Draft Form I, TOR Letter & its Compliance & Environmental Impact Assessment Report

For

Expansion of cement plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakhs TPA to 6.27 Lakhs TPA

At

Village Khrew, Tehsil Pampore, District Pulwama, Jammu & Kashmir

TOR: File No. J-11011/204/2016-IA.II(I) dated 15.01.2021
Cost of Project: Rs. 250 Crores (Existing-85.52 crores, Proposed-Rs 165 crores)
Category As per EIA Notification, 2006 : B1, 3 (b)
Plot Area: 12.38 ha.
Capacity of Plant: Total after expansion 3.135 Lakh TPA Clinker and 6.27 Lakh TPA Cement
Baseline Season: Oct 2022-Dec 2022
Laboratory Assigned: M/s Perfact Researchers Pvt. Ltd.
Date of Preparation: 15.05.2023

Project Proponent

M/s Trumboo Industries Private Ltd. (TIPL)

Registered Address-C/63, Rajbagh Extension, Srinagar, Jammu & Kashmir, India- 190008

Contact Person- **Mr. Mushtaq Ahmed Trumboo**

(Authorised Signatory & Director)

Contact No.- 0194-2486811

Email-ed@tcimax.in

Environmental Consultant

M/s Perfact Enviro Solutions Pvt. Ltd.

(NABET Registered vide list of accredited consultants organisations/ certificate no. NABET/EIA/1922/SA0143 & validity extension letter no. QCI/NABET/ENV/ACO/23/2766 valid till 28.08.2023)

NN Mall, Sector-3, Rohini, New-Delhi-85;
Email ID: info@perfactgroup.in
Phone- +91 - 11- 49281360

UID: PE2017072-G-04

Ref No :758/TIPL/23-24 Date: 06-06-23

Member Secretary
Jammu and Kashmir Pollution Control Committee,
Parivesh Bhawan, Forest Complex, Gladni, Narwal,
Transport Nagar, Jammu,
Jammu and Kashmir- 180004

Subject: Request for Conducting Public Hearing for Project Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and Clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir by Trumboo Industries Private Limited.

Reference: Term of References granted by the MoEF&CC vide File No. IA-J-11011/204/2017-IA-II(I) dated 15.01.2021.

Dear Sir,

With reference to the afore mentioned subject we would like to inform you that the proposed project is an Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA located at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir.

The project falls under category 'B1' of Schedule 3(b) as per EIA notification 2006 and its subsequent amendments as the capacity of the proposed cement plant is less than 1 MTPA. The project attracts general conditions as the Dachigam National Park is located at 3.12 km N from the plant site, hence will be appraised at Central Level. Terms of Reference (TOR) was granted vide TOR letter number, MoEF&CC.IA-J-11011/204/2017-IA-II(I) dated 15.01.2021. As per the TOR granted, we have to get the public hearing conducted for our project for getting environmental clearance as per EIA Notification, 2006. We are attaching herewith following documents:

1. Draft EIA Report with Form-1, TOR compliance & Annexures (10 copies).
2. Executive Summary In Urdu (10 copies).
3. Executive Summary of EIA Report in English (10 copies).
4. A soft copy of above (2 CD).
5. Demand Draft of Rs. 350000 favouring Member secretary The J&K State Pollution Control Committee (DD No. 220631 dated 5.06.2023 payable at Srinagar, J&K).

We shall be thankful if the Public Hearing process is initiated at the earliest.

Thanking you,
Yours faithfully

Director
M/s Trumboo Industries Private Limited

TRUMBOO INDUSTRIES PVT. LIMITED SRINAGAR

Table of Content

S.No.	Description	Page no.
1.	Board Resolution	i
2.	Consultant Authorisation	ii
3.	Undertaking by Head of EIA Consultant	iii
4.	Declaration by EC, FAEs, FAA, TM	iv to xi
5	Undertaking by EIA Coordinator	xii
6.	Plagiarism/ QMS Certificate	xiii
7.	Commitment letter from Project Proponent	xiv
8.	Abbreviations and Nomenclature	xv to xvii
9.	Section A (Form-1)	A-1 to A- 26
10.	Section B (TOR Letter & TOR Compliance)	B-1 to B-28
11.	Section C (Environmental Impact Assessment Report)	C-1 to C-279
12.	Section D (Annexures)	D-1 to D-126
	1. Consultant Accreditation	D-2 to D- 5
	2. Land Paper Along with English Translator of Land Papers	D- 6 to D-15
	3. NOC to Abstract Ground Water	D- 16 to D- 17
	4. NBWL Clearance Copy	D- 18 to D- 20
	5. Distance Authentication Letter & Map for Dachigam National Park	D- 21 to D- 22
	6. Latest Consent to Operate	D- 23 to D- 26
	7. Certified Compliance Report of CTO	D- 27 to D- 34

	8. Hazardous Waste Agreement	D- 35 to D- 38
	9. Environment Policy	D- 39 to D- 40
	10. Process Flow Sheet for Clinker Section	D- 41 to D- 45
	11. Process Flow Sheet for Cement Section	D- 46 to D- 47
	12. Conservation Plan for Schedule I Species	D- 48 to D- 75
	13. Raw Data of AAQ	D- 76 to D- 84
	14. Undertaking for No Violation of EIA Notification and Subsequent Amendments	D- 85 to D- 86
	15. Undertaking for No Pending Court Case/ Litigation Related to Environment	D- 87 to D- 88
	16. Annual Health Report of Workers	D- 89 to D- 97
	17. Layout Plan	D- 98 to D- 100
	18. Topographical Map	D- 101 to D- 102
	19. AQ Report	D- 103 to D- 126

Ref No 584/TIPL/23-24 Dated 06.06.2023

AUTHORISATION LETTER

In a Board Meeting of the Company, which was held on 25th April 2023 at Company's registered office, following resolution was passed:

*This is to resolve that Mr. Mushtaq Ahmed Trumboo, Director(TIPL) is authorized to sign all the documents related to Environment Clearances/other clearances including engagement of consultant for project Expansion of cement plant from capacity 3.3 Lakhs TPA to 6.6 Lakhs TPA of Trumboo Industries Pvt. Ltd. located at Village- Khrew, Tehsil- Pampore, District Pulwama, J&K.

Certified True copy

Date : 06.06.2023
Place : Srinagar

Chairman

TRUMBOO INDUSTRIES Pvt. LIMITED. SRINAGAR

Trumboo Industries Pvt. Ltd.

Ref No :-458/TIPL/23-24

Dated 06.06.2023

To Whom It May Concern

We hereby authorize M/s Perfact Enviro Solutions Pvt. Ltd., 5th Floor, NN Mall, Mangalam Palace, Sector-3, Rohini, New Delhi-110085 as one of the approved consultants of the Ministry of Environment & Forest, Govt. of India listed on MoEF&CC website for getting Environmental Clearance for the project "Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA" at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir by M/s M/s Trumboo Industries Private Limited.

Director

TRUMBOO INDUSTRIES Pvt. LIMITED. SRINAGAR

M/s Trumboo Industries Private Limited

Undertaking by Head of EIA Consultant

I, Rachna Bhargava, CEO of M/s Perfact Enviro Solutions Pvt. Ltd., 5th floor, NN Mall, Sector 3, Rohini, New Delhi, 110085 authorise Mr. Nipun Bhargava (EIA Coordinator- 3(b)) for the preparation and conducting the Environment Impact Assessment for project **"Expansion of cement plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakhs TPA to 6.27 Lakhs TPA " by M/s Trumboo Industries Private Limited.**

Name of EIA Coordinator	Mr. Nipun Bhargava
	3 (b)- Cement Plant, Category A
Signature & Date	



Rachna Bhargava, CEO

M/s Perfact Enviro Solutions Pvt. Ltd.

5th floor, NN Mall, Mangalam Palace,
Sector – 3, Rohini, New Delhi – 110085

Declaration by EIA Coordinator(s) & Experts Contributing to the EIA "Expansion of cement plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakhs TPA to 6.27 Lakhs TPA" by M/s Trumboo Industries Private Ltd (TIPL).

I hereby declare that I was involved in the following EIA Report submitted to MoEFCC, as EIA Coordinator. I further certify that the data given in this report is true and correct to the best of my knowledge.

Name of EIA Coordinator	Mr. Nipun Bhargava
	3 (b)- Cement Plant, Category A
Signature & Date	
Task & Period of Involvement	I had visited the site along with the FAEs to understand the project site and the study area. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: October 2022 -till date
Office Address	**Perfact Enviro Solutions Pvt. Ltd.** 5th floor, NN Mall, Mangalam Palace, Sector – 3, Rohini, New Delhi – 110085

List of Team Members Involved (TM to EIA Coordination)

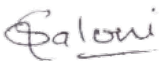
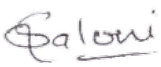
S. No	Sector	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
1	3 (b)- Cement Plant	Ms. Neha Aggarwal	I had understood the project. Coordinated with the experts and prepared the Environment Impact Assessment Report along with the EIA coordinator. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: October 2022 to till date	

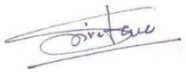
Name of Assistant to EIA Coordinator	Mrs. Urvi Pritam
Signature & Date	
Task & Period Of Involvement	I had visited the site to understand the project site and the study area. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: October 2022 to till date
Office Address	**Perfact Enviro Solutions Pvt. Ltd.** 5th floor, NN Mall, Mangalam Palace, Sector – 3, Rohini, New Delhi – 110085

List of FAEs Involved (Cat B)

S. No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
1.	LU	Mr. Rajneesh Maurya	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: October 2022 to till date	
2.	AP	Ms. Urvi Pritam	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring ; based on the results and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: October 2022 to till date	
3.	WP	Mr. Nipun Bhargava	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources have prepared Sampling plan & collected samples ; based on the results from the lab and the site specific details along with	

			Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: October 2022 to till date	
4.	RH	Mr. Nipun Bhargava	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I prepared the Impact Mitigation measures. Period of Involvement: October 2022 to till date	
5.	SE	Mr. Manoj Pant	I had visited the site to collect the baseline status of socio-economic conditions up to 3 km radius. Studied Villages in study area using Topographical map and extracted Secondary data from Census of India. Then was involved in preparing a socio economic study report using the primary survey and secondary data which includes impact and mitigation measures. Period of Involvement: October 2022 to till date	
6.	NV	Ms. Urvi Pritam	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution	

			sources have prepared the Impact Mitigation measures. Period of Involvement: October 2022 to till date	
7.	SHW	Mr. Praveen Bhargava	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources have prepared the Impact report and suggested Mitigation measures and development of EMP. Period of Involvement: October 2022 to till date	
8.	HG	Mrs. Saloni Sharma	The physical observation of the study area including Ground water sources and its water quality was made. After studying the Water pollution sources, the Impact report was prepared and Mitigation measures were suggested Period of Involvement: October 2022 to till date	
9.	Geo	Ms. Saloni Sharma	I had visited the site to assess the physical observation of the study area. After studying the site, an Impact & mitigation report is prepared. Period of Involvement: October 2022 to till date	
10.	SC	Mr. Chandrashekhar Jha	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and	

			need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: October 2022 to till date	
11	EB	Mrs. Seema Srivastava	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, prepared the Impact report and suggested Mitigation measures Period of Involvement: October 2022 to till date	
12	AQ	Mr. Nipun Bhargava	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modelling results and development of EMP. Period of Involvement: October 2022 to till date	

List of Team Members Involved (TM to FAE)

S. No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
1	AQ	Mrs. Shweta Rajput	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and	

			micrometeorology interpretation of modelling results and development of EMP. Period of Involvement: October 2022 to till date	
2	LU	Mrs Cipia Mehta	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: October 2022 to till date	
3	WP	Mrs. Disha Patel	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources based on the results from the lab and the site specific details along with Project Specific Details obtained , I have given my inputs related the Impact Mitigation measures to FAE. Period of Involvement: October 2022 to till date	
4	EB	Mrs. Deepika Arora, Mrs. Disha Patel	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, had given my inputs regarding the Impact report and suggested Mitigation measures to FAE Period of Involvement: October 2022 to till date	 

5	SHW	Mrs. Charmi Shah	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources had given my inputs regarding the Impact report and suggested Mitigation measures to FAE Period of Involvement: October 2022 to till date	

Undertaking By EIA Coordinator

I, Mr. Nipun Bhargava, EIA Coordinator from Environmental consultant M/s Perfact Enviro Solutions Pvt. Ltd., 5th floor, NN Mall, Sector 3, Rohini, New Delhi, 110085 for project **"Expansion of cement plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakhs TPA to 6.27 Lakhs TPA " by M/s Trumboo Industries Private Limited** hereby undertake that the report is prepared in accordance with a robust quality management system adopted by EIA consulting organisation for the EIA process and the prescribed TOR have been complied with and that the data submitted is factually correct.

Name of EIA Coordinator	Mr. Nipun Bhargava
	3 (b)- Cement Plant, Category A
Signature & Date	
Office Address	Perfact Enviro Solutions Pvt. Ltd. 5th Floor, NN Mall, Mangalam Palace Sector-3, Rohini, New Delhi-110085

Plagiarism/ QMS Certificate

Title of EIA Report:	**Expansion of cement plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakhs TPA to 6.27 Lakhs TPA by M/s Trumboo Industries Private Limited**
Name of Accredited Organization:	M/s Perfact Enviro Solutions Pvt Ltd
Unique Identification Number:	PE2017072-G-04
Name of EIA Coordinator (EC):	Mr. Nipun Bhargava
Name of the Software:	Duplichecker
Date of Check:	15.05.2023
Time of Check:	9:00 pm

I hereby certify that this EIA Report has been evaluated using online/In-house software Duplichecker viz The report produced has been analysed by the system and based on it, I certify that the EIA report produced in accordance with good scientific practice.

Date and Sign of EIA Coordinator:



Signature and Date:

Name: Mr. Nipun Bhargava
Designation: Chief Operating Officer



Date and Sign of Head of Accredited Organisation: Rachna Bhargava
Name of the EIA consultant organisation: M/s Perfact Enviro Solutions Pvt Ltd

NABET certificate no. NABET/EIA/1922/SA0143 & validity extension letter no. QCI/NABET/ENV/ACO/23/2766 valid till 28.08.2023

Ref No : 567/TIPL/23-24 Dated 06.06.2023

COMMITMENT LETTER FROM PROJECT PROPONENT

TO WHOMSOEVER IT MAY CONCERN

I, Mushtaq Ahmed Trumboo S/o Shri Abdul Ahad Trumboo , authorised signatory & Director of M/s Trumboo Industries Private Limited, for the project "Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA" at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir hereby commit the implementation of Environmental Management Program including Environmental Monitoring Program and recommendations of the additional studies, if any, in the specified time-frame and allocation of the required funds included.

I hereby also give undertaking that I owned the contents (Information & Data) of the Report prepared for the project ""Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA"

Date:06.06.2023

Director

TRUMBOO INDUSTRIES Pvt. Limited SRINAGAR

M/s Trumboo Industries Private Limited

Abbreviations And Nomenclature

AAQ	Ambient air Quality
ANQ	Ambient Noise Quality
APCM	Air Pollution Control Measures
APCS	Air Pollution Control System
APHA	American Public Health Association
ASP	Activated Sludge Process
BDL	Below detectable limit
BGL	Below ground level
BOD	Biological Oxygen Demand
CER	Corporate Environmental Responsibility
CGWB	Central Ground Water Board
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CTE	Consent to Establish
CTO	Consent to Operate
DG	Diesel Generator
EAC	Expert Appraisal Committee
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMC	Environment Management Cell
EMP	Environmental Management Plan
EMS	Environmental Management System
ENVIS	Environmental Information System
EPA	Environmental Protection Agency
ERP	Emergency Response Plan

ESZ	Environment Sensitive Zone
GLC	Ground Level Concentrations
GWQ	Ground Water Quality
HAG	Hot Air Generator
HSD	High Speed Diesel
IMD	India Meteorological Department
IUCN	International Union for Conservation of Nature
J&K	Jammu and Kashmir
LOC	Level of Concern
MBBR	Moving bed biofilm reactor
MoEF&CC	Ministry of Environment, Forests and Climate Change
MSL	Mean sea level
SW	Solid Waste
NAAQS	National Ambient Air Quality Standards
NABL	National Accreditation Board for Testing and Calibration
NBWL	National Board for Wildlife
OPC	Ordinary Portland Cement
PESPL	Perfact Enviro Solutions Pvt Ltd
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RA	Risk Assessment
RO	Reverse Osmosis
EAC	Environment Appraisal committee
SPCB	State Pollution Control Board

SQ	Soil Quality
TDS	Total Dissolved solids
ToR	Terms of Reference
TPA	Tons per Annum
TSDF	Treatment, Storage and Disposal Facility
TWA	Total weighted Average
VRM	Vertical Roller Mill

Section A- Form I

FORM-1

(I) Basic Information

S.No.	Item	Details
1.	Name of the Project/s	Expansion of Cement Plant from 1000 TPD (3.3 Lakhs TPA) to 2000 TPD (6.6 Lakhs TPA) capacity of M/s Trumboo Industries Pvt. Ltd. (TIPL).
2.	S. No. in the schedule	3(b)
3.	Proposed Capacity/area/ Length/tonnage to be handled/ command area/ lease area/ number of wells to be drilled.	Total Proposed Capacity (Cement)-2000 TPD (6.6 lakh TPA) Area of Plant- 12.38 ha
4.	New/Expansion/Modernization	Expansion
5.	Existing Capacity/Area etc.	Existing Capacity 1000 TPD (3.3 Lakh TPA)
6.	Category of project i.e. 'A' or 'B'	'B'
7.	Does it attract general conditions? If yes, Please Specify.	Yes, Dachigam National Park located 3.12 Km N from the plant area.
8.	Does it attract the specific condition? If yes, please specify.	No
9.	Location	Lat- 26°7'41.791"N to 26°7'45.276"N Long- 92° 0'8.750"E to 92° 0'8.857"E Survey of India Toposheet No. 43 N/4 [Restricted Toposheet]
	Plot/survey/Khasra No.	Khasra No. 107, 109, 134, 142, 141, 112,140, 143, 145, 110, 144, 108, 151, 150, 106,105, 135, 138, 139, 146, 148, 113, 3173, 3171, 298, 3299, 3300, 3301,

		3302, 3303, 3304, 3305, 2881, 3295, 2879, 3170, 3172, 3173/1,3177,3234, 3250
	Village	Khrew
	Tehsil	Pampore
	District	Pulwama
	State	J&K
10.	Nearest Railway station/ airport along with distance in kms.	Pampur Railway Station- 12.60 km SW
11.	Nearest Town, city, district Headquarters along with distance in kms.	Bathan- 0.47 km, N
12.	Village panchayats, Zillaparishad, Municipal corporation, Local body (complete postal addresses with telephone nos. to be given)	Village Panchayat- Khrew
13.	Name of the applicant	Mr. Mushtaq Ahmed Trumboo
14.	Registered Address	M/s Trumboo Industries Pvt. Ltd C/63, Rajbagh Extension, Srinagar, Jammu & Kashmir, India- 190008
15.	Address for correspondence	
a	Name	Mr. Mushtaq Ahmed Trumboo
b	Designation(Owner/Partner/ CEO)	Authorised Signatory & Director

c	Address	Trumboo Industries Pvt Ltd C/63, Rajbagh Extension, Srinagar, Jammu & Kashmir, India- 190008
d	Pin code	190,008
e	E-mail	E.mail : ed@tcimax.in
f	Telephone No.	0194-2486811
g	Fax. No.	-
16.	Details of alternative Sites examined, if any. Location of these sites should be shown on a Topo sheet.	Not applicable.
17.	Interlinked Projects	No
18.	Whether separate application of interlinked project has been submitted?	Not Applicable
19.	If Yes, date of submission	Not Applicable
20.	If No, reason	Not Applicable
21.	Whether the proposal involves approval/ clearance under: if Yes, details of the same and their status to be given. (a) The forest (conversation) Act, 1980?	. Not Applicable

	(b) The wildlife (Protection) Act, 1972? (c) The C.R.Z. notification, 1991?	Yes, NBWL clearance has been granted by the Standing Committee vide letter no. F.No.6-132/2021-WL dated 02.05.2022. Not Applicable
22.	Whether there is any Government Order/Policy relevant/ relating to the site?	No
23.	Forest land involved(hectares)	Nil
24.	Whether there is any litigation pending against the project and/or land in which the project is proposed to be set up. (a) Name of the court (b) Case No. (c) Orders/ directions of the Court, if any and its relevance with the proposed project.	 Not applicable Not applicable Not applicable

(II) Activity

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

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	This is an existing Cement Plant where production rate will be enhanced from 1000 TPD (3.3 Lakh TPA) to 2000 TPD (6.6 Lakh TPA) on the existing land area. There will be limited change in

			land use due to installation of the new unit in the existing land. The land use is an industrial area.
1.2	Clearance of existing land, vegetation and buildings?	No	Not Applicable
1.3	Creation of new land uses?	No	Not Applicable
1.4	Pre-construction investigations e.g. boreholes, soil testing?	Yes	Soil testing for the purpose of foundation of the plant will be carried out.
1.5	Construction works?	Yes	Construction will be done for the expansion of cement plant within the existing Plant.
1.6	Demolition works?	No	Not Applicable
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Most of the construction workers will be employed on contract basis from nearby areas. For some workers coming from outside, temporary accommodation will be provided within the existing Plant premises.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	During the expansion of the plant, there will be some physical change on account of digging the earth for foundation within the existing land. The soil and waste material removed from the earth for the construction purpose will be utilized for backfilling in the low-lying area and for plantation
1.9	Underground works including mining or tunneling?	No	Not Applicable
1.10	Reclamation works?	No	Not Applicable

1.11	Dredging?	No	Not Applicable
1.12	Offshore structures?	No	Not Applicable
1.13	Production and manufacturing processes?	Yes	Process will involve five significant manufacturing stages, namely crushing, milling, clinkerisation, grinding and packing.
1.14	Facilities for storage of goods or materials? `	Yes	Covered storage shed for silica/clay, storage for coal, shed for clinker, silos for cement storage have already been provided. Open & covered storage for limestone has been provided. Additional one storage shed of 20,000 T will be constructed for the proposed expansion.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Dust collected in the pollution control equipment (Bag House/Bag Filters/ESP) is being recycled in the process. Same will be done after expansion of the project. Discharge from canteen, toilets is being disposed through soak pit. STP of 50 KLD capacity is proposed to be installed in the plant. Domestic & cement cooling waste water will be treated in the proposed STP after expansion. STP Sludge will be used as manure in the Green belt area.
1.16	Facilities for long term housing of operational workers?	No	Not Applicable
1.17	New road, rail or sea traffic during construction or operation?	No	The existing facilities are adequate. No additional road facilities will be required.

