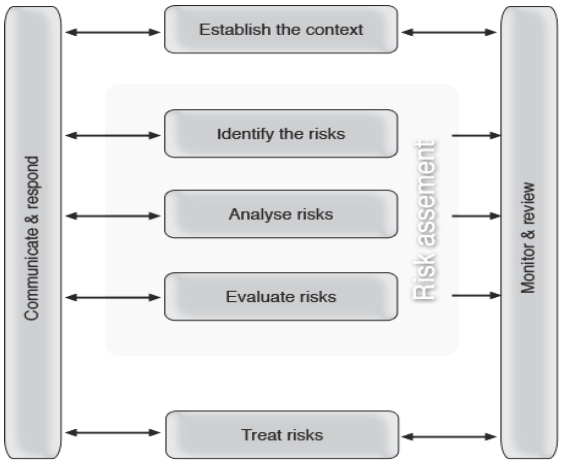
7.5.5 Physical Hazards Onsite

- Accident due to Conveyor feeding system/Machines
- Slip/Trip/ Fall due to improper stacking of material/unclean platforms
- Contact with Hot molten Liquid steel
- Approach of heavy good vehicles for unloading material
- Excessive Dust during Loading/unloading operation
- Cleaning of overflows
- Unauthorized passages ,travelling over transportation system

7.6 RISK ASSESSMENT

The main objective of the risk assessment study is to determine damage due to major hazards having damage potential to life and property and provide a scientific basis to assess safety level of the facility. The secondary objective is to identify major risk in manufacturing process, operation, occupation and provide control through assessment and also to prepare on-site, off site plans to control hazards. Risk assessment requires an assessment of failure probability, credible accident scenario, vulnerability of population etc. Much of this information is difficult to get or generate consequently, the risk analysis in present case is confined to maximum credible accident studies and safety and risk aspect related to steel Industry.

Risk assessment is the determination of quantitative and qualitative value of risk related to a concrete situation and a recognized threat. Activities requiring assessment of risk due to



occurrence of most probable instances of hazard and accident are both onsite and off-site

The risk management measures for the proposed project activities will be adopted as required for best safety practice within the works boundary.

5 x 5 Matrix for Risk Assessment Likelihood

5. Almost Certain
4. Probable
3. Possible
2. Possible (under unfortunate circumstances)
1. Rare

Severity

5. Fatality
4. Major Injury, resulting in disability
3. Injury Requires, Doctor's or Hospital attendance
2. Minor Injury, 1st Aid required
1. Minor Injury, 1st Aid not required

Risk Rating

Risk Rating is calculated by multiplying the likelihood against the consequences, e.g. taking a likelihood of 4, which is classified as Probable, and multiplying this against a consequence of 2, which is classified as a Minor Injury aid required, would give you and overall risk rating of 8, which would be risk rated as a low risk.



High Risk (16 – 25)	High Risks activities should cease immediately until further control measures to mitigate the risk are introduced
Medium Risk (9 – 15)	Medium Risks should only be tolerated for the short-term and then only whilst further control measures to mitigate the risk are being planned and introduced, within a defined time period. Note: Medium risks can be an organizations greatest risk, can be considered as Achilles heel, this due to the fact that they can be tolerated in the short-term.
Low Risk (1 – 8)	Low Risks are largely acceptable, subject to reviews periodically, or after significant change etc.

Table 7.5: Associated Risk and Proposed Safety System for M/S ESPL

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
1	**Material Handling (Raw Materials & Finished Products)**				
1.1	Unloading of material from trucks	Dust Collision of trucks	Respiratory problems Injury to person	Medium	1. Preparation of SOP and SMP and Training manuals 2. Provide adequate training to the operators 3. Conduct regular safety audits and rectify safety issue and monitor safety compliance reports. 4. Ensure use of PPE
1.2	Transportation of material by conveyors	Dust Overloading	Respiratory problem Injury to personnel	Low	
1.3	Handling of Coal & Coke	Inflammable, fire/explosion hazard	Fire and Explosion hazard in the facility can lead to fatality.	Medium	1. Inspection and Maintenance 2. Fire protection/suppression system. 3. Fire/smoke detectors 4. Fire Hydrant system
1.4	Finished Product Handling and Transportation	Occupational and Physical Hazard	Cuts, Falling of material	Low	1. Avoid overloading 2. Training to operators 3. Ensure use of PPE
2.	**Steel Melt shop**				
2.1	Melting operation in furnace	Electric shock	Body injury	Medium	1. Inspection of ladle for presence of water before tapping of liquid steel or slag 1. Proper safety measure like body apron, face shield, helmet and hand gloves 2. Safety distance of 4 mtr from the delivery spout are suggest to work near
2.2	Tapping of liquid steel	Spillage of liquid steel	Burn injury,	High	
		Explosion	Body injury. May be fatal	High	

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
					molten metal 3. Complete dryness of material prior to contact with liquid iron and steel
2.3	Material Handling System - Cranes	Improper handling leads to accident	Personnel injury, may be fatal	High	1. Regular Maintenance of EOT cranes in respect of wire ropes, brakes, lifting hook, rails/wheels, electrical system/motors etc. 2. Limit switches / Emergency main switches of the cranes to be provided near the platform or at an easily accessible place. 3. Bell/Siren is to be provided in the cabin for crane operator &Annual inspection of Cranes/Lifting tackles by competent person every year, as per the factory act. 4. Display of safe working load on each crane 5. Proper Guarding of all stairs and crane's CT Trolley
3.	**Rolling Mill**				
3.1	Rolling operation	Hot object	Burn injury	High	1. SOPs and SMPs and Training manuals shall be prepared and awareness shall be created 2. Provide adequate training to operators 3. Conduct regular safety audits and rectify safety issue and monitor safety
3.2	Cutting of re bars in shear machine	Flying off sharp metals	Body injury	Medium	
3.3	Water treatment plant operation and cleaning	Chemical attack	Body injury	Medium	

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
					compliance reports 4. Ensure use of PPE
4.	**Reheating Furnace using LDO**				
4.1	Handling of Hot Billets	Hot object	Burn injury	High	1. Inspection and Maintenance 2. Fire Fighting system, Fire/smoke detectors 3. Proper design of electrical fittings as per HAC 4. Preparation of SOP and SMP and Training manuals and 5. Provide adequate training to operators 6. Conduct regular safety audits and rectify safety issue and monitor safety compliance reports.
4.2	Supply of LDO to Furnace	Leakage	Fire/Explosion	High	
5.0.	**Submerged Arc furnace**				
5.1	Tapping/Handling of molten alloys and slag	Spillage of molten alloys	Burn injury	High	1. Provided SOP and SMP and Training manuals 2. Provided adequate training to operators 3. Conduct regular safety audits and rectify safety issue and monitor safety compliance reports 4. Ensure wear of personal PPE and wear hot metal protection suit. 5. Firefighting system in operation 6. Vital connections e.g. water, gas,
5.2	Operation Area	Electrical Hazard	Body injury	High	
5.3	Melting of raw material in furnace	Fugitive emission and flue gas generation	Respiratory problem, Health issue	Medium	

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
					compressed air, oxygen etc., would be cut off or regulated as per requirement 7. In case of minor leakages, the flow of molten metal will be controlled. 8. If there is major breakout, the area would be cut off and cordoned. 9. Reliable and selective digital or microprocessor based electromagnetic protective relays would be incorporated in the electrical system
5.4	Hot metal or slag falling in a pool of water/ failure of water-cooled panels, puncture in water-cooled lances, leakage of water from the walls of mould	Steam Explosion	Burn injury and Fire	High	1. Inspection of ladle before tapping of molten alloy & slag 2. Create awareness and trainings on SOPs 3. Proper maintenance of furnace parts and cooling panels 4. Provision of Fire Fighting system
6.0.	**Sinter Plant**				
6.1	Transportation fines (raw materials) to Sinter Plant	Fugitive dust emission, Spillage of dust	Eye and Skin Irritation	Medium	1. Dust Extraction System with Bag Filter provided to control flue gas emission and secondary emissions 2. Provided SOPs and SMPs and Training manuals 3. Provide adequate training to
6.2	Feeding of material on Sinter bed	Dust	Fumes	Medium	
6.3	Sintering of ore	High temperature	Heat, Dust, Fumes	Sintering of	

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
				ore	operators
6.4	Breaking of hot Sinter	Contact with Hot object	Burn injury	High	4. Conduct regular safety audits and rectify safety issue and monitor safety compliance reports 5. Ensure proper wear of PPE 6. Guarding of all rotating parts of Sinter fan and motors couplings of conveyor system 7. Provided Emergency switches 8. Display of 'High Noise Area' sign boards 9. Adherence to electrical safety precautions 10. Protective cover/ grill at storage Bin top. 11. Dislocation stopper at Bin top
7.	**Fire/explosion hazard (General)**				
7.1	Hot Area	1. All Hot Metal Areas 2. Furnace Transformers 3. Furnace Operating Floor	1. Scope of fire accidents and burns 2. Scope of damage to skin	Medium	1. Proper SOPs for O & M and good firefighting scheme eliminate these Hazards 2. Proper safety and protective equipment eliminate impact of these Hazards 3. Safety distance of 4 mtr from the delivery spout are suggest to work near molten metal
7.2	Diesel Generator	Mechanical hazards	Fire / electrical	Medium	1. Inspection and Maintenance

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
		and fire hazards in Lube oil system, Cable galleries and Short circuits	accident		2. Fire protection system. 3. Provision in electrical system described above
7.3	Hydrocarbon handling (Coal/HSD/Coke/LDO)	Highly inflammable nature of fuels may cause fire/explosion hazard in the facility leading to fatality.	Fire and Explosion	High	1.Inspection and Maintenance 2. Fire protection/suppression system. 3.Fire/smoke detectors 4.Fire Hydrant system
7.4	Used Oil Storage in the Plant	Fire hazard / Slippage	Burn injury, May be fatal if magnitude of fire is high and uncontrollable Body injury due to slippage	High	1. Oil storage on Concrete floor with catchment 2. Firefighting system 3. Fireproof bulb in Oil storage area 4. Proper house keeping 5. No smoking/any other ignition source while handling Used oil
8.	**Electrical System**				
8.1	Electrical System	1. Exposure to Electrical Shocks 2. Scope of Fire due to Electrical Short circuits 3. Exposure to Burns due to Electrical Systems	1. Burns due to electrical accidents 2. Shocks due to electrical accidents 3. Damages to skin due to electrical fire accidents 4. Neurological	Medium	1. Adequately rated and quick response circuit breakers, aided by reliable and selective digital or microprocessor based electromagnetic protective relays would be incorporated in the electrical system design for the proposed activities. 2. Proper firefighting scheme for electrical failures eliminate these Hazards

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
			problems due to electrical shocks		3. Proper design of electrical equipment as per standards/HAC and proper isolation to eliminate these Hazards. 4. All motors should be flame proof in case of usage near Hydrocarbon handling area. 5. The metering and instruments would be of proper accuracy class and scale dimensions.
9.	**Construction & Maintenance**				
9.1	Movement of workers in the plant during maintenance work in different units	Accidents	Body injury	Medium	1. The plant machineries will be comprising of standard engineering designs meeting all quality specifications. 2. Since most accidents occur due to human error and improper work practice, safety awareness workshop for the plant personnel will be organized on regular basis. 3. Workers are encouraged to wear and use PPEs like safety boots, hand gloves, helmets, aprons, goggles. 4. Safety belt to be used while working at height
9.2	Construction work Road accidents due to vehicular movement, etc.	Accidents	Body injury	Medium	
10.	**Failure Of Pollution Control Equipment**				
10.1	Failure of Pollution Control Equipment	High levels of Particulate Matter	Respiratory problem Injury to	High	1. Operation of pollution control equipment will be interlocked. In case

Sl. No.	Activity	Hazard	Risk	Risk Level	Proposed Safety system
	of	and Gaseous Concentrations	personnel		of failure of Bag Filter, Operation shall be stopped with in the minimum possible time. 2. WBPCB shall be informed about the failure of pollution control equipment along with action taken report within 24 hours of the failure occurred 3. 24x7 ambulance facility shall be provided for any medical emergencies arises

7.7 MITIGATION MEASURES

Risk Mitigation measures for the proposed Expansion requires adoption of best safety practice at the respective construction zones as well as operational phase within the works boundary. In addition, the design and engineering of the proposed facilities will take into consideration of the proposed protection measures for air and water environmental as outlined in the earlier Chapters.

7.7.1 Coal & Coke Handling Areas

The following actions would be taken to prevent any accident in the premises:

- Coal & Coke handling unit shall be minimum 500 meters away from the residential area, school/colleges, Historical Monuments, Religious Places, Ecological sensitive area as well as forests area. Also, from Railway line, Express ways, National Highways, State ways and District Roads and from water bodies like River, Nala, Canal, Pond etc.
- Coal & Coke storage unit shall provide paved approach with adequate traffic carrying capacity.
- Compound wall with adequate height should be constructed around the coal storage area. Coal & Coke storage unit should ensure that stacking of coal and coke in heaps does not get higher than the compound wall of premises of unit
- The unit should have adequate water supply through pipe/ surface water before selection of the site.
- Adequate dust suppression measures should be provided.
- Specific measures should be under-taken to avoid fugitive emission at the time of loading/unloading of coal by individual coal yard unit.
- Firefighting measures should be provided to avoid any fire and ensure that there is no explosive or chemical reaction in storage yard.

7.7.2 Control Rooms

- Control rooms shall be blast proof and shock proof
- The building shall be located upwind of the process storage and handling facilities.
- Adequate number of doors shall be provided in the control room for safe exit
- Smoke detectors system shall be provided for control rooms at suitable locations
- One hydrant (minimum) for every 45m per wall of the building shall be positioned all around the building.

7.7.3 Electrical safety

- Adequately rated and quick response circuit breakers, aided by reliable and selective digital or microprocessor based electromagnetic protective relays would be

incorporated in the electrical system design for the proposed activities.

- The metering and instruments would be of proper accuracy class and scale dimensions.
- Installation of electrical equipment as per HAC.

7.7.4 Furnace Safety

- To ensure the furnace safety, proper inspection of the furnace to be done by competent person before start of operation.
- Safety valves/Temperature indicators and control system should be inspected and maintained.

7.7.5 Fire Fighting Facility inside the Plant

All the fire extinguisher system will be controlled by the Security Department. Safety department will consist of qualified safety manager, safety officer and supporting staff. Following are fire-fighting facilities required in the plant:

- Portable fire extinguishers
- Fire Hydrant system
- Sprinkler system employed near fire prone areas
- Fire Buckets

Table 7.6: Details of Fire Fighting Facilities onsite

Sl. No.	Name of site	Type of Extinguisher
1	Cable galleries	CO_2 & Dry chemical powder
2	High voltage panel	CO_2 &, Dry chemical powder
3	Control rooms	CO_2 & Dry chemical powder
4	MCC rooms	CO_2 & Dry chemical powder
5	Pump Houses	CO_2 & Dry chemical powder
6	Offices	CO_2 & Dry chemical powder
7	Godowns	CO_2 & Foam type, Dry chemical powder
8	Bunkers, Silo, enclosed dust collector	CO_2 type, N_2 type, water sprinkler, fixed spray nozzle(unless water reactive)

7.7.6 Personal Protective Equipment (PPE)

Personal Protective equipment kept onsite are made readily available to plant personnel. Following **Table 7.7** shows the lists of recommended Personal Protective Equipment (PPE) onsite.

Table 7.7: Summary of Recommended Personal Protective Equipment

	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, hot metal, gases or vapors, light radiation	Safety glasses with face-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Safety helmets for top and side impact protection
Hearing protection	Noisy Areas	Hearing protectors (ear plugs or ear muffs)
Foot protection	Failing or rolling objects, points objects. Corrosive or hot liquids	Safety shoes and boots for protection against moving and failing objects, liquids and chemicals
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures	Rubber hand gloves or synthetic material (Neoprene),etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors	• Facemasks with appropriate filters for dust removal and air purification (chemical, mists, vapors and gases). • Single or multi-gas personal monitors, if available
	Oxygen deficiency	Portable or supplied air (fixed lines). Onsite rescue equipment
Body / leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Insulating clothing, body suits, aprons etc. of appropriate materials
Bag Filter Dust	Dust handling and storage	• Dust-proof goggles and rubber or PVC gloves shall be given • For large quantities or where heavy contamination is likely, wear coveralls. • For high dust levels, wear Full-face Class P3 (Particulate) or an Air-line respirator. • For inhalation risk exists, wear Class P1 (Particulate) respirator.

7.8 RISK ASSESSMENT SUMMARY

The preliminary risk assessment has been completed for the proposed expansion of steel plant and associated facilities. The hazardous event scenarios and risks in general at this facility can be adequately managed to acceptable levels by performing the recommended safety studies as part of detailed design, applying recommended control strategies and implementing a Safety Management System.

7.8.1 Recommended Approach to Combat with the Possible Accidents

Considering all possible accident scenarios as analysed in the risk analysis, it is established that there are potential hazards for handling of hazardous chemicals. So, the project authorities should be well prepared to handle any such eventuality described below:

i. In case of Fire/Explosion

The following measures and actions are to be taken:

- Evacuate the area in vicinity;
- Take all necessary actions to avoid escalation of the accident;
- If problem appears to be out of control, call fire brigade and police. Report to district collector, etc.; and
- Provide first aid to the victims as suggested in the Material Safety Data Sheets.

ii. Loss of Containment (LOC) of High-Speed Diesel (HSD) / LDO

In proposed expansion case, the source of fuel for reheating furnace will be LDO which is flammable in nature. Possible sources of leakages are flanges, joints, valves etc in the pipeline/tank, and also full-bore rupture of the pipeline/tank.

In present case, for DG sets HSD is handled in the plant. Possible sources of release of HSD are flanges, valves, tail ends or during transfer from truck tanker (TTS)/Storage tank.

Action Plan considered preventing loss of containment (LOC) of HSD/LDO

- Preventive maintenance of all flanges, valves, joints, fittings etc. to prevent leakage.
- Periodic maintenance/inspection for corrosion.
- Regular inspection/maintenance of fire detectors and checking its operability.

In case of leakage of oil from flanges, valves, tail ends or during transfer from truck tanker (TTS):

- Detect the source of leakage;
- If possible, try to collect the leaking oil in a suitable container;
- Bring portable fire extinguishers near to the area of leakage; and
- Stop flow of spilled oil and prevent it from coming into contact with any ignition source.

In Case HSD/LDO is ignited at the source of leak, in addition to the above, following actions are to be taken:

- Use fire extinguishers/Hydrant/Monitors to diminish the fire;
- See that the flame does not impinge on tanks or any other adjacent installation;
- If impingement of flame is unavoidable, put water protection system in between and cool the adjacent installations;
- Give priority to closure of valve and stop the flow;
- Best trained personnel to prevent further spread of fire;
- Take all necessary actions to avoid escalation of the accident; and
- In case of fire, ensure suffocation and toxicity due to flame does not take place.

In case of fire near HSD/LDO storage tanks following measures shall be taken:

- If the fire is near the storage tanks area, use water hydrant and DCP type fire extinguishers;
- Never allow fire to spread to the area below the tank, start cooling the tank by the emergency water spray; and
- Call fire brigade & police for assistance.

7.9 OCCUPATIONAL HEALTH & SAFETY ONSITE

7.9.1 Occupational Health Hazards at M/s. ESPL

Major health hazards that are envisaged for the proposed project activity are mentioned below:

a) Occupational Overuse syndrome (OOS)

b) Dermatitis

c) Stress

d) Fatigue

e) Burns

f) Soft tissue injuries

g) Respiratory disease (Dust, Gases, vapors and other contaminants)

h) Sprains and strains

i) Eye injuries

j) Noise-induced hearing loss

k) Metal fume fever

7.9.2 Airborne contaminants

Gases, vapours and other contaminants: In addition to dusts, these contaminants are generated primarily by the core making and moulding processes, and may irritate the eyes and the respiratory tract.

7.9.3 Iron oxide

It is the major fume generated in iron and steel operations. 'Metal fume fever' may result from exposure to these contaminants. This is an acute illness of short duration which commences some hours after inhalation of the metallic fumes. The initial symptoms are flu-like: nausea, headache, dry throat and coughing, and muscular pains. Chills and sweating may occur later. Recovery is usual within 24 hours after removal from exposure.

M/s. ESPL will adopt suitable measures for the proper occupational health safety of workers complying to OSHA standards. Permissible Exposure Level (PEL) of various Chemical Handled onsite are listed below in **Table No 7.8.**

- Dust Exposure level of shop floor workers shall be appropriately monitored.
- Check of the effectiveness of preventive and control measures on regular basis.
- Adequate supplies of potable drinking water are to be provided. Water supplied to areas of Plant food preparation or for the purpose of personal hygiene (washing or bathing) are according to drinking water quality standards
- Where there is potential for exposure to harmful dusts by ingestion arrangements are to be made for clean eating areas, where workers are not exposed to the hazardous or noxious substances
- Periodic medical hearing checks are to be performed on workers exposed to high noise levels
- Provisions are to be made to provide OHS orientation training to all new employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees
- Contractors that have the technical capability to manage the occupational health and safety issues of their employees are to be hired, extending the application of the hazard management activities through formal procurement agreements
- Ambulances and First aid treatment facilities are made available for any emergency situation

Table 7.8: PEL level Summary as per OSHA

Sl.N	Chemical Name	OSHA PEL mg/m3	Cal/OSHA PEL 8-hour TWA (ST) STEL (C) Ceiling mg/m3	NIOSH REL Up to 10-hour TWA (ST) STEL (C) Ceiling mg/m3	ACGIH TLV
1.	Coal Dust			1	0.9 (resp.) bituminous or lignite; 0.4 (resp.) anthracite coal dust to be monitored for crystalline silica
2.	a) Respirable fraction less than 5% SiO2	2.4	0.9 (bituminous)		
	b) Respirable fraction greater than 5% SiO2	10	0.1(bituminous)		
3.	Iron oxide	10 (fume)	5 (fume)	5 (dust and fume)	5 mg/m3
4.	Limestone				
	a) Total Dust	15 mg/m3	10 mg/m3	10 mg/m3	
	b) Respirable dust fraction	10 mg/m3	5 mg/m3	5 mg/m3	
5.	Quartzite	5 mg/m3	2 mg/m3	2 mg/m3	2 mg/m3
6.	Carbon Monooxide	55 mg/m3	25 ppm	35 ppm	25 ppm
Reference- OSHA/PEL exposure limit Guide					

7.9.4 Evaluation for Specific Health Status of Workers

As this is an expansion project, company is already in practice to conduct the evaluation of workers health in pre designed format. All the workers working in the company are evaluated pre-placement and periodically for chest X-rays, Audiometry, Spirometry, Vision testing (Far & Near vision. color vision and any other ocular defect) ECG. The format of evaluation sheet is provided below:

Spirometry Tests						
Year	***Total Manpower***	***FVC (litres)***	***FEV 1***	***FEV 1/ FVC %***	***PEFR***	***Conclusion***

Physical Examination Tests								
YEAR	***Total Manpower***	***Pulse***	***ECG***	***BP***	***Right Eye***	***Left Eye***	***Color Blindness***	***Squint***

Investigations Tests					
YEAR	*Total Manpower*	*Blood (CBC)*	*Blood Sugar (F& PP)*	*Lipid profile*	*URINE (R&M)*
Audiometry Tests					
YEAR	*Total Manpower*	*Audiometry done*	*Normal*	*Abnormal*	*Conclusion*

7.9.5 Annual report of health status of workers with special reference to Occupational Health and Safety

Report of the latest conducted evaluation for health status of workers on the above-mentioned parameters as per age, sex, duration of exposure and department wise is provided as ***Annexure-11***. Annual report of health is always reviewed for the facility and necessary actions are taken in the facility for maintaining the OHS.

7.9.6 Plan and fund allocation to ensure the Occupational Health & Safety of all contract and casual workers

Safety monitoring programs shall verify the effectiveness of prevention and control strategies. The selected indicators shall be 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 environments, Health & Safety aspects shall be re-assessed on annual basis. The occupational health and safety monitoring program shall include:

- **Safety inspection, testing and calibration**: M/s ESPL shall carryout regular inspection and testing of all safety features and hazard control measures focusing i.e. testing of pressure vessels, testing of cranes etc. The inspection shall verify that issued personal protective equipment (PPE) shall provide adequate protections.
- All instruments installed or used for monitoring and recording of working environment parameters shall be regularly tested and calibrated, and the respective records to be maintained;

Capital Budget of Rs. 17.5 lakhs and recurring budget of Rs. 10.0 lakhs is allocated to ensure safety of all Employees including contract & casual workers. Breakup of the OH&S budget is provided below:

Table 7.9: OH&S Budget Breakup

S. No.	Requirement	Capital Budget (Rs in Lakh)	Recurring Budget (Rs in Lakh)
1.	Installation of Fire hydrant/ Sprinkler /Route Maintenance	6.0	1.0

S. No.	Requirement	Capital Budget (Rs in Lakh)	Recurring Budget (Rs in Lakh)
	of Fire Hydrant Line		
2.	Installation of Heat Detectors, smoke detectors and Maintenance	2.5	0.5
3.	Yearly Hydro test of Fire Extinguishers	--	1.0
4.	CO_2 Flooding System for MCC & Panel Rooms	4.0	1.0
5.	Third Party EHS Audit (Once in 3 years along with)	--	0.5
6.	PPE Purchase	4.0	1.0
7.	Exhaust Ventilation Test	--	3.0
8.	Training and Safety Awareness Program/Safety week celebration Conduction and Safety Slogans	--	1.0
9.	Maintenance of accessories/safety equipment's in plant	--	1.0
10.	Miscellaneous	1.0	--
Total		**17.5**	**10.0**

7.10 NATURAL AND MANMADE CALAMITIES WHICH CAN LEAD TO EMERGENCY

7.10.1 Earthquake

Paschim Burdwan district of the state West Bengal lies in Seismic Zone-III indicating area under moderately affected zone in terms of being prone to Earthquake activity. Earthquake cannot usually be forecasted and therefore precautions immediately prior to such event are not usually possible. Emergency plan has been considered by the emergency management team as per the situation and site conditions.

7.10.2 Storm

The contingency actions during storm shall be based on the weather forecasts obtained from meteorological stations and the local meteorological department. Some of the important actions to be carried out are as follows:

Prior to Storm

- Communication with the local meteorological department
- Maintain distances from storm in order to execute preparatory actions in a shorter time.
- Considering the consequences about the emergency might have on operations and personnel.
- Review all operations carefully to ensure that systems in jeopardy are taken care of or shut down.
- Ensure the readiness of first aiders, emergency vehicles, medical Centre, medicines etc.

- Metallic sheets, loose materials, empty drums and other light objects shall be properly secured.
- Flush the drainage systems.

During Storm

- Remain calm.
- Avoid going outdoors.
- Do not seal the office completely as the suction created by the difference in atmospheric. Pressure inside and outside can rip open a window or door by breaking window glass panes.

After the Storm

- Do not touch electric lines.
- Stay away from the disaster area.
- Take special precautions in driving vehicles since the under-pavement could cave in due to the weight of automobile.

7.10.3 Flood

West Bengal faces major floods mainly due to Flash Floods. Appropriate measures are taken to maintain the Plant safety. Flash flood has caused severe damages to houses, roads, bridges and culvert. There is no major river within 1km distance from the project site. Although Barakar River is at an approximate distance of 4km from the plant site but the river has no flood history in past 25years. The Highest Flood Level (HFL) for the nearest station is of Maithon Dam on river Barakar which is 4.86 kms from the plant site. The HFL is 151.84m/498.16ft on the year 2021. Also, flood control measures will be taken as required maintaining the Plant safety.

7.10.4 Air Raid

Air raid warning is obtained from the District Emergency Authority or Defense Authorities, during which total blackout of the entire complex should be considered. Some of the contingency actions to be considered during an air raid are as follows:

- The Aviation Lights installed on highest point inside the factory shall be switched off.
- All the lighting on the Streets shall be put off.
- All the plant lighting shall be put off.
- Brown curtains shall be provided for all windows inside the building.
- Other emergency actions shall be followed in addition as per the general procedure.

7.10.5 Food and Water Poisoning

Food and water poisoning to a no. of persons, due to canteen food or other means, is another scenario which can leads to major emergency. In this case Medical Officer would

be informed immediately by the Main Controller at site and then to incident Controller (IC) and Site Controller (SC). In such situation doctors will act and if situation demands additional help such as ambulances, doctors and medicine would be arranged from nearby factories and hospitals.

7.11 DISASTER MANAGEMENT PLAN AND MITIGATION MEASURES

The objectives of DMP are to describe the company's emergency preparedness, organization, the resource availability and response actions applicable to deal with various types of situations that can occur at facility in shortest possible time.

Thus, the overall objectives of the emergency plan are summarized as:

- Rapid control and containment of Hazardous situation
- Minimizing the risk and impact of event/ accident
- Effective prevention of damage to property

In order to achieve effectively the objectives of emergency planning, the critical elements that form the backbone of Disaster Management Plan (DMP) are:

- Reliable and early detection of an emergency and immediate careful planning
- The command, co-ordination and response organization structure along with availability of efficient trained personnel
- The availability of resources for handling emergencies
- Appropriate emergency response action
- Effective notification and communication facilities
- Regular review and updating DMP
- Training of the concerned personnel

Steps taken for minimizing the effects may include rescue operations, first aid, evacuation, rehabilitation and communicating promptly to people living nearby.

7.11.1 Key Elements

a) Basis of Plan

Hazard Identification necessitates preparation and planning the prevention and methods by which accidental failure can be tackled without much damage to life. HIRA and consequence analysis combines and requires planning for the following:

- Hazards from spread of fire or release of flammable from storage and process units
- Hazards due to formation of pressure waves due to vapour cloud explosion of flammable gases
- Hazards during handling of Hot Materials

b) Emergency planning and Response procedure

The Emergency Response Plan is plan for dealing with emergencies are implemented immediately whenever there is a fire, explosion, or release of a hazardous substance etc, that threatens human health or the environment. The emergency response plan is reviewed and immediately amended whenever:

- The plan fails in an emergency
- Change in list of emergency contacts
- The list of emergency equipment changes
- The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that increases the potential for fire, explosions, or release of a hazardous substance

c) Incident Response Plan

It is the Frame work of addressing the emergency situation arose due to failure scenario.

7.11.2 On-Site Emergency Plan

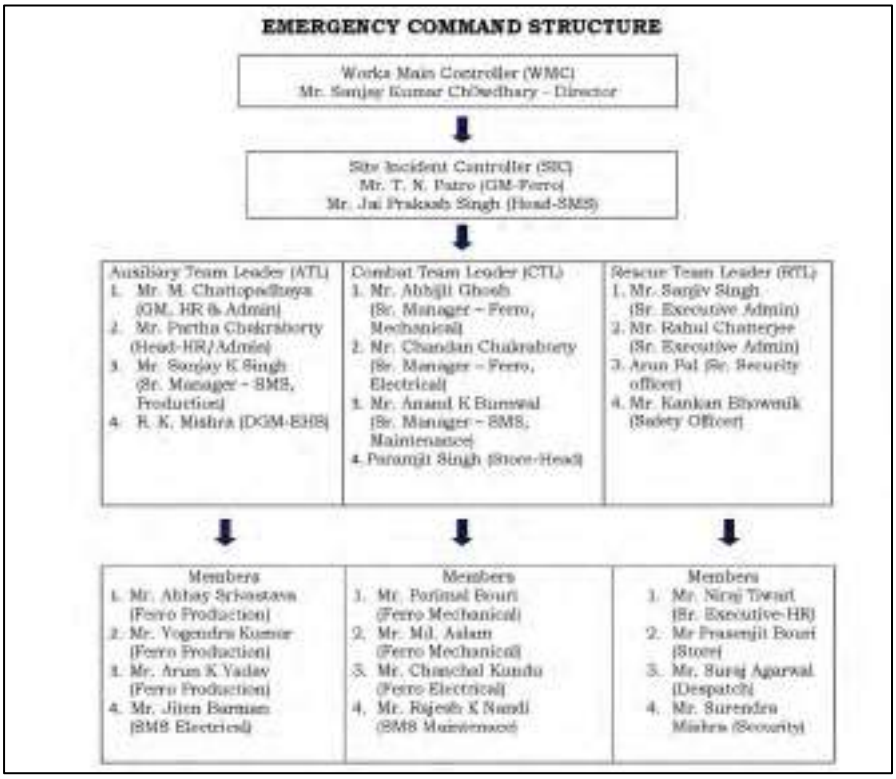
Disaster management plan are prepared with an aim of taking precautionary step to control the hazard propagation, avert disaster, take action after the disaster which limits the damage to the minimum and follow the on-site emergency planning.

The onsite emergency is an unpleasant situation that causes extensive damage to plant personnel and surrounding area and its environment due to in operation, maintenance, design and human error. Onsite plan will be applied in case of proposed expansion. Following point are taken into consideration:

- To identify, assess, foresee and work out various kinds of possible hazards, their places, potential and damaging capacity and area in case of above happenings.
- Review, revise, redesign, replace or reconstruct the process, plant, vessels and control measures if so assessed.
- Measures to protect persons and property of processing equipment in case of all kinds of accidents, emergencies and disasters
- To inform people and surroundings about emergency if it is likely to adversely affect them.

7.11.2.1 Disaster Control Management system at M/s Eloquent Steel Pvt Ltd

Disaster Management group plays an important role in combating emergency in a systematic manner. Schematic representation Emergency Control Management system for facility is shown in following figure:



Sl No.	Name	Position in Team	Mob. Number
1	Mr. Sanjay Kumar Chowdhary	Works Main Controller (WMC)	7908451604
2	Mr. T. N. Patro	Site Incident Controller (SIC)	9233340408
3	Mr. Jai Prakash Singh		9832889395
4	Mr. M. Chattopadhaya	Auxiliary Team Leader (ATL)	8367850085
5	Mr. Partha Chakraborty		8250708382
6	Mr. Sanjay Kumar Singh		6204366508
7	Mr. R. K. Mishra		8695621900
8	Mr. Abhijit Ghosh	Combat Team Leader (CTL)	8170003749
9	Mr. Chandan Chakraborty		8373819925
10	Mr. Anand K Burnwal		9572564278
11	Mr. Paramjit Singh		7431018575
12	Mr. Sanjiv Singh	Rescue Team Leader (RTL)	7605089188
13	Mr. Rahul Chatterjee		8918633455
14	Mr. Kankan Bhowmik		7602134397

EMERGENCY CONTACT NUMBERS:

Sl No.	Name	Mob. Number	PAX. No.
1	Factory Main Gate	7605089199	
2	Factory Security In-charge	7605089199	
3	Factory Medical Unit/Ambulance	7605089103	
4	Govt. Ambulance Service	101	
5	Factory Safety officer	7605089168	
6	District Magistrate Paschim Bardhaman	-	0341-2554545
7	Superintendent of Police	-	0341-2257962
8	Additional Superintend of Police, Asansol	-	0341-2252640
9	Asansol Police Control	-	0341-2203287
10	Chief Medical Officer	9474782394	
11	Sub Divisional Hospital, Asansol	-	0341-2252176
12	ADM (G),	-	0341-2253010
13	OC Disaster Management	8777860955	
14	Dy. Chief Inspector of Factories	9433649808	0341-2252644
15	Sub Divisional Officer, Asansol		0341-2252222
16	Fire Station Raghunathpur	8584027313/314	03251-203550
17	Fire Station Asansol	-	0341-2304506
18	Asansol District Hospital	-	0341-2304040
19	Pithaikeyari Block Hospital	7547945591	-
20	Pithaikeyari, BMHO	9547687716	-
21	Police Station Salanpur	-	0341-2531118

Fig 7.2: Onsite DMP - Disaster Control / Management System

7.11.2.2 Key Personnel and Their Roles and Responsibility

A team of following Essential persons shall be taking necessary action in case of emergency. The roles and responsibilities of these personnel are defined subsequently:

- Work Incident Controller (WIC)
- Site Incident Controller(SIC)
- Works Main Controller (WMC)
- Combat Team Leader
- Rescue Team Leader
- Auxiliary Team Leader(Communication Officer)
- Liaison Officer
- In-charge (Security)
- In-charge (Medical)
- Shift In-charge (Security)

a) Work Incident Controller (WIC)

- The Works Incident Controllers are the departmental heads of respective divisions for SAF and SMS whose duties include the direction of the efforts and lead to onsite emergency response team to control the situation.
- Since in the initial stages of emergency, the WIC may be called on to take decisions involving the operations of other plants, it is necessary for the person selected to have a thorough knowledge of the overall works situation.
- The person working as shift in-charge/manager i. e., an individual having overall control of the works processes for a shift shall work in the authority of WIC, when the WIC may be off-site or affected by the emergency.

b) Site Incident controller (SIC)

He will be available at the factory or in the colony nearby. At any point of time and on being informed about an accident, he has to:

- Intimate the Works Main Controller (WMC) and proceed to the emergency site.
- Take the necessary information from Combat Team Leader (CTL), assess the situation and call Rescue Team Leader (RTL) and Auxiliary Team Leader (ATL).
- Inform Works Main Controller (WMC) regarding the situation.
- Take necessary steps and provide guidance to Combat Team, Rescue Team, and Auxiliary Team Leaders to mitigate the emergency situation.
- Examine for major emergency shutdown operation activities, decide safe escape route and announce for evacuation to Assembly Point.

- Inform Works Main Controller (WMC) about the status of the situation at regular intervals.

c) Works Main Controller (WMC)

The WMC is the Director of the unit and is generally available in the factory or reside in the nearby except on tours. On emergency, he can reach work site at any odd hour within 30-45minutes time. In his absence, GM at Plant shall take up his charge as WMC

In the major situation, decisions will have to be taken by WMC by collaboration with the senior managers at works which may affect the whole or a substantial part of the works and senior officers of the outside services as per site situation. After getting informed of an emergency situation WMC will rush to the emergency site, collect all information from SIC and:

- Decide if emergency is to be declared and advise Site Incident Controller (SIC) accordingly and reach Emergency Control Room (ECR).
- Take decision to shut-down the plant if necessary to take up repair and other combating measures.
- Advise Rescue Team Leader (RTL)/Security Gate to blow the 'emergency siren' with appropriate code for declaration of emergency. Emergency Siren: Twenty Seconds with a pause of Five Seconds for 5 times.
- Advice (Auxiliary Team Leader) ATL for communication to statutory authorities and for mutual aid as required.
- Through Auxiliary Team Leader (ATL) shall ensure constant communication to statutory authorities and to mutual aid partners as required.
- Maintain continuous communication with Site Incident Controller (SIC) to review the situation and assess the possible course of action for emergency operations.
- To declare normalcy at the end of operation and advise Rescue Team Leader (RTL)/Security Gate to blow 'All clear siren'. All Clear Siren will be blown for 1 minute continuously.
- Ensure the record keeping of emergency operations chronologically.

d) Essential Personnel

The Works Incident Controller/Main Controller will be supported by a Task Force of suitably trained people. The nature of essential works to be performed is:

- Shutdown of Plants
- Isolation, repairing of the affected equipment /pipeline etc.
- First Aid and removal of the injured persons to hospital.

e) Combat Team Leader

He is the leader to attend to the emergency and is available in the factory or in the colony at any instant. On being informed about an accident, he has to:

- Immediately rush to the site and lead the rescue team to control the situation. Inform Site incident controller (SIC) about the incident and request him to rush to the spot.
- Give the necessary instructions to the rescue team to combat the situation
- Co-ordinate the activities of team members and combat the emergency, so as to eliminate the root cause of the hazard.
- To arrest the leakage and spillage from various equipment, shut down the concerned equipment.
- Take necessary action to remove unwanted persons from the site of the incident.
- Keep informed about the developments to Site Incident Controller (SIC).

f) Rescue Team Leader

He is the person who conducts rescue operations and should be available at any instant. On receiving the information about the incident he has to:

- Rush to site of emergency through safe route.
- Ensure presence of all his team members, availability of firefighting facilities and take necessary action to arrest the fires/leakage of gas.
- Arrange for safe escape of entrapped persons.
- Make necessary arrangements to send the affected persons for immediately medical attention through the medical officer.
- Search for the missing persons on the basis of role call taken by Auxiliary team leader (ATL).
- Give the feedback to the site incident controller (SIC) about the developments.

g) Auxiliary Team Leader (Communication Officer)

He is the communication manager for the crisis management. On being informed of the emergency, he should proceed to Emergency Control Room (ECR) and shall:

- Keep in constant touch with works main controller (WMC) and Site Incident Controller (SIC).
- Inform the Statutory Authorities and District Administration. Communicate to mutual Aid Partners, Fire service stations at Asansol.
- Send communications to District Hospital Paschim Bardhaman at Asansol for rendering services.
- To arrange for suitable persons to act as runners/messengers in case of failure of communication system

- Inform the relatives of causalities and send them to their residence or hospital as the case maybe.
- Take care of visit of the authorities to the Emergency site.
- Give feed back to work main controller (WMC) about the status with respect to his areas of activities.

h) Liaison Officer

HOD (HR&A) shall be the Liaison officer. He shall be responsible for: -

- To contact Fire Brigade, Police, and Medical facilities on intimation from Works Main Controller & arrange for the rescue operation.
- To ensure that the casualties receive attention.
- To inform relatives of the affected employee at the earliest.
- To arrange for additional transport if required.
- To arrange for relief of personnel & organize refreshment/catering facility, in case the duration of emergency is prolonged.
- To issue authorized statements to news media and ensure that evidence is preserved for enquiry to be conducted.

i) In-charge (Medical)

On receiving the information, he will reach First Aid Centre immediately and take following actions:

- He will keep necessary first aid and medicines and artificial respiration equipment ready.
- Inform doctors at other places to be ready, for attending serious injury, burn cases and food poisoning.

j) In-charge - Security

- The In-charge (Security) shall guide the crew, according to the condition of emergency site, for the actions required to handle the emergency i.e. for fire-fighting, removal of debris, arresting of dust, removal of oil-soaked earth etc. He shall give instructions to Security Guards to cordon off areas as required by WIC.
- He shall be responsible for ensuring the discipline at control points and for preventing the entry of unauthorized persons inside the affected area as well as inside the factory during emergency.

k) Shift In charge – Security

He shall be responsible for;

- To arrange the necessary help as requested by WIC.

- To inform In-charge (Security).
- To blow emergency siren, if instructed by the WMC.
- To send Ambulance near accident area.
- To rush to the accident site with fire brigade along with available trained security persons

Silent Hour Command Structure: The Senior Officers/ Key Persons of the plant remain during day time i.e. 8A.M. to 8P.M. Hence the timing of 8P.M. to 8A.M. is considered as silent hour that to 10P.M. to 8A.M. is the crucial time. Still each and every unit/section of the plant is headed by shift in charge in the rank of Officer, Engineer or Sr. Engineer or Asst. Manager, who shall be responsible for handling the emergency. The other supporting/services and emergency sections like Fire Service, Ambulance, Security, Personnel, Water Supply, Transport departments etc. are also running for 24 hours shift wise with shift in charge and crew to handle emergency during the silent hour till main command personnel arrives. However, most of the key persons of the main command structure reside in nearby area and can reach within minimum time. The command structure of the silent hour shall be same as during normal hour, however, during the silent hour, the operation Shift-in charge of the concerned area where the fire or leakage of gas has taken place, shall act as SIC-in-charge, till the arrival of actual designation members.

7.11.2.3 Facilities Available For On-Site Emergency Plan

a). Assembly Point

In any emergency it will be necessary to evacuate people from affected zones other zones likely to be affected, to a safer place. Safer places are identified and designated as Assembly Points. Taking the area and hazard zones into consideration four assembly points have been marked in four different areas these are:

- Near Administrative Building (Assembly Point-1)
- Near OHC Area (Assembly Point-2)
- Between SMS & Ferro Metal Yard (Assembly Point-3)
- Near Plant Main Gate (Assembly Point-4)

Above points are well connectable to the plant road and facilities like drinking water, temporary shelter and first aid is available there. These points are displayed at different places inside plant and near administrative building.

b). Escape Routes

Escape routes are provided for systematic, safe and orderly evacuation of all the occupants in case of fire or any emergency, in the least possible time, to a safe assembly point through nearest safe means of escape. Escape routes are ear marked on the drawings as

well as on the routes, which will facilitate all for safe evacuation. Facility staff will be notified of evacuation by one or more of the following method(s):

- Verbal, Intercom, Portable Radio, Alarm, Other
- Notification to emergency services to ECR
- Staff will follow predetermined evacuation routes and assemble at designated areas.
- Evacuation maps must be displayed throughout the facility.
- Individuals responsible for coordinating evacuations must confirm the process.

c). Emergency Control Room (ECR)

An Emergency Control Room (ECR) is established from which emergency operations are directed and coordinated. Room will be activated as soon as on-site emergency is declared. During an emergency, the Emergency Management Staff, including the main controller will gather in the ECR. Therefore, the ECR will be equipped with adequate communication systems in the form of telephones and other equipment to allow unhampered organization and other nearby facility personnel.

The ECR will provide shelter to its occupants against the most common accidents; in addition, the ECR's communication systems will be protected from possible shutdown. The ECR will always be ready for operation and provided with the equipment and supplies necessary during the emergency such as:

- Hazard identification chart
- All Emergency response plans
- Population around factory
- Internal telephone connections and External telephone connections
- A list of key personnel, with addresses, telephone numbers, etc.
- Hotline connection to district collector, police control room, fire brigade, Hospital etc.
- Public address system (PAS)
- MSDS of all the materials used in Plant site
- List of dispensaries and registered medical practitioners around factory
- Area map of surrounding villages
- Note pads and ball pens to record message received and instructions
- The blown-up copy of Layout plan showing areas where accident has Occurred
- Updated copies of the On-site Disaster Management Plan
- Emergency telephone numbers
- The names, phone number, and address of external agencies, response organizations and neighboring facilities

- The adequate number of telephones
- Emergency lights
- List of fire extinguishers with their type no. and location, capacity, etc
- Personal protective equipment (PPE)
- Safety helmets
- Clock
- Several maps of the facility including drainage system for surrounding area showing:
  - Areas where hazardous materials are stored
  - Plant layout
  - Plot plans of storage tanks, routes of pipelines, all water permanent lines etc.
  - The locations where personal protective equipment are stored
  - The position of pumping stations and other water sources
  - Roads and plant entrances
  - Assembly areas
  - Layout of Hydrant lines

d). Automatic Fire Detection System

Unattended vulnerable premises like electrical control rooms, cable tunnels, MCC, oil cellars, etc. will be provided with automatic fire detection and alarm systems.

e). Manual Call Point Systems

All major units and welfare/administrative building will be provided with manual call points for summoning the fire-fighting crew from the fire station for necessary assistance.

f). Fire Station

The equipment provided in the fire posts are Water Tender, Foam Tender, Portable pump, Wireless set, Hot Line Telephone and Hoses.

g). Alarm System

A hooter installed at the Security Office shall blow 'Emergency Siren: Siren blown for Twenty Seconds with a pause of Five Seconds for 5 times' to indicate major emergency in the plant. In such case, all non-essential employees are expected to gather at any of the four designated assembly point i.e. Near Administrative Building, Near OHC Area, Between SMS & Ferro Metal Yard & near Plant Main Gate. Signal for the clearance of emergency shall be given by blowing the 'All Clear Siren: Siren blowing continuously for one minute'.

h). First Aid Centre

- Company has provided First Aid boxes with required first aid medicines at different locations inside the plant to address minor injuries. First aid boxes are checked by the pharmacists once in a month & and medicines are filled/replaced. The first aid boxes are provided in the following locations: SAF, Administrative building, SMS and Security Office.
- An organized First-aid centre with ambulance, stretchers, oxygen cylinder etc. is placed inside the plant. The First-aid centre is manned by one Doctor/pharmacist and one attendant. An external Ambulance service is also hired to meet emergency situation. The first-aid center is manned round the clock.
- To ensure that the system is strictly followed, In-charge (Safety) shall cross check randomly once in a fortnight the preparedness of Ambulance as per the check list and counter sign.
- The injured shall be shifted to nearby hospital, as per the opinion of the Medical Officer.
- The names & contact numbers of trained First Aiders are provided the same is displayed at all the prominent locations in the premises.
- In case of Injury caused due to Hazardous Chemicals, Material Safety Data Sheet (MSDS) available with the user department / Hospital shall be referred.

i). Communication

Public address system and EPABX telephone are available for effective communication inside the plant. Telephone directory is available in all the departments.

j). Mock Drill

For reviewing and assessing the level of preparedness, AGM-EHS shall conduct mock trials four times in a year simulating the covered emergencies and will maintain records of the trials. Fire drills will be exercised once in every six months under the leadership of AGM-EHS. The findings of the mock drills shall be used for improvements in preparedness and response. All RTL shall be responsible for implementing the suggestions.

k). Training

On yearly basis class room training for fire-fighting and mitigating measures to be adopted to reduce environmental impact & OHS risks, will be imparted covering at least 20% employee by the AGM-EHS. The records of the same are maintained.

7.11.2.4 Activation & Closing Procedure for On-Site Emergency

- The person noticing the incident of fire or leakage of gas, shall inform about the location & nature of fire to the combat team Leader (CTL), security Gate and concerned Shift-in-charge.

- Combat team Leader (CTL) shall inform site incident controller (SIC) and shall rush to the site immediately. He shall arrange for firefighting and first aid available at site. He shall arrange to take necessary steps to eliminate the root cause of fire.
- Site incident controller (SIC) on getting information shall inform the WMC and reach the site at the earliest. He shall take over the charge and shall direct Rescue Team Leader (RTL)) to carry out rescue operations including firefighting and medical attention. Site incident controller (SIC) shall co-ordinate with Combat team leader (CTL) to eliminate the root cause of fire.
- Work main controller (WMC), on arrival at site shall take stock of the situation from site incident controller (SIC) and then rush to emergency control room (ECR) to declare emergency on the basis of assessment made by (Site incident controller (SIC). He shall give direction to the security gate/ (Rescue Team Leader) RTL to activate siren
- Twenty seconds with a pause of five seconds for 5 times for fire Accident.
- Thirty seconds with a pause of five seconds for 5 times for leakage of gas.
- Rescue Team Leader (RTL) shall mobilize fire-fighting and medical resources to site and shall assist (Site incident Controller) SIC.
- Auxiliary Team Leader (ATL) shall take charge of Emergency Control Room (ECR), shall ensure smooth operation of ECR and shall inform relatives of casualties. Informs mutual Aid partners and ensures their arrival at site if required.
- Auxiliary Team Leader (ATL) informs statutory authorities and district administration regarding emergency suitably and coordinates their visit at site.
- WMC coordinates and keeps the track of all the activities at site and off the site and arranges the recording of the activities in a chronological manner for review of the Onsite emergency Plan.

7.11.2.5 Responsibility of Implementation of DMP

Responsibility for establishing and maintaining an Emergency Preparedness Plan/DMP belongs to the AGM-EHS. He is responsible for the control of the plan, and for ensuring that the plan is applicable and implementing procedures are operated during emergency situation and are reviewed and revised annually. As a member of top management he is responsible for the training of personnel to ensure that adequate emergency response capabilities are maintained in accordance with the plan. He is also responsible for ensuring the regular conduct of drills and other measures, as outlined in the DMP.

7.11.3 Off-Site Emergency Plan

The off-site emergency plan is an integral part of any hazard control system. It is based on those accidents identified by the works management, which could affect people and the environment outside the works. The roles of the various parties that may be involved in the

implementation of an off-site plan are described below. The responsibility for the off-site plan will be likely to rest either with the works management or with the local authority. Schematic representation of various organization involved during emergency is shown below in **Fig.7.3**.

Either way, the plan must identify an emergency coordinating officer who would take overall command of the off-site activities. Consideration of evacuation may include the following factors:

- In the case of a major fire but without explosion risk (e.g. an oil storage tank), only houses close to the fire are likely to need evacuation
- If fire is escalating very fast it is necessary to evacuate people nearby as soon as possible
- In acute emergency people are advised to stay indoors and shield themselves from the fire.



Fig 7.3: Various Organizations Involved During Emergency

Organization

Organizational details of command structure, warning systems, implementation procedures, emergency control centres include name and appointments of incident controller, site main controller, their deputies and other key personnel involved during emergency.

Communications

Identification of personnel involved, communication centre, call signs, network, list of telephone numbers.

Special Emergency Equipment

Details of availability and location of heavy lifting gear, specified fire-fighting equipment, fireboats etc.

Voluntary Organizations

Details of Voluntary organizations, telephone numbers nearby of hospitals, Emergency helpline, resources etc are to be available with chief authorities.

Non-governmental Organizations (NGO)

NGO's could provide a valuable source of expertise and information to support emergency response efforts.

- Evacuation of personnel from the affected area
- Arrangements at rallying posts and parking yards
- Rehabilitation of evacuated persons

Chemical information

Details of the hazardous substances (MSDS information) and a summary of the risks associated with them will be made available at respective site.

Meteorological information

There is to be arrangements for obtaining details of weather conditions prevailing at before the time of accident and weather forecasts updates.

Humanitarian Arrangements

Transport, evacuation centres, emergency feeding, treatment of injured, first aid, ambulances, temporary mortuaries.

Public Information

- Dealing with the media-press office
- Informing relatives, etc.

Assessment

- Collecting information on the causes of the emergency
- Reviewing the efficiency and effectiveness of all aspects of the emergency plan.

Role of local authority

Local Authorities like Panchayat, Sabha, Samity, municipalities can help in combating emergency situation after assessing the impact scenario in rescue phase.

Role of police

The police are to assist in controlling of the accident site, organizing evacuation and removing of any seriously injured people to hospitals.

- Co-ordination with the transport authorities, civil defence and home guards
- Co-ordination with army, navy, air force and state fire services

- Arrange for post mortem of dead bodies
- Establish communication centre with easy contact with ECC

Role of Fire Brigade

The fire brigade shall be organized to put out fires and provide assistance as required during emergency.

Media

- The media is to have ready and continuous access to designated officials with relevant information, as well as to other sources in order to provide essential and accurate information to public throughout the emergency and to avoid commotion and confusion.
- Efforts are made to check the clarity and reliability of information as it becomes available, and before it is communicated to public Public health authorities are consulted when issuing statements to the media concerning health aspects of chemical accidents.
- Members of the media are to facilitate response efforts by providing means for informing the public with credible information about accidents involving hazardous substances.

Role of health care authorities

- Hospitals and doctors shall be ready to treat all type of injuries to causalities during emergency.
- Co-ordinate the activities of Primary Health Centers and Municipal Dispensaries to ensure required quantities of drugs and equipment
- Securing assistance of medical and paramedical personnel from nearby hospitals/institutions
- Temporary mortuary and identification of dead bodies

7.12 CONCLUSION

As discussed in above sections, adequate risk Control measures for process needs to be considered for to say that the proposed expansion or new proposed Project Activity is not likely to cause major significant risk to onsite, offsite & environment. Suitable Mitigation Measures will be taken by M/s Eloquent Steel Pvt Ltd to ensure complete workplace safety. In the event of disaster onsite, offsite and all the emergency planning procedures will be followed so as to minimize the impact on working personnel, plant surrounding and environment.

CHAPTER - 8
PROJECT BENEFITS

8.1 INTRODUCTION

The development of industrial projects plays a key role in the economic growth of any country. Steel making is traditionally considered as the back bone of manufacturing industry. It is a major input to the sectors which support economic growth of the nation, such as, Automobile, Industrial Machinery, Power, Construction & Mining Equipment, Railways and General Engineering. Demand and production have been growing at a healthy rate for past two years and forecast for the next ten years is very bright. The global report also states that the industry has been increasingly focusing on enhancing long product production efficiency. 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

Expansion of the plant shall provide an opportunity for direct employment for additional 400 persons with a total direct employment of 800 persons and total indirect employment of approximate 1100 persons.

8.2.1 Direct Employment

Employment scenario of the study area is largely dependent on the Industries of the area and less on agriculture. 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 800. Both skilled & un-skilled workers will be employed by the company. Direct employment is more than 400 persons in the existing facility. Under the expansion, direct employment of another 400 persons is expected. These persons will be on Company payroll. Others will be arranged through contractors. 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, the owners of both plants have caused generation of income and employment opportunities the ancillaries and service unit which came in the vicinity of the plant, specially, 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. Indirect employment due

to this proposed plant will be around 1100-1200 in supply of raw material, disposal or sale of finished goods, handling of raw material etc.

Employment potential of the area may be attributed to the existing plant and other industries in the vicinity. As the expansion will takes 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 effect indicates 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. Major maintenance and annual overall will be contracted out to the manufactures or reputed agencies. Odd jobs, plant cleaning, hiring of vehicles, road and maintenance, plant security, gardening/green belt development etc. will be locally contracted out.

8.3 IMPROVEMENT IN INFRASTRUCTURE

M/s ESPL 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 the proposed project.

b) Market: Need of the long steel products are in Industrial Machinery, Power, Construction & Mining Equipment, Railways and General Engineering.

c) Infrastructure: Creation of community assets (infrastructure) like Installation/ Repair of hand Pumps/ Bore wells, Gram Panchayat dug well de-siltation and deepening, as a part of corporate social responsibility.

d) Increasing other business opportunities for local people- There will be scope of hiring vehicle like tractors & trolleys, JCB, excavators during construction phase of the project and trucks / trailers during operation phase.

8.4. EDUCATION

The local peoples' 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 M/s ESPL. 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 proposed expansion. The project will have positive impact on the level of education of the people.

8.5 DETAILS OF SOCIAL DEVELOPMENTAL ACTIVITIES BY M/s ESPL IN STUDY AREA

8.5.1 Activities done by M/s ESPL under CSR during the years 2020 to 2022

Company is responsible for carrying out social activities and encourages a positive impact on the stakeholders. Plant authorities have provided support for local schools and local groups, for education, health care, food, etc. in the recent past and will continue to do so in future under its Corporate Social Responsibility.

- Circulation of Study Materials
- Distribution of Hand Sanitizer
- Masks to the workers and their kids & families
- Cloth Distribution to villagers
- Distribution of jackets to boatmen of Maithon dam
- Distribution of Tiffin's to students
- Health Checkup and Eye Checkup camp














TIFFIN DISTRIBUTION AT KALIPATHAR MOTHER TERESA CHARITY TRUST





TIFFIN DISTRIBUTION AT KALIPATHAR HINDI PRIMARY SCHOOL





HEALTH CHECK-UP CAMP FOR THE EMPLOYEES AT ESPL







8.5.2 Action Plan with Time Frame and Budget for Commitments to Address the Issues Raised During Public Hearing

Activities will be carried M/s ESPL to meet commitments made to address issues raised during public hearing of the proposed expansion project. Detailed action plan with budget shall be prepared to implement the activities.

Activities to be carried out for Addressing Public Hearing Issues

- Establishment of Mechanical Tool training center at Eloquent Steel Pvt Ltd. at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal
- Renovation of Primary Schools by Development of Classrooms, Development of Playground, Providing Sports Material, Computer and White Board, Library Materials, Study Material, Offering Scholarship to the meritorious student, Water Purification system and Construction of Separate Toilets for Boys and Girls.
- Procurement of 2 no. of water tanker for sprinkle water on the Kalyaneshwari Dendua road, which is being used for transportation of materials during dry weather.
- Ambulance with life supporting facilities i.e. Oxygen supply unit with necessary accessories and Nebulizer along with stretchers for the patient will be provided for villagers of Dendua, Nakrajoria
- Company will be doing avenue plantation in vacant area available in the govt. schools, panchayat Office, govt. hospitals, community centers, etc. under social forestry and Plantation of trees along the Kalyaneshwari Dendua road covering stretch of 5.34kms
- Development Activities such as Road maintenance shall be done at Nakrajoria village of Dendua Village Panchayat, Installation of 5 Hand pumps at different location Nakrajoria village under Dendua village panchayat., Roadside and street drain shall be made for sanitation in the village Nakrajoria of Dendua Village Panchayat, Installation of 20 Solar street lights in Nakrajoria village of Dendua village panchayat. And Renovation/beautification of village pond along with

making bathing ghat at Nakrajoria Village and in Dendua Village panchayat area to facilitate natural ground water recharge.