1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	Not Applicable
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not Applicable
1.20	New or diverted transmission lines or pipelines?	No	Not Applicable
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	There will be no change from the proposed project.
1.22	Stream crossings?	No	Not Applicable
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	Cement will be manufactured by dry process. Water will be used for cooling, dust suppression, gardening and domestic purpose. Abstraction of Ground water will be done for which permission has been obtained from the state authority.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	Not applicable
1.25	Transport of personnel or materials for construction,	Yes	Construction materials will be brought to the plant by road.

	operation or decommissioning?		
1.26	Long-term dismantling or decommissioning or restoration works?	No	Not applicable
1.27	Ongoing activity during decommissioning which could have an impact on the Environment?	No	Not applicable
1.28	Influx of people to an area in either temporarily or permanently?	Yes	In the existing plant 350 workers are employed. For the expansion of the plant 200 additional workers will be employed. Since most of the workers have been employed locally hence there will be no large scale influx due to the expansion of plant
1.29	Introduction of alien species?	No	Not applicable
1.30	Loss of native species or genetic diversity?	No	Not applicable
1.31	Any other actions?	No	Not applicable

2. **Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are nonrenewable or in short supply):**

S.No.	**Information/checklist confirmation**	**Yes/ No**	**Details thereof (with approximate quantities / rates, wherever possible) with source of information data**
2.1	Land especially undeveloped or agricultural land (ha)	No	Expansion of cement & clinker manufacturing capacity will be done within the existing land area measuring 12.38 ha.

<table>
<tr><td>2.2</td><td>Water (expected source & competing users) unit: KLD</td><td>Yes</td><td>After expansion of the plant total water requirement will be 189KLD. Out of this fresh water requirement is estimated as 154 KLD . The water requirement will be sourced from the existing borewell.</td></tr>
<tr><td>2.3</td><td>Minerals (MT)</td><td>Yes</td><td>
<table>
<tr><th>Minerals</th><th>Existing (TPA)</th><th>Additional (TPA)</th><th>Total after expansion (TPA)</th></tr>
<tr><td>Limestone</td><td>363000</td><td>363,000</td><td>726,000</td></tr>
<tr><td>Iron Ore</td><td>8,250</td><td>8,250</td><td>16,500</td></tr>
<tr><td>Coal</td><td>56,340</td><td>56,340</td><td>112,680</td></tr>
<tr><td>Clay/ Silica</td><td>74,250</td><td>74,250</td><td>148,500</td></tr>
</table>
</td></tr>
<tr><td>2.4</td><td>Construction material – stone, aggregates, sand / soil (expected source – MT)</td><td>Yes</td><td>For the construction of new cement line cement, sand and aggregates will be used for construction purposes.</td></tr>
<tr><td>2.5</td><td>Forests and timber (source – MT)</td><td>No</td><td>Not applicable</td></tr>
<tr><td>2.6</td><td>Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)</td><td>Yes</td><td>Present power requirement is 9 MW which will go upto 18 MW after expansion. Electric power will be sourced from the grid of Electricity board of J&K Government. After</td></tr>
</table>

			expansion about 200 liters/hr of diesel will be required to run DG sets.
2.7	Any other natural resources (use appropriate standard units)		Not Applicable

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

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	Yes	Diesel and oil will be used in the plant for various operations. Coal will be used for manufacturing clinker in the kiln. No hazardous chemical as specified under MSIHC 1989 is stored above the threshold value(s). MSDS for all the raw materials are available.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	None
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	Additional indirect employment will be generated after expansion in the form of transportation workers and other services.
3.4	Vulnerable groups of people who could be affected by the project e.g.	No	None

	hospital patients, children, the elderly etc.,		
3.5	Any other causes	No	Not Applicable

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

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Soil, overburden or mine wastes	No	Not Applicable
4.2	Municipal waste (domestic and or commercial wastes)	Yes	After expansion of the plant Domestic waste of about 83 Kg/day will be generated from the plant, out of which biodegradable waste will be 33 kg/day which will be used as manure & 50 kg/day will be recyclable waste which will be sent to authorised recyclers.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	yes	Used oil from plant will be about 3300 KLPA which will be carefully stored in leak proof HDPE drums in isolated and covered facility. The used oil will be sold to authorized recycler facility of State Pollution Control Board for the treatment of the same. Suitable care will be taken so that spills / leaks of used oil from storage will be avoided.
4.4	Other industrial process wastes	No	None

4.5	Surplus product	No	Not applicable
4.6	Sewage sludge or other sludge from effluent treatment	Yes	After expansion 9 kg/day STP sludge will be generated which will be used as manure for greening and plantation.
4.7	Construction or demolition wastes	Yes	Construction waste will be reused at the site.
4.8	Redundant machinery or equipment	Yes	Redundant machinery/equipment will be handed over to authorized agency as per rules.
4.9	Contaminated soils or other materials	No	No contamination of soil or other materials are envisaged due to the expansion of proposed proposal.
4.10	Agricultural wastes	No	Not Applicable
4.11	Other solid wastes	No	Not Applicable

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

S. No.	**Information/Checklist confirmation**	**Yes/ No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	No	Fossil fuel in the form of coal is being used in the existing plant and will be used after expansion of Cement Plant but no pollutants or any hazardous, toxic or noxious substance will be released into air as air pollution control devices has already been installed within the plant and

			for the new unit also pollution control devices will be installed.
5.2	Emissions from production processes	Yes	Emissions occur from production processes in the cement manufacturing facilities especially from crushers, mill, kiln and transfer points. These are mitigated by installing bag filters, ESP at all the points where fugitive dust is generated. The chimneys have been installed with appropriate height as per CPCB guidelines. Additional chimney will be installed for the proposed cement line.
5.3	Emissions from materials handling including storage or transport	Yes	The raw material and clinker is stored in sheds. Cement plant has installed pollution control measures to control fugitive emissions from all the sections such as unloading section, material handling section including transfer points, clinker storage section etc., by putting these facilities in closed circuit and installation of pulse jet bag filters. After expansion of the plant the installation of new units of pollution control measures will be provided. Water sprinkling will be done to control fugitive dust.
5.4	Emissions from construction activities including plant and equipment	Yes	Fugitive dust emissions may be generated from construction activities. These emissions will

			be temporary and will be controlled.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Dust will be generated from the construction activity which will be managed by sprinkling of water.
5.6	Emissions from incineration of waste	No	Not Applicable
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Not Applicable
5.8	Emissions from any other sources	No	Not Applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	**Information/Checklist confirmation**	Yes/ No	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Noise sources in cement plant are Crushers, Mills, Pumps, forced draft fans, motors,Induced draft fans, Compressors and Diesel generators. For noise control all the equipment will be of high standard with least noise. The enclosures will be provided to all the moving equipment to control the noise and for safety purposes. Acoustic enclosures are provided using sound absorption material for the DG set.

6.2-	From industrial or similar processes	Yes	This has been covered in para 6.1
6.3	From construction or demolition	Yes	No demolition work will be carried out. Noise generation from construction works for proposed installation of new line-II will be intermittent, which will be controlled by enclosures.
6.4	From blasting or piling	No	Not Applicable
6.5	From construction or operational traffic	Yes	Noise is being generated due to machinery/ vehicular movement during construction & operational traffic, which are being maintained within the prescribed limit. Same shall be followed after proposed installation of new line-II.
6.6	From lighting or cooling systems	Yes	Cooling towers/tanks have been provided in the Plant for heat exchange with the atmosphere. However, noise emitted from the lighting and cooling system shall be below the prescribed limits. Same shall be followed after proposed installation of new line-II.
6.7	From any other sources	No	No other source was envisaged.

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

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data

7.1	From handling, storage, use or spillage of hazardous materials	Yes	Industry will be providing adequate storage areas for the safe storage of fuel as per approved Layout drawing. Storage of HSD shall not exceed their threshold limit, wherever threshold is exceeded Clearance shall be obtained as per MSIHC Rules, 1989. Proper care shall be taken to avoid any spillage. Equipment Will be kept well maintained, so that they may remain leakage free. Hazardous Waste which will be stored at separate storage facilities are designated and maintained as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. This will be managed at the kiln after obtaining clearance from CPCB under Rule 9 of HoWM 2016 or given to authorized utilisers of waste.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	Wastewater shall be generated only from domestic activities, cement plant cooling which will be Ntreated in STP. It will be a ZLD unit. o effluent will be discharged to water or land.
7.3	By deposition of pollutants emitted to air into the land or into water	No	Not Applicable
7.4	From any other sources	No	Not Applicable
7.5	Is there a risk of long term buildup of pollutants in the environment from these sources?	No	Not Applicable

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

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	Possibility of an accident on account of explosion, spillages, fire or hazardous substances is very less. Proper maintenance, operation and leakage-proof condition of machinery eliminates possibilities of fire. Fire extinguishers are available near all machines in the plant. All persons are periodically trained to quench the fire at the source itself. No other major risks are involved. Same shall be followed after proposed installation of new line-II.
8.2	From any other causes	Yes	Falling from height or object falling on head – Wearing of safety belt and helmet has been made mandatory. Same shall be followed after proposed installation of new line-II.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g: floods, Earthquakes, landslides, cloudburst etc).	Yes	The chances of earthquake in the area are very high as J&K lies in Seismic Zone–V. All necessary precautions at the design stage itself have already been taken in terms of building of the existing cement plant. Similar precautions will be taken for expansion.

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

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: •Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other	Yes	This is an existing plant which is being expanded in the existing land area. Employment opportunities will increase due to the requirement of workers for the proposed project. This will contribute in raising the socioeconomic status and standard. ● Demand for new markets, supply industries are likely to emerge due to use of raw materials for manufacturing. ● Higher demand on transport sectors are likely to emerge. Proposed installation of new line-II will result in further growth of the surrounding areas by way of increased direct and indirect employment opportunities in the region including ancillary development. This will contribute in raising the socio-economic status and standard of living of the nearby villagers.

9.2	Lead to after-use of the site, which could have an impact on the environment	No	Not Applicable
9.3	Set a precedent for later developments	Yes	The existing plant is already operational. All pollution control devices & practices in being adopted in the existing unit and same shall be followed After installation of new line-II. Thus, it will set a precedent for later developments.
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	On account of installation of highest quality of pollution control equipments, the cement plant after expansion will not contribute in increasing the pollutants the atmosphere.

S. No.	**Areas**	**Name/ Identity**	**Aerial distance (within 15 km.) from Proposed project location boundary**
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Dachigam National Park Dachigam National Park with ESZ	3.12 Km N 0.13 km WNW

2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	**Water Bodies** Jhelum River Tributary Drain near Satura Daghwan Nalla Drain near Khana Gund Drain near Narastan Sarbal Lake Jhelum River Marsar Lake Chumnai lake- Major (boud sar) Dal Lake Sonasar Lake Tarsar lake	4.96 Km SE 5.13 Km SE 7.19 Km NNW 7.26 km SE 7.49 Km SE 8.19 km SW 9.64 km SW 12.42 km NE 13.65 km NE 13.68 km NW 13.89 km NE 14.46 km NE
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Dachigam National Park Dachigam National Park with ESZ	3.12 Km N 0.13 km WNW
4	Inland, coastal, marine or underground waters.	None	None
5	State, National boundaries	None	None

6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	**Roads** Pampore- Zantrag Road Wuyan- Pampore Road Khanmoh Road Sempora Road NH-1A NH-44 **Railway Station** Pampur Railway Station Kakapor Railway Station **Airport** Srinagar International Airport, J&K	 1.37 km ESE 4.41 km SW 5.11 km SW 5.47 km SW 5.47 km SW 9.59 km SW 10.47 SW 12.60 km SW 14.51 km SW 23.93 km SW
7	Defense installations	None	None
8	Densely populated or built-up area	Bathan	0.47 Km N

9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	**Hospital** Primary Health Center -Shabir sha chowk Khrew, Jammu and Kashmir 191103 Primary Health Center Wuyan (PHC) -Wuyan, J&K New Modern Health Care - Wuyan Pampore, Jammu and Kashmir 191102 Hospital - 3X42+W74,Khanmo, 191121 **Post Office** Post Office Khrew -Khrew,near sumo stand Pampore, Jammu and Kashmir 191103 Post Office Wuyan - 2XJ7+JQH,Wuyan Srinagar, Jammu and Kashmir 191102 India Post- 4V6M+XV2,Brein,Srinagar, Jammu and Kashmir 191123 **Places of worship** Masjid Shareif IQbal Colony -2XCX+XV2 Khrew, Jammu and Kashmir 191103 Jawala mata temple, Khrew -22C2+3C5, Pampore - Zantrag Road,Khrew, 191103	3.85 km, SSW 4.66 km, SW 5.29 km, SW 5.84 km, WNW 3.93 km, SSW 5.20 km, SW 13.45 km, NW 3.72 km SSW 3.92 km SSW

		Jawala Bhagwati Temple, Khrew, Pulwama, Jammu & Kashmir - 2XCV+MWX,Khrew, 191103	3.97 km SW
		Masjid Shareef Khar Mohalla - 2XCW+4J4, Khrew, Jammu and Kashmir 191103	4.05 km, SW
		School / Colleges	
		Govt kids primary school -3299+3MW Bathan, 191103	1.19 km, N
		Government High School - 324M+P49 Zantrag, Jammu and Kashmir 191103	1.36 km, ESE
		Govt High school Bathen - 32C9+XVG, Bathen road,Khrew, Jammu and Kashmir 191103	1.71 km, N
		Govt Primary School Nagander -326P+666 Zantrag, Jammu and Kashmir 191103	1.75 km, NE
		Bank	
		State Bank of India Khrew, J&K-191103	3.07 km SSW
		Jammu and Kashmir Bank, Khrew-191103	4.07 km SW
		Jammu and Kashmir Bank, Khanmo-191104	6.07 km WNW

10	Areas containing important, high quality or scarce resources (Ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	None	None
11	Areas already subjected to pollution or environmental damage. (Those where existing legal environmental standards are exceeded)	None	None
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (Earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	**Seismic Zone–V**	It is included in the High seismic zone.

Ref No 584/TIPL/23-24 Dated 06.06.2023

UNDERTAKING

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

Date : 06.06.2023
Place : Srinagar

Director

TRUMBOO INDUSTRIES Pvt. LIMITED SRINAGAR

Trumboo Industries Pvt. Ltd.

SECTION B: ToR Letter and ToR Compliance

F. No. J-11011/204/2016 - IA. II(I)]
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)
*****

Indira Paryavaran Bhawan
JorBagh Road, Aliganj
New Delhi - 110003
E-mail: dirind-moefcc@gov.in
Tel: 011-24695368

Dated: 15.01.2021

To

Shri Waseem Trumboo
Director
M/s Trumboo Industries Pvt. Ltd (TIPL)
Village- Khrew, Tehsil- Pampre, District- Pulwama
Jammu & Kashmir
E-mail: mail@tcimax.in

Subject: Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA by **M/s Trumboo Industries Pvt. Ltd. (TIPL)** located at Village- Khrew, Tehsil- Pampore, District- Pulwama, Jammu & Kashmir [Online Proposal No. IA/JK/IND/188134/2020, File No. J- 11011/204/2016-IA.II(I)] – **Prescribing of Terms of Reference** – regarding.

Sir

1. This has a reference to your online application vide proposal no. IA/JK/IND/188134/2020 dated 15/12/2020 along with the application in prescribed format (Form-I), copy of pre-feasibility report and proposed ToRs for undertaking detailed EIA study as per the EIA Notification, 2006 for the project mentioned above. The proposed project activity is listed at S. No. 3(b) Cement plants under Category "B" of the schedule of the EIA Notification, 2006 and attract general condition as the project site falls within 5km of Dachigam National Park. In view of this, project is appraised at the central level.

2. The aforesaid proposal was considered in 27th EAC meeting held on dated 30-31 December 2020.

Details submitted by the project proponent

3. M/s. Trumboo Industries Pvt. Ltd. proposes expansion of existing cement manufacturing unit from 3.3 Lakhs TPA to 6.6 Lakhs TPA with clinker production from 3.135 Lakhs TPA to 6.27 Lakh TPA. It is proposed to expand the plant for producing OPC based on Dry process utilizing the pre-calciner technology.
4. The existing project was accorded Consent to Operate by Jammu & Kashmir State Pollution Control Board vide letter no. SPCB/digital/1806470858 of 2018 dated 09.07.2018. Valid of CTO is up to April 2021.
5. The proposed unit is located at Latitude: 34°3'11.81"N to 34°3'25.86"N, Longitude:

75°0'50.54"E to 75°1'4.47"E, Village: Khrew, Tehsil: Pampore District: Pulwama, State: Jammu & Kashmir.

6. The land area of 12.38 ha acquired for the existing plant will also be utilized for the proposed expansion. There will be no need for additional land. The entire land is private land. No forest land is involved.

7. The targeted production capacity of the plant is from 3.135 Lakh TPA to 6.27 Lakh TPA clinker and 3.3 Lakh TPA to 6.6 Lakh TPA of cement. The majority of limestone for the plant would be procured from the own mine located at 1.5 km from the plant site and some limestone may be sourced from other mines. The Ore transportation will be done through the road. The proposed capacity for different products for new site is as below:

Name of Product	No. of units	Capacity of each unit	Production Capacity
Ordinary Portland Cement (OPC)	2 (Existing-1; Proposed-1)	3.3 Lakhs TPA each	3.3 Lakhs TPA to 6.6 Lakhs TPA cement & 3.135 Lakhs TPA to 6.27 Lakh TPA of clinker

8. PP has reported that Dachigam National Park is located at a distance of 3.12 Km N direction (distance is from boundary of National Park). 8 Schedule I species are known to be present in the Study area for which conservation plan has been prepared. NBWL Clearance is applicable to the project and the application for the same has been made online.

9. Total project cost is approx 165 Crores rupees. Proposed employment generation from the proposed project will be 550 persons (Existing- 350; Additional during expansion- 200) direct employment and indirect employment in the field of transportation, ancillary industries, security etc. Priority in employment will be given to local people as per their skills.

10. The proposed raw material and fuel requirement, source and transportation details are as given below:

Sl. No	Name of Raw Material	Before Expansion (TPD)	After Expansion (TPD)	Source	Mode of Transportation
1.	Limestone	1100	2200	Captive Mine	Road
2.	Iron Ore	25	50	Punjab	Road
3.	Gypsum	50	100	Uri	Road
4.	Coal	250	500	Import from S. Africa & part of Jammu	
5	Clay/Silica	225	450	Local	Road

11. Thirty-three percent of the total area has been planned as green belt by TIPL after expansion of plant to 6.6 Lakhs TPA as per the guidelines of CPCB. Local species will be planted in

consultation with DFO for green belt development.

12. After Expansion total water Consumption (fresh+ recycled) for the proposed project plant will be 623 KLD and domestic waste water generation will be 40 KLD. Domestic waste water 40 KLD will be treated in a STP and industrial waste water generated of 385 KLD will be filtered and recycled. Domestic treated water of 38 KLD will be utilized for dust suppression & green belt development.

13. Power requirement for the existing cement plant operating at 3.3 Lakhs TPA capacity is 9 MW which will go up to 18 MW after the expansion of cement plant. The required power is being drawn from the power grid of J&K Government power department.

14. The solid waste generation and management will be as follows:

S. No.	Particulars	Quantity generated (Kg/day)	Mode of Disposal
Municipal Solid Waste			
1	Biodegradable	33	The generated waste will be handed over to 2 Non authorized vendor
2	Non-Biodegradable	49.5	
	Total Municipal waste in a day	82.5	
Non-Hazardous Waste			
	STP Sludge	3	Used as manure for plantation

15. The project proponent has reported that since no additional land will be required for the expansion of cement plant capacity to 6.6 lakhs TPA thus no rehabilitation & resettlement is applicable to this project.

16. The proponent has mentioned that there is no court case or violation under EIA Notification to the project or related activity.

17. Name of the EIA consultant: M/s. Perfact Enviro Solutions (P) Ltd. New Delhi [S.No. 9, List of ACOs with their Certificate / Extension Letter no. Rev. 05, Dec. 18, 2020].

18. The proposal is considered by the EAC (Industry 1) in its 27th meeting of the Re-constituted EAC (Industry-I) held during 30-31st December, 2020. The observations and recommendations of EAC is given as below:

Observations of the Committee

19. The Committee noted the following:

    i. It is a Cat B project. Due proximity of site to Dachigam National Park within 5 km the projects has come up for appraisal to Centre.
    ii. TOR was granted earlier in 2016. EIA process could not be completed in past four years hence this request for fresh TOR.

Recommendations of the Committee

20. After deliberations, the Committee recommended the project proposal for prescribing following specific ToRs for undertaking detailed EIA and EMP study in addition to the generic ToR enclosed at **Annexure-1** read with additional ToRs at **Annexure-2:**

i. At the time of submission of final EIA report, the baseline data should not be older than three years as per the MoEF&CC Office Memorandum dated 29/08/2017.
ii. Green belt shall be developed in an area equal to 33% of the plant area with native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant.
iii. STP for domestic waste water treatment shall be provided.
iv. Treated effluent from the plant shall be reused and recycled.
v. PM level from Stacks shall be less than 30mg/Nm3.
vi. PP shall submit action plan for complete shift to surface water use in next three years.

21. Ministry of Environment, Forest and Climate Change after accepting the recommendations of EAC (Industry-1), hereby decide to accord above said specific Terms of Reference (ToRs), in addition to the standard ToRs and sector specific ToRs as enclosed at **Annexure-1** read with additional ToRs at **Annexure-2** for carrying out detailed EIA and EMP for the above project.

22. It is requested that Draft EIA report may be prepared in accordance with the above mentioned specific ToRs and enclosed generic ToRs and additional ToRs and thereafter further necessary action including conduct of public consultation may be taken for obtaining Environmental Clearance in accordance with the procedure prescribed under the EIA notification, 2006 as amended.

23. In accordance with this Ministry's Notification vide S.O. 751 (E) dated 17.02.2020, the ToRs are valid for a period of four years from today i.e., **15.01.2021** and will expire on **14.01.2025.** There will be no further extension of validity of ToR.

This issues with the approval of Competent Authority.

(A.K. Agrawal)
Director

Copy to:-

1. Secretary, Department of Environment, Government of Jammu & Kashmir, Secretariat Department of Forests, Government of Jammu & Kashmir, Forest Complex, Sheikh Bagh, Near Lal Chowk, Srinagar (J&K).
2. Deputy Director General of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (NZ), Bays No. 24-25, Sector 31 A, Dakshin Marg, Chandigarh – 160030.
3. Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office complex, East Arjun Nagar, New Delhi-1100032.
4. Member Secretary, Central Ground Water Authority, 18/11, Jamnagar House, Man Singh Road, New Delhi-110011.
5. Chairman, J&K State Pollution Control Board, Parivesh Bhawan,Forest Complex, Gladni, Narwal, transport Nagar, Jammu (J& K)
6. District Collector, District Pulwama, State Jammu & Kashmir.
7. Guard File/Record File/Monitoring File.
8. MoEF&CC Website.

(A.K. Agrawal)
Director

ANNEXURE –1

GENERIC TERMS OF REFERENCE (ToR) IN RESPECT OF INDUSTRY SECTOR

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. The project proponent shall furnish the requisite documents from the competent authority in support of drawl of ground water and surface water and supply of electricity.
- ix. Process description along with major equipment and machineries, process flow sheet (Quantitative) from raw material to products to be provided
- x. Hazard identification and details of proposed safety systems.
- xi. Expansion/modernization proposals:
  - a. Copy of all the Environmental Clearance(s) including Amendments thereto 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 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 /existing operation of the project from SPCB/PCC shall be attached with the EIA-EMP report.
  - 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. Co-ordinates (lat-long) of all four corners of the site.
- iv. Google map-Earth downloaded of the project site.

v. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.

vi. Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.

vii. 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)

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

ix. Geological features and Geo-hydrological status of the study area shall be included.

x. 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)

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.

xii. R&R details in respect of land in line with state Government policy.

5. <u>Forest and wildlife related issues (if applicable):</u>

i. Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable).

ii. Land use map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (*in case of projects involving forest land more than 40 ha).*

iii. Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.

iv. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-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 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 forests.

iii. Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with – min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.

iv. Surface water quality of nearby River (60m upstream and downstream) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.
v. Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC.
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.

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 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 well 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, if the effluent is proposed to be discharged in to 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.
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 disposal. Copies of MOU regarding utilization of solid and hazardous waste shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resource conservation.
viii. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.
ix. Action plan for the green belt development 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.

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. Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved,

ii. Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre-designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre-placement and periodical examinations give the details of the same. Details regarding last month analysed data of abovementioned parameters as per age, sex, duration of exposure and department wise.

iii. Annual report of health status of workers with special reference to Occupational Health and Safety.

iv. Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.

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. To address the Public Hearing issues, provisions contained under Ministry's Office Memorandum vide F.No. 22-65/2017-IA.III dated 30/09/2020 shall be complied.

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 ToRs.

14. The ToRs prescribed shall be valid for a period of three years for submission of the EIA-EMP reports along with Public Hearing Proceedings (wherever stipulated).

The following general points shall be noted:

i. All documents shall be properly indexed, page numbered.
ii. Period/date of data collection shall be clearly indicated.
iii. Authenticated English translation of all material in Regional languages shall be provided.
iv. The letter/application for environmental clearance shall quote the MOEF&CC file No. and also attach a copy of the letter.
v. The copy of the letter received from the Ministry shall be also attached as an annexure to the final EIA-EMP Report.
vi. The index of the final EIA-EMP report must indicate the specific chapter and page no. of the EIA-EMP Report
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.
viii. The consultants involved in the preparation of EIA-EMP report after accreditation with Quality Council of India (QCl)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA-EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. Name of the Consultant and the Accreditation details shall be posted on the EIA-EMP Report as well as on the cover of the Hard Copy of the Presentation material for EC presentation.
ix. ToR 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 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.

ANNEXURE-2

ADDITIONAL ToR FOR CEMENT INDUSTRY

1. Limestone and coal linkage documents along with the status of environmental clearance of limestone and coal mines
2. Quantum of production of coal and limestone from coal & limestone mines and the projects they cater to;
3. Present land use shall be prepared 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.
4. If the raw materials used have trace elements, an environment management plan shall also be included.
5. Plan for the implementation of the recommendations made for the cement plants in the CREP guidelines must be prepared.
6. Energy consumption per ton of clinker and cement grinding
7. Provision of waste heat recovery boiler
8. Arrangement for co-processing of hazardous waste in cement plant.
9. Trace metals in waste material especially slag.

***

S. No.	TERMS OF REFERENCE POINTS	TOR Compliance	Remarks
	STANDARD TOR		
1.	Executive Summary	Executive Summary of the Project is given at Chapter 11 of the EIA report.	Chapter 11 of the EIA report.
2.	Introduction i) Details of the EIA consultant including NABET accreditation	EIA Consultant involved is M/s Perfact Enviro Solutions Pvt Ltd. NABET Registered List 'A' of Accredited Consultant Organisations/ as on April 26, 2023 certificate no. NABET/EIA/1922/SA0143 valid till 28.8.2023. Details of consultants with NABET accreditation are given in Chapter-12 of Section C in the EIA report.	Chapter-12 in Section C of EIA report NABET accreditation certificate has been attached at Annexure 1 of Section D of EIA report.
	ii) Information about the project proponent	Trumboo Industries Pvt. Ltd is a Jammu & Kashmir based Private ltd. Company. Information about the project proponent is given in Section C of EIA Report.	
	iii) Importance and benefits of the project	Project will cause improvement in physical & social infrastructure by extending healthcare facilities to the community, education facilities, skill development, water facilities and will lead to improvement of working skill of the people in the area, about 550 people will be employed during the operational stage after expansion of the project. There will be indirect employment opportunities which will help in uplifting the living standards of local communities. The industry also aims to use dust collected in bag filters and back into the process to minimise the quantity of waste generated by the plant & about 33% of total plot area will be developed as green area thus will help in improvement in quality of environment. Details of Benefits & importance of the project are given in Chapter-8 in Section C of EIA Report.	Chapter-1, Section 1.2 in Section C of EIA report Chapter-8 in Section C of EIA report
3.	Project Description i) Cost of Project and the time of completion	Total cost of the project is Rs 250.52 Crores and time of completion is 14 months after getting Environment clearance and CTE.	Cost and completion time of the project given in Chapter 2, Section

			2.24
	ii) Products with capacities for the proposed project	After expansion Cement (OPC) - 0.66 MTPA and Clinker - 0.627 MTPA capacity will be produced from the proposed project. Details of products with capacities are given in Chapter 2 Section 2.7.1 in Section C of EIA Report.	Products with capacities are given in Chapter-2 Section 2.7.1 in Section C of EIA report.
	iii) If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.	Yes it is an expansion project. Present Capacity of cement is 0.33 MTPA (3.3 Lakh TPA) of cement which will be enhanced to 0.66 MTPA (6.6 Lakh TPA). The expansion will be done in the existing plant area of 12.38 ha.	Details are given in Chapter-2 Section 2.7.1 in Section C of EIA report.
	iv) List of raw materials required and their source along with mode of transportation.	Main raw materials for the proposed manufacturing unit after expansion will be Limestone - 726,000 TPA, Clay/Silica- 148,500 TPA, Coal-112680 TPA, Iron Ore - 16,500 TPA, Gypsum 33,000 TPA, Coal (as a fuel)- 1,48,500 TPA List of Raw Materials required, their source along with mode of transportation are given in 2.10 of EIA Report.	Chapter-2, Section 2.10 in Section C of EIA report
	v) Other chemicals and materials required with quantities and storage capacities.	No other chemicals or materials would be required for the proposed project.	Not Applicable
	vi) Details of Emission, effluents, hazardous waste generation and their management.	Details of effluents, emissions and hazardous waste generation are given in Chapter-2 of EIA Report.	Chapter-2 Section 2.18, 2.17 and 2.19 in Section C of EIA report
	vii) Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)	After expansion, total 189 KLD of water will be required for the project, out of which 154 KLD will be fresh water and 35 KLD will be treated water. NOC for constructing private well within the plant area has been obtained from PHE, Ground Water Division, Srinagar, Kashmir has been obtained vide letter no.	Water requirement and other details are in Chapter-2 Section 2.17 & NOC for water extraction is attached as Section D at Annexure 3.

		PHE:GWD:589 dated 15.05.2007 and is also annexed in Section D of EIA Report. Details of water requirement, source of supply and water balance are given in Chapter-2 of the EIA Report. The applied copy for water approval is attached in Section D	
		After expansion total power requirement will be 18 MW which will be sourced from the Power grid of the state government. Details of power requirement are given in Chapter-2 of the EIA report.	Power requirement is in Chapter-2 Section 2.9.3 in Section C of EIA report.
		The existing manpower in line I is 350 nos. and proposed manpower in line II is 200 nos., thus total manpower is 550 nos. Details of man-power requirements are given in Chapter 2 of the EIA Report.	Manpower requirement- Chapter-2 Section 2.9.2 in Section C of EIA report
	viii) The project proponent shall furnish the requisite documents from the competent authority in support of drawl of ground water and surface water and supply of electricity.	NOC for constructing private well within the plant area has been obtained from PHE, Ground Water Division, Srinagar, Kashmir has been obtained vide letter no. PHE:GWD:589 dated 15.05.2007 and is also annexed in Section D of EIA Report.	Annexure 3 in Section D of the EIA report
	ix)Process description along with major equipment and machineries, process flow sheet (quantitative) from raw material to products to be provided.	Details of manufacturing processes, equipment/ machineries, and process flow sheet are given in Chapter-2 in Section C of the EIA report.	Chapter-2 Section 2.12 and 2.13 in Section C of EIA report
	x) Hazard identification and details of proposed safety systems.	Hazard identification and safety related information is given in Chapter-7 of Section C of EIA Report.	Chapter-7 Section 7.2.1 in Section C of EIA report
	xi) Expansion/modernization proposals: a. Copy of all the Environmental Clearance(s) including Amendments thereto	The plant has been in operation since 2010 for which CTE was obtained from Jammu and Kashmir State Pollution Control Board vide letter no 200 of 2004 dated 16.08.2004. The Consent to	Copy of Latest CTO & certified compliance report of CTO is attached at Annexure 6 & 7

	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 existing operation of the project from SPCB shall be attached with the EIA-EMP report. 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 reports to the conditions of consents from the SPCB shall be submitted.	operate has been obtained for the existing capacity from time to time. Latest CTO has been granted by the Jammu & Kashmir State Pollution Control Board to M/s Trumboo Industries Pvt. Ltd. vide letter no. PCC/digital/22062773946 of 2022 dated 11.08.2022, which is valid up to June 2026. Certified Compliance report on CTO has been issued by RO, MoEF, Srinagar, Kashmir vide letter no. PCC/RDK/PS/2023/97-98 dated 29.04.2023. The Consent to Establish was granted to the project in 2004 before the EIA notification 2006. Also, the land has been acquired before the EIA Notification 1994. Hence as per the OM J-11013/41/2006-IA.II (I) (Part) dated 15.01.2008, EC for the existing project was not required. Certified Compliance report on CTO has been issued by RO, MoEF, Srinagar, Kashmir vide letter no. PCC/RDK/PS/2023/97-98 dated 29.04.2023.	in Section D of EIA report Copy of CTO & certified compliance report of CTO is attached at Annexure 6 & 7 in Section D of EIA report
4.	**Site Details**	This is an existing project located in an	

	i) Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered.	area of 12.38 ha at Village Khrew, Tehsil: Pampore, District-Pulwama, Jammu & Kashmir State. The expansion is proposed to be done within the existing land itself.	Chapter-2 Section 2.3 in Section C of EIA report
	ii) A toposheet of the study area of radius of 10 km and site location on 1:50,000/1: 25,000 scales on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)	The project falls in toposheet no. 43 N/4 which is a restricted toposheet. 10 km google map with site location is given in Chapter-2 of Section C of the EIA Report. Also attached in Section D of the EIA report.	Chapter-2 Section 2.4.1 in Section C of EIA report Annexure 19 in Section D of EIA report
	iii) Co-ordinates (lat-long) of all four corners of the site	Co-ordinates (lat-long) of the all corners of the site are given in Chapter 2 of the EIA Report.	Chapter 2 Section 2.4 in Section C of EIA report
	iv) Google Map-Earth downloaded from the project site.	Google earth map is given in Chapter-2 of the EIA Report.	Chapter-2 Section 2.3 in Section C of EIA report
	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 plan for the proposed unit is given in Chapter-2 Section 2.8 of EIA Report and attached in Section D as Annexure	Chapter- 2, Section 2.8 in Section C of EIA report. Annexure 17 in Section D of EIA report
	vi) Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.	Site photographs are given in Chapter-2 of Section C of the EIA Report.	Chapter-2 Section 2.4.5 in Section C of EIA report.
	vii) Land use break-up of total land of the project site (identified and acquired), government/ private - agricultural, forest, wasteland, water bodies,	The existing project is located within 12.38 ha. Expansion is proposed within the existing land itself. 33% of the total land area is proposed to be utilized for plantation/green belt	Land use breakup is given in Chapter 2 Section 2.9.1 in Section C of EIA report. All land documents are

	settlements, etc shall be included. (not required for industrial area)		attached as Annexure 2 in Section D.
	viii) A list of major industries with name and type within study area (10 km radius) shall be incorporated. Land use details of the study area	List of major industries within 10 km of the project is given in Chapter 2 of the EIA Report. Land use of the study area is given in Chapter 3 Section 3.4 of the EIA report.	Chapter-2 Section 2.4.3 Chapter-3 Section 3.4
	ix) Geological features and Geo-hydrological status of the study area shall be included.	Geological details and geo hydrological status is given in Chapter- 3 Section 3.9 of EIA Report.	Chapter- 3 Section 3.9
	x) Details of Drainage of the project up to 5 km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)	The Study details including the drainage map up to 10 Km radius	Chapter-3 section 3.9.1 in Section C of EIA report.
	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.	Land is in possession of Trumboo Industries Private Limited, The land documents are attached in Section D of the EIA Report.	Annexure 2 in Section D of the EIA report
	xii) R&R details in respect of land in line with state Government policy.	The proposed project land consists of a total plot area of 12.38 ha.Therefore no villages or residents within the project site. The complete land is in possession by the M/s Trumboo Industries Pvt. Ltd. R&R will be applicable.	Chapter 7 Section 7.10 in Section- D of EIA Report
5.	**Forest and wildlife related issues (if applicable):** i. Permission and approval for the use of forest land (forestry clearance), if any,	Not Applicable.	Not Applicable

	and recommendations of the State Forest Department. (if applicable)		
	ii. Land use 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)	Not Applicable	Not Applicable
	iii. Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.	Not Applicable	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.	Dachigam National Park is located at a distance of 3.12 km in the North direction from the project site & has been authenticated by the Chief Wildlife Warden, Jammu & Kashmir	Annexure 5 in Section D of the EIA report
	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.	Conservation plan has been approved by Wildlife Warden, Central Division, Srinagar, J&K vide letter no. WLWC/Estt/2020-21/1254 dated 04.09.2020	Annexure 12 in Section D of the EIA report
	vi. Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.	NBWL clearance has been granted by the Standing Committee vide letter no. F.No.6-132/2021-WL dated 02.05.2022.	Annexure 4 in Section D of the EIA report

6.	**Environmental Status:** i. Determination of atmospheric inversion level at the project site and site-specific micrometeorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.	Micro-meteorological data has been collected and is given in chapter 3 section 3.6 of Section C of EIA report.	Chapter-3 Section 3.6 of Section C in EIA report
	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 on CPCB guidelines and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests.	AAQ data of the Post Monsoon Season has been collected. AAQ data is given in Chapter-3 of EIA Report.	Chapter-3 Section 3.7 of Section C in EIA report
	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 measurements has been given as Annexure in Section D.	Annexure 13 in Section D of the EIA report
	iv. Surface water quality of nearby river (100 m upstream and downstream of the discharge point) and other surface drains at eight locations as per CPCB/ MoEF&CC guidelines.	Surface water quality data is given in Chapter-3 Section 3.10 of EIA Report.	Chapter-3 Section 3.10 of Section C in EIA report
	v. Whether the site falls near a polluted stretch of river identified by the CPCB/	Not Applicable	Not Applicable

	MoEF&CC, if yes, give details.		
	vi. Ground-water monitoring at minimum at 8 locations shall be included.	Ground water quality monitoring data is given in Chapter-3 Section 3.10 of Section C of EIA Report.	Chapter-3 Section 3.10 in Section C of EIA report
	vii. Noise levels monitoring at 8 locations within the study area.	Noise quality monitoring data is given in Chapter 3 Section 3.8 of Section C of EIA Report.	Chapter 3 section 3.8 in Section C of EIA report.
	viii. Soil Characteristic as per CPCB guidelines.	Soil quality data is given in Chapter-3 Section 3.11 of the EIA Report.	Chapter-3 Section 3.11 in Section C of EIA report
	ix. Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to the proposed project, parking arrangement etc.	Traffic study of the area is given in Chapter-3 of Section C of the EIA Report. Details of type and frequency of vehicles used for transportation is given in Chapter 2.	Chapter-3 Section 3.14
	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.	Flora and fauna details are given in Chapter-3 Section 3.12 of Section C of EIA Report. Conservation plan and its submission receipt is attached as Annexure in Section D of EIA report.	Chapter-3 Section 3.12. In Section C of EIA report and Annexure 12 in Section D of EIA report.
	xi. Socio-economic status of the study area	The Socio Economic Report is given in Chapter 3 Section 3.13 of Section C of the EIA report.	Chapter 3 Section 3.13 of Section C in EIA report
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 hilly terrain, the	Air Dispersion Modelling has been done. Isopleths from the same are given as Annexure in Section D.	Annexure 19 in Section D of the EIA report