Estimated expenditure for implementation of the proposed action plan will be **Rs 180.0 lakhs.** Detailed plan for implementation of the above schemes (along with time schedule and budget) is given in ***Chapter-7*** of the EIA Report.

8.6. OTHER TANGIBLE BENEFITS

Increased Availability of Steel

The proposed expansion cum modernization programme will increase the availability of domestically produced high quality steel for Indian consumers.

Increase Economic Growth

Direct and indirect employment will give a boost to the local economy. It is expected that a significant proportion of the money earned by the additionally employed people will be spent locally which will boost the local economy.

Peripheral development and creation of social capital

ESPL will undertake peripheral development as part of company's CSR programme, which will benefit local villagers.

Improvement of Infrastructure and Civic Amenities

The project will stimulate development of housing facilities, sanitation, drinking water supply and civic amenities for workers and also benefit local villagers.

Revenue to the Exchequer

The expanded project will generate substantial revenue for the state and central exchequers both directly as well as from downstream industries.

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.

The proposed 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 encourage industrial growth of this sector specifically in formulation units in the region.

CHAPTER - 9
ENVIRONMENTAL COST BENEFIT ANALYSIS

9.1 ENVIRONMENTAL COST BENEFIT ANALYSIS

As per EIA Notification dated 14th September, 2006 as amended from time to time; the chapter on "Environmental Cost Benefit Analysis" is applicable only, if the same is recommended at the Scoping Stage.

As per the ToR issued by MoEF&CC for the project, vide F.No. J-11011/188/2011-IA-II(I) dated 11/11/2020, the Environmental Cost Benefit Analysis is not required.

CHAPTER 10
EMP IMPLEMENTATION PROGRAM

10.1 INTRODUCTION

Any industrial development is associated with certain positive impacts as well as some negative impacts on the environment. However, the negative or adverse impacts cannot possibly rule out scientific development. At the same time adverse impacts cannot be neglected. An Environment Management Plan shall be formulated for mitigation of the adverse impacts and is based on the present environmental conditions and the environmental impact appraisal. This plan helps in formulation, implementation and monitoring of the environmental parameters during and after commissioning of the project. The Environmental Management Plan describes in brief, the management plan for proper and adequate implementation of treatment and control system for air and water and noise pollution and for maintaining the environment. It also includes the development of green belts in and around the plant, proper safety of the workers, noise control, fire protection systems and measures.

10.2 PURPOSE OF ENVIRONMENTAL MANAGEMENT PLAN

The 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. The EMP provides a delivery mechanism to address potential adverse impacts and to introduce standards of good practice to be adopted for all project works. 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, the following information is presented:

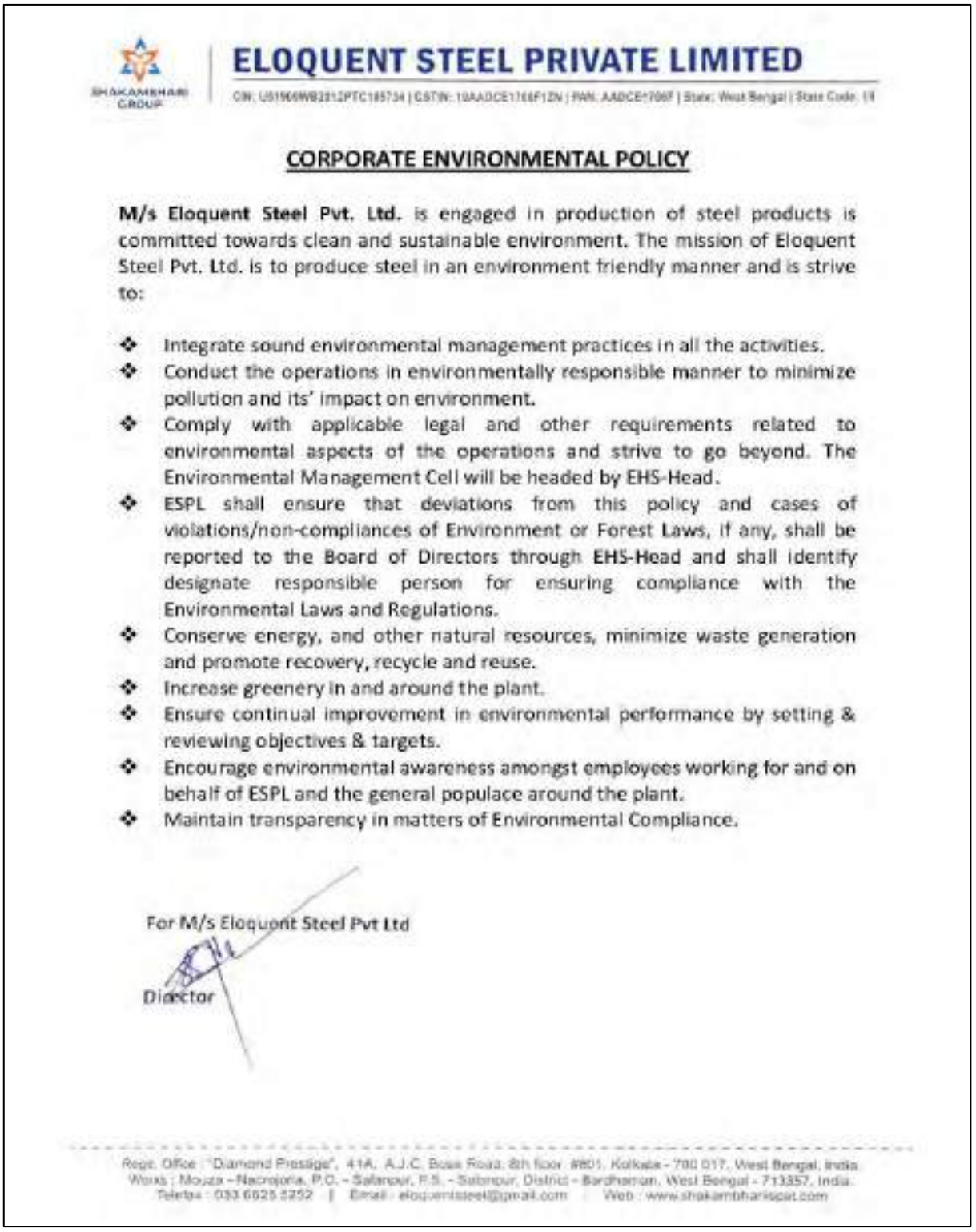
- To treat and dispose-off all the pollutants *viz.* liquid, gaseous and solid waste so as to meet statutory requirements (Relevant Pollution Control Acts) with appropriate technology.
- To support and implement work to achieve environmental standards and to improve the methods of environmental management.
- 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.

10.3 ENVIRONMENT MANAGEMENT POLICY & ENVIRONMENT COMMITTEE

The 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 negative impact 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.

To achieve this objective, the Company has a well-defined policy for management of Environment. Environment Policy is issued by Director of M/s Eloquent Steel Pvt Ltd. and is provided below and in **Annexure-10.**



ELOQUENT STEEL PRIVATE LIMITED

CIN: U51909WB2012PTC185734 | GSTIN: 19AADCE1768F1ZN | PAN: AADCE1768F | State: West Bengal | State Code: 19

CORPORATE ENVIRONMENTAL POLICY

M/s Eloquent Steel Pvt. Ltd. is engaged in production of steel products is committed towards clean and sustainable environment. The mission of Eloquent Steel Pvt. Ltd. is to produce steel in an environment friendly manner and is strive to:

- Integrate sound environmental management practices in all the activities.
- Conduct the operations in environmentally responsible manner to minimize pollution and its' impact on environment.
- Comply with applicable legal and other requirements related to environmental aspects of the operations and strive to go beyond. The Environmental Management Cell will be headed by EHS-Head.
- ESPL shall ensure that deviations from this policy and cases of violations/non-compliances of Environment or Forest Laws, if any, shall be reported to the Board of Directors through EHS-Head and shall identify designate responsible person for ensuring compliance with the Environmental Laws and Regulations.
- Conserve energy, and other natural resources, minimize waste generation and promote recovery, recycle and reuse.
- Increase greenery in and around the plant.
- Ensure continual improvement in environmental performance by setting & reviewing objectives & targets.
- Encourage environmental awareness amongst employees working for and on behalf of ESPL and the general populace around the plant.
- Maintain transparency in matters of Environmental Compliance.

For M/s Eloquent Steel Pvt Ltd

Director

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Works : Mouza – Nacrojoria, P.O. – Salanpur, P.S. – Salanpur, District – Bardhaman, West Bengal - 713357, India.
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Fig. 10.1: Environment Policy of Eloquent Steel Pvt. Ltd.

10.3.1 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.
- 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.
- Comply fully with all relevant legal requirements, codes of practice and regulations.
- Reduce, recycle and reuse natural resources.
- Minimize waste and increase recycling within the framework of waste management procedures.
- Identify and manage environmental risks and hazards.
- 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 and water pollution control laws.
- To handle hazardous wastes as per the Hazardous Waste Hazardous & Other Wastes 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.

10.3.2 Hierarchical system for reporting of Non-conformance / Violation/ Deviations from the Environment Policy

The system of reporting of Non-conformances /violation of any Environmental Law/Policy will be as per the SOP defined under the Environment Management System. As per the

SOP, any non-conformances/violation of Environmental Law/Policy, either identified during Internal Audits or reported by any authority or received through any source, will be discussed during the Review Meetings with Board of Directors. Under the system designated persons at all hierarchy level have been identified for ensuring adherence to the policy and compliance with the environmental laws and regulations. Also, system has been developed to take adequate measures.

Non-conformances/violation, if any shall also be put at the website of the Company.

M/s ESPL has formed reporting system of any non-conformance / violation to the Board of directors of the Company, as follows:

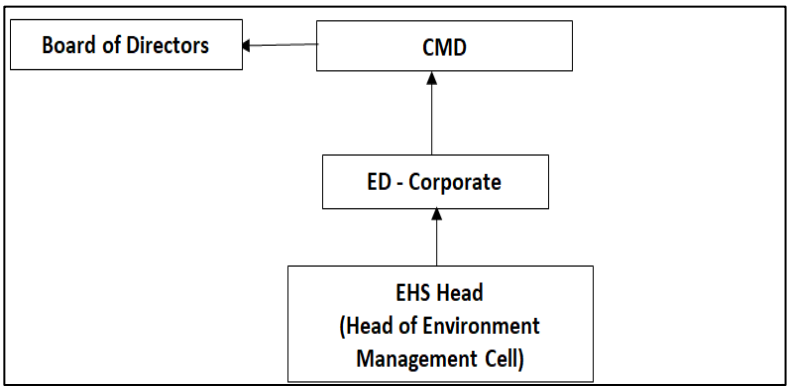


Fig 10.2: M/s ESPL reporting system of any non-conformance / violation

10.3.3 SOP in case of any Violation is observed

- The cases of violations /deviation /non-compliances / major accident, Head of Environment Department will do immediate reporting to the Executive Director-Corporate, Directors and Chairman cum Managing Director of the Company.
- It shall be reported to the Board of Directors by EHS-Head (head of EMC) through ED and shall identify designate responsible person for ensuring compliance with the Environmental Laws and Regulations.
- Conduct reviews of operations to monitor environmental performance.
- Comply with all relevant environmental laws and regulations to minimize risks to health, safety and the environment.

10.3.4 Hierarchical system or administrative order of the company to deal with the environmental issues

M/s ESPL is responsible for implementation of all the mitigation and management measures. A separate department "Environment Management Cell" (EMC) exists to look after all environmental related matters of the plant.

All the Environmental issues pertaining to the organization are immediately highlighted by the Manager-EHS of the plant to the General Manager who in turn shares the details along with the necessary actions to be taken to the Environment Engineer.

Executive Director Corporate will conduct reviews of our operations to monitor

environmental performance to comply with all relevant environmental laws and regulations to minimize risks to health, safety and the environment. Work with local government, regulatory authorities and communities to ensure safe handling, use and disposal of all materials, resources and products, if required.

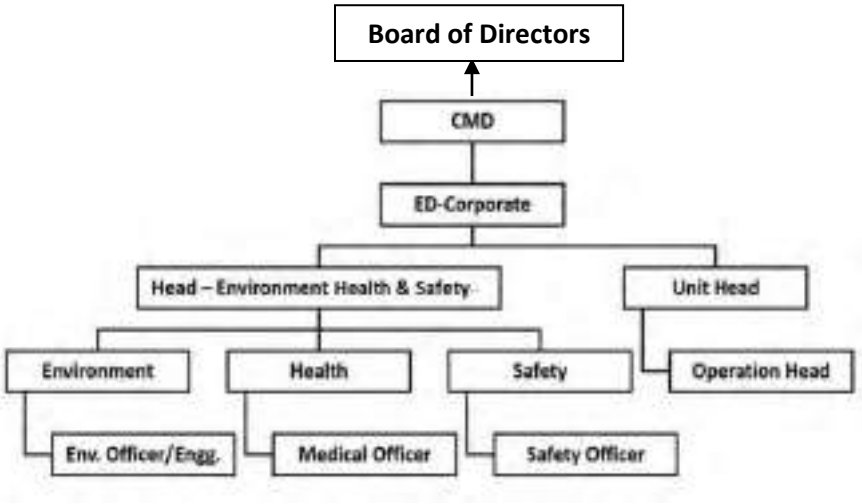


Fig 10.3: M/s ESPL E-Cell organization structure

10.4 IMPLEMENTATION OF ENVIRONMENT MANAGEMENT PLAN

M/s ESPL is responsible for implementation of all the mitigation measures and Environmental Management plan as suggested in chapter-4 and this chapter. Already discussed a separate department "Environmental Management Cell" (EMC) headed by EHS Head exists to look after all environmental related matters of the plant. Roles & responsibilities of EMC have been discussed in detailed in ***Chapter-6*****.**

The mitigation measures suggested in the ***Chapter-4*** should be implemented so as to reduce the impact on environment due to the operations of the proposed project. In order to facilitate easy implementation, mitigation measures are phased as per the priority implementation. The Environment Management Plan with budget provision is given below.

10.5 BUDGETARY PROVISION FOR EMP IMPLEMENTATION

Table 10.1 Cost Breakup for Environmental Management Plan during Construction

Components	Items	Capital Cost (Lakhs of Rs.)	Recurring Cost (Lakhs of Rs./Annum)
Air	Water Sprinklers	4	1
	Tarpaulin Covers for vehicles for use during transportation of construction materials		
	Shed for cement storage		
Water	Sanitary Facilities - construction Workers	1	0.2

Components	Items	Capital Cost (Lakhs of Rs.)	Recurring Cost (Lakhs of Rs./Annum)
	Oil & Grease Traps		
Soil	Shed for storage of top soils	5	1
	Cementing of Floor for storage of Paint & Diesel		
Noise	Ear plugs and muffs for Construction Workers	0.4	0.1
OH&S	PPE, first aid facility, drinking water facility.	2	0.2
Total		**12.4**	**2.5**

The environmental monitoring system will be followed as proposed in ***Chapter 6*** and statutory requirements. Monitoring of efficiency of the pollution control equipment and calibration of online monitoring system will be taken up as per norms.

Table 10.2: Cost Breakup for Environmental Management Plan during Operation

Sl. No.	Environmental Protection Measures		Capital Cost Rs. In lakhs	Recurring Cost Rs. In Lakhs / Yr.
1.	***Air Pollution Control Measures***			
	a.	Cyclone cum spark arrester + Pulsejet type Bag Filter with proposed 2x25T Induction Furnace	30.0	1.5
	b.	Pulse Jet Type Bag Filter (1 no. each) in Briquetting Plant and Sinter Plant	40.0	2.5
	c	Augmentation of existing 6 no. of Bag Filters	13.50	9.0
	d.	Vehicle mounted (1 no.) Water Sprinklers	10.0	0.5
	e.	Fixed Water Sprinklers along the plant boundary	6.50	0.50
	Sub Total (A)		**100.0**	**14.0**
2.	***Water Pollution Control Measures and Rainwater Harvesting***			
	a.	Maintenance of existing Pond and construction of three (3) Concrete tanks for Rainwater Storage	15.0	1.0
	b.	Neutralization Pit – 1 no. (new)	10.0	1.5
	c.	ETP of 100 KLD Capactiy for Rolling Mill	35.0	1.5
	d.	STP of 25KLD capacity	15.0	1.0
	Sub Total (B)		**75.0**	**5.0**
3.	***Noise Pollution Control Measures***			
	a.	Acoustic Enclosure or Separate housing for DG Set and Compressor	10.0	1.5
	Sub Total (C)		**10.0**	**1.5**

Sl. No.	Environmental Protection Measures		Capital Cost Rs. In lakhs	Recurring Cost Rs. In Lakhs / Yr.
4.	***Storage and Solid Waste Management***			
	a.	RCC flooring for storage raw materials and storage of Bag filter Dust, to avoid leaching	5.0	0.5
	b.	Concrete platform with bund wall and oil collection system for storage of HSD, and other Oil Drums and Used Oil	2.0	0.5
	Sub Total (D)		**7.0**	**1.0**
5.	***Environment Monitoring Program***			
	a.	Installation of 1 no. of CAAQMS	80.0	5.00
	b.	Cost of monitoring of environmental parameters for Ambient Air, Fugitive Emission, Work-Zone Emissions, Stack emissions, Effluent, Ground water, Ambient & Work Zone Noise Levels monitoring, TCLP Test	-	5.34
	c.	Monitoring of Health of Workers	-	2.00
	d.	Plantation (Monitoring)	-	1.50
	e.	Socio-economic (Regular interaction with Stakeholders)	-	0.75
	f.	Monitoring of Performance of Pollution Control Equipment	-	1.0
	Sub Total (E)		**80.0**	**15.59**
6.	***Greenbelt Development and Landscaping***		**2.40**	**2.20**
7.	***Occupational Health & Safety***		**17.50**	**10.00**
	TOTAL		**291.9**	**49.29**
8.	***Activities to address PH issues***			
	a.	Establishment of Mechanical Tool training center at Eloquent Steel Pvt Ltd. at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal	50.0	--
	b.	Renovation of Primary Schools by Development of Classrooms, Development of Playground, Providing Sports Material, Computer and White Board, Library Materials, Study Material, Offering Scholarship to the meritorious student, Water Purification system and Construction of Separate Toilets for Boys and Girls.	30.0	--

Sl. No.	Environmental Protection Measures		Capital Cost Rs. In lakhs	Recurring Cost Rs. In Lakhs / Yr.
	c.	Procurement of 2 no. of water tanker for sprinkle water on the Kalyaneshwari Dendua road, which is being used for transportation of materials during dry weather.	24.0	--
	d.	Ambulance with life supporting facilities i.e. Oxygen supply unit with necessary accessories and Nebulizer along with stretchers for the patient will be provided for villagers of Dendua, Nakrajoria	12.0	--
	e.	Company will be doing avenue plantation in vacant area available in the govt. schools, panchayat Office, govt. hospitals, community centers, etc. under social forestry aAnd Plantation of trees along the Kalyaneshwari Dendua road covering stretch of 5.34kms	28.0	--
	f	Development Activities such as Road maintenance shall be done at Nakrajoria village of Dendua Village Panchayat, Installation of 5 Hand pumps at different location Nakrajoria village under Dendua village panchayat., Roadside and street drain shall be made for sanitation in the village Nakrajoria of Dendua Village Panchayat, Installation of 20 Solar street lights in Nakrajoria village of Dendua village panchayat. And Renovation/beautification of village pond along with making bathing ghat at Nakrajoria Village and in Dendua Village panchayat area to facilitate natural ground water recharge.	36.0	
	Total		**180.0**	**--**
	TOTAL EMP BUDGET (including budget for Activities to address PH issues)		**471.9**	**49.29**

CHAPTER 11

SUMMARY AND CONCLUSIONS

11.1 BACKGROUND

M/s Eloquent Steel Pvt. Ltd. **(ESPL)** is an existing Steel Plant at village: Nakrajoria, P.O.-Salanpur, Dist: Paschim Burdwan, West Bengal for production of 106,004 TPA of MS Ingots through 4x7 Ton Induction Furnace and production of either 59,052 TPA of Ferro-manganese or 43,236 TPA Silico-manganese or 22,680 TPA Ferro-Silicon or 59,052 TPA Ferro-Chrome or 33,480 Fe-Si-Cr Or in combination of any through 3x7.5 MVA & 1x5.5 MVA Submerged Arc Furnace. The existing plant area is 9.089 Ha.

ESPL has acquired two adjacently located Steel Plants of M/s Hira Concast Ltd. and M/s Impex Steel Ltd., with common boundary wall in the village: Nakrajoria, P.O. Salanpur, Dist: Paschim Burdwan, West Bengal. Possession of M/s Hira Concast Ltd was made through Auction from Official Liquidator of Hon'ble High Court, Calcutta on 01.09.2017. Possession of M/s Impex Steel Ltd was made through bidding in Auction Notice, issued by Stressed Asset Management Branch of State Bank of India, Kolkata. The unit was not in operation for about three years and was put up for auction by the authorities.

M/s Hira Concast Ltd. has initially installed 2x7 Ton Induction Furnaces for production of 53,000 TPA MS Ingots. Environmental Clearance (EC) for expansion of M/s Hira Concast Ltd. was granted by Ministry of Environment, Forest and Climate Change (MoEF&CC) vide F.No J-11011/533/2008-IA.II(I) dated on 11.12.2008 for production of 15,225 TPA Ferro Manganese & 11,455 TPA Silico Manganese through 1x7.5MVA Submerged Arc Furnace (SAF). EC for further expansion of M/s Hira Concast Ltd. was granted by MoEF&CC vide F.No. J-11011/49/2010-IA.II(I) dated on 03.09.2012 for total production of 27,555 TPA Ferro Manganese and 20,735 TPA Silico Manganese by installation of additional 1x5.5 MVA SAF.

M/s Impex Steel Limited was also established for the production of 53,004 TPA MS Ingots through 2x7 Ton Induction Furnaces after obtaining NOC from WBPCB on 24.04.2006. Company obtained EC for expansion from MoEF&CC for the production of 17,076 Ferro-manganese and 11,394 TPA Silico Manganese through SAF of capacity 2x7.5MVA vide F.No: J-11011/183/2008-IA.II(I) on 28.07.2008. Later on, the company further obtained EC from MoEF&CC for production of 31,500 TPA Ferro-manganese or 22,500 TPA Silico-manganese or 9,000 TPA Ferro-silicon by installation of additional 2x7.5 MVA SAFs and 300 TPD Sinter Plant for production of 90,000 TPA Mn Ore sinter vide F.No.: J-11011/188/2011-IA.II(I) on 20.09.2012. However, these additional facilities are not installed till date in the plant premises. West Bengal Pollution Control Board (WBPCB) awarded Consent to Establish (CTE) and Consent to Operate (CTO) time to time.

Further, M/s ESPL. is granted permission by WBPCB vide memo no. 124-2N-29/2019(E) – PT dated 05.03.2020 for change in product mix within overall production capacity of

Ferro-Alloy plant without increase in pollution load as per the provision of MoEF&CC Notification No. S.O.3518(E) dated 23.11.2016 for production of:

- Ferro-Manganese - 59,052 TPA OR
- Silico-Manganese - 43,236 TPA OR
- Ferro-Silicon - 22,680 TPA OR
- Ferro-chrome - 59,052 TPA OR
- Ferro-Silicon-chrome - 33480 TPA OR in combination of any.

CTO is issued by WBPCB vide memo no. 1534-WPBA/ Red (Bwn)/ Cont (591)/08 dated 28.06.18 to the M/s ESPL for production of 53,000 TPA MS Ingot, 27,552 TPA Fe-Mn and 20,736 TPA Si-Mn, is valid till 30.04.2023 for the units which were formally under M/s Hira Concast Limited. Another CTO is issued by WBPCB vide memo no. 1530-WPBA/Red(Bwn)/Cont(581)/07 dated 28.06.18 to the M/s ESPL for production of 53,004 TPA MS Ingot, 31,500 TPA Fe-Mn and 22,500 TPA Si-Mn, is valid till 30.06.2023 for the units which were formally under M/s Impex Steel Ltd.

MoEF&CC on 15th October, 2020 has issued transfer of Environmental Clearances from M/s Hira Concast Ltd to M/s Eloquent Steel Pvt Ltd vide F.No. J-11011/49/2010-IA.II(I) and from M/s Impex Steel Ltd to M/s Eloquent Steel Pvt Ltd vide F.No. 11011/188/2011-IA.II(I) respectively.

11.1.1 The Project

M/s ESPL is now proposed for Amalgamation of above Environment Clearances transferred in the name of Eloquent Steel Pvt. Ltd. and seeking environment clearance for the proposed modification cum expansion project for production of 336,000 TPA Billets through modification of existing 4x7 Ton Induction Furnace to 4x8 Ton, installation of new 2x8 Ton Induction Furnace with 1x8Ton LRF & 2x4/7m CCM and 2x25Ton Induction Furnaces with 1x25Ton LRF & 3x6/11m CCM and production of 210,000 TPA MS Rolled products (Long products- TMT Bar, MS Round & Wire Rod) by installation of 600TPD Rolling Mill along with 1x25TPH Reheating Furnace. Also, 1x25TPH Briquette plant for production of 150,000TPA Chrome Ore Briquettes, 1x300TPD Sinter Plant for production of 108,000TPA Iron Ore Sinter are also proposed under the proposed expansion with addition of "Pig Iron' as product from the existing 3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces with maximum production capacity of 76,400 TPA within the existing plant area of 9.089 Ha (22.46 acres).

The proposed project activity is listed at activity 3(a) Metallurgical industries (Ferrous & Non- ferrous) under Schedule of EIA Notification, 2006, issued by Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India and falls under Category 'A'.

Standard ToR for the project was granted by MoEF&CC on 11.11.2020 vide F.No. J-11011/188/2011-IA.II(I).

Table 11.1: Existing and Proposed Production Facilities

Plant	Existing installed Units and Capacity		Proposed Units		Total after Expansion	
	Unit	Capacity in TPA	Unit	Capacity in TPA	Unit	Capacity in TPA
Steel Melting Shop -1	4x7 Ton Induction Furnace	106,004 MS Ingots	Modification of existing 4x7 Ton IF to 4x8 Ton + Installation of 2x8 Ton IF with LRF (1x8T) and 2x4/7m CCM	164,500	6x8 Ton Induction Furnace with 1x8 Ton LRF and 2x4/7 m CCM	336,000 Billets
Steel Melting Shop-2	--	--	Installation of new 2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	171,500	2x25 Ton IF with 1x25 Ton LRF and 3x6/11m CCM	
Rolling Mill	--	--	600 TPD	2,10,000 Rolled Products (TMT Bar, MS Round & Wire Rod)	600TPD	210,000 Rolled Products (TMT Bar, MS Round & Wire Rod)
Reheating Furnace	--	--	1 x 25 TPH	--	1 x 25 TPH	--
Ferro-Alloy Plant with metal recovery Plant	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or	Proposed for addition of Pig Iron production without adding any additional facilities	Pig Iron-76400	3x7.5 MVA + 1x5.5 MVA SAF with metal recovery Plant	Fe-Mn-59,052, or
		Si. Mn-43,236, or				Si. Mn-43,236, or
		Fe Si – 22680, or				Fe Si – 22,680, or
		High Carbon Ferro Chrome – 59052, or				High Carbon Ferro Chrome – 59,052, or
		Ferro Silico Chrome – 33480				Ferro Silico Chrome – 33,480, or
		Or in combination of any				Pig Iron-76,400, or in combination of any
Briquette Plant	--	--	1x 25 TPH	150,000	1x 25 TPH	150,000
Sinter Plant	--	--	1x300 TPD	108,000	1x300 TPD	108,000

11.2 PROJECT DESCRIPTION

11.2.1 Location Details

The project is located at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal on area of 9.089Ha between latitude ranging from 23°46'28.52"N to 23°46'43.04"N and longitude ranging from 86°51'33.15"E to 86°51'49.34"E. The entire project will be installed in vacant land of the existing plant. Project does not envisage additional land for the project. No forest land is involved. As per DFO Memo No. 5596/28-1 dated 02.03.2022, there are no national parks/ Wildlife Sanctuary/ Reserve forests within 10km radius. Nearest habitation is Dendua Village at 30meters distance from project site. Interstate border of Jharkhand and West Bengal lies at the distance of 3.52kms. River Damodar is flowing at a distance of 3.75km in West direction and Maithon dam is located at a distance of 4.86 km in NW direction of project site. Project is having good connectivity through SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi Kolkata Highway) is at 0.91km & 4.64km road distance respectively connected to project site by Kalyaneshwari to Dendua Road. SH-5 is also located at 4.67km road distance. Also, Salanpur Railway station is 3.2kms from project site.

11.2.2 Manufacturing Process

The existing Plant is for production of 106,004TPA of MS Ingots through 4x7Ton Induction Furnace and production of either 59,052TPA of Ferro-manganese (Fe-Mn) or 43,236TPA Silico-manganese (Si-Mn) or 22,680TPA Ferro-Silicon (Fe-Si) or 59,052TPA Ferro-Chrome (Fe-Cr) or 33,480TPA Fe-Si-Cr Or in combination of any through installed 3x7.5MVA & 1x5.5MVA Submerged Arc Furnaces (SAF).

The present proposal is for;

Steel Melting Shop-1: Modification of existing 4x7 Tons Induction Furnaces to 4x8 Tons Furnaces and Installation of new 2x8 Ton Induction Furnace with 2x4/7 Billet caster and 1x8 Ton Ladle Refining Furnace for 164,500 Billet Production.

Steel Melting Shop-2: Installation of additional 2x25Ton Induction Furnaces with 1x25Ton Ladle Refining Furnace and 3x6/11m Billet caster for production of 171,500 TPA Billets.

Total Billet production from SMS-1 & SMS-2 will be 336,000 TPA.

Submerged Arc Furnace: No additional Submerged Arc Furnace shall be installed under the expansion. However, in addition to the production of 59,052 TPA of Fe-Mn Or 43,236 TPA Si-Mn Or 22,680 Fe-Si Or 59,052 TPA High Carbon Ferro Chrome Or 33,480 TPA Ferro Silico Chrome production or in combination of any, it has been proposed to produce 76,400 TPA Pig Iron from the existing 3x7.5MVA+1x5.5MVA SAFs. Ferro-alloy division has been provided with Metal Recovery plant from recovery of metals from the slag.

Rolling Mill: Installation of 600 TPD Rolling Mill for production of 210,000 TPA Rolled products (TMT Bar), MS Round & Wire Rod). It has been proposed to directly rolled the hot billets from CCM (Continuous Casting M/cs). However, 1x25 TPH Reheating furnace has been proposed to reheat the billets which couldn't be rolled directly.

Briquette Plant: Additionally, 1x25TPD Briquette Plant for production of 150,000 TPA briquettes from Ferro-Chrome fines shall be installed. Briquettes shall be used for production of Ferro-chrome.

Sinter Plant: 1x300 TPD Sinter Plant shall be installed for production of 108,000 TPA Sinter from iron ore fines, to be used in SAFs for production of Pig iron.

11.2.3 Project Requirement

11.2.3.1 Raw Material Requirement

The Raw materials and products can easily be transported to the proposed site as it is having a good connectivity through the National Highway and Eastern Railway line. SH-15 (Asansol-Chittranjan Road) and NH-19 (Delhi-Kolkata Highway) is at 0.91km & 4.64km road distance respectively connected to project site by Kalyaneshwari to Dendua Road. Also, SH-5 is at 4.67km road distance from project site. Railway connectivity is present through Salanpur Railway Station present at a distance of 3.2kms. Raw material requirement of Ferro division is arrived on maximum basis.

Storage of Raw Material: The Raw material that is used in the plant will be stored in a Closed Storage Area and all the storage area will provided with impervious flooring and shall be equipped with water spray system for dust suppression. The Storage area shall also be provided with garland drains and catch pit to trap off the materials.

List of raw material required is presented below:

Table 11.2: Raw Material Requirement after the Proposed Expansion

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
A	**Ferro Division**						
A-01	Manganese ore	1,44,914	1,44,914	World Metals and Alloys, UAE Kolkata Port to plant	322 km	Ship and By Road	Invoice
A-02	Coke	33,955	33,955	Vivan Overseas, Assam	905 km	By Road	Purchase Order
A-03	Coke Breeze	-	8,640	Jai Maa Gayatri Enterprises, Dhanbad	58.6km	By Road	Purchase Order
A-04	Steam coal	-	16,810	Open Market	20km	By Road	Agreement will done with the source after grant of EC
A-05	Charcoal	6,700	6,700	G.M Coke Industries, Assam	890km	By Road	Agreement will done with the source after grant of EC
A-06	Quartzite	40,030	42,190	Durga Enterprises	267km	By Road	Purchase Order
A-07	Dolomite	5,188	15,988	Ma Bhuwneswari Traders, WB	552	By Road	Purchase Order
A-08	Limestone	-	28296	Odisha	--	Rail	Agreement will done with the source after grant of EC
A-09	Electrode paste	1,675	1,675	Hindalco Industries Ltd., Karnataka	2052km	Road	Purchase Order
A-10	Mill Scales	8,618	21,545	In-house	-	-	-
A-11	Chrome ore	19,840	19,840	Odisha	700 km	Rail/Road	Agreement will done

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
							with the source after grant of EC
A-12	Magnesite	2,953	2,953	Imported	--	Rail/Road	Agreement will done with the source after grant of EC
A-13	Iron ore Fines	-	70,200	Bravo Sponge Iron Pvt Ltd., Purulia	57km	Road	Purchase Order
A-14	Ferro Chrome Chips	18,748	18,748	Imported/ Odisha	/450 km	Ship/Road	Agreement will done with the source after grant of EC
A-15	Chrome Ore Fines	--	1,62,360	Imported/ Odisha	/450 km	Ship/Road	Agreement will be done once the source is finalized after EC
A-16	Fe Mn Slag	12,971	12,971	In-house	--	--	
A-17	Hydrated Lime	-	4,950	Shree Ram Chemical Works, WB	10km	Road	Agreement will done with the source after grant of EC
A-18	Molasses	-	7,920	Uttam Sugar Mills Limited, Uttarakhand	1483km	By Road	Agreement will done with the source after grant of EC
	Sub Total of "A"	**295592**	**620655**				
B	**Steel Division**						
B-01	Sponge iron	94,325	300,125	Shakambhari Ispat & Power Ltd., Purulia, WB	27.3km	Road	Purchase order

Sl. No.	Raw Material	Existing (TPA)	Total after proposed expansion (TPA)	Source	Distance from Source	Mode of Transport	Linkage
B-02	Pig Iron	20,644	65,684	Jai Balaji Industries Ltd..,WB	72km	Road	Purchase order
B-03	Scrap	13,615	43,326	Tata Steel Ltd., Jamshedpur	167 km	Road	Purchase order
B-04	Ferro Alloys	1,294	4,116	In-house	--	Conveyor	-
	Sub Total of "B"	**129,878**	**413,251**				
Total		**425,470**	**10,33,906**				

11.2.3.2 Land Requirement

Total area of the existing plant is 9.089 Ha. (22.46 Acres). The proposed expansion will be carried within the existing plant area. Hence no additional land acquisition is envisaged for the expansion. Breakup of land use after proposed expansion is as follows:

Table 11.3: Land Use Breakup details of proposed site

S.No	Proposed Land Use	Existing (Ha.)	Proposed (Ha.)	Total (Ha.)
1.	Plant Area	2.047	2.246	4.293
3.	Electrical Sub Station	0.101	0.101	0.202
4.	RWH Pond, Waste Water Storage Tank, Reservoir Pond	0.401	-	0.401
5.	Parking and Internal Road	1.02	0.051	1.071
6.	Office, Store, Temple, Misc. Building	0.12	0.002	0.122
7.	Green Belt Development (33% of Total Area)	2.72	0.28	3.0
Total Land Area Required		**6.409**	**2.68**	**9.089**

11.2.3.3 Power Requirement

Existing power requirement for the operation of units is 30MW and the permission for the same has been obtained from Damodar Valley Corporation (DVC) vide letter dated 30.12.2021. At present power is being provided by DVC through 33KV Sub-station for operation of the plant. Permission for construction clearance for the up-gradation of supply voltage from 33KV to 132KV is also obtained from DVC vide letter dated 28.07.2021. Power requirement after the proposed expansion shall be 64MW and will be met from DVC and permission for the same shall be obtained. 2 nos. of 250 KVA silent type DG set have been installed to provide power to the auxiliaries of plant when DVC power is not available. Another 2x500 KVA will be installed under the expansion.

11.2.3.4 Water Requirement

The total requirement of makeup water for industrial and domestic purposes after the proposed expansion will be 1970 KLD. Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir.

Table 11.4: Water Requirement for the proposed project (m^3/day)

Unit	Make-up water requirement after Expansion (m^3/day)	Recycle Water (m^3/day)
Steel Melting Shop #1	535	0
Steel Melting Shop #2	540	0
Rolling Mill	480	0

Unit	Make-up water requirement after Expansion (m^3/day)	Recycle Water (m^3/day)
Softening Plant	135	0
Ferro Alloy Plant	240	0
Sinter Plant for FA Division	-	10
Dust Suppression	-	52
SMS Slag Cooling	-	50
Ferro-alloys Plant Slag Cooling	-	40
Ferro-alloys Plant – Metal Recovery Plant	-	10
Domestic	40	0
Plantation	-	18
Total Water Requirement	**1970**	**180**

11.2.3.5 Manpower Requirement

The manpower required for expansion project is 400 apart from existing 400 which equals the manpower requirement to 800 after expansion. The estimate covers the top management, middle and junior level executives and other supporting staff and workers. This requirement will be fulfilled from the surrounding villages, thereby improving the socio economic status in the surrounding rural areas. Apart from the direct employment, the industry will also provide indirect employment in many sectors like contract works & transport.

11.2.3.6 Cost Estimate of Project

Project Cost is estimated as Rs. 120 Crs. Cost of the existing plant is Rs. 83.62 Crores. Hence, total approx. cost of the Plant after the proposed expansion will be Rs. 203.62 Crs.

Table 11.5: Cost Breakup

Sl. No.	Unit Name	Cost (Rs. in Crores)
a.	**Existing Plant**	**83.62**
b.	**Proposed Plant**	
1.	2x8T IF with LRF & CCM	12.0
2.	2x25T IF with LRF & CCM	35.0
3.	Rolling Mill	48.0
4.	Briquetting Plant	7.0
5.	Sinter Plant	1.0
6.	132 kV Substation	15.0

Sl. No.	Unit Name	Cost (Rs. in Crores)
7.	Miscellaneous	2.0
	Total Cost of Proposed plant	**120.0**
	TOTAL COST	**203.62**

11.3 BASELINE ENVIRONMENTAL STATUS

The monitoring of environmental parameters has been conducted within the core zone and buffer zone (10 km radial distance) from project site at Village: NakraJoria, P.O.: Salanpur, District: Paschim Burdwan, West Bengal in accordance with the guidelines issued by the Ministry of Environment, Forests and Climate Change, CPCB, and S PCB, during the study period (1st December 2019 to 29th February 2020).

11.3.1 Meteorological Data

The climate of Paschim Burdwan district is tropical. The average annual temperature of the district is 26.3°C. April is the warmest month of the year. The temperature in April averages 30.9°C. The lowest average temperatures in the year occur in January, when it is around 19.4°C. The district receives adequate Rainfall from the Southwest Monsoon which sets in the later half of June and withdraws by the middle of October. The driest month is December, with 2mm of rain. The greatest amount of precipitation occurs in July, with an average of 309mm. Average Annual Rainfall of the district is 1313mm.

11.3.2 Ambient Air Quality Data

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM10 for all the eight (8) Air Quality monitoring stations were found to be 32.2 to 86.7 µg/m^3 respectively, while for PM2.5 it vary between 16.1 to 52.9 µg/m^3. The minimum and maximum concentrations of NO2 were found to be 10.8 to 39.4 µg/m^3respectively. The minimum and maximum concentrations of SO2 were found to be 8.2 to 29.9 µg/m^3 respectively. The minimum and maximum concentrations of CO were found to be 0.36 to 1.09 mg/m^3 respectively. All the values were found to be within prescribed limits of NAAQS.

11.3.3 Ambient Noise Quality Data

Ambient noise levels were measured at 8 (eight) locations around the proposed project site. Minimum and maximum Leq noise levels recorded during the day time were from 45.1dB(A) and 67.5 dB(A) respectively and minimum and maximum Leq level of noise during night time were 34.9dB(A) and 56.2dB(A) respectively. All the values were observed to be within NAAQS w.r.t. Ambient Noise.

11.3.4 Water Quality Data

Analysis results of ground water from sampling locations reveal the following :

Parameter	Unit	Maximum	Minimum	Remark
pH	NA	8.22	7.15	Within acceptable limits
Fluoride	mg/l	0.48	0.22	
Chloride	mg/l	97.42	53.8	
Zinc	mg/l	1.42	0.39	
TDS	mg/l	468.0	342.0	
Hardness	mg/l	250.0	128.0	More than Desirable but less than acceptable limits

Analysis results of surface water for 8 locations reveal the following:

Parameter	Unit	Maximum	Minimum
pH	NA	7.72	7.36
DO	mg/l	6.20	4.99
BOD	mg/l	13.0	6.0
COD	mg/l	41.0	18.0
Total Coliform	MPN/100ml	1750	1200

11.3.5 Soil Quality Data

The analysis results show that soil is neutral in nature as pH value ranges from 6.2 to 6.49 with organic matter 0.42% to 0.64%. The concentration of Nitrogen (198.21 to 240.18 Kg/ha), Phosphorus (9.66 to 20.20 Kg/Ha) and Potassium (119.30 to 183.0 Kg/ha) has been found.

11.3.6 Land use/Land Cover

The proposed study area consisting 35.7% (11536 ha.) of Agriculture land, 14.9% (4829 Ha.) of Builtup Area, 12.2% (3941 Ha.) area as waterbody, 10.8% (3477 Ha.) of open scrub area and 9.1% (2936 Ha.) of Fallow Land.

The landscape of the study area represents a complex of rural habitation, emerging industrial establishment, conversion of agricultural land in to residential area.

11.3.7 Hydrology

In the major part of the district, ground water occurs in thick unconsolidated Quatrnaries & Tertiaries deposited under fluviatile environment; the sand and/or gravel in different proportions of this formation constitute the main aquifers and they occur down to 295m bgl in the central and eastern part of the district. Deeper aquifers occur under semi-confined to confined condition. Palaeozoic- Mesozoic-Tertiary sequence of Gondwana supergroup of sedimentarias occurs under both unconfined and confined conditions down to 150.35m bgl. Groundwater in the extreme northwestern small part of Salanpur Block occupied by the archaeanmetamorphics occurs down to a depth of about 82m bgl under both unconfined and confined conditions down to 150.35m bgl.

According to CGWB, 2013 report the occurrence of aquifer and potentiality of this block generally lies between in the depth ranges of 2–32mbgl and 34-82mbgl with

transmissivity ranges between 40-50 m^2/day and Storativity is 14 x 10-4. At the site depth to water levels during pre-monsoon period (May 2020) and post Monsoon period (November 2020) varies from 3-6mbgl and 1.4-5 mbgl respectively.

11.3.8 Traffic Study

The traffic study was carried out for 24 hours at three locations namely Kalyaneshwari to Dendua Road (KD Road), SH-15 (Asansol-Chittaranjan) Road and NH-19 (Delhi-Kolkata) Road. These roads are near to the project site and are to be used as medium for transportation of construction or raw material and final products to & from the industry. Existing traffic scenario cam out to be "**Very Good**" falling under **LOS 'B'** for the three roads on which traffic study was done, indicating stable flow zone which affords reasonable freedom to drivers in terms of speed selection and manoeuvers within the traffic stream.

11.3.9 Socio-Economic Status

The study area was defined as an area within 10 km radius around the project site which includes total 84 villages and 11 urban areas that are from Salanpur and Barabani Tehsil of Bardhaman District, of West Bengal and Nirsa Cum Chirkunda Tehsil of Dhanbad District of Jharkhand state.

10 villages were surveyed from study area and the respondents were asked for their awareness / opinion about the existing plant and also of their opinion about the impacts of the project. The observations of Socio-Economic Survey in the Study Areas are in detailed mentioned under 3.3.8.7 heading in Chapter 3 of this report. The highlighting points are that the primary sources of cooking fuel were firewood, cow dung cake, coal etc., very few villagers were using LPG facility, more than 60% of the households were not having toilet facilities and mostly the villagers have open drainage system, people from some villages in core zone stated that there is shortage of water in summer season. In some of the villages primary health sub centres were available.

The economy of the study area is fortunate in terms of development in industry sector. The average QoL index value for the study area is leaning towards satisfactory level due to good economic status like income, employment and also availability of basic needs, viz. food, clothing, housing. The area is lacking with medical, educational facilities and social security, besides water scarcity, lack of sanitation, which are subjective conditions and are not much satisfactory as compared to objective conditions.

11.3.10 Ecology and Biodiversity

Floral Diveristy: Detailed ecological studies conducted within 10 km radius of the project site. The area is sparsely populated and is undulated and interspersed with small hillocks and hilly terrain. Agriculture is produced at small scale with major products grown here are Paddy, Wheat and a little amount of vegetables like brinjal, ladies finger, tomato etc. for household consumption. The forest belongs to category 5B of group 5 and is represented by types C1/1C, C2, DS1, E5, E7 and 2S1, on the basis of the composition of

species found in the forest. Four principal vegetation types within the study area were recognized during survey Dense mixed jungle (PF), Dense mixed jungle, Open Scrub and Plantation of Acacia & Eucalyptus. The grass lands were mixed with natural vegetation in low lands and cultivable waste lands and are now being utilized as grazing grounds to the livestock species: Goat, Cow, Ox and Buffalo. Trees in the non-forest areas are tropical dry mixed deciduous in nature. The main species are Siris, Kachnar, Amaltas, Banyan, Pipal, Teak, Arjuna, Jacaranda, Subabul, etc. Common shrubs randomly distributed within the non-forest areas such as barren lands, waste lands, and periphery of water bodies. The main species are Aak, Arni, Ber, Punarnava, Amaltash, Dhatura, Vasaka, etc. Grasses like *Cynodon dactylon* and *Heteropogon contortus* are generally found in the area. The dominant herbs in the ground vegetation are Achyranthus aspera, Alternanthera sessilis, Argemone Mexicana, Solanum nigrum, Solanum xanthocarpum, Cassia tora, Parthenium hysterophorus, Sida rhombifolia, Tridax procumbens etc. None of the plant species observed in the study area can be considered as 'rare' and 'endangered' as per the IUCN Red list.

Faunal Diversity: List having details of avifauna, mammals, reptiles & amphibians and buttlerflies is given in the table of Chapter 3 in EIA Report. No schedule - I fauna as per reconnaissance survey has been found from the study area. Although some Schedule-II species, which are very common species and found in every locality, even in villages, certain steps, should be taken to conserve the critical wild life. Baseline survey was conducted on the Maithon Reservoir to have existing aquatic environmental conditions in and around the proposed Project. The list of species of fishes and the information about Wetland faunal diversity is provided in chapter 3 of EIA Report.

11.4 ANTICIPATION ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.4.1 Land Environment

Construction Phase

The proposed expansion shall be carried out within the existing plant of 9.089 Hectares which is already in procession with the plant authority. No additional land shall be required for the project. Therefore no major change in land use is envisaged. There are no major trees or crops in the site.

During construction phase, solid waste such as excavated soil, debris, metal waste and oil & grease from construction machinery/equipment will be generated which may contaminate soil at construction site temporarily so they would be restricted to a small area and the storage will be done on impervious flooring. Excavated top soil will be used for plantation and on completion of construction; all waste will be cleared and disposed-off suitably as soon as possible.

11.4.2 Air Environment

Construction Phase

During construction phase, dust is expected to be the main pollutant, which is associated with general construction activity including excavation, leveling and material handling. Concentration of SO2, NOX and CO may slightly increase due to increased vehicular traffic. All the roads are bituminous within the plant boundary. Proper upkeep and maintenance of vehicles, sprinkling of water on roads and construction site, providing sufficient vegetation all-around are some of the measure that would greatly reduce the impacts during the construction phase. Thus, it is inferred that minor impact within a few 100 meters from the source within the site would occur on the ambient air quality under the worst conditions, which are mitigated by implementing environmental management plan.

Operation Phase

During operational phase air pollution shall be from gaseous and dust emissions arising from different activity like Raw Material Handling and other process in Steel Melting Shop, Reheating Furnace, SAF, Sinter Plant and Briquetting Plant.

Emission from Point Source (Stack)

Stack emissions will be from Steel Melting shop, Reheating Furnace, Submerged Arc Furnace, Sinter Plant, Briquetting Plant and DG sets.

Emission from Area Source (Fugitive Emission)

Fugitive emissions are expected during Material & Product Handling area, operation of Steel Melting Shop, SAF, Sinter Plant & Briquetting Plant and due to vehicular movement.

Details of existing and proposed pollution control facility are provided below in table. For adequate dispersion of gases, stacks of adequate height have been provided. For heat dissipation in the work zones arising from furnaces adequate ventilation systems has been provided.

Table 11.6: Details of Air Pollution Generation units and its Management

Sl. No.	Unit	Type of Pollution Control Facility	Nos	Connected with Stack	Norms to met (mg/Nm^3)
1.	Induction Fce. 3x8T	Fume Extraction with spark arrester + Pulsejet type Bag Filter (Existing system will be augmented)	1	1	< 30
2.	Induction Fce. 3x8T + 1x8 T LRF	Fume Extraction with spark arrester + Pulsejet type Bag Filter (Existing system will be augmented)	1	1	< 30
3.	Induction Fce. 2x25T	Fume Extraction with spark arrester	1	1	< 30

Sl. No.	Unit	Type of Pollution Control Facility	Nos	Connected with Stack	Norms to met (mg/Nm^3)
	+ 1x25 T LRF	+ Pulsejet type Bag Filter			
4.	SAF #1 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
5.	SAF #2 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
6.	SAF #3 (7.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
7.	SAF #4 (5.5MVA)	Fume Extraction with spark arrester + Pulsejet type Bag Filter	1	1	< 30
8.	Reheating Fce. (25TPH)	Low NOx Burner + Recuperator	-	1	< 30
9.	Briquetting Plant (25TPH)	Pulse Jet Type Bag Filter	1	1	< 30
10.	Sinter Plant (300TPD)	Pulse Jet Type Bag Filter	1	1	< 30
Total number of Bag Filters and Stacks			**9**	**10**	
Material Handling Area		Dust Extraction system and Fog/Mist Sprinklers	All transfer points, screens, crushers, etc.		

11.4.3 Traffic Scenario

Due to construction and production activities at ESPL, traffic volume on the roads under study *(KD Road, SH-15 & NH-19)* will increase due to movement of medium and heavy vehicles considering the overall size and nature of the Project. Vehicles used for transportation of construction or raw materials as well as finished product would be trucks. Other vehicles used for various purposes would be Jeeps, cars and 2 wheelers.

Increase in traffic volume and in V/C ratio for roads (KD Road, SH-15 & NH-19) is being observed by inclusion of proposed expansion project when compared to that obtained during analysis of baseline study data. However the increased traffic volume will be less than the design capacities of same roads as prescribed by IRC and 'Level of Service' also remains 'Good'.

Mitigation Measures

Drivers of trucks / dumpers engaged in construction work will be instructed to give way to passenger buses, cars etc. Transport of construction materials and machineries will be carried out during lean traffic period of the day or during night. All trucks are to be used for transportation will be covered with tarpaulin, maintained, optimally loaded and have PUC certificates. All vehicles and their exhausts would be well maintained and regularly tested for emission concentration. Truck/tippers shall be parked in designated parking area only. Minimize use of roads at any particular time by planning vehicles

movements. It can be concluded that proposed expansion will have insignificant effect on the traffic and proper management plan will further reduce the negative impacts.

11.4.4 Water Environment

Construction Phase

Construction activities for the proposed development can have minor impact on hydrology and ground water quality of the area if the construction waste leaches into the ground water source. Potential sources of impacts on the hydrology and groundwater quality during the construction phase are as follows:

- Soil runoff from the site leading to off-site contamination (mainly during rainy season)
- Improper disposal of construction debris leading to off-site contamination of water resources
- Spillage of oil and grease from the vehicles and wastewater generated on site activities such as vehicles washing, workshop, etc.
- Utilization of water for constructional activity

Mitigation Measures

- Construction Material (aggregates, oil, paints, etc) to be stored over pucca platform with raised boundary to avoid flowing of material along runoff.
- Proper concrete drains for storm water are already constructed to divert storm run-off from flowing over the construction areas and minimize soil erosion. Not allowing water to leave the construction site
- Due to civil construction activities, during rainy season the surface runoff may contain more of eroded soil and other loose matter. As far as possible, construction activities will be avoided during rainy days to mitigate the small impacts on soil/water quality caused due to construction activity
- Disposal of construction debris in approved areas and disposal as per C&D Management Rules, 2016
- Installing oil and grease traps in construction workshop
- Toilets are already available at site for construction workers.

Thus, the overall impacts on water environment during construction phase due to proposed activity shall be temporary and marginal.

Operation Phase

Impact due to Water Usage and mitigation Measures

The total water requirement of after the proposed expansion will be 1970 KLD. Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir. No ground

water shall be used for the project, hence there will be no impact on ground water resource.

Impact due to effluent Discharge and Mitigation Measures

Wastewater generation shall take place in the form of blow downs from cooling towers, back wash from Softening Plant, wastewater from cooling of rollers in Rolling Mill and domestic waste water. Domestic waste water will be generated from toilets, washrooms and canteen buildings in the plant. Water in the plant premises will be re-circulated for reuse after treatment by using below mentioned processes. Total wastewater generation during operation of all existing and proposed units and from domestic use shall be **180 KLD**, break of which is provided in table below:

Table 11.7: Details of the Wastewater Generation and Pollution Control facilities

Sl. No.	Unit	Type of Pollution Control System	Quantity (KLD)	Usages
1.	Softening Plant waste water from SMS	Neutralization Pit	10	Slag cooling, Metal Recovery Plant & Dust suppression
2.	Cooling Tower blow down from SMS	-	118	
~~3.~~	Rolling Mill	ETP	0	Recycled
~~4.~~	Softening Plant waste water from Ferro-alloys Plant	Neutralization Pit	4	Slag cooling, Metal Recovery Plant, Sinter Plant & Dust suppression
5.	Cooling Tower blow down from Ferro-Alloy Plant	-	30	
6.	Domestic waste water	STP	18	Plantation
Total Discharge			**180 KLD**	

Total effluent discharge from the existing and proposed plant shall be used for slag cooling, Metal Recovery Plant, Sinter Plant and dust suppression. Discharge from the STP will be used for plantation. No plant effluent will be discharged in to public water ways or drains. Hence, the plant will be designed for **Zero Liquid Discharges (ZLD).**

Storm Water Drainage: During heavy rains excess water is taken to the existing pond/proposed storage tanks through the drains constructed around production facilities as well as all roads. The water enters in to the pond/proposed storage tanks through silt traps pits preventing washed silt from plant to enter into it.

11.4.5. Noise Environment

Construction Phase

The areas affected are those close to the site. At the peak of the construction, marginal increase in noise levels is expected to occur but they are temporary. During the construction phase, noise generated from various construction activities are listed below:

- Movement of vehicles carrying construction materials and loading & unloading activities.
- Excavation machines, concrete mixer and other construction machines including pneumatic tools and compressors.
- Operation of DG sets.
- Concreting, hammering.
- Mechanical operations, like fabrication, drilling, fitting, etc.

Mitigation Measures

- Provision of rubber padding/noise isolators/silencers to modulate the noise generated by machinery/equipment, wherever possible. Selection of low noise generating machinery/equipment
- Preventive maintenance of machinery/equipment and vehicles
- The high noise zones at site will be demarcated and provided with enclosures & barriers
- Persons working in high noise areas have been provided with ear plug / ear muff
- Major construction work will be carried during the day time
- Greenbelt development will be undertaken from the construction stage itself
- Appropriate training and education will be given to the workers
- Regular monitoring of ambient noise level as per monitoring plan shall be carried out

Operation phase

During operation, the major noise generating sources from various units of the plant are Submerged Arc Furnace, Induction Furnaces, ID Fans, Rolling Mill, DG Set and Compressor, etc. The predicted noise level generated from the proposed plant (Lp(total)) is 85 dB(A) and from the noise propagation formula it has been estimated that the reduced noise level is 62 dB(A) at distance of 16 m from the source. Therefore, there will not be any significant impact on surrounding environment due to the activities of the proposed project.

Mitigation Measures

Noise control will form an integral part of the plant design. Care will be taken during selection of the equipment and other machinery so that noise generation is not exceed 85 dB (A) at a distance of 1.0 m. In addition to this, effective ear plugs will be provided and their use is made obligatory in specified areas where noise level is high and unavoidable. Other general mitigation measures for the attenuation of noise are given in Chapter 4 of this report.

11.4.5 Solid Waste Management

Construction Phase

The common anticipated wastes are concrete, empty paint cans, plastic bags and metal scrap, etc. Improper disposal of solid waste generated will create negative impact on surrounding environment.

Mitigation Measures

As the proponent is going for expansion, existing infrastructure will be utilized to the maximum extent. The laborer's will be taught as how and where to disposal of waste materials. Wet and dry waste bins will be supplied to them. Waste generated from constructional labor will be handed over to municipal authorities. Metal scrap generated, will be utilized in the existing plant as raw material. The concrete waste will be kept separately and used for filling in the low-lying areas. Cans and bags will be given to authorized recyclers.

Operation Phase

All solid wastes generated during operation phase shall be either utilized within the plant or will be disposed as per Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 and Solid Wastes Management Rules, 2016. Mitigation measures like RCC flooring and Concrete platform with bund wall along with oil collection system has been proposed to avoid land contamination through leaching. Solid waste generation and utilization from the existing and proposed plant is given in **Table 11.8.**

Table 11.8: Details of Solid Waste Generation, Handling and Utilization

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
IF Slag	18,326	58,310	After metal recovery (approx. 12%), remaining slag shall be used as aggregates
IF Bag Filter Dust	3,773	12,005	Shall be used in Sinter Plant
Scale from Ingot Casting / CCM	1,400	2,100	Shall be used for production of Fe-Si or Fe-Si-Cr. Or will be used in Sinter Plant
End Cut / Crop from CCM	--	4,900	Will be charged in Induction Furnace as return scrap
Mill Scale from Rolling Mill	--	3,150	Shall be used for production of Fe-Si or Fe-Si-Cr.
End Cut / Cobbles Rolling Mill	--	5,250	Will be charged in Induction Furnace as return scrap
Fe-Mn Slag	59,052 (max.)	59,052 (max.)	Will be used for production of Si-Mn

Type of Waste	Quantity in Tons (TPA)		Mode of Disposal
	Existing	Total after the proposed Expansion	
Si-Mn Slag	36,750 (max.)	36,750 (max.)	Shall be used for construction or filling of low-lying area
Fe-Cr. Slag	53,147 (max.)	53,147 (max.)	• Chrome from Ferro-chrome slag will be recovered at chrome recovery plant. • After chrome recovery, the tailing material will be used as stone chips (8 to 25 mm) & land filling purpose (0 to 8 mm). • TCLP Test will be carried out all around the storage area on regular basis. • Will be supplied for Construction or will be sent to TSDF.
Fe-Si. Slag	1,134 (max.)	1,134 (max.)	Ferro Silicon Slag will be used for cement industries as a raw material & used for medium carbon silico manganese production purpose
Fe-Cr.-Si	1,674 (max.)	1,674 (max.)	Ferro Silico Chrome Slag will be used for cement industries as a raw material as well as for construction and Road filling material after undergoing TCLP Test.
Pig Iron Slag	--	38,200 (max.) or in any combination, not exceeding 59,052 TPA	Pig Iron Slag will be used for cement industries as a raw material
Bag Filter Dust from SAFs	1,358 (maximum)	1,358 (Maximum)	Ferro-chrome dust will be used in Briquette Plant. Fe-Mn & Fe-Si dust will be used in Sinter plant
Sinter Plant Dust from Pollution Control	---	5,940	Shall be recycled
Dust from Briquette Plant	--	8,250	Shall be recycled
Used Refractories	30	50	Shall be recycled

Hazardous Waste Management: Generation of 'Used Oil' after the proposed expansion shall be approx. 6.5 kiloliters per annum. Used oil will be collected in dedicated drums

and stored on impervious concrete floor for maximum 90 days before disposal and will be sold to the registered recyclers.