	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 if the effluent is proposed to be discharged in to 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.	No discharge to the water body as it is Zero Liquid Discharge Unit.	Not Applicable
	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	Impact on transportation is given under chapter 4 of the EIA report.	Chapter 4 Section 4.3.4. in Section C of EIA report

	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.	Water Management with treatment scheme and characteristics is given in detail in Chapter-2 of Section C of the EIA Report.	Chapter 2 Section 2.17 in Section C of EIA report
	v. Details of stack emission and action plan for control of emissions to meet standards.	Stack emission details and control of air emissions is given in Chapter- 2 of Section C of the EIA Report.	Chapter 2 Section 2.18 in Section C of EIA report
	vi. Measures for fugitive emission control	Fugitive Emission control is given in Chapter-2 of Section C of EIA Report.	Chapter 2 Section 2.18 in Section C of EIA report
	vii. Details of hazardous waste generation and their storage, utilisation and management. Copies of MOU regarding utilisation 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.	Hazardous waste and process waste management is given in Chapter-2 of Section C of the EIA Report. All the Hazardous waste shall be Sold/disposed to authorised vendors. Details of waste-minimization, recycle/reuse/recover techniques, Energy conservation are given in Chapter 5 of Section C in EIA report.	Chapter 2 Section 2.19.2 in Section C of EIA report Chapter-5 in Section C of EIA report
	viii. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.	No fly ash shall be generated from the cement industry.	—
	ix. Action plan for the green belt development plan in 33 % area i.e. land with not less than 1,500 trees per ha.	After expansion total Green area will be 4.08 ha i.e. 33% of total plant area will be developed in the project as per CPCB guidelines with density of 2500 trees/ha.	Chapter 2 Section 2.22 in Section C of EIA report

	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.	Details of the plantation are given in Chapter 2 of the EIA report.	
	x. Action plan for rainwater harvesting measures at the plant site shall be submitted to harvest rainwater from the roof-tops and storm water drains to recharge the groundwater and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.	Roof top rainwater will be collected and stored in pits that will help in recharging the groundwater. At present there are no existing rain water harvesting pits at the site.	Chapter 2 Section 2.17.3 of Section C of EIA report
	xi. Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.	After expansion total capital and recurring cost for environmental pollution control measures will be Rs 1470.05 lakhs & Rs 427.14 lakhs/annum respectively. Details are given in Chapter-10 Section C of the EIA Report.	Chapter 10 Section 10.4 in Section C of EIA report
	xii. Action plan for post-project environmental monitoring shall be submitted.	Action plan for post project environmental monitoring is given in Chapter-6 Section C of EIA Report.	Chapter 6 in Section C of EIA report
	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.	Details given in Chapter-7 of Section C in EIA Report.	Chapter 7 in Section C of EIA report

8.	**Occupational health** I. Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved,	Occupational health and safety details are given in Chapter-2 Section 2.25 of Section C of EIA Report. No raw material is being used for which a PEL is defined	Chapter 2 Section 2.25. of Section C of EIA report
	ii. Details of exposure specific health status evaluation of workers. 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 analysed data of above-mentioned parameters as per age, sex, duration of exposure and department wise.	The company will be conducting pre & post employment medical tests including physical examination, urine routine examination, Haematology, Audiometry, vision tests, spirometry, Chest X-Rays, Blood Sugar tests, etc. Details are given in Chapter-2 Section 2.25 of EIA Report. .	Chapter-2 Section 2.25 in Section C of EIA report.
	iii. Annual report of health status of workers with special reference to Occupational Health and Safety.	Annual reports of health status of existing workers are attached at Section D of the EIA report	Annexure 16 in Section D of EIA report.
	iv. Plan and fund allocation to ensure the occupational health of safety of all contract and casual workers	Rs 59 lakhs has been allocated for the occupational health & safety of the workers in the proposed project & Rs 12 lakhs for public health Safety. Plan and fund allocation to ensure the	Chapter-2 Section 2.25 in Section C of EIA report.

		occupational health of safety of all contract and casual workers are given in Chapter 2 of Section C.	
9.	**Corporate Environment Policy** 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.	Environmental Policy is attached in Section D	Annexure 9 in Section D of 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.	Yes, the policy prescribes the same.	-
	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.	The hierarchical system/administrative order of the company to deal with environmental issues and ensuring compliance with environmental clearance conditions is given in Chapter-10 of the EIA report.	Chapter-10 Section 10.2 in Section C of EIA report.
	iv. Does the company have a 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 EHS head will be responsible for the internal monitoring. Inspection and audit findings along with the improvement program will be reported to the senior management regularly. Records will be maintained for regulatory, monitoring and operational issues. Details are given in Chapter 10 Section 10.2 of the EIA report.	Chapter 10 Section 10.2 in Section C of 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	Labour force/ drivers during the construction phase will be provided sanitation and restrooms in the unit. Facilities already provided to workers in the existing unit are. ● First aid kits at all prominent places ● Fire hydrant facility	Chapter 2 Section 2.12.1 of Section C in EIA report.

	truck drivers during the operation phase.	● Restroom for employees & drivers with sanitation facilities ● Pre-employment and routine medical examinations ● Security system at entrance ● Plant Canteen ● Guest house In the proposed expansion, the company has proposed a full fledged Occupational health centre within the plant premises.	
11.	To address the Public Hearing issues, provisions contained under Ministry's Office Memorandum vide F.No. 22-65/2017-IA.III dated 30/09/2020 shall be complied.	Noted, the EIA is being submitted for conduction of Public Hearing. The same will be compiled in the Final EIA.	
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.	None	Not Applicable
13.	A tabular chart with index for points wise compliance of above TOR.	Noted, it has been complied	Complied
14	The TORs prescribed shall be valid for a period of three years for submission of the EIA-EMP reports along with Public Hearing Proceedings (wherever stipulated).	Noted	–
SPECIFIC TOR			
14.	Limestone and coal linkage documents along with the status of environmental clearance of limestone and coal mines	Limestone will be sourced from a captive mine located 4km from the plant site. Coal will be purchased from South Africa & part of Jammu	Chapter 2 Section 2.10 of the EIA report.

15.	Quantum of production of coal and limestone from coal & limestone mines and the projects they cater to;	Limestone will be sourced from a captive mine located 4km from the plant site. Coal will be purchased from South Africa & part of Jammu. Coal will be purchased from the open market hence its quantum cannot be mentioned.	Chapter 2 Section 2.10 of the EIA report.
16.	Present land use shall be prepared 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 use/land-cover mapping of the area.	Present Land Use has been prepared based on satellite image.. Details of Land use is given in Chapter 3 Section 3.4 of Section C of the EIA report.	Chapter 3 section 3.4 in Section C of EIA report.
17.	If the raw materials used have trace elements, an environment management plan shall also be included.	None. No raw materials being used have trace elements.	Not applicable
18.	Plan for the implementation of the recommendations made for the cement plants in the CREP guidelines must be prepared.	Recommendations made for the cement plants in the CREP guidelines shall be complied.	—
19.	Energy consumption per ton of clinker and cement grinding	Energy consumption details are given in chapter 2 of Section C of the EIA report.	Chapter 2 Section 2.9.4 of Section C in EIA report
20.	Provision of waste heat recovery boiler	Not Applicable	Not Applicable
21.	Arrangement for co-processing of hazardous waste in cement plant.	Not Applicable. No hazardous waste will be co-processed within the cement plant.	-
22.	Trace metals in waste material especially slag.		
ADDITIONAL TOR			
22.	At the time of submission of final EIA report, the baseline data should not be older than three years as per the MoEF&CC Office Memorandum dated 29/08/2017.	Noted, baseline data is of Oct- Dec 2022	Chapter 3

23.	Green belt shall be developed in an area equal to 33% of the plant area with native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant.	Noted. After expansion total Green area will be 4.08 ha i.e. 33% of total plant area will be developed in the project as per CPCB guidelines with density of 2500 trees/ha. Details of the plantation are given in Chapter 2 of the EIA report.	Chapter 2 Section 2.23 in Section C of EIA report
24.	STP for domestic waste water treatment shall be provided.	Noted, STP of 50 KLD based on MBBR technology is proposed for expansion.	Chapter 2 Section 2.17.1 in Section C of EIA report
25.	Treated effluent from the plant shall be reused and recycled.	Treated water after proposed expansion will be 35 KLD which will be reused in gardening (20 KLD), dust suppression (6 KLD) & cement plant make up water (9 KLD)	Chapter 2 Section 2.17 in Section C of EIA report
26.	PM level from Stacks shall be less than 30mg/Nm3.	Noted. Same	
27.	PP shall submit an action plan for complete shift to surface water use in the next three years.	We have done the feasibility study, and shifting to surface water for the water source is not feasible in this area. NOC of water groundwater abstraction is available.	-

SECTION C- ENVIRONMENT IMPACT ASSESSMENT REPORT

Content

1. Introduction..... 13
1.1. Chronology of CTO till date with production allowed..... 15
1.1 Purpose of the report..... 16
1.2 Project & project proponent..... 17
1.4. Brief description of project..... 18
1.5. Scope of EIA study..... 18
1.6. EIA methodology..... 19
1.7. Limitations..... 20
1.8. Applicable environmental laws..... 21
2. Project description..... 23
2.1 Type of projects..... 23
2.2 Need for the projects..... 23
2.3 Location..... 24
2.4 Coordinated of all corners..... 26
2.4.1 Topographical map (showing 10 KM radius around the project site).... 29
Ecological sensitivity map (10 km radius)..... 30
2.4.2 Environment setting of the project..... 31
2.4.3 Major industries in 10 km buffer area..... 31
2.4.5 Site photographs..... 32
2.4.6 Seismicity..... 33
Map showing seismicity of Area:..... 33
2.5 Project description..... 34
2.6 Details of development..... 35
2.6.1 Land area details..... 35
2.6.2 Details of approvals..... 35
2.7 Plant capacity..... 35
2.7.1 Details of products and production..... 36
2.8 Layout plan..... 37
2.9 Resources for the projects..... 38
2.9.1 Land..... 38
2.9.2 Manpower..... 40
2.9.3. Power and fuel requirement..... 41
2.9.4 Energy consumption..... 41
2.9.5 Water..... 42
2.10 Details of raw material, it's source, quality & storage..... 42

2.11 Transportation details of raw material & product..... 44
2.12 Plant and machinery..... 45
2.12.1 Amenities and facilities..... 45
2.13 Manufacturing process and process of flow diagram..... 46
2.14 Flow chart of activities during construction and operational phase..... 56
2.14.1 During construction phase..... 56
2.14.2 During operational phase..... 57
2.15 Environmental issue of the project..... 58
2.16 Pollution load summary..... 59
2.17 Water & wastewater management..... 60
2.17.1 Treatment scheme of STP..... 64
2.17.2. Wastewater characteristics from different activities..... 66
2.17.3 Rainwater harvesting..... 66
2.18 Air emission management..... 67
2.18.1 Control of air emission..... 67
2.19 Solid hazardous waste management..... 72
2.19.1. Process waste (NON- HAZARDOUS)..... 72
2.19.2. Hazardous waste..... 73
2.19.3. E-waste management..... 73
2.19.4 Battery waste management..... 73
2.20 Noise management..... 73
2.20.1 During Construction Phase..... 73
2.21 Parking provision..... 75
2.22 Plantation & green belt..... 75
2.23 Safety measures..... 78
2.24 Project cost & implementation schedule..... 79
2.25 Occupational health & safety..... 79
2.25.1 Plan of budget for occupational health and safety..... 84
2.25.2 Public health and safety..... 84
3. Description of environment..... 85
3.1. Introduction..... 85
3.2. Base map of the area..... 85
3.2.1. Google image of the project site..... 85
3.2.2. Topographical map..... 85
3.2.3. DEM map..... 86
3.2.4 Village map..... 88
3.3. Methodology of baseline data collection..... 89
3.4 Land use..... 89
3.4.1 Introduction..... 89

3.4.2 Methodology....90
Land use Buffer zone:....91
Agriculture Land:....93
Forest:....93
3.5. METEOROLOGY....94
3.5.1 Climate condition (as per global modelling and assimilation office (GMAO)(2015) merra-2,2010-2019)....94
3.5.2 Temperature....95
3.5.3 Relative Humidity....97
3.5.4 Rainfall....99
3.5.5 Wind speed....100
3.5.6 Wind direction....102
3.6. Micro- meteorological data....105
3.7 Ambient air quality....106
3.7.1 Sampling station selection and rationale of pollutant measure....106
3.7.2 Ambient air sampling locations....107
3.7.4. Sampling procedure....109
3.7.5. Analytical method followed for ambient air quality monitoring....110
3.7.6. Ambient air quality results....111
3.7.6.1. Baseline date: post monsoon season (October- December- 2022): 111
At each station ambient air quality parameters i.e PM10, PM2.5, SO2, NOx & CO, were monitored twice a week for 3 months (October 2022- December 2022) 24 hourly at uniform intervals:....111
3.7.7. Air quality index....112
3.7.8. Data interpretation....113
3.8 Noise level....113
3.8.1 Methodology....113
3.8.2 Ambient noise sampling station....114
Criteria for site selection:....114
3.8.4. Results and discussion....117
3.9. Hydrology & geology....119
3.9.1 Geomorphology....119
3.9.2 GEOLOGY....121
3.9.3 Drainage....122
3.9.4 Flood History....123
3.9.5 Geohydrology....124
3.9.6 Groundwater Development....125
3.10 WATER QUALITY....126
3.10.1 SAMPLING STATION....126

3.10.2 Groundwater sampling locations....126
3.10.3. Surface water monitoring locations....127
3.10.4 Criteria of selection of sampling locations....127
3.10.5 Sampling frequency and sampling techniques....128
3.10.8. Ground water quality results....131
3.10.7 Ground water quality results interpretations....133
3.10.8 Surface water quality results....135
3.10.13. Data interpretation....137
3.11. Soil quality....138
3.11.1. Sampling location....138
3.11.3. Sampling procedures of analysis....140
3.11.4. Physical and chemical properties of soil....141
3.11.8 Data interpretation....143
3.12. Ecology & biodiversity....143
3.13 Socio-economic environment....163
3.13.1 Introduction....163
3.13.2 Objective of Study....163
3.13.3 Methodology....163
3.13.4 Concept & definitions....164
3.13.5 Socio study using secondary data (CENSUS OF INDIA, 2011)....165
3.13.6 Demographic profile of area....168
3.14 Traffic survey....180
4. Anticipated environmental impact & mitigation measures....184
4.1. Impact assessment methodology....184
4.2. Potential impacts during construction/ installation phase of Line-II....185
4.2.1. Activity - construction of new line II, equipment foundation etc....185
Aspects:....185
4.2.2. Activity- Installation of machinery of line II....187
4.2.3. Activity- operation of construction / installation of machinery (DG set, heavy machinery etc.)....188
4.2.4. Activity- transportation (raw material, labour)....190
Aspects:....190
4.2.5. Activity- working and daily activity of labour....191
4.3. Operational phase....193
4.3.1. Activity:loading & unloading storage of raw material....193
4.3.2. ACTIVITY- MANUFACTURING PROCESS-CLINKER & CEMENT PRODUCTION (CRUSHING, GRINDING, PYROPROCESSING AND STORAGE)....194
4.3.3. Activity- operation of machinery & equipment (DG sets, STP)....198
4.3.4. Activity- transportation of raw material , finished products, waste... 200

4.3.5. Activity- working & daily activity of staff, visitor.....202
4.4. Air quality modelling (AERMOD).....204
PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF PM10.....210
PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF SO2.....210
PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF CO.....211
4.5. Summary.....212
4.5.1. Air environment.....212
4.5.2. Water environment.....212
4.5.3. Land use.....212
4.5.4. Soil environment.....213
4.5.5. Socio-economic.....213
4.5.6. Ecology- biodiversity.....213
4.5.7. Noise vibration.....214
4.5.8. Hydrology & geology.....214
4.5.9. Solid & hazardous waste.....215
4.5.10. Traffic.....215
5. Analysis of alternative.....216
5.1. Description of alternatives.....216
5.2. Alternative manufacturing methods.....216
6. Environmental monitoring programme.....218
6.1. Details of monitoring to judge effectiveness of measures.....218
6.1.1. During construction phase.....219
6.2. During operational phase (After Expansion).....220
6.2.1.Work zone monitoring.....224
6.3. Submission of six monthly compliances.....224
6.4. Environmental audit.....224
6.5. Compliance of environmental of approval.....224
6.5.1. CGWA clearance.....224
6.5.2. Forest clearance.....224
6.5.4. Annual returns.....225
7. Additional studies.....226
7.1. Public consultations.....226
7.2.1. Hazard identification.....226
7.2.2. Vulnerability analysis.....228
7.3. Risk analysis.....230
7.3.1. Earthquake.....230
7.3.2. Flooding.....230
7.3.3. Fire & explosion.....230
7.3.4. Electrical.....230

7.3.5. Mechanical..... 231
7.3.6. Thermal..... 231
7.3.7. Terrorism..... 231
7.4. On-site emergency planning..... 231
7.4.1. Planning..... 231
7.5. Preventive measures..... 232
7.5.1. Earthquake..... 232
7.5.2. Flooding..... 233
7.5.3. Fire and life safety..... 233
7.5.4. Mechanical..... 234
7.5.5. Thermal and electrical..... 236
7.6. Emergency response procedure..... 236
7.6.1. Roles and responsibility..... 237
7.6.2. Recovery procedure..... 239
7.7. Off site emergency management plan..... 239
7.7.1. Vulnerability analysis..... 240
7.8. Preventive measures..... 240
7.8.1. During transportation..... 240
7.8.2. Emergency response procedures..... 241
7.8.3. Roles and responsibilities..... 241
7.8.4. Recovery procedures..... 243
7.9. Emergency control team..... 243
7.9.1. Key personnel..... 243
7.9.2. Chain of command during emergency..... 243
7.10. R&R action plans..... 244
8. Project benefits..... 245
8.1. Improvements in the physical infrastructure..... 245
8.2. Improvements in the social infrastructure..... 245
8.3. Employment potential – skilled, semi-skilled and unskilled..... 245
8.4 Improvements in Quality of Environment..... 246
8.5 Other tangible benefits..... 246
9. Environmental cost benefit analysis..... 247
10. Environment management plan..... 248
10.1. Introduction..... 248
10.2. Organisational Role and Responsibility..... 248
10.2.1. Role of project proponent (top management)..... 251
10.2.2. Role of contractor..... 252
10.2.3. Inspection, monitoring and audit..... 253
10.2.4. Monitoring, Reporting and Documentation..... 253

10.2.5. Internal monitoring, reporting and communication..... 253
10.2.6. Documentation.....254
10.2.7. EMP review & amendments..... 254
10.3. Environment management plan..... 255
10.3.1. Environment Management Plan during Construction Phase.....255
10.3.2. Environment Management Plan during Operation Phase..... 256
10.4. EMP implementation budget..... 258
10.5 Social Activities Budget..... 259
10.6 Wildlife Conservation Plan Budget..... 262
10.5. ENVIRONMENTAL Cost Summary..... 263
11. Summary & Conclusion..... 264
11.1. Project description..... 264
11.2. Description of the environment..... 265
11.3. Anticipated environmental impact and mitigation measures..... 268
11.4. Environmental monitoring programme..... 272
11.5. Additional studies..... 272
11.6. Project benefits..... 273
11.7. Environment management plan..... 273
11.8. Conclusion..... 274
12. Disclosure of consultants engaged..... 275

List Of Tables

- Table 1. Chronology of CTO & EC Till date
- Table 2. Population Calculation During Construction Phase
- Table 3. Population Calculation During Operational Phase
- Table 4. Coordinates of all corners of project site
- Table 5. Environment Setting of the Project
- Table 6. Major industries in 10 km study area
- Table 7. Project Description
- Table 8. Details of Approvals
- Table 9. Details of Products & Production
- Table 10 Land Use
- Table 11. Manpower details
- Table 12. Manpower Calculation
- Table 13. Power & Fuel Requirement
- Table 14. Energy Consumption
- Table 15. Raw Material Details

- Table 16. Transportation Details of Raw Material & product
- Table 17. Plant & machinery
- Table 18. Environment Issue of the Project
- Table 19. Pollution Load Summary (Effluent)
- Table 20. Pollution Load Summary (Waste Details)
- Table 21. Pollution Load Summary (Emission from Machinery for Process)
- Table 22. Water & Wastewater management
- Table 23. Characteristics of Wastewater & Treated Water
- Table 24. Rain Water Harvesting
- Table 25. Fugitive Emission Control Measure
- Table 26. Utilities Emission Control
- Table 27. Emission Control Process System
- Table 28. Solid Waste Management
- Table 29. Non- Hazardous Waste Management (Process)
- Table 30. Hazardous Waste Management
- Table 31. E-Waste Management
- Table 32. Battery Waste Management
- Table 33. Parking Provision
- Table 34. Details of Year wise Green belt Plantation
- Table 35. Green Belt Layout Legend
- Table 36. List of Medical Test during Pre & post Employment
- Table 37. Budget for Occupational health & Safety
- Table 38. Budget for Public Health & Safety
- Table 39. Methodology of Baseline Data
- Table 40. Land Use Break up of Buffer Zone
- Table 41. Temperature
- Table 42. Relative Humidity
- Table 43. Rainfall
- Table 44. Wind Speed
- Table 45. WInd Direction
- Table 46. Micro- Meteorological Data
- Table 47. AMbient Air Sampling Locations
- Table 48. Ambient Air Quality Results (PM 2.5 & PM10)
- Table 49. Ambient Air Quality Results (SO2 & NO2)
- Table 50. Ambient Air Quality Results (CO)
- Table 51. AQI Value
- Table 52. Ambient Noise Sampling Station
- Table 53. Ambient Noise Results
- Table 54. Regional Geology
- Table 55. Groundwater Development

- Table 56. Groundwater Sampling Location
- Table 57. Surface Water Monitoring Location
- Table 58. Ground water quality Results
- Table 59. Surface Water Quality Results
- Table 60. Surface Water Criteria as per CPCB
- Table 61. Soil Quality Sampling Location
- Table 62. Soil Results
- Table 63. Existing Soil Quality at Core Zone
- Table 64. Ecological sensitive area & distance
- Table 65. Terrestrial Study
- Table 66. Fauna of Core Zone
- Table 67. Flora of Buffer Zone
- Table 68. Flora of Buffer Zone
- Table 69. List of Shrubs, Herbs, Climbers, Ferns & Grasses:
- Table 70. Fauna of Buffer Zone
- Table 71. Schedule-I Species in buffer Zone
- Table 72. List of Village in Study Area
- Table 73. List of Villages falling in Pulwama district
- Table 74. List of villages falling in District Srinagar
- Table 75. Demographic Feature of the Study Area Based on Census Data 2011
- Table 76. Demographic Features of the Study Area Based on Census Data 2011
- Table 77. Demographic Features of the Study Area Based on Census Data 2011 of District Srinagar
- Table 78. Work Profile of the district Pulwama (rural areas)
- Table 79. Work Profile of the district Pulwama (Urban Areas)
- Table 80. Work profile in District Srinagar Urban Area
- Table 81. Amenities available in the Study Area
- Table 82. Primary Field Surveyed Villages
- Table 83. Population Details
- Table 84. Occupation Details
- Table 85. Other Infrastructure Facilities
- Table 86. Vehicle PUC Value
- Table 87. Traffic Analysis (Pampore- Zantrang Road)
- Table 88. Summary of Traffic Survey
- Table 89. Traffic Analysis (Approach Road)
- Table 90. Summary of Traffic Survey (Approach Road)
- Table 91. LOS Value as per IRC 106:1990
- Table 92. Construction of New Line II, Equipment Foundation etc.

- Table 93. Activity- Installation of machinery of Line II
- Table 94. Operation of Construction/ Installation of Machinery (DG Set, Heavy Machinery etc.)
- Table 95. Activity- transportation (raw material, labour)
- Table 96. Activity- working and daily activity of labour
- Table 97. Activity:loading & unloading storage of raw material
- Table 98. ACTIVITY- MANUFACTURING PROCESS-CLINKER & CEMENT PRODUCTION (CRUSHING, GRINDING, PYROPROCESSING AND STORAGE)
- Table 99. Activity- operation of machinery & equipment (DG sets, STP)
- Table 100. Transportation of Raw Material, Finished Products, Waste
- Table 101. Working & Daily Activity of Staff, Visitor
- Table 102. Input parameters for air quality modelling
- Table 103. Predicted post project ambient air quality for PM 2.5
- Table 104. Predicted post project ambient air quality for PM10
- Table 105. Predicted post project ambient air quality for NO2
- Table 106. Predicted post project ambient air quality for SO2
- Table 107. Predicted post project ambient air quality for CO
- Table 108. Environment Monitoring Plan during construction Phase
- Table 109. Environment Monitoring Plan during operation Phase
- Table 110. Vulnerability Analysis
- Table 111. Vulnerability Analysis (offsite emergency)
- Table 112. Roles and responsibilities (off site Emergency)
- Table 113. EMP During Construction Phase
- Table 114. EMP during Operation Phase
- Table 115. EMP Capital Cost
- Table 116. EMP recurring cost
- Table 117. Expenditures done of Social Activities
- Table 118. Cost spent on Social activities FY 2020-21
- Table 119. Cost spent on Social activities FY 2021-22
- Table 120. Cost spent on Social activities FY 2022-23
- Table 121. Proposed Social activities Budget
- Table 122. Wildlife Conservation Plan Budget
- Table 123. Environmental Cost Summary
- Table 124. Core Team
- Table 125. List of EIA Expert
- Table 126. List of Team Members (TM to EIA Coordination)
- Table 127. List of Team Member to FAE Involved

List Of Images

- Figure 1. Map showing study area (10 km)
- Figure 2. Map showing close view of the project site (1 km)
- Figure 3. Accessibility Map with 1 km Radius
- Figure 4. Accessibility map with 2 km radius
- Figure 5. Google image showing coordinates of the site
- Figure 6. Topographical Map
- Figure 7. Ecological Sensitivity Map
- Figure 8. Site Photographs
- Figure 9. Seismicity Map
- Figure 10. Layout Plan
- Figure 11. Existing land Use
- Figure 12. After Expansion Land Use
- Figure 13. Flow Chart for the crushing of Limestone & coal
- Figure 14. Flow Sheet Showing the Grinding of Raw Material
- Figure 15. Flow sheet for new coal storage & Grinding section
- Figure 16. Flow Sheet for New Coal Mill bins
- Figure 17. Flow sheet for pyro processing, Clinker Cooler & Storage
- Figure 18. Flow Sheet for clinkerisation
- Figure 19. Flow Sheet for the Clinker Grinding & Cement
- Figure 20. Flow sheet for packing & Dispatch of cement
- Figure 21. Hydraulic Flow Diagram of STP Based on MBBR Technology
- Figure 22. Existing APCS
- Figure 23. Existing Plantation Photographs
- Figure 24. Green Belt layout
- Figure 29. DEM Map
- Figure 30. Village Map
- Figure 31. Flow Chart for Methodology of LULC Map Prapartion
- Figure 32. Land Use Breakup Expansion of Cement Plant
- Figure 33. Land Use Map
- Figure 34. Maximum Relative Humidity
- Figure 35. Minimum Relative Humidity
- Figure 36. Maximum Rainfall
- Figure 37. Minimum Rainfall
- Figure 38. Maximum Wind Speed
- Figure 39. MInimum Wind Speed
- Figure 40. Wind Rose Diagram Winter
- Figure 41. Wind Rose Diagram Post Monsoon
- Figure 42. Wind Rose Diagram Summer
- Figure 43. Micro Met Wind Rose
- Figure 44. Air Sampling Location Map

- Figure 45. Noise Sampling Location Map
- Figure 46. Geomorphological Map
- Figure 47. Drainage Map with Contour
- Figure 48. Ecological Sensitivity Map
- Figure 49. Village Map
- Figure 50. Occupation. / Job Profile
- Figure 51. Predicted maximum GLC concentration from proposed project for PM 2.5
- Figure 52. Predicted maximum GLC concentration from proposed project for PM10
- Figure 53. Predicted maximum GLC concentration from proposed project for NO2
- Figure 54. Predicted maximum GLC concentration from proposed project for SO2
- Figure 55. Predicted maximum GLC concentration from proposed project for CO
- Figure 56. Disaster Management Cell
- Figure 57. Chain of command during emergency
- Figure 58. Environment Policy
- Figure 59. Environment management cell

1. Introduction

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process used to identify the Environmental, social and economic impacts of a project prior to decision-making. With a view to make effective sustainable plant programmes, it is necessary to conduct a baseline survey of the existing Environmental attributes. It helps to evaluate anticipated Environmental impacts resultant to proposed activities and in formulating a scientific Environmental Management Plan. Irrespective of magnitude of operation, attempts have been made to maintain ecological balance of the study area.

In order to commence production, it is necessary to obtain Environmental Clearance from the Ministry of Environmental and Forests & CC, Govt. of India as per EIA Notification 2006.

Trumboo Industries Private Limited (TIPL) is presently operating a cement plant having a cement and clinker capacity of 3.3 Lakhs TPA (0.33 million TPA) & 3.135 Lakhs TPA (0.31 million TPA) respectively to produce ordinary portland cement (OPC) in an area of 12.38 ha at Village Khrew, Taluka: Pampore, District-Pulwama, Jammu & Kashmir. Considering demand in the state of J&K. TIPL has decided to expand the cement manufacturing capacity in the existing plant area by adding another manufacturing line of 3.3 Lakhs TPA (0.33 million TPA) to produce 6.6 Lakhs TPA (0.66 million TPA) ordinary Portland cement. It already has a captive limestone mine to supply limestone to the existing as well proposed cement production capacity. The majority of limestone for the plant would be procured from the company's own mine located at approx. 4.0 km from the plant site . The cement unit is established in a land area of 12.38 Ha, the expansion of the proposed project will be within the existing plot area only, no additional land is required for the expansion.

The project falls under category ‘B1’ of Schedule 3(b) as per EIA notification 2006 and its subsequent amendments as the capacity of the proposed cement plant is less than 1 MTPA. The project attracts general conditions as the Dachigam National Park is located at 3.12 km N from the plant site, hence will be appraised at Central Level. The ESZ of the aforementioned National Park is not notified hence the default ESZ of 10 km has been considered and accordingly, NBWL clearance application was applied vide Proposal No. FP/JK/IND/4774/2020. NBWL clearance has been granted by the Standing Committee vide letter no. F.No.6-132/2021-WL dated 02.05.2022. The distance from Dachigam National Park i.e. 3.12 km N has been authenticated by the Chief WildLife Warden, Jammu & Kashmir.

The plant has been in operation since 2010 for which CTE was obtained from Jammu and Kashmir State Pollution Control Board vide letter no 200 of 2004 dated 16.08.2004. The Consent to operate has been obtained for the existing capacity from time to time. Latest CTO has been granted by the Jammu & Kashmir State Pollution Control Board to M/s Trumboo Industries Pvt. Ltd. vide letter no. PCC/digital/22062773946 of 2022 dated 11.08.2022, which is valid up to June 2026.

Certified Compliance report on CTO has been issued by RO, MoEF, Srinagar, Kashmir vide letter no. PCC/RDK/PS/2023/97-98 dated 29.04.2023.

1.1. Chronology of CTO till date with production allowed

Table 1. Chronology of CTO & EC Till date

S. No	CTO/EC	Company Name	Date of Issue	Validity	Consent Number
1	CTE	M/s Trumboo Industries Pvt. Ltd.	16.08.2004	-	200 of 2004
2	CTO (Renewal)*	M/s Trumboo Industries Pvt. Ltd.	09.06.2015	April 2016	438 of 2015
3	CTO (Renewal)	M/s Trumboo Industries Pvt. Ltd.	10.01.2017	April 2018	SPCB 967 of 2017
4	CTO (Renewal)	M/s Trumboo Industries Pvt. Ltd.	09.07.2018	April 2021	SPCB/digital/1806470858 of 2018
5	CTO (Renewal)	M/s Trumboo Industries Pvt. Ltd.	14.06.2021	13.06.2022	PCC/digital/21061945798 of 2021
6	CTO (Renewal)	M/s Trumboo Industries Pvt. Ltd.	11.08.2022	June 2026	PCC/digital/22062773946 of 2022
*Remark- The plant has been operational since 2010. The plant was operational on the basis of the CTO/its renewal granted to the unit. However, as per letter received from J&K pollution Control Committee vide letter no. PCC/RoK/Sgr/2023/398-99 dated 18.03.2023 the office remained inundated in the floods of 2014 hence whole record got devastated, thus the copy if the CTO granted from 2010 to june 2015 is not available.					

1.1 Purpose of the report

The EIA Study for the proposed project as per the requirements of the EIA Notification, 2006 and its subsequent amendments with an objective of obtaining an Environmental Clearance (EC) has been done to make a comprehensive impact assessment of the project on the environment and its mitigation measures. The industry is involved in production and manufacture of cement. The Ministry of Environment & Forests, Govt. of India, made environmental clearance (EC) for certain development projects mandatory through its notification of 27.01.1994 under the Environment Protection Act, 1986. Keeping in view of the experience gained in the environmental clearance process over a period of one decade, the MoEF&CC came out with Environment Impact Notification, SO 1533(E), dated 14.09.2006. It has been made mandatory to obtain environmental clearance for all **Cement Plants** and the project lies under **Item 3(b), Category B1** as per EIA Notification 2006 and its subsequent amendments. Since the proposal attracts general conditions as Dachigam national park is located at 3.12 km from the project site hence the project requires clearance from central level i.e. MoEF&CC. The notification has classified all cement plants with capacities less than 1.0 million tonnes per annum under Category-B.

Hence, Project proponent M/s Trumboo Industries Pvt. Ltd. have involved consultants Perfact EnviroSolutions Private Limited (NABET accredited for 3(b) sector) for preparing EIA report based on Appendix III of the said notification for the grant of Environment Clearance. MoEF&CC has accorded **Terms of Reference (TOR) for the proposed project vide File No. J-11011/204/2016-IA.II (I) dated 15/01/2021.**

Demands-Supply Gap: The cement demand in India during the year 2022 is estimated to be 355 MTPA which is expected to reach 648 MTPA in the year 2026 while the installed effective cement capacity in India is estimated to be around 540 MTPA during the year 2022. Demand - Supply projection for cement on a National and State basis reveals that there exists an imbalance between availability and demand of cement in various regions of the country. Under these circumstances to bridge the gap, M/s Trumboo Industries Pvt. Ltd has proposed expansion of cement plant from 3.3 Lakhs TPA (0.33 million TPA) to 6.6 Lakhs TPA (0.66 million TPA) capacity by installing another manufacturing line of 3.3 Lakhs TPA (0.33 million TPA at Village Khrew, Taluka: Pampore, District-Pulwama, Jammu & Kashmir State.

Imports vs. Indigenous Production: There will be no import of cement in the country as India has vast potential to produce clinker & cement due to availability of vast reserves of limestone. The cement produced in the state will be entirely

utilised for the indigenous development. Clinkers produced will be consumed inhouse for cement production.

Domestic / Export Markets: Clinker produced will be consumed inhouse for cement production & cement produced will be sold locally and the mode of transportation for the final product will be by road. There will be no export of cement or clinker.

Employment Generation: Total employment during the construction phase will be about 350 persons including 100 as permanent staff and 250 as contractual staff. Manpower will be sourced from the local area in J&K state. The details of the manpower for both construction & operation phase are given below:

Table 2. Population Calculation During Construction Phase

Population calculation during construction phase	
Permanent hired Staff	100
Temporary hired staff	250
Total Manpower during Construction phase	**350**

Table 3. Population Calculation During Operational Phase

Population calculation during operation phase			
Particular	**Existing**	**Proposed**	**After Expansion**
Skilled Manpower	275	155	430
Semi-Skilled	50	30	80
Unskilled Manpower	25	15	40
Total Population	**350**	**200**	**550**

1.2 Project & project proponent

The proposed project is an expansion by enhancement in production capacity of Cement from existing 3.3 Lakh TPA to 6.6 Lakh TPA by Trumboo Industries Pvt. Ltd located at Village Khrew, Taluka: Pampore, District-Pulwama, Jammu & Kashmir State. The minimum elevation of the site is about 1,922 m and maximum elevation is 1970 m with respect to mean sea level.

Total Capacity: 6.27 lakh TPA Clinker, 6.6 lakh TPA Cement

Name of the Applicant: Mr. Mushtaq Ahmed Trumboo, Authorised Signatory & Director

Address: C/63, Rajbagh Extension, Srinagar, Jammu & Kashmir, India- 190008

Phone: 0194-2486811

E-Mail: ed@tcimax.in

M/s Trumboo cement Industries Pvt. Ltd. (TIPL) is one of the most recognized brands in the state which was founded in 1,970. The brand holds value in all corners of the state employing more than 400 people in its operations.

Trumboo Group expanded their business across the valley. To start with, special focus was given to the setting up of cement plants and then expanding into new and emerging areas like horticulture, textile and tourism.

The Trumboo Group with diversified business interests in Jammu & Kashmir has earned a hard earned reputation for excellent business practices and quality products. Trumboo Group is the state's leading cement manufacturer employing the most advanced technology and processes.

The group is also launching a chain of its premier leisure and business properties under a management contract with one of the World's largest hotel chains Starwood. The concept of launching the new chain of hotels is to encompass the essence of Kashmir that brings to life myriad facets of the great state through its architecture, interiors, services, cuisine, decor, and ambience.

1.4. Brief description of project

Location: Village Khrew, Taluka: Pampore, District-Pulwama, Jammu & Kashmir State.

Plot size: Total - 12.38 ha

Locational advantages: The site can be accessed from Jantrang Khrew road located at 1.28 Km SE. The nearest Railway station is Pampore Railway Station which is approximately 12.75 km SW from the site. The nearest Airport is Srinagar International Airport which is approximately 23.54 km SW direction.

1.5. Scope of EIA study

1. **To Determine the status of current environmental parameters:** This study involves assessment of present environment and ecology, flora and fauna, land use/ land cover, socio-economic condition of the area, monitoring of atmospheric pollutants like air, water, soil, noise and meteorological parameters. Studies in this respect were carried out in core zone (i.e. project area) as well as in buffer zone (area covering 10 km radius from the project) as per the guidelines of MoEF&CC and ToR Granted.
2. **To Predict, assess, categorise, quantify and mitigate probable significant environmental impacts (considering alternate assignments, baseline scenario and public opinion):** In order to predict the expected impact of processes and activities of the project on various environmental factors, a

detailed study of interrelationship of project activities and environmental factors has been carried out in this report.

3. **To prepare a detailed Environmental Management Plan (EMP) with best available management tools and techniques including monitoring, reporting along with Operation and Maintenance Budget for better implementation.**

4. **Undertake Risk assessment for the proposed project and lay down risk mitigation measures for the safe Operations.**

1.6. EIA methodology

The methodology adopted while preparing the EIA report is given below in the following steps.

1. **Screening:** Reviewing of the study area and the project description & activity associated with the project, identifying their potential impacts on various environmental components, applicability of the regulatory framework, compilation of the available baseline data, categorization and identification of the schedule & activity number of the project as per the EIA Notification, 2006.

2. **Scoping:** It involves the submission of the application for the terms of reference & appraisal by EAC for scoping for the EIA study. The proposal for the grant of terms of reference was submitted to MoEF&CC on 15th December 2020 and the Term of References was granted by the MoEF&CC vide **File No. IA-J-11011/204/2017-IA-II(I) dated 15.01.2021** based on which this EIA study has been conducted.

3. **Project Description:** The detailed study and project description was carried out as per the Project pre feasibility report and additional information provided by the Project Proponent Trumboo Industries Pvt. Ltd., the detailed project description is covered in Chapter 2 and has been considered as an input for the impact assessment & suggesting mitigation measures. Occupational health and Hazards have also been identified and covered in Chapter 2.

4. **Environmental Baseline Study:** The baseline study was carried out for October- December 2022. The information has been collected and compiled from primary and secondary sources. Primary environmental data has been generated through field study within the impact zone (Core Zone and Buffer Zone) for various components of the environment viz. Air, Noise, Soil, Water,

Traffic. The land use/land cover, ecology and socio-economic baseline has been prepared through primary survey and collection of secondary data.

5. **Impact Assessment & Analysis of Alternatives:** The detailed methodology for the assessment of the impact associated with the project activities are given in Chapter 4. This involves identification, prediction and quantification of the impacts based on the activities associated during the construction and operation phase. The impacts have been accessed as per the information provided by the proponent and the experts' judgement. The methods involved qualitative assessment, expert/professional judgement to quantitative modelling output. Worst case scenario has been assumed while identifying the impacts and accordingly mitigation measures have been proposed.

6. **Environmental Management and Monitoring Plan:** Based on the baseline study and the impact assessment the Environmental Monitoring Plan has been prepared for ambient air & noise, water & waste-water, soil, solid waste, landscaping, energy saving, work zone area, Hazardous chemicals monitoring etc are covered in Chapter 6.

7. **Risk Assessment (RA):** Risk Assessment was carried out in order to ensure effective management of any emergency situations that may arise from the failure of storage silos, spillages, etc. with respect to the proposed project. The RA provides the appropriate preventive and risk mitigation measures. (Chapter 7).

8. **Project Approvals:** The EIA study conducted will be used as a guiding document for the decision making for the proposed project by MoEF&CC as per the EIA Notification, 2006.

1.7. Limitations

This EIA study is based on certain scientific principles, expert systems and professional judgement to certain facts with resultant subjective interpretation and the baseline data collected. The report has been prepared based on the information provided by Trumboo Industries Pvt. Ltd. and information gathered by the Perfact Enviro Solutions Pvt. Ltd. team. The impact prediction and assessment is done based on the project description covered in Chapter 2. If information to the contrary is found, the findings in this EIA may need to be modified accordingly.