Other Solid Waste The Solid Waste generated other than the above mentioned waste will be E-Waste, Plastic Waste

E- Waste is mostly generated from the discarded electrical parts that from the machineries or the Discarded computer parts. The plant almost produces 0.02TPA of Electrical waste that will be stored on impervious concrete floor for maximum of 180 days. The parts that can be reused will be recovered and the remaining will be sold to Authorized Recycler.

Plastic Waste is mostly generated from the packing unit and raw material unit. It is estimated that the Plastic waste that is generated in the plant will be 0.04TPA. This Plastic Waste will be sold to Authorized Recycler.

The Project Proponent will take initiative to reduce and reuse these types of waste generation so as to prevent pollution.

11.4.6 Socio-economic Environment

Construction Phase

The construction phase induces employment opportunities for the local people in construction work. Local population would also have employment opportunities in related activities like small commercial establishments, small contracts and supply of construction materials etc. During construction phase, increase level of dust and other air pollutants may lead to respiratory diseases.

Hazards expected are electrocution, vehicular accident, fall of personnel from overhead works, high level noise due to construction machinery, centering failure and exposure of eyes to dust and welding rays. Constructional and occupational safety measures will be adopted during construction phase of the industry to reduce any impact on manpower involved.

Operation Phase

Negative Impacts: During construction phase, increase level of dust and other air pollutants may lead to respiratory diseases. Vehicular traffic and construction activities may create noise pollution. The impact due to air emissions shall be negligible as sufficient number of pollution control equipment will be installed for effective control systems at all the identified sources of emission. Due to the proposed project activity, influx of population may increase during the construction and operation phase. This may lead to strain on infrastructure facilities in the area as well as increase in population at local level. However, this impact is only for the short duration and temporary in nature.

Positive Impacts: The project does not involve any displacement of inhabitants and so issues like resettlement and rehabilitation. There was a growth in indirect jobs and business opportunities to the local and surrounding people such as contractors,

transporters and raw material suppliers etc. due to the proposed development in the area. Demands of community services and commercial development also create additional employment for the poor strata of society by way of security guard, driver, maid/servant, sweeper, gardener etc. The activity will benefit the local people due to provision of more infrastructural development of facilities which may be Medical, Educational, approach and internal road network, sanitation, solar lights, water conservation, commercials as well as daily need shops, as development of some is covered under activites to address public hearing issues and others might be covered under CSR. Also, 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. The expected value of quality of Life after the proper implementation of Environment Management Plan and after the execution of welfare measures by the M/s ESPL in the study area is 0.59. This shows the quality of life will improve and increase.

11.4.7 Biological Environment

Construction Phase

Construction activities at the site involving human and vehicular movement might disturb aerial and wild animals in the area. Terrestrial micro flora and fauna at the site might also be affected. This adverse impacts can be reduced by shortening of the construction phase period and development of greenery along the plant boundary. Also construction work will be undertaken in two phases. Hence, no significant adverse impact is expected on biological environment.

Loss of vegetation during construction will be minimal as the major expansion will be installed inside existing shades. However, loss of vegetation if any, will be compensated by greenbelt development

Operation Phase

The fauna might be impacted due to noise generated during the operational phase. The air emissions might reduce the abundance of sensitive species like butterflies and birds. Bag Filters will be used so that insignificant impact occurs on the nearby vegetation. The fugitive dust generation area will be regularly sprinkled with water. The Plant site will be properly fenced and gated to check the entry of animals in search of eatable goods. Wastes will be properly disposed-off to prevent the chances of eating by wild animals, which may become hazardous to them. The vehicles entering in the project site will not use pressure horns during night time as it may distract the fauna or animals near to the site.

11.4.8 Greenbelt Development

Out of 9.089 Ha. area of the plant 3.0 Ha. area (33%) is covered under the plantation. Till date (25.06.2022), company has planted 7150 number of trees (including 150 number of trees planted on 05th June, 2022) covering the 3.0 hectare area within the plant premises involving the total expenditure of Rs. 45.80 lakhs.

Company has a proposal for doing additional plantation of 600 trees for gap filling near the plant boundary to increase the tree density to 2500 trees/ha. Company has also proposed to keep a capital budget of Rs. 2.40Lakhs for additional plantation in next two years and a budget of Rs. 2.20lakhs for yearly maintenance of green area, compensation plantation for non-surviving plants, etc..

11.4.9 Rain Water Harvesting

The total volume of water generated in project premises from rooftop, road/paved, green belt and open area in a single storm on 30mm/hr. peak rainfall intensity would be 1236.2 cubic meter. The existing pond in the plant premises having storage capacity of 6400m^3 will be utilized to accommodate the total quantum of runoff from the plant. The stored water in pond will be used with the plant for different purpose, resulting in reduction of the fresh water requirement during monsoon period. Proposal also involves the maintenance of the existing pond like stone pitching on side walls, plantation and fencing around the pond.

11.5 ANALYSIS OF ALTERNATIVES

The proposed project is an expansion of existing plant and will be installed in the existing premises of the ESPL. The source of power at present is DVC and permission for additional requirement shall be obtained from the same. Company has an agreement dated 29.09.2021 with Damodar Valley Corporation (DVC) for the supply of 2240KLD (0.49MGD) of raw water from Maithon Reservoir.

The technological route used for the production of TMT bars, Ferro Alloys, Pig Iron by M/s Eloquent Steel Pvt Ltd is well-established and technically viable.

11.6 ENVIRONMENTAL MONITORING PROGRAM

Environmental Monitoring is an essential tool for sustainable development and ensuring effective most implementation and monitoring of Environmental Management Plan and mitigation measures. Monitoring involves periodic checking to ascertain whether activities are going according to the plans. A detailed monitoring plan has been prepared to keep regular check on various environmental parameters, performance of pollution control equipment, OH&S plan, Plantation, etc. A Capital budget of Environmental Monitoring has been kept as Rs. 80lakhs and recurring budget of Rs. 15.59 lakhs which include monitoring of efficiency of pollution control equipment, once in six months.

11.7 ADDITIONAL STUDIES

11.7.1 Social Impact Assessment

The socio-economic survey in the study was carried out to provide inputs of social concerns and to avoid or minimize the adverse social impacts with the best possible solutions at minimum cost. The study area was defined as an area within 10 km radius around the project site which includes total 84 villages and 11 urban areas that are from

Salanpur and Barabani Tehsil of Bardhaman District, of West Bengal and Nirsa Cum Chirkunda Tehsil of Dhanbad District of Jharkhand state.

As per the data generated through the survey it is observed that the quality of life of the surveyed village is on an average and with lack of basic amenities such as medical facility in some villages. Drinking water facility is also not satisfactory. Summarized Details of the Socio-Economic Survey is given in chapter 7 of this report.

11.7.2 Hazard Identification and Risk management

- Some of the hazards likely to occur due to the proposed project are given below.
- Fire at Lubrication, Hydraulic & fuel oil installations
- Fire/explosion at Coal/Coke/LDO/ Diesel handling area
- Coal dust explosion
- Physical Hazards due conveyor system, material handling
- Fugitive Dust of Raw Material Handling at charging bay, storage yard,
- Collapse of Structures/Fall of Material, stacking failure
- Loading/ Unloading failures
- Electrocution/ Electrical Hazards
- Fire hazards/Slippage hazard due to waste oil generated in plant
- Mechanical Hazards

11.7.3 Risk Analysis

The site specific risk analysis was carried out and the probable hazard zones like Raw material handling, Steel Melting Shop, Rolling Mill, Submerged Arc Furnace, Sinter Plant, Construction & Maintenance and control room were examined along with other units of the proposed plant. The Action plan and control measures for the same were formulated based on the risk rating. The site specific HIRA was conducted and the suitable safety measures were proposed to minimize the hazard.

11.7.4 Occupational Health and Safety

Source of Occupational Health Hazards are:

- Fire Hazards
- Heat Radiations
- Air Pollution
- Noise Level

M/s ESPL is/shall be adopting suitable measures for the proper occupational health safety of workers complying with OSHA standards.

- Dust level of shop floor shall be appropriately monitored.
- Check of the effectiveness of preventive and control measures on regular basis.

- Adequate supply of potable drinking water shall be provided. Water supplied for the purpose of personal hygiene (washing or bathing) will be according to drinking water quality standards.
- Periodic audiometry checks shall be performed on workers exposed to high noise levels.
- Provisions shall be made to provide OHS orientation training to all new employees.
- Contractors must have the technical capability to manage the occupational health and safety issues of their employees are to be hired, extending the application of the hazard management activities through formal procurement agreements.
- Ambulances and first aid treatment facilities shall be made available for any emergency situation

The proposed expansion Project is not likely to cause major significant risk to onsite, offsite & environment. In the event of disaster onsite, offsite and all the emergency planning procedures will be followed so as to minimize the impact on working personnel, plant surrounding and environment. Capital Budget of Rs. 17.5 lakhs and recurring budget of Rs. 10.0 lakhs is allocated to OH&S.

11.8 PUBLIC HEARING

Information of the Public Hearing for the project was given by publishing advertisement on 09.09.2021 (one month prior) in the daily newspaper "AajKaal", "Sanmarg" and "Millennium Post". The Public hearing was conducted on 03.11.2021 at Nandanik Hall of Salanpur Block Office, Rupnarayanpur Station Road, Dabour More, District: Paschim Bardhaman, West Bengal. It was presided by Shri Sandip Tudu, Additional District Magistrate, Paschim Bardhman, West Bengal and was attended by 93 people from nearby villages.

Major concerns raised by villagers during the public hearing were regarding employment to the of local people in the proposed expansion, provisions for prevention of pollution, development of schools in surrounding areas, development in surrounding villages under CSR, dust & smoke generated due to movement of heavy vehicles, safety measures for workers and plantation in surrounding areas.

11.8.1 Schemes Along With Budget For The Commitments To Address Issues Raised During Public Hearing

As per Ministry's OM dated 30/09/2020, the Ministry has decided that EAC will deliberate on the commitments made by the project proponent to address the concerns raised during the Public Hearing. Accordingly, M/s ESPL has made the detailed action plan (along with time schedule and budget) for the implementation of activities proposed for fulfillment of commitments made during the Public hearing and is provided in ***Chapter 7*** of EIA report.

The total budget of **Rs 180.0 lakhs** has been kept to address the concerns raised during public hearing. All the activities proposed will be implemented within 36 months after

obtaining necessary clearances. These activities will help in elevating the socio-economic status of the area and will encourage other entrepreneurs/Industrialist to invest in the development activities for the region.

11.9 PROJECT BENEFITS

The growth of the Steel industry significantly contributes to economic growth as it generates employment both directly and also indirectly. 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.

- Direct employment to approx. 400 persons and indirect employment is expected to be much more in the area of transport, ancillary development etc.
- Improvement in infrastructure like road, market, installation of hand pump, dug well etc.
- Improvement in Education & Healthcare facilities
- Land is available with the project proponent, hence no procurement of land or displacement of people.
- Revenue for the State.
- Socio-economic benefits and consequent improvement in the living conditions of local population through planned activities to address issues raised during public hearing.
- Company has been carrying various social activities like support for local schools and local groups, for education, health care, food, etc, in the recent past and will continue to do so in future under its Corporate Social Responsibility.

11.10 ENVIRONMENTAL MANAGEMENT PLAN

M/s Eloquent Steel Pvt. Ltd. is responsible for implementation of all the mitigation and management measures. A separate department "Environmental Management Cell" (EMC) headed by EHS Head exists to look after all environmental related matters of the plant. The cell will act to ensure the suitability, adequacy and effectiveness of the Environment Management Program. Organization structure of EMC is given in *Chapter-6,* for implementation of EMPs and mitigation measures and to look after environmental monitoring program also.

The estimated capital expenditure for implementation of EMP during Construction will be **Rs. 12.4 lakhs** and recurring cost **Rs. 2.5 lakhs/year** and implementation of EMP during Operation will be **Rs. 291.9 lakhs** (excluding cost for activities to address public hearing issues) and recurring cost **Rs. 49.29 lakhs/year**.

11.11 CONCLUSION

Considering the demand for steel in these sectors M/s. Eloquent Steel Pvt. Ltd. has planned to expand the production capacity of its existing plant at Village: NakraJoria,

P.O.- Salanpur, Distt. – Paschim Burdwan, West Bengal to meet the demand of long steel products for domestic as well as International market.

Mr. Deepak Kumar Agarwal, Chairman cum Managing Director, aged about 48 years, son of Mr. Ramabatar Agarwal is a commerce graduate. He has about 25 years of experience in various industries including coal trading, manufacturing of various Iron and Steel products like Sponge Iron, Billets, Gases, TMT, etc and trading of iron and steel products and trading of petroleum products. The Management represents a team of highly qualified and experienced executives, who in turn are supported by dedicated and committed supervisors and workers. The team is quite capable of managing the business. Therefore, no financial problem is envisaged.

The technological route involved in expansion project for the production of TMT bars, Ferro Alloys, Pig Iron by M/s Eloquent Steel Pvt Ltd is well-established, technically viable, well proven and reliable. Many plants are operating all over the country in this pattern are successful. 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 finished product will be sold in the Steel Markets of Major states in India especially Bengal, Jharkhand, Bihar, Sikkim, Uttar Pradesh and North Eastern States. The products will be produced indigenously and will be consumed in the country and also outside the country as per the demand.

Profitability of project is quite attractive. Project is technically and financially viable with positive impact on the local infrastructure.

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

Environmental Impact Assessment study established that, M/s Eloquent Steel Pvt Ltd will successfully implement a well–designed Environmental Management Plan and it will comply with Environmental Norms/Guidelines issued by WBPCB/CPCB/MoEF&CC.

In view of the above, we request we request EAC to recommend Environmental Clearance for the project.

CHAPTER - 12

DISCLOSURE OF CONSULTANT

12.1 INTRODUCTION

Vardan Environet is a pioneer consulting organisation of India specializing in Environmental Protection, Industrial Pollution Control, Environmental & Mechanical testing and engineering field. Vardan assists clients in comprehensive environmental and engineering services ranging from conceptual planning and preliminary investigation to detailed engineering designs. Local knowledge coupled with national and international experience of proven technical know-how and a strong commitment from our team of experts enables Vardan to assist in solving the clients environmental and engineering problems successfully with competence by first analysing then visualizing and finally utilizing technically strong and dedicated skill.

Vardan has successfully completed a wide range of multi-disciplinary assignments/reports. The company's project formulation requires preliminary and detailed project investigation. The objective of the investigation is to assess the technical viability and cost effectiveness of the proposals vis-à-vis the objective and benefit. Vardan was founded in 2012 and brought together a number of consultancy services with a track record of performance in the environmental Science and Engineering field.

Headquartered in Gurugram, Vardan has prominent presence in Delhi-NCR, Rajasthan, Maharashtra, Madhya Pradesh, West Bengal and Jharkhand. With a man-power of over 125 professionals, the organization comprises of senior retired government officers from various departments like Pollution Control Board, Mines & Geology, Civil Services, SAIL, GAIL, NEERI who have decades of experience in the field of environmental management. The team also Comprises of young, dynamic and progress driven Environment, Civil, Mechanical & Chemical engineers, Geologists, GIS experts, Ecologists and Auditors.

Vardan Envirolab, a sister concern provides reliable and precise testing services for a wide range of Environmental, Chemical, Food testing, Microbiology and Building Materials with in-house Equipment/Instruments of advance technology along with experienced technical staff.

12.2 SERVICES OF VARDAN ENVIRONET

- Environmental Impact Assessment (EIA), Environmental Management Plan (EMP), Environmental Compliance, Mining Plan, Social Impact Assessment,
- Testing of water, Waste water, Ambient & work zone air, stack emissions, noise, soil, limestone, dolomite, iron ore, coal, cement, bricks, concrete, blocks, steel bars & wires, Indoor Air Quality monitoring, Sludge.
- Hydrological surveys for ground water clearance.
- Approvals/NOC/Clearances from various Government Authorities.
- Detailed Project report/Feasibility report/Plans/Designs.
- Environmental Quality Monitoring and analysis.
- Geotechnical investigations, Topographical Survey, Planning and Designs.

- EHS, Energy and water Audit, risk/hazard studies and disaster management plan (both onsite and off-site)

12.3 RECOGNITIONS

- Approved by NABET in 21 sectors for preparation of EIA/EMP reports.
- Vardan EnviroLab is recognized by Ministry of Environment, Forest & Climate Change, Govt. of India under Environmental Protection Act 1986.
- Vardan EnviroLab is accredited by NABL in the field of Testing.
- Vardan EnviroLab is certified by OHSAS 18001:2007.
- Vardan EnviroLab is certified by ISO 14001:2015.
- Vardan EnviroLab is certified by ISO 9001:2015.
- Vardan EnviroLab is approved by HSPCB & RSPCB.

12.4 LIST OF SOFTWARE MODELS FOR ENVIRONMENTAL STUDIES

- Multisource Dispersion Model based on Gaussian Model (ISCST3, AERMOD)
- Noise Propagation Model (Dhawani Pro)
- Risk and Hazard studies through Aloha model
- GIS mapping through Arc GIS, watershed & area drainage mapping, cadastral mapping, DGPS survey, 3D modelling, Urban/Rural area planning & management and Digital Elevation Model.
- Transect and line intercepts for Ecology and Biodiversity studies
- Extrapolative method & Intuitive technique (Delphi technique) in socio-economic assessment.

12.5. KEY MANAGEMENT PERSONNEL OF VARDAN

S.No.	Name	Designation	Experience (years)
1	R.S. Yadav	Managing Director	30
2	Aman Sharma	Vice President	12
3	Roopika Sharma	CEO	10
4	Anshul Yadav	General Manager	8
5	K.M. Khare	EIA Coordinator	38

12.6. EMINENT CLIENTELE OF VARDAN

Vardan has executed around 1000 projects across all over India in a short span of time covering both public and private sectors. Following are some of our reputed clients.

Indian Oil, HPCL, NTPC, NTPC, NHPC, BPCL, Delhi Metro, GAIL, SAIL, NHAI, APCPL, RITES, MPPGCL, Indian Railways, JK Lakshmi Cement Ltd., L&T, Tata, Adani, Hero, Honda, HCL, Panasonic, Jaypee group, DLF, Godrej, Haldiram's, Unitech, JBM, Trident hotels, Lanco, Mangalam cement, JW Marriot, Eros group and many others**.**

12.7 PERSONNEL INVOLVED IN PREPARATION OF M/S ESPL EIA REPORT

The personnel involved during the preparation of EIA report of M/s ESPL are listed below:

S.No.	Name of Employee	Work Assisted	Experience (Years)
1	Shubham Tyagi	Preparation of ToR application and Draft EIA along with Presentations	6.5
2	Dushyant Parashar	Assisted in Preparation of Soil, Land use	3.0

		and Air Quality reports	
3	Shweta Ghildiyal	Assisted in preparation of Risk Assessment, AP and SHW reports	4.0
4	Jameen Sheikh	Provided necessary assistance related to software updates and editing applications	5.0
5	Prashant Yadav	Assisted in preparation of Hydrogeology reports	7.0
6	Kushal Sharma	Providing necessary assistance in preparing Baseline Reports	5.0
7	Aman Verma	Provided necessary assistance in ToR documents, Draft EIA report, Presentations	1.2

12.8 CERTIFICATIONS OF VARDAN GROUP


National Accreditation Board for Education and Training

Certificate of Accreditation

Vardan Environet


भारत का राजपत्र
The Gazette of India


National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

VARDAN ENVIRO LAB

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

TESTING



F. No. J-11011/49/2010-IA. II (I)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Jor Bagh Road, Aliganj,
New Delhi – 110003
E-mail: dirind-moefcc@gov.in
Tel: 011-24695368

Dated: 15th October, 2020

To

Shri. Deepak Kumar Agarwal,
Director,
M/s. Eloquent Steel Private Limited,
Village: NakraJoria, P.O: Salanpur,
District: Paschim Burdwan,
West Bengal – 700017.
E-mail: esplmoef@shakambharigroup.in

Subject: Transfer of Environment Clearance titled "Expansion of Ferro Alloy Plant (Fe-Mn & Si-Mn) by installing 5.5 MVA SAF at Mouza Nakrajoria, P.S. Salanpur, Dist. Burdwan, West Bengal" **from M/s. Hira Concast Limited to M/s. Eloquent Steel Private Limited –regarding.**

Ref. : (i) MoEF&CC letter No. J-11011/533/2008-IA-II (I) dated 11/12/2008
(ii) MoEF&CC letter No. J-11011/49/2010-IA-II (I) dated 03/09/2012
(ii) Online proposal no. IA/WB/IND/165821/2020 dated 07/08/2020 & subsequent ADS reply letter dated 31/08/2020

Sir,

1. Reference is invited to your online proposal no. IA/WB/IND/165821/2020 dated 07/08/2020 & subsequent ADS reply letter dated 31/08/2020 requesting the Ministry to transfer the Environment Clearance accorded by MoEF&CC vide letter no. J-11011/533/2008-IA.II(I) dated 11/12/2008 and J-11011/49/2010-IA-II (I) dated 03/09/2012 from M/s. Hira Concast Limited to M/s. Eloquent Steel Private Limited.

2. The Ministry of Environment, Forest and Climate Change (MoEF&CC) has examined the request submitted by you. It is noted that the unit was not under operation for the last three years and was put up for auction by the authorities. The possession of M/s. Hira Concast Limited was made through Auction from Official Liquidator of Hon'ble High Court of Calcutta by M/s. Eloquent Steel Private Limited on 1/09/2017.

3. It is also noted that following documents have been submitted for the transfer of Environment Clearance dated 11/12/2008 and 03/09/2012:
   i. Form No.7 for transfer of Environmental Clearance.
   ii. Authorization letter enabling Shri. Deepak Kumar Agarwal, Director to correspond and execute documents with MoEF&CC

iii. Order dated 25/08/2017 of Hon'ble High Court of Calcutta in C.A. No. 287 & 297 of 2017regarding auction for sale of property of M/s. Hira Concast Limited.

iv. Undertaking dated 28/07/2020 of M/s. Eloquent Steel Private Limited in a non-judicial stamp paper stating that they will be complying with the environmental safeguards mentioned in the Environment Clearance letter dated 11/12/2008 and 03/09/2012.

v. Memorandum and Articles of Association of M/s. Eloquent Steel Private Limited.

vi. Certificate of incorporation issued by the Ministry of Corporate Affairs to M/s. Eloquent Steel Private Limited on 11/09/2012.

4. This Ministry hereby accepts your request for change of company name in the Environment Clearance accorded vide letter no. J-11011/533/2008-IA.II(I) dated 11/12/2008 and J-11011/49/2010-IA-II (I) dated 03/09/2012 from M/s. Hira Concast Limited to M/s. Eloquent Steel Private Limited subject to satisfactory compliance to all the stipulated specific and general conditions. You are also requested to obtain 'Consent to Operate' from the West Bengal Pollution Control Board in the name of M/s. Eloquent Steel Private Limited.

5. M/s. Eloquent Steel Private Limited shall comply with the all specific and general conditions stipulated in the Environment Clearance letter dated 11/12/2008 and 03/09/2012.

6. In case, there is a change in the scope of the project, fresh Environment Clearance shall be obtained.

This issues with the approval of the Competent Authority.

Yours faithfully,

(A.K. Agrawal)
Director

Copy to:-

1. Secretary, Department of Environment, Government of West Bengal, Secretariat Kolkata.
2. Deputy Director General of Forests (Central), Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandrasekharpur, Bhubneshwar-751 023.
3. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
4. Chairman, West Bengal State Pollution Control Board, Paribesh Bhawan, 10A- Block LA, Sector –III, Salt Lake City, Kolkata – 700 098.
5. Member Secretary, Central Ground Water Authority, West Block –II, Wing -3, Sector I, R.K.Puram, New Delhi – 110086.
6. District Collector, Paschim Burdwan District, State of West Bengal.
7. Guard File / Record file / Monitoring file.
8. MOEF&CC Website.

(A.K. Agrawal)
Director

F. No. J-11011/188/2011-IA. II (I)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Jor Bagh Road, Aliganj,
New Delhi – 110003
E-mail: dirind-moefcc@gov.in
Tel: 011-24695368

Dated: 15th October, 2020

To

Shri. Deepak Kumar Agarwal,
Director,
M/s. Eloquent Steel Private Limited,
Village: NakraJoria, P.O: Salanpur,
District: Paschim Burdwan,
West Bengal – 700017.
E-mail: esplmoef@shakambharigroup.in

Subject: Transfer of Environment Clearance titled "Expansion of the existing unit by installation of 2 X 7.5 MVA Ferro Alloys Plant & 1 X 300 TPD Sinter Plant to manufacture Ferro Alloys and Manganese Ore Sinter at Mouza: Nakrajoria, P.S.: Salanpur, District: Burdwan in West Bengal" **from M/s. Impex Steel Limited to M/s. Eloquent Steel Private Limited –regarding.**

Ref. : (i) MoEF&CC letter No. J-11011/183/2008-IA-II (I) dated 28/07/2008
(ii) MoEF&CC letter No. J-11011/188/2011-IA-II (I) dated 20/09/2012
(ii) Online proposal no. IA/WB/IND/166435/2020 dated 07/08/2020 & subsequent ADS reply letter dated 31/08/2020

Sir,

1. Reference is invited to your online proposal no. IA/WB/IND/166435/2020 dated 07/08/2020 & subsequent ADS reply letter dated 31/08/2020 requesting to transfer the Environment Clearance accorded by MoEF&CC vide letter no. J-11011/183/2008-IA.II(I) dated 28/07/2008 and J-11011/188/2011-IA-II (I) dated 20/09/2012 from M/s. Impex Steel Limited to M/s. Eloquent Steel Private Limited.

2. The Ministry of Environment, Forest and Climate Change (MoEF&CC) has examined the request submitted by you and the following points ae noted;
A. Implementation status of the EC dated 28/07/2008 and 20/09/2012

File No.	Date	Project	Present status
J-11011/183/2008-IA.II(I)	28/07/2008	Expansion of the plant by Setting up of Ferro Alloys Plant (2 X 7.5 MVA) at Mouza Nakrajoria, P.S.	Project implemented within EC validity period and unit has obtained Consent to Operate from

File No.	Date	Project	Present status
		Salanpur, District, Burdwan in West Bengal.	WBPCB till 31/03/2016.
J-11011/188/2011-IA.II(I)*	20/09/2012	Expansion of existing Unit by installation of 2 X 7.5 MVA Ferro Alloys Plant & 1 X 300 TPD Sinter Plant to manufacture Ferro Alloys and Manganese Ore Sinter at Mouza Nakrajoria, P.S. Salanpur, District, Burdwan in West Bengal	These additional facilities are not installed till date in the plant premises.

**Note: The facilities envisaged in the EC dated 20/09/2012 have not been installed and as per the available records, no validity extension has been obtained from MoEF&CC and the validity period of the EC dated 20/09/2012 was already expired on 19/09/2019.*

B. Reasons for EC transfer:
The unit was not under operation for the last three years. Possession of M/s Impex Steel Ltd was made through bidding in Auction Notice, issued by Stressed Asset Management Branch of State Bank of India, Kolkata.

C. Documents submitted for EC transfer:
   i. Form No.7 for transfer of Environmental Clearance.
   ii. Authorization letter enabling Shri. Deepak Kumar Agarwal, Director to correspond and execute documents with MoEF&CC
   iii. Sale certificate dated issued by Stressed Asset Management Branch of State Bank of India, Kolkata.
   iv. Undertaking dated 28/07/2020 of M/s. Eloquent Steel Private Limited in a non-judicial stamp paper stating that they will be complying with the environmental safeguards mentioned in the Environment Clearance letter dated 28/07/2008 and 20/09/2012.
   v. Memorandum and Articles of Association of M/s. Eloquent Steel Private Limited.
   vi. Certificate of incorporation issued by the Ministry of Corporate Affairs to M/s. Eloquent Steel Private Limited on 11/09/2012.

3. As per the para 11 of EIA notification 2006, a prior environmental clearance granted for a specific project or activity to an applicant may be **transferred during its validity** to another legal person entitled to undertake the project or activity on application by the transferor, or by the transferee with a written "no objection" by the transferor to and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period. No reference to the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned is necessary in such cases.

4. This Ministry hereby decided the following:
   i. Accepted the request for transfer of Environment Clearance accorded vide letter no. J-11011/183/2008-IA.II(I) dated 28/07/2008 from M/s. Impex Steel Limited to M/s. Eloquent Steel Private Limited subject to satisfactory compliance to all the stipulated specific and general conditions. You are also requested to obtain 'Consent to Operate' from the West Bengal Pollution Control Board in the name of M/s. Eloquent Steel Private Limited.

   ii. Rejected the transfer process for EC dated 20/09/2012 as the units envisaged under the said EC have not been implemented within its validity period and the validity period of the said EC was already expired on 19/09/2019.

5. M/s. Eloquent Steel Private Limited shall comply with the all specific and general conditions stipulated in the Environment Clearance letter dated 28/07/2008.

6. In case, there is a change in the scope of the project, fresh Environment Clearance shall be obtained.

This issues with the approval of the Competent Authority.

Yours faithfully,

(A.K. Agrawal)
Director

Copy to:-

1. Secretary, Department of Environment, Government of West Bengal, Secretariat Kolkata.
2. Deputy Director General of Forests (Central), Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandrasekharpur, Bhubneshwar-751 023.
3. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
4. Chairman, West Bengal State Pollution Control Board, Paribesh Bhawan, 10A- Block LA, Sector –III, Salt Lake City, Kolkata – 700 098.
5. Member Secretary, Central Ground Water Authority, West Block –II, Wing -3, Sector I, R.K.Puram, New Delhi – 110086.
6. District Collector, Paschim Burdwan District, State of West Bengal.
7. Guard File / Record file / Monitoring file.
8. MOEF&CC Website.

(A.K. Agrawal)
Director

F. No. J-11011/533/2008- IA II (I)
Government of India
Ministry of Environment and Forests
(I.A. Division)

Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi – 110 003

E-mail : pb.rastogi@nic.in
Telefax : 011: 2436 7668

Dated 11th December 2008

To,

The Director
M/s Hira Concert (Pvt.) Ltd.
Mouza _Nacrajoria, P.S. Salanpur
District Burdwan – 713357
West Bengal

E-mail : ??? ; Fax No. : 033 - 22110011

Subject : Setting up of Ferro Alloy Plant (High Carbon Ferro Manganese, 15,225 TPA & Silico Manganese 11,455 TPA) in existing M.S. Ingot Plant at Mouza Nacrajoria, P.S. Salanpur, District Burdwan, West Bengal by M/s Hira Concast (Pvt.) Ltd. – Environment clearance reg.

Ref. : Your letter no. nil dated 17th June, 2008.

Sir,

Kindly refer your letter **no. nil dated 17th June, 2008** alongwith project documents including Application in Form I, draft Terms of References (TORs) and Pre-feasibility Report and subsequent clarifications furnished vide letters 12th August, 2008 and 7th October, 2008 regarding above mentioned project.

2.0 The Ministry of Environment and Forests has examined the application. It is noted that proposal is for setting up of Ferro Alloy Plant (High Carbon Ferro Manganese, 15,225 TPA & Silico Manganese 11,455 TPA) in existing M.S. Ingot Plant at Mouza Nacrajoria, P.S. Salanpur, District Burdwan, West Bengal by M/s Hira Concast (Pvt.) Ltd. The proposed expansion by installation of submerged Arc Furnace (7.5 MVA) will be carried out in the existing campus and no additional land will be required. Total land acquired is 6.68 acres. Total cost of the project is Rs. 1,544.39 Lakhs. Following will be manufactured:

Product	Installed Capacity (TPA)	1st Year	2nd Year	3rd year
High Carbon Ferro Manganese	**15,225**	**12,180**	**12,941**	**13,702**
Silico Manganese	**11,455**	**9,164**	**9,737**	**10,310**

2.0 Bag filters will be provided to the submerged arc furnace to control gaseous emissions within 150 mg/Nm^3. Smoke hood, heat exchanger, bag filter, inducted dust (ID) fan and stack will be provided. Dust suppression system will be provided to control fugitive emissions. Total

ground water requirement will be 6 m^3/day. No water will be discharged from the cooling system due to use for slag cooling, dust suppression etc. Softener back wash will be neutralized and used for dust suppression. No industrial waste will be generated due to recycle/reuse of the treated wastewater. Slag will be generated as solid waste and disposed by filling low lying area and making roads within the factory premises. Dust collected from bag filter will be collected and recharged in the furnace.

3.0 Public hearing is not required due to expansion of the proposed unit in the same campus as per Section 7 (ii) of EIA Notification, 2006.

4.0. The Ministry of Environment and Forests hereby accords environmental clearance to the above project under EIA Notification dated 14th September, 2006 subject to strict compliance of the following conditions:

A. SPECIFIC CONDITIONS :

i) Continuous monitoring facilities for all the stacks and sufficient air pollution control equipments viz. fume extraction system with bag filters, I D fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 100 mg/Nm^3. The West Bengal Pollution Control Board (WBPCB) may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. The monitoring reports shall be submitted to the Ministry's Regional Office at Bhubaneswar, CPCB and WBPCB.

ii) Gaseous emissions from Submerged Arc Furnace shall be controlled by providing smoke hood, heat exchanger, bag filter, inducted draft fan etc. A water-cooled cover around the furnace and fume collectors hood shall also be provided. Clean gas shall be vented to atmosphere through a chimney of adequate height as per CPCB guidelines.

iii) Secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed. Data on fugitive emissions shall be submitted to Ministry's Regional Office at Bhubaneswar, CPCB and WBPCB

iv) In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Dust collection system shall be provided for arresting dust and outlet dust emission shall not exceed 100 mg/Nm^3. Dust suppression system like water spraying shall be provided at unloading and raw material handling areas, storage yards, conveyor belts and bucket elevators to control fugitive dust emissions to meet the WBPCB norms. Covered conveyer belts shall be provided. Water spraying shall also be done to prevent the dust emanation due to vehicular movement.

v) Total ground water requirement shall not exceed 6 m^3/day. The softener back wash water shall be neutralized and used for dust suppression. All the other treated wastewater shall be recycled and reused in the process, slag cooling and green belt development. No process water shall be discharged outside the premises and 'Zero'

discharge shall be adopted. Domestic wastewater shall be treated in septic tank followed by soak pit system and used for plantation.

vi) Prior permission for the drawl of 6 m^3/day ground water shall be obtained from State Ground Water Board/Central Ground Water Authority (SGWB/CGWA).

vii) Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to the Ministry's Regional Office at Bhuvaneswar, WBPCB and CPCB. Waste oil shall be sold to authorized recyclers as per the Hazardous Waste (Management & Handling) Rules, 1989 and subsequent amendments.

viii) All the ferro alloy slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leachability Potential (TCLP) test. Otherwise, hazardous substances shall be recovered from the slag and output waste and be disposed in secured landfill as per CPCB guidelines. Dust collected from bag filter shall be collected and recharged in the furnace.

ix) Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture Silico Manganese (Si-Mn).

x) As proposed, green belt shall be developed in at least 33 % area in and around the plant premises to mitigate the effects of fugitive emissions all around the plant as per the CPCB guidelines in consultation with DFO.

xi) All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Ferro Alloy Units shall be strictly implemented.

xii) The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

B. GENERAL CONDITIONS :

i. The project authority shall adhere to the stipulations made by West Bengal Pollution Control Board (WBPCB) and State Government.

ii. No further expansion or modification of the plant shall be carried out without prior approval of this Ministry.

iii. The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The WBPCB may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.

iv. Ambient air quality monitoring stations shall be set up as per statutory requirement in consultation with the WBPCB. Ambient air quality including ambient noise levels shall not exceed the standards stipulated under EPA or by the State authorities. Monitoring of ambient air quality and shall be carried out regularly in consultation with WBPCB and data submitted to the CPCB and WBPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated time to time.

v. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environmental (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).

vi. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

vii. All the environment management measures given in the EIA/EMP shall be implemented and complied with.

viii. The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.

ix. Proper house keeping and adequate occupational health programmes shall be taken up as per the Factory Act.

x. The company shall undertake eco-development measures including community welfare measures in the project area.

xi. A separate environmental management cell to carry out various management and monitoring functions shall be set up under the control of Senior Executive.

xii. Adequate funds shall be earmarked towards the capital cost and recurring cost/annum for environment pollution control measures shall be used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.

xiii. The Regional Office of this Ministry at Bhubaneswar/CPCB/WBPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data alongwith statistical interpretation shall be submitted to them regularly.

xiv. The Project Authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.

xv. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the W. B. Pollution Control Board and may also be seen at the Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be

in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bhubaneswar.

5.0 The Ministry or any other competent authority may stipulate any further condition(s) on receiving reports from the project authorities. The above conditions shall be monitored by the Regional Office of this Ministry located at Bhubaneswer.

6.0 The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.

7.0 Any other conditions or alteration in the above conditions shall have to be implemented by the project authorities in a time bound manner.

8.0 Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.

9.0 The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 the Air (Prevention and Control of Pollution) Act, 1981 the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

(Dr. P. B. Rastogi)
Director

Copy to :-

1. The Secretary, Department of Environment, Govt. of West Bengal, Kolkata, West Bengal.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
3. The Chairman, West Bengal Pollution Control Board, Parivesh Bhawan, 10A Block-LA Sector-III, Salt Lake, Kolkata - 700091, West Bengal.
4. The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3, Chandrashekharpur, Bhubaneswar – 751 023, Orissa.
5. Adviser (IA-II), Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
6. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
7. Guard File.
8. Monitoring File.
9. Record File.

(Dr. P. B. Rastogi)
Director

By speed post

भारत सरकार
पर्यावरण एवं वन मंत्रालय
Government of India
Ministry of Environment & Forests
(IA Division)

Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi – 110 003
E-mail: hsmalviya@gmail.com
Telephone: 011: 24367076

F. No. J-11011/183/2008-IA(II)
July 28, 2008

To

M/s Impex Ferro Steel Ltd
33, Chittaranjan Avenue, 2nd Floor,
Kolkata – 700012
West Bengal
jbecpl@yahoo.com, impex_steel@yahoo.co.in, aruntripathy_1954@yahoo.co.in

Sub: Expansion of the plant by setting up of Ferro Alloy Plant (2x7.5 MVA) at Mouza Nakrajaria, P.O. Salanpur, District Burdwan, West Bengal by M/s Impex Steel Ltd. Environmental Clearance reg.

Sir,

This has reference to your letter no. ISPL/LT/07-08 dated February 1, 2008 alongwith application in Form – 1 and project report seeking environmental clearance under EIA Notification 2006 and subsequent submission of EIA/EMP on 14th June 2008 during the expert appraisal Committee meeting.

2. The Ministry of Environment and Forests has examined the application along with the EIA/EMP and noted that proposal is for environmental clearance for the plant by setting up of Ferro Alloy Plant (2x7.5 MVA) at Mouza Nakrajaria, P.O. Salanpur, District Burdwan, West Bengal by M/s Impex Steel Ltd. The total area of the plant is 23653.87 m^2. Out of this 7805.78 m^2 is earmarked as green belt and open space. The proposed project 2 nos. of 7.5 MVA arc furnaces will be installed with a production capacity of 3840 TPA ferro manganese/silico manganese. The Jharkhand State boundary is located at 3-4 km towards North from the plant. The total cost of the project is Rs. 2825.18 Lakhs

3. Bag filters system will be installed for control of air pollution from the ferro-alloy plant. The flue gases will pass through the hood, damper, heat exchanger followed by bag filter, ID fan and 30 meter high stack. The dust suppression system will be provided at material handling and transfer points. The total water requirement of the plant will be 18 KLD will be met from ground water. The domestic waste water will be treated in anaerobic baffle reactor and treated waste water will be used for plantation.

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IMPEX STEEL LIMITED

Director

4. No public hearing is required as per para 7(ii) of EIA notification 2006 due to expansion of the ferro alloy plant in the same campus.

5. The Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated 14th September, 2006 subject to strict compliance of the following specific and general conditions:

A. SPECIFIC CONDITIONS :

i) Project authorities shall provide monitoring facilities for all the stacks. Air pollution control equipments such as bag filters shall be installed to keep emissions levels below 100 mg/Nm^3 and reports submitted to ministry's Regional Office at Bhubaneshwar, WBPCB and CPCB. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.

ii) Secondary fugitive emissions from furnace shall be controlled within the latest permissible limits issued by the Ministry. Guidelines / Code of Practice issued by the CPCB shall be followed.

iii) All the treated wastewater shall be recycled and reused and 'Zero' effluent discharge shall be ensured.

iv) Permission for drawl of ground water shall be obtained from the Central Ground Water Authority or State Ground Water Board and copy submitted to the Ministry's Regional Office at Bhubaneswar.

v) The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.

vi) The company shall regularly conduct Toxicity Characteristic Leaching Procedure (TCLP) test for the slag before its disposal and reports shall be submitted to Ministry's Regional Office at Bhubaneswar, CPCB and WBPCB along with the details of mode of disposal.

vii) The hazardous slag generated from the furnace shall be disposed of in accordance with the Hazardous Waste (Management and Handling) Rules, 2003.

viii) The company shall submit a complete solid waste management plan for disposal of various solid and hazardous waste generated from the plant to the Ministry's Regional Office at Bhubaneshwar within 3 months.

ix) Green belt shall be developed in 7805.78 m^2 with adequate width and density to mitigate the effects of fugitive emissions in and around the plant as per the CPCB guidelines in consultation with DFO.

CERTIFIED TRUE COPY

IMPEX STEEL LIMITED

Director

x) Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

B. GENERAL CONDITIONS:

i. The project authorities must strictly adhere to the stipulations made by the West Bengal Pollution Control Board (WBPCB) and the State Government.

ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.

iii. At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of SPM, SO_2 and NO_X are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.

iv. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).

v. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.

vi. The fund earmarked towards the capital cost and recurring cost/annum for environmental pollution control measures shall be judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.

vii. The Regional Office of this Ministry / CPCB / SPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.

viii. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in. This shall be

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IMPEX STEEL LIMITED

Director

advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.

ix. Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.

6.0 The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

7.0 The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner will implement these conditions.

8.0 The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.

(H.S. Malviya)
Joint Director

Copy to:

1. Secretary (Environment), Government of West Bengal, Kolkata
2. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-office Complex, East Arjun Nagar, New Delhi-110 032
3. The Chairman, West Bengal Pollution Control Board, Paribesh Bhawan, 10-A, Block LA, Sector 3, Salt Lake City, Kolkata-700 091
4. Chief Conservator of Forests (Central), Regional Office, Western Regional Office, A/3, Chandrasekharpur, Bhubaneswar -751 023
5. Director, Monitoring Cell, MoEF
6. Guard file
7. Monitoring file
8. Record file

(H.S. Malviya)
Joint Director

CERTIFIED TRUE COPY

IMPEX STEEL LIMITED

Director

F. No. J-11011/183/2008- IA II (I)
Government of India
Ministry of Environment and Forests
(I.A. Division)

Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi – 110 003

E-mail : pb.rastogi@nic.in
Telefax : 011: 2436 7668

Dated 5th September, 2008

CORRIGENDUM

Subject: Expansion of the Plant by setting up Ferro Alloy Plant (2x7.5 MVA) at Mouza Nakrajaria, P.O. Salanpur, District Burdwan, West Bengal by M/s Impex Steel Ltd. – Environmental Clearance Corrigendum reg.

Attention is invited to Ministry's even no. letter dated 28th July, 2008 and your letter no. ISP/LT/08-09 dated 4th August, 2008 on the above subject requesting for change in address and correction in annual production capacity. Accordingly, following may be incorporated :

In Address	**For**	: Impex Ferro Steel Limited
	Read	: Impex Steel Ltd.
In para 2	**For**	: production capacity of 3,840 TPA
	Read	: production capacity of 28,470 TPA

2. All other conditions and paras shall remain same.

3. This letter shall be kept attached with the original clearance letter.

4. This issues with the approval of Competent Authority.

(Dr. P.B. Rastogi)
Director

To,

M/s Impex Steel Limited
33, Chittaranjan Avenue, 2nd Floor
Kolkatta – 700 012
West Bengal

CERTIFIED TRUE COPY

IMPEX STEEL LIMITED

Director

Copy to :

1. The Secretary, Department of Environment, Govt. of West Bengal, Kolkata, West Bengal.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
3. The Chairman, West Bengal Pollution Control Board, Pariveeh Bhawan, 10A Block-LA Sector-III, Salt Lake, Kolkata - 700091, West Bengal.
4. The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3, Chandrashekharpur, Bhubaneswar – 751 023, Orissa.
5. Adviser (IA-II), Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
6. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
7. Guard File.
8. Monitoring File.
9. Record File.

(Dr. P. B. Rastogi)
Director

CERTIFIED TRUE COPY
IMPEX STEEL LIMITED
Director

F. No. J-11011/188/2011-IA-II (I)
Government of India
Ministry of Environment and Forests
(I.A. Division)

Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi – 110 003

E-mail : aditya.narayan@nic.in
Telefax : 011: 2436 549
Dated 20th September, 2012

To,

The Director
M/s Impex Steel Limited
33, Chittaranjan Avenue
2nd Floor , Kolkata- 700 012

Ph: 033- 22110546; Fax: 033- 22110537; E-mail: impex.steel.limited@gmail.com

Sub : Expansion of the existing unit by installation of 2 X 7.5 MVA Ferro Alloys Plant & 1 X 300 TPD Sinter Plant to manufacture Ferro Alloys and Manganese Ore Sinter at Mouza : Nakrajoria, P.S. : Salanpur, District : Burdwan in West Bengal by M/s Impex Steel Limited- regarding Environmental Clearance
Ref : Your letter no. ISL/AVFERRO/11-12/08 dated 20th January, 2012.

Sir,

This has reference to your letter dated 20th January, 2012 along with copies of EIA/EMP and public hearing reports seeking environmental clearance under the provisions of EIA Notification, 2006.

2. The Ministry of Environment and Forests has examined your application. It is noted that M/s Impex Steel Limited have proposed to expand its existing plant by installing 2 X 7.5 MVA Ferro Alloys Plant & 1 X 300 TPD Sinter Plant at Mouza : Nakrajoria, P.S. : Salanpur, District : Burdwan in West Bengal. The expansion will be carried out within the existing plant premises of 10.46 acres. Green belt will be developed in 3.46 acres of total plant area. An additional land of 2.8 acres has been taken on lease for Rainwater Harvesting Pond & Labour Hutment. No R & R is involved. No National Park/Wild Life Sanctuary/Reserve Forest is located within 10 km radius of the project site. Manganese ore, Fe-Mn slag, coke breeze, quartz, dolomite, iron scrap and pet coke will be used as raw materials. Total cost of the proposed project is Rs. 101.10 Crores. Rs. 4.2 Crores and Rs. 45 Lakhs/Annum will be earmarked towards total capital cost and recurring cost for environmental pollution control measures.

3. Following are the details of existing and proposed facilities to be installed along with the production capacity:

Main Plant	**Units**	**Existing**	**Additional**
	Submerged Arc Furnace	2 X 7.5 MVA	2 X 7.5 MVA
	Induction Furnace	2 X 7 T	-
	Sinter Plant	-	1 X 300 TPD
Installed	**Items**	**Existing**	**Additional**

Capacity	M.S. Ingots	53,004 TPA	-
	Ferro Manganese	17,076 TPA	31,500 TPA
	Silico Manganese	11,394 TPA	22,500 TPA
	Ferro Silicon	-	9,000 TPA
	Mn Ore Sinter	-	90,000 TPA

4. It is noted that the smoke and fumes collected from SAF and Sinter Plant by the hood will be passed through bag filter before discharging through a stack of adequate height. Fugitive emissions from raw material handling section will be suppressed by dry fogging system/water sprinkling.

5. Make up water requirement for the proposed plant will be 45 m^3/day in addition to existing requirement of 22 m^3/day which will be sourced from bore well/rainwater harvesting pond. Maximum recycling of wastewater will be carried after treatment to achieve zero discharge. Treated waste water will be used for dust suppression and green belt development. Effluent streams such as cooling tower blow down, floor washings, laboratory effluent etc. will be used for fugitive dust suppression, water sprinkling etc. Sewage generated from factory premises will be disposed off through septic tanks followed by soak pit. Acoustic enclosure will be provided to DG set. Total power requirement of 38.5 MW will be met by Damodar Valley Corporation (DVC). DG set of capacity 1 X 250 kVA will be installed and used during power failure only

6. Bag filter dust will be recycled in the process. Fe-Mn slag will be utilized in Si-Mn production. Slag from Si-Mn production will be used in land / road / area development / manufacturing of insulated bricks & coloured glass. Fe-Si slag will be utilized in cupola furnace as raw material. All pumps and motors will be selected from less noise generating types. Ear plugs will be provided to employees working in high noise prone areas

7. The proposal was considered by the Expert Appraisal Committee-1 (Industry) in its 35th meeting held during 26th - 27th April, 2012. The Committee recommended the proposal for environmental clearance subject to stipulation of specific conditions along with other environmental conditions. Public hearing for the project was held on 16.11.2011.

8. Based on the information submitted by you, presentation made by you and your consultant, M/s Environ India, Kolkata, the Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated 14th September 2006 subject to strict compliance of the following Specific and General conditions:

A. SPECIFIC CONDITIONS:

i. No charcoal shall be used as fuel. Pet coke shall be used as fuel instead of charcoal from unknown sources.

ii. Continuous monitoring facilities for all the major stacks and sufficient air pollution control equipments viz. fume extraction system with bag filters, ID fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 50 mg/Nm^3.

iii. The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed.

iv. Secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.

v. Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the E(P) Act whichever are more stringent. Leachate study for the effluent generated and analysis should also be regularly carried out and report submitted to the Ministryôs Regional Office at Bhubaneswar, SPCB and CPCB.

vi. The total water requirement shall not exceed 45 m^3/day. ôZeroô effluent discharge shall be strictly followed and no wastewater should be discharged outside the premises. Permission from the competent authority for drawl of water shall be obtained

vii. Efforts shall be made to make use of rain water harvested. If needed, capacity of the reservoir should be enhanced to meet the maximum water requirement. Only balance water requirement should be met from other sources.

viii. Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture of Silico Manganese (Si-Mn). All the other ferro alloy slag shall be used in the preparation of building materials.

ix. No Ferro Chrome shall be manufactured without prior approval from the Ministry of Environment & Forests.

x. Risk and Disaster Management Plan along with the mitigation measures should be prepared and a copy submitted to the Ministryôs Regional Office at Bhubaneswar, SPCB and CPCB within 3 months of issue of environment clearance letter.

xi. All the commitments made to the public during the Public Hearing / Public Consultation meeting held on 16th November, 2011 should be satisfactorily implemented and a separate budget for implementing the same should be allocated and information submitted to the Ministryôs Regional Office at Bhubaneswar.

xii. As proposed, green belt should be developed in at least 33 % of the project area. Selection of plant species shall be as per the CPCB guidelines in consultation with the DFO.

xiii. At least 5 % of the total cost of the project should be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan should be prepared and submitted to the Ministryôs Regional Office at Bhubaneswar. Implementation of such program shall be ensured accordingly in a time bound manner.

xiv. The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

B. GENERAL CONDITIONS:

i. The project authorities must strictly adhere to the stipulations made by the West Bengal Pollution Control Board (WBPCB) and the State Government.

ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.

iii. At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM, SO_2 and NO_X are anticipated in consultation with the WBPCB including one ambient air quality monitoring station in the downwind direction. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the WBPCB / CPCB once in six months.

iv. Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.

v. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).

vi. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

vii. The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.

viii. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.

ix. Requisite amount shall be earmarked towards the capital cost and recurring cost/annum for environmental protection measures and judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.

x. A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.

xi. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the WBPCB. The criteria pollutant levels namely; SPM, RSPM, SO_2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

xii. The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of

monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF at Bhubaneswar, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar / CPCB / WBPCB shall monitor the stipulated conditions.

xiii. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company alongwith the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.

xiv. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the WBPCB and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bhubaneswar.

xv. Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.

9. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

10. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

11. The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention &. Control of Water Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

(A N Singh)
Dy. Director

Copy to:

1. The Secretary, Department of Environment, Govt. of West Bengal, Kolkata, West Bengal.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
3. The Chairman, West Bengal Pollution Control Board, Parivesh Bhawan, 10A Block-LA, Sector-III, Salt Lake, Kolkata - 700091, West Bengal.
4. The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests A-3, Chandrashekharpur, Bhubaneswar - 751 023, Orissa
5. Guard File / Monitoring File / Record File.

(A N Singh)
Dy. Director

No.J-11011/188/2011-IA.II(I)

Goverment of India

Minister of Enviroment,Forest and Climate Change

Impact Assessment Division

***

Indira Paryavaran Bhavan,
Vayu Wing,3rd Floor,Aliganj,
Jor Bagh Road,New Delhi-110003
11 Nov 2020

To,

M/s ELOQUENT STEEL PRIVATE LIMITED
Diamond Prestige, 41 A, A J C Bose Road, 8th Floor, Room No. 801, Kolkata, West Bengal, Kolkata-700017
West Bengal

Tel.No.033-66255252; Email:esplmoef@shakambharigroup.in

Sir/Madam,

This has reference to the proposal submitted in the Ministry of Environment, Forest and Climate Change to prescribe the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the proponent had submitted online information in the prescribed format (Form-1) along with a Pre-feasibility Report. The details of the proposal are given below:

1. Proposal No.:	IA/WB/IND/153893/2020
2. Name of the Proposal:	Expansion of Eloquent Steel Pvt. Ltd. for 336,000 TPA Billet Production along with Rolling Mill for production of 210,000 TPA Rolled Product, Installation of 150,000 TPA Briquette Plant, 100,800 TPA Sinter Plant and addition of Pig Iron as product from the Existing Submerged Arc Furnace
3. Category of the Proposal:	Industrial Projects - 1
4. Project/Activity applied for:	3(a) Metallurgical industries (ferrous & non ferrous)
5. Date of submission for TOR:	10 Nov 2020

In this regard, under the provisions of the EIA Notification 2006 as amended, the Standard TOR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior environment clearance is prescribed with public consultation as follows:

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

3(a):STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR METALLURGICAL INDUSTRIES (FERROUS & NON FERROUS) PROJECTS AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT

A. STANDARD TERMS OF REFERENCE (TOR)

1) Executive Summary

2) Introduction

i. Details of the EIA Consultant including NABET accreditation

ii. Information about the project proponent

iii. Importance and benefits of the project

3) 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.

vii. Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)

viii. Process description along with major equipments and machineries, process flow sheet (quantative) from raw material to products to be provided

ix. Hazard identification and details of proposed safety systems.

x. Expansion/modernization proposals:

a. Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Regional Office of the Ministry of Environment and Forests as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, status of compliance of Consent to Operate for the ongoing Iexisting operation of the project from SPCB shall be attached with the EIA-EMP report.

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

b. 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.

4) 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.

ii. A toposheet of the study area of radius of 10km 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. Details w.r.t. option analysis for selection of site

iv. Co-ordinates (lat-long) of all four corners of the site.

v. Google map-Earth downloaded of the project site.

vi. 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.

vii. Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.

viii. 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)

ix. A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area

x. Geological features and Geo-hydrological status of the study area shall be included.

xi. Details of Drainage of the project upto 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)

xii. Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.

xiii. R&R details in respect of land in line with state Government policy

5) 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. Landuse map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha)

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

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-à-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

6) 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 PM10, PM2.5, SO2, 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 (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.

v. Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC, if yes give details.

vi. Ground water monitoring at minimum at 8 locations shall be included.

vii. Noise levels monitoring at 8 locations within the study area.

viii. Soil Characteristic as per CPCB guidelines.

ix. Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.

x. 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.

xi. Socio-economic status of the study area.

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

7) Impact 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 Modelling 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 assessed. Details of the model used and the input data used for modelling 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 - in case of discharge in water body

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 of wastewater from different plant operations, extent recycled and reused 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 E(P) Rules.

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 management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant 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 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.

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 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.

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

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.

8) Occupational health

i. Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers

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 above mentioned parameters as per age, sex, duration of exposure and department wise.

iii. Details of existing Occupational & Safety Hazards. What are the exposure levels of 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,

iv. Annual report of heath status of workers with special reference to Occupational Health and Safety.

9) 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

10) 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.

11) Enterprise Social Commitment (ESC)

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.

12) 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.

13) 'A tabular chart with index for point wise compliance of above TOR.

B. SPECIFIC TERMS OF REFERENCE FOR EIASTUDIES FOR METALLURGICAL INDUSTRIES (FERROUS & NON FERROUS)

1) Complete process flow diagram describing each unit, its processes and operations, along with material and energy inputs & outputs (material and energy balance).

2) Details on blast furnace/ open hearth furnace/ basic oxygen furnace/ladle refining, casting and rolling plants etc.

3) Details on installation/activation of opacity meters with recording with proper calibration system

4) Details on toxic metals including mercury, arsenic and fluoride emissions

5) Details on stack height requirement for integrated steel

6) Details on ash disposal and management -Non-ferrous metal

7) Complete process flow diagram describing production of lead/zinc/copper/ aluminium, etc.

8) Raw materials substitution or elimination

9) Details on smelting, thermal refining, melting, slag fuming, and Waelz kiln operation

10) Details on Holding and de-gassing of molten metal from primary and secondary aluminum, materials pre-treatment, and from melting and smelting of secondary aluminium

11) Details on solvent recycling

12) Details on precious metals recovery

13) Details on composition, generation and utilization of waste/fuel gases from coke oven plant and their utilization.

14) Details on toxic metal content in the waste material and its composition and end use (particularly of slag).

15) Trace metals Mercury, arsenic and fluoride emissions in the raw material.

16) Trace metals in waste material especially slag.

17) Plan for trace metal recovery

18) Trace metals in water

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

C. ADDITIONAL TOR FOR INTEGRATED STEEL PLANT

1). Iron ore/coal linkage documents along with the status of environmental clearance of iron ore and coal mines

2). Quantum of production of coal and iron ore from coal & iron ore mines and the projects they cater to. Mode of transportation to the plant and its impact

3). For Large ISPs, a 3-D view i.e. DEM (Digital Elevation Model) for the area in 10 km radius from the proposal site. MRL details of project site and RL of nearby sources of water shall be indicated.

4). Recent land-use map based on satellite imagery. High-resolution satellite image data having 1m-5m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc. for the 10 Km radius area from proposed site. The same shall be used for land used/land-cover mapping of the area.

5). Respirable Suspended particulate matter (RSPM) present in the ambient air must be analysed for source analysis - natural dust/RSPM generated from plant operations (trace elements). The RSPM shall also be analysed for presence of poly-aromatic hydrocarbons (PAH), i.e. Benzene soluble fraction, where applicable. Chemical characterization of RSPM and incorporating of RSPM data.

6). All stock piles will have to be on top of a stable liner to avoid leaching of materials to ground water.

7). Plan for the implementation of the recommendations made for the steel plants in the CREP guidelines.

8). Plan for slag utilization

9). Plan for utilization of energy in off gases (coke oven, blast furnace)

10). System of coke quenching adopted with justification.