The report preparation is not for the purpose of advertisement, sales, promotions, or recommendation of the client's interest or Public attention. The client acknowledges that the report prepared by Perfact Enviro Solutions Pvt. Ltd. is only

for the absolute use of the client and for the grant of the Environmental clearance and will not be used for any promotional and commercial purpose.

1.8. Applicable environmental laws

Following legislations are applicable to the project

THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT 1974

Under Section 25. Restrictions on New Outlets and New Discharges

- Applicable due to discharge of runoff or wastewater from the cement manufacturing unit
- Under the above-mentioned act, we shall take consent “consent to establish” & “consent to operate” from the State Pollution Control Board.

THE AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981

Under section 21. Restrictions on the use of certain industrial plants.

- Applicable due to provision of DG Sets & Manufacturing units (like kilns) which will be a source of air emissions to the atmosphere. Stack & Air Pollution Control Device shall be installed.
- Under the above-mentioned act, we shall take consent “consent to establish” & “consent to operate” from the State Pollution Control Board.

SOLID WASTE (MANAGEMENT AND HANDLING) RULES, 2016

- As per this rule solid waste is to be segregated, treated and disposed of as per defined procedure at approved sites for disposal of solid waste or within its own complex by using different solid waste disposed technologies.

HAZARDOUS AND OTHER WASTE (MANAGEMENT & TRANSBOUNDARY MOVEMENT) RULES, 2016

- Hazardous wastes shall be collected, treated, stored at isolated locations.
- It will be given to authorised recyclers/ service providers only.

BATTERIES (MANAGEMENT AND HANDLING) RULES, 2001.

- To control the hazardous waste generation (lead waste) from used lead acid batteries

THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000

- The noise levels in any area zone shall not exceed the noise quality standards in respect of noise as specified in the schedule.

- The authority shall be responsible for the enforcement of noise pollution control measures and the due compliance of the noise quality standards in respect of noise.

PUBLIC LIABILITY INSURANCE ACT, 1991

- An act to provide for public liability-insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling any hazardous substance and for matters connected therewith or incidental thereto.

THE MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICALS RULES, 1989.

- Storage of all chemicals shall not exceed their threshold limit, wherever threshold is exceeded Clearance shall be as per obtained taken as MSIHC Rules, 1989.

EIA NOTIFICATION, 2006 & ITS AMENDMENTS

- EIA Notification, 2006 falls under EPA, 1986 under this act any project which has probable impact on the environment is listed under 35 categories, then units are required to take prior environmental clearance after occupying/identifying the land for a particular use. The project comes under category “B” & listed 3(b) schedules as per EIA notification, 2006.

EXPLOSIVE ACT, 1884

- An Act to regulate the manufacture, possession, use, sale, [transport, import and export] of Explosives.

CENTRAL MOTOR VEHICLE ACT 1988 AND CENTRAL MOTOR VEHICLES RULES 1989

- For transportation of dangerous/ flammable goods

OCCUPATIONAL SAFETY, HEALTH AND WORKING CONDITIONS CODE, 2020

- This code is applicable to all the establishments with 10 or more workers

2. Project description

2.1 Type of projects

Trumboo Industries Private Limited (TIPL) is proposing to enhance the production capacity of Existing cement plant from cement and clinker capacity of 3.3 Lakhs TPA (0.33 million TPA) & 3.135 Lakhs TPA (0.31 million TPA) respectively over the existing land area of 12.38 ha located at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir. The plant site is located at a distance 3.12 Km N of Dachigam National Park from the plant. The project falls under category 'B1' of Schedule 3(b) as per EIA notification 2006 and its subsequent amendments as the capacity of the proposed cement plant is less than 1 MTPA. The project attracts general conditions as the Dachigam National Park is located at 3.12 km N from the plant site, hence will be appraised at Central Level.

2.2 Need for the projects

India's cement demand has grown exponentially at a rate of 7.6% in the last 10 years. For the last few years it has grown at a rate of more than 9 % and still shows a steady increase in growth rate. Hence the growth of Cement will continue in the state and all over the country. J&K is situated at a large distance from the existing cement plants of the country. Since the cost of cement is transport sensitive hence the price of cement in J&K from other plants of the country becomes prohibitive. Considering this factor and with availability of limestone in the state, it is prudent to set up a cement plant in the state itself to cater the needs of J&K. Existing plant of 3.3 Lakhs TPA (0.33 million TPA) was set up with this fact in mind. Now the demand of cement in the state has gone up therefore TIPL has now proposed doubling of cement production capacity from 3.3 Lakhs TPA (0.33 million TPA) to 6.6 Lakhs TPA (0.66 million TPA) .

TIPL now proposes to increase production in following manner:

1. Increase of Cement & Clinker production capacity from 3.3 Lakhs TPA (0.33 million TPA) to 6.6 Lakh TPA(0.66 million TPA) & 3.135 Lakhs TPA (0.31 million TPA) to 6.27 Lakh TPA(0.627 million TPA) respectively.
2. No change in type of cement after expansion of cement plant i.e. OPC being presently produced from the existing plant.
3. The proposed expansion unit will be located within the existing plant area of 12.38 ha.

2.3 Location

Location - Village: Khrew, Tehsil- Pampore, District: Pulwama, State: Jammu & Kashmir.

The existing Cement Plant is located in Khasra No. 107 Min, 109 Min, 134, 142, 141, 112, 140, 143 Min, 144 Min, 145 Min, 110 Min, 108, 151 Min, 150 Min, 106, 105 Min, 135 Min, 138 Min, 139, 139 Min, 148 Min, 113, 3,173, 3,171, 3,298, 3,299, 3,300, 3,301, 3,302, 3,303, 3,304, 3,305, 2,881, 3,295, 2,879, 3,170, 3,172, 7,389/3,173/1, 7,391/3,177 at Village Khrew, Tehsil: Pampore, District-Pulwama, Jammu & Kashmir State.

Maximum Elevation: 1,922 m

Minimum Elevation: 1,970 m

Map showing study area of 10 km radius is below:

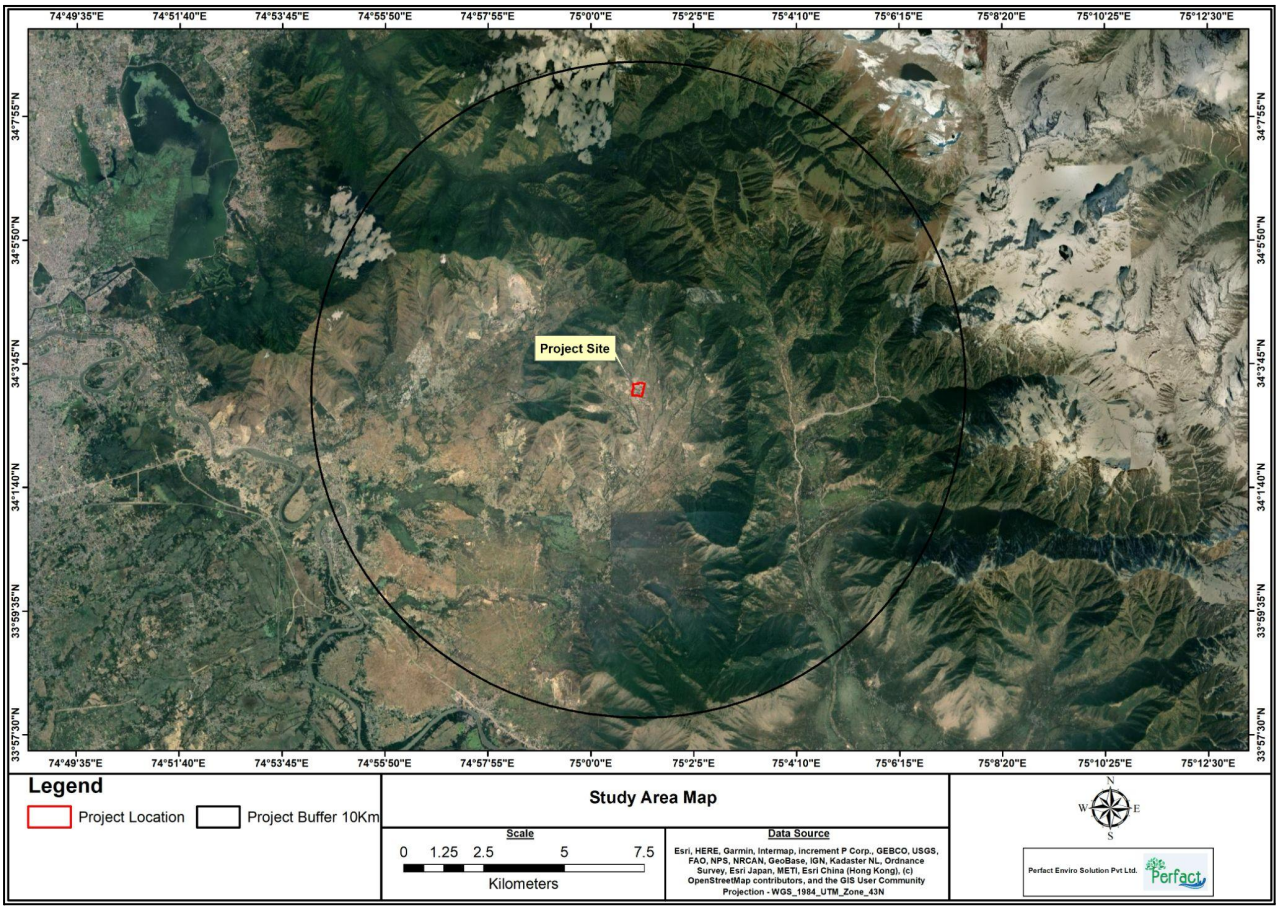


Figure 1. Map showing study area (10 km)

Map showing close view of the project site with 1km radius:

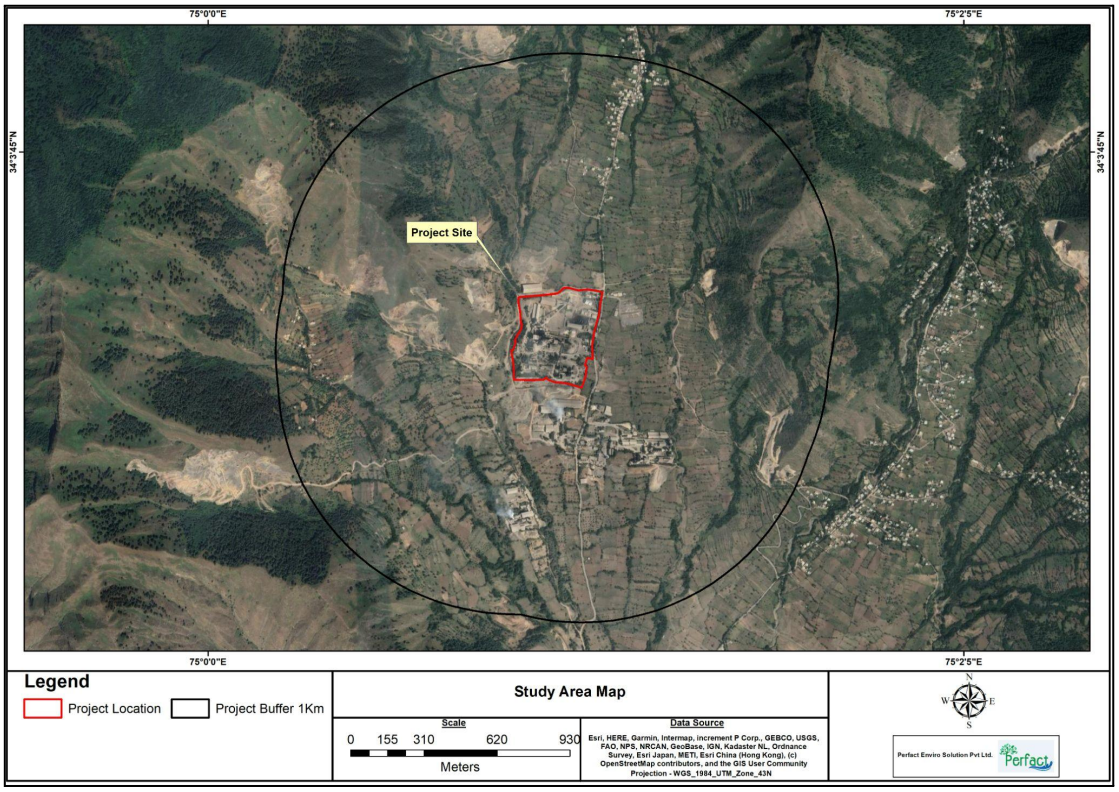


Figure 2. Map showing close view of the project site (1 km)

Accessibility map with 1 km radius

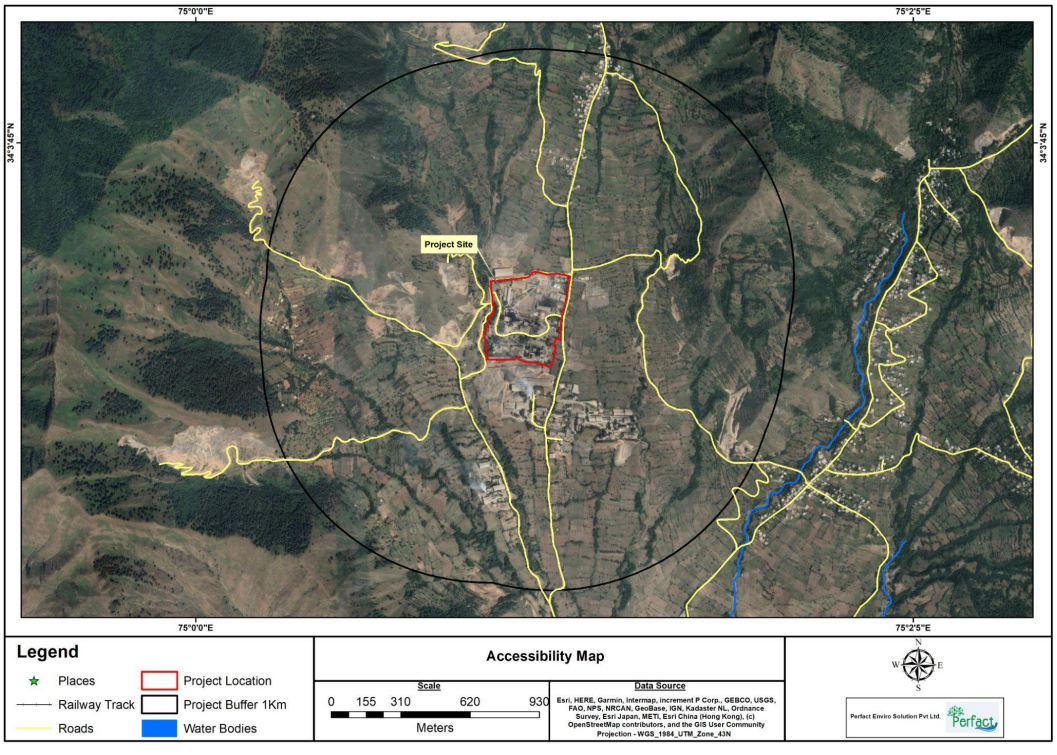


Figure 3. Accessibility Map with 1 km Radius

Accessibility map with 2 km radius

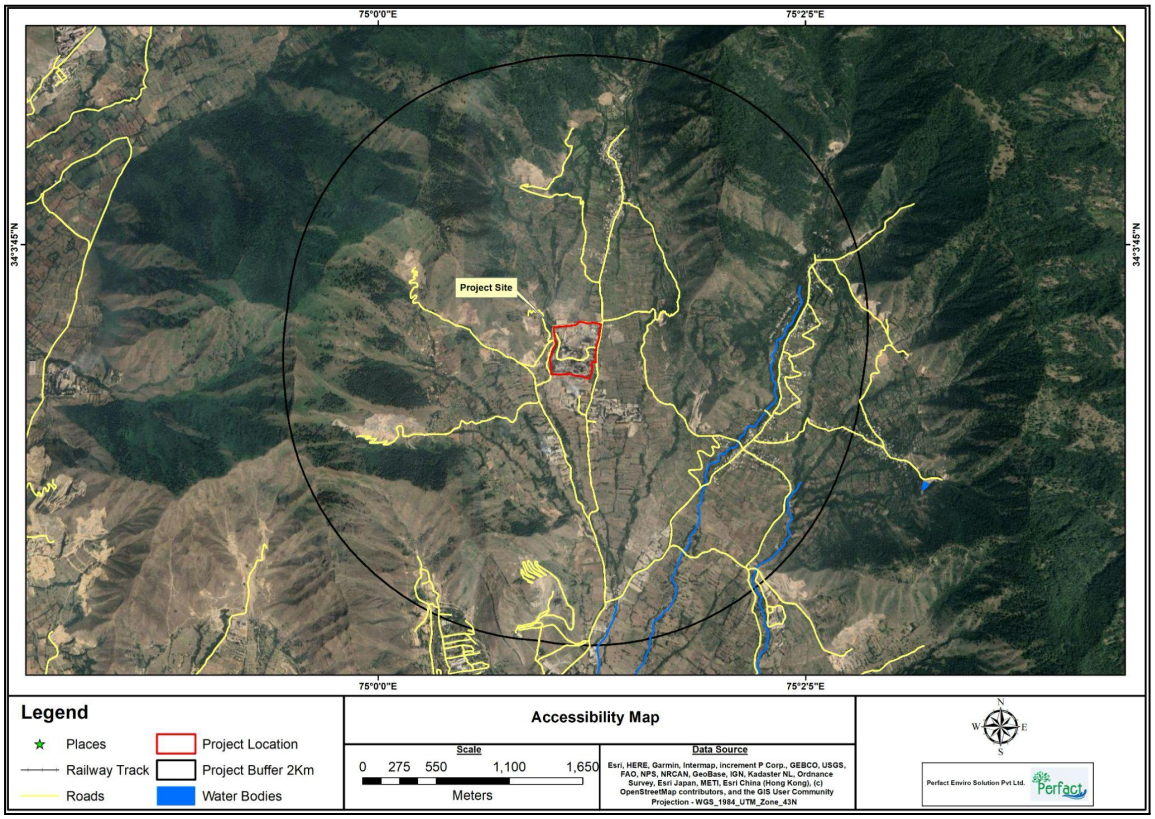


Figure 4. Accessibility map with 2 km radius

2.4 Coordinated of all corners

The Coordinates of the project are given below.