***

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ESPL/AA/01-26**	**Report No.:**	**VEL/AA/2003/05/001-026**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
Sample Collected By:	**Vardan Envirolab Representative**	**Equipment Used:**	**RDS & FPS with all accessories**
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Near Project site (A1)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
02/12/2019	65.1	45.5	28.4	20.5	0.54
03/12/2019	66.8	46.9	29.2	21.2	0.62
09/12/2019	78.8	44.4	29.5	22.0	0.75
10/12/2019	75.5	47.8	28.9	20.9	0.78
16/12/2019	76.8	41.1	32.1	21.3	0.75
17/12/2019	77.1	49.8	30.8	21.4	0.70
23/12/2019	66.4	46.0	31.5	20.6	0.68
24/12/2019	76.2	39.8	33.8	22.1	0.73
30/12/2019	75.4	46.2	34.0	23.5	0.83
31/12/2019	78.4	45.1	31.5	24.8	0.91
06/01/2020	76.8	49.8	32.8	21.6	0.69
07/01/2020	71.8	44.5	32.4	23.0	0.78
13/01/2020	79.2	42.7	29.5	22.8	0.99
14/01/2020	75.0	47.6	30.3	21.0	0.75
20/01/2020	79.6	46.0	32.1	21.5	0.72
21/01/2020	75.6	34.5	34.0	20.1	0.91
27/01/2020	76.1	39.1	30.1	22.6	0.77
28/01/2020	77.9	39.5	29.5	20.8	1.05
03/02/2020	76.1	45.6	30.8	21.5	0.91
04/02/2020	75.9	46.1	32.0	22.4	0.73
10/02/2020	79.5	47.0	33.1	22.8	0.75

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN Dr (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/001-026				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
11/02/2020	76.1	39.6	35.8	21.0	0.70
17/02/2020	77.0	45.2	36.8	20.4	1.00
18/02/2020	79.8	42.8	34.5	22.2	0.80
24/02/2020	75.6	48.8	38.8	23.9	0.75
25/02/2020	70.1	39.6	35.8	21	0.86

Limit as per NAAQS	**Parameter**	**PM10 ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m^3)**
	--	**100**	**60**	**80**	**80**	**4**

***National Ambient Air Quality Standards**

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL /AA/27-52**	**Report No.:**	**VEL/AA/2003/05/027-052**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
Sample Collected By:	**Vardan Envirolab Representative**	**Equipment Used:**	**RDS & FPS with all accessories**
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Village- Shrirampur(A2)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
02/12/2019	55.1	35.5	21.5	10.7	0.48
03/12/2019	59.2	32.8	21.6	10.2	0.61
09/12/2019	56.2	42.4	18.1	13.1	0.52
10/12/2019	69.4	29.6	17.5	14.6	0.55
16/12/2019	63.4	26.9	19.4	13.9	0.62
17/12/2019	59.8	42.5	18.7	15.2	0.65
23/12/2019	63.5	34.9	20.2	10.0	0.56
24/12/2019	66.4	33.3	19.8	14.7	0.60
30/12/2019	57.7	32.4	21.8	13.4	0.66
31/12/2019	59.8	36.4	24.8	18.5	0.82
06/01/2020	62.5	39.5	25.3	16.1	0.72
07/01/2020	56.9	31.8	26.1	20.0	0.66
13/01/2020	58.4	32.4	28.4	10.8	0.62
14/01/2020	64.2	31.2	23.5	12.3	0.60
20/01/2020	57.9	30.7	26.1	14.6	0.47
21/01/2020	59.2	44.5	24.9	16.3	0.55
27/01/2020	56.9	30.2	27.1	15.9	0.60
28/01/2020	59.4	34.5	26.7	17.6	0.54
03/02/2020	61.2	32.1	27.8	14.4	0.50
04/02/2020	63.4	33.1	25.6	16.2	0.49
10/02/2020	56.9	36.2	23.5	17.0	0.58

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN Environ... (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/027-052				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
11/02/2020	54.2	34.5	19.7	13.6	0.62
17/02/2020	53.6	33.8	17.5	17.6	0.53
18/02/2020	58.1	47.1	23.8	15.5	0.58
24/02/2020	57.6	39.4	26.4	19.1	0.62
25/02/2020	53.1	45.7	24.2	16.0	0.36

Limit as per NAAQS	**Parameter**	**PM10 ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
	--	**100**	**60**	**80**	**80**	**4**

VARDAN ENVIROLAB GURUGRAM
(Checked By)

VARDAN ENVIROLAB
(Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL /AA/53-78**	**Report No.:**	**VEL/AA/2003/05/053-078**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
		Equipment Used:	**RDS & FPS with all accessories**
Sample Collected By:	**VardanEnvirolab Representative**	**Protocol Used:**	**IS-5182**
Sample Description:	**Ambient Air Quality Monitoring**	**Parameter Required**	**As per work order**
Location:	**Village-Digari(A3)**		

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
02/12/2019	78.4	47.8	38.1	24.5	0.57
03/12/2019	81.2	49.5	36.6	26.4	0.53
09/12/2019	85.6	52.2	37.2	29.9	0.58
10/12/2019	81.5	49.7	39.4	24.8	0.61
16/12/2019	82.5	50.3	36.9	25.4	0.53
17/12/2019	78.4	47.8	38.0	26.0	0.56
23/12/2019	79.9	48.7	37.9	21.2	0.58
24/12/2019	81.5	49.7	39.4	22.5	0.56
30/12/2019	82.4	50.3	37.9	23.2	0.61
31/12/2019	82.5	50.3	37.5	25.9	0.65
06/01/2020	84.0	51.2	33.6	23.5	0.83
07/01/2020	72.5	44.2	39.1	25.2	0.97
13/01/2020	76.8	46.8	35.1	22.5	0.73
14/01/2020	77.7	47.4	30.0	21.0	1.05
20/01/2020	86.7	52.9	37.4	24.2	1.00
21/01/2020	77.6	47.3	27.6	21.2	1.07
27/01/2020	79.4	48.4	25.8	22.0	0.92
28/01/2020	80.4	49.0	29.4	23.2	0.77
03/02/2020	77.0	47.0	36.1	24.8	0.97
04/02/2020	76.6	46.7	38.0	24.1	1.07
10/02/2020	80.6	49.2	39.2	16.5	0.92

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN Environ... (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/053-078				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
11/02/2020	77.4	47.2	27.6	25.0	1.01
17/02/2020	84.1	51.3	37.5	24.4	0.78
18/02/2020	82.2	50.1	34.7	22.8	1.09
24/02/2020	79.4	48.4	37.0	21.2	1.03
25/02/2020	78.1	47.6	33.6	20.5	0.62

Note - *Below Detection Limit

Limit as per NAAQS	**Parameter**	**PM10 ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
	--	**100**	**60**	**80**	**80**	**4**

***National Ambient Air Quality Standards**

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL /AA/79-104**	**Report No.:**	**VEL/AA/2003/05/079-104**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
Sample Collected By:	**VardanEnvirolab Representative**	**Equipment Used:**	**RDS & FPS with all accessories**
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Near Maheshpur(A4)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM10 (µg/m3)	PM2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (mg/m3)
04/12/2019	42.2	26.1	10.8	10.2	0.41
05/12/2019	58.8	33.8	13.6	8.9	0.34
11/12/2019	50.8	30.4	21.9	10.4	0.45
12/12/2019	42.8	26.7	19.8	12.0	0.42
18/12/2019	46.2	29.1	20.7	8.2	0.44
19/12/2019	48.1	30.4	21.5	12.4	0.45
25/12/2019	49.2	29.5	20.0	9.1	0.42
26/12/2019	52.0	32.8	20.1	10.8	0.45
01/01/2020	56.4	38.8	22.4	10.2	0.36
02/01/2020	56.4	37.0	21.6	11.5	0.41
08/01/2020	57.2	37.1	23.6	10.2	0.42
09/01/2020	58.1	35.8	20.2	12.6	0.41
15/01/2020	52.6	32.6	22.4	8.9	0.42
16/01/2020	52.4	32.4	22.7	11.6	0.44
22/01/2020	46.8	26.2	21.4	10.4	0.45
23/01/2020	44.2	24.2	24.1	14.2	0.42
29/01/2020	45.2	24.9	22.4	14.9	0.45
30/01/2020	32.2	16.1	21.0	8.2	0.45
05/02/2020	40.8	26.1	20.4	10.1	0.42
06/02/2020	42.8	22.9	12.1	12.0	0.41

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/079-104				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
12/02/2020	46.4	24.1	12.4	19.4	0.41
13/02/2020	43.4	22.6	20.2	18.1	0.44
19/02/2020	52.2	32.0	20.4	12.0	0.45
20/02/2020	51.8	31.4	22.2	11.5	0.42
26/02/2020	53.6	33.1	23.4	10.6	0.41
27/02/2020	54.4	33.9	25.1	8.8	0.45

Note - *Below Detection Limit

Limit as per NAAQS	Parameter	PM10 ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
	--	100	60	80	80	4

*National Ambient Air Quality Standards

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL /AA/105-130**	**Report No.:**	**VEL/AA/2003/05/105-130**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
		Equipment Used:	**RDS & FPS with all accessories**
Sample Collected By:	**VardanEnvirolab Representative**		
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Sabanpur (A5)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
04/12/2019	76.2	39.1	29.2	15.2	0.79
05/12/2019	65.2	43.8	28.1	18.6	0.69
11/12/2019	66.9	44.1	29.8	13.3	0.72
12/12/2019	78.2	43.8	28.4	15.5	0.63
18/12/2019	71.9	43.9	31.4	20.9	0.70
19/12/2019	71.2	44.4	30.8	19.4	0.76
25/12/2019	75.4	43.8	30.2	23.5	0.71
26/12/2019	69.8	43.2	32.0	26.2	0.68
01/01/2020	68.2	42.6	31.4	19.2	0.61
02/01/2020	74.6	45.6	29.5	21.4	0.65
08/01/2020	78.2	43.8	28.5	22.2	0.80
09/01/2020	75.2	40.2	29.2	21.8	0.97
15/01/2020	72.9	46.7	31.6	20.2	0.73
16/01/2020	78.0	41.9	32.0	19.4	0.63
22/01/2020	75.4	43.5	29.2	18.6	0.81
23/01/2020	67.8	42.4	30.7	20.0	0.77
29/01/2020	69.1	42.1	31.8	14.4	0.83
30/01/2020	71.6	43.9	32.0	18.4	0.77
05/02/2020	76.2	42.9	28.7	18.2	0.97
06/02/2020	77.4	42.5	29.2	20.5	0.83

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/105-130				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
12/02/2020	78.1	44.2	25.4	21.4	0.81
13/02/2020	68.1	42.1	27.2	21.1	0.72
19/02/2020	75.2	43.4	29.1	19.9	0.82
20/02/2020	73.6	44.8	30.5	20.0	0.74
26/02/2020	77.4	42.6	31.6	19.3	0.70
27/02/2020	74.1	36.5	32.4	10.2	0.66

Note - *Below Detection Limit3

Limit as per NAAQS	**Parameter**	**PM10 ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
	--	**100**	**60**	**80**	**80**	**4**

***National Ambient Air Quality Standards**

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB Dr. Singh (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL /AA/131-156**	**Report No.:**	**VEL/AA/2003/05/131-156**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
Sample Collected By:	**VardanEnvirolab Representative**	**Equipment Used:**	**RDS & FPS with all accessories**
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Village- Dobipur(A6)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
04/12/2019	52.1	31.2	28.8	18.4	0.69
05/12/2019	58.8	33.1	33.1	16.4	0.64
11/12/2019	59.1	38.9	27.8	15.2	0.66
12/12/2019	62.0	44.2	36.6	17.4	0.53
18/12/2019	54.5	41.9	27.3	18.5	0.64
19/12/2019	63.4	38.2	23.6	17.6	0.62
25/12/2019	68.5	40.4	35.8	15.4	0.66
26/12/2019	67.6	39.0	38.7	18.2	0.77
01/01/2020	68.1	40.1	21.8	17.8	0.66
02/01/2020	52.5	31.1	34.7	18.2	0.62
08/01/2020	54.1	33.4	24.6	18.9	0.68
09/01/2020	53.4	32.2	16.5	14.2	0.66
15/01/2020	58.6	39.8	25.8	17.4	0.78
16/01/2020	62.4	32.0	30.0	15.0	0.70
22/01/2020	65.9	43.2	27.5	17.3	0.64
23/01/2020	69.2	45.5	23.1	17.4	0.72
29/01/2020	64.6	39.8	22.2	15.2	0.64
30/01/2020	60.8	40.1	29.8	14.9	0.71
05/02/2020	54.1	33.2	25.0	15.8	0.79
06/02/2020	56.2	34.1	21.6	16.4	0.74

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN Environ... (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/131-156				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
12/02/2020	58.1	35.1	27.5	17.2	0.87
13/02/2020	59.8	38.6	29.1	16.4	0.75
19/02/2020	64.0	47.8	26.6	15.2	0.70
20/02/2020	54.2	35.8	21.6	16.1	0.66
26/02/2020	59.0	40.0	28.7	17.8	0.64
27/02/2020	58.1	34.5	12.8	15.4	0.71

Note - *Below Detection Limit

Limit as per NAAQS	Parameter	PM10 ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
	--	100	60	80	80	4

*National Ambient Air Quality Standard

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL /AA/157-181**	**Report No.:**	**VEL/AA/2003/05/157-181**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
		Equipment Used:	**RDS & FPS with all accessories**
Sample Collected By:	**VardanEnvirolab Representative**		
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Village –Alkusha(A7)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
06/12/2019	73.5	39.2	22.4	18.2	0.61
07/12/2019	71.2	42.1	23.9	10.8	0.62
13/12/2019	72.7	44.5	29.0	17.0	0.54
14/12/2019	69.2	42.4	32.8	19.4	0.58
20/12/2019	72.5	38.1	23.6	20.1	0.64
21/12/2019	73.5	32.0	28.8	18.6	0.62
27/12/2019	69.0	33.4	27.4	12.0	0.66
28/12/2019	64.5	39.6	30.0	15.8	0.60
03/01/2020	60.1	39.4	29.8	16.4	0.65
04/01/2020	66.3	37.4	20.3	17.6	0.70
10/01/2020	72.6	40.0	17.6	16.8	0.66
11/01/2020	71.1	45.8	28.2	18.1	0.61
17/01/2020	63.1	42.5	20.0	19.8	0.72
18/01/2020	73.8	32.6	25.4	19.2	0.66
24/01/2020	71.5	42.2	25.8	17.4	0.64
25/01/2020	73.5	43.1	18.6	17.4	0.66
31/01/2020	61.8	40.4	29.1	12.0	0.56
07/02/2020	63.4	42.5	25.2	10.4	0.66
08/02/2020	71.5	44.9	24.8	19.6	0.61
14/02/2020	74.0	39.5	28.6	18.2	0.67

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN Environ... Dr ... Singh (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/157-181				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
15/02/2020	67.5	36.5	26.1	17.6	0.64
21/02/2020	59.4	30.7	29.8	18.4	0.62
22/02/2020	60.7	32.8	26.2	20.2	0.70
28/02/2020	62.5	34.6	27.1	21.8	0.73
29/02/2020	67.1	38.4	30.0	20.0	0.66

Note - *Below Detection Limit

Limit as per NAAQS	Parameter	PM10 ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
	--	100	60	80	80	4

*National Ambient Air Quality Standard

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	**VEL/ ESPL/AA/182-212**	**Report No.:**	**VEL/AA/2003/05/188-206**
Name & Address of Project	**M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal**	**Reporting Date:**	**05/03/2020**
		Ref. No:	**NIL**
		Monitoring Period:	**Dec 2019 to Feb 2020**
Sample Collected By:	**VardanEnvirolab Representative**	**Equipment Used:**	**RDS & FPS with all accessories**
Sample Description:	**Ambient Air Quality Monitoring**	**Protocol Used:**	**IS-5182**
Location:	**Village –Lalbazar(A8)**	**Parameter Required**	**As per work order**

RESULTS

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m3)
06/12/2019	65.1	39.1	25.4	18.2	0.69
07/12/2019	66.8	43.8	26.1	10.8	0.64
13/12/2019	66.3	35.6	28.9	17.0	0.66
14/12/2019	75.5	43.8	31.4	19.4	0.58
20/12/2019	76.8	43.9	30.8	20.1	0.64
21/12/2019	72.1	38.2	28.4	18.6	0.62
27/12/2019	66.4	40.1	27.9	12.0	0.66
28/12/2019	71.5	43.2	25.1	19.8	0.77
03/01/2020	75.4	42.6	23.8	16.4	0.66
04/01/2020	78.4	41.9	25.7	17.6	0.75
10/01/2020	71.1	43.8	21.9	18.2	0.76
11/01/2020	65.9	40.2	27.5	20.2	0.71
17/01/2020	68.5	39.5	30.1	19.8	0.78
18/01/2020	71.8	41.9	25.6	20.2	0.70
24/01/2020	66.9	40.4	26.4	18.6	0.66
25/01/2020	71.1	41.2	24.3	17.4	0.72
31/01/2020	76.1	39.4	23.4	12.0	0.64
07/02/2020	69.2	41.2	29.5	9.2	0.71
08/02/2020	76.5	42.9	30.8	19.6	0.79
14/02/2020	71.1	40.7	26.8	18.2	0.83

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN Environ... (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VEL/AA/2003/05/181-206				
Date	**PM_{10} ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
15/02/2020	72.1	37.9	28.4	17.6	0.87
21/02/2020	76.1	42.1	30.4	18.4	0.75
22/02/2020	65.2	40.5	24.8	19.5	0.74
28/02/2020	68.2	38.7	29.4	20.2	0.80
29/02/2020	75.6	42.6	26.7	20.0	0.64

Note - *Below Detection Limit

Limit as per NAAQS	**Parameter**	**PM10 ($\mu g/m^3$)**	**$PM_{2.5}$ ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**CO (mg/m3)**
	--	**100**	**60**	**80**	**80**	**4**

***National Ambient Air Quality Standard**

VARDAN ENVIROLAB GURUGRAM (Checked By)

VARDAN ENVIROLAB (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEI/ESPL/W/01	Report No.:	VEL/W/2001/17001
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd.-(ESPL) Expansion of Existing Steel Plant Village: Nakrajoria, P.S.: Salampur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 - 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Project Site (GW1)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH at 25°C	APHA ,4500-H+ B Electrometric Method	8.13	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B, Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	250.00	mg/l	200	600
7.	Calcium as Ca	APHA 3500 Ca B, EDTA Titrimetric Method	83.30	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	188.00	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	97.42	mg/l	250	1000
10.	*Cyanide as CN	APHA , 4500 CN^- D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	10.24	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	410.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	24.0	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F D, SPADNS Method	0.22	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 5025 (P-34) ,Chromotropic Method	9.01	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1.10 Phenanthroline Method	0.24	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA , 3111 B, Direct Air. Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

MEENU KAUSHIK
LAB ANALYST
(Tested By)

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No: VEL/ESPL/W/01			Report No.: VEL/W/2001/17001			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 2510 B, Conductivity Meter Method	683	µS/cm	--	--
21.	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l	0.5	No Relaxation
23.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.30	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.42	mg/l	0.05	1.5
26.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(** DL 0.005 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.0005 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	<2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note - These parameters are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

MEENU KAUSHIK
SR. ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/02	Report No.:	VEL/W/2001/17002
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nabarjoora, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village- Digari (GW2)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS: 10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	8.22	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 1Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	193.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500-Ca B, EDTA Titrimetric Method	60.10	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	176.00	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	58.00	mg/l	250	1000
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	8.39	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	454.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	23.00	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	0.24	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	11.00	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.21	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 4500B-C, Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA , 3111 B, Direct Air Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

MEENU KAUSHIK
CHEMIST & ANALYST
(Tested By)

(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No : VEL/ESPL/W/02			Report No.: VEL/W/2001/17002			
S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA, 2510 B, Conductivity Meter Method	723	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.04mg/l)	mg/l	0.5	No Relaxation
23.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.28	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.52	mg/l	0.05	1.5
26.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.003 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 3114 B, Manual Hydride Generation	*BDL(**DL 0.0005 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note - *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

MUKUL KAUSHIK (Tested By) LAB ANALYST

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/03	Report No.:	VEL/W/2001/17/003
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakrajola, P.S.: Salanpur, District: Burdwan. West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village Shrirampur (GW3)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected By:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA .4500-H⁺ B Electrometric Method	7.15	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odor	APHA, 2150 B . Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA . 2340 C. EDTA Titrimetric Method	218.00	mg/l	200	600
7.	Calcium as Ca	APHA. 3500 Ca B. EDTA Titrimetric Method	59.10	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	191.00	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl⁻ B, Argentometric Method	53.8	mg/l	250	1000
10.	*Cyanide as CN	APHA . 4500 CN⁻ D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B. Calculation Method	17.14	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	468.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	24.00	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F⁻ D, SPADNS Method	0.27	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	11.05	mg/l	45	No Relaxation
16.	Iron as Fe	APHA . 3500-Fe B 1,10 Phenanthroline Method	0.20	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA . 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

(Tested By) (Checked By) (Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No :VEL/ESPL/W/03			Report No: VEL/W/2001/17/003			
S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA, 2510 B, Conductivity Meter Method	780	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l	0.5	No Relaxation
23.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.35	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.50	mg/l	0.05	1.5
26.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(** DL 0.005 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.0005 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	<2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *These parameter are not covered in our NABL scope.
*BDL- Below Detection Limit, **DL- Detection Limit

(Tested By) MEENU KAUSHIK SR. ANALYST

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	YEL/ESPL/W/04	Report No.:	YEL/W/2001/17004
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakrajoria, P.S.: Sitarampur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village Dobipur (GW4)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA .4500-H+ B Electrometric Method	7.43	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B. Visual Comparison Method	*BDL (**DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA. 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA. 2150 B , Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA . 2160 B. Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	213.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	64.00	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B. Titrimetric Method	174.00	mg/l	200	600
9.	Chloride as Cl	APHA. 4500-Cl- B. Argentometric Method	59.00	mg/l	250	1000
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	12.95	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	436.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E. Turbidimetric Method	24.50	mg/l	200	400
14.	Fluoride as F	APHA . 4500-F- D. SPADNS Method	0.25	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	12.67	mg/l	45	No Relaxation
16.	Iron as Fe	APHA . 3500-Fe B 1,10 Phenanthroline Method	0.23	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA . 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA. 4500B C. Carmine Method	*BDL(**DL 0.5 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

(Tested By) MEENU KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ESPL/W/04 | Report No.: VEL/W/2001/17/004

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA, 2510 B, Conductivity Meter Method	726	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.03mg/l)	mg/l	0.5	No Relaxation
23.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.42	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.40	mg/l	0.05	1.5
26.	Manganese as Mn	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(** DL 0.005 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA . 3114 B, Manual Hydride Generation	*BDL(**DL 0.0005 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA . 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note - *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

(Tested By) VEENU KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/05	Report No.:	VEL/W/2001/17005
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nabrajoria, P.S.: Salanpur, District: Burdwan West Bengal	Format No.:	7.8.9-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village Near Maheshpur (GW 5)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 4500-H+ B Electrometric Method	7.38	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 2120 B, Visual Comparison Method	*BDL (**DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA. 2150 B , Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	210.10	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	68 .00	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	220.00	mg/l	200	600
9.	Chloride as Cl	APHA. 4500-Cl- B, Argentometric Method	78.00	mg/l	250	1000
10.	#Cyanide as CN	APHA . 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA . 3500 Mg B, Calculation Method	9.82	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	330.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	16.00	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	0.41	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	18.05	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.24	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA. 4500B C, Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

(Tested By) MEENU KAUSHIK ANALYST

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ES/PL/W/05 — Report No.: VEL/W/2001/17005

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA, 2510 B, Conductivity Meter Method	683	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	#Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l	0.5	No Relaxation
23.	#Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.40	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.47	mg/l	0.05	1.5
26.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.005 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	<2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - #These parameter are not covered in our NABL scope.
*BDL-Below Detectable Limit, **DL- Detection Limit

(Tested By) — ARJUN RAWAT (Checked By) — (Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/06	Report No.:	VEL/W/2001/17/006
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakrajoria, P.S.: Sitarampur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village Alkusha (GW6)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.19	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA .2120 B, Visual Comparison Method	*BDL (**DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA. 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA. 2150 B . Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B. Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA , 2340 C. EDTA Tirimetric Method	205.00	mg/l	200	600
7.	Calcium as Ca	APHA. 3500 Ca B, EDTA Tirimetric Method	65.90	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Tirimetric Method	191.00	mg/l	200	600
9.	Chloride as Cl	APHA. 4500-Cl B. Argentometric Method	56.00	mg/l	250	1000
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	9.86	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	342.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	19.50	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	0.25	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	14.02	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1.10 Phenanthroline Method	0.26	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL0.01mg/l)	mg/l	0.03	0.2
18.	Boron	APHA. 4500B C, Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA , 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

MEENU KAUSHIK
ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ESPL/W/06				Report No.: VEL/W/2001/17/006		
					Limits of IS:10500 -2012	
S. No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA, 2510 B, Conductivity Meter Method	570	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l	0.5	No Relaxation
23.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.39	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.41	mg/l	0.05	1.5
26.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.06 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.005mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *These parameters are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

MEHUL KAUSHIK K. SR. ANALYST (Tested By)

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/07	Report No.:	VEL/W/2001/17/007
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd.(ESPL) Expansion of Existing Steel Plant Village: Nakrajarka, P.S.: Satanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village Ramdih (GW7)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnviro Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.51	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 1Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B , Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	192.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	61.42	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	298.00	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	57.82	mg/l	250	1000
10.	*Cyanide as CN	APHA , 4500 CN D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	9.41	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	450.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	18.90	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F D, SPADNS Method	0.22	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) Chromotropic Method	13.67	mg/l	45	No Relaxation
16.	Iron as Fe	APHA , 3500-Fe B 1.10 Phenanthrolene Method	0.27	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C, Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

MEENU KAUSHIK
LAB ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ESPL/W/07			Report No.: VEL/W/2001/17007			
S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA. 2510 B, Conductivity Meter Method	750	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS 3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l	0.5	No Relaxation
23.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.08	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.50	mg/l	0.05	1.5
26.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.005 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA . 3114 B, Manual Hydride Generation	*BDL(**DL 0.0005 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA . 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL(**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note : *These parameter are not covered in our NABL scope
*BDL- Below Detection Limit, **DL- Detection Limit

MEENU KAUSHIK
ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 52A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/08	Report No.:	VEL/W/2001/17008
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020 – 22/01/2020
		Receipt Date:	17/01/2020
Sample Description:	Ground Water Sample	Sampling Date:	15/01/2020
Sample Location:	Village Salanpur (GW8)	Sampling Quantity:	5.0 Ltr + 250 ml
Sample Collected by:	VardanEnvirn Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS-10500-2012,APHA &SOP	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA .4500-H+ B Electrometric Method	7.58	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA ,2120 B, Visual Comparison Method	*BDL (**DL 1Hazen)	Hazen	5	15
3.	Turbidity	APHA. 2130 B, Nephelometric Method	*BDL (**DL 1 NTU)	NTU	1	5
4.	Odo.	APHA. 2150 B , Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA , 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA . 2340 C, EDTA Titrimetric Method	128.00	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	34.20	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	258.00	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	72.00	mg/l	250	1000
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA . 3500 Mg B, Calculation Method	7.94	mg/l	30	100
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	420.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	32.00	mg/l	200	400
14.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	0.48	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	4.58	mg/l	45	No Relaxation
16.	Iron as Fe	APHA . 3500-Fe B 1,10 Phenanthroline Method	0.34	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA, 4500B C. Carmine Method	*BDL(**DL 0.05 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.05	No Relaxation

(Tested By) MANOJ KAUSHIK SR. ANALYST (Checked By) ARJUN RAWAT (Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001| ISO 14001| ISO 45001

Test Report

Sample No.: VEL/ESNL/W/08 — Report No.: VEL/W/2001/17008

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20	Conductivity	APHA. 2510 B, Conductivity Meter Method	700	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l	0.5	No Relaxation
23	*Anionic Detergents as MBAS	APHA. 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24	Zinc as Zn	APHA , 3111 B, Direct Air. Acetylene Flame Method	1.98	mg/l	5	15
25.	Copper as Cu	APHA , 3111 B, Direct Air. Acetylene Flame Method	0.32	mg/l	0.05	1.5
26	Manganese as Mn	APHA , 3111 B, Direct Air. Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA , 3111 B, Direct Air. Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28	Lead as Pb	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(** DL 0.005 mg/l)	mg/l	0.01	No Relaxation
29	Selenium as Se	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.0005 mg/l)	mg/l	0.01	No Relaxation
30	Arsenic as As	APHA , 3114 B, Manual Hydride Generation	*BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA , 3112 B, Cold Vapour AAS Method	*BDL (**DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32	Total Coliform	IS 1622	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *These parameter are not covered in our NABL scope.
*BDL- Below Detection Limit, **DL- Detection Limit

ANALYST (Tested By)

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/09	Report No.:	VEL/W/2001/06/009
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nalurajaria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020-10/01/2020
Sampling Location:	Pond Near Dendua (SW1)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA& SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.72	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	15	Hazen
3.	Turbidity	APHA 2130 B, Nephelometric Method	27.00	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA .2340 C. EDTA Titrimetric Method	276.00	mg/l
6.	Calcium as Ca	APHA, 3500 Ca B. EDTA Titrimetric Method	73.50	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B. Titrimetric Method	241.50	mg/l
8.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	69.01	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	22.50	mg/l
12.	Total Dissolved Solids	APHA .2540 C. Gravimetric Method	450.00	mg/l
13.	Total Suspended solids	APHA.2540 D Gravimetric Method	72.00	mg/l
14.	Dissolved Oxygen	APHA.4500 O B Iodometric Method	6.20	mg/l
15.	Sulphate as SO_4^{2-}	APHA , 4500 E, Turbidimetric Method	28.50	mg/l
16.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	0.50	mg/l
17.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	10.00	mg/l
18.	COD	APHA 5220 B. Open Reflux Method	30.00	mg/l

MEENU KAUSHIK
LAB ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001| ISO 14001|ISO 45001

Test Report

Sample No : VEL/ES/L/W/09			Report No: VEL/W/2001/06/009	
S. No.	Parameter	Test Method	Result	Unit
19.	Conductivity	APHA, 2510 B, Conductivity Meter Method	750	µS/cm
20.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	7.45	mg/l
21.	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	35.20	mg/l
22.	Potassium as K	APHA 3500 K B, Flame Photometric Method	9.45	mg/l
23.	Iron as Fe	APHA . 3500-Fe B 1.10 Phenanthroline Method	*BDL(**DL 0.02 mg/l)	mg/l
24.	Aluminium as Al	APHA , 3111 DNitrous Oxide Acetylene Flame Method	0.42	mg/l
25.	Boron	APHA . 4500B C Carmine Method	*BDL(**DL 0.01 mg/l)	mg/l
26.	Chromium as Cr	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
27.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.004mg/l)	mg/l
28.	*Mineral Oil	Clause 6 of IS 3025(Part 39)	*BDL(**DL 0.05 mg/l)	mg/l
29.	*Anionic Detergents as MBAS	APHA 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l
30.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.24	mg/l
31.	Copper as Cu	APHA . 3111 B, Direct Air, Acetylene Flame Method	0.62	mg/l
32.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622	1600	MPN/100ml
35.	Fecal Coliform	IS 1622	900	MPN/100ml

Note - *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

MEENU KAUSHIK
LAB ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/10	**Report No.:**	VEL/W/2001/06/010
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	**Format No.:**	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	**Period of Analysis:**	06/01/2020-10/01/2020
Sampling Location:	Pond Near Banbirdih (SW2)	**Receipt Date:**	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	**Sampling Date:**	04/01/2020
Preservation:	Refrigerator	**Sampling Quantity:**	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA&SOP	**Sampling Type:**	Grab

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.64	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	12.00	Hazen
3.	Turbidity	APHA. 2130 B. Nephelometric Method	26.00	NTU
4.	Odour	APHA, 2150 B . Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	248.00	mg/l
6.	Calcium as Ca	APHA. 3500 Ca B. EDTA Titrimetric Method	78.42	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	121.00	mg/l
8.	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	64.20	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	*Cyanide as CN	APHA , 4500 CN D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	17.56	mg/l
12.	Total Dissolved Solids	APHA . 2540 C, Gravimetric Method	410.00	mg/l
13.	Total Suspended solids	APHA,2540 D Gravimetric Method	68.00	mg/l
14.	Dissolved Oxygen	APHA,4500 O B Iodometric Method	6.2	mg/l
15.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	25.60	mg/l
16.	Fluoride as F	APHA , 4500-F D, SPADNS Method	0.48	mg/l
17.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	9.00	mg/l
18.	COD	APHA, 5220 B, Open Reflux Method	27.00	mg/l

(Tested By) ANKU KAUSHIK S.R. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.:VEL/ESPL/W/10			Report No.:VEL/W/2001/06010	
S. No.	Parameter	Test Method	Result	Unit
19.	Conductivity	APHA, 2510 B, Conductivity Meter Method	683	µS/cm
20.	Nitrate as NO3	IS 3025 (P-34) ,Chromotropic Method	4.30	mg/l
21.	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	42.10	mg/l
22.	Potassium as K	APHA 3500 K B, Flame Photometric Method	12.08	mg/l
23.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.22	mg/l
24.	Aluminium as Al	APHA , 3111 DNitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25.	Boron	APHA, 4500B C, Carmine Method	0.41	mg/l
26.	Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l
28.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l
29.	S[illegible]onic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05 mg/l)	mg/l
30.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.22	mg/l
31.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.60	mg/l
32.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622	1500	MPN/100ml
35.	Fecal Coliform	IS 1622	800	MPN/100ml

Note: *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

VEENU KAUSHIK
SR. ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/11	Report No.:	VEL/W/2001006011
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village-Nakarjoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020-10/01/2020
Sampling Location:	Pond Near Bamra (SW3)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA&SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.36	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	15.00	Hazen
3.	Turbidity	APHA, 2130 B, Nephelometric Method	27.60	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	251.00	mg/l
6.	Calcium as Ca	APHA, 3500 Ca B, EDTA Tutimetric Method	73.10	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Tutimetric Method	238.00	mg/l
8.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	68.40	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	#Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	16.67	mg/l
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	493.00	mg/l
13.	Total Suspended solids	APHA,2540 D Gravimetric Method	108.00	mg/l
14.	Dissolved Oxygen	APHA,4500 O B Iodometric Method	4.99	mg/l
15.	Sulphate as SO_4^{2-}	APHA , 4500 E, Turbidimetric Method	26.02	mg/l
16.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	1.40	mg/l
17.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	9.80	mg/l
18.	COD	APHA, 5220 B, Open Reflux Method	39.00	mg/l

(Tested By) MENU KAUSHIK

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.- VEL/ESPL/W/11			Report No :VEL/W/2001506/011	
S. No.	Parameter	Test-Method	Result	Unit
19.	Conductivity	APHA, 2510 B, Conductivity Meter Method	821	µS/cm
20.	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	6.32	mg/l
21.	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	52.90	mg/l
22.	Potassium as K	APHA 3500 K B, Flame Photometric Method	15.50	mg/l
23.	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.28	mg/l
24.	Aluminium as Al	APHA , 3111 DNitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25.	Boron	APHA, 4500B C, Carmine Method	0.52	mg/l
26.	Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l
28.	*Mineral Oil	Clause 6 of IS 3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l
29.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.015mg/l)	mg/l
30.	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.24	mg/l
31.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.54	mg/l
32.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622	1450	MPN/100ml
35.	Fecal Coliform	IS 1622	800	MPN/100ml

Note: *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

MEENU KAUSHIK
SR. ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/12	Report No.:	VEL/W/2001/06/012
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020 10/01/2020
Sampling Location:	Barakar River Near Dubardihi(SW4)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA&SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H^+ B Electrometric Method	7.50	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	22.30	Hazen
3.	Turbidity	APHA. 2130 B, Nephlelometric Method	28.00	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	264.00	mg/l
6.	Calcium as Ca	APHA. 3500 Ca B. EDTA Titrimetric Method	74.80	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	283.00	mg/l
8.	Chloride as Cl	APHA, 4500-Cl^- B, Argentometric Method	64.00	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	*Cyanide as CN	APHA , 4500 CN^- D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA , 3500 Mg B. Calculation Method	18.80	mg/l
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	508.00	mg/l
13	Total Suspended solids	APHA,2540 D Gravimetric Method	85.00	mg/l
14.	Dissolved Oxygen	APHA,4500 O B Iodometric Method	5.6	mg/l
15.	Sulphate as SO^{4}	APHA , 4500 E. Turbidimetric Method	21.50	mg/l
16.	Fluoride as F	APHA , 4500-F D, SPADNS Method	1.24	mg/l
17.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	12.00	mg/l
18.	COD	APHA, 5220 B. Open Reflux Method	36.00	mg/l

(Tested By) MITHU KAUSHIK

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ESPL/W/12			Report No.:VEL/W/2001/06012	
S. No.	Parameter	Test-Method	Result	Unit
19.	Conducuvity	APHA, 2510 B, Conductivity Meter Method	846	µS/cm
20.	Nitrate as NO3	IS 3025 (P-34) ,Chromotropic Method	15.48	mg/l
21.	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	45.20	mg/l
22.	Potassium as K	APHA 3500 K B, Flame Photometric Method	22.65	mg/l
23.	Iron as Fe	APHA . 3500-Fe B 1,10 Phenanthroline Method	0.24	mg/l
24.	Aluminium as Al	APHA , 3111 DNitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25.	Boron	APHA, 4500B C, Carmine Method	0.51	mg/l
26.	Chromium as Cr	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l
28.	*Mineral Oil	Clause 6 of (IS_3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l
29.	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05mg/l)	mg/l
30.	Zinc as Zn	APHA . 3111 B, Direct Air, Acetylene Flame Method	2.34	mg/l
31.	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.50	mg/l
32.	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622	1400	MPN/100ml
35.	Fecal Coliform	IS 1622	800	MPN/100ml

Note. -*These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

(Tested By) KAUSHIK (Checked By) ARJUN RAWAT (Approved By)

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/13	Report No.:	VEL/W/2001/06/013
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nalnajoria, P.S.: Salanpur, Distrct: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020-10/01/2020
Sampling Location:	Maithon Reservoir Near Shantinagar (SW5)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA&SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.72	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	20.00	Hazen
3.	Turbidity	APHA, 2130 B, Nephelometric Method	25.00	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	236.00	mg/l
6.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	72.90	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	210.46	mg/l
8.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	49.40	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10	Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l
11	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	13.10	mg/l
12	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	486.00	mg/l
13	Total Suspended solids	APHA,2540 D Gravimetric Method	112.00	mg/l
14	Dissolved Oxygen	APHA,4500 O B Iodometric Method	5.9	mg/l
15	Sulphate as SO_4^{2-}	APHA , 4500 E, Turbidimetric Method	20.45	mg/l
16	Fluoride as F	APHA , 4500-F D, SPADNS Method	1.28	mg/l
17	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	9.00	mg/l
18	COD	APHA, 5220 B, Open Reflux Method	34.00	mg/l

(Tested By) (Checked By) (Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ESPL/W/13			Report No.:VEL/W/2001/06/013	
S. No.	Parameter	Test Method	Result	Unit
19.	Conductivity	APHA, 2510 B, Conductivity Meter Method	810	µS/cm
20	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	13.90	mg/l
21	Sodium as Na	APHA.3500 Na B, Flame Photometric Method	44.00	mg/l
22.	Potassium as K	APHA 3500 K B, Flame Photometric Method	21.50	mg/l
23.	Iron as Fe	APHA . 3500-Fe B 1.10 Phenanthrolene Method	0.23	mg/l
24.	Aluminium as Al	APHA . 3111 DNitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25.	Boron	APHA. 4500B C, Cannine Method	0.50	mg/l
26.	Chromium as Cr	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l
28.	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.75mg/l)	mg/l
29	*Anionic Detergen... s MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05mg/l)	mg/l
30.	Zinc as Zn	APHA . 3111 B. Direct Air, Acetylene Flame Method	1.22	mg/l
31.	Copper as Cu	APHA . 3111 B. Direct Air, Acetylene Flame Method	0.54	mg/l
32.	Manganese as Mn	APHA . 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA . 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622	1500	MPN/100ml
35.	Fecal Colliform	IS 1622	800	MPN/100ml

Note: -*These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

(Tested By) MEENU KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/AV/14	Report No.:	VEL/W/2001006/014
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020-10/01/2020
Sampling Location:	Pond Near Kortala (SW6)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA&SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.51	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	25.00	Hazen
3.	Turbidity	APHA 2130 B, Nephelometric Method	24.00	NTU
4	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	215.00	mg/l
6.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	68.50	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	189.00	mg/l
8.	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	61.12	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	*Cyanide as CN	APHA , 4500 CN D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	10.71	mg/l
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	451.00	mg/l
13.	Total Suspended solids	APHA,2540 D Gravimetric Method	82.00	mg/l
14.	Dissolved Oxygen	APHA,4500 O B Iodometric Method	5.9	mg/l
15.	Sulphate as SO_4	APHA , 4500 E, Turbidimetric Method	28.05	mg/l
16.	Fluoride as F	APHA , 4500-F D, SPADNS Method	0.58	mg/l
17.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	13.00	mg/l
18.	COD	APHA, 5220 B, Open Reflux Method	41.00	mg/l

(Tested By) MEENU KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001| ISO 14001| ISO 45001

Test Report

Sample No.: VEL/ESPL/W/14			Report No.: VEL/W/2001/06/014	
S. No.	Parameter	Test Method	Result	Unit
19	Conductivity	APHA, 2510 B, Conductivity Meter Method	801	µS/cm
20	Nitrate as NO3	IS 3025 (P-34) Chromotropic Method	25.20	mg/l
21	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	12.80	mg/l
22	Potassium as K	APHA 3500 K B, Flame Photometric Method	6.42	mg/l
23	Iron as Fe	APHA , 3500-Fe B 1,10 Phenanthroline Method	0.32	mg/l
24	Aluminium as Al	APHA , 3111 DNitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25	Boron	APHA, 4500B C, Carmine Method	0.45	mg/l
26	Chromium as Cr	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	*BDL(**DL 0.0001 mg/l)	mg/l
28	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l
29	*Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL 0.05mg/l)	mg/l
30	Zinc as Zn	APHA , 3111 B, Direct Air, Acetylene Flame Method	1.31	mg/l
31	Copper as Cu	APHA , 3111 B, Direct Air, Acetylene Flame Method	0.34	mg/l
32	Manganese as Mn	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33	Cadmium as Cd	APHA , 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34	Total Coliform	IS 1622	1400	MPN/100ml
35	Fecal Coliform	IS 1622	800	MPN/100ml

Note: - *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit

(Tested By) NEENU KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Vardan EnviroLab
Laboratory: Plot No. B2A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/15	Report No.:	VEL/W/2001/06/015
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Naharjuria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020-10/01/2020
Sampling Location:	Pond Near Ankurni SW7)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS:3025,APHA&SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.70	--
2.	Colour	APHA .2120 B, Visual Comparison Method	19.80	Hazen
3.	Turbidity	APHA. 2130 B, Nephelometric Method	27.00	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	246.00	mg/l
6.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	76.00	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	221.10	mg/l
8.	Chloride as Cl	APHA. 4500-Cl- B, Argentometric Method	69.50	mg/l
9.	Residual free Chlorine	APHA, 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA . 3500 Mg B. Calculation Method	13.70	mg/l
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	440.00	mg/l
13.	Total Suspended solids	APHA,2540 D Gravimetric Method	121.00	mg/l
14.	Dissolved Oxygen	APHA,4500 O B Iodometric Method	5.6	mg/l
15.	Sulphate as SO_4^{2-}	APHA . 4500 E. Turbidimetric Method	23.45	mg/l
16.	Fluoride as F	APHA . 4500-F D, SPADNS Method	1.24	mg/l
17.	BOD (3 Days at 27°C)	APHA. 5210 C / IS 3025.P-44	12.00	mg/l
18.	COD	APHA, 5220 D, Open Reflux Method	36.00	mg/l

MEENU KAUSHIK
SR. ANALYST
(Tested By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.: VEL/ESPL/W/15 — Report No.: VEL/AV/2001/06/015

S. No.	Parameter	Test Method	Result	Unit
19	Conductivity	APHA, 2510 B, Conductivity Meter Method	733	µS/cm
20	Nitrate as NO_3	IS 3025 (P-34) ,Chromotropic Method	20.85	mg/l
21	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	12.62	mg/l
22	Potassium as K	APHA 3500 K B, Flame Photometric Method	4.45	mg/l
23	Iron as Fe	APHA . 3500-Fe B 1,10 Phenanthroline Method	0.34	mg/l
24	Aluminium as Al	APHA . 3111 DNitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25	Boron	APHA, 4500B C, Carmine Method	*BDL	mg/l
26	Chromium as Cr	APHA . 3111 B, Direct Air. Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l
28	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l
29	*Anio Decergents as MBAS	APHA 5540 C MBAS Method	*BDL(**DL 0.05mg/l)	mg/l
30	Zinc as Zn	APHA . 3111 B, Direct Air. Acetylene Flame Method	1.10	mg/l
31	Copper as Cu	APHA . 3111 B, Direct Air. Acetylene Flame Method	0.40	mg/l
32	Manganese as Mn	APHA . 3111 B, Direct Air. Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33	Cadmium as Cd	APHA . 3111 B, Direct Air. Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34	Total Coliform	IS 1622	1750	MPN/100ml
35	Fecal Coliform	IS 1622	859	MPN/100ml

Note: *These parameter are not covered in our NABL scope.
*BDL-Below Detection Limit **DL - Detection Limit

(Tested By) (Checked By) ARJUN RAWAT (Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/W/16	Report No.:	VEL/W/2001/06/016
Name of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Naharajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/01/2020
Sample Description:	Surface Water Sample	Period of Analysis:	06/01/2020-10/01/2020
Sampling Location:	Pond Near Ravakar (SW8)	Receipt Date:	06/01/2020
Sample Collected by:	VardanEnviro Lab Representative	Sampling Date:	04/01/2020
Preservation:	Refrigerator	Sampling Quantity:	5.0 Ltr + 250 ml
Sampling and Analysis Protocol:	IS-3025,APHA&SOP	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	APHA ,4500-H+ B Electrometric Method	7.36	--
2.	Colour	APHA ,2120 B, Visual Comparison Method	17.30	Hazen
3.	Turbidity	APHA ,2130 B, Nephelometric Method	26.00	NTU
4.	Odour	APHA, 2150 B , Threshold Test Method	Agreeable	--
5.	Total Hardness as $CaCO_3$	APHA , 2340 C, EDTA Titrimetric Method	265.00	mg/l
6.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	76.20	mg/l
7.	Alkalinity as $CaCO_3$	APHA , 2320 B, Titrimetric Method	238.00	mg/l
8.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	64.00	mg/l
9.	Residual free Chlorine	APHA 4500 Cl B Iodometric Method	*BDL(**DL 0.15mg/l)	mg/l
10.	*Cyanide as CN	APHA , 4500 CN- D	*BDL(**DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA , 3500 Mg B, Calculation Method	18.19	mg/l
12.	Total Dissolved Solids	APHA , 2540 C, Gravimetric Method	457.00	mg/l
13.	Total Suspended solids	APHA,2540 D Gravimetric Method	102.00	mg/l
14.	Dissolved Oxygen	APHA,4500 O B Iodometric Method	6.1	mg/l
15.	Sulphate as SO_4^{2-}	APHA , 4500 E, Turbidimetric Method	12.98	mg/l
16.	Fluoride as F	APHA , 4500-F- D, SPADNS Method	0.23	mg/l
17.	BOD (3 Days at 27°C)	APHA, 5210 C / IS 3025,P-44	6.00	mg/l
18.	COD	APHA, 5220 B, Open Reflux Method	16.00	mg/l

(Tested By) MEENU KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No. VEL/ESPL/AW/16			Report No : ELAW/2001/06/016	
S. No.	Parameter	Test Method	Result	Unit
19	Conductivity	APHA, 2510 B. Conductivity Meter Method	811	µS/cm
20	Nitrate as NO3	IS 3025 (P-34) .Chromotropic Method	21.45	mg/l
21	Sodium as Na	APHA,3500 Na B, Flame Photometric Method	12.60	mg/l
22	Potassium as K	APHA 3500 K B. Flame Photometric Method	1.45	mg/l
23	Iron as Fe	APHA , 3500-Fe B 1.10 Phenanthroline Method	0.32	mg/l
24	Aluminium as Al	APHA , 3111 D Nitrous Oxide Acetylene Flame Method	*BDL(**DL 0.03 mg/l)	mg/l
25	Boron	APHA. 4500B C, Carmine Method	*BDL	mg/l
26	Chromium as Cr	APHA , 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.01 mg/l)	mg/l
27	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	*BDL(**DL 0.0004 mg/l)	mg/l
28	*Mineral Oil	Clause 6 of IS:3025(Part 39)	*BDL(**DL 0.05mg/l)	mg/l
29	*Anionic Detergents as MBAS	APHA 5540 C MBAS Method	*BDL(**DL 0.05mg/l)	mg/l
30	Zinc as Zn	APHA , 3111 B. Direct Air, Acetylene Flame Method	1.18	mg/l
31	Copper as Cu	APHA , 3111 B. Direct Air, Acetylene Flame Method	0.42	mg/l
32	Manganese as Mn	APHA , 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.10 mg/l)	mg/l
33	Cadmium as Cd	APHA , 3111 B. Direct Air, Acetylene Flame Method	*BDL(**DL 0.001 mg/l)	mg/l
34	Total Coliform	IS 1622	1200	MPN/100ml
35	Fecal Coliform	IS 1622	700	MPN/100ml

Note: - *This parameter are not covered in our NABL scope
*BDL-Below Detection Limit, **DL- Detection Limit

(Tested By) NEERAJ KAUSHIK SR. ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/JAN/01	Report No.:	VEL/JAN/2001/17/001
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date:	17/01/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: VardanEnviro Lab Representative
Sampling Location	: Project Site (N1)
Instrument Used	: Sound Level Meter-01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 14/01/2020-15/01/2020
Time of Monitoring	: 06.00 AM to 06.00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	82.4	67.4	dB(A)
2.	L_{min}	IS 9989	52.9	41.9	dB(A)
3.	L_{eq}	IS 9989	67.2	56.2	dB(A)
4	CPCB Limits in dB(A) Leq (Industrial Area)		75.00	70.00	dB(A)

Note: "A" decibel" is a unit in which noise is measured

(Tested By) KOMAL SINGH ANALYST

(Checked By) ARUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/AN/02	Report No.:	VEL/AN/2001/17002
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salampur. District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date:	17/01/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: VardanEnviro Lab Representative
Sampling Location	: Village- Digari (N2)
Instrument Used	: Sound Level Meter- 02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 14/01/2020-15/01/2020
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	79.2	60.1	dB(A)
2.	L_{min}	IS 9989	45.2	35.8	dB(A)
3.	L_{eq}	IS 9989	53.1	43.7	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

KOMAL SINGH (Tested By)
ANALYST

ARJUN RAWAT (Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector – 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/AN/03	Report No.:	VEL/AN/2001/17003
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date:	17/01/2020

Sample Description: **AMBIENT NOISE LEVEL MONITORING**

General Information:-

Sample collected by	: VardanEnviro Lab Representative
Sampling Location	: Village- Shriranpur (N3)
Instrument Used	: Sound Level Meter- 03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 14/01/2020-15/01/2020
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS:9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1	L_{max}	IS 9989	64.3	51.2	dB(A)
2	L_{min}	IS 9989	37.4	31.4	dB(A)
3	L_{eq}	IS 9989	48.7	39.8	dB(A)
4	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

KOMAL SINGH
ANALYST
(Checked By)

ARJUN RAWAT
(Checked By)

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number.	VEL/ESPL/AN/04	Report No.:	VEL/AN/2001/17004
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date.	17/01/2020
Sample Description:	AMBIENT NOISE LEVEL MONITORING		

General Information:-

Sample collected by	:	VardanEnviro Lab Representative
Sampling Location	:	**Village-Ramdih (N4)**
Instrument Used	:	Sound Level Meter- 04
Instrument Calibration Status	:	Calibrated
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	14/01/2020-15/01/2020
Time of Monitoring	:	06:00 AM to 06:00AM
Surrounding Activity	:	Human & Vehicular Activities
Scope of Monitoring	:	Regulatory Requirement
Sampling & Analysis Protocol	:	IS-9989
Sampling Duration	:	24 Hours
Parameter Required	:	As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	71.5	58.8	dB(A)
2.	L_{min}	IS 9989	43.7	34.4	dB(A)
3.	L_{eq}	IS 9989	52.6	41.1	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Tested By)
KOMAL SINGH
ANALYST

(Checked By)
ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/AN/05	Report No.:	VEL/AN/2001/17005
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nukrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date:	17/01/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: VardanEnviro Lab Representative
Sampling Location	: Village- Sahanpur(N5)
Instrument Used	: Sound Level Meter- 05
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 14/01/2020-15/01/2020
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB(A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	81.4	65.2	dB(A)
2.	L_{min}	IS 9989	46.4	38.6	dB(A)
3.	L_{eq}	IS 9989	53.9	44.1	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Tested By) KOMAL SINGH ANALYST

(Checked By) RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/AN/06	Report No.:	VEL/AN/2001/17/006
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date:	17/01/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	:	VardanEnviro Lab Representative
Sampling Location	:	**Village-Dobipur (N6)**
Instrument Used	:	Sound Level Meter-06
Instrument Calibration Status	:	Calibrated
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	14/01/2020-15/01/2020
Time of Monitoring	:	06.00 AM to 06:00AM
Surrounding Activity	:	Human & Vehicular Activities
Scope of Monitoring	:	Regulatory Requirement
Sampling & Analysis Protocol	:	IS-9989
Sampling Duration	:	24 Hours
Parameter Required	:	As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1	L_{max}	IS 9989	74.7	58.9	dB(A)
2	L_{min}	IS 9989	44.7	35.1	dB(A)
3	L_{eq}	IS 9989	52.8	42.7	dB(A)
4	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Tested By) KRISHAN SINGH ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/AN/07	Report No.:	VEL/AN/2001/17/007
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nakrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date:	17/01/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: VardanEnviro Lab Representative
Sampling Location	: Village- Alkusha (N7)
Instrument Used	: Sound Level Meter- 07
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 14/01/2020-15/01/2020
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	68.1	56.9	dB(A)
2.	L_{min}	IS 9989	42.3	33.9	dB(A)
3.	L_{eq}	IS 9989	51.7	40.9	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Tested By)
KOMAL SINGH
ANALYST

(Checked By)
ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number:	VEL/ESPL/AN/08	Report No.:	VEL/AN/2001/17008
Name & Address of Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village:Nokrajoria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Receipt Date	17/01/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	:	VardanEnviro Lab Representative
Sampling Location	:	Village- Sabanpur (N8)
Instrument Used	:	Sound Level Meter- 08
Instrument Calibration Status	:	Calibrated
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	14/01/2020-15/01/2020
Time of Monitoring	:	06:00 AM to 06:00AM
Surrounding Activity	:	Human & Vehicular Activities
Scope of Monitoring	:	Regulatory Requirement
Sampling & Analysis Protocol	:	IS-9989
Sampling Duration	:	24 Hours
Parameter Required		As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	58.2	43.5	dB(A)
2.	L_{min}	IS 9989	35.1	29.7	dB(A)
3.	L_{eq}	IS 9989	45.1	34.9	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Tested By) KOMAL SINGH ANALYST

(Checked By) ARJUN RAWAT

(Approved By)

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/501	Report No.:	VEL/S/2001/17/001
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nahargoda, P.S.- Salanpur, District: Burdwan, West Bengal	Format No.:	T.R F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Project Site (S1)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS - 2720 (P-26) by pH Meter	6.2	—
2.	Conductivity	IS.14767 by Conductivity meter	0.583	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Sandy – 52 Silt – 20 Clay -28	%
4.	Color	SOP . SP-78,Issue No.-01& Issue Date-14/02/2013	Brownish	—
5.	Water holding capacity	SOP . SP-81,Issue No.-01& Issue Date-14/02/2013	31.80	%
6.	Bulk density	SOP . SP-80,Issue No.-01& Issue Date-14/02/2013	1.58	gm/cc
7.	Chloride as Cl	SOP . SP-85,Issue No.-01& Issue Date-14/02/2013	59.02	mg/100g
8.	Calcium as Ca	SOP . SP-82,Issue No.-01& Issue Date-14/02/2013	49.82	mg/100g
9.	Sodium as Na	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	45.20	mg/kg
10.	Potassium as K	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	130	kg/hec.
11.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.49	%
12.	Magnesium as Mg	SOP . SP-83,Issue No.-01& Issue Date-14/02/2013	4.38	mg/100g
13.	Available Nitrogen as N	IS 14684 Distillation Method	212	kg./hec.
14.	Available Phosphorus	SOP . SP-86,Issue No.-01& Issue Date-14/02/2013	16.04	kg./hec.
15.	Zinc (as Zn)	USEPA 3050B	1.24	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	3.72	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.42	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.20	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.64	mg/kg
20.	Copper (as Cu)	USEPA 3050B	0.36	mg/kg

(SOP- Standard Operating Procedure)

VANDANA
Analyst

(Checked By)
MAMTA NAYAK
SR. ANALYST

(Approved By)

NOTE: a) The results listed relate only to the tested samples & applicable parameters
b) Total liabilities of our lab will be restricted to the invoice amount only
c) The sample will be destroyed after stipulated time unless otherwise specified
d) This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/S/02	Report No.:	VEL/S/2001/17002
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nalwajoria, P.S.: Satanpur. Distnct: Bardwan, West Bengal	Format No.:	7.5 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Village- Digari (S2)	Sampling Quantity:	2.0 Kg
Sample Collected by:	Vardan Envro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26) by pH Meter	6.3	--
2.	Conductivity	IS: 14767 by Conductivity meter	0.502	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA 2000)	Sand-46	%
			Silt -20	
			Clay-34	
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Brownish	--
5.	Water holding capacity	SOP , SP-81,Issue No -01& Issue Date-14/02/2013	30.08	%
6.	Bulk density	SOP , SP-80,Issue No -01& Issue Date-14/02/2013	1.32	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	38.02	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	56.82	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No -01& Issue Date-14/02/2013	40.26	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	122.22	kg/hec.
11.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.45	%
12.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	3.90	mg/100g
13.	Available Nitrogen as N	IS:14684 Distillation Method	209	kg./hec.
14.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	14.05	kg./hec.
15.	Zinc (as Zn)	USEPA 3050B	1.23	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	3.60	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.34	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.14	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.60	mg/kg
20.	Copper (as Cu)	USEPA 3050B	0.76	mg/kg

SOP- Standard Operating Procedure

(Tested By) VANDANA Analyst

(Checked By) MANISHA NAYAK SR. ANALYST

(Approved By)

NOTE: a) The results listed refer only to the tested samples & applicable parameters
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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/S/03	Report No.:	VEL/S/2001/17/003
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd (ESPL) Expansion of Existing Steel Plant Village: Nalanjoora, P.S.: Salnapur District: Bardhman, West Bengal	Format No.:	7.5.8-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Village Salnapur (S3)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26) by pH Meter	6.24	--
2.	Conductivity	IS-14767 by Conductivity meter	0.922	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA 2003)	Sand-47 Silt-23 Clay-30	%
4.	Color	SOP . SP-78,Issue No.-01& Issue Date-14/02/2013	Brownish	--
5.	Water holding capacity	SOP . SP-79,Issue No.-01& Issue Date-14/02/2013	36.12	%
6.	Bulk density	SOP . SP-80,Issue No.-01& Issue Date-14/02/2013	1.25	gm/cc
7.	Chloride as Cl	SOP . SP-85,Issue No.-01& Issue Date-14/02/2013	54.08	mg/100g
8.	Calcium as Ca	SOP . SP-82,Issue No.-01& Issue Date-14/02/2013	51.20	mg/100g
9.	Sodium as Na	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	30.45	mg/kg
10.	Potassium as K	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	183	kg/hec.
11.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.62	%
12.	Magnesium as Mg	SOP . SP-83,Issue No.-01& Issue Date-14/02/2013	20.85	mg/100g
13.	Available Nitrogen as N	IS. 14684 Distillation Method	240.18	kg/hec.
14.	Available Phosphorus	SOP . SP-86,Issue No.-01& Issue Date-14/02/2013	20.20	kg/hec.
15.	Zinc (as Zn)	USEPA 3050B	1.40	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	4.83	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.32	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.14	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.56	mg/kg
20.	Copper (as Cu)	USEPA 3050B	2.61	mg/kg

Note: SOP-Standard Operating Procedure

(Tested By) VANL Analyst

(Checked By) MANOJ NAYAK SR. ANALYST

(Approved By)

NOTE: a) The results listed relate only to the tested samples & applicable parameters.
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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/S/04	Report No.:	VEL/N/2001/17/004
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd (ESPL) Expansion of Existing Steel Plant Village: Nakrajoria, P.S.: Sonapur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis:	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Near Dohlpur (S4)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26) by pH Meter	6.32	--
2.	Conductivity	IS:14767 by Conductivity meter	0.902	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2001)	Sand - 50 Silt- 18 Clay -32	%
4.	Color	SOP . SP-78,Issue No.-01& Issue Date-14/02/2013	Brownish	--
5.	Water holding capacity	SOP . SP-81,Issue No.-01& Issue Date-14/02/2013	39.20	%
6.	Bulk density	SOP . SP-80,Issue No.-01& Issue Date-14/02/2013	1.42	gm/cc
7.	Chloride as Cl	SOP . SP-85,Issue No.-01& Issue Date-14/02/2013	54.18	mg/100g
8.	Calcium as Ca	SOP . SP-82,Issue No.-01& Issue Date-14/02/2013	52.34	mg/100g
9.	Sodium as Na	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	31.98	mg/kg
10.	Potassium as K	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	176	kg/hec.
11.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.64	%
12.	Magnesium as Mg	SOP . SP-83,Issue No.-01& Issue Date-14/02/2013	22.56	mg/100g
13.	Available Nitrogen as N	IS: 14684 Distillation Method	238.22	kg./hec.
14.	Available Phosphorus	SOP . SP-86,Issue No.-01& Issue Date-14/02/2013	19.00	kg./hec.
15.	Zinc (as Zn)	USEPA 3050B	1.42	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	5.21	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.22	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.14	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.65	mg/kg
20.	Copper (as Cu)	USEPA 3050B	3.42	mg/kg

Note: SOP-Standard Operating Procedures

(Tested By)
VANDANA
Analyst

(Checked By)
MAMTA NAYAK
SR. ANALYST

(Approved By)

NOTE: a)The results listed relate only to the tested samples & applicable parameters
b) Total liabilities of our lab will be restricted to the invoice amount only
c) The sample will be disposed after completion of the validity period as specified
d) This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law

Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/S/05	Report No.:	VEL/S/2001/17/005
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakrajaria, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Near Alkusha (S5)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26) by pH Meter	6.49	--
2.	Conductivity	IS 14767 by Conductivity meter	0.476	mS/cm
3.	Soil Texture	IS : 2720 (P-22, RA2003)	Sand- 52	%
			Silt – 25	
			Clay- 23	
4.	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Yellowish	--
5.	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	29.48	%
6.	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.45	gm/cc
7.	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	44.02	mg/100g
8.	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	40.10	mg/100g
9.	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	41.56	mg/kg
10.	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	120.49	kg/hec.
11.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.42	%
12.	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	3.74	mg/100g
13.	Available Nitrogen as N	IS:14684 Distillation Method	202.22	kg/hec.
14.	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	10.02	kg/hec.
15.	Zinc (as Zn)	USEPA 3050B	0.91	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	3.10	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.32	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.12	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.49	mg/kg
20	Copper (as Cu)	USEPA 3050B	0.42	mg/kg

Note: SOP-Standard Operating Procedure

(Tested By)
VANDANA
Analyst

(Checked By)
MAMTA NAYAK
SR. ANALYST

(Approved By)

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/LSPL/S06	Report No.:	VEL/S/2001/17/006
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakraporia, P.S.: Salanpur, District: Burdwan West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Village Ramchandrapur (S6)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test Method	Result	Unit
1	pH (at 25 °C)	IS : 2720 (P-26) by pH Meter	6.42	--
2	Conductivity	IS:14767 by Conductivity meter	0.428	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA 2003)	Sand – 52 Silt - 22 Clay -26	%
4	Color	SOP . SP-78.Issue No.-01& Issue Date-14/02/2013	Yellowish	--
5	Water holding capacity	SOP . SP-81.Issue No -01& Issue Date-14/02/2013	29.20	%
6	Bulk density	SOP . SP-80.Issue No -01& Issue Date-14/02/2013	1.80	gm/cc
7	Chloride as Cl	SOP . SP-85.Issue No -01& Issue Date-14/02/2013	38.20	mg/100g
8	Calcium as Ca	SOP . SP-82.Issue No -01& Issue Date-14/02/2013	42.68	mg/100g
9	Sodium as Na	SOP . SP-84.Issue No -01& Issue Date-14/02/2013	30.26	mg/kg
10	Potassium as K	SOP . SP-84.Issue No -01& Issue Date-14/02/2013	119.30	kg/hec.
11	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.48	%
12	Magnesium as Mg	SOP . SP-83.Issue No.-01& Issue Date-14/02/2013	3.30	mg/100g
13	Available Nitrogen as N	IS:14684 Distillation Method	198.21	kg/hec.
14	Available Phosphorus	SOP . SP-86.Issue No.-01& Issue Date-14/02/2013	9.66	kg/hec.
15	Zinc (as Zn)	USEPA 3050B	0.92	mg/kg
16	Manganese (as Mn)	USEPA 3050B	3.92	mg/kg
17	Lead (as Pb)	USEPA 3050B	0.65	mg/kg
18	Cadmium (as Cd)	USEPA 3050B	0.74	mg/kg
19	Chromium (as Cr)	USEPA 3050B	0.61	mg/kg
20	Copper (as Cu)	USEPA 3050B	0.78	mg/kg

Note: SOP-Standard Operating Procedure

VANDANA
Analyst

(Checked By)
MAMTA NAYAK
SR. ANALYST

(Approved By)

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/ESPL/S/07	Report No.:	VEL/S/2001/17/007
Name & Address of the Project:	M/s. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nabrajpur, P.S.: Salanpur, District: Burdwan, West Bengal	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Village Ethora (S7)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 °C)	IS . 2720 (P-26) by pH Meter	6.42	--
2	Conductivity	IS:14767 by Conductivity meter	0.598	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2003)	Sand-53 Silt -22 Clay-25	%
4	Color	SOP . SP-78,Issue No.-01& Issue Date-14/02/2013	Brownish	--
5	Water holding capacity	SOP . SP-81,Issue No.-01& Issue Date-14/02/2013	32.63	%
6	Bulk density	SOP . SP-80,Issue No.-01& Issue Date-14/02/2013	1.40	gm/cc
7	Chloride as Cl	SOP . SP-85,Issue No.-01& Issue Date-14/02/2013	48.03	mg/100g
8	Calcium as Ca	SOP . SP-82,Issue No.-01& Issue Date-14/02/2013	41.91	mg/100g
9	Sodium as Na	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	32.91	mg/kg
10	Potassium as K	SOP . SP-84,Issue No.-01& Issue Date-14/02/2013	128.30	kg/hec.
11	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.54	%
12	Magnesium as Mg	SOP . SP-83,Issue No.-01& Issue Date-14/02/2013	8.20	mg/100g
13	Available Nitrogen as N	IS:14684 Distillation Method	226.14	kg/hec.
14	Available Phosphorus	SOP . SP-86,Issue No.-01& Issue Date-14/02/2013	12.24	kg/hec.
15	Zinc (as Zn)	USEPA 3050B	1.22	mg/kg
16	Manganese (as Mn)	USEPA 3050B	3.20	mg/kg
17	Lead (as Pb)	USEPA 3050B	0.26	mg/kg
18	Cadmium (as Cd)	USEPA 3050B	0.23	mg/kg
19	Chromium (as Cr)	USEPA 3050B	0.50	mg/kg
20	Copper (as Cu)	USEPA 3050B	0.45	mg/kg

Note: SOP-Standard Operating Procedure

(Tested By)
VANDANA
Analyst

(Checked By)
MAMTA NAYAK
SR. ANA.

(Approved By)

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Vardan EnviroLab
Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
Branch Off: Plot No. 24 & 25, Narayan Vihar, Block-B, Jaipur - 302035 (Rajasthan)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	YEL/ESPL/S/01	Report No.:	YEL/S/2001/17/01
Name & Address of the Project:	M/S. Eloquent Steel Pvt. Ltd. (ESPL) Expansion of Existing Steel Plant Village: Nakrajoria, P.S.: Salanpur, District: Burdwan. West Bengal	Format No.:	F-8 P-01
		Party Reference No.:	NIL
		Reporting Date:	22/01/2020
		Period of Analysis :	17/01/2020-22/01/2020
		Receipt Date:	17/01/2020
		Sampling Date:	17/01/2020
Sample Description.	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Village Barakar (S8)	Sampling Quantity:	2.0 Kg
Sample Collected by:	VardanEnviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 , USEPA & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 °C)	IS : 2720 (P-26) by pH Meter	6.38	--
2	Conductivity	IS:14767 by Conductivity meter	0.682	mS/cm
3	Soil Texture	IS : 2720 (P-22, RA2005)	Sand-52 Silt -21 Clay-27	%
4	Color	SOP , SP-78,Issue No.-01& Issue Date-14/02/2013	Brownish	--
5	Water holding capacity	SOP , SP-81,Issue No.-01& Issue Date-14/02/2013	37.45	%
6	Bulk density	SOP , SP-80,Issue No.-01& Issue Date-14/02/2013	1.45	gm/cc
7	Chloride as Cl	SOP , SP-85,Issue No.-01& Issue Date-14/02/2013	50.91	mg/100g
8	Calcium as Ca	SOP , SP-82,Issue No.-01& Issue Date-14/02/2013	44.20	mg/100g
9	Sodium as Na	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	35.40	mg/kg
10	Potassium as K	SOP , SP-84,Issue No.-01& Issue Date-14/02/2013	140.26	kg/hec.
11	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.56	%
12	Magnesium as Mg	SOP , SP-83,Issue No.-01& Issue Date-14/02/2013	8.92	mg/100g
13	Available Nitrogen as N	IS:14684 Distillation Method	232.31	kg./hec.
14	Available Phosphorus	SOP , SP-86,Issue No.-01& Issue Date-14/02/2013	17.23	kg./hec.
15	Zinc (as Zn)	USEPA 3050B	1.09	mg/kg
16	Manganese (as Mn)	USEPA 3050B	3.42	mg/kg
17	Lead (as Pb)	USEPA 3050B	0.22	mg/kg
18	Cadmium (as Cd)	USEPA 3050B	0.18	mg/kg
19	Chromium (as Cr)	USEPA 3050B	0.42	mg/kg
20	Copper (as Cu)	USEPA 3050B	0.98	mg/kg

Note: SOP-Standard Operating Procedure

VANDANA
(Tested By)
Analyst

MAMTA NAYAK
(Checked By)
SR. ANALYST

(Approved By)

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www.vardan.co.in

NO153268

NOC

WEST BENGAL POLLUTION CONTROL BOARD

Paribesh Bhawan
10A, Block-LA, Sector-III
Bidhannagar, Kolkata-700 098

Memo No. 3232 -WPBA/NOC/ Red (281)/Bwn/17 Dated 20/12/17

Name & Ownership Change

From :
Member Secretary,
West Bengal Pollution Control Board

West Bengal Pollution Control Board
Asansol Regional Office

TO M/s. Eloquent Steel Pvt. Ltd.
(Formerly M/S. Hira Concast Ltd.)
Vill- Nakrajoria, P.O. & P.S. Salanpur,
To : Dist- Paschim Bardhaman

WEST BENGAL

Sub : Consent to Establish (NOC) from Environmental Point of View

Ref : Your letter No. ..... Dated 24-11-2017

Dear Sirs,

In response to the application for Consent to Establish (NOC) for proposed Unit of M/s M/s. Eloquent Steel Pvt. Ltd. (Formerly M/S. Hira Concast Ltd.)
for manufacturing/storage/installation Name and Ownership Change
at Mouza - Nakrajoria, Vill- Nakrajoria, P.O. & P.S. Salanpur,
Dist- Paschim Bardhaman
this is to inform you that this Board hereby grants the Consent to Establish (NOC) from the environmental point of the above subject to the following conditions and special conditions annexed.

1. The quality of sewage and trade effluent to be discharged from your factory shall satisfy the permissible limits as prescribed in IS : 2490 (Pt. I) of 1974, and/or its subsequent amendment and Environment (Protection) Rules 1986.

2. Suitable measures to treat your effluent shall be adopted by you in order to reduce the pollutional load so that the quality of the effluent satisfies the standards mentioned above.

3. You shall have to apply to this Board for its consent to operate and discharge of sewage and trade effluent according to the provisions of the water (Prevention & Control of Pollution) Act, 1974. No sewage or trade effluent shall be discharged by you without prior consent of this Board.

4. All emission from your factory shall conform to the standards as laid down by this Board.

5. No emission shall be permitted without prior approval of this Board and you shall apply to this Board for its consent to operate and atmospheric emission as per provision of the Air (Prevention & Control Pollution) act, 1981.

6. No industrial plant, furnace, flues, chimneys, control equipment, etc. shall be constructed/reconstructed/ erected/re-erected without prior approval of this Board.

NOC NO153268

7. You shall comply with
   (i) Water (Prevention and Control of Pollution) Cess Act, 1977, if applicable.
   (ii) Water (Prevention and Control of Pollution) Cess Act, 1978, if applicable.
   (iii) Environment (Protection) Act, 1986
   (iv) Environment (Protection) Rules, 1986
   (v) Hazardous Wastes (Management and Handling) Rules, 1989 and Amended Rules, 2000
   (vi) Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and Amended Rules, 2000
   (vii) Manufacture, Use, Import and Storage and Hazardous Micro-Organisms, Genetically Engineered Organisms or Cell Rules, 1989
   (viii) The Public Liability Insurance Act, 1991 and Amended Act, 1992
   (ix) The Public Liability Insurance Rules, 1991 and Amended Rules 1993
   (x) Biomedical Wastes (Management & Handling) Rules, 1998 and Amended Rules 2000 if applicable.
   (xi) Recycled Plastics Manufacture and Usage Rules 1999, if applicable and
   (xii) Ozone Depleting Substances (Regulation & Control) Rules, 2000, if applicable

8. You will have to abide by any other stipulations as may be prescribed by any authority/local bodies/Government Departments etc.

SPECIAL CONDITION :

01. This NOC is valid for the Changes of Name of the unit and ownership of the unit.
02. Gross Capital investment Rs. 43625000 /-

Any violation of the aforesaid conditions shall entail cancellation of this Consent to Establish (NOC)

Yours faithfully,

20/04/17

Member Secretary,
West Bengal Pollution Control Board

Memo No. .....
Copy forwarded for information to :

Dated.....

1. Chief Inspector of Factories, Government of West Bengal, N. S. Building, Kolkata-700 001
2. Director of Industries/Director of Cottage & Small Scale Industries, Government of West Bengal, N. S. Building, Kolkata-700 001
3. Guard file, West Bengal Pollution Control Board.
4. Environmental Engineer, HO/Alipur R.O./Howrah R.O./Hooghly R.O./B.R.O./D.R.O./Haldia R.O./S.R.O./ Asansol/ Sub-R.O./WBPC Board

Himalaya Bhawan
Delhi Road, Dankuni
Dist. Hooghly

Vill. Panpur
Kalyani Expressway
P.O. Narayanpur
Dist. 24 Pgs. (N)

Sahid Khudiram Sarani
City Centre, Durgapur-16
Dist. Burdwan

10, Camac Street
2nd Floor
Kolkata-700 017

Paribesh Bhawan
10A, LA-Block, Sector-III
Salt Lake City.
Kolkata - 700 098

Block-05 at 40
Flats Complex
Adjacent to Priyambada
Housing Estate
P.O. : Khanjanchak,
P.S. Durgachak
Haldia-721602
Dist. : Purba Medinipur

Paribahan Nagar
Matigara, Siliguri
Dist. Darjeeling

Satya Chowdhury
Indoor Stadium
Balurchar Bandh Road
Malda-732101

Asansol Sub-Regional Office
ADDA Commercial Market (2nd Floor)
Opposite Asansol Fire Station
G.T. Road, Asansol-713 301

Member Secretary.
West Bengal Pollution Control Board

NO153298

NOC

WEST BENGAL POLLUTION CONTROL BOARD

Paribesh Bhawan
10A, Block-LA, Sector-III
Bidhannagar, Kolkata-700 098

Memo No. 1263A - WPBA/NOC/Red(301)/Bwn/2018 Dated 23/5/18

Name Change Only

From :
Member Secretary,
West Bengal Pollution Control Board

West Bengal Pollution Control Board
Asansol Regional Office

TO M/s. Eloquent Steel Pvt. Ltd.
(Formerly Impex Steel Ltd.)
Mouza- Nakrajoria
Vill + P.O. + P.S. - Salanpur
To : Dist- Paschim Bardhaman, Pin-713358

WEST BENGAL

Sub : Consent to Establish (NOC) from Environmental Point of View

Ref : Your letter No. NIL Dated 11-04-2018

Dear Sirs,

In response to the application for Consent to Establish (NOC) for proposed Unit of M/s M/s. Eloquent Steel Pvt. Ltd. for manufacturing/storage/installation 2 nos. SEAF of capacity 7.5 MVA each & 2 nos. Induction Furnace of capacity 7 MT / Charge each. at Plot no. 641,702,703,704(P),705,706,711, Mouza- Nakrajoria, Vill + P.O. + P.S. - Salanpur, Dist- Paschim Bardhaman this is to inform you that this Board hereby grants the Consent to Establish (NOC) from the environmental point of the above subject to the following conditions and special conditions annexed.

1. The quality of sewage and trade effluent to be discharged from your factory shall satisfy the permissible limits as prescribed in IS : 2490 (Pt. I) of 1974, and/or its subsequent amendment and Environment (Protection) Rules 1986.

2. Suitable measures to treat your effluent shall be adopted by you in order to reduce the pollutional load so that the quality of the effluent satisfies the standards mentioned above.

3. You shall have to apply to this Board for its consent to operate and discharge of sewage and trade effluent according to the provisions of the water (Prevention & Control of Pollution) Act, 1974. No sewage or trade effluent shall be discharged by you without prior consent of this Board.

4. All emission from your factory shall conform to the standards as laid down by this Board.

5. No emission shall be permitted without prior approval of this Board and you shall apply to this Board for its consent to operate and atmospheric emission as per provision of the Air (Prevention & Control Pollution) act, 1981.

6 No industrial plant, furnace, flues, chimneys, control equipment, etc. shall be constructed/reconstructed/ erected/re-erected without prior approval of this Board

NOC NO153299

7. You shall comply with
   (i) Water (Prevention and Control of Pollution) Cess Act, 1977, if applicable.
   (ii) Water (Prevention and Control of Pollution) Cess Act, 1978, if applicable.
   (iii) Environment (Protection) Act, 1986
   (iv) Environment (Protection) Rules, 1986
   (v) Hazardous Wastes (Management and Handling) Rules, 1989 and Amended Rules, 2000
   (vi) Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and Amended Rules, 2000
   (vii) Manufacture, Use, Import and Storage and Hazardous Micro-Organisms, Genetically Engineered Organisms or Cell Rules, 1989
   (viii) The Public Liability Insurance Act, 1991 and Amended Act, 1992
   (ix) The Public Liability Insurance Rules, 1991 and Amended Rules 1993
   (x) Biomedical Wastes (Management & Handling) Rules, 1998 and Amended Rules 2000 if applicable.
   (xi) Recycled Plastics Manufacture and Usage Rules 1999, if applicable and
   (xii) Ozone Depleting Substances (Regulation & Control) Rules, 2000, if applicable

8. You will have to abide by any other stipulations as may be prescribed by any authority/local bodies/Government Departments etc.

SPECIAL CONDITION :

01. Total fixed investment of the unit is Rs. 40,00,00,000/-
02. This NOC is valid for Change of Name only.

Any violation of the aforesaid conditions shall entail cancellation of this Consent to Establish (NOC)

Yours faithfully, 23/5/18

Member Secretary,
West Bengal Pollution Control Board

Memo No. ..... Dated.....

Copy forwarded for information to :

1. Chief Inspector of Factories, Government of West Bengal, N. S. Building, Kolkata-700 001
2. Director of Industries/Director of Cottage & Small Scale Industries, Government of West Bengal, N. S. Building, Kolkata-700 001
3. Guard file, West Bengal Pollution Control Board.
4. Environmental Engineer, I/II/Alipur R.O./Howrah R.O./Hooghly R.O./B.R.O./D.R.O./Haldia R.O./S.R.O./ Asansol/ Sub-R.O./WBPC Board

Himalaya Bhawan
Delhi Road, Dankuni
Dist. Hooghly

Vill, Panpur
Kalyani Expressway
P.O. Narayanpur
Dist. 24 Pgs. (N)

Sahid Khudiram Sarani
City Centre, Durgapur-16
Dist. Burdwan

10, Camac Street
2nd Floor
Kolkata-700 017

Paribesh Bhawan
10A, LA-Block, Sector-III
Salt Lake City,
Kolkata - 700 098

Block-05 at 40
Flats Complex
Adjacent to Priyambada
Housing Estate
P.O. : Khanjanchak,
P.S. Durgachak
Haldia-721602
Dist. : Purba Medinipur

Paribahan Nagar
Matigara, Siliguri
Dist.-Darjeeling

Satya Chowdhury
Indoor Stadium
Balurchar Bandh Road
Malda-732101

Asansol Sub-Regional Office
ADDA Commercial Market (2nd Floor)
Opposite Asansol Fire Station
G.T. Road, Asansol-713 301

Member Secretary
West Bengal Pollution Control Board

WEST BENGAL POLLUTION CONTROL BOARD

'Paribesh Bhawan'
Bldg. No. - 10A, Block - LA, Sector-III
Salt Lake City, Kolkata-700 098

Consent Letter Number : CO1/0122

apply for renewal of consent 60 (Sixty) days before expiry

Memo Number : 1534 - WPB/A/Red (Bnm)/Cons-(591)/08

Date : 28/06/18

Consent to Operate

under

Section 25 & 26 of the **Water (Prevention and Control of Pollution) Act, 1974** and
Section 21 of the **Air (Prevention and Control of Pollution) Act, 1981**

The West Bengal Pollution Control Board (hereinafter referred to as State Board) under the provisions of Section 25 & 26 of the Water (Prevention and Control of Pollution) Act, 1974, as amended and Section 21 of the Air (Prevention and Control of Pollution) Act, 1981, as amended and Rules and Orders made thereunder, hereby grants its consent to :

M/s Eloquent Steel Pvt. Ltd. (Formerly Known as M/s Hira Concast Ltd.) (Address of Regd. office/Head Office/City Office)

(hereinafter referred to as Applicant) for its unit located at Vill. – Nakranjoria P.O. & P.S. – Salanpur, Dist. – Paschim Bardhaman

(Detailed address of the manufacturing unit)

for a period from UP to 30.04.2023

to operate the industrial unit and to discharge liquid effluent and to emit gaseous effluent from the premises/land of the industrial unit, in accordance with the conditions as mentioned in the Annexure to this consent letter provided on any day at any instance the quantity and quality of liquid discharge and gaseous emission shall not exceed the permissible limit as specified in the Table I & II of this consent letter and in the Environmental (Protection) Act, 1986.

Breach of the conditions and / or failure to comply with the directions as set out in the Annexure shall render the applicant liable for prosecution under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.

The State Board reserve the right to revoke, withdraw or make any reasonable variation / change / alter the conditions of this consent letter giving one month's notice to the applicant.

West Bengal Pollution Control Board
Asansol Regional Office

For and on behalf of the State Board

28/06/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

(2)

ANNEXURE

nsent to M/s Eloquent Steel Pvt. Ltd. (Formerly known as M/s Hira Concast Ltd) vill.-Nokrajoria

its unit at P.O. & P.S.-Salanpur, Dist.-Paschim Bardhaman

nditions :

. This Consent is valid for the manufacture of :-

Sl. No.	Name of major products and by-products	Quantity manufactured per month
01	Ferro Manganese	2296 MT
02	Silico Manganese	1728 MT
03	M.S. Ingot	4917 MT
04		
05		
06		
07		
08		
09		
10		
11		
12		

2. The *Applicant* shall remain responsible for quantity and quality of liquid effluent and air emissions.
3. **Daily** discharge of industrial liquid effluent shall not exceed ——— KL.
4. **Daily** discharge of domestic liquid effluent shall not exceed 4.0 KL.
5. **Daily** discharge of mixed (industrial & domestic) liquid effluent shall not exceed ——— KL.
6. The *Applicant* shall discharge liquid effluent to Soak pit (place of discharge) through 01 nos. outlets / outfalls.
7. To bring into any altered or new outlet/outfall or to change the place of discharge, the Applicant shall have to inform the Board and obtain prior permission of the Board in this effect.
8. The *Applicant* shall provide comprehensive facility for treatment of industrial liquid waste and domestic liquid waste (sewage, sullage and liquid effluent generated from canteen), and operate and maintain the same continuously so that the quality of final effluent conforms to the *Standard* as given in Table-I in page 03.

28/06/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

(3)

nsent to M/s Eloquent Steel Pvt. Ltd. (Formerly Known as M/s Hira Concast Ltd.) vill. – Nakranjoria

or its unit at P.O. + P.S. – Salanpur, Dist – Paschim Bardhaman

Table-I

Outlet No.	Nature of effluent	Parameters	Standard	Frequency of effluent sampling
01	Domestic	pH	Between : 5.5 to 9.0	Yearly
		Total Suspended Solids	Not to exceed : 100 mg/l.	
		Biochemical Oxygen Demand (3day at 27°C)	Not to exceed : 30 mg/l.	
		Chemical Oxygen Demand	Not to exceed : 250 mg/l.	
		Oil & Grease	Not to exceed : 10 mg/l.	

09. The *Applicant* falls in the .....Category of the Water (Prevention and Control of Pollution) Cess Act, 1977 and Rules made thereunder and the Applicant shall comply with the provisions of the said Act and Rules made thereunder.

10. **Daily** water consumption for the following purposes should not exceed :-

- Industrial cooling, spraying in mine pits and boiler feed water (Water used for gardening should be included in this category of use) → 22 KL
- Domestic purpose → 06 KL
- Processing whereby water gets polluted and the pollutants are easily biodegradable → — KL
- Processing whereby water gets polluted and the pollutants are not easily biodegradable → — KL

The *Applicant* shall regularly submit to the Board the Returns of Water Consumption in the prescribed form and pay the Cess as specified under Section 3 of the said Act.

28/06/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

Consent to M/s Eloquent Steel Pvt. Ltd (Formerly known as M/s Hira Concast. Ltd.) Vill.–Nakrajoria

for its unit at P.O. + P.S. – Salanpur, Dist–Paschim Bardhaman

11. The *Applicant* shall install suitable device for measuring the volume of water consumed for different purposes as mentioned above giving correct result to the satisfaction of the *State Board*.

12. All the stacks connected to various sources of emissions must be designated by numbers such as S-1, S-2, S-3, etc., and this must be painted/displayed to faciliate identification.

13. The *Applicant* shall install comprehensive control system consisting of pollution control equipment as is warranted with reference to generation of air emissions and operate and maintain the same continuously so as to achieve the level of pollutants of the *Standard* as given in Table-II below :

Table-II

Stack No.	Stack height from G.L., (In mts.)	Stack attached to (sources and control system, if any):	Volume $Nm^3/hr.$	Velocity of gas emission m/sec	Concentrations of parameters not to exceed					Frequency of emission sampling
					SPM (mg/Nm^3)	CO (%v/v)				
S-I	30	SEAF (1X5·5MVA)		–	100	–	–	–	–	Half yearly
S-2	30	SEAF (1X7·5 MVA)	–	–	100	–	–	–	–	-Do-
S-3	30	02 Nos. Induction Furnace (2X7MT/charge)			150	–	–	–	–	yearly
S-4	7	01 No. D.G. Set (250 KVA)	–	–	150	–	–	–	–	-Do-
S-5										
S-6										
S-7										
S-8										
S-9										
S-10										

18/01/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued....

(5)

onsent to M/s Elaquent Steel Pvt. Ltd. (Formerly known as M/s Hira Concast Ltd.) Vill.- Nakrajoria

for its unit at P.O.+P.S.- Salanpur, Dist.- Paschim Bardhaman

14. The *Applicant* shall provide ports in the stack(s) and other necessary permanent facilities such as ladder, platform, etc. for monitoring/sampling the air emissions and the same shall be made available for inspection and use by the *State Board's* staff as well as *State Board's* authorised agencies.

15. The *Applicant* shall observe the following fuel consumption pattern :-

Sl. No	Type of fuel	Quantity consumed per day	Fuel burning operation where the fuel is used
01			
02			
03			
04			
05			

16. The *Applicant* shall maintain the generation and treatment/disposal of non-hazardous solid waste as specified below :-

Type of waste	Quantity	Treatment	Disposal
Fe-Mn Slag	2152 MT/month	—	Used in Si-Mn production
Si-Mn Slag	1900 MT/month	—	Road development

17. The *Applicant* shall take adequate measures for control of noise levels from its own sources within the premises within the limit given below :-

Time	Limit in dB(A) L_{eq}
Day Time (06 a.m. to 10 p.m.)	65
Night Time (10 p.m. to 06 a.m.)	55

18. The *Applicant* shall at all times maintain good house-keeping, proper working order, and operate efficiently for control of pollution from all sources so as not to cause nuisance to surrounding areas/inhabitants and to achieve compliance with the terms and conditions of the consent.

19. The *Applicant* shall bring about at least 33% of the available open land under the green coverage / plantation.

20. The *Applicant* shall provide for an alternate electric power source sufficient to operate all pollution control facilities installed by the *Applicant* to maintain compliance with the terms and conditions of the consent. In absence of such an alternate electric power source, the *Applicant* shall stop, reduce or otherwise control production to abide by the terms and conditions of the Consent regarding pollution level.

21. The *Applicant* shall install a separate energy meter showing the consumption of energy for operation of pollution control devices.

22. The *Applicant* shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.

23. The *Applicant* shall provide drainage system for conveying industrial and domestic liquid waste. Storm-water drain shall be kept separate from the drainage system meant for industrial and domestic liquid waste

28/06/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

Consent to M/s Eloquent Steel Pvt. Ltd. (Formerly Known as M/s Hira Concast Ltd.) for its unit at Vill. – Nakrarjoria P.O. + P.S. – Salanpur, Dist. – Paschim Bardhaman

24. The *Applicant* shall maintain a separate register showing consumption of chemicals used in pollution control systems.

25. The *Applicant* shall get the samples of hazardous wastes/leachates analysed at least once in ..... from the laboratory recognised of the West Bengal Pollution Control Board and ensure that they conform to the limits stipulated. Test reports shall be sent to the Board.

26. The *Applicant* shall provide adequate and safe facility for collection of air, waste water and solid waste samples by the *State Board's* staff as well as *State Board's* authorised agencies.

27. The *Applicant* shall submit to the *State Board* by the 30th September of every year the Environmental Statement Report for the financial year ending 31st March of the current year in the prescribed form (Form -V) as required under the provisions of rule 14 of the Environment (Protection) [Second Amendment] rules, 1992.

28. The *Applicant* shall allow the Officers of the *State Board* to enter into the applicant's premises at any reasonable time to inspect the pollution control systems as well as monitoring and measuring devices in connection with prevention & control of pollution.

29. The *Applicant* shall maintain an Inspection Book in the factory premises which shall be made available to Officers & employees of the *State Board* for inspection, review and to write down any direction or observation as is deemed necessary during the inspection from time to time.

30. The *Application* shall furnish to the *State Board* all information in respect of quality, quantity, rate of discharge, place of discharge of liquid effluent and air emissions.

31. The *Applicant* shall maintain adequate number of qualified and trained personnel among his staff for proper maintenance and operation of the effluent treatment and / or emission control devices and for overall environment management of the industry.

32. The *Applicant* shall have to make registration for the use of groundwater if any, with Central Ground Water Authority.

33. The *Applicant* shall intimate to the *State Board* immediately of any occurrence or apprehension of occurrence of discharge of any poisonous, noxious or pollutants in excess of quality as well as quality as mentioned earlier to any receiving water body/receiving system or to atmosphere owing to accident or other unforeseen incident/event including natural disaster. The *Applicant* Shall (i) take all steps adequate to prevent such accident discharge/release of poisonous, noxious or pollutants and to limit their consequences to persons and the environment, (ii) provide to the persons working on the site with the information, training and equipment including antidotes necessary to ensure their safety and mitigate the accidental release of poisonous noxious or pollutants to the environment.

34. The *Applicant* shall make an application to the *State Board* in the prescribed form for renewal of the consent at least 60 (sixty) days before the date of expiry of this Consent.

35. The *Applicant* shall not make any alternation/modification/expansion in the existing manufacturing process and equipment as well as the pollution control system without prior approval of the Board.

36. The *Applicant* shall comply with the conditions as laid down in the Manufacture, Storage and Import of hazardous Chemicals Rules, 1989 and Hazardous Wastes (Management & Handling) Rules, 1989.

Additional Conditions

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

WEST BENGAL POLLUTION CONTROL BOARD

'Paribesh Bhawan'
Bldg. No. - 10A, Block - LA, Sector-III
Salt Lake City, Kolkata-700 098

apply for renewal of consent 60 (Sixty) days before expiry

Consent Letter Number : CO 110124

Memo Number : 1530- HPB/BA/Real (Bsm)/cons-(SSI)/07 Date : 28/06/18

Consent to Operate

under

Section 25 & 26 of the Water (Prevention and Control of Pollution) Act, 1974 and
Section 21 of the Air (Prevention and Control of Pollution) Act, 1981

The West Bengal Pollution Control Board (hereinafter referred to as State Board) under the provisions of Section 25 & 26 of the Water (Prevention and Control of Pollution) Act, 1974, as amended and Section 21 of the Air (Prevention and Control of Pollution) Act, 1981, as amended and Rules and Orders made thereunder, hereby grants its consent to :

M/s Eloquent Steel Pvt Ltd. (Formerly Known as M/s Impex Steel Ltd) (Address of Regd. office/Head/Office/City Office)

(hereinafter referred to as Applicant) for its unit located at Vill. — Nakrajoria

P.O. + P.S. — Salanpur, Dist.-Paschim Bardhaman

(Detailed address of the manufacturing unit)

for a period from up to 30.06.2023.

to operate the industrial unit and to discharge liquid effluent and to emit gaseous effluent from the premises/land of the industrial unit, in accordance with the conditions as mentioned in the Annexure to this consent letter provided on any day at any instance the quantity and quality of liquid discharge and gaseous emission shall not exceed the permissible limit as specified in the Table I & II of this consent letter and in the Environmental (Protection) Act, 1986.

Breach of the conditions and / or failure to comply with the directions as set out in the Annexure shall render the applicant liable for prosecution under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.

The State Board reserve the right to revoke, withdraw or make any reasonable variation / change / alter the conditions of this consent letter giving one month's notice to the applicant.

West Bengal Pollution Control Board
Asansol Regional Office

For and on behalf of the State Board 28/06/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

(2)

ANNEXURE

Consent to M/s Eloquent Steel Pvt. Ltd. (Formerly Known as M/s Impex Steel Ltd.)

for its unit at Vill. – Nakrajanka P.O. & P.S. – Salanpur, Dist. – Paschim Bardhaman

Conditions :

01. This Consent is valid for the manufacture of :-

Sl. No.	Name of major products and by-products	Quantity manufactured per month
01	Ferro Manganese	2625 MT
02	Silico Manganese	1875 MT
03	M.S. Ingot	4417 MT
04		
05		
06		
07		
08		
09		
10		
11		
12		

02. The *Applicant* shall remain responsible for quantity and quality of liquid effluent and air emissions.

03. **Daily** discharge of industrial liquid effluent shall not exceed ——— KL.

04. **Daily** discharge of domestic liquid effluent shall not exceed 04 KL.

05. **Daily** discharge of mixed (industrial & domestic) liquid effluent shall not exceed ——— KL.

06. The *Applicant* shall discharge liquid effluent to Soak pit (place of discharge) through 01 nos. outlets / outfalls.

07. To bring into any altered or new outlet/outfall or to change the place of discharge, the Applicant shall have to inform the Board and obtain prior permission of the Board in this effect.

08. The *Applicant* shall provide comprehensive facility for treatment of industrial liquid waste and domestic liquid waste (sewage, sullage and liquid effluent generated from canteen), and operate and maintain the same continuously so that the quality of final effluent conforms to the *Standard* as given in Table-I in page 03.

18/10/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

Consent to M/s Eloquent Steel Pvt Ltd (Formerly Known as M/s Ion Steel Ltd.) Vill. – Nakrajoria

for its unit at P.O. + P.S. – Salanpur, Dist. – Paschim Bardhaman

11. The *Applicant* shall install suitable device for measuring the volume of water consumed for different purposes as mentioned above giving correct result to the satisfaction of the *State Board*.

12. All the stacks connected to various sources of emissions must be designated by numbers such as S-1, S-2, S-3, etc., and this must be painted/displayed to faciliate identification.

13. The *Applicant* shall install comprehensive control system consisting of pollution control equipment as is warranted with reference to generation of air emissions and operate and maintain the same continuously so as to achieve the level of pollutants of the *Standard* as given in Table-II below :

Table-II

Stack No.	Stack height from G.L., (In mts.)	Stack attached to (sources and control system, if any):	Volume $Nm^3/hr.$	Velocity of gas emission m/sec	Concentrations of parameters not to exceed					Frequency of emission sampling
					SPM (mg/Nm^3)	CO (%v/v)				
S-I	35	02 Nos. EAF (2 x 7.5 MVA)	—	—	150	—	—	—	—	Half yearly
S-2	30	02 Nos. Induction furnace (2 x 7 MT/charge)	—	—	150	—	—	—	—	Yearly
S-3	7	D.G. Set 250 KVA	—	—	150	1	—	—	—	-Do-
S-4										
S-5										
S-6										
S-7										
S-8										
S-9										
S-10										

18/04/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

(3)

Consent to M/s Eloquent Steel Pvt. Ltd. (Formerly Known as M/s. Steel Ltd.) Vill – Nakrajoria

for its unit at P.O. + P.S. – Salanpur, Dist. – Paschim Bardhaman.

Table-I

Outlet No.	Nature of effluent	Parameters	Standard	Frequency of effluent sampling
01	Domestic	pH	Between: 5.5 to 9.0	yearly
		Total Suspended Solids	Not to exceed : 100 mg/l.	
		Biochemical Oxygen Demand (3day at 27°C)	Not to exceed : 30 mg/l.	
		Chemical Oxygen Demand	Not to exceed : 250 mg/l.	
		Oil & Grease	Not to exceed : 10 mg/l.	

09. The *Applicant* falls in the .....Category of the Water (Prevention and Control of Pollution) Cess Act, 1977 and Rules made thereunder and the Applicant shall comply with the provisions of the said Act and Rules made thereunder.

10. **Daily water consumption for the following purposes should not exceed :-**

- Industrial cooling, spraying in mine pits and boiler feed water (Water used for gardening should be included in this category of use) → 22 KL
- Domestic purpose → 06 KL
- Processing whereby water gets polluted and the pollutants are easily biodegradable → — KL
- Processing whereby water gets polluted and the pollutants are not easily biodegradable → — KL

The *Applicant* shall regularly submit to the Board the Returns of Water Consumption in the prescribed form and pay the Cess as specified under Section 3 of the said Act.

28/07/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

(5)

Consent to M/s Eloquent Steel Pvt Ltd (Formerly known as M/s Ion Steel Ltd) for its unit at Vill.– Nakrazoria P.O. + P.S. – Salanpur, Dist.– Paschim Bardhaman.

14. The *Applicant* shall provide ports in the stack(s) and other necessary permanent facilities such as ladder, platform, etc. for monitoring/sampling the air emissions and the same shall be made available for inspection and use by the *State Board's* staff as well as *State Board's* authorised agencies.

15. The *Applicant* shall observe the following fuel consumption pattern :-

Sl. No	Type of fuel	Quantity consumed per day	Fuel burning operation where the fuel is used
01			
02			
03			
04			
05			

16. The *Applicant* shall maintain the generation and treatment/disposal of non-hazardous solid waste as specified below :-

Type of waste	Quantity	Treatment	Disposal
Fe-Mn Slag	250 MT/month	—	Recycled
Si-Mn Slag	1400 MT/month	—	Road development

17. The *Applicant* shall take adequate measures for control of noise levels from its own sources within the premises within the limit given below :-

Time	Limit in dB(A) L_{eq}
Day Time (06 a.m. to 09 p.m.)	65
Night Time (09 p.m. to 06 a.m.)	55

18. The *Applicant* shall at all times maintain good house-keeping, proper working order, and operate efficiently for control of pollution from all sources so as not to cause nuisance to surrounding areas/inhabitants and to achieve compliance with the terms and conditions of the consent.

19. The *Applicant* shall bring about at least 33% of the available open land under the green coverage / plantation.

20. The *Applicant* shall provide for an alternate electric power source sufficient to operate all pollution control facilities installed by the *Applicant* to maintain compliance with the terms and conditions of the consent. In absence of such an alternate electric power source, the *Applicant* shall stop, reduce or otherwise control production to abide by the terms and conditions of the Consent regarding pollution level.

21. The *Applicant* shall install a separate energy meter showing the consumption of energy for operation of pollution control devices.

22. The *Applicant* shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.

23. The *Applicant* shall provide drainage system for conveying industrial and domestic liquid waste. Storm-water drain shall be kept separate from the drainage system meant for industrial and domestic liquid waste

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

Continued.....

Consent to M/s Eloquent Steel Pvt Ltd. (Formerly Known as M/s Intpex Steel Ltd.) Vill.- Nakrajoia P.O. + P.S.- Salanpur, Dist.- Paschim Bardhaman

24. The *Applicant* shall maintain a separate register showing consumption of chemicals used in pollution control systems.

25. The *Applicant* shall get the samples of hazardous wastes/leachates analysed at least once in ..... from the laboratory recognised of the West Bengal Pollution Control Board and ensure that they conform to the limits stipulated. Test reports shall be sent to the Board.

26. The *Applicant* shall provide adequate and safe facility for collection of air, waste water and solid waste samples by the *State Board's* staff as well as *State Board's* authorised agencies.

27. The *Applicant* shall submit to the *State Board* by the 30th September of every year the Environmental Statement Report for the financial year ending 31st March of the current year in the prescribed form (Form -V) as required under the provisions of rule 14 of the Environment (Protection) [Second Amendment] rules, 1992.

28. The *Applicant* shall allow the Officers of the *State Board* to enter into the applicant's premises at any reasonable time to inspect the pollution control systems as well as monitoring and measuring devices in connection with prevention & control of pollution.

29. The *Applicant* shall maintain an Inspection Book in the factory premises which shall be made available to Officers & employees of the *State Board* for inspection, review and to write down any direction or observation as is deemed necessary during the inspection from time to time.

30. The *Application* shall furnish to the *State Board* all information in respect of quality, quantity, rate of discharge, place of discharge of liquid effluent and air emissions.

31. The *Applicant* shall maintain adequate number of qualified and trained personnel among his staff for proper maintenance and operation of the effluent treatment and / or emission control devices and for overall environment management of the industry.

32. The *Applicant* shall have to make registration for the use of groundwater if any, with Central Ground Water Authority.

33. The *Applicant* shall intimate to the *State Board* immediately of any occurrence or apprehension of occurrence of discharge of any poisonous, noxious or pollutants in excess of quality as well as quality as mentioned earlier to any receiving water body/receiving system or to atmosphere owing to accident or other unforeseen incident/event including natural disaster. The *Applicant* Shall (i) take all steps adequate to prevent such accident discharge/release of poisonous, noxious or pollutants and to limit their consequences to persons and the environment, (ii) provide to the persons working on the site with the information, training and equipment including antidotes necessary to ensure their safety and mitigate the accidental release of poisonous noxious or pollutants to the environment.

34. The *Applicant* shall make an application to the *State Board* in the prescribed form for renewal of the consent at least 60 (sixty) days before the date of expiry of this Consent.

35. The *Applicant* shall not make any alternation/modification/expansion in the existing manufacturing process and equipment as well as the pollution control system without prior approval of the Board.

36. The *Applicant* shall comply with the conditions as laid down in the Manufacture, Storage and Import of hazardous Chemicals Rules, 1989 and Hazardous Wastes (Management & Handling) Rules, 1989.

Additional Conditions

28/09/18

(Member Secretary/Chief Engr./ Sr. Env. Engr. / Env. Engr. / Asst. Env. Engr.)

SPEED POST

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 5868 / 1625
Fax : 2335 - 5868 / 2813
City Code : 33, Country Code : 91
Website: **www.wbpcb.gov.in**

Memo No: 124 **-2N-29/2019(E)- PT** **Dated:** 05 **.03.2020**

To
M/s. Eloquent Steel Private Limited
(Formerly M/s. Impex Steel Ltd. & M/s. Hira Concast Ltd.)
'Diamond Prestige', 41A, A.J.C. Bose Road,
8th Floor, #801, Kolkata – 700 017.

Sub: Application for getting "No Increase in Pollution Load Certificate" for change in number of products in the same category (i.e. ferro alloys) in the existing Submerged Arc Furnaces at Vill – Nakrajoria, PO & PS – Salanpur, Dist – Paschim Bardhaman, West Bengal.

Ref: Your presentation in the 14th meeting of the Technical Committee for No Increase In Pollution Load held on 04.03.2020.

Sir,

With reference to the above, this is to inform you that your application for change in product mix, has been duly considered by the committee for No Increase in Pollution Load in its 14th meeting held on 04.03.2020. The committee after detailed deliberation recommended for change in product mix without increase in overall production capacity, as per the provisions of the Notification of MoEF & CC vide No. S.O.3518(E) dated 23.11.2016. The product mix and the production capacity is given below:

Ferro Alloys Plant - (3x7.5 MVA + 1x5.5 MVA Submerged Arc Furnaces)		
As per valid Consent To Operate		**Proposed Changed In Products with production capacity**
Product	**Existing Capacity**	
Ferro Manganese	4921 Ton/month (59,052 TPA)	4,921 Ton/month OR
Silico Manganese-	3603 Ton/month (43,236 TPA)	3,603 Ton/month OR
Ferro Silicon	NIL	1,890 Ton/month OR
High Carbon Ferro - Chrome	NIL	4,921 Ton/month OR
Ferro Silico Chrome	NIL	2,790 Ton/month OR
	Maximum 4921 Ton/month (59,052 TPA)	Maximum 4921 Ton/month (59,052 TPA)

You are hereby advised to apply to the Asansol Regional Office of the West Bengal Pollution Control Board alongwith the compliance status of the conditions mentioned in the Environmental Clearance issued by MoEF&CC, Govt. of India vide No. J-11011/149/2010-IA II(I) dated 03.09.2012 and Vide No. J-11011/188/2011-IA II(I) dated 20.09.2012 for obtaining Consent to Operate for change in products of existing unit.

Yours faithfully,

05/03/2013.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

DAMODAR VALLEY CORPORATION

AGREEMENT

EXECUTED ON ....22nd..... **day of September-2021**

BETWEEN

DAMODAR VALLEY CORPORATION

AND

ELOQUENT STEEL PRIVATE LIMITED

For Supply of RAW WATER

FOR

INDUSTRIAL PURPOSE

AT

SARKURI

FROM

Maithon Reservoir

FOR

INDUSTRIAL (USES)

Allocated Quantity : 0.49 (Zero Point Four Nine) MGD

Executive Engineer (C)
Water, Tariff Cell
RO'S Office, DVC, Maithon

ELOQUENT STEEL PVT. LTD. SILIGURI



पश्चिमवङ्ग पश्चिम बंगाल WEST BENGAL

AGREEMENT

Supply of Raw Water

For

Industrial Use

This Agreement is made on this 22nd Day of September-2021

BETWEEN

DAMODAR VALLEY CORPORATION, a Corporation constituted under the Damodar Valley Corporation Act being Act No. XIV of 1948 (hereinafter referred to as "the said Act") and having its **Headquarters of DVC Towers, VIP Road, Kolkata -700 054 in the state of West Bengal (hereinafter to as "the First Party", which term shall unless excluded by or repugnant to the subject or context include its successors-in-interest and assigns) of the ONE PART**

AND

M/S. ELOQUENT STEEL PRIVATE LIMITED, a Limited Company, having their registered office at DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017 in the state of West Bengal (Hereinafter referred to as "the Second Party" which term shall unless excluded by or repugnant to the subject or context include its successors-in-interest and/or permitted assigns) of OTHER PART.

Rakesh Ranjan
Executive Engineer (C)
Water Tariff Cell
RO'S Office, DVC, Kolkata



WHEREAS one of the functions of the First party under Section 12(a) of the said Act is the promotion and operation of the schemes inter-alia for the supply of water in the Damodar Valley.

AND WHEREAS under the provisions of Section 15 of the said Act the First Party is vested with power to determine and levy rates for bulk supply and retail distribution of water for industrial purposes and specify the manner of recovery of such rates.

AND WHEREAS under the provisions of section 17 of the said Act construction, operation or maintenance in the Damodar Valley of any dam or other work of any installation for extraction of water shall not be effected by any person without the consent of the First Party.

AND WHEREAS the Second Party has requested the First Party under cover of its letter No. ESPL/WPP/2020-21/09-001 dated 19.09.2020 & ESPL/WPP/2020-21/11-001 dated 03.11.2020 annexed hereto, to allow it to construct, operate and/or maintain the water supply scheme and to allow it to have a supply of water from Maithon Reservoir for their INDUSTRIAL PURPOSE at NAKRAJORIA, P.O. & P.S.-SALANPUR, DIST.-WEST BURDWAN, WEST BENGAL, , PIN-713357 in accordance with the approved plan and drawing forwarded by Chief Engineer (Civil), DVC, Maithon vide letter no.- Nil & Letters No.- MRO/ Tariff Cell/1/936 dated 07.07.2020 & Letter No.- MRO/Water Tariff Cell/63 dated 07.08.2021 of Dy. Chief Engineer ©, Water Resources, DVC, Maithon and also the letter No. MD/DVRR/W-6(143)/2020/1212-17 dated 01.07.2020 -of Member Secretary, DVRRC, CWC, Maithon annexed hereto for Industrial purpose as laid down in the relevant provisions of the said act.

AND WHEREAS the First Party has agreed to such construction, operation and/or maintenance of the water supply scheme and has further agreed to such supply of water to the Second Party for an initial period of five years as referred to in Clause- 16 here-in-under on the terms and conditions as hereinafter appearing.

NOW THIS AGREEMENT WITNESSTH AND IT IS HEREBY DECLARED AND AGREED AS FOLLOWS:-

01. (a) PERMISSION :

(i) The "First Party" hereby grants to the "Second Party" the permission to construct, operate and/or maintain the said water supply scheme in accordance with the Plan and Drawing annexed hereto and to extract such quantities of water from Maithon Reservoir for the purpose of INDUSTRIAL PURPOSE at SARKURI as the "Second Party" may require upto 0.49 (Zero Point Four Nine) MGD at the point in the Maithon Reservoir indicated in the said plan and Drawing annexed hereto and in the manner hereinafter mentioned provided the "Second Party" desiring to increase or decrease the quantity of water to be extracted as permitted aforesaid the "First Party" may require the "Second Party" to give the "First Party" THREE(3) MONTHS' notice in writing and approach DVRRC stating the quantity of water required and the "First Party" after receipt of approval of DVRRC will permit the additional drawal of water depending on the condition prevailing at that time provided further that failure on the part of 'the First Party' will not be construed as breach of this Agreement. the sourcing point and allocation of water by DVRRC is function-specific. The allocation shall, in no way, be utilized /misused by 'the Second Party' by sale of water to any other consumer or its sister concern (or any agency on its behalf) for any purpose whatsoever, in the event of any such act, the same will be construed as breach of the terms and conditions of this agreement on the part of 'the Second Party' as specified in clause-17

Rakesh Ranjan
Executive Engineer (C)
Water, Tariff Cell
RO'S Office, DVC, Maithon

ELOQUENT STEEL PVT. LTD. SALANPUR

01. **(b) PERMISSION : Applicable**

(i) The "First Party" who is seized and possessed of and is otherwise well and sufficiently entitled to the plots of land measuring 9230.05 of DVC land, more particularly described in the drawing hereto annexed, hereby grants to the "Second Party" the right to use/build at his own cost, the intake works comprising the pump house supporting structures and approaches and also lay down pipes and other works on the above mentioned piece and parcel of land.

(ii) These structures and pumping installations shall be the property of the "Second party" and shall be maintained by them.

(iii) The "Second Party" shall apply to the "First Party" for extension of the license-period of the temporarily allotted piece of land for permissive possession/occupation for the specific use if applicable as mentioned hereinabove in Cl. 01.(b).(i) before expiry of every license-period/term of 11 (eleven) months as per the subsisting rules & regulations for temporary use/permissive possession/occupation. The "Second Party" hereby agrees to comply with all the existing terms and conditions as may be decided by the Corporation from time to time and agrees to pay the license fee as may be revised time to time without raising any dispute in this regard.

(iv) For the temporary use/occupation of the said 9230 05 of DVC land, the second party shall pay the "First party" a license fee 65,349/- (Sixty Five Thousand Three Hundred Forty Nine Only) @ Rs. 6/- sq.ft. per term of 11 (eleven) months from the date of permissive possession/occupation of the said land if applicable, is made over to the 'Second Party'.

The aforesaid license-period and the rate of license fee may be altered and /or revised and/or enhanced as per discretion of 'the FIRST party' and 'the SECOND PARTY' agrees to make the payments as per the revised rate as and when made applicable.

(v) The "Second Party" shall not be entitled to transfer or let out the said land to others without the consent of the "First Party".

(vi) The "First Party" shall not put up any structure of its own on the aforesaid piece of land without the consent of the "Second Party" which shall not be unnecessarily withheld.

(vii) On the termination of the tenure of the temporary use and occupation period, the "Second Party" shall quit, vacate and deliver peaceful possession of the said land by removing the intake works built thereon and restoring it to its original condition at his own cost.

(viii) Neatness and cleanliness of the area occupied should be observed by the "Second Party"

02. **APPROVAL OF PLAN & DRAWING INSPECTION**

The installation of the "Second Party" required for extraction of water at the point on the Maithon Reservoir indicated in the said plan and Drawing shall be duly approved by the "First Party" before erection provided the "First Party" or its representatives duly authorized in that behalf shall, from time to time, and at all times be entitled to enter such installations of the "Second Party" for inspection.

Rakesh Ranjan
Executive Engineer (C)
Water, Tariff Cell
CO'S Office, DVC, Maithon

ELOQUENT STEEL PVT. LTD. SALANPUR

03. (a) **EXCESS DRAWAL :**

No deawal in excess of the water, as permitted shall be made by "the second party" without obtaining the specific prior written permission/approval of DVRRC and subject to such terms and conditions as "the First Party" may like to impose. Notwithstanding, whatever is mentioned in this agreement regarding excess drawal, it is hereby agreed and accepted by the second party that, for the quantities of water consumed in excess of the approved monthly drawal and for any other unauthorized drawal of water, sanctioned quantum will be charged @ normal rate plus overdrawal/unauthorized drawal in excess of sanctioned drawal on monthly basis will be charged @ 2 (Two) times the normal rate.

(b) LESS DRAWAL:

The less drawal of water by 10% or more of the agreement quantity during any 5 (five) consecutive years will automatically call for revision of the agreement quantity. The revised agreement quantity will be reduced to average of preceding 5 yrs' actual drawal, without making any further reference to the consumer incorporating the actual average drawal. However, the consumer may opt to apply to DVRRC for increase the quantity as per provision under Clause -1(a) hereinabove.

04. **MODE OF MEASUREMENT & METERS :**

For the purpose of measurement of the quantity of water extracted, the "Second Party" shall under this Agreement, with the prior Approval of the First Party, install at such points as may be indicated by 'the First Party', as many meters or as equal to the different type or types of uses of water so as to register the quantity of water for the purpose of determining the water drawal pattern (excess/less drawal) of the Second Party in such units of measurement as may be adopted by "the First Party"

from time to time provided that for the purpose of checking the accuracy of the meter/meters installed by "the Second Party", "the First Party" may install check meters or other mutually agreed upon check measures and "the Second Party" shall provide all facilities such as log book etc. required by "the First Party" for such installation or such check.

It shall be responsibility of the 'Second Party' to repair/rectify/replacement of meter/meters within a period of 30 days from the date of detection of the fault by either party. And that 'the second party' has to submit a report certified by the representative of the first party every year regarding their compliance with proper and satisfactory functioning of meter with proper logging of meter readings which will be given due importance during periodic review of water utilization by DVRRC. Non-compliance of above may tantamount to cancellation of water allotment.

The reading of the meters referred to above shall be jointly taken by the accredited representative of the consumer and Corporation on/or as near as practicable to the last day of each English calendar month or as decided by the corporation and the reading so taken shall be binding, final and conclusive between the consumer and the Corporation as to the quantity of water drawal by the consumer , provided that in the event of any meter being found defective and the quantity of drawal of water during the period when the meter was defective shall be determined, unless otherwise mutually agreed as detailed in clause – 6 & 10 here-in-under.

Executive Engineer (C)
Water, Tariff Cell
RO'S Office, DVC, Maithon

SALANPUR

05. **SEALING OF METERS :**

All meters referred to in the above mentioned Clause - 04 excepting the ones with automatic recorder on charts if any, shall be properly sealed on behalf of both the parties hereto and shall not be interfered with by either party except in the presence of the other party or its representatives duly authorized in that behalf.

06. **METER READING, INSPECTION & BASIS OF PAYMENT :**

The Control Valve House housing the meter/meters of 'the Second Party' shall remain in the custody of 'the second Party' and 'the First Party' through its representative duly authorized in that behalf shall at all times be entitled to enter the said Control Valve House and inspect the meter/meters. The meter reading shall be entered up daily at 9.00 hours in a register by the second Party or its representatives duly authorized in that behalf. The readings may be checked and attested by 'the First Party' or its representative duly authorized in that behalf, at convenient intervals.

Provided that where it is not possible to record the quantity of water extracted for a particular use directly owing to the absence of a meter directly recording such quantity, the quantity extracted for such use shall be determined by taking the difference between the quantity recorded in the main meter, recording the total quantity extracted for all uses under this Agreement, and the quantity recorded for the other uses for which there may be direct meter/meters.

Provided further that if this meter/meters installed by 'the second party' for recording the quantity of water is/are out of order, the quantity of water extracted may be assessed by taking the average of the quantity extracted during the preceding 3 (three) months as per the reading of the meter/meters, provided further that nothing as aforesaid shall prevent the respective parties from arriving at a mutual settlement as regard the quantity of water extracted during the above period for the purpose of ascertaining excess/less drawal by the second party.

The basis of payment shall be the quantity of water extracted in a month. In other words, bills shall be raised monthly or quarterly or as decided by the corporation, based on the extracted quantity.

07 **QUANTITY OF WATER CONSUMED OR EXTRACTED :**

The Registers of meter reading referred to in the above mentioned Clause- 06 or the assessed quantity of water mutually agreed upon by and between both the parties hereto or the average of the quantity of water extracted during the three months as aforesaid or computed by taking the difference between the direct recording and main meter shall be the prima facie evidence of the quantity of water extracted by 'the second Party'.

Rakesh Ranjan
Executive Engineer (C)
Water, Tariff Cell
CO'S Office, DVC, Maithon

08. PROPRIETARY RIGHT OF METERS AND UPKEEPMENT:

Meters as mentioned in the above mentioned Clause -04 shall be the property of 'the Second Party' and 'the Second Party' shall be liable for the upkeepment of the meter and for carrying out test once a year or more to the satisfaction of the First Party about the accuracy of such meter/meters.

09. ACCURACY OF METERS :

In the event of any dispute or difference between 'the First Party' and the Second Party as to the sufficiency or accuracy or state of repair or condition of the said meter or as to the quantity of water extracted through such meter, such difference or dispute shall be referred to and determined by an Engineer to be appointed by both the parties hereto.

10. BASIS OF ASSESSMENT IN ABSENCE OF METER :

(a) It is accepted and agreed by the 'Second Party' that the total quantity of consumption of water for the month shall be computed by the first party on the basis of actual drawal of water and the bills shall be raised on such quantity as referred to in Schedule-I & II. However, the Second Party is required to install and commission the meter(s) up to the satisfaction of the First Party for ascertaining excess/less drawal as referred to in clause 3.(a) & 3.(b) hereinabove.