Table 4. Coordinates of all corners of project site

S. No.	Latitude	Longitude
1	34°3'24.032"N	75° 0'51.331"E
2	34°3'24.894"N	75° 0'51.314"E
3	34°3'25.411"N	75° 0'57.732"E
4	34°3'26.198"N	75° 0'58.848"E
5	34°3'26.167"N	75° 0'59.691"E
6	34°3'25.844"N	75° 1'1.173"E
7	34°3'25.966"N	75° 1'2.739"E
8	34°3'25.768"N	75° 1'4.406"E
9	34°3'25.571"N	75° 1'5.199"E

10	34°3'22.409"N	75° 1'4.651"E
11	34°3'20.008"N	75° 1'3.824"E
12	34°3'18.158"N	75° 1'3.528"E
13	34°3'16.322"N	75° 1'3.613"E
14	34°3'16.473"N	75° 1'2.681"E
15	34°3'15.456"N	75° 1'2.335"E
16	34°3'15.285"N	75° 1'2.644"E
17	34°3'13.906"N	75° 1'2.437"E
18	34°3'12.328"N	75° 1'1.784"E
19	34°3'12.964"N	75° 0'59.270"E
20	34°3'13.038"N	75° 0'58.203"E
21	34°3'13.112"N	75° 0'57.318"E
22	34°3'13.525"N	75° 0'56.107"E
23	34°3'13.782"N	75° 0'55.859"E
24	34°3'13.437"N	75° 0'55.500"E
25	34°3'13.437"N	75° 0'54.851"E
26	34°3'13.404"N	75° 0'53.478"E
27	34°3'13.469"N	75° 0'50.595"E
28	34°3'14.622"N	75° 0'50.579"E
29	34°3'16.053"N	75° 0'50.425"E
30	34°3'16.964"N	75° 0'50.213"E
31	34°3'17.543"N	75° 0'50.192"E
32	34°3'17.602"N	75° 0'50.444"E
33	34°3'18.725"N	75° 0'50.906"E
34	34°3'18.854"N	75° 0'50.703"E
35	34°3'19.961"N	75° 0'51.320"E
36	34°3'19.938"N	75° 0'51.464"E
37	34°3'20.558"N	75° 0'51.838"E
38	34°3'21.198"N	75° 0'51.928"E
39	34°3'21.360"N	75° 0'51.720"E
40	34°3'22.999"N	75° 0'51.604"E

Google image showing coordinates of the site is below:

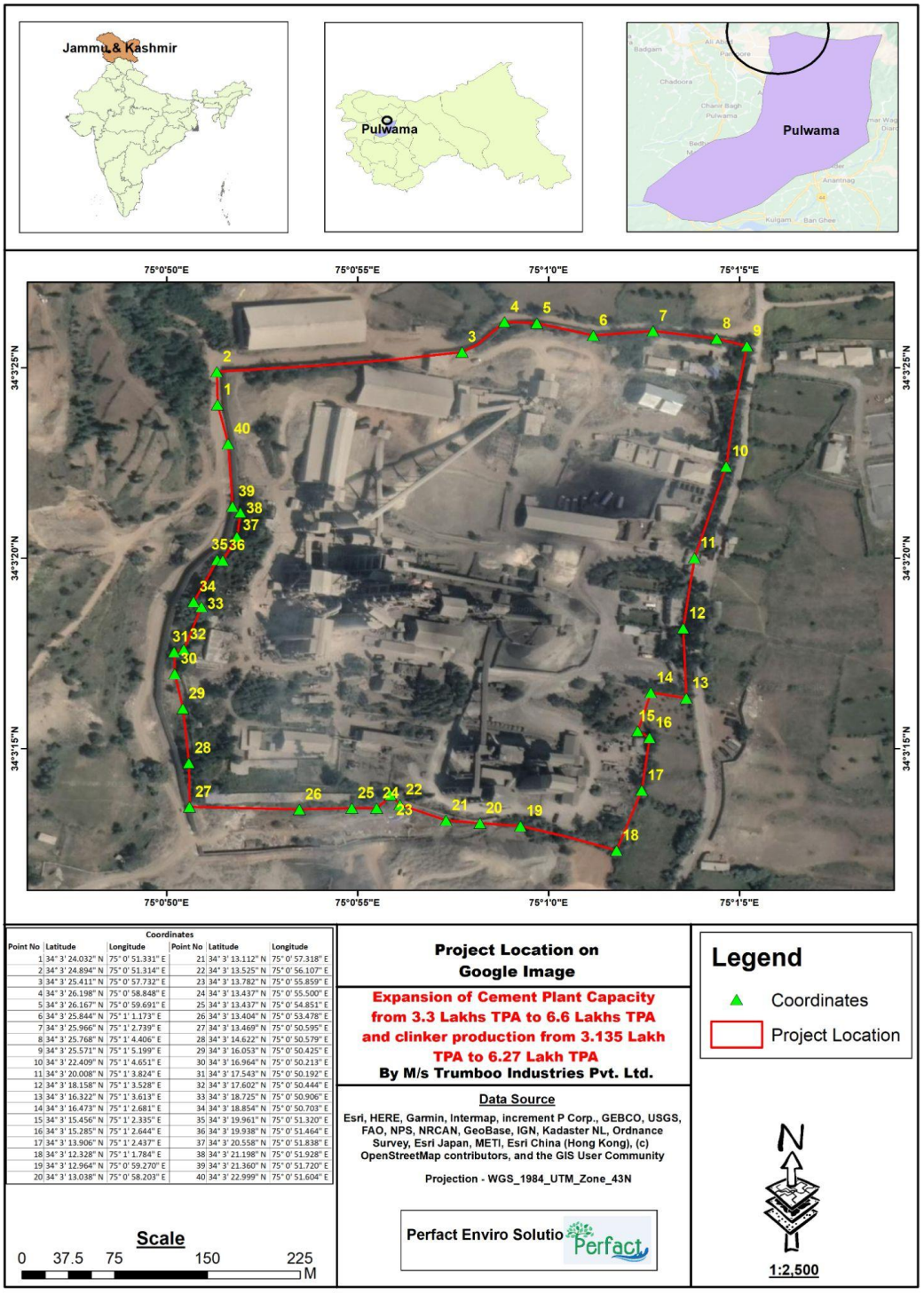


Figure 5. Google image showing coordinates of the site

2.4.1 Topographical map (showing 10 KM radius around the project site)

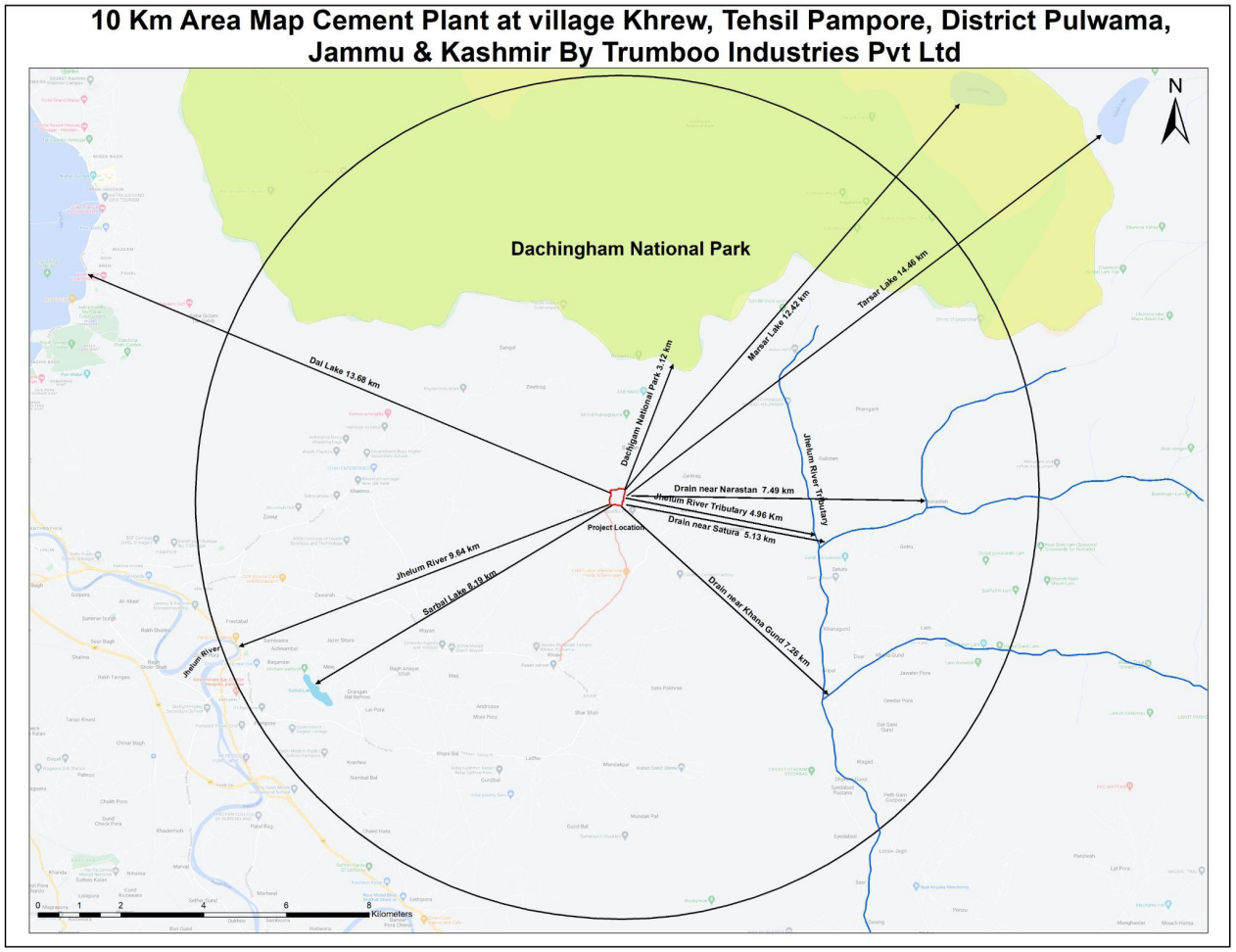


Figure 6. Topographical Map

Ecological sensitivity map (10 km radius)

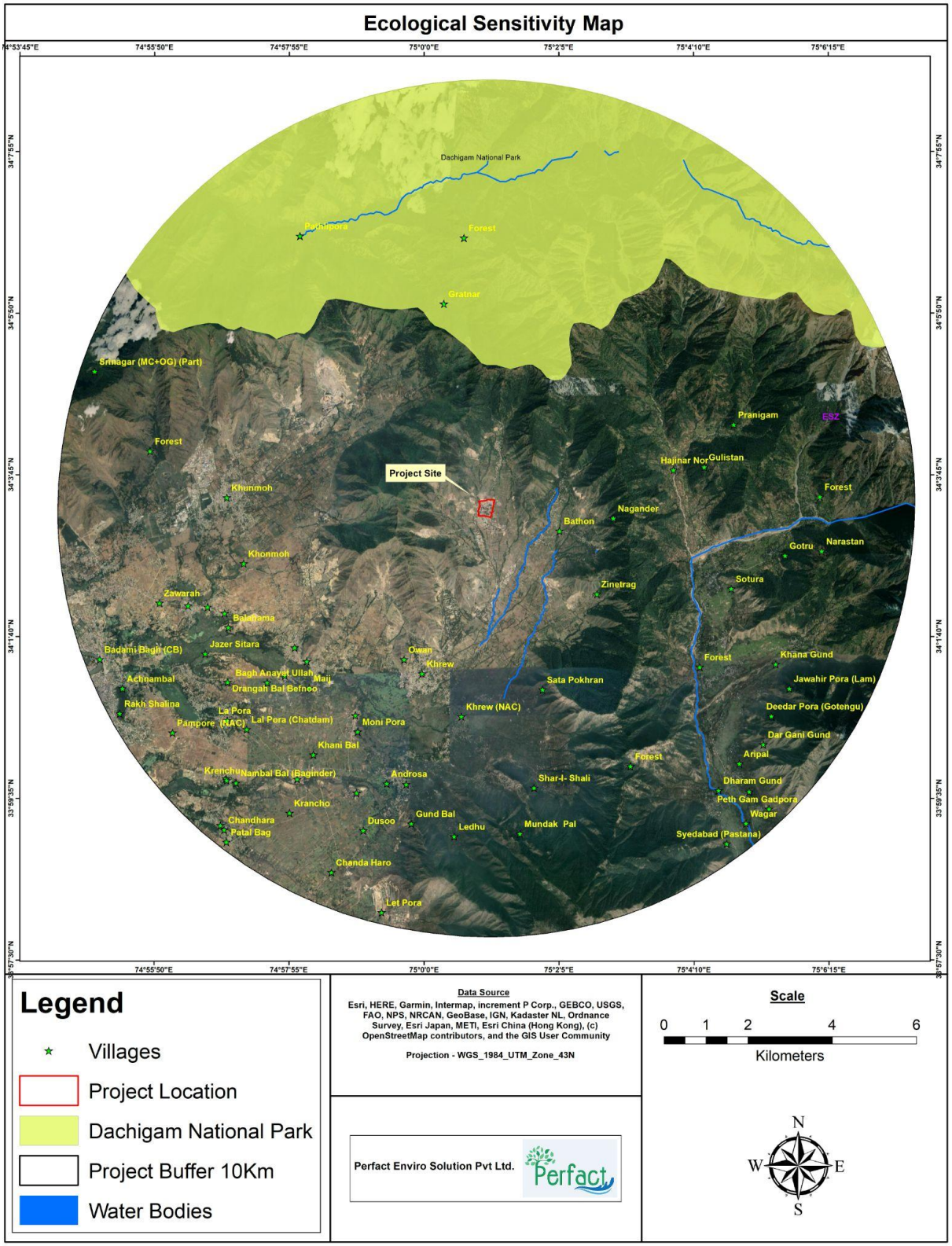


Figure 7. Ecological Sensitivity Map

2.4.2 Environment setting of the project

Table 5. Environment Setting of the Project

S. No.	Particulars	Details (with approximate aerial distance & direction from the plant site)
1.	Nearest Town / City	Bathan (0.47 km, N)
2.	Nearest National Highway/ State Highway	Pampore-Zantrag Road (1.37 km, ESE) NH-1A (9.59 km, SW)
3.	Nearest Railway station	Pampur Railway Station (12.60 km, SW)
4.	Nearest Airport	Srinagar International Airport J&K (23.93 km, SW)
5.	National Parks, Wildlife Sanctuaries, Biosphere Reserves within 10 km radius	Dachigam National Park (3.12 km, N) Dachigam National Park with ESZ (0.13 km, WNW)
6.	River / Water Body (within 10 km radius)	Jhelum River Tributary (4.96 km, SE) Drain near Satura (5.13 km, SE) Daghwan Nalla (7.19 km, NNW) Drain near Khana Gund (7.26 km, SE) Drain near Narastan (7.49 km, SE) Sarbal Lake (8.19 km, SW) Jhelum River (9.64 km, SW) Marsar Lake (12.42 km, NE) Chumnai Lake-Major (boud sar) (13.65 km, NE) Dal Lake (13.68 km, NW) Sonasar Lake (13.89 km, NE) Tarsar Lake (14.46 km, NE)
7.	Reserve Forests (RF) / Protected Forests (PF) within 10 km radius	Nil
8.	Seismic Zone	Zone - V [as per IS 1,893 (Part-1): 2002]

2.4.3 Major industries in 10 km buffer area

Table 6. Major industries in 10 km study area

S.No.	Name of Industries	Type of Industry	Approximately distance with direction from the project site
1	Trumboo Cement Limestone mIne	Limestone Mine	0.17 km W
2	Dawar Cements Pvt. Ltd.	Cement Plant	0.19 km S
3	Valley Cements Industries	Cement Plant	0.31 km S
4	IFTAQ Cements	Cement Plant	0.49 km S
5	ICC Cements Manufacturer	Cement Plant	0.56 km S

6	Zaffron Stone Crusher	Stone crusher	1.56 km SE
7	Shah Stone Crusher	Stone crusher	1.54 km SE
8	Limestone Mine by Riaz Ahmad Panjra	Limestone Mine	2.04 km ESE
9	Cemtac Cements	Cement Plant	2.25 km SE
10.	J & K Cements Ltd.	Cement Plant	2.25 km S

2.4.5 Site photographs



Figure 8. Site Photographs

2.4.6 Seismicity

The area under study falls in Zone-V, according to the Indian Standard Seismic Zoning Map. Suitable seismic coefficients in horizontal and vertical directions respectively, will be adopted while designing the structure.

Map showing seismicity of Area:

Seismic map of the area

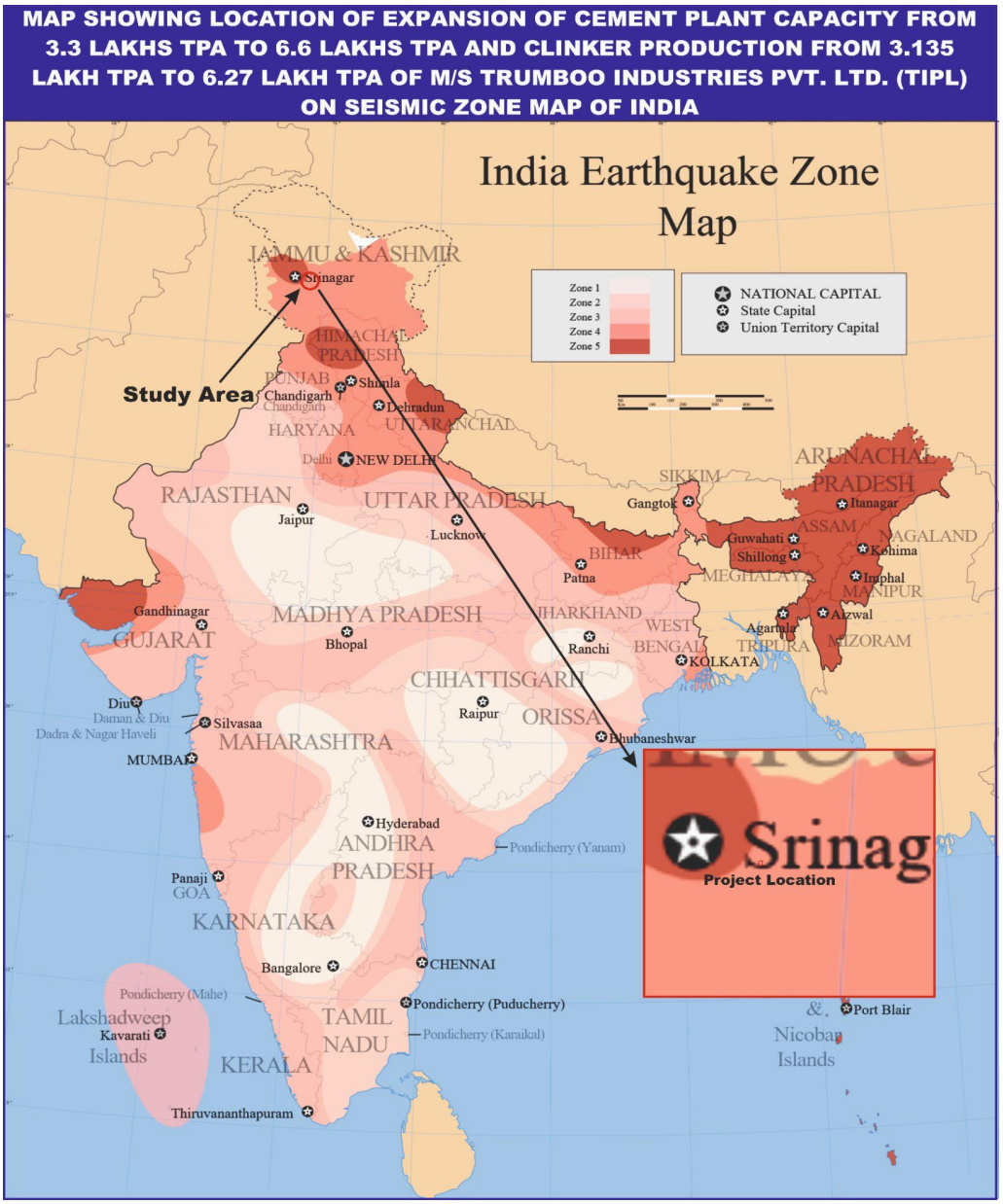


Figure 9. Seismicity Map

2.5 Project description

Table 7. Project Description

Details	**Existing**	**Project Proposed**	**After Expansion**
Production Capacity	Cement(OPC) - 0.33 MTPA Clinker - 0.3135 MTPA	Cement (OPC) - 0.33 MTPA Clinker - 0.3135 MTPA	Cement (OPC) - 0.66 MTPA Clinker - 0.627 MTPA
Type of Cement	Ordinary Portland Cement, (OPC)		
Total plot area	12.38 ha		
Total greenbelt area	1.76 ha (14.2 % of total plot area)	2.32 ha (18.8 % of total plot area)	4.08 ha (33 % of total plot area)
Total Water Requirement	75	114	189
Fresh Water Requirement	75	96	154
Fresh Water Source	Ground water from the borewell		
Power Required & source	9 MW (Power grid of the state government)	9 MW (Power grid of the state government)	18 MW (Power grid of the state government)
D.G. Sets	3 * 1,500 kVA	1* 1,500 kVA	4*1,500 KVA
Waste water	19 KLD	18 KLD	37 KLD
STP capacity	Discharge of wastewater in soak pit via septic tank	50 KLD of MBBR technology	50 KLD of MBBR technology
APCS proposed for process emissions	Jet pulse bag filters, Bag Filter, Bag house & ESP		
Waste generated	Dust from Bag filter - 96 TPD Used Oil- 2500 KLPA	Dust from Bag filter - 96 TPD Used Oil- 800 KLPA	STP Sludge- 9 kg/day Dust from Bag filter - 192 TPD Used Oil- 3300 KLPA
Total Cost of the Project	Rs. 85.52 crores	Rs. 165 crores	Rs. 250.52 crores
Manpower	350	200	550

2.6 Details of development

2.6.1 Land area details

The proposed cement plant will be located in an area of 12.38 ha owned by Trumboo Industries Private Limited. The proposed expansion of the proposed project will be within the existing plot area only, no additional land is required for the expansion.

The land documents are attached in Section D of the EIA Report.

2.6.2 Details of approvals

Table 8. Details of Approvals

S. No.	Approvals	Status
1	Land Papers	Land papers are enclosed in Section D
2	Water Approval	NOC from PHE, Ground Water Division, Srinagar, Kashmir has been obtained vide letter no. PHE:GWD:589 dated 15.05.2007 and is also annexed in Section D.
3	Hazardous & other waste agreement	Hazardous waste application for generation & storage of Used oil has been applied to J&K pollution control committee & is enclosed at Section D
4.	NBWL Clearance	NBWL Clearance has been granted vide letter no. F.No. 6-132/2021-WL dated 02.05.2022

2.7 Plant capacity

The proposal is an expansion project for the “Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA” Cement manufacturing unit. The clinker produced will be totally used inhouse for cement production. The detailed product wise description is given below:

2.7.1 Details of products and production

Table 9. Details of Products & Production

PRODUCTS DETAILS, STORAGE & TRANSPORTATION DETAILS										
Sr. No.	**Products/By-Product Name**	**Existing (TPA)**	**Proposed (TPA)**	**After Expansion (TPA)**	**Means of Storage**	**No. of shed/silo**	**No. of Days of storage**	**Total Storage capacity of shed/silo (Tonnes)**	**Transportation (by Road/Air/ Sea)**	**Product Sale (Local/ Export)**
1	Clinker	3,13500(1000 TPD)	3,13500(1000 TPD)	6,27000(2000 TPD)	Cement Clinker Silo Cement Clinker covered shed	2	15	30,000 (one shed of 10,000 T is existing & 20,000 T proposed for expansion)	conveyor belt	Local/Export
2	Cement (OPC)	330,000.00	330,000.0	660,000.00	Cement Silo Covered Shed	2 Silo	2.25	4,500 Each (Existing- 4,500 T, Proposed- Nil)	Road	Local/Export

2.8 Layout plan



Figure 10. Layout Plan

2.9 Resources for the projects

2.9.1 Land

The proposed cement manufacturing unit will be located in an area of 12.38 ha. The expansion of the proposed project will be within the existing plot area only, no additional land is required for the expansion.