(b) If at any time the meters installed for measurement of water extracted shall at any time, cease to register correctly or be removed for repair, calibration etc., then for the period until the said meters shall have been repaired replaced or otherwise adjusted as to register the quantity of water passing through it correctly, the quantity shall be computed as per proviso of clause 08 hereinabove. The First Party, however, shall be entitled to charge and 'the Second Party' shall be liable to pay for such quantity of water as mentioned in Schedule-II and the bills shall be continued to be raised by first party based on the **extracted** quantity as mentioned hereinabove.

Notwithstanding the bills shall be raised as per provisions contained in preceding cl. 10.(a). The Second Party shall make every Endeavour to get the meter repaired and installed to the satisfaction of the First Party within a period of 1(one) months.

11. BILLS & PAYMENTS:

(a) Bills & Tariff:

The price for supply of water shall be charged to the 'Second Party' in accordance with Schedule-I & the First Party's 'Schedule of Rates' as given in Schedule-II and other conditions in force from time to time, provided that any levy such as any Surcharge, Sales Tax, Octroi or any another amount by whatever other name called known or made by the Corporation, the state Government or any other competent authorities on quantity of water allocated to the 'the second Party' under this agreement, shall be paid by 'the second Party'.

Rakesh Ranjan
Executive Engineer (C)
Water, Tariff Cell
20'S Office, Dvt., Hathora

SALANPUR

(b) Security Deposit: Applicable

The First Party may require the Second Party to deposit a Security Amount of Rs. 23,46,402/- (Rs. Twenty Three Lakh Forty Six Thousand Four Hundred Two Only) equivalent to water charges for three calendar months, considering quantity allocated in 0.49 (Zero Point Four Nine) MGD specified in Clause- 1(a) and given in the schedule –I annexed hereto and or as modified as per clause-13 here-in-under and as per the prevailing water rate mentioned in schedule of rates in Schedule-II. The Second Party shall have to pay altered security amount if the quantity of allocation is changed by DVRRC as per the terms of this agreement and as and when the water rates are revised and notified to the second party from time to time during the tenure of this agreement. In the event of termination of this agreement such security deposit shall be refunded after adjustment of dues, if any, to the Second Party without any interest thereon.

(c) Periodicity of Billing:

Bills will be raised to the Second Party monthly/quarterly based on **actual drawal** or as decided by the Corporation as the case may be. It will be the responsibility of second party to make the aforesaid payment within the due date without raising any dispute in this regard.

(d) Mode of payment:

The 'second party' shall pay the bill amount to the first party's office at Kolkata by RTGS/Cheque/Demand Draft drawn on Kolkata Branch of any Nationalized Bank, payable to **Executive Director (Finance), DVC, Kolkata-54** within within 30 days from the date of issue of the bill . The license fee, however, is to be paid by the second party as per terms mentioned in Clause- 1 (b).

(e) Provisional Billing for disputed bills:

In the case of any disputed bill(s) and or non-receipt/delayed receipt of bill, the second party shall collect the duplicate bill from the office of first party and make the payment immediately. However Delay Payment Surcharge, if applicable, as mentioned here-in-under in clause 11.(f) shall have to be borne by the second party. In case of disputed bills, the second party shall continue to pay full amount as per the bill raised by the first party. The necessary adjustment shall be done by the first party on resolution of dispute and/or differences.

(f) Delay Payment Surcharge:

If 'the second party' fails to make the payment of any bill amount within the due date, the second party shall pay the surcharge of 2.0 % per month on the amount of the bill from the due date of payment to the date of receipt of such amount in first party's office at Kolkata/ in Corporation's Account which shall be treated as date of payment. The rate of Delay Payment Surcharge is however liable to revision from such date as the Corporation may decide with prior notice of one month in writing to the consumer.

(g) Default in payment:

In the event any bill remaining unpaid for 60 days from the date of issue of the bill, the first party shall give the second party **7(Seven)** days' clear notice in writing of its intention to discontinue the supply of water and on the expiry of such period if the payment has not been received, 'the first party' may forthwith discontinue supply of water to the second party till the period the default continues. Such discontinuance of supply shall not be deemed as breach on the part of the Corporation to comply with any of the terms of this Agreement and shall not relieve the consumer of its obligations and liabilities under the Agreement.

Rakesh Ranjan
Executive Engineer (C)
Water Tarm Cell
CE'S Office, DVC, Maithon

ELOQUENT STEEL PVT. LTD. DURGAPUR

(h) **Resolution of Dispute on Bill Amount:**

In the event of any dispute on the amount of the bill the consumer shall submit the in details indicating the reason/reasons for such dispute and the aforesaid dispute/disputes normally shall be resolved by mutual discussion and/or mutual exchange of written documents between the consumer and the Corporation through authorized representative within **30 (thirty) days** from the date of receipt of such reference made by the second party to 'the First Party'.

12. MODE OF SUPPLY UNDER NORMAL & ABNORMAL CONDITION:

Save as provided herein 0.49 (Zero Point Four Nine) MGD which, however, need not be continuous, throughout 24 hours, shall be available to 'the Second Party' provided that in case of draught or other unforeseen circumstances, force majeure or any other cause over which the First Party has no control, the First Party shall not be responsible for any diminution or discontinuance of supply on such occasions, but it shall restore the normal conditions of supply as soon as it reasonably can be done to the extent possible.

"The First Party" shall not be considered to be in default or in breach in supplying agreed quantity of raw water due to causes beyond the control of the "The First Party" such as acts of God, Natural Calamities, Civil Wars, Fire, Draught, Riot and acts of unsurpassed power, etc.

13. VALIDITY PERIOD OF QUANTUM OF WATER ALLOCATION:

Notwithstanding whatever is stated herein above, the allocated quantum of water for drawal by 'the Second Party' i.e. initial allocation of quantity (in MGD/Cusec) by DVC/DVRRC shall remain valid for INITIAL AGREEMENT period of **5 (five)** years.

In case the average drawal by the second party during the initial agreement period of five years is **not below 90%** of allocated quantity, then the allocated quantity as specified in Clause- 1(a) shall be treated as the 'allocated quantum' of water for drawal by 'the second party' during the forthcoming period provided that the average drawal during last consecutive **5 (five)** years is **not less by more than 10%** of allocated quantity at the time of review by DVRRC.

In case the drawal is found **less by more than 10%,** the first party may reduce the quantum of allocation accordingly based on the average drawal. However, the second party shall have the liberty to apply for increasing the **re-allocated quantity** as per provision of Clause- 1(a). Any change in the allocated quantity after review by DVRRC Shall deem to replace the quantity of drawal specified in Clause- 1(a) and Schedule- I annexed hereto.

Fresh application for re-allotment of the earlier quantity of water for drawal by the second party, shall be required to be submitted by 'the Second Party' **twelve(12)** months prior to expiry of the initial agreement block of 5(five) years.

If the fresh application as above, is not submitted by 'the second party' in due time to the review committee of DVRRC, 'The first party' shall have the right to reduce ex-parte the re-allocation of water as decided by the committee as deemed fit for equitable distribution taking into consideration the average drawal by the second party during the preceding 5(five) years.

'The second party' hereby accepts and agrees to the aforesaid re-allocation of water without any dispute and the bills shall be raised on the basis of the **drawal quantity** in MGD.

Rakesh Ranjan
Executive Engineer (C)
Water, Tariff Cell
CO'S Office, DVC, Maithon

SALANPUR

14. RULES & REGULATION:

'The Second Party' agrees to conform to and abide by all rules and regulations made by the First Party including guidelines for water allocation set by DVRRC now in force and/or which may from time to time be made by the First Party consistent with this agreement relating to the extraction of water from the First Party's sources within the statutory limit of the said Act.

'The second party' shall ensure the optimal use of allotted quantum for the specific purpose and surrender the wasteful usage from the allotted quota. 'The second party' shall take all cares to avoid any untoward hydraulic conditions and undesirable changes in the river/supply channel.

'The second party' shall also ensure that the minimum flow in the river channel required for ecological balance is not interfered with. The Second Party shall take care that the intake structure and drawl of water, under no circumstance be detrimental to the safety and operation procedures of adjoining intakes/reservoir bridges both upstream & downstream of the intake point and also that the proposed intake is strong enough to be able to withstand floods in the river.

Notwithstanding whatever is stated in Clause-13 above, the review committee for allocation of water shall have prerogative to review periodically to reflect and incorporate the changes which take place in the realm of Water Resource Management.

"**The Second Party**" will ensure that the effluent water discharging out of the plant/industry will conform to the latest rules/bye laws/ regulations/prescribed water quality parameters by pollution control board of respective State Governments and/or Central Government.

Notwithstanding that the Corporation may not have acted on some previous breach, defaults or event of like nature on the part of the second party, it shall be lawful for the Corporation to enforce the terms and conditions of these presents in the event of a subsequent breach, default or event of like nature in all matters related to withdrawal of raw water by 'the Second Party'.

Any waiver by 'the First Party' of any breach of the terms and conditions of this agreement by the Second Party shall not constitute waiver of any subsequent breach of any other terms or conditions of this agreement.

15. DISPUTE OR DIFFERENCE & ARBITRATION:

Any dispute(s) or difference(s) arising out of or in connection with the agreement at any time between the 'First Party' and the 'Second Party' shall to the extent possible be settled amicably between the parties.

In the event of any dispute(s) or difference(s) whatsoever arising under the agreement or in connection therewith including any question relating to existence, meaning and interpretation of the agreement or any alleged breach thereof, the same shall be referred to the Secretary/CEO of Damodar Valley Corporation, Kolkata-700 054, to nominate Sole Arbitrator for settlement of disputes.

The Arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 or any statutory modification thereof or for the time being in force or the latest. The decision/judgment of the Sole Arbitrator shall be final and binding on both the parties. The cost of Arbitration shall equally be borne by both the parties. The venue of Arbitration shall be at Kolkata.

However, in case the 'Second Party' is a Central Public Sector Enterprise/Govt. Department, the dispute arising between the parties shall be settled through **Permanent Arbitration Machinery (PAM)** of the Department of Public Enterprise, Govt. of India as per prevailing rules.

All suits arising out of dispute(s) or difference(s) between the 'First Party' and the 'Second Party' are subject to jurisdiction of Court in the City of Kolkata.

Rakesh Ranjan
Executive Engineer (C)
Water, Tarif Cell
RO'S Office, DVC, Maithon

STEEL PVT. LTD. SALANPUR

16. TENNURE OF AGREEMENT OR VALIDITY :

This agreement shall subject as hereinbefore provided be and remain in force for a period of **5 (five)** years initially from the date of commencement of supply under this Agreement and thereafter shall continue uninterruptedly under the existing terms and conditions until determined by either party after the expiration of the fifth or any subsequent year on giving **3 (Three) months'** prior notice in writing of such intention and at the expiration of such notice this Agreement shall absolutely cease and determine but without prejudice to the rights and remedies, if any, of either party which may have accrued or arisen hereunder in the meantime and provided that the Second Party shall on giving the First Party **3 (three)** months' prior notice in writing of such intention be at liberty at any time after the expiration of the fifth or any subsequent year to terminate this Agreement by making payment of the charges equal to water charges for one year as per Schedule of Rates (Annexed as Schedule-II) in force at that time.

17. TERMINATION :

If the '**Second Party**' commits any breach of the terms and conditions of this agreement or if there is any default on the part of '**the second Party**', '**the First party**' will be at liberty to terminate this agreement upon one months' notice to 'the second party' without prejudice to the rights and remedies, if any, which may have accrued or arisen thereunder.

Executive Engineer (C)
Water, Tariff Cell
RO'S Office, DVC

IN WITNESS WHEREOF THE PARTIES TO THESE PRESENTS HAVE HERE UNTO PUT THEIR REPECTIVE HANDS AND SEALS EACH THE DAY AND YEAR FIRST ABOVE WRITTEN.

The Agreement along with Schedule of rates would come into effect on and from the date of commencement of water supply.

21.9.2021

SIGNED, SEALED AND DELIVERED
FOR AND ON BEHALF OF
DAMODAR VALLEY CORPORATION

कार्यपालक निदेशक (असैनिक)
Executive Director (Civil)
दामोदर घाटी निगम, धनबाद
DVC, Maithon, Dhanbad

WITNESS

1 S.K. MAJI — 21.9.21
DEE (C)-HQ

2 Rakesh Ranjan
(Name & Address)
Executive Engineer (C)
Water, Tariff Cell
HQ'S Office, DVC, Maithon

Eloquent Steel Pvt.Ltd.
Authorized Signatory

SIGNED, SEALED AND DELIVERED
FOR AND ON BEHALF OF
ELOQUENT STEEL PRIVATE LIMITED

Registered Office: DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017

WITNESS

1 (CHANDAN CHANTY)
E. Engg

2 S.K. Tiwari (Sanjeev Kumar Tiwari)
G.M. Comml. ESPL
(Name & Address)

ANNEXURE - 'A'

SCHEDULE- I

[Referred to in Clause-1(a)]

Quantity of Water allocated by DVRRC for drawal by M/s ELOQUENT STEEL PRIVATE LIMITED at SARKURI, NAKRAJORIA, P.O. & P.S.-SALANPUR, DIST.-WEST BURDWAN, WEST BENGAL, , PIN-713357, 0.49 (Zero Point Four Nine) MGD

From ..... day of of two thousand and Twenty the date of commencement of water drawal:

[N.B.: The quantity of raw water allocation as revised by DVRRC from time to time as per the provision of the agreement shall from the integral part of this agreement]

SCHEDULE- II

[Referred to in Clause-11]

SCHEDULE OF RATES

(Effective from 1st April 2019)

FOR

RAW WATER SUPPLY

SOURCES OF DRAWAL	INDUSTRIAL	DOMESTIC/MUNICIPALITY/PHED
	Rate	Rate
Reservoir / River (Per KL)	Rs. 10.64	Rs. 1.725
Extra Charges for drawing water from water supply canal (Per KL)	Rs. 0.52	

The Tariff will be enhanced annually at the end of every financial year (i.e. w.e.f. 1st April) as follows:

(i) For Domestic/Municipality/PHED use - 05% shall be increased in raw water tariff annually.

(ii) For Industrial use - 10% shall be increased in raw water tariff annually.

Note: 1) The Water Supply Bills shall be raised on the basis of actual drawal quantity as for all the consumers with the above tariff.

2) An incentive of 10% on the monthly billed amount will be allowed to those Industries who have taken appropriate measures for "**Zero Effluent Discharge**". The said incentive will be applicable only if the payments are made within due date and on production of requisite certificate from State Pollution Control Authority.

N.B. : Revised rate will be applicable as and when notified by the Corporation.

Eloquent Steel Pvt.Ltd.

For and on behalf of

ELOQUENT STEEL PRIVATE LIMITED

Registered Office: DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017

CHIEF ENGINEER

For and on behalf of

DAMODAR VALLEY CORPORATION

कार्यपालक निदेशक (अभियांत्रिकी)
Executive Director (Civil)
दामोदर घाटी निगम, मैथन
DVC, Maithon, Dhanbad

Kolkata-700054

ANNEXURE - 'B'

Performa of information to be submitted by the company

DETAILS OF THE COMPANY

A. DETAILS OF APPLICANT:

01.Name in Capital Letters	DEEPAK KUMAR AGARWAL
02 Designation	CMD
03 Relationship with Intending Consumer	CMD of the Company
04 Complete Postal Address	NAKRAJORIA, P.O. & P.S.-SALANPUR, DIST.-WEST BURDWAN, WEST BENGAL, , PIN-713357
05 Telephone No.	9233331111
06 FAX No.	033-66255252
07.E.Mail Address	eloquentsteel@gmail.com

B. DETAILS OF THE WATER CONSUMER:

1 Details of Registered Office:

Registered Office	Postal Address:	DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017
	Telephone No. :	9233331111
	FAX No. :	033-66255252
	E.Mail Address :	eloquentsteel@gmail.com

2 Details of Contact Person:

NAME:	DEEPAK KUMAR AGARWAL	
Contact Person	Postal Address:	DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017
	Telephone No. :	033-66255252
	FAX No. :	033-66255252
	E.Mail Address :	cmdsipl@gmail.com

3	Complete Billing Address:	
Billing Address	Postal Address:	DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017
	Telephone No. :	9434053527
	FAX No. :	033-66255252
	E.Mail Address :	eloquentsteel@gmail.com

C. DETAILS OF PROJECT/UNIT/PUMP LOCATION ETC.:

01. Name of the Village/Place	SARKURI
02. Plot no.	15
03. Dag No.	15
04. Mouza Name & No.	SARKURI
05. J.L. No.	3
06. Police Station Name & No.	SALANPUR, 0341-2015200
07. Name of Post Office with PIN	KALYANESWARI,PIN-713369
08. District	WEST BURDWAN
09. Postal Address of the Plant/ Unit site	NAKRAJORIA, P.O. & P.S.-SALANPUR, DIST.-WEST BURDWAN, WEST BENGAL, , PIN-713357
10. Point of Water Withdrawal/	DVC LAND IN SARKURI MOUZA ON THE MAITHON RESERVOIR
Telephone No.	9434053527
FAX No.	033-66255252
E.Mail Address	eloquentsteel@gmail.com
11. Location of Water Treatment Plant	WITHIN THE PREMISES OF ELEQUENT STEEL PRIVATE LIMITED, NAKRAJORIA, P.O. & P.S.-SALANPUR, DIST.-WEST BURDWAN, WEST BENGAL, , PIN-713357
12. Location of Pumping Station	PLOT NO-15,JL NO-3,MOUZA SARKURI, PO&PS-SALANPUR, DIST.WEST BENGAL, WEST BURDWAN, PIN-713357

13. Number of pumps installed	**2 Nos. of centrifugal pumps**
14. Capacity of pumps	**90 KW**
15. Location of water meter	**IN THE PIPE LINE FROM MAITHON RESERVOIR TO PUMP HOUSE**
16. Location of Intake point	**DVC LAND IN SARKURI MOUZA ON THE MAITHON RESERVOIR**
17 Quantum of water withdrawal in MGD (approved by DVRRC)	**0.49 (Zero Point Four Nine) MGD**
18. Date of Commencement of water withdrawal from pumping station (to be filled up later)	

D. DETAILS OF RAW WATER USAGE:

(Attach Separate sheet, if necessary, giving details)

(1)

Eloquent Steel Pvt.Ltd.

Authorized Signatory

Signature with full name of person signing the Agreement & Stamp/ Seal of Company

DAMODAR VALLEY CORPORATION

P.O-MAITHON DAM,

Tel No. (06540) 279402/279683/279445; Fax No. 06540-274313

ANNEXURES
ENCLOSURES FORMING THE PART OF THE AGREEMENT:-

Annexure (1) to (4) mentioned below and annexed hereto shall form the integral part of this Agreement:-

(1) ANNEXURE-'A'	Schedule -I & Schedule -II
(2) ANNEXURE-'B'	Detail of the Company
(3) ANNEXURE-'C'	MD/DVRR/W-6(143)/2020/1212-17 dated 01.07.2020 -of Member Secretary, DVRRC, CWC, Maithon
(4) ANNEXURE-'D'	**Letters No.- MRO/ Tariff Cell/1/936 dated 07.07.2020 & Letter No.- MRO/Water Tariff Cell/63 dated 07.08.2021 of Dy. Chief Engineer ©, Water Resources, DVC, Maithon**

Eloquent Steel Pvt.Ltd.

Authorized Signatory

For and on behalf of

ELOQUENT STEEL PRIVATE LIMITED

Registered Office: DIAMOND PRESTIGE, 41A, AJC BOSE ROAD, 8 TH FLOOR, ROOM 801, KOLKATA 700017

CHIEF ENGINEER

For and on behalf of

कार्यपालक निदेशक (असैनिक)
Executive Director (Civil)
DAMODAR VALLEY CORPORATION
DVC, Maithon, Dhanbad

Kolkata-700054

DAMODAR VALLEY CORPORATION

Annexure-6

COMMERCIAL DEPARTMENT

DVC TOWERS, V I P ROAD, KOLKATA- 700 054.

Tel. No: 033-2355-1172/7931 FAX: 033-2355-2129

No.-Coml/CD/21-22/MHS/ESPL/ 2752 Date: 30.12.2021

To
The Director,
Eloquent Steel Pvt Ltd.,
"Diamond Prestige,41A, A.J.C Bose Road,
8th Floor, Room No.-801,
Kolkata, West Bengal-700 017

Sub: Submission of security deposit for enhancement of Contract Demand (CD) in respect of M/s. Eloquent Steel Pvt. Ltd. fed from Maithon Hydel Substation [MHS, Left Bank] of DVC. [Consumer No: 440403]

Ref: 1) Your email dtd. 06.09.2021

Dear Sir,

The enhancement of Contract Demand from existing 25 MVA to 30 MVA in respect of M/s. Eloquent Steel Pvt. Ltd. fed from Maithon Hydel Substation [MHS, Left Bank] of DVC is under consideration subject to compliance of following commercial terms from your end:

1) Current outstanding dues, if any, at the time of enhancement of CD shall be cleared prior to the enhancement of CD.

2) Payment of the additional Security Deposit (SD) amounting to Rs. 3,38,09,000/- (Security Deposit commensurate with the CD of 30 MVA is Rs. 23,25,59,000/-; SD of Rs. 19,87,50,000/- is available with DVC) in the form of Cash SD/ Bank Guarantee (BG).

   In case, if the security deposit is submitted in the form of BG, the BG should be valid for the period of 02 (two) years with a claim period of 03 (three) months. BG format is enclosed herewith.

Yours sincerely,

Biswajit Mondal 30/12/2021

(B.Mondal)
Dy. Chief Engineer (Commercial)

DAMODAR VALLEY CORPORATION
COMMERCIAL DEPARTMENT
DVC TOWERS, VIP ROAD, KOLKATA-700 054
PHONE: 033-23557931, FAX: 033-23552129

No. Coml./Voltage upgradation/ESPL/132KV- 1441 Date: 28.07.21

To
The Director
M/s. Eloquent Steel Pvt. Ltd.
Diamond Prestige;
41A, A.J.C. Bose Road;
8th Floor; Room No. 801.
Kolkata-17.

Construction Clearance

Sub: Up gradation of supply voltage from 33KV to 132KV in respect of Eloquent Steel Pvt. Ltd. from Kalyaneswari Sub-station

Ref.: 1. Our letter no. Coml./Voltage upgradation/ESPL/132KV/1385 dt. 19.07.21.
2. Your mail dt.27.07.2021

Dear Sir,

We are in receipt of the following charges/ material cost and GST from your end:

Service charges/Cost of equipments & GST after deduction of TDS amounting Rs. 1,25,746.00	Rs. 72,93,268.00

Since, you have already conveyed your unconditional acceptance towards **Terms & Conditions** as stipulated in our letter dt. 19.07.21 (ref. 1 above), construction work for building up necessary infrastructure may be done as per following:

A. **Scheme**:

1.	Feed point	132KV switchyard at Kalyaneswari Sub-station.
2.	Bay allocation	Existing 132KV Maithon Alloy bay.
3.	Line details	Power supply to the applicant may be effected through stringing of spare circuit after common HTLS portion of proposed 132KV MSPL feeder partly through AAAC Panther (37/3.15 mm.) conductor and partly by laying 132KV underground cable having a route length of 3.109 Km. (approx.) up to consumer premises. Total route length from Kalyaneswari sub-station up to consumer premises is 4.171 Km. (approx.). Details of proposed conductor: AAAC Panther (37/3.15 mm.). Details of proposed cable: 132KV 1Cx400 sq. mm. copper cable. Crossing involved: 400KV line – 01 no., 220KV line 02 nos., 33KV line - 04 nos., 11KV line – 02 nos., Road 02 nos., Nala – 01 no.
4.	Terminal infrastructure	The terminal infrastructure will consist of a full-fledged 132KV metering and line bay arrangement. The applicant will have to construct the line bay complete with circuit breaker along with full control and protection arrangement with remote operation facility from DVC's Sub-station end. The cost of this work will be borne by the applicant. A metering room will have to be constructed adjacent to the line bay for installation of a panel with tariff meters. The tariff meters will be supplied by DVC. The

		control and protection panels for the line bay may be installed in the applicant's control room.

Please note the following:

1. The charges indicated above are the service charges calculated on an initial estimate of the cost of terminal and metering infrastructure based on Corporation guidelines. This does not purport to be the actual cost of the project.

2. The cost of construction of 132KV S/C line up to your premises and construction of line bay including terminal arrangement and metering arrangement at your premises has not been included in the charges to be paid by you, as construction of line and line bay including terminal infrastructure and metering infrastructure will be carried out by you and the cost of such work including supply of all materials will be borne by you. However, all technical help will be provided by DVC.

3. Maintenance of the 132KV cable so built including termination at both ends will rest with you only.

4. All formalities for statutory clearances from CEA, Forest Dept. and other agencies such as Highway authority, Railway authority etc. shall be initiated by DVC. You will have to prepare the necessary documents and pursue the matter in the various Govt. Depts. as may be required for obtaining the permits.

5. All expenses that may be incurred in obtaining statutory clearances related to Forest, Wireless, River, Highway, Railway crossings will have to be borne by you.

6. Settlement of any disputes related to 'Right of Way' issues with public/ local authorities/ state authorities shall be rest with you. DVC will participate in the negotiations wherever necessary.

7. The assessment and payment on account of 'Right of Way', crop compensation, tree compensation etc. shall be done by you.

8. You have to share the proportionate cost of the common portion of the line with other consumers on the feeder.

9. Construction of transmission line will be taken up after obtaining approval from the appropriate authority under section 68 of Electricity Act, 2003, if applicable.

10. All materials shall be as per DVC specification and procured from DVC's approved list of vendors only.

11. Warranty of materials used during construction work and given by the manufactures is to be passed on DVC after commissioning of the infrastructure, so constructed.

12. The infrastructure to be constructed at your cost will however be owned, operated & maintained by DVC and DVC shall be entitled to supply power to other consumers from this infrastructure, so built. However, maintenance of 132KV cable along with its termination at both ends will be in the scope of the applicant as per Sl. No. 3 above.

13. You have to provide 01 (one) no. PC/Laptop of reputed make at DVC's Control Room towards remote operation of consumer end's breaker from DVC's Sub-station end.

14. You are requested to get in touch with the office of the CE (TSC), DVC, Maithon for matters related to supervision of the work.

15. You are requested to get in touch with the office of the CE (SPE), DVC, Kolkata for matters related to specification of equipment for line and terminal infrastructure, design and engineering issues.

16. *Also, for construction of the proposed line, shutdown of 132KV MAL feeder is required for which existing consumer, i.e., M/s Maithon Alloy Ltd. has to agree.*

17. You will have to deposit Security deposit if required,in the form of BG/ cash equivalent to 3 months average billing amount on the basis of CD as per prevailing tariff in line with WBERC regulation before commencement of power supply at 132KV level.
18. You will have to execute new power supply agreement with DVC before commencement of supply of power at 132 KV.
19. **You will have to liquidate all the outstanding dues before commencement of supply at 132KV,if any.**

Yours faithfully,

Chief Engineer (Comml.)

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L&LR
SBP N

5933385

খাজনার দাখিলা এবং বিবিধ তলব

প্রজার অংশ

১। জেলার নাম	২। থানার নাম ও জৌজি নং	৩। সার্কেলের নাম ও তহশীল ব্লক নং	৪। ভূমিমহালের হালিল নং
৭: বর্ধমান	[illegible]		৩৮৫.

৫। মৌজার নাম ও জে.এল. নং	৬। জরাবন্দী নং	৭। খতিয়ান নং	৮। দাগ নং	৯। জমির পরিমাণ
নেতাজুরিয়া ২২		৫৮৭.	২৩৫.	১১.৭৯ একর

১০। প্রজার নাম ও পিতা/স্বামীর নাম ও সাকিন	১১। কোন খতা (খাজনা) দাখিল হইতেছে।
ইসপেক্ট স্টীল প্রা: লিমিটেড	ঐ: এলোক্কাপ্প স্টীল প্রা লিমিটেড

প্রজার উপর সালিয়ানা তলব

নগদ খাজনা	সার চার্জ	পথ কর	পূর্ত কর	শিক্ষা কর	বিবিধ		গ্রামীণ কর্মসংস্থান আইনে দেয়		মোট
					খাস জমি বাবদ লাইসেন্স ফি১৭ (ক)	অন্যান্য ১৭ (খ)	সার চার্জ ১৮ (ক)	সেস ১৮ (খ)	
১২	১৩	১৪	১৫	১৬					১৯
						Dd No I-835			18

3898985 15/11/18

ওয়াশীল Cheque No-135004 11.6.18

	তিন সনের পূর্বেকার ২০	কৃষীয় সনের বাকি ২১	ত্রিবীয় সনের বাকি	দ্বাদশ সনের বাকি	হাল ২৪২৫	মূল ২৫	পরিশিষ্ট ২৬
খাজনা			২৩৫৮	২৩৫৮	২৩৫৮	৮২২৪	
সার চার্জ			—	—	—		
পথ কর			২৪৯	২৪৯	২৪৯		
পূর্ত কর			৫৮৯	৫৮৯	৫৮৯		
শিক্ষা কর			২৩৫৮	২৩৫৮	২৩৫৮		
খাস জমি বাবদ লাইসেন্স ফি			—	—	—		
অন্যান্য			—	—	—		
গ্রামীণ কর্মসংস্থান আইনে সেস			—	—	—		
(ক) সার চার্জ			৩৫৩৭	৩৫৩৭	৩৫৩৭		
(খ) সেস			৭০৭৪	৭০৭৪	৭০৭৪		
মোট			৪৯৫৩	৪৯৫৩	৪৯৫৩	৮২২৪	
বাং টিনাহ	৯.	একশত	উনষাটটিলক্ষ	বাহান্ন			

মোট আদায় (কথায়) একশত উনষাটটিলক্ষ বাহান্ন টাকা মাত্র.

আদায়কারী কর্মচারীর সহি
21.6.18

যাঁহাদের নিকট তহশীলদার আসিবেন।
মন্তব্য। যেখানে খাজনা দেওয়া হইবে এইখানে তাহার [illegible] বিবরণ লিখিতে হইবে।
SBP [illegible]

West Bengal Form No. 1077

L&LR
SBP N

খাজনার দাখিলা এবং বিবিধ তলব 7181749

প্রজার অংশে

১। জেলার নাম	২। থানার নাম ও চৌহদ্দি নং	৩। সার্কেলের নাম ও তহশীল ব্লক নং	৪। ভূমিসংস্কারের রসিদ নং
প: বর্ধমান	[illegible]		2084

৫। মৌজার নাম ও জে.এল. নং	৬। জমাদারী নং	৭। খতিয়ান নং	৮। দাগ নং	৯। জমির পরিমাণ
[illegible]		৫২৮	২০৫	২০৩৭ একর

১০। প্রজার নাম ও পিতা/স্বামীর নাম ও সাকিন

[illegible]

১১। কারার ধারা (খাজনা) বাকির উল্লেখ

[illegible]

প্রজার উপর সালিয়ানা তলব

খাদ্য খাজনা	সার চার্জ	পথ কর	পূর্ত কর	শিক্ষা কর	বিবিধ		গ্রামীণ কর্মসংস্থান আইনে দেয়		মোট
					খাস জমি বাবদ লাইসেন্স ফি ১৭ (ক)	অন্যান্য ১৭ (খ)	সার চার্জ ১৮ (ক)	সেস ১৮ (খ)	১৯
১২	১৩	১৪	১৫	১৬					
১২.১৩	[illegible]								

3898863.

ওয়াশীল Deed No: 02799/17

	কিস্তি সনের পূর্বেকার ২০	পূর্ববর্তী সনের বাকি ২১	দ্বিতীয় [illegible]	হাল সনের [illegible]	মোট [illegible]	মূল ২২	পরিমাণ ২৩
খাজনা			২২৬৪০	২২৬৪০	২২৬৪০	৯৪৪৬	
সার চার্জ			—	—	—		
পথ কর			২২৬	২২৬	২২৬		
পূর্ত কর			[illegible]	[illegible]	[illegible]		
শিক্ষা কর			২২৬৪	২২৬৪	২২৬৪		
খাস জমি বাবদ লাইসেন্স ফি			—	—	—		
অন্যান্য			—	—	—		
গ্রামীণ কর্মসংস্থান আইনে দেয়			—	—	—		
সার চার্জ			৩২০৩	৩২০৩	৩২০৩.		
(খ) সেস			৩৪০২	৩৪০২	৩৪০২.		
মোট			[illegible]	[illegible]	[illegible]		
বাদ দিবার			[illegible]				

*যে সনের বাবদ ওয়াশীল প্রদান করিবেন।

দ্রষ্টব্য : [illegible] সবিশেষ বিবরণ লিপিবদ্ধ করিতে।

SBP, Kolkata-700 015.

[illegible] এই [illegible] রসিদ দেওয়া হইল।

[illegible] আদায়কারী কর্মচারীর সহি

19.11.18

ENVIROCHECK
Recognised by MoEF&CC, WBPCB & JSPCB
Accredited by NABL (ISO/IEC 17025:2017)
Certified by ISO 9001:2015, ISO 14001:2015 & ISO 45001 : 2018

TCLP REPORT

1.	Name of the Industry	:	Eloquent Steel Pvt. Ltd. (Formerly Known as – HiraConcast Ltd.)
2.	Address	:	Vill. – Nakrajoria, P.O. + P.S. – Salanpur, Dist. – PaschimBardhaman
3.	Date of sampling	:	21.09.2021
4.	Report No.	:	Env/579/S/M/21-22
5.	Reporting date	:	24.09.2021
6.	Type of sample	:	SMS Slag

PARAMETERS (mg/lt.)					
Zn.	**Cr.**	**Cu**	**Ni**	**Pb**	**Cd**
6.15	1.80	3.50	1.60	1.40	<0.002

Reviewed By :

DURBADAL CHAKRABORTY
Dy. Quality Manager

Approved By :

Dr. AJOY PAUL
Quality Manager

ENVIROCHECK
Recognised by MoEF&CC, WBPCB & JSPCB
Accredited by NABL (ISO/IEC 17025:2017)
Certified by ISO 9001:2015, ISO 14001:2015 & ISO 45001 : 2018

TCLP REPORT

1.	Name of the Industry	:	Eloquent Steel Pvt. Ltd. (Formerly known as – Impex Steel Ltd.)
2.	Address	:	Vill. – Nakrajoria, P.O. + P.S. – Salanpur, Dist. – Paschim Bardhaman
3.	Report No.	:	ENV/580D/S/M/21-22
4.	Date of sampling	:	21.09.2021
5.	Reporting Date	:	29.09.2021
6.	Type of sample	:	Slag
7.	Location	:	SMS Slag

Sl. No.	PARAMETERS	METHOD	UNIT	RESULTS
1.	Zinc (Zn)	EPA 1311 : 1992 APHA 23rd Ed., 3111 B : 2017	mg./l	6.50
2.	Copper (Cu)	EPA 1311 : 1992 EPA 3050 B, 1996/EPA 200.6 : 1998	mg./l	3.20
3.	Nickel (Ni)	EPA 1311 : 1992 APHA 23rd Ed., 3111 B : 2017	mg./l	2.50
4.	Lead (Pb)	EPA 1311 : 1992 EPA 3050 B, 1996/EPA 200.9 : 1998	mg./l	1.20
5.	Cadmium (Cd)	EPA 1311 : 1992 EPA 3050 B, 1996/IS 3050 (Part 46)	mg./l	<0.002

Reviewed By :

DURBADAL CHAKRABORTY
Dy. Quality Manager

Approved By :

Dr. AJOY PAUL
Quality Manager

MAITHAN STEEL & POWER LIMITED

maithan STEEL
NIRMAAN KA MAANDAND

Date: 01.12.2021.

AGREEMENT

This Memorandum of Understanding (MOU) hereafter referred to as ("Agreement") made on this the First Day of December, 2021 by M/s. Eloquent Steel Pvt. Ltd, a company incorporated under the Companies Act, 1956 and having located at Vill. Nakrajoria, PO/PS. Salanpur, Dist. Paschim Bardhaman (WB)- 713357 hereafter referred to as ESPL (Which expression shall unless excluded by or repugnant to the subject or context to deemed to mean and include its successor or successors and permitted assigns) of the Party-1.

AND

M/s. Maithan Steel & Power Ltd., having its factory at Salanpur, Dendua (Which expression shall unless excluded by or repugnant to the subject or context to deemed to mean and include its successor or successors and permitted assigns) of the Party-2.

Whereas, the First Party offered Solid waste slag generated at ESPL from Induction Furnace & SAF to M/s. Maithan Steel & Power Ltd.

Whereas, the material shall be dispatched by ESPL to M/s. Maithan Steel & Power Ltd., by their own means and cost and no charges what so ever shall be paid by M/s. Maithan Steel & Power Ltd., towards, cost, loading, freight, etc.

M/s. Maithan Steel & Power Ltd., will utilize the solid waste slag towards land filling and use as aggregate at its factory at Salanpur, Dendua.

Period of Agreement: This agreement shall remain in force for a period of 2 (Two) years from the date of signing this agreement which may be further extended with mutual consent of the parties.

Dispute Resolution: That in the event of any dispute of difference between the parties in respect to this Agreement shall be settled by amicable negotiation between the parties failing which the same shall be decided by Arbitration in accordance with provision of Arbitration and conciliation Act, 1966.

In witness thereof the parties hereto have executed this above written Agreement on the First Day of December, 2021

Signed and Delivered by the above

Name: Arun Kumar Show
Designation: Factory Manager
M/s. Maithan Steel & Power Ltd.

Signed and Delivered by the above

Name: Ram Sunder Singh
Designation: Factory Manager
M/s. Eloquent Steel Pvt. Ltd.

Eloquent Steel Pvt. Ltd. Salanpur

Eastern Track Udyog Pvt. Ltd.
MANUFACTURER OF RAILWAY TRACK FITTING

Jai Dai Group
ENGINEERING INNOVATIONS
VILL : Nakrajoria, P.O. : Salanpur
Dist : Paschim Bardhaman
Pin : 713357
E-mail : kediakedia@jaidadigroup.com
easternudyog@rediffmail.com
Website : www.jaidadigroup.com
CIN No. : U35203WB2005PTC104529

Date: 01.12.2021

AGREEMENT

This memorandum of understanding (MOU) hereafter referred to as ("Agreement") made on this the first day of December 2021 by M/S Eloquent Steel Pvt. Ltd. a company incorporated under the companies Act, 1956 and having located at Vill-Nakrajoria, PO/PS-Salanpur, Dist-Paschim Bardhaman (WB)-713357 hereafter referred to as ESPL (with expression shall unless excluded by or repugnant to the subject or context to deemed to mean and include its successor or successors and permitted assigns) of the PARTY-1.

AND

M/s Eastern Track Udyog private Limited having its factory at Nakrazoria, Salanpur (with expression shall unless excluded by or repugnant to the subject or context be deemed to mean and include its successor or successors and permitted assigns) of the PARTY-2.

Whereas, the First Party offered Solid Waste Slag generated at ESPL from Induction Furnace & SAF to M/S Maithan Steel and Power Limited the rate of the Slag will be decided on monthly basis.

Whereas, M/S. Eastern Track Udyog private Limited shall arrange to place vehicle for lifting of the slag from ESPL and will pay the freight to the transporter/truck driver as per lorry receipt and at actual being the charges from unit of ESPL, Nakrajoria, to the unit of M/S Shakambhari Group of Industries.

M/S. Eastern Track Udyog private Limited will utilize the solid waste slag towards land filling and use as aggregate at its factory at Salanpur, Denuda.

Period of Agreement: This agreement shall remain in force for a period of 3(Three) years from the date of signing this agreement which may be further extended with mutual consent of the parties.

Dispute Resolution : That in the event of any dispute of difference between the parties in respect to this Agreement shall be settled by amicable negotiation between the parties failing which the same shall be decided by Arbitration in accordance with provision of Arbitration and conciliation Act, 1966.

In witness thereof the parties here to have executed this above written Agreement on the first day of December 2021.

Signed and Delivered by the above

Name:
Designation:
M/S Eastern Track Udyog private Limited

Signed and Delivered by the above

Name: Ram Sunder Singh
Designation: Factory Manager
M/S Eloquent Steel Pvt. Ltd.

CORPORATE ENVIRONMENTAL POLICY

M/s Eloquent Steel Pvt. Ltd. is committed to,

1. Protect Environment and continually improve environmental performance by implementing an environmental management system as per ISO-14001:2004, involving all employees.
2. Comply with applicable environmental legislations, regulations, special and general conditions laid down by the statutory bodies time to time.
3. Check, reduce and control of air pollution.
4. Strive to reduce, reuse and recycle the wastes.
5. Increase the competence of employees to reduce significant environmental impacts.
6. Conserve fuels, raw materials, water and energy.
7. Develop thick green belt in and around the plant.
8. Develop awareness among employees and public towards environmental conservation.
9. Performs R & D activities with respect to specific pollution problems.



RESPONSIBILITIES FOR ENVIRONMENT MANAGEMENT CELL (EMC)

The Directors/Chairman of the Company is responsible for the Compliance of the Policy. The Directors/Chairman shall constitute a Cell called as Environment Management Cell (EMC). The EMC is committed to monitor the company operations in an environmentally sound manner.

The overall responsibilities for Environment Management Cell (EMC) at plant level rest with head of Environment Department. The Head of the Department will:

- Ensure the implementation of Policy on environment at plant level and review the status with respect to stipulated norms.
- In case of emergency (non-compliance/deviation/violation/major accident) Head of Environment Department will do immediate reporting to the Executive Director-Corporate, Directors and Chairman of the Company.
- Prevention of incidents/accidents that might result from abnormal operating conditions
- Establish appropriate management system for environment management and ensure regular auditing to verify compliance.
- Ensure conducting third party environmental monitoring through certified bodies to evaluate prevailing environmental condition with respect to statutory norms.
- Formally review environment performance of the company and report environmental performance to the Board of Directors/Chairman of the company through Executive Director-Corporate once every quarter.
- Review environment performance on monthly basis and recognize exemplary performance.
- Ensure the statutory environmental compliances.
- The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions is presented below:



For M/s Eloquent Steel Pvt Ltd

Director

Date: 10.01.2020

Board Resolution

EXTRACT OF THE MINUTE OF THE MEETING OF BOARD OF DIRECTORS OF M/S ELOQUENT STEEL PVT LTD HELD ON FRIDAY 10TH DAY OF JANUARY, 2020 AT 2.30 P.M. AT REGISTERED OFFICE OF THE COMPANY.

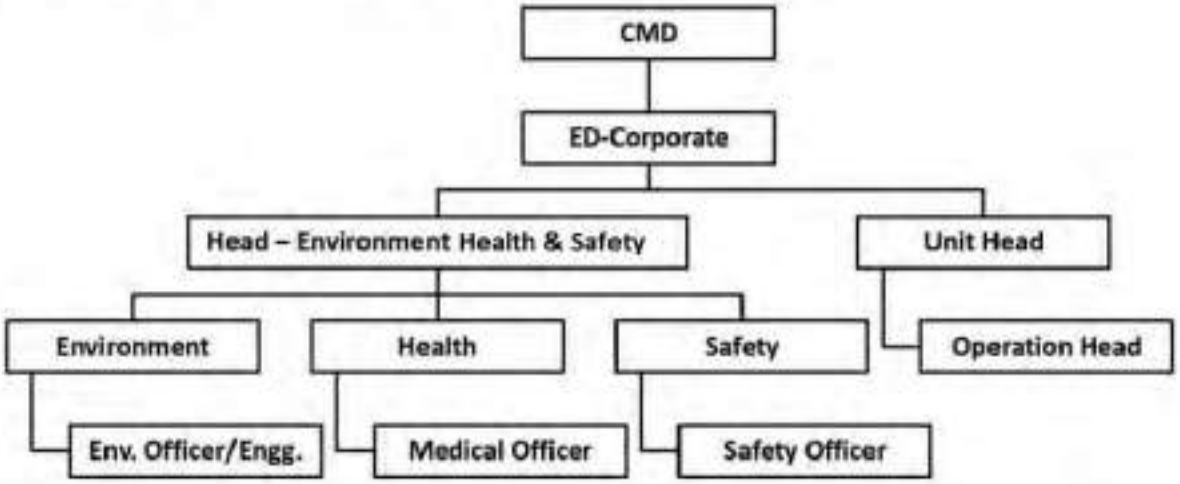
Based on the principle of managing environment for the benefit & enjoyment of both current & future generation, the board decided to frame and adopt an Environmental Policy. After due deliberation, following resolutions was passed in this regard:-

"RESOLVED THAT" the board hereby adopts the Environment Policy (as discussed below) and is strive to;

1. Integrate sound environmental management practices in all our activities.
2. Conduct our operations in environmentally responsible manner to minimize pollution and its impact on environment.
3. Comply with applicable legal and other requirements related to environmental aspects of our operations and strive to go beyond.
4. ESPL shall ensure that deviations from this policy and cases of violations, if any, shall be reported to the Board of Directors and shall identify designate responsible person for ensuring compliance with the Environmental Laws and Regulations.
5. Conserve energy, and other natural resources, minimize waste generation and promote recovery, recycle and reuse.
6. Increase greenery in and around the plant.
7. Ensure continual improvement in environmental performance by setting & reviewing objectives & targets.
8. Encourage environmental awareness amongst employees working for and on behalf of ESPL and the general populace around the plant.

Hierarchical systems – Environmental issues and for ensuring compliance

Company EHS Cell is responsible for the compliance of the environmental conditions. The EHS Head will functionally report to ED-Corporate. The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions is presented below:



"**RESOLVED FURTHER THAT** Mr. R.K. Mishra of the company be and is hereby severally authorized to make, sign and execute on behalf of the Company such all necessary document required in framing & adoption of "Environment Policy."

"**RESOLVED FURTHER THAT** the Board be and is hereby recommended to adopt Environment Policy, as the draft places before the board, initiated by the CMD for the sake of identification."

For M/s Eloquent Steel Pvt Ltd

Director

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Soumitra Ganguly

Date of Birth: - 25.02.1985

Father's Name (Shri):- Joydev Ganguly

Designation: - Supervisor Raw-Mat.

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	61 Kg
P.R.	:	101
B.P.	:	110/70
C.B.G.	:	117 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"AB"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Sanjay Kumar Singh

Date of Birth: - 25.09.1973

Father's Name (Shri):- Late Bengali Singh

Designation: - Senior Manager

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	76 Kg
P.R.	:	111
B.P.	:	144/90
C.B.G.	:	109 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"AB"
R.H. Factor	:	Positive
E.C.G.	:	--------
X-Ray	:	--------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 with glass (+1.50D) BE
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74545 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Gopal Yadav

Date of Birth: - 12.01.1976

Father's Name (Shri):- Late Gejo Yadav

Designation: - Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	73 Kg
P.R.	:	96
B.P.	:	130/90
C.B.G.	:	90 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	---------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 with glass (+1.50D)
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Anup Kumar Mondal

Date of Birth: - 10.01.1979

Father's Name (Shri):- Bishnupada Mondal

Designation: - Helper

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	52 Kg
P.R.	:	80
B.P.	:	120/90
C.B.G.	:	97 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	---------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	Near BE=+1.50D
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Bijoy Das

Date of Birth: - 05.05.1989

Father's Name (Shri):- Rabi Das

Designation: - Shift Incharge

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	74 Kg
P.R.	:	83
B.P.	:	130/90
C.B.G.	:	133 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"AB"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Gopikanta Dey

Date of Birth: - 17.021987

Father's Name {Shri}:- Sunil Kumar Dey

Designation: - Electrician

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	71 Kg
P.R.	:	74
B.P.	:	100/80
C.B.G.	:	96 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Mohan Bhandari

Date of Birth: - 28.01.1980

Father's Name (Shri):- Ratan Bhandari

Designation: - Electrician

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	59 Kg
P.R.	:	96
B.P.	:	110/90
C.B.G.	:	128 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	--------
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Manabendra Nayak

Date of Birth: - 21.03.1987

Father's Name (Shri):- Dilip Nayak

Designation: - Helper

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	71 Kg
P.R.	:	105
B.P.	:	140/90
C.B.G.	:	141 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Keshab Mahara

Date of Birth: - 28.12.1978

Father's Name {Shri}:- Bara Ramu Mahara

Designation: - FloorLift Operator

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	68 Kg
P.R.	:	90
B.P.	:	130/80
C.B.G.	:	409 mg/dl
C.B.G. (N/A.N.)	:	Ab -Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 with glass (+1.50D) BE
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Sk Noor Alam

Date of Birth: - 08.03.1990

Father's Name {Shri}:- Sk. Ramjana

Designation: - Auto

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	54 Kg
P.R.	:	70
B.P.	:	100/90
C.B.G.	:	104 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Sanjeev Kumar Singh

Date of Birth: - 27.12.1975

Father's Name {Shri}:- Lt. Umesh Chandra Singh

Designation: - Senior Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	71 Kg
P.R.	:	104
B.P.	:	150/100
C.B.G.	:	151 mg/dl
C.B.G. (N/A.N.)	:	Ab -Normal
Blood Group	:	-------
R.H. Factor	:	-------
E.C.G.	:	-------
X-Ray	:	-------
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Parimal Bauri

Date of Birth: - 08.10.1984

Father's Name (Shri):- Ajit Bauri

Designation: - Fitter

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	79 Kg
P.R.	:	90
B.P.	:	120/90
C.B.G.	:	102 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	--------
R.H. Factor	:	-------
E.C.G.	:	Normal
X-Ray	:	--------
Audiomatry	:	Normal
Eye Vision (Distance)	:	---------
Eye Vision (Near)	:	---------
Colour Vision	:	---------

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Harihar Paswan

Date of Birth: - 01.01.1972

Father's Name (Shri):- Somaru Prasad

Designation: - Fitter

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	49 Kg
P.R.	:	97
B.P.	:	160/80
C.B.G.	:	133 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	--------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 with glass (+1.50D)
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74345 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Rahul Chatterjee

Date of Birth: - 18.08.1993

Father's Name (Shri):- Sanjit Chatterjee

Designation: - Senior Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	60 Kg
P.R.	:	-----
B.P.	:	110/80
C.B.G.	:	-- mg/dl
C.B.G. (N/A.N.)	:	--------
Blood Group	:	"A"
R.H. Factor	:	Negative
E.C.G.	:	---------
X-Ray	:	---------
Audiomatry	:	---------
Eye Vision (Distance)	:	Distance 6/6 with glass (-0.25D)
Eye Vision (Near)	:	N6 Near BE
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Dillip Kumar Pradhan

Date of Birth: - 20.04.1986

Father's Name {Shri}:- Udayan Pradhan

Designation: - Technician

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	70 Kg
P.R.	:	82
B.P.	:	100/70
C.B.G.	:	92 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	----
R.H. Factor	:	----
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Vishal Kumar Sharma

Date of Birth: - 28.04.1993

Father's Name {Shri}:- Natwar Lal Sharma

Designation: - Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	71 Kg
P.R.	:	96
B.P.	:	100/70
C.B.G.	:	83 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rajat Kumar Nath
MBBS, M.D.
Reg. No. 24835 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Rajib Mahata

Date of Birth: - 11.09.1987

Father's Name (Shri):- Late Madhusudan Mahata

Designation: - Shift Incharge

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	75 Kg
P.R.	:	76
B.P.	:	140/90
C.B.G.	:	148 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rahul Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Manas Ranjan Patra

Date of Birth: - 02.04.1988

Father's Name (Shri):- Tapan Kumar Patra

Designation: - Ass. Manager

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	57 Kg
P.R.	:	90
B.P.	:	120/80
C.B.G.	:	145 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74665 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Manas Kumar Das

Date of Birth: - 12.12.1994

Father's Name (Shri):- Srimanta Das

Designation: - Engineer

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	55 Kg
P.R.	:	118
B.P.	:	130/90
C.B.G.	:	120 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Niraj Tiwari

Date of Birth: - 17.04.1986

Father's Name {Shri}:- Pradip Kumar Tiwari

Designation: - Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	78 Kg
P.R.	:	100
B.P.	:	110/70
C.B.G.	:	169 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	-----
Audiomatry	:	Normal
Eye Vision {Distance}	:	------
Eye Vision {Near}	:	------
Colour Vision	:	------

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Deepak Kumar Pandey

Date of Birth: - 13.06.1998

Father's Name {Shri}:- Surendra Pandey

Designation: - Electrician

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	50 Kg
P.R.	:	80
B.P.	:	130/70
C.B.G.	:	95 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	-----
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Bablu Lohar

Date of Birth: - 02.03.1983

Father's Name {Shri}:- Haradhan Lohar

Designation: - Fitter

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	65 Kg
P.R.	:	108
B.P.	:	120/80
C.B.G.	:	108 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near BE
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Sakti Pada Paul

Date of Birth: - 24.10.1976

Father's Name (Shri):- Late Amulya Paul

Designation: - Fitter

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	81 Kg
P.R.	:	----
B.P.	:	120/80
C.B.G.	:	-- mg/dl
C.B.G. (N/A.N.)	:	------
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	------
Eye Vision (Near)	:	------
Colour Vision	:	------

Dr. Rohit Kumar Nath
MBBS, M.D
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Kuldeep Ray

Date of Birth: - 05.11.1984

Father's Name (Shri):- Manmohan Ray

Designation: - Fireman

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	70 Kg
P.R.	:	104
B.P.	:	130/90
C.B.G.	:	260 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 with glass (+1.00) BE
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. [illegible] (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Md Naushad

Date of Birth: - 05.04.1988

Father's Name (Shri):- Md Moin

Designation: - Fitter

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	72 Kg
P.R.	:	100
B.P.	:	130/80
C.B.G.	:	262 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Bishwajit Pal

Date of Birth: - 22.08.1984

Father's Name (Shri):- Rampada Pal

Designation: - Fitter

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	71 Kg
P.R.	:	--
B.P.	:	110/70
C.B.G.	:	133 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D
Regd. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Tapas Nath

Date of Birth: - 28.03.1993

Father's Name (Shri):- Ujjal Nath

Designation: - Welder

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	71 Kg
P.R.	:	--
B.P.	:	120/70
C.B.G.	:	118 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- T N Patro

Date of Birth: - 05.01.1987

Father's Name (Shri):- T A Patro

Designation: - Gen. Manager

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	76 Kg
P.R.	:	--
B.P.	:	130/80
C.B.G.	:	--- mg/dl
C.B.G. (N/A.N.)	:	------
Blood Group	:	----
R.H. Factor	:	------
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D
Reg. No. 74545 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Abhay Kumar Shrivastava Date of Birth: - 05.01.1987

Father's Name {Shri}:- Binod Prasad Shrivastava Designation: - Furnish In-charge

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	95 Kg
P.R.	:	118
B.P.	:	140/90
C.B.G.	:	156 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	------
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Abhijit Kumbhakar

Date of Birth: - 28.01.1987

Father's Name {Shri}:- Rasudeb Kumbhakar

Designation: - Shift In-charge

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	61 Kg
P.R.	:	92
B.P.	:	108/80
C.B.G.	:	99 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	------
Audiomatry	:	------
Eye Vision {Distance}	:	------
Eye Vision {Near}	:	------
Colour Vision	:	------

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Sanjib Ghosh

Date of Birth: - 05.01.1986

Father's Name (Shri):- Haradhan Ghosh

Designation: - Control Room Ope.

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	64 Kg
P.R.	:	97
B.P.	:	110/80
C.B.G.	:	124 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- James Mehta

Date of Birth: - 01.01.1981

Father's Name {Shri}:- Joshef Mehta

Designation: - Buffer Operator

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	70 Kg
P.R.	:	102
B.P.	:	120/90
C.B.G.	:	161 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 with glass (+1.50D)
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Munna Hela

Date of Birth: - 17.04.1984

Father's Name (Shri):- Banarash Hela

Designation: - Supervisor Raw-Mat.

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	84 Kg
P.R.	:	86
B.P.	:	110/70
C.B.G.	:	96 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Nishith Layek

Date of Birth: - 12.10.1983

Father's Name (Shri):- Ranjit Layek

Designation: - Batch Operator

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	56 Kg
P.R.	:	99
B.P.	:	140/90
C.B.G.	:	119 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"AB"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rajat Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Santosh Mandal

Date of Birth: - 01.01.1990

Father's Name {Shri}:- Raj Kumar Mandal

Designation: - JCB Operator

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	59 Kg
P.R.	:	90
B.P.	:	100/90
C.B.G.	:	180 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Snehasis Mandal

Date of Birth: - 02.05.1986

Father's Name {Shri}:- Amarshankar Mandal

Designation: - Shift In-charge

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	70 Kg
P.R.	:	86
B.P.	:	130/80
C.B.G.	:	107 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Subhankar Pattanayak

Date of Birth: - 20.05.1992

Father's Name (Shri):- Nimai Pattanayak

Designation: - Sen. Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	64 Kg
P.R.	:	84
B.P.	:	140/90
C.B.G.	:	74 mg/dl
C.B.G. (N/A.N.)	:	------
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Soumen Roy

Date of Birth: - 09.01.1969

Father's Name (Shri):- Late Chandidas Roy

Designation: - Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	61 Kg
P.R.	:	115
B.P.	:	170/90
C.B.G.	:	116 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	--
R.H. Factor	:	------
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Dist. RE=+1.50D, LE=+1.00D with glass
Eye Vision (Near)	:	N6 with glass(+2.25D) BE
Colour Vision	:	Normal

Dr. Ronit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Surendra Mishra

Date of Birth: - 10.02.1980

Father's Name (Shri):- Late Sudama Mishra

Designation: - Officer

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	84 Kg
P.R.	:	113
B.P.	:	136/97
C.B.G.	:	--- mg/dl
C.B.G. (N/A.N.)	:	------
Blood Group	:	----
R.H. Factor	:	-----
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rahul Kumar Nath
MBBS, M.D.
Reg. No. 74545 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Bipad Tarun Mondal

Date of Birth: - 20.07.1996

Father's Name {Shri}:- Tarun Mondal

Designation: - Assistant

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	49 Kg
P.R.	:	--
B.P.	:	110/70
C.B.G.	:	102 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D
Reg. No. 74545 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Sujit Kumar Roy

Date of Birth: - 27.09.1985

Father's Name {Shri}:- Lt. Jogesh Chandra Roy

Designation: - MIS Assistant

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	64 Kg
P.R.	:	70
B.P.	:	130/80
C.B.G.	:	162 mg/dl
C.B.G. (N/A.N.)	:	Ab-Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74545 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Arun Kumar Yadav

Date of Birth: - 28.05.1981

Father's Name (Shri):- Jagdish Prasad Yadav

Designation: - Supervisor

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	69 Kg
P.R.	:	80
B.P.	:	120/80
C.B.G.	:	148 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	------
X-Ray	:	------
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74645 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Arun Paul

Date of Birth: - 02.11.1978

Father's Name (Shri):- Narayan Chandra Paul

Designation: - Officer

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	86 Kg
P.R.	:	100
B.P.	:	120/90
C.B.G.	:	134 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	----
R.H. Factor	:	----
E.C.G.	:	----
X-Ray	:	----
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 with glass(+1.50D) Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Nandu Kumar

Date of Birth: - 01.01.1980

Father's Name {Shri}:- Sambhu Gond

Designation: - Fireman

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	86 Kg
P.R.	:	82
B.P.	:	140/90
C.B.G.	:	108 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	NV N6 BE
Colour Vision	:	Normal

Dr. Rahul Kumar Nath
MBBS, M.D.
Reg. No- 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Kiran Mahata

Date of Birth: - 23.04.1986

Father's Name (Shri):- Kshudiram Mahata

Designation: - Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	69 Kg
P.R.	:	89
B.P.	:	120/70
C.B.G.	:	128 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Panchanan Malik

Date of Birth: - 02.01.1995

Father's Name {Shri}:- Sunil Malik

Designation: - Welder

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	50 Kg
P.R.	:	100
B.P.	:	140/80
C.B.G.	:	128 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"A"
R.H. Factor	:	Positive
E.C.G.	:	--
X-Ray	:	--
Audiomatry	:	--
Eye Vision {Distance}	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Paramjit Singh

Date of Birth: - 23.01.1979

Father's Name (Shri):- Lt. Gurdev Singh

Designation: - Incharge

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	73 Kg
P.R.	:	84
B.P.	:	117/76
C.B.G.	:	104 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	Near=+1.00(BE)
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MDC MERCURY

DATE: 27.12.2021

Name(Mr./Mrs.):- Anupam Pal

Date of Birth: - 28.06.1986

Father's Name (Shri):- Shaktibaran Pal

Designation: - Sen. Executive

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	76 Kg
P.R.	:	67
B.P.	:	120/80
C.B.G.	:	96 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"B"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	--
Eye Vision (Distance)	:	Distance 6/6
Eye Vision (Near)	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

MERCURY

DATE: 27.12.2021

Name{Mr./Mrs.}:- Prakash Das

Date of Birth: - 28.03.1993

Father's Name {Shri}:- Jiban Das

Designation: - FloorLift Operator

Company: - ELOQUENT STEEL PRIVATE LIMITED

Health Check-Up Detail

Weight	:	62 Kg
P.R.	:	80
B.P.	:	130/80
C.B.G.	:	92 mg/dl
C.B.G. (N/A.N.)	:	Normal
Blood Group	:	"O"
R.H. Factor	:	Positive
E.C.G.	:	Normal
X-Ray	:	Normal
Audiomatry	:	Normal
Eye Vision {Distance}	:	Distance 6/6
Eye Vision {Near}	:	N6 Near
Colour Vision	:	Normal

Dr. Rohit Kumar Nath
MBBS, M.D.
Reg. No. 74845 (WBMC)

ELOQUENT STEEL PRIVATE LIMITED

(Formerly M/s Hira Concast Ltd. & M/s Impex Steel Ltd.)

NAKRAJORIA, PO. & PS. SALANPUR, DIST. WEST BURDWAN, WEST BENGAL, PIN-713357

Health checkup details of Employees

Date: 23/11/2022 Wednesday

Sl. No.	Employee's Name (Mr.)	Father's name (Shri)	Designation	D.O.B.	PARAMETERS													
					Weight	PR	BP	FBS	CBG(NORMAL/ABNORMAL)	Blood Group	RH factor	ECG	X-RAY	Audiometry	Eye Vision(Distance)	Eye Vision(Near)	Colour Vision	Remarks
1	Soumitra Ganguly	Joydev Ganguly	Supervisor Raw Mill	25-July-1969	61 Kg	101	110/70	117 mg/dl	Normal	"AB"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
2	Sanjay Kumar Singh	Late Bengali Singh	Senior Manager	15-Jan-1971	76 Kg	111	144/90	109 mg/dl	Normal	"AB"	Positive			Normal	Distance 6/6	N6 with glass(+1.50)DE	Normal	
3	Gopal Yadav	Late Gopi Yadav	Executive	12-Jan-1978	73 Kg	90	130/80	90 mg/dl	Normal	"A"	Positive	Normal		Normal	Distance 6/6	N6 with glass(+1.00)	Normal	
4	Anup Kumar Mandal	Krishnapada Mandal	Helper	10-Jan-1978	52 Kg	80	120/90	97 mg/dl	Normal	"A"	Positive	Normal		Normal	Distance 6/6	Near N6(+1.00)	Normal	
5	Bijoy Das	Nabi Das	Shift incharge	01-May-1989	74 Kg	83	130/90	133 mg/dl	Normal	"AB"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
6	Joydeepta Dey	Sunil Kumar Dey	Electrician	17-Feb-1987	71 Kg	94	120/80	95 mg/dl	Normal	"A"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
7	Mahan Bhandari	Rajesh Bhandari	Electrician	28-Jan-1989	58 Kg	86	120/80	128 mg/dl	Normal	"B"	Positive		Normal	Normal	Distance 6/6	N6 Near	Normal	
8	Bhaskarananda Nayak	Dilip Nayak	Helper	01-Mar-1987	71 Kg	105	140/90	161 mg/dl	Normal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
9	Arabinda Mahata	Bata Nanda Mahata	Forklift Operator	28-Dec-1979	68 Kg	90	130/80	109 mg/dl	Abnormal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 with glass +1.50 D (DE)	Normal	
10	Sk Nasir Alam	Sk Ranjan	Asst	08-Mar-1990	54 Kg	70	100/80	104 mg/dl	Normal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
11	Sanjay Kumar Singh	Lt. Umesh Chandra Singh	Senior Executive	27-Dec-1978	71 Kg	104	150/100	153 mg/dl	Abnormal					Normal	Distance 6/6	N6 Near	Normal	
12	Parimal Bauri	Ajit Bauri	Fitter	28-Oct-1984	79 Kg	98	120/90	107 mg/dl	Normal			Normal		Normal				
13	Hardhar Rawani	Soniram Prasad	Fitter	01-Jan-1972	49 Kg	91	160/90	133 mg/dl	Normal	"B"	Positive	Normal		Normal	Distance 6/6	N6 Near with glass(+1.50)	Normal	
14	Kajrul Chatterjee	Kanai Chatterjee	Senior Executive	18-Aug-1993	68 Kg		110/80			"A"	Negative				Distance 6/6 with glass (1.50)	Near N6 @	Normal	
15	Dilip Kumar Pradhan	Lokenath Pradhan	Technician	30-Jan-1986	70 Kg	82	120/70	92 mg/dl	Normal			Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
16	Vishal Kumar Sharma	Kishanji Lal Sharma	Electrical	28-Apr-1993	71 Kg	96	130/70	83 mg/dl	Normal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
17	Avijit Mahata	Late Madhusudan Mahata	Shift Incharge	11-Sep-1987	75 Kg	76	140/90	144 mg/dl	Normal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
18	Manas Ranjan Patra	Tapan Kumar Patra	Assistant Manager	03-Apr-1984	67 Kg	92	120/80	141 mg/dl	Normal	"O"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
19	Manas Kumar Das	Siddarta Das	Engineer	12-Dec-1994	55 Kg	119	130/90	120 mg/dl	Normal	"O"	Positive		Normal	Normal	Distance 6/6	N6 Near	Normal	
20	Suraj Tiwari	Pradip Kumar Tiwari	Executive	17-Apr-1998	78 Kg	103	110/70	169 mg/dl	Abnormal	"O"	Positive			Normal				
21	Deepak Kumar Pandey	Surendra Pandey	Operator	19-Jan-1999	50 Kg	85	130/70	94 mg/dl	Normal	"B"	Positive			Normal	Distance 6/6	N6 Near	Normal	
22	Bablu Lohar	Hiralal Lohar	Fitter	03-Mar-1983	60 Kg	108	120/80	108 mg/dl	Normal	"O"	Positive	Normal		Normal	Distance 6/6	N6 Near @	Normal	
23	Sabir Reza Naul	Late Amirul Naul	Fitter	24-Oct-1976	91 Kg		120/80			"O"	Positive	Normal	Normal	Normal				
24	Kuldeep Rai	Manmohan Rai	Foreman	05-Nov-1984	72 Kg	101	140/90	163 mg/dl	Abnormal	"B"	Positive	Normal		Normal	Distance 6/6	N6 with glass+1.00 D	Normal	
25	Md Nausad	Md Wasi	Fitter	05-Apr-1988	71 Kg	100	140/80	162 mg/dl	Abnormal	"B"	Positive	Normal		Normal	Distance 6/6	N6 Near	Normal	
26	Bishadjit Pal	Rampada Pal	Fitter	22-Aug-1983	71 Kg		110/70	131 mg/dl	Normal	"O"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
27	Tapas Nath	Ujjal Nath	Welder	28-Mar-1995	71 Kg		130/70	128 mg/dl	Normal	"A"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
28	T N Patra	T A Patra	General Manager	05-Jan-1961	76 Kg		110/80					Normal		Normal	Distance 6/6	N6 Near	Normal	
29	Abhay Kumar Srivastava	Binod Prasad Shrivastava	Turnkey In Charge	05-Jan-1987	90 Kg	113	140/90	216 mg/dl	Abnormal	"O"	Positive	Normal			Distance 6/6	N6 Near	Normal	
30	Ajit Ji Kundalkar	Rawanth Kundalkar	Shift Incharge	28-Jan-1987	61 Kg	93	100/60	99 mg/dl	Normal	"O"	Positive							
31	Sanjib Ghosh	Harakhan Ghosh	Control Room Opr.	09-Jan-1984	64 Kg	97	110/80	130 mg/dl	Normal	"B"	Positive			Normal	Distance 6/6	N6 Near	Normal	
32	Uttam Mehta	Ishaf Mehta	Buffer Operator	01-Jan-1981	78 Kg	101	120/80	161 mg/dl	Abnormal	"A"	Positive	Normal	Normal	Normal	Distance 6/6	N6 with glass (+1.50 D)	Normal	
33	Munra Hela	Baneshf Hela	Supervisor Raw Mill	17-Apr-1984	84 Kg	80	120/70	96 mg/dl	Normal	"A"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
34	Jayesh Layek	Ramji Layek	Batch Operator	12-Oct-1983	56 Kg	90	140/90	178 mg/dl	Normal	"AB"	Positive			Normal	Distance 6/6	N6 Near	Normal	
35	Suresh Mandal	Rabindra Mandal	KK Operator	01-Jan-1900	69 Kg	90	100/90	180 mg/dl	Abnormal	"A"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	

BEHALA :
187 B, Hy-De Mnh Sarani (Bakultala, Behala), Kolkata - 700061
Phone : 033-2447 8023, 75868 22755, 7586822988

GARIA :
119,Kanungo Park,Garia, Kolkata - 700084,
Metro Kavi Nazrul Station, Raghunath Market
Phone : 033-4605 1676, 91634784111, 9163484111

HOWRAH :
506,G.T.Road(South), Fair Bazar, Howrah - 711101
Phone : 033-3558 1973, 91634784111, 9163484111

MERCURY DIAGNOSTICS CENTRE

MDC MERCURY

Annexure-11

ELOQUENT STEEL PRIVATE LIMITED

(Formerly M/s Hira Concast Ltd. & M/s Impex Steel Ltd.)

NARAJORA P.O. & P.S. SALANPUR, DIST. WEST BURDWAN, WEST BENGAL, PIN-713357

Health checkup details of Employees

Date: 27/11/2023 Wednesday

Sl. No.	Employee's Name (Mr.)	Father's name (Shri)	Designation	E.O.B.	PARAMETERS													
					Weight	PR	BP	CBG	CBG(NORMAL/A B NORMAL)	Blood Group	RH Factor	ECG	X-RAY	Audiometry	Eye Vision(Distance)	Eye Vision(Near)	Colour Vision	Remarks
36	[illegible]	[illegible]	Shift Incharge	02-May-1986	70 Kg	84	130/90	107 mg/dl	Normal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
37	[illegible]	[illegible]	Senior Electrician	26-Nov-1991	64 Kg	84	140/90	94 mg/dl		"B"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
38	Soumen Roy	Lt. Chandan Roy	Executive	04-Jun-1989	83 Kg	114	170/90	126 mg/dl	Normal			Normal	Normal	Normal	Dist. R6++(-500)/L6++(-600 with glass)	N6 with glass(+1.25D) R6	Normal	
39	Surendra Mishra	Lt. Sukama Mishra	Officer	10-Feb-1980	84 Kg	110	146/97					Normal		Normal	Distance 6/6	N6 Near	Normal	
40	Bisal Yasir Mandal	Yasin Mandal	Assistant	20-Jul-1996	69 Kg		110/70	102 mg/dl	Normal	"O"	Positive			Normal	Distance 6/6	N6 Near	Normal	
41	Sujit Kumar Roy	Lt Rajesh Chandra Roy	MIS Assistant	27-Sep-1981	64 Kg	70	130/80	162 mg/dl	Abnormal	"A"	Positive	Normal		Normal	Distance 6/6	N6 Near	Normal	
42	Arun Kumar Yadav	Jagdish Prasad Yadav	Supervisor	28-May-1981	69 Kg	80	120/80	148 mg/dl	Normal	"B"	Positive			Normal	Distance 6/6	N6 Near	Normal	
43	Arup Paul	Narayan Chandra Pal	Officer	02-Nov-1979	86 Kg	100	120/90	134 mg/dl	Normal					Normal	Distance 6/6	N6 with glass(+1.00D) Near	Normal	
44	Sandip Kumar	Lumbhu Gond	Foreman	01-Jan-1980	80 Kg	92	140/90	102 mg/dl	Normal	"B"	Positive	Normal	Normal	Normal	Distance 6/6	N9 N6 N8	Normal	
45	Kajal Mahato	Kshudiram Mahato	Executive	23-Apr-1980	69 Kg	85	120/70	123 mg/dl	Normal	"O"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	
46	Pantharam Malik	Sunil Malik	Welder	01-Jan-1993	58Kg	100	140/80	136mg/dl	Normal	"A"	Positive				Distance 6/6	N6 Near	Normal	
47	Navjot Singh	Lt. Gurbir Singh	In-charge	23-Jan-1979	73 Kg	84	111/76	104 mg/dl	Normal	"O"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near(+1.00D)	Normal	
48	Anusam Pal	Shyamsundar Paul	Senior Executive	25-Jul-1985	70 Kg	67	120/80	96 mg/dl	Normal	"B"	Positive	Normal	Normal		Distance 6/6	N6 Near	Normal	
49	Prakash Das	Ram Das	Forklift Operator	24-Mar-1991	61 Kg	80	130/80	90 mg/dl	Normal	"O"	Positive	Normal	Normal	Normal	Distance 6/6	N6 Near	Normal	

Dr. [illegible]
[illegible]
Reg. No. [illegible]

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187-B, Ho-Chi-Minh Sarani (Babulda, Behala), Kolkata - 700061
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Phone : 033-3558 1973, 033 : 91634 78111, 91634 58111

MERCURY DIAGNOSTICS CENTRE

MDC MERCURY

Annexure-11

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 5868 / 1625
Fax : 2335 - 5868 / 2813
City Code : 33, Country Code : 91
Website: www.wbpcb.gov.in

Memo No. 628 **-2N-68/2021(E)** **Dated:** 17 **.09.2021**

To
Mr. Deepak Kumar Agarwal, Director,
M/s. Eloquent Steel Private Limited,
'Diamond Prestige', 41A, A.J.C. Bose Road,
8th Floor, #801, Kolkata – 700 017.

As you know final clearance has to be obtained from the Ministry of Environment, Forest & Climate Change, Government of India for the proposed expansion of 3,36,000 TPA Billet production along with Rolling Mill for production of 2,10,000 TPA Rolled Product, installation of 1,50,000 TPA Briquette Plant, 1,00,800 TPA Sinter Plant and addition of Pig Iron as product from the existing Submerged Arc Furnace at Vill – Nakrajoria, PO – Salanpur, Dist – Paschim Bardhaman, West Bengal notification for which has already been done in local dailies as per statute for conducting public hearing scheduled to be held on **03.11.2021.**

You may kindly note that, as per the APPENDIX IV of the EIA notification S.O. 1533(E) dated 14th September 2006 of the MoEF & CC, Govt. of India, videography of the public hearing should be sent to the MoEF&CC along with the proceedings of the public hearing.

Therefore, it is suggested to make necessary & adequate arrangement for the continuous & unedited videography. The continuous recording of the entire process of public hearing and necessary electrical power back up should also be ensured. The videography should also be ensured to be submitted to the EIM Cell, WBPCB, Paribesh Bhawan, 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106 within a week in unedited VCD format.

17/09/2021.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

SPEED POST

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 5868 / 1625
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Memo No. 627**-2N-68/2021(E)** **Dated:** 17 **.09.2021**

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Mr. Deepak Kumar Agarwal, Director,
M/s. Eloquent Steel Private Limited,
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8th Floor, #801, Kolkata – 700 017.

Sir,

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The notification has been published in "Millennium Post", "Sanmarg" and "Aajkaal" dated **09.09.2021.**

This is for your information.

Yours faithfully,

17/09/2021.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

Aajkaal 07-09-2021

বিজ্ঞপ্তি

পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ

পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রক, ভারত সরকারের বিজ্ঞপ্তি নম্বর এস.ও.১৫৩৩(ই) তারিখ ১৪.০৯.২০০৬ অনুসারে, এতদ্বারা বিজ্ঞপ্তি জারি করা হচ্ছে যে, মেসার্স ইসোলেক্সপ্রেস স্টিল প্রাইভেট লিমিটেড গ্রাম-নাকরাকোয়া, ডাক-সালানপুর, জেলা-পশ্চিম বর্ধমানে প্রস্তাবিত সংপ্রসারণের কাজ ৩,৩৬,০০০ টিপিএ বিলেট উৎপাদন ভবনের রোলিং মিল দ্বারা ২,১০,০০০ টিপিএ রোলড প্রোডাক্ট উৎপাদন, ১,৫০,০০০ টিপিএ ব্রিকেট প্ল্যান্ট ও ১,০০,৮০০ টিপিএ পিস্টন প্ল্যান্ট স্থাপন এবং বর্তমানে অবস্থিত সাবমার্জড আর্ক ফারনেস এর প্রোডাক্ট ক্ষমতা পিপ আমবন্ধন-এর অন্তর্ভুক্তিকরণের জন্য জনশুনানি ০৩.১১.২০২১ তারিখে বেলা ১২টায় 'নাগরিক হল', সালানপুর ব্লক অফিস, জগন্নারায়ণপুর স্টেশন রোড, ডাকুর মোড়, জেলা-পশ্চিম বর্ধমান, পশ্চিমবঙ্গে ধার্য করা হয়েছে।

কোনও ব্যক্তি বা ব্যক্তিবর্গের সমষ্টি যিনি বা যাঁরা প্রস্তাবিত হতে পারেন বা সংযুক্ত স্থানীয় কর্তৃপক্ষ, আলোচ্য প্রকল্পের এক্সিকিউটিভ সামারির কপি (ইংরেজি ও বাংলা) দেখতে পারেন এবং ইআইএ/ইএমপি রিপোর্টের ড্রাফ্ট বা খসড়া নিম্নলিখিত কার্যালয়গুলিতে পাওয়া যাবে (১) জেলাশাসক, পশ্চিম বর্ধমান-এর কার্যালয়, (২) অতিরিক্ত জেলাশাসক (এলপ্রার) জেলা-পশ্চিম বর্ধমান-এর কার্যালয়, (৩) সাব-ডিভিশনাল অফিসারের কার্যালয়, আসানসোল সাবডিভিশন, পশ্চিম বর্ধমান, (৪) ব্লক ডেভেলপমেন্ট অফিসারের কার্যালয়, সালানপুর ডেভেলপমেন্ট ব্লক, পশ্চিম বর্ধমান, (৫) জেনারেল ম্যানেজার, ডি.আই.সি., পশ্চিম বর্ধমান-এর কার্যালয়, (৬) সভাধিপতির কার্যালয়, পশ্চিম বর্ধমান জেলা পরিষদ, (৭) সালানপুর পঞ্চায়েত সমিতির-এর কার্যালয়, পশ্চিম বর্ধমান, (৮) সালানপুর গ্রাম পঞ্চায়েত-এর কার্যালয়, পশ্চিম বর্ধমান, (৯) সিনিয়র এনভায়রনমেন্টাল ইঞ্জিনিয়ার, আসানসোল আঞ্চলিক কার্যালয়, ওয়েস্ট বেঙ্গল পলিউশন কন্ট্রোল বোর্ড, এডিডিএ, কমার্শিয়াল মার্কেট, ২য় তল, আসানসোল মায়ার স্টেশনের বিপরীতে, জি. টি. রোড, আসানসোল, পশ্চিম বর্ধমান, পিন-৭১৩৩০১, জেলা-পশ্চিম বর্ধমান, (১০) পরিবেশ দপ্তর, পশ্চিমবঙ্গ সরকার, গ্রামীণসম্পদ ভবন, ৬ষ্ঠ তল, এলবি-২, সেক্টর-৩, বিধাননগর, কলকাতা - ৭০০১০৬, (১১) পরিবেশ, বন এবং জলবায়ু পরিবর্তন মন্ত্রক, পূর্বাঞ্চল কেন্দ্রীয় কার্যালয়, ৪/৩, ইন্দ্রাশেখরপুর, ভুবনেশ্বর-৭৫১০২৩, ওড়িশা, (১২) পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ-এর সদর কার্যালয়, পরিবেশ ভবন, ১০এ, ব্লক-এলএ, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০১০৬। এক্সিকিউটিভ সামারি ও প্রকল্পের আবেদনপত্র পর্ষদের ওয়েবসাইট www.wbpcb.gov.in-এ পাওয়া যাবে।

প্রস্তাবিত প্রকল্প বা কার্যাবলীর দ্বারা স্থানীয়ভাবে প্রভাবিত হতে পারেন এরূপ ব্যক্তি বা গোষ্ঠী 'নাগরিক হল' সালানপুর ব্লক অফিস, জগন্নারায়ণপুর স্টেশন রোড, ডাকুর মোড়, জেলা-পশ্চিম বর্ধমান, পশ্চিমবঙ্গে ০৩.১১.২০২১ তারিখে বেলা ১২টায় অনুষ্ঠেয় জনশুনানিতে অংশ নিতে পারেন। জনশুনানির সভায় আলোচ্য বিষয় সম্পর্কে তাঁদের পরামর্শ/আপত্তি মৌখিক অথবা লিখিতভাবে জানাতে পারেন। প্রকল্প সম্বন্ধে কার্যাবলীর পরিবেশগত দিক থেকে প্রভাবিত হবার যুক্তিগ্রাহ্য কারণ আছে এরূপ অন্য কোনো ব্যক্তি লিখিত আকারে তাঁর পরামর্শ/আপত্তি জনশুনানির তারিখের পূর্বে সিনিয়র এনভায়রনমেন্টাল ইঞ্জিনিয়ার (ইআইএম সেল), পরিবেশ ভবন, ১০এ, ব্লক-এলএ, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০১০৬-এর কাছে জানাতে পারেন।

সদস্য সচিব
পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ

Millennium post 09.09.2021

NOTICE

West Bengal Pollution Control Board

In compliance with Notification No. S.O.1533(E) dated 14.09.2006 of Ministry of Environment, Forests & Climate Change, Govt. of India, it is hereby notified that the Public Hearing for the proposed expansion of 3,36,000 TPA Billet production along with Rolling Mill for production of 2,10,000 TPA Rolled Product, Installation of 1,50,000 TPA Briquette Plant, 1,00,800 TPA Sinter Plant and addition of Pig Iron as product from the existing Submerged Arc Furnace at Vill – Nakrajoria, PO – Salanpur, Dist – Paschim Bardhaman, West Bengal by M/s. Eloquent Steel Private Limited is hereby scheduled on 03.11.2021 at 12:00 Noon at the 'Nandanik Hall' of Salanpur Block Office, Rupnarayanpur Station Road, Dabour More, Dist – Paschim Bardhaman, West Bengal.

Any person or association of persons who feel that he/it might be affected or the local authority involved, may consult the copies of Executive Summary of the project (English and Bengali) and draft EIA/EMP report which would be available at the (1) Office of the District Magistrate, Paschim Bardhaman (2) Office of the Additional District Magistrate (LR), Paschim Bardhaman, (3) Office of the Sub-Divisional Officer, Asansol Subdivision, Paschim Bardhaman (4) Office of the Block Development Officer, Salanpur Development Block, Paschim Bardhaman (5) Office of the General Manager, D.I.C., Paschim Bardhaman, (6) Office of the Sabhadhipati, Paschim Bardhaman Zilla Parishad (7) Office of the Salanpur Panchayat Samity, Paschim Bardhaman (8) Office of the Salanpur Gram Panchayat, Paschim Bardhaman (9) Office of the Senior Environmental Engineer, Asansol Regional Office, WBPCB, ADDA, Commercial Market, 2nd Floor, Opp. Asansol Fire Station, G. T. Road, Asansol, Paschim Bardhaman, PIN - 713301 (10) Department of Environment, Govt. of West Bengal, Paribesh Bhawan, 5th Floor, LB-2, Sector – III, Bidhannagar, Kolkata 700 106 (11) Ministry of Environment, Forests & Climate Change, Eastern Zonal Office, A/3, Chandra Sekharpur, Bhubaneswar – 751 023, Odisha (12) Head office of West Bengal Pollution Control Board, Paribesh Bhawan, 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106, Executive Summary and the application form of the project would also be available in the website of the Board: www.wbpcb.gov.in

Any person or groups who might be locally affected from the proposed project or activity may participate in the public hearing to be held on 03.11.2021 at 12:00 Noon at the 'Nandanik Hall' of Salanpur Block Office, Rupnarayanpur Station Road, Dabour More, Dist – Paschim Bardhaman, West Bengal. They may make verbal or written suggestions / objections in the matter in the public hearing meeting. Any other concerned persons having a plausible stake in the environmental aspects of the project or activity may make suggestions/objections in writing to the Senior Environmental Engineer (EIM Cell), Paribesh Bhawan, 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106 before the date of public hearing.

Member Secretary
West Bengal Pollution Control

Sama Mukherji 09/09/2

में पढ़ाई शुरू, र्खास्तगी पर रोक

लंघन के आदेश को चुनौती दे सकते
। जस्टिस मंथा ने आदेश दिया है कि
विश्वविद्यालय के अंदर और बाहर
छात्र-छात्राओं और अन्य द्वारा किये
जा रहे सभी प्रदर्शन, धरना, आंदोलन
और हड़ताल को तत्काल प्रभाव से
बंद करना पड़ेगा। जस्टिस मंथा ने
शिक्षार्थियों को सलाह दी है कि किसी
भी मतादर्श को स्वीकार या अनुकरण
करने से पहले उनके अंदर एक हद
तक समझदारी और उसके बारे में
जानकारी होनी चाहिए। एडवोकेट
अरुणाभ घोष को आदेश दिया कि
प्रोफेसरों और अध्यापकों को घाटी
बनाने के लिए एफिडेविट दायर किया
जाए। एडवोकेट विकास रंजन
भट्टाचार्या ने छात्र-छात्राओं की
पैरवी करते हुए कहा कि उनके साथ
बेहद कठोर बर्ताव किया गया है।
जस्टिस मंथा ने अपने आदेश में कहा
है कि छात्र-छात्राओं के खिलाफ
आरोप है कि उन्होंने इकोनॉमिक्स
बिल्डिंग के एक प्रोफेसर के कक्ष पर
लगी सील को तोड़ दिया था। इसकी
जांच के लिए एक विशेष जांच कमेटी
बनायी गई थी। उसने उन्हें तीन साल
के लिए निष्कासित करने की सजा
सुनायी जो कि अत्यधिक के मुकाबले
अत्यधिक है।

सूचना

पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार की अधिसूचना संख्या एस.ओ.1533(ई) दिनांक 14.09.2006 के अनुपालन में, एतद्द्वारा अधिसूचित किया जाता है कि एल्केमेंट स्टील प्राइवेट लिमिटेड द्वारा ग्राम - नफरसोरिया, डाक-सालनपुर, जिला-पश्चिम बर्धमान, पश्चिम बंगाल में 3,36,000 टीपीए बिलेट उत्पादन के प्रस्तावित विस्तार के साथ 2,10,000 टीपीए रोलड प्रोडक्ट हेतु रोलिंग मिल, 1,50,000 टीपीए क्लिंकर प्लांट , 1,00,800 टीपीए सिंटर प्लांट की संस्थापना एवं चालू सम्मलई आर्क फर्नेस से उत्पाद के रूप में विंग आयरन का संयोजन हेतु दार्शनिक सुनवाई सहायपुर स्थित कार्यालय, रूपनारायणपुर स्टेशन रोड, डाबर मोड़, जिला- पश्चिम बर्धमान, पश्चिम बंगाल के 'नंदनिक हॉल' में एतद्द्वारा 03.11.2021 को दोपहर 12:00 बजे निर्धारित है।

कोई भी व्यक्ति या व्यक्तियों का संघ जो महसूस करता है कि वह प्रभावित हो सकता है या स्थानीय प्राधिकरण शामिल हो सकता है, परियोजना के कार्यकारी सारांश (अंग्रेजी और बांग्ला) की प्रतियों और इंआईए / इंएमपी रिपोर्ट के मसौदे की प्रतियों से परामर्श कर सकता है जो निम्नलिखित कार्यालयों में उपलब्ध होगा : (1) जिला मजिस्ट्रेट का कार्यालय, पश्चिम बर्धमान (2) अपर जिला मजिस्ट्रेट (एडमिन) का कार्यालय, पश्चिम बर्धमान (3) अनुमंडल अधिकारी का कार्यालय, आसनसोल अनुमंडल, पश्चिम बर्धमान (4) प्रखंड विकास अधिकारी का कार्यालय , सालनपुर विकास खंड, पश्चिम बर्धमान (5) महाप्रबंधक का कार्यालय, डीआईसी, पश्चिम बर्धमान (6) सभाधिपति का कार्यालय, पश्चिम बर्धमान जिला परिषद,(7) सालनपुर पंचायत समिति का कार्यालय, पंचम बर्धमान (8) सालनपुर ग्राम पंचायत का कार्यालय, पश्चिम बर्धमान (9) जरिष्ठ पर्यावरण अभियंता का कार्यालय, आसनसोल क्षेत्रीय कार्यालय, डब्लूबीपीसीबी, मडीडीए, कामातिपल मार्केट, दूसरी मंजिल, आसनसोल काजर स्टेशन के सामने, जी.टी. रोड, आसनसोल, पश्चिम बर्धमान, पिन-713301 (10) पर्यावरण विभाग, पश्चिम बंगाल सरकार, ग्रामीण संपद भवन, 5वीं मंजिल, प्लॉट-2, सेक्टर - III, विश्वकर्मा, कोलकाता 700 106 (11) पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, पूर्वी क्षेत्रीय कार्यालय, ए/3, चंद्रशेखरपुर, भुवनेश्वर-751 023, ओडिशा (12) पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड का मुख्यालय, परिवेश भवन, 10ए, ब्लॉक- एलए, सेक्टर- III, विधाननगर, कोलकाता-700106। कार्यकारी सारांश और परियोजना का आवेदन पत्र बोर्ड की वेबसाइट www.wbpcb.gov.in पर भी उपलब्ध होगा।

कोई भी व्यक्ति या समूह जो प्रस्तावित परियोजना या गतिविधि से स्थानीय रूप से प्रभावित हो सकते हैं, वे सालनपुर ब्लॉक कार्यालय, रूपनारायणपुर स्टेशन रोड, डाबर मोड़, जिला-पश्चिम बर्धमान, पश्चिम बंगाल के 'नंदनिक हॉल' में 03.11.2021 को दोपहर 12:00 बजे होने वाली जन सुनवाई में भाग ले सकते हैं। वे जन सुनवाई बैठक में इस मामले में मौखिक या लिखित सुझाव/आपत्ति दे सकते हैं। परियोजना या गतिविधि के पर्यावरणीय पहलुओं में प्रशासनिक जानकारी रखने वाले कोई अन्य इच्छित व्यक्ति वरिष्ठ पर्यावरण अभियंता (डिआईएम सेल), परिवेश भवन, 10 ए, ब्लॉक - एलए, सेक्टर-III, विधाननगर, कोलकाता-700 106 को सुनवाई की तिथि से पहले लिखित रूप में सुझाव /आपत्तियां दे सकते हैं।

सदस्य सचिव
पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड

RA DEVI HARAKH CHAND KANKARIA
AN COLLEGE

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 5868 / 1625
Fax : 2335 - 5868 / 2813
City Code : 33, Country Code : 91
Website: www.wbpcb.gov.in

Memo No. 628 **-2N-68/2021(E)** **Dated:** 17 **.09.2021**

To
Mr. Deepak Kumar Agarwal, Director,
M/s. Eloquent Steel Private Limited,
'Diamond Prestige', 41A, A.J.C. Bose Road,
8th Floor, #801, Kolkata – 700 017.

As you know final clearance has to be obtained from the Ministry of Environment, Forest & Climate Change, Government of India for the proposed expansion of 3,36,000 TPA Billet production along with Rolling Mill for production of 2,10,000 TPA Rolled Product, installation of 1,50,000 TPA Briquette Plant, 1,00,800 TPA Sinter Plant and addition of Pig Iron as product from the existing Submerged Arc Furnace at Vill – Nakrajoria, PO – Salanpur, Dist – Paschim Bardhaman, West Bengal notification for which has already been done in local dailies as per statute for conducting public hearing scheduled to be held on **03.11.2021.**

You may kindly note that, as per the APPENDIX IV of the EIA notification S.O. 1533(E) dated 14th September 2006 of the MoEF & CC, Govt. of India, videography of the public hearing should be sent to the MoEF&CC along with the proceedings of the public hearing.

Therefore, it is suggested to make necessary & adequate arrangement for the continuous & unedited videography. The continuous recording of the entire process of public hearing and necessary electrical power back up should also be ensured. The videography should also be ensured to be submitted to the EIM Cell, WBPCB, Paribesh Bhawan, 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106 within a week in unedited VCD format.

17/09/2021.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

SPEED POST

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 5868 / 1625
Fax : 2335 - 5868 / 2813
City Code - 33, Country Code : 91
Website: www.wbpcb.gov.in

Memo No. 627**-2N-68/2021(E)** **Dated:** 17 **.09.2021**

To,
Mr. Deepak Kumar Agarwal, Director,
M/s. Eloquent Steel Private Limited,
'Diamond Prestige', 41A, A.J.C. Bose Road,
8th Floor, #801, Kolkata – 700 017.

Sir,

As you know final clearance has to be obtained from the Ministry of Environment, Forest & Climate Change, Government of India for the proposed expansion of 3,36,000 TPA Billet production along with Rolling Mill for production of 2,10,000 TPA Rolled Product, installation of 1,50,000 TPA Briquette Plant, 1,00,800 TPA Sinter Plant and addition of Pig Iron as product from the existing Submerged Arc Furnace at Vill – Nakrajoria, PO – Salanpur, Dist – Paschim Bardhaman, West Bengal notification for which has already been done in local dailies as per statute for conducting public hearing scheduled to be held on **03.11.2021**.

The notification has been published in "Millennium Post", "Sanmarg" and "Aajkaal" dated **09.09.2021.**

This is for your information.

Yours faithfully,

17/09/2021.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

PROCEEDINGS OF THE PUBLIC HEARING FOR PROPOSED EXPANSION OF EXISTING STEEL PLANT FOR 336,000 TPA BILLET PRODUCTION ALONG WITH ROLLING MILL FOR PRODUCTION OF 210,000 TPA ROLLED PRODUCT, INSTALLATION OF 150,000 TPA BRIQUETTE PLANT, 100,800 TPA SINTER PLANT AND ADDITION OF PIG IRON AS PRODUCT FROM THE EXISTING SUBMERGED ARC FURNACE AT VILL: NAKRAJORIA, PO: SALANPUR, DIST: PASCHIM BARDHAMAN, WEST BENGAL BY M/S ELOQUENT STEEL PRIVATE LIMITED AT THE 'NANDANIK HALL' OF SALANPUR BLOCK OFFICE, RUPNARAYANPUR STATION ROAD, DABOUR MORE, DIST. PASCHIM BARDHAMAN, WEST BENGAL HELD ON 03.11.2021 AT 12.00 HRS.

M/S ELOQUENT STEEL PRIVATE LIMITED submitted an application to the West Bengal Pollution Control Board for conducting a public hearing for the proposed expansion of the existing steel plant for 3,36,000 TPA billet production along with rolling mill for production of 2,10,000 TPA rolled product, installation of 1,50,000 TPA briquette plant, 1,00,800 TPA sinter plant and addition of pig iron as product from the existing submerged arc furnace at Vill: Nakrajoria, PO & PS. Salanpur, Dist. Paschim Bardhaman, West Bengal.

As per EIA Notification S.O. 1533 dated 14th September, 2006 & it's subsequent amendments of Ministry of Environment, Forest & Climate Change, Govt. of India, Environmental Clearance (EC) for the said expansion project is required to be obtained from the Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India, after conducting the public hearing.

Accordingly, the West Bengal Pollution Control Board (WBPCB) after observing all formalities conducted the Public Hearing on 03.11.2021 at 12.00 hrs at the Nandanik Hall of Salanpur Block Office, PO. Salanpur, Dist. Paschim Bardhaman, West Bengal. List of the panel members and others present in public hearing is enclosed.

Sri Sandip Tudu, Additional District Magistrate , Paschim Bardhaman, presided over the public hearing.

The hearing started with a welcome note from Sri Swarup Kumar Mandal, Senior Environmental Engineer of West Bengal Pollution Control Board. He explained the provisions of the above stated Notification of Ministry of environment, Forest & Climate Change (MoEF&CC), Govt. of India, and mentioned in details about the procedure of conducting the public hearing. He also informed the audience about the proposal of M/s. Eloquent Steel Private Limited for the proposed expansion project and the probable impact upon the environment due to the proposed expansion project. He further informed the gathering that the entire public hearing procedure would be recorded and unedited Videography would be sent to the Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India for their consideration. He requested Additional District Magistrate, Paschim Bardhaman to preside over the Public Hearing.

Thereafter, Sri Sandip Tudu, Additional District Magistrate, Paschim Bardhaman welcomes the audience present in the public hearing. He described the need of public hearing and probable environmental impacts from proposed expansion project. He mentioned that the people from audience could voice their views and queries on proposed and existing project on environmental point of view. He also mentioned that the project proponent should follow the environmental rules for the proposed expansion project.

Sri Swarup Kumar Mondal, Senior Environmental Engineer, West Bengal Pollution Control Board requested the project proponent to present the proposed expansion project in detail through power point presentation in local language.

Sri Sovon Gupta of M/s. Eloquent Steel Private Limited presented the details of the proposed expansion project in local language through a power point presentation. He highlighted overall project scenario, Site location,

Project Highlights, Plant layout, Rain Water Harvesting, Proposed Air Pollution Control Measures, Waste Water Management, solid Waste Management, and Cost of proposed Pollution Control Measures, Environmental Base Line Data, Environmental Study Area, Impact Assessment on Air, Water etc., Green Belt Development, Project Benefit and Corporate Social Responsibilities (CSR).

Thereafter, Sri Swarup Kumar Mandal, Sr. Environmental Engineer, West Bengal Pollution Control Board requested the audience present in the public hearing to raise their suggestions / queries related to the proposed expansion project.

During the discussion the following audience present in the public hearing made queries/suggestions with respect to the proposed expansion project which are noted below.

Sri Shankar Ghosh of Vill Nakrajoria, enquired about employment of local people in proposed expansion project & installation of necessary machineries for prevention of pollution.

Sri Akshay Layek Vill-Kalyaneswari, enquired about the role of project proponent regarding development of schools in surrounding areas.

Sri Somnath Maji of Vill-Dendua, welcomed the proposed expansion project and expressed his concern regarding development of surrounding villages.

Sri Hari Hasda of Vill-Maheshpur, expressed his concern regarding emission of dust & smoke generated due to movement of heavy transport and enquired about the steps to be taken by the Project Proponent to overcome this problem.

Sri Sajal Mandal of Vill-Sidnabari, asked the project proponent about the height of the chimney & the steps to be taken for prevention of environmental pollution.

Sri Arvind Kumar Balmiki of Vill-Left Bank, asked the project proponent about safety measures to be taken for workers.

Sri Pradyut Banerjee of Vill-Dendua, welcomed the proposed expansion project and requested project proponent to look after the employment of local people. He also expressed his deep concern regarding local area development under CSR.

Thereafter, Sri Swarup Kumar Mandal, Sr. Environmental Engineer WBPCB requested the project proponent to address isssues raised by the audience present in the public hearing.

Sri Sanjeev Kumar Sachan, Executive Director-Corporate of M/s Eloquent Steel Private Limited, addressed the gathering present in the public hearing. He assured that all commitments regarding local employment, abetment of pollution, road development, control fugitive emission during heavy vehicle movement, safety of manpower, corporate social responsibility (CSR), development of local area including schools etc. will be undertaken.

He mentioned that after completion of expansion of the proposed project, unskilled & skilled worker to be employed and preference shall be given to local people according to their skill & qualifications. Training center to be set up for skill development program.

He also mentioned that equipment will be installed for proper pollution control measures to minimize all kind of pollution. To stop air pollution bag filters will be used. Zero discharge policy will be taken against water pollution. To minimize dust from heavy vehicle, concrete road & water sprinkling arrangements shall be made.

He also mentioned that medical camp shall be organized time to time for the health benefit of local villagers. Ambulance facility to be provided for emergency medical issue.

He assured the present audience that safety is the first priority of the company and it will follow all the standard procedures to save workers, machine and materials from any accident or untoward incident as per standard rules and regulations.

Md Armaan, Karmadhyakkhya, Zilla Parisad, Paschim Bardhaman said that Govt. of West Bengal encourages growth of industries to provide local employment. Corporate Social Responsibility & pollution control as per the guidelines of WBPCB should be given the top most priority by the Project Proponent. He has requested the Project Proponent to adopt local village for development.
Smt. Falguni Karmakar Ghasi, Sabhapati, Salanpur Panchyat Samity expressed her whole hearted help towards the proposed expansion project and expected to generate local employment, follow guidelines of WBPCB and CSR activity simultaneously.

Sri Bidyut Mishra, Saho Sabhapati, Salanpur Panchayat Samity expressed his wishes for local area development, to follow WBPCB guidelines and plantation in surrounding areas.

Sri Sandip Tudu, Additional District Magistrate, Paschim Bardhaman, mentioned that the District Paschim Bardhaman is a favorable place for Industrial development. He asked the project proponent to comply with all the statutory provisions for abatement of environmental pollution. He also added that apart from 33% greenery within the industries premises the project proponent should take effective steps toward greenery development in the surrounding area. He asked the project proponent & local authority for proper parking arrangement of heavy vehicles.

He expected that all the commitments made by the project proponent must be fulfilled. He also expressed his hope that the proposed expansion project will lead to overall socio-economic development of the project surrounding area.

Finally, Sri Swarup Kumar Mandal, Sr. Environmental Engineer, West Bengal Pollution Control Board with due permission from Additional District Magistrate, Paschim Bardhaman concluded the public hearing.

(Swarup Kumar Mandal)
Senior Environmental Engineer
West Bengal Pollution Control Board

(Sandip Tudu)
Additional District Magistrate
Paschim Bardhaman

Statement of attendance of Panel Members of the Public Hearing for the Proposed expension of 336,000 TPA Billet Production alongwith Rolling Mill for Production of 210,000 TPA Rolled Product, installation of 150,000 TPA Briquette Plant 100,800 TPA Sinter Plant and addition of Pig Iron as Product from the existing Submerged Arc Furnace at Vill - Nakrakoria, P.O - Salanpur, Dist - Paschim Bardhaman, West Bengal by M/s Eloquent Steel Private Limited.

Public Hearing will be held on 03/11/2021 at 12.00 noon at the 'Nandanik Hall' of Salanpur Block office, Ruponarayanpur Station Road, Dabon More, Dist - Paschim Bardhaman.

Sl. No	Name of Panel Members	Signature
01.	SANDIP TUDU, ADDL. DISTRICT MAGISTRATE, PASCHIM BARDHAMAN	
02.	SWARUP KR MANDAL SEE, WBPCB	03.11.2
03.	ANJAN FOUZDAR AEE, WBPCB	03/11/21

Main Persons and Govt. officials Present in the Public Hearing held on 03/11/2021 at the 'Nandanik Hall' of Salampur Block office, Rupnarayanpur Station Road, Dabri Near, Dist – Paschim Bardhaman.

Sl. No.	Name of Persons	Address	Signature
4	Jawardas Singh	Rupnarayanpur	Jawala Singh
5	Gurdayal Singh maan	Rupnarayanpur	G Singh
6	Shambhu Singh	Ardendra Vaga	Shambhu Singh
7	Sahan Murmu	Dordoshi	Sahan Murmu
8	Gopi Bouri	Dendua	Gopi Bouri
9	GOGRAB PAUL	DEUNA	GOGRAB
10	Prakash Bauri	Dendua	
11	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]
13	Hari Hansda	Nabeek pur	
14	Sukhamoy Bauri	Dendua	
15	Bapi Bauri	Dendua	
16	Amil Kumar	Dendua	Anil
17	Pradip Kumar	Dendua hospital	pradipkumar
18	31/03/21	Dendua hospital	31/03/21
19	Goutam Maity	Dendua	Maji
20	Fazlul Bagar	Dendua	
21	[illegible]	[illegible]	[illegible]
22	Subham Hela	Dendua	Hela
23	[illegible]	[illegible]	[illegible]
24	Nakul Tiri	Dendua	Nakul Tiri
25	Raja ka Singh	Dendua	
26	Aman Kr Singh	Dendua	Aman Singh
27	[illegible]	[illegible]	[illegible]
28	[illegible]	Sidhabani	
29	Samit Mandal	Sidabani	
30	Sajal Mandal	Sidhabani	Sajal mandal
31	PRASANTA BOURI	Sidhabani	PRASANTA BOURI
32	KIRTAN DUTTA	Sidhabani	KIRTAN DUTTA
33	[illegible]	Left Bank	[illegible]
34	Dayamoy Ruj	Sidhabani	Dayamoy Ruj
35	Biswajit Mandal	Sidhabani	Biswajit Mandal

Other Persons and Govt. Officials Present in a Public Hearing held on 03/11/2021 at- 12:00 Noon at the 'Nandemir Hall' of Salanpur Block office, Rupnarayanpur Station Road, Dabor More. Dist- Paschim Bardhaman, W.B.

Sl. No	Name of Persons	Address	Signature.
36	Arvind Kr. Balmiki	Left Bank Colony	
37	[illegible]	[illegible]	
38	[illegible]	[illegible]	
39	[illegible]	[illegible]	
40	Manbhula Mahato	Srirampur	Manbhula Mahato
41	[illegible]	[illegible]	[illegible]
42	Saumitra Mahato	Sri Ram Pur	Mahato
43	Dipen Dawri	Hotel Dagar	Dipen Dawri
44	[illegible]	[illegible]	[illegible]
45	NANDA KISHOR GHOSH	Rupnarayanpur	Nanda Kishor Ghosh
46	Malyan Hansda - Natun	Rupnarayanpur	Malyan Hansda
47	[illegible]	[illegible]	[illegible]
48	Baidyanath Mallick	Kadamita	Mallick
49	Amit Pan	Alladi Dangalpur Jemaire	Amit Pan
50	Bikram Mondal		Bikram
51	Soumajit Saha	Dendua Pandaya	Soumajit Saha
52	Malay Adhikary	Malay Adhikary Siliguri	Malay Adhikary
53	Bhamakanta Orsel.		Bhamakanta Orsel
54	Dipen Dey	Dendua	Dipen Dey
55	Bhajan Bauri	Dendua	
56	Dipak Bauri	Dendua	
57	Amit Bauri	Nakrejoria	Amit Bauri
58	Rajesh Bauri	Nakrejoria	Rajesh Bauri
59	Monoj Mahato	Nakrejoria	
60	Sudan Kisku	Maheshpur	
61	Somnath Maji	Dendua	Somnath Maji
62	Satya Ranjan Parida	Rupnarayanpur	
63	Bijan Nath	Near S.B.I Bank	Bijan Nath
64	Harjit Mahato	Dendua	
65	Uttam Bauri	Dendua	Uttam Bauri
66	Goutam Ram	Left Bank Colony	
67	Shankar Yadav.	Left Bank colony	
68	Bimal Mondal	Left Bank Maidhar	

...r Persons and Govt. Officials Present in the Public Hearing held on 03/11/2021 at ...ooms at the 'Nandanik Hall' of Salarpur Block office, Rupnarayanpur Police Stn. Dist. Durgapur Note, Dist- Paschim Bardhaman.

Sl. No	Name of Persons	Address	Signature.
69	Sani Kumar Singh	Left Bank	Sani
70	Manoj Pracer	Left Bank	Manoj
71	Jai Prakash Singh	Rup Narayan Pur	
72	VINOD KUMAR	PALHARJEE (R.P.N	
73	Bishnu Bahadur	Hospital	
74			
75	Subhas Baniki.	L. B.	S. BANIKI
76	Bhabesh Kora	Jamar Gali	Bhabesh Kora
77	ABHISHEK OJHA	DENDUA	
78	Avishekar Singh.	Dendua	
79	Rajveer Singh.	Dendua.	Rajveer
80	Rohit Chauhan	Dendua	Rohit
81	Motilal Thakur	Dendua	
82	Akash Thakur	Dendua	
83	Sankar Ghosh	Nakrajuri	
84		741	
85	Ajoy Mallick	Left Bank	Ajoy
86	Alok Mallick	Left Bank	Alok
87	Santosh Chowdhury	Rupnarayanpur	
88	Ram Roy	R.N.P	Ram Roy
89	Shimala Marandi	D.G.P	Gyaramdi
90	Shankar Shaw	Left Bank	
91	ASHRAF KHAN	Left Bank	Ashraf
92	Santosh Kumar Gyaldy	Left Bank kalyanpur	Gyaldy
93	Sanjit Sutradhar	Left Bank	Sanjit

Government of West Bengal
Directorate of Forests
Office of the Divisional Forest Officer, Durgapur Division.
Aranyapally, Shashtri Avenue, Durgapur-12.
E-mail- dfodurgapur@yahoo.in
Office Tel. / FAX- 0343-2537229

Memo No. 5190 /28-1 **Dated, Durgapur, The** 19/03/2021

To :: M/S Eloquent Steel Private Limited
Nakrajoria
P.O. & P.S. – Salanpur
Dist – Paschim Bardhaman
West Bengal, Pin - 713357

Sub. :: Information regarding National Park / wildlife Sanctuary and Flora Fauna list for proposed Expansion project by M/S Eloquent Steel Private Limited.

Ref. :: Your application dated 08/02/2021.

******

In response to the communication cited above there is no National Park / Wildlife Sanctuary within 10 Km radius of the project area at Nakrajoria, P.O.& P.S.- Salanpur, Dist – Paschim Bardhaman, West Bengal, Pin - 713357. The required report in connection with the Flora and Fauna list is enclosed herewith.

Divisional Forest Officer
Durgapur Division
18/3/21

CHAPTER-II

FLORA & FAUNA

CHAPTER –IIA:

Forest Flora

The rainfall of the tract is, little above the lower limit of the rainfall for the sub-group 3C i.e. North Indian moist deciduous forests and very near the higher limit of the Sub-group 5B i.e. Northern tropical dry deciduous forests. (Both the Sub-groups are as described in the 'Forest Types of India' by Champion & Seth (1962). It is needless to point out here that fevourable site conditions favour development of moister forest types even with lower precipitation , while the reverse is true for the unfavourable sites. In fact, the above reference while dwelling on the 'General Description' of the Dry Tropical Forests observes: 'Most of the species also occur in the moist deciduous forests where they reach finer development'. It goes on to add: 'The number of species is much less than in the foregoing types and although a few tend to predominate over any selected area, the majority are not particularly gregarious so that more or less pure associations can usually be traced to soil peculiarities or human interference'.

The forest of Burdwan District has got different types of Floral Composition. The blank areas within the forest or degraded patches are regenerated artificially with the miscellaneous species and this entire miscellaneous species have got good growth. The following list shows the existence of species found in Burdwan District.

2.1 **Forest Flora of Burdwan District:**

A. TREES:

Table 2.1

Vernacular or Common Names	Botanical Name
Akashmoni, Sonajhuri	*Acacia auriculiformis*
Am	*Mangifera indica*
Amla	*Emblica officinalis*
Amra	*Spondias pinnata*
Ankar	*Alangium salvifolium*
Arjun	*Terminalia arjuna*
Asan	*Terminalia tomentosa*
Aswatha	*Ficus religiosa*
Bahera	*Terminalia bellirica*
Bandar Lathi, Sonalu	*Cassia fistula*
Bat	*Ficus benghalensis*
Bel	*Aegle marmelos*
Cashew, Kaju	*Anacardia occidentale*
Chalta	*Holoptelea integrifolia*
Sajne Sisis	*Albizia Odoratissima*
Chhatim	*Alstoneis scholaris*
Dhaw	*Anogeissus latifolia*
Dumur	*Ficus serica*
Gabdi, Palas	*Butea monosperma*
Gamar	*Gmelina arborea*

Vernacular or Common Names	Botanical Name
Gokul	*Ailanthus excelsa*
Jagnya Dumur / Gular	*Ficus racemosa*
Haldu or Karam	*Haldina cordifolia*
Haritaki	*Terminalia chebula*
Kanthal	*Artocarpus heterophyllus*
Jarul	*Lagerstroemia flosreginae*
Kadam	*Anthocephalus cadamba*
Kaj	*Gridelia retusa*
Kaju	*Anacardium occidentale*
Kalojam	*Syzygium cumini*
Kamla or Sindure	*Mallotus philippensis*
Kanta Bhuel	*Xantolis tenuatosa*
Kend or Kendu	*Diospyros melanoxylon*
Kumbhi	*Careya arborea*
Kusum	*Schleichera oleosa*
Latkaram	*Hymanodictyon excelsum*
Madar	*Artocarpus lacucha*
Mahua or Mahol	*Madhuca indica*
Minjiri	*Cassia siamea*
Neem	*Azadirachta indica*
Palas	*Butea Monosperma*
Panjan	*Ougeinia oojeinensis*
Parashi	*Clerodendrum collinus*
Peasal / Murga	*Pterocarpus marsupium*
Pitali	*Trewia nudiflora*
Pryal	*Buchanania lanzan*
Rahara	*Soymida febrifuga*
Sal	*Shorea robusta*
Setisal	*Dalbergia latifolia*
Sidha	*Lagerstroemia parviflora*
Simul	*Salmalia malabarica*
Siris	*Albizzia odoratissima*
Sissu	*Dalbergia sissoo*
Tanual	*Diospyros exaculpta*
Teak	*Tectona grandis*

B. SHRUBS & CLIMBERS: **Table – 2.2**

Vernacular or Common Names	Botanical Name
Anantamul	*Hemidesmus indicus*
Asanulata	*Eupatorium odoratum*
Atari	*Combretum decandrum*
Bagsaki	*Martynia diandra*
Bairchi	*Flacourtia indica*
Baukal or Dholkalmi	*Chassy Austin*
Bantulsi	*Ocimum americanum*
Berala	*Sida cordifolia*

Vernacular or Common Names	Botanical Name
Bhabri	*Lantana camara*
Bhuru	*Gardenia gummifera*
Chakunda	*Cassia tora*
Kalmegh	*Andrographis paniculata*
Korcmcha / Bankoromcha	*Carissa spinarum*
Kul	*Zizyphus glaberrima*
Kurchi	*Holarrhena antidysenterica*
Marvadanta	*Catunaregam spinosa*
Nakdana	*Opuntica stricta*
Nilkanta	*Curcuma cassia*
Nirinda	*Vitex negunda*
Rankhejur	*Phoenix acaulis*
Putri	*Croton roxburghii*
Satamuli	*Asparagus racemosa*
Shialkanta	*Mimosa rulcaulis*
Talmuli	*Curculigo orchioides*
Dudhilata	*Ichnicarpus fridescens*
Gulancha	*Tinospora cordifolia*
Kantaalu	*Dioscorea pentaphylla*
Kunch	*Abris precatoreius*
Lalapalash	*Butea superba*
Muljan	*Bauhinia vahlii*
Mauda	*Butea parviflora*
Shora alu	*Dioscores nummularea*

Table – 2.3

C. MEDICINAL PLANTS

Vernacular or Common Names	Botanical Name
Ramdantan	*Smilex zeylanicum*
Iswaramul	*Aristolchia indica*
Anantamul	*Hemidesmus indicus*
Ban kapas	*Azanza lampas*
Bagnokhy	*Martynia diandra*
Dudhilata	*Ichnocarpus frutiscens*
Kuchla	*Strychnos nux-vomica*
Patari	*Stereospermum tetragonum*
Sanara	*Streblus aspera*
Kontikary	*Solanum xanthocarpum*
Kanta siris	*Acacia lauticularis*
Thankuni	*Centella asiatica*
Yasti madhu	*Glycyrrhiza glabra*
Nagkesara	*Mesua ferrea*
Chirata	*Swertia chirata*
Karanj	*Pongamia pinnata*
Kurchi	*Hollorrhena antidysenterica*
Pipul	*Piper longum*
Dhaw	*Anogeissus latifolia*

Vernacular or Common Names	Botanical Name
Kalmegh	*Addrographis paniculata*
Neem	*Azadirachta indica*
Simul	*Bombax ceiba*
Akanel	*Calotropis gigantean*
Sonalu	*Cassia fistula*
Nayantara	*Catharanthus roseus*
Haritaki	*Terminalia chebula*
Amloki	*Phyllanthus emblica*
Bahera	*Terminalia bahera*
Bat	*Ficus bengalensis*
Harjora	*Cissus quadrangularis*
Sisso	*Dalbergia sissoo*
Alkushi	*Nucuna pruriens*
Kulekhara	*Hygrophila schalli*
Peasal	*Pterospeaum marsupium*
Valai	*Semecarpus anacardium*
Arjun	*Terminalia arjuna*
Kul	*Ziziphus mauritiana*
Bantulshi	*Ocium americanum*
Aswathe	*Ficus religiosa*

2.2 General Description of the Growing Stock:

The rainfall of the tract is, little above the lower limit of the rainfall for the sub-group 3C i.e. North Indian moist deciduous forests and very near the higher limit of the sub-group 5B i.e. Northern topical dry deciduous forests. (Both the sub-groups are as described in the 'Forest Types of India' by Champion & Seth (1962)

Taking into account the edaphic factors, rainfall, site quality and floristics we may conveniently conclude that most of the forests of the district may be classified under the subtype $_5B/C_{1c}$. However some areas of higher rainfall may come under $_3C/C_{2c}$(ii).

The main species in this Forest is Shorea robusta (Sal) with characteristic associates of *Pterocarpus marsupium* (Peasal) *Terminalia tomentosa* (Asan), *Anogeissus latifolia* (Dhaw). The other commoner species which constitute the Top Canopy and Second Storey are *Adina cordifolia* (Gamar), *Alstonia scholaris* (Chatim) *Albizzia Spp.*(Siris), *Buchanania lanzan* (Piyal), Butea frondosa (Palash) Dalbergia latifolia (Shetisal), Diospyros melanoxylon (Kend), *Madhuca Indica* (Mahul), *Holoptelia integrifolia* (Challa), *Salmalia malabarica* (Simul) etc.

The common shrubs are *Combretum decandrum* (Atari), *Flacourtia indica* (Bamchi), *Gardenia gummifera* (Bhurru), *Holarhena antidysenteriea* (Kurchi), *Lantana camara* (Bhabri), *Phoenix acaulis* (Bankhejur) & *Ziziphus spp.* (Kuli)

The common herbs are Aristidia, Chrysonogon, Imperata, Pollinia, Themeda etc. & the common climbers are Combetrum decandrum, Bauhinia vahlii, Butea superba & Smilax zeylanica etc. Such type of vegetation is found in this district.

भारत सरकार/Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
एकीकृत क्षेत्रीय कार्यालय
Integrated Regional Office
कोलकाता/Kolkata-700106
Email: iro-kolkata-mefcc@gov.in

No. 102-455/12/EPE/270 Date: 13.07.2022

To,

Dr. R. B. Lal,
Scientist-E, Industry-I,
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhawan,
Jorbagh Road, Aliganj,
New Delhi – 110 003.
(E-mail: rb.lal@nic.in)

Sub: Examination of reply submitted against non-compliances observed during project monitoring on date 02.06.2022 at Eloquent Steel PVT. Ltd., Vill.- Nakrajoria, PO- Salanpur, Dist.- Paschim Bardhaman (WB)-reg.

Ref: I) 102-455/12/EPE/270 dated 17.06.2022
II) ESPL/SMC/ATR/RO-MoEF/JULY/2022 dated 04.07.2022
II) Email dated 08.07.2022

Sir,

I am directed to draw your kind attention to the subject and reference letters cited above and to state that the above project was monitored on 02.06.2022 by Dr. Soma Das, IGF (C) and Dr. Shahida Parvin Quazi, Scientist E. During monitoring non-compliances were observed. Subsequently, vide this office letter No. 102-455/12/EPE/270 dated 17.06.2022, the PAs were asked to comply with the non-compliances. Action Taken Report was submitted by PAs vide letter No. ESPL/SMC/ATR/RO-MoEF/JULY/2022 dated 04.07.2022 and Email dated 08.07.2022.

Based on the ATR submitted by PAs, the condition wise reply is furnished below:

:

EC F. No. J-11011/49/2010-IA-II (I) dated 03.09.2012:	
1.	**Observation made during monitoring on 02.06.2022:** It is observed that parameters such as O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni has been monitored at only one location: Near Administrative Building. PAs need to monitor O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni as mentioned in GSR No. 826 (E) dated 16th November, 2009 for the other three location: common entrance for Hira Concast and Impex Steel Ltd., near DVC Meter Room (back side of the plant), Dendua village (1 Km distance from the plant) (Specific condition no. iii)

	Action taken report submitted by the project proponent on 04.07.2022: Ambient Air Quality Monitoring have been carried out by NABL accredited laboratory at common entrance for Hira Concast and Impex Steel Ltd., near DVC Meter Room (back side of the plant), Dendua village (1 Km distance from the plant) and results are found well within the norms. Monitoring reports are enclosed as **Annexure-1.** **Review of Acton Taken Report: Being complied.** As per information provided, it is observed that Ambient Air Quality Monitoring (O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni level) have been carried out by NABL accredited laboratory at common entrance for Hira Concast and Impex Steel Ltd., near DVC Meter Room (back side of the plant), Dendua village (1 Km distance from the plant). The levels are below the stipulated standard.
2.	**Observation made during monitoring on 02.06.2022:** PAs need to monitor groundwater and submit the report to the Regional Office. Further, PAs also need to conduct leachate study for the effluent generated and report to be submitted to the Regional Office. (Specific condition no. v) **Action taken report submitted by the project proponent on 04.07.2022:** Ground water monitoring has been done taking sample from hand pump at village Nakrajoria and results are within norms. Please refer **Annexure-2.** Leachate study also been conducted and results are found below detectable limits (BDL) only Barium as Ba found 5.18 mg/l against the stipulated limit of 100 mg/l and it is well within the norms. Analysis report is as enclosed as **Annexure-3.** **Review of Acton Taken Report: Being complied.** As per information provided, it is observed that ground water monitoring has been carried out by PAs, using sample from hand pump at village Nakrajoria and results are within the acceptable limit as per IS:10500:2012. Further, it is observed that Leachate study has been conducted by PAs from soil Sample collected from different locations of the plant area. It has been informed that main sources of effluent generation are the cooling tower blowdown and backwash of softner plant, wherein the main issues of the effluent are pH and TDS and do not contain any sludge. Effluent generated from these sources is taken into pucca tank designated for effluent collection. It was further informed that, TDS in such effluent are normally much below the prescribed limit and pH value also being maintained within the prescribed limit of 6.5 to 8.5. This effluent stored in pucca tank are utilized in slag quenching, metal recovery plant and dust suppression as per requirement.
EC F. No. J-11011/183/2008-IA-II dated 28.07.2008:	
3.	**Observation made during monitoring on 06.10.2021:** PAs need to conduct AAQ monitoring in another one location, (General condition iii).

	Action taken report submitted by the project proponent on 08.07.2022: AAQ monitoring has been carried out for additional 01 location. **Review of Acton Taken Report: Being complied.** From the information provided, it is observed that Ambient Air Quality monitoring has been carried out for additional 01 location (Near Temple beside Plant Boundary) by PAs. Ambient air quality data is within the stipulated standard.
Conclusion: The PAs have complied with the conditions stipulated by the Ministry. Accordingly the action taken report may be considered for further necessary action.	

This is for kind information and necessary action.

Yours faithfully,

Dr. Shahida Parvin

(डॉ. सहिदा परवीन क़ाज़ी / Dr. Shahida Parvin Quazi)
वैज्ञानिक-इ / Scientist-E

Copy to: Shri Deepak Kumar Agarwal, Director, M/s Eloquent Steel Private Limited, Village: Nakarjoria, P.O : Salanpur, West Bengal -700017. Email: esplmoef@shakambharigroup.in

/

वैज्ञानिक-इ / Scientist-E

भारत सरकार/Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
एकीकृत क्षेत्रीय कार्यालय
Integrated Regional Office
कोलकाता/Kolkata-700106
Phone-033-2335-5713/7938 Fax-2335-5904

No. 102-455/12/EPE/273 Date: 24.06.2022

To,

Dr. R. B. Lal,
Scientist-E, Industry-I,
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhawan,
Jorbagh Road, Aliganj,
New Delhi – 110 003.
(E-mail: rb.lal@nic.in)

Sub: 1. Expansion of Ferro Alloy Plant (Fe-Mn & Si-Mn) by installing 5.5 MVA SAF at Mouza Nakrajoria, P.S. – Salanpur, Dist: - Burdwan, West Bengal by M/s Hira Concast Limited.

2. Setting up of Ferro Alloy Plant (High Carbon Ferro Manganese, 15,225 TPA & Silico Manganese 11, 455 TPA) in existing M.S. Ingot Plant at Mouza – Nakrajoria, P.S. – Salanpur, District: - Burdwan, West Bengal by M/s Hira Concast (Pvt.) Ltd.

3. Expansion of the plant by setting up of Ferro Alloy Plant (2x 7.5 MVA) at Mouza – Nakrajoria, P.O. – Salanpur, District: - Burdwan, West Bengal by M/s Impex Steel Ltd.

Ref: 1. J-11011/533/2008-IA II (I) dated 11.12.2008.
2. J-11011/49/2010-IA II (I) dated 03.09.2012.
3. J-11011/183/2008-IA (II) dated 28.07.2008.
4. J-11011/188/2011-IA.II (I) dated 20.09.2012.
5. J-11011//49/2010- IA II (I) dated 15.10.2020
6. J-11011/188/2011-IA II (I) dated 15.10.2020.

Sir,

I am directed to draw your kind attention to the subject and reference letters cited above and to state that in the CCR issued vide letter no. 102-455/12/EPE/269 dated 17.06.2022, in Specific Condition no. xii of EC dated 03.09.2012, Specific Condition no. x of EC dated 11.12.2008 and Specific Condition no. ix of EC dated 28.07.2008, it has been written that "700 (approx) plants of indigenous species have been planted on the basis of recommendation of DFO". There has been a typographical error and 700 may be read as 7000.

This is submitted for kind information and necessary action.

Yours faithfully,

S. Shahida Parvin

(डॉ. शाहिदा परवीन काज़ी/ Dr. Shahida Parvin Quazi)
(वैज्ञानिक- इ/ Scientist-E)

भारत सरकार/**Government of India**
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
एकीकृत क्षेत्रीय कार्यालय
Integrated Regional Office
कोलकाता/**Kolkata-700106**
Email: iro.kolkata-mefcc@gov.in

No. 102-455/12/EPE/269 Date: 17.06.2022

To,

Dr. R. B. Lal,
Scientist-E, Industry-I,
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhawan,
Jorbagh Road, Aliganj,
New Delhi – 110 003.
(E-mail: rb.lal@nic.in)

Sub: 1. Expansion of Ferro Alloy Plant (Fe-Mn & Si-Mn) by installing 5.5 MVA SAF at Mouza Nakrajoria, P.S. – Salanpur, Dist: - Burdwan, West Bengal by M/s Hira Concast Limited.

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3. Expansion of the plant by setting up of Ferro Alloy Plant (2x 7.5 MVA) at Mouza – Nakrajoria, P.O. – Salanpur, District: - Burdwan, West Bengal by M/s Impex Steel Ltd.

Ref: J-11011/533/2008-IA II (I) dated 11.012.2008
J-11011/49/2010-IA II (I) dated 09.2012
J-11011/183/2008-IA (II) dated 28.07.2008
J-11011/188/2011-IA.II (I) dated 20.09.2012
J-11011//49/2010- IA II (I) dated 15.10.2020
J-11011/188/2011-IA II (I) dated 15.10.2020

Sir,

I am directed to draw your kind attention to the subject and reference letters cited above and to state that the above project was monitored by the undersigned and IGF (C) on 02.06.2022 for issuance of Certified Compliance Report. Based on the observations made while monitoring of the project, the detailed Certified Compliance Report has been prepared and enclosed for kind information and further needful action.

Yours faithfully,

Encl: As above

Q. Shahida Parvi

(डॉ. शाहिदा परवीन काज़ी/ Dr. Shahida Parvin Quazi)
(वैज्ञानिक- इ/ Scientist-E)

भारत सरकार / Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
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Integrated Regional Office
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प्रमाणित अनुपालन रिपोर्ट / Certified Compliance Report

SN	Item	Details
1.	परियोजना का प्रकार **Type of Project**	Industry-1 (Steel)
2.	परियोजना का नाम **Name of Project**	1. Expansion of Ferro Alloy Plant (Fe-Mn & Si-Mn) by installing 5.5 MVA SAF at Mouza Nakrajoria, P.S. – Salanpur, Dist: - Burdwan, West Bengal by M/s Hira Concast Limited 2. Setting up of Ferro Alloy Plant (High Carbon Ferro Manganese, 15,225 TPA & Silico Manganese 11, 455 TPA) in existing M.S. Ingot Plant at Mouza – Nakrajoria, P.S. – Salanpur, District: - Burdwan, West Bengal by M/s Hira Concast (Pvt.) Ltd. 3. Expansion of the plant by setting up of Ferro Alloy Plant (2x 7.5 MVA) at Mouza – Nakrajoria, P.O. – Salanpur, District: - Burdwan, West Bengal by M/s Impex Steel Ltd.
3.	परियोजना प्राधिकरण का पता **Address of project authorities**	Shri Deepak Kumar Agarwal, Director, M/s Eloquent Steel Private Limited, Village: Nakarjoria, P.O : Salanpur, West Bengal -700017 Email: esplmoef@shakambharigroup.in
4.	पर्यावरणीय स्वीकृति पत्र सं0 तथा तिथि **Env. Clearance Letter No. & Date**	1. J-11011/533/2008-IA II (I) dated 11.012.2008 2. J-11011/49/2010-IA II (I) dated 09.2012 3. J-11011/183/2008-IA (II) dated 28.07.2008 4. J-11011/188/2011-IA.II (I) dated 20.09.2012 5. J-11011//49/2010- IA II (I) dated 15.10.2020 6. J-11011/188/2011-IA II (I) dated 15.10.2020
5.	क्षेत्रीय कार्यालय संचिका सं0 **Regional Office File No.**	102-455/12 102-420/11 102-294/08
6.	स्थल दौरा तिथि **Date of Site Visit**	02.06.2022
7.	परियोजना की स्थिति **Status of Project**	Operational
8.	उपलब्ध कर्मचारी **Persons available**	a) Shri Jai Prakash Singh, GM-SMS b) Shri K. C. Pan, GM- Ferro Division c) Shri Mr. Abhijit Ghosh, Sr. Manager-Ferro d) Shri Mr. R. K. Mishra, DGM-EHS
9.	निगरानी अधिकारी **Monitoring Officer**	1. Dr. Soma Das, IGF (C) 2. Dr. Shahida Parvin Quazi, Scientist E

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10. परियोजना की वर्तमान स्थिति / Present status of the Project:

M/s Hira Concast Limited was accorded EC by the Ministry vide letter no. J-11011/533/2008-IA II (I) dated 11.012.2008. Further for expansion of ferro alloy plant (Fe-Mn & Si-Mn) by installing 5.5. MVA SAF, EC was granted to M/s Hira Concast Limited vide letter no. J-11011/49/2010 IA –II (I) dated 03.09.2012. M/s Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in September, 2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. EC transfer from M/s Hira Concast Limited to M/s Eloquent Steel Private limited was given vide letter no. J-11011/49/2010-IA.II (I) dated 15.10.2020.

M/s Impex Steel Ltd was accorded EC for setting up of Ferro Alloy plant (2x7.5 MVA) vide letter no. J-11011/183/2008-IA (II) dated 28.07.2008. Further for expansion of existing unit by installation of 2x7.5 MVA ferro alloys plant and 1x 300 TPD Sinter plant to manufacture Ferro Alloys and Managnese ore sinter, EC was accorded vide letter dated 20.09.2012. The facilities envisaged in the EC dated 2012 have not been installed and as per available records, no validity extension has been obtained. The validity period of the EC dated 2012 expired on 19.09.2019. M/s Impex Steel Ltd. a closed unit was purchased by M/s Eloquent Steel Pvt. Ltd. (ESPL) and was taken over through auction from Stressed Assets Management Branch State Bank of India, Kolkata and possession was taken over on 22nd December 2017. EC was transferred from M/s Impex Steel Limited to M/s Eloquent Steel Private Limited vide letter no. J-11011/188/2011-IA.II (I) dated 15.10.2020.

Unit	As per the last EC				Existing Configuration & Production of ESPL	
	Hira Concast Ltd.		Impex Steel Ltd.		Configuration	Production TPA
	Conf.	Prod. TPA	Conf.	Prod. TPA		
Steel Melting Shop	IF 2x7 Ton	53000	IF 2x7 Ton	53004	4x7 Ton Induction Fce.	106,004
Ferro- Alloys Plant	1x7.5 MVA + 1x5.5 MVA	Fe-Mn. 27,555 Si-Mn 20,735	2x7.5 MVA	Fe-Mn. 48,576 Si-Mn 22500 Fe-Si 9000	3x7.5MVA + 1x5.5MVA	Fe-Mn 59052 Si-Mn 43,235

It has been observed that the Project Authorities (PAs) have complied or are in process of complying the conditions stipulated in EC. The detailed observations are as follows:

11. अनुबंधित स्थितियाँ / Stipulated Conditions:

J-11011/49/2010-IA-II (I) dated 03.09.2012

A. SPECIFIC CONDITIONS

i. **No charcoal shall be used as fuel. Pet coke shall be used as fuel instead of charcoal from unknown sources.**
Status: As per information provided, it is observed that charcoal is not being used as fuel.

ii. **Continuous monitoring facilities for all the major stacks and sufficient air pollution control equipment viz. fume extraction system with bag filters, ID fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 50mg/Nm³.**

Status: Being complied. Continuous Emission Monitoring System has been installed in the major stacks. It was observed that air pollution control devices viz. dust extraction systems with bag filters have been installed. Third party monitoring by NABL accredited laboratory is being conducted periodically to evaluate the emission levels. The monitoring data submitted by PAs is furnished below:

Sl. No.	EC on the name of	Stack attached to	Parameter	Result
1.	HIRA	SEAF (No. 1) (7.5 MVA)	Concentration of Particulate Matter (mg/Nm^3)	21.85
2.		SEAF (No. 2) (5.5 MVA)	Concentration of Particulate Matter (mg/Nm^3)	28.83

iii. The National ambient Air Quality Standards issued by the Ministry vide G.S.R No. 826(E) dated 16th November, 2009 shall be followed.

Status: Partially complied. It is observed that ambient air quality monitoring is conducted by Envirocheck at four locations: near administrative building, common entrance for Hira Concast and Impex Steel Ltd., near DVC meter room (back side of the plant), Dendua village (1 km distance from the plant). The monitoring data of ambient air quality as submitted by PAs is furnished below:

Sl. No.	EC on Name of	Date of Study	Location	Average Result			
				$PM_{2.5}$ (µg/m^3)	PM_{10} (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)
1.	HIRA	Sept, 2021	Near Administrative Buildings	53.86	86.20	12.38	36.15
2.			Near Main Gate (Common Entrance for Impex Steel Ltd & Hira Concaast Ltd)	49.53	82.60	11.76	29.50
3.			Near DVC Meter Room (Back Side of the Plant)	48.23	86.06	7.84	26.52
4.			Dendua Village (1.0 KM Distance from Plant)	46.47	79.83	6.80	26.52
5.		March, 2022	Near Administrative Buildings	52.93	84.10	16.64	36.15
6.			Common Entrance for Impex Steel Ltd & Hira Concaast Ltd	49.79	82.47	11.30	29.95
7.			Near DVC Meter Room (Back Side of the Plant)	48.29	80.06	7.46	28.54
8.			Dendua Village (1.0 KM Distance from Plant)	52.96	84.21	12.37	32.46

From monitoring reports of ambient air quality submitted by PAs, it is observed that PAs have monitored PM_{10}, $PM_{2.5}$, SO_2, NO_2 at the four locations. ***However, it is observed that parameters such as O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni has been monitored at only one location: near administrative building. PAs need to monitor O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni as mentioned in G.S.R No. 826(E) dated 16th November, 2009 for the other three locations: common entrance for Hira Concast and Impex Steel Ltd., near DVC meter room (back side of the plant), Dendua village (1 km distance from the plant).***

iv. Secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.

Status: Being complied. Fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and Fume extraction system with FDC & Bag Filters are provided with SEAFs to capture Fugitive emissions during process operation. It was observed that water sprinkling was being done to control fugitive emissions on roads. Fugitive emission is being monitored at two locations: in the raw material storage yard and inside the ferro alloy plant. Fugitive emission data as submitted by PAs is submitted below:

Sl. No.	EC on Name of	Date of Study	Location	Average Result of SPM (µg/m³)
1.	HIRA	Sept, 2021	Inside the Raw Materials Storage Yard	490.12
2.			Inside the Ferro Alloy Plant	486.28
3.		March, 2022	Inside the Raw Materials Storage Yard	416.16
4.			Inside the Ferro Alloy Plant	456.0

v. **Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the E(P) Act whichever are more stringent. Leachate study for the effluent generated and analysis should also be regularly carried out and report submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.**

Status: Partially complied.3 PAs have monitored effluent, surface water. The parameters are within the stipulated standard. ***PAs need to monitor groundwater and submit the report to the Regional Office. Further, PAs also need to conduct leachate study for the effluent generated and report to be submitted to the Regional Office.***

vi. **The makeup water requirement shall not exceed 28m³/day. 'Zero' effluent discharged shall be strictly followed and no wastewater should be discharged outside the premises.**

Status: PAs have informed that as per existing EC for Hira & Impex makeup water required is 28+6=34KL. It has been stated that the actual makeup water requirement is 620 KLD on full production capacity. PAs do not use the ground water. It has been further informed that all possible attempts are taken to ensure optimal use of water within the factory premises. It was observed that no effluent was being discharged outside the factory premises. "Zero" effluent discharge is being followed at the unit.

vii. **Efforts shall be made to make use of rain water harvested. If needed, capacity of the reservoir should be enhanced to meet the maximum water requirement. Only balance water requirement should be met from other sources.**

Status: Being complied. It was observed that rainwater harvesting pond is present in the premise. PAs have informed that the water from this pond is being used to keep the water requirement low.

iii. **Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture of Silico Manganese (Si-Mn). All the other ferro alloy slag shall be used in the preparation of building materials.**

Status: Being complied. PAs have informed that Ferro Manganese (Fe-Mn) slag is being

B. Shalida Pasuri

used for the manufacturing of Silico Manganese (Si-Mn). Further, silico manganese slag is being used for land filling and road construction.

ix. **No Ferro Chrome shall be manufactured without prior approval from the Ministry of Environment & Forests.**

Status: Agreed with.

x. **Risk and Disaster Management Plan along with the mitigation measures should be prepared and a copy submitted to Ministry's Regional Office at Bhubaneswar.**

Status: Risk and Disaster Management Plan along with mitigation measures has been prepared and submitted to Ministry's Regional Office.

xi. **All the commitments made to the public during the public Hearing/Public Consultation meeting held on 17th November, 2011 should be satisfactorily implemented and a separate budget for implementing the same should be allocated and information submitted to the Ministry's Regional Office at Bhubaneswar.**

Status: PAs have informed that Public Hearing was held on 17th November, 2011 and EC was accorded to M/s Hira Concast Ltd on 3rdSeptember, 2012. Eloquent Steel Pvt. Ltd. (ESPL) purchased the closed unit M/s Hira Concast Ltd. and possession was taken over on 01.09.2017 through auction from Official Liquidator of Hon'ble High Court Calcutta. PAs have informed that they do not have the public hearing details from M/s Hira Concast and hence are unable to comply with the commitments to the public hearing meeting.

xii. **As proposed, green belt should be developed in at least 33% of the project area. Selection of Plant species shall be as per the CPCB guidelines in consultation with the DFO.**

Status: Being complied. It was observed that the development of green belt is satisfactory. As per information provided, total area for Eloquent Steel Pvt. Ltd. comprising of M/s Hira Concast and Impex Steel Ltd., is 9.089 Ha, wherein the greenbelt has to be developed over 3 Ha. It has been informed that 700 (approx) plants of indigenous species have been planted on the basis of recommendation of DFO.

xiii. **At least 5% of the total cost of the project should be earmarked towards the Enterprises Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan should be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program shall be ensured accordingly in a time bound manner.**

Status: EC was granted on 3rdSeptember, 2012 and M/s Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL), and possession was taken in 2018 through auction from the Official Liquidator of Hon'ble High Court, Calcutta. PAs informed that they donot have record of the public hearing. CSR activities undertaken by project are as follows:

Annual CSR Activities for the Year 2020-21	
Food Material Distribution	1,35,000
Education Support	1,00,000
Nearby School Repairing & Painting	1,60,000

Financial Support to Cultural Activities and LocalDevelopment	85,000
Drinking-Water facility & Maintenance in Nearby villages	55,000
Water Sprinkling on Village Roads	2,70,000
Cloth & Blanket Distribution	1,80,000
COVID-19 Awareness, Control & Support	3,25,000
Medical Camps for Local Villagers	2,35,000
Organization of Local Sports & Support	1,25,000
Plantation	1,35,000
Environmental Awareness Rally	50,000
Other Regular Activities & Misc.	50,000
	19,05,000

Annual CSR Activities for the Year 2021-22	
Food Material Distribution	1,10,000
Education Support	1,20,000
Financial Support to Cultural Activities and Local Development	1,00,000
Drinking-Water facility & Maintenance in Nearby villages	10,000
Water Sprinkling on Village Roads	3,10,000
Cloth & Blanket Distribution	2,15,000
COVID-19 Awareness, Control & Support	40,000
Medical Camps for Local Villagers	2,70,000
Organization of Local Sports & Support	1,45,000
Plantation	1,60,000
Environmental Awareness Rally	50,000
Pond Excavation	1,65,000
Other Regular Activities & Misc.	50,000
	17,45,000

xiv. The company shall provide housing for construction labour within site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

Status: Agreed with. During monitoring, it was observed that no construction work is undergoing.

B. GENERAL CONDITIONS

i. The project authorities must strictly adhere to the stipulations made by the West Bengal Pollution Control Board (WBPCB) and the State Government.

Status: Agreed with. PAs have received CTO from West Bengal Pollution Control Board vide memo number 1534-WPBA/Red (Bwn)/cont-(591)/08 dated 28.06.2018 with validity till 30.04.2023. PAs have also received amendment to CTO vide memo no. 389-WPBA/Red(Bwn)/Cont(591)/08 dated 26.08.2020.Further, PAs have applied for Hazardous Waste Authorization vide application no. 1475655 dated 11.01.2022.

ii. No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.

Q. Shahida Parveen

Status: Agreed with. PAs have received TOR vide letter no. J-11011/188/2011-IA. II (I) dated 11.11.2020

iii. **At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM, SO_2 and NOx are anticipated in consultation with the WBPCB including one ambient air quality monitoring station in the downwind direction. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the WBPCB/CPCB once in six months.**

Status: Being complied. It is observed that ambient air quality monitoring is conducted by Envirocheck at four locations: near administrative building, common entrance for Hira Concast and Impex Steel Ltd., near DVC meter room (back side of the plant), Dendua village (1 km distance from the plant). As per the monitoring data it is observed that the parameters are within the stipulated standard.

iv. **Industrial wastewater shall be properly collected, treated so as to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.**

Status: Being complied. It is observed that no industrial water is being discharged outside the factory premises. PAs have submitted effluent analysis report, wherein the parameters are within the stipulated standard.

v. **The overall noise levels in and around the plant area shall be kept well within the standards [(85 dB(A)] by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB(A) (day time) and 70 dB(A) (night time).**

Status: Being complied. It is observed that ambient noise levels have been monitored at three locations: near administrative building, near DVC meter room (back side of the plant) and Dendua village (1 km distance from plant). Work zone noise has been monitored at two locations: storage yard – R M handling section and near ferro alloy plant –ferro division. Monitoring data as submitted by PAs is furnished below:

Sl. No.	EC on Name of	Date of Study	Location	Average dB (A)	
				Day Time	Night Time
1.	HIRA	Sept, 2021	Near Administrative Building	63.80	56.54
2.			Near DVC Meter Room (Back side of the Plant)	68.11	63.39
3.			Dendua Village (1.0 KM Distance from Plant)	51.52	43.14
4.		March, 2022	Near Administrative Building	65.25	57.45
5.			Near Main Gate	68.16	56.93
6.			Near DVC Meter Room (Back side of the Plant)	68.30	58.47
7.			Dendua Village (1.0 KM Distance from Plant)	52.09	44.45

Sl. No.	EC on Name of	Date of Study	Location	Average Result dB (A)
1.	HIRA	March, 2022	Raw Material Storage Yard – R.M. Handling Section	70.77
2.			Near Ferro Alloys Plant – Ferro Division	76.50
3.			Induction Furnace Area – SMS Division	73.63

vi. **Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.**

Status: Being complied. As per information provided by PAs, it is observed that occupational health surveillance for the employees being carried and records are being maintained.

vii. **The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.**

Status: Being complied. PAs have developed rainwater pond and it was informed that water from this pond is being reused in order to keep the water requirement low.

viii. **The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.**

Status: M/s Eloquent Steel Pvt. Lt. (ESPL) purchased the closed unit of M/s Hira Concast and possession was taken on 01.09.2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. PAs have informed that they do not have the EIA/EMP report of the project. It was observed that environmental protection measures viz. dust/Fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and fume extraction system with FD cooler followed by Bag Filters are provided with SEAFs to capture fugitive emissions during process. PAs have undertaken CSR activities which is furnished above.

ix. **As proposed, Rs. 2.5 Crores and Rs. 0.7Crores shall be earmarked towards the capital cost and recurring cost/annum for environmental protection measures and judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.**

Status: PAs have informed that as M/s Hira Concast Ltd. was purchased by ESPL through auction they do not have the details of capital cost incurred. It was further informed that the recurring cost for environmental protection measure is being done as per requirement. The expenditure incurred for implementation of environmental protection measures for the year 2021-22 as submitted by PAs is furnished below:

Recurring Expenses on Pollution Control System During FY:2021-22		
Facilities/Area	Amount (Rs)	Remarks
Ferro Alloys Division (3x7.5 MVA +1.5 MVA) SEAF Steel Melting Shop (SMS) 4x7 Ton/Heat each Induction Furnace	38,50,000	Expenses incurred towards maintenance of Pollution Control Devices i.e. replacement/repair of bag filters, bag filter cage, bearings, ducts, air purging system, ID fan, dust extraction system, conveyor galleries, motor, pumps etc.
Others (Water Sprinkling through mobile water tanker)	3,50,000	Water sprinkling on roads, dust prone areas and village road etc.
Total:	42,00,000	Rupees Forty-Two Lakhs

x. **A copy of clearance latter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. The clearance latter shall also be put on the web site company by the proponent.**

Status: EC was granted on 3rdSeptember, 2012 and M/S Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in September, 2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. From available records, it could not be found whether M/s Hira Concast had sent a copy of the clearance letter to the concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the Local NGO.

xi. **The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update same periodically. It shall simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the WBPCB. The criteria pollutant levels namely; SPM, RSPM SO_2, NO_X(ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.**

Status: Being complied. Compliance status with the stipulated EC conditions has been uploaded on company's website. http://shakambhariispat.com/environmental-compliance . Criteria pollutant levels SPM, RSPM SO_2, NO_X (ambient levels as well as stack emissions) has been displayed in the display board

xii. **The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environment conditions including results of monitored data (both in hard copies as well as by e-mail) to the regional Office of MOEF at Bhubaneswar, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar / CPCB / WBPCB shall monitor the stipulated conditions.**

Status: Being complied. It is observed that PAs (M/s Eloquent Steel Pvt. Ltd.) have been regular in submitting the six monthly compliance report.

xiii. **The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State**

Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986 as amended subsequently, shall be put on the website of the company along with the status of compliance of environment conditions and shall also be sent the respective Regional Offices of the MOEF by e-mail.

Status: Being complied. PAs have submitted a copy of the environmental statement in Form-V.

xiv. **The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the WBPCB and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the sane shall be forwarded to the Regional Office at Bhubaneswar.**

Status: EC was granted on 3rdSeptember, 2012 and M/s Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in September, 2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. From available record of this office, it is observed that for the EC dated 2008, EC was published in two newspapers: The Telegraph on 19.01.2009 and Bengali newspaper on 21.01.2009. However no such information is available for the EC dated 2012.

xv. **Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.**

Status: EC was granted on 3rd September, 2012 and M/s Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in September, 2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. PAs have informed that they do not have information with respect to the date of financial closure, final approval and date of commencing of land development work. From available records in this office, it is observed that the last monitoring report for EC dated 2008 was sent by M/s Hira Concast was 04.01.2013 for the period of April 2012 to September 2012, wherein PAs have not provided any information with respect to the date of financial closure, final approval and date of commencing of land development work. Further, for the EC dated 2012, from available records, no information was available with respect to the date of financial closure, final approval and date of commencing of land development work.

J-11011/533/2008-IA-II (I) dated 11.12.2008

A. <u>SPECIFIC CONDITIONS</u>

i. **Continuous monitoring facilities for all the major stacks and sufficient air pollution control equipment viz. fume extraction system with bag filters, ID fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 100mg/Nm^3. The West Bengal Pollution Control Board (WBPCB) may specify more stringent standards for relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can automatically stopped in case emission level exceed the limit.**

Q. Shahida Parvin

The monitoring reports shall be submitted to the Ministry's relational office at Bhubaneswar, CPCB & SPCB.

Status: Being complied. Continuous Emission Monitoring System has been installed in the major stacks. It was observed that air pollution control devices viz. dust extraction systems with bag filters have been installed. Third party monitoring by NABL accredited laboratory being conducted periodically to evaluate the emission levels. The monitoring data for the month of March 2022, submitted by PAs is furnished below:

Sl. No.	EC on the name of	Stack attached to	Parameter	Result
1.	HIRA	SEAF (No. 1) (7.5 MVA)	Concentration of Particulate Matter (mg/Nm^3)	21.85
2.		SEAF (No. 2) (5.5 MVA)	Concentration of Particulate Matter (mg/Nm^3)	28.83

ii. **Gaseous emissions from Submerged Arc Furnace shall be controlled by providing smoke hood, heat exchanger, bag filter, inducted draft fan etc. A water-cooled cover around the furnace and fume collectors hood shall also be provided. Clean gas shall be vented to atmosphere through a chimney of adequate height as per CPCB guidelines.**

Status: It was observed that for the proper control of gaseous emissions from SAF, fume extraction system with FD cooler followed by Bag Filters are provided with and being discharged through the stacks of adequate height.

iii. **Secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code CPCB shall be followed. Data on fugitive emissions shall be submitted to Ministry's Regional Office at Bhubaneswar, CPCB and WBPCB.**

Status: Being complied. As per information provided and observations made, ssecondary fugitive emissions is being controlled with dust extraction system and dust suppression with adequate water sprinkling. Fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and fume extraction system with FDC & bag filters are provided with SEAFs to capture fugitive emissions during process operation. During monitoring, water sprinkling being done to control fugitive emissions on roads.

iv. **In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Dust collection system shall be provided for arresting dust and outlet dust emission shall not exceed 100 mg/Nm^3. Dust suppression system like water spraying shall be provided at unloading and raw material handling areas, storage yards, conveyor belts and bucket elevators to control fugitive dust emissions to meet the WBPCB norms. Covered conveyer belts shall be provided. Water spraying shall also be done to prevent the dust emanation due to vehicular movement.**

Status: Being complied. Fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and Fume extraction system with FDC & Bag Filters are provided with SEAFs to capture fugitive emissions during process operation. It was observed that conveyor belt galleries are covered. Further, water

sprinkling was being done in dust prone areas and to suppress the fugitive dust emission due to vehicular movement.

Sl. No.	EC on Name of	Date of Study	Location	Average Result of SPM (µg/m³)
1.	HIRA	Sept, 2021	Inside the Raw Materials Storage Yard	490.12
2.			Inside the Ferro Alloy Plant	486.28
3.		March, 2022	Inside the Raw Materials Storage Yard	416.16
4.			Inside the Ferro Alloy Plant	456.0

v. **Total ground water requirement shall not exceed 6 m³/day. The softener back wash water shall be neutralized and used for dust suppression. All the other treated wastewater shall be recycled and reused in the process, slag cooling and green belt development. No process water shall be discharged outside the premises and 'Zero' discharge shall be adopted Domestic wastewater shall be treated in septic tank followed by soak pit system and used for plantation.**

Status: PAs have informed that as per existing EC for Hira & Impex makeup water required 28+6=34KL. It has been stated that the actual makeup water requirement is 620 KLD on full production capacity. PAs do not use the ground water. It has been further informed that all possible attempts are taken to ensure optimal use of water within the factory premises. It was observed that no effluent was being discharged outside the factory premises. "Zero" effluent discharge is being followed at the unit. Softener backwash water is being neutralized in neutralization tank and used for dust suppression. For the treatment of domestic waste water septic tank followed by soak pit facility have been provided.

vi. **Prior permission for the drawl of 6 m³/day ground water shall be obtained from State Ground Water Board/Central Ground Water Authority (SGWB/CGWA).**

Status: No ground water is being used by the unit. PAs have made agreement with Damodar Valley Corporation (DVC) to fulfill the requirement of water.

vii. **Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to the Ministry's Regional Office at Bhubaneswar, WBPCB and CPCB. Waste oil shall be sold to authorized recyclers as per the Hazardous Waste (Management & Handling) Rules, 1989 and subsequent amendments.**

Status: Being complied. As per information provide, it is observed that Ferro Manganese (Fe-Mn) Slag is being used for the manufacturing of Silico Manganese (Si-Mn), and Silico Manganese slag is being used for land filling and road construction. Induction Furnace slag also being used for road construction. PAs have submitted the TCLP test report to this office. Used oil is sold to authorized recycler. PAs have applied for Hazardous Waste Authorization vide application no. 1475655 dated 11.01.20222. PAs have informed that waste oil is old to recyclers.

viii. **All the Ferro alloy slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leachability Potential (TCLP) test. Otherwise, hazardous substances shall be recovered from the slag and**

output waste and be disposed in secured landfill as per CPCB guidelines. Dust collected from bag filter shall be collected and recharged in the furnace.

Status: Being complied. Ferro Manganese (Fe-Mn) Slag being used for the manufacturing of Silico Manganese (Si-Mn), and Silico Manganese slag being used for land filling and road construction. PAs have provided a copy of the TCLP test report of ferro slag along with the six monthly compliance report.

ix. **Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture Silico Manganese (Si-Mn).**

Status: Being complied. PAs have informed that Ferro Manganese (Fe-Mn) Slag being used for the manufacturing of Silico Manganese (Si-Mn).

x. **As proposed, green belt shall be developed in at least 33% area in and around the plant premises to mitigate the effects of fugitive emissions all around the plant as per the CPCB guidelines is consultation with DFO.**

Status: Being complied. It was observed that the development of green belt is satisfactory. As per information provided, total area for Eloquent Steel Pvt. Ltd. comprising of M/s Hira Concast and Impex Steel Ltd., is 9.089 Ha, wherein the greenbelt has to be developed over 3 Ha. It has been informed that 700 (approx) plants of indigenous species have been planted on the basis of recommendation of DFO.



xi. **All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Ferro Alloy Units shall be strictly implemented.**

Status: Agreed with.

xii. **The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking mobile toilets, mobile STP. Safe drinking water, medical health can creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.**

Status: Not applicable at present. During monitoring it was observed that no construction work was being carried out.

B. GENERAL CONDITIONS

N. Shahida Parveen

i. **The project authorities must strictly adhere to the stipulations made by the West Bengal Pollution Control Board (WBPCB) and the State Government.**

Status: Agreed with. PAs have received CTO from West Bengal Pollution Control Board vide memo number 1534-WPBA/Red (Bwn)/cont-(591)/08 dated 28.06.2018 with validity till 30.04.2023. PAs have also received amendment to CTO vide memo no. 389-WPBA/Red(Bwn)/Cont(591)/08 dated 26.08.2020. Further, PAs have applied for Hazardous Waste Authorization vide application no. 1475655 dated 11.01.20222.

ii. **No further expansion or modification in the plant shall be carried out without prior approval of the Ministry.**

Status: Agreed with. PAs have received TOR vide letter no. J-11011/188/2011-IA. II (I) dated 11.11.2020

iii. **The gaseous emissions from various process units shall conform to the load/mass-based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The WBPCB may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provide so that process can be automatically stopped in case emission level exceeds the limit.**

Status: Continuous Emission Monitoring System has been installed in the major stacks. It was observed that air pollution control devices viz. dust extraction systems with bag filters have been installed. Third party monitoring by NABL accredited laboratory being conducted periodically to evaluate the emission levels. Emission levels are within the stipulated standard.

iv. **Ambient air quality monitoring stations shall be set up as per statutory requirement in consultation with the WBPCB. Ambient air quality including ambient noise levels shall not exceed the standards stipulated under EPA or by the State authorities. Monitoring of ambient air quality and shall be carried out regularly in consultation with WBPCB and data submitted to the CPCB and WBPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated time to time.**

Status: Being complied. It is observed that ambient air quality monitoring is conducted by Envirocheck at four locations: near administrative building, common entrance for Hita Concast and Impex Steel Ltd., near DVC meter room (back side of the plant), Dendua village (1 km distance from the plant). Ambient air quality as submitted by PAs is furnished below:

G. Shakida Parveen

Sl. No.	EC on Name of	Date of Study	Location	Average Result			
				$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
1.	HIRA	Sept, 2021	Near Administrative Buildings	53.86	86.20	12.38	36.15
2.			Near Main Gate (Common Entrance for Impex Steel Ltd & Hira Concaast Ltd)	49.53	82.60	11.76	29.50
3.			Near DVC Meter Room (Back Side of the Plant)	48.23	86.06	7.84	26.52
4.			Dendua Village (1.0 KM Distance from Plant)	46.47	79.83	6.80	26.52
5.		March, 2022	Near Administrative Buildings	52.93	84.10	16.64	36.15
6.			Common Entrance for Impex Steel Ltd & Hira Concaast Ltd	49.79	82.47	11.30	29.95
7.			Near DVC Meter Room (Back Side of the Plant)	48.29	80.06	7.46	28.54
8.			Dendua Village (1.0 KM Distance from Plant)	52.96	84.21	12.37	32.46

v. **The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environmental (Protection) Act, 1986 Rules, 1989 viz 75 dBA (day time) and 70 dBA (night time).**

Status: Being complied. It is observed that ambient noise levels have been monitored at three locations: near administrative building, near DVC meter room (back side of the plant) and Dendua village (1 km distance from plant). Work zone noise has been monitored at two locations: storage yard – R M handling section and near ferro alloy plant –ferro division. Monitoring data as submitted by PAs is furnished below:

Sl. No.	EC on Name of	Date of Study	Location	Average dB (A)	
				Day Time	Night Time
1.	HIRA	Sept, 2021	Near Administrative Building	63.80	56.54
2.			Near DVC Meter Room (Back side of the Plant)	68.11	63.39
3.			Dendua Village (1.0 KM Distance from Plant)	51.52	43.14
4.		March, 2022	Near Administrative Building	65.25	57.45
5.			Near Main Gate	68.16	56.93
6.			Near DVC Meter Room (Back side of the Plant)	68.30	58.47
7.			Dendua Village (1.0 KM Distance from Plant)	52.09	44.45

Sl. No.	EC on Name of	Date of Study	Location	Average Result dB (A)
1.	HIRA	March, 2022	Raw Material Storage Yard – R.M. Handling Section	70.77
2.			Near Ferro Alloys Plant – Ferro Division	76.50
3.			Induction Furnace Area – SMS Division	73.63

vi. **Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.**

Status: Being complied. As per information provided by PAs, it is observed that Occupational health surveillance for the employees being carried and records are being maintained.

vii. **All the environment management measures given in the EIA/EMP shall be implemented and complied with.**

Status: EC was granted on 11th December, 2008 and 2012 to M/s Hira Concast Ltd. The closed unit of M/s Hira Concast was purchased by Eloquent Steel Pvt. Ltd. (ESPL) and possession was taken on 01.09.2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. It was observed that environmental protection measures such as fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and fume extraction system with FD cooler followed by bag filters are provided with SEAFs to capture fugitive emissions during process. Water sprinkling is being done to control fugitive emissions on roads.

viii. **The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.**

Status: Being complied. PAs have developed rainwater pond and it was informed that water from this pond is being reused in order to keep the water requirement low.



ix. **Proper housekeeping and adequate occupational health programmes shall be taken up as per the Factory Act.**

Status: Being complied. During monitoring it was observed that housekeeping is satisfactory. As per information provided by PAs, it is observed that Occupational health surveillance for the employees being carried and records are being maintained.

x. **The company shall undertake eco-development measures including community welfare measures in the project area.**

D. Shahida Parvin

Status: Being complied. PAs have undertaken CSR activities which are furnished below:

Annual CSR Activities for the Year 2020-21	
Food Material Distribution	1,35,000
Education Support	1,00,000
Nearby School Repairing & Painting	1,60,000
Financial Support to Cultural Activities and Local Development	85,000
Drinking-Water facility & Maintenance in Nearby villages	55,000
Water Sprinkling on Village Roads	2,70,000
Cloth & Blanket Distribution	1,80,000
COVID-19 Awareness, Control & Support	3,25,000
Medical Camps for Local Villagers	2,35,000
Organization of Local Sports & Support	1,25,000
Plantation	1,35,000
Environmental Awareness Rally	50,000
Other Regular Activities & Misc.	50,000
	19,05,000

Annual CSR Activities for the Year 2021-22	
Food Material Distribution	1,10,000
Education Support	1,20,000
Financial Support to Cultural Activities and Local Development	1,00,000
Drinking-Water facility & Maintenance in Nearby villages	10,000
Water Sprinkling on Village Roads	3,10,000
Cloth & Blanket Distribution	2,15,000
COVID-19 Awareness, Control & Support	40,000
Medical Camps for Local Villagers	2,70,000
Organization of Local Sports & Support	1,45,000
Plantation	1,60,000
Environmental Awareness Rally	50,000
Pond Excavation	1,65,000
Other Regular Activities & Misc.	50,000
	17,45,000

xi. **A separate environmental management cell to carry out various management and monitoring actions shall be set in under the control of Senior Executive.**

Status: Being complied. PAs have stated that eenvironmental monitoring and management are done on day to day basis and discrepancies if any being taken care under the control of senior executive.

xii. **Adequate funds shall be earmarked towards the capital cost and recurring cost/annum for environment pollution control measures shall be used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.**

Status: PAs have informed that as M/s Hira Concast Ltd. was purchased by ESPL through auction they do not have the details of capital cost incurred. It was further informed that the recurring cost for environmental protection measure is being done as per requirement. The expenditure incurred for implementation of environmental protection measures for the year 2021-22 as submitted by PAs is furnished below:

Recurring Expenses on Pollution Control System During FY:2021-22		
Facilities/Area	Amount (Rs)	Remarks
Ferro Alloys Division (3x7.5 MVA +1.5 MVA) SEAF	38,50,000	Expenses incurred towards maintenance of Pollution Control Devices i.e. replacement/repair of bag filters, bag filter cage, bearings, ducts, air purging system, ID fan, dust extraction system, conveyor galleries, motor, pumps etc.
Steel Melting Shop (SMS) 4x7 Ton/Heat each Induction Furnace		
Others (Water Sprinkling through mobile water tanker)	3,50,000	Water sprinkling on roads, dust prone areas and village road etc.
Total:	42,00,000	Rupees Forty-Two Lakhs

xiii. **The Regional Office of this Ministry at Bhubaneswar CPCB/WBPCB shall monitor the stipulated conditions. A six-monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.**

Status: Being complied. It is observed that PAs (M/s Eloquent Steel Pvt. Ltd.) has been regular in submitting the six monthly compliance report.

xiv. **The Project Authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.**

Status: EC was granted on 3rd September, 2012 and M/S Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in September, 2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. PAs have informed that they do not have information with respect to the date of financial closure, final approval and date of commencing of land development work. From available records in this office, it is observed that the last monitoring report for EC dated 2008 was sent by M/s Hira Concast was 04.01.2013 for the period of April 2012 to September 2012 , wherein PAs have not provided any information with respect to the date of financial closure, final approval and date of commencing of land development work. Further, for the EC dated 2012, from available records, no information was available with respect to the date of financial closure, final approval and date of commencing of land development work.

xv. **The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the W. B. Pollution Control Board and may also be seen at the Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bhubaneswar.**

Status: EC was granted on 3rd September, 2012 and M/S Hira Concast Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in September, 2017 through auction from Official Liquidator of Hon'ble High Court, Calcutta. From available record of this office, it is observed that for the EC dated 2008, EC was published in two newspapers: The Telegraph on 19.01.2009 and Bengali newspaper on 21.01.2009.

xvi. **The Ministry or any other competent authority may stipulate any further condition(s) on receiving reports from the project authorities. The above conditions shall be monitored by the Regional Office of this Ministry located at Bhubaneswar.**

Q. Shahida Parveen

Status: Agreed with.

xvii. **The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.**

Status: Agreed with.

xviii. **Any other conditions or alteration in the above conditions shall have to be implemented by the project authorities in a time bound manner.**

Status: Agreed with.

xix. **Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.**

Status: Agreed with.

xx. **The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 the Air (Prevention and Control of Pollution) Act, 1981 the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.**

Status: Agreed with.

J-11011/183/2008-IA-II dated 28.07.2008.

A. SPECIFIC CONDITIONS

i. **Project authorities shall provide monitoring facilities for all the stacks. Air pollution control equipment such as bag filters shall be installed to keep emissions levels below 100mg/Nm^3 and reports submitted to ministry's Regional Office at Bhubaneswar, WBPCB and CPCB. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.**

Status: Continuous Emission Monitoring System has been installed in the major stacks. PAs have informed vide letter dated 05.06.2022, that during commissioning stage, a component of the OCEMS device was found faulty and it was sent to vendor M/s Forbes Marshall Pvt. Limited . Due to this, OCEMS stack display for the Stack 1 (7.5 MVA) and Stack 2 (7.5 MVA) showed error on the display board.. It was observed that air pollution control devices viz. dust extraction systems with bag filters have been installed. Third party monitoring by NABL accredited laboratory being conducted periodically to evaluate the emission levels. The monitoring data submitted by PAs is furnished below:

Sl. No.	EC on the name of	Stack attached to	Parameter	Result
1.	**IMPEX**	SEAF (No. 1) Through APC system	Concentration of Particulate Matter (mg/Nm^3)	21.85
2.		SEAF (No. 2) Through APC system	Concentration of Particulate Matter (mg/Nm^3)	28.21

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ii. **Secondary fugitive emissions from furnace shall be controlled within the latest permissible limits issued by the Ministry. Guidelines / Code of Practice issued by the CPCB shall be followed.**

Status: **Being complied.** Fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and Fume extraction system with FDC & Bag Filters are provided with SEAFs to capture Fugitive emissions during process operation. It was observed that water sprinkling was being done to control fugitive emissions on roads. Fugitive emission is being monitored at two locations: in the raw material storage yard and inside the ferro alloy plant. Fugitive emission data as submitted by PAs is submitted below:

Sl. No.	EC on Name of	Date of Study	Location	Average Result of SPM (µg/m³)
1.	IMPEX	Sept, 2021	Inside the Ferro Division	486.12
2.			Near Raw Materials Stock Yard	431.28
3.		March, 2022	Inside the Ferro Division	490.29
4.			Near Raw Materials Stock Yard	390.62

iii. **All the treated waste water shall be recycled and reused and 'Zero' effluent discharge shall be ensured.**

Status: Being complied. As per information provided and observations made, mainly the waste water generation is from Softener backwash. This kind of waste water is taken in a pucca tank made as neutralization tank. It is used at metal recovery plant, slag quenching and dust suppression. Cooling water is being recycled to the process. No effluent is being discharged outside the premise.

iv. **Permission for drawl of ground water shall be obtained from the Central Ground Water Authority or State Ground Water Board and copy submitted to the Ministry's Regional Office at Bhubaneswar.**

Status: As per information provided, it is observed that the company has made agreement with Damodar Valley Corporation (DVC) to fulfill its water requirements. No ground water is being used by PAs.

v. **The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.**

Status: Being complied. PAs have developed rainwater pond and it was informed that water from this pond is being reused in order to keep the water requirement low.

vi. **The company shall regularly conduct Toxicity Characteristics Leaching Procedure (TCLP) test for the slag before its disposal and reports shall be submitted to Ministry's Regional Office at Bhubaneswar, CPCB and WBPCB along with the details of mode of disposal.**

Status: Being complied. PAs have submitted a copy of the TCLP of the ferro slag along with the six monthly compliance report.

vii. **The hazardous slag generated from the furnace shall be disposed of in accordance with the Hazardous Waste (Management and Handling) Rules, 2003.**

Q. Shahida Parvin

Status: As per information provided, it is observed that Ferro-manganese and Silico-manganese is being produced at present from SAF. PAs informed that Ferro Manganese (Fe-Mn) Slag is being used for the manufacturing of Silico Manganese (Si-Mn), and Silico Manganese slag is being used for land filling and road construction. Induction Furnace slag is being used for road construction. PAs have applied for Hazardous Waste Authorization vide application no. 1475655 dated 11.01.20222.

viii. **The company shall submit a complete solid waste management plan for disposal of various solid and hazardous waste generated from the plant to the Ministry's Regional Office at Bhubaneswar within 3 months.**

Status: EC was granted on 28thJuly, 2008 to M/s Impex Ferro Steel Ltd. The closed unit of M/s Impex Ferro Steel Ltd was purchased by M/s Eloquent Steel Pvt. Ltd. (ESPL) and was taken over through auction from Stressed Assets Management Branch State Bank of India, Kolkata and possession was taken over on 22nd December 2017. PAs have stated that the solid waste management Plan might have been submitted by the then proponent. From available records in this office, it is observed that M/s Impex Ferro Steel Ltd. had not submitted solid waste management plan.

ix. **Green belt shall be developed in 7805.78 m² with adequate width and density to mitigate the effects of fugitive emissions in and around the plant as per the CPCB guideline in consultation with DFO.**

Status: Being complied. It was observed that the development of green belt is satisfactory. As per information provided, total area for Eloquent Steel Pvt. Ltd. comprising of M/s Hira Concast and Impex Steel Ltd., is 9.089 Ha, wherein the greenbelt has to be developed over 3 Ha. It has been informed that 700 (approx) plants of indigenous species have been planted on the basis of recommendation of DFO.

x. **Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories act.**

Status: Being complied. As per information provided by PAs, it is observed that Occupational health surveillance for the employees being carried and records are being maintained.

B. GENERAL CONDITIONS

i. **The project authorities must strictly adhere to the stipulation made by the West Bengal Pollution Control Board (WBPCB) and the State Government.**

Status: Agreed with. PAs have received consent to operate vide memo number 1530-WPBA/Red (Bwn)/Cont-(581)/07 dated 28.06.18. PAs have also received amendment to CTO vide memo no. 389-WPBA/Red(Bwn)/Cont(591)/08 dated 26.08.2020. Further, PAs have applied for Hazardous Waste Authorization vide application no. 1475655 dated 11.01.20222.

ii. **No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.**

Status: Agreed with. PAs have received TOR vide letter no. J-11011/188/2011-IA. II (I) dated 11.11.2020

iii. **At least four ambient air quality monitoring station shall be established in the downward direction as well as where maximum ground level concentration of SPM, SO_2 and NO_x are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.**

Status: Partially complied. It is observed that ambient air quality monitoring is conducted by Envirocheck at three locations: near administrative building, Nakarjori village (1 km distance from plant), near M C C building (back side of the plant) As per the monitoring data it is observed that the parameters are within the stipulated standard.

Sl. No.	EC on Name of	Date of Study	Location	Average Result			
				$PM_{2.5}$ (µg/m³)	PM_{10} (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)
1	IMPEX	Sept, 2021	Near Administrative Building	52.65	84.13	11.76	32.48
2			Nakrajoria Village (1 km Distance from Plant)	48.38	80.50	7.63	28.51
3			Near M.C.C. Building (Back Side of the Plant)	48.25	82.62	6.80	26.44
4							
5		March, 2022	Near Administrative Building	57.15	91.50	16.42	36.15
6			Nakrajoria Village (1 km Distance from Plant)	51.02	80.08	8.50	30.03
7			Near M.C.C. Building (Back Side of the Plant)	51.84	83.50	8.10	32.46
8							

PAs need to conduct AAQ monitoring in another one location.

iv. **The overall noise levels in and around the plant are shall be kept well within the standard [(85 dB (A)] by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (nighttime).**

Status: Being complied. Ambient noise monitoring has been conducted at four locations: near administrative building, near main gate (common with Impex Steel Ltd & Hira Concast Ltd), Nakrajoria village (1 km distance from plant), near MNC building (back side of the plant). Work zone noise monitoring has been conducted at near ferro alloys plant (ferro division), Induction furnace area – SMS division, raw material storage yard – R.M. handling section.

Sl. No.	EC on Name of	Date of Study	Location	Average dB (A)	
				Day Time	Night Time
1	IMPEX	Sept, 2021	Near Administrative Building	68.52	58.29
2			Near Main Gate (Common with Impex Steel Ltd & Hira Concaast Ltd)	67.98	56.51
3			Nakrajoria Village (1 km Distance from Plant)	53.38	43.75
4		March, 2022	Near MNC Building (Back side of the Plant)	70.59	66.40
5			Near Administrative Building	64.35	53.23
6			Near Main Gate	64.22	56.33
7			Nakrajoria Village (1 km Distance from Plant)	53.18	44.63
8			Near MNC Building (Back side of the Plant)	69.72	65.36

J-11011/533/2008-IA II (I) dated 11.012.2008, J-11011/49/2010-IA II (I) dated 09.2012
J-11011/183/2008-IA (II) dated 28.07.2008, J-11011/188/2011-IA.II (I) dated 20.09.2012, J-11011//49/2010- IA II (I) dated 15.10.2020, J-11011/188/2011-IA II (I) dated 15.10.2020

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Sl. No.	EC on Name of	Date of Study	Location	Average Result dB(A)
1	IMPEX	March, 2022	Near Ferro Alloys Plant (Ferro Division)	74.28
2			Induction Furnace Area – SMS Division	72.88
3			Raw Material Storage Yard – R.M. Handling Section	69.71

v. **The project proponent shall also comply with all the environmental protection measures and safeguards recommend in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surroundings villages like community development programmers, educational programmers, drinking water supply and health care etc.**

Status: EC was granted on 28th July, 2008 to M/s Impex Steel Ltd. The closed unit of M/s Impex Steel Ltd., was taken over by M/s Eloquent Steel Pvt. Ltd. (ESPL) . They took the possession on 22nd December, 2017 through auction from Stressed Assets Management Branch State Bank of India, Kolkata. M/s Eloquent Steel Private Limited has informed that they do not have the EIA or EMP report. It was observed that environmental protection measures viz. dust/fume extraction system with spark arrester and bag filters have been provided with the Induction Furnaces and fume extraction system with FD cooler followed by bag filters are provided with SAFs to capture Fugitive emissions during process. During monitoring, it was observed that water sprinkling was being done to control fugitive emissions on roads.

vi. **The fund earmarked towards the capital cost and recurring cost/ annum for environmental pollution control measures shall be judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.**

Status: It was informed that the recurring cost for environmental protection measure is being done as per requirement. The expenditure incurred for implementation of environmental protection measures for the year 2021-22 as submitted by PAs is furnished below:

Recurring Expenses on Pollution Control System During FY:2021-22		
Facilities/Area	Amount (Rs)	Remarks
Ferro Alloys Division (3x7.5 MVA +1.5 MVA) SEAF	38,50,000	Expenses incurred towards maintenance of Pollution Control Devices i.e. replacement/repair of bag filters, bag filter cage, bearings, ducts, air purging system, ID fan, dust extraction system, conveyor galleries, motor, pumps etc.
Steel Melting Shop (SMS) 4x7 Ton/Heat each Induction Furnace		
Others (Water Sprinkling through mobile water tanker)	3,50,000	Water sprinkling on roads, dust prone areas and village road etc.
Total:	42,00,000	Rupees Forty-Two Lakhs

vii. **The Regional Office of this Ministry/CPCB/SPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.**

Status: Agreed with. From available records, it is observed that M/s Eloquent Steel Private Limited is regular in submitting six monthly compliance report.

viii. **The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at website of the Ministry of Environment and Forests at http://envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.**

Status: EC was granted on 28thJuly, 2008 and M/s Impex Ferro Steel Ltd. a closed unit was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in December, 2017) and was taken over through auction from Stressed Assets Management Branch State Bank of India, Kolkata. From available records, it is observed that M/s Imex Ferro Steel Ltd have not provided a copy of the advertisements in local newspaper to the Regional Office.

ix. **Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.**

Status: EC was granted on 28thJuly, 2008 to M/s Impex Ferro Steel Ltd. The closed unit of M/s Impex Ferro Steel Ltd was purchased by Eloquent Steel Pvt. Ltd. (ESPL) in December, 2017) and was taken over through auction from Stressed Assets Management Branch State Bank of India, Kolkata. From available records of this office, no information was available with respect to the date of financial closure, final approval and date of commencing of land development work.

10. **The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.**

Status: Agreed with.

11. **The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.**

Status: Agreed with.

12. **The above conditions shall be enforced inter alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.**

Status: Agreed with.

12. पर्यवेक्षण / Observations:

J-11011/49/2010-IA-II (I) dated 03.09.2012

1. It is observed that parameters such as O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni has been monitored at only one location: near administrative building. PAs need to monitor O_3, Pb, CO, NH_3, C_6H_6, BAP, As, Ni as mentioned in G.S.R No. 826(E) dated 16th November, 2009 for the other three locations: common entrance for Hira Concast and Impex Steel Ltd., near DVC meter room (back side of the plant), Dendua village (1 km distance from the plant). (Specific condition iii)

2. PAs need to monitor groundwater and submit the report to the Regional Office. Further, PAs also need to conduct leachate study for the effluent generated and report to be submitted to the Regional Office. (Specific condition v)

J-11011/183/2008-IA-II dated 28.07.2008.

1. PAs need to conduct AAQ monitoring in another one location. (General condition iii)

13. अनुशंसा / Recommendations:

This project can be put up in the following tick-marked category of compliance status.

- Compliance status could not be judged as the project was shut down / not in operational during the site visit.
- No non-compliances detected. No further action is required.
- ✓ ***Minor non-compliances detected (not of immediate danger to health & safety of the people). Letter issued to project authorities for taking corrective measures.***
- Serious non-compliances detected. Recommended to issue a Show-Cause Notice to Project Authorities.

Sh. Shahida Parvin

(डॉ. शाहिदा परवीन काज़ी/ Dr. Shahida Parvin Quazi)
वैज्ञानिक-ई / Scientist-E

डा. शाहिदा परवीन काजी / DR. SHAHIDA PARVIN QUAZI
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MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
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IB-198, SECTOR-III, SALT LAKE CITY, KOLKATA - 700106

SHAKAMBHARI GROUP

ELOQUENT STEEL PRIVATE LIMITED

CIN: U51909WB2012PTC185734 | GSTIN: 19AADCE1766F1ZN | PAN: AADCE1766F | State: West Bengal | State Code: 19

Undertaking

I, Mr. Deepak Kumar Agarwal, Director of M/s Eloquent Steel Pvt. Ltd. (ESPL) located at village Nakrajoria, P.O.- Salanpur, Dist: Paschim Burdwan, West Bengal hereby undertake that there are no court cases or litigations pending/Ongoing on the company and proposed Land of the plant.

Dated: 02/07/2022

Thank You,

For M/s Eloquent Steel Pvt. Ltd. (ESPL)

Deepak Kumar Agarwal
Director