The land use for the proposed unit is given below:

Table 10 Land Use

Proposed/Post-project land use					
Particulars	**Existing in Ha**	**% Area (Existing)**	**Particulars**	**Proposed Changes in area in Ha**	**% Area (after expansion)**
Plant area	4.05	32.7	Plant area	4.74	38.3
Guest house, Canteen and office building etc.	0.44	3.6	Guest house, Canteen and office building etc.	0.56	4.5
Storage	0.93	7.5	Storage	1.60	12.92
workshop	0.11	0.9	workshop	0.11	0.9
Parking	0.15	1.2	Parking	0.28	2.3
Road	1.01	8.2	Road	1.01	8.2
Greenbelt	1.76	14.2	Greenbelt	4.08	33.0
Balanced open land	3.93	31.7	Balanced open land	0	0
Total	**12.38**	**100**	**Total**	**12.38**	**100.0**

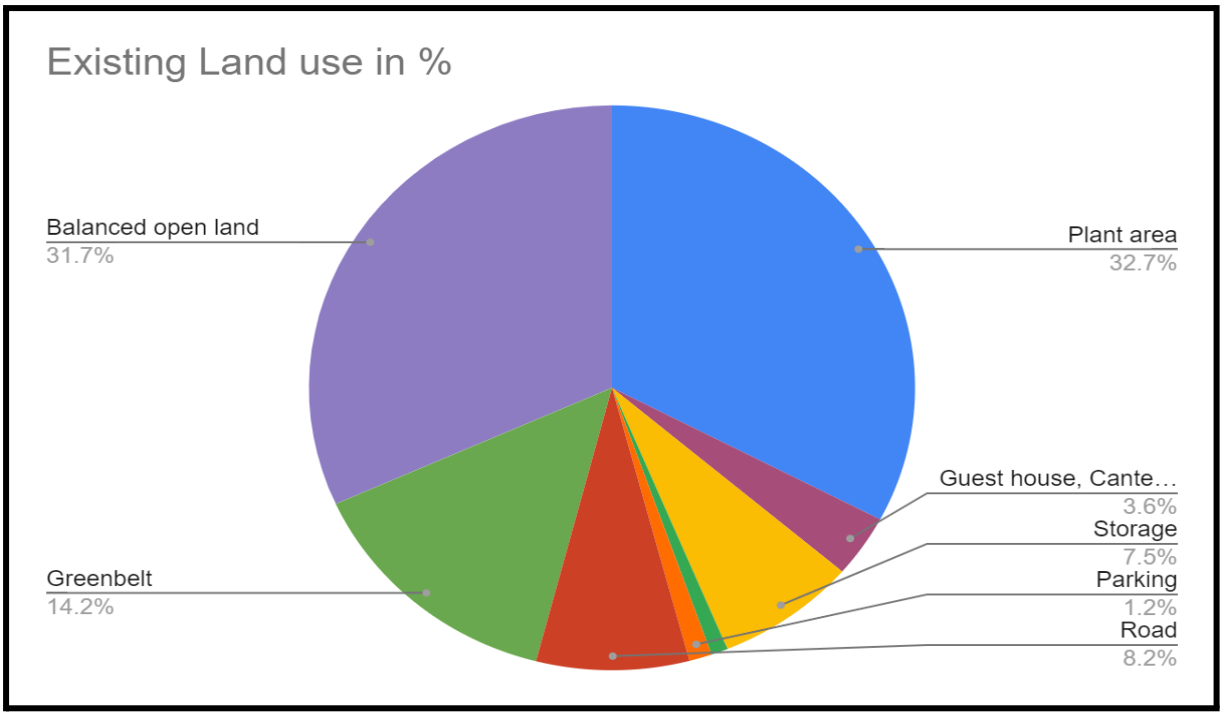


Figure 11. Existing land Use

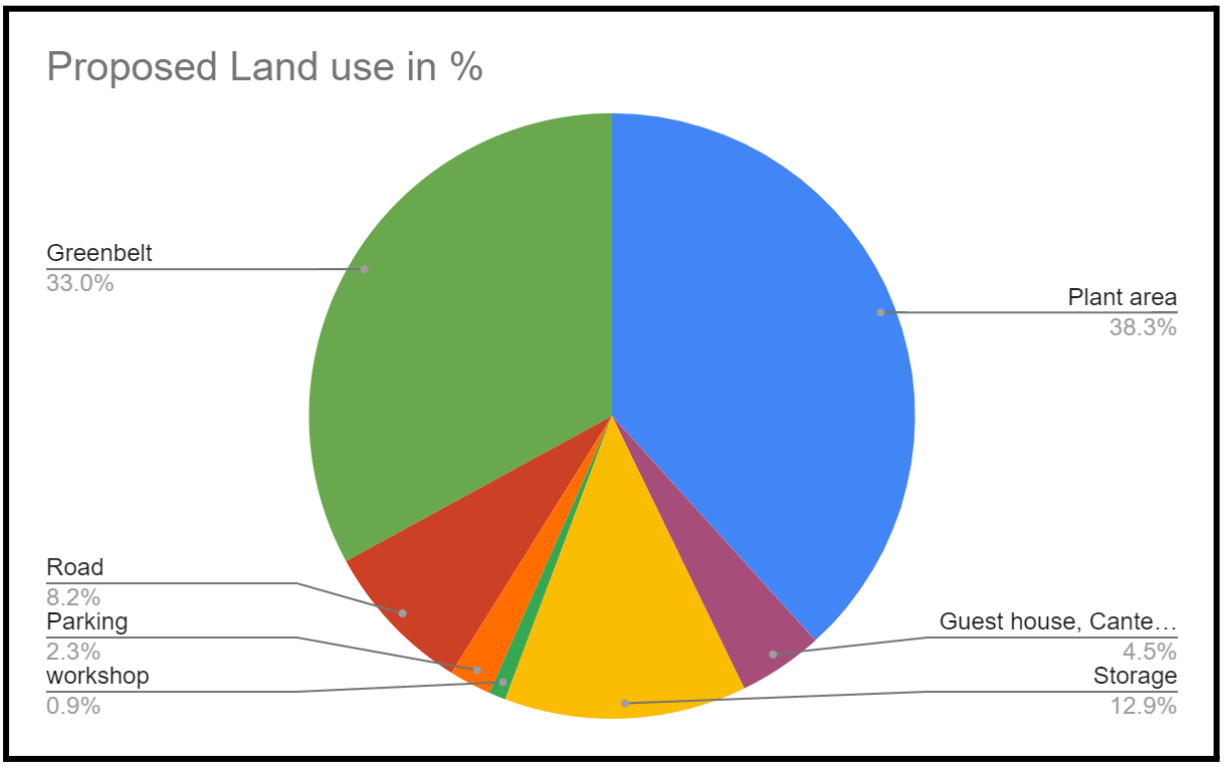


Figure 12. After Expansion Land Use

2.9.2 Manpower

The existing manpower in line I is 350 nos. And proposed manpower in line II is 200 nos., thus total manpower is 550 nos. as shown in the table given below.

Table 11. Manpower details

Particular	Existing (Line- I)	Proposed (Line- II)	Total (Line- I + Line- II)
Skilled Manpower	275	155	430
Semi-Skilled	50	30	80
Unskilled Manpower	25	15	40
Total Manpower	**350**	**200**	**550**

Table 12. Manpower Calculation

MANPOWER Calculation	
Employment likely to be generated during construction phase	
Particulars	Details
No. of permanent employment (No.s) [A]	100
Period of employment (No. of days) [B]	365
No. of man-days [X]=[A]*[B]	36,500
Temporary / Contractual employment (No. of Man days) [Y]	91,250
Total [X] +[Y]	1,27750
Employment likely to be generated during operational phase	
No. of permanent employment (No.s) [A]	550
Period of employment (No. of days) [B]	30
No. of man-days [X]=[A]*[B]	5,445000
Temporary / Contractual employment (No. of Man days) [Y]	0
Total [X] +[Y]	5,445000

2.9.3. Power and fuel requirement

Power requirement for the existing manufacturing unit is 9 MW & after expansion it will be 18 MW which is sourced from Power grid of the state government & after expansion it will be taken from the same source. At present, 3*1,500 kVA DG set is used in case of power failure & one additional DG set of 1 x 1500 KVA is proposed for the expansion. The details of power requirement, back-up & fuel are given below:

Table 13. Power & Fuel Requirement

S. No.	Particulars	Capacity		
		Existing	Proposed	Total
1	Power load	9 MW	9 MW	18 MW
2	Power Source	Power grid of the state government	Power grid of the state government	Power grid of the state government
3	Capacity of D.G. Sets	3 * 1,500 kVA	1* 1,500 kVA	4*1,500 KVA
4	Fuel Type & Quantity for DG Sets in kVA (in case of emergency)	150 lt/hr Diesel	50 lt/hr Diesel	200 lt/hr Diesel
5	Fuel Type & quantity for Kiln and pre-calciner	Coal (180 TPD)	Coal (180 TPD)	Coal (360 TPD)

2.9.4 Energy consumption

Table 14. Energy Consumption

Sr. No.	Type	Existing	Proposed
1	Envisaged specific heat consumption	700 Kcal/Kg clinker	700 Kcal/Kg clinker
2	Envisaged specific electrical energy consumption		
2(a)	Clinker production :	56 KWh/t clinker	56 KWh/t clinker
2(b)	Cement production plant :	28 kWh/t OPC	28 kWh/t OPC
2(c)	Packing, Dispatch	1.5 KW/t Cement	1.5 KW/t Cement
2(d)	Lighting , Pumps & Misc services	2KW/t Cement	2KW/t Cement
2(e)	The Specific power consumption per tonne of cement (OPC)	OPC 81 KWh/t	OPC 81 KWh/t

2.9.5 Water

During Construction Phase:

Source of water: The water required during construction of the project will be 26 KLD out of which 10 KLD will be used for domestic activities of the labour and 16 KLD for construction purposes. 10 KLD will be sourced from the inhouse borewell supply and 16 KLD for construction purposes will be sourced from mobile STP treated water. Domestic wastewater will be generated from labours which will be treated in mobile STP.

During Operation Phase:

Source of fresh water: Groundwater from borewells

Total water requirement of the project will be 189 KLD, out of which 75 KLD of water is required during the existing phase which consists of water required for Domestic water (16 KLD), Cement plant make up water (50 KLD), Gardening (8 KLD) and Dust suppression (1 KLD) while the proposed water demand will be 114 KLD, out of which water required for Domestic water (9 KLD), Cement plant make up water (88 KLD), Gardening (12 KLD) and Dust suppression (5 KLD). Waste water generated during existing phase is 19 KLD which is disposed off to two soak pit via septic tank after expansion the waste water generated will be 37 KLD which will be treated in STP of 50 KLD and treated water of 35 KLD will be reused for gardening (20 KLD), dust suppression (6 KLD) & cement plant make-up water (9 KLD).

2.10 Details of raw material, it's source, quality & storage

The basic raw materials used in the cement plant are Limestone, Iron Ore, Coal, Clay/Silica and Gypsum. The source, quantity, storage & transportation details of the raw material & product are given below:

Table 15. Raw Material Details

RAW MATERIAL DETAILS, STORAGE & TRANSPORTATION DETAILS											
S. No.	**Name of Raw Material**	**Existing Consumption (TPA)**	**Proposed Consumption (TPA)**	**After Expansion Consumption (TPA)**	**Source**	**Distance**	**Means of Storage**	**No. of shed/silo**	**No. of Days of storage**	**Total Storage capacity of shed/silo (Tonnes)**	**Transportation (by Road/Air/ Sea)**
For Clinker Production											
1	Limestone	363,000	363,000	726,000	Captive mine	4Km	Closed Yard	1	9	20,000 (Existing- 20,000 T, Proposed- Nil)	Road
2	Iron Ore	8,250	8,250	16,500	Punjab	Outside state	Open Yard	1	38	2,000 (Existing- 2,000 T, Proposed- Nil)	Road
3	Coal	56,340	56,340	1,12,680	Import from S. Africa & part from Jammu	Outside state	Closed Yard	1	11	6,000 (Existing- 6,000 T, Proposed- Nil)	Road
4	Clay/Silica	74,250	74,250	148,500	Local	Local(<50 Km)	Closed Yard	2	148	70,000 (Existing- 70,000 T, Proposed- Nil)	Road
For Cement Production											
1	Clinker	313,500	313,500	627,000	In house	0	Silo	1	15	30,000 (Existing- 10,000 T, Proposed- 20,000)	Conveyor Belt
2	Gypsum	16,500	16,500	33,000	Uri	150 Km	Open Yard	1	20	2000 (Existing- 2,000 T, Proposed- Nil)	Road

2.11 Transportation details of raw material & product

Table 16. Transportation Details of Raw Material & product

S. No.	Name of Raw Material	Existing Consumption (TPA)	Proposed Consumption (TPA)	After Expansion Consumption (TPA)	Quantity of Material transportable in a single truck (Tonne)	Distance	Means of Transport	No. of trucks/day
1	Limestone	363,000	363,000	726,000	20	4Km	Road	116
2	Iron Ore	8,250	8,250	16,500	20	Outside state	Road	3
3	Coal	82,500	82,500	165,000	20	Outside state	Road	26
4	Clay/Silica	74,250	74,250	148,500	20	Local(<50 Km)	Road	24
5	Clinker	313,500	313,500	627,000	20	0	Conveyor Belt	0
6	Gypsum	16,500	16,500	33,000	20	150 Km	Road	5
7.	Cement (OPC)	330,000	330,000	660,000	20	Local	Road	100

2.12 Plant and machinery

Table 17. Plant & machinery

LIST OF MACHINERY & EQUIPMENT					
S. No	**Product**	**List of Major Equipments**	**Existing capacity**	**Proposed capacity**	**Total capacity**
1	Clinker/Cement	Limestone Crusher	180 TPH	200TPH	380 TPH
2		Coal crusher	50 TPH	0	50 TPH
3		Gypsum Crusher	50 TPH	0	50 TPH
4		Raw Mill	100 TPH	170 TPH	270 TPH
5		Coal Mill	12 TPH	20 TPH	32 TPH
6		Bending Silo	4500 T	3,000T	7500 T
7		Pre-heater	1,000 TPD	1,000 TPD	2,000 TPD
8		Kiln/Raw Mill	1,000 TPD	1,000 TPD	2,000 TPD
9		Clinker Cooler	1,300 TPD	1,000 TPD	2,600 TPD
10		Clinker Storage	10,000 T	10,000 T	20,000 T
11		Conveyor Belt			
11a		Limestone Crusher to Yard Conveyor Belt	250 TPH	0	250 TPH
11 b		Mill Feeding Limestone Belt Conveyor	100 TPH	0	100 TPH
11 c		Iron Ore/Silica/Clay (From dump hopper to mill) belt capacity	100 TPH	0	100 TPH
11 d		Coal Belt (From Crusher to hoppers) belt capacity	50 TPH	0	50 TPH
11 e		Gypsum (from crusher to mill feeding hopper) belt capacity	250 TPH	0	250 TPH
11f		Clinker (from CSP to mill feeding hopper) belt capacity	250 TPH	0	250 TPH
12		Cement Mill	70 TPH	50 TPH	120 TPH
13		cement Silo	2,000T	2,000 T	4,000 T
14		Packer	120 TPH	120 TPH	240 TPH

2.12.1 Amenities and facilities

Trumboo Industries Private Limited has provided the following amenities/facilities in the project:

- First aid kits at all prominent places

- Fire hydrant facility
- Restroom for employees & drivers with sanitation facilities
- Pre-employment and routine medical examinations
- Security system at entrance
- Plant Canteen
- Guest house

  In the proposed expansion, the company has proposed a full fledged Occupational health centre within the plant premises.

The developments of the amenities / facilities will be further done in the nearby area of the plant site as per the requirement of local people under social activities. Also, the project has given financial support to the needy peoples of Bathen & Khrew village by providing assistance in medical aid, education, widow fund etc.

Health and Sanitation facilities

Proper drainage network is provided in the unit which will be maintained to ensure the optimum hygienic conditions in the unit area to avoid water logging and surface runoff. Adequate health measures will be taken to ensure a clean and healthy environment. Good Housekeeping practises will be followed.

2.13 Manufacturing process and process of flow diagram

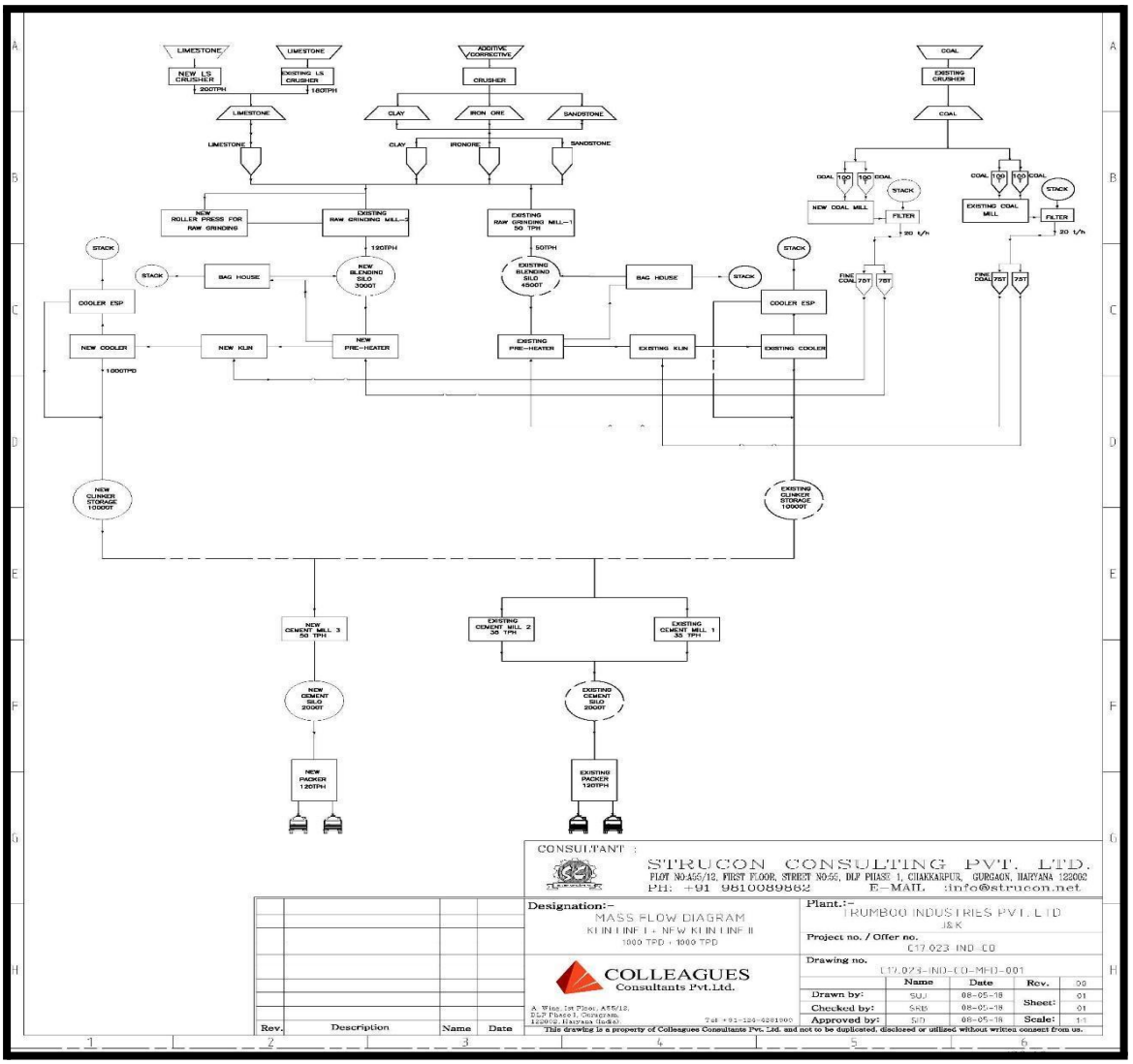
The Manufacturing Process details comprises:

- ❖ Transportation of limestone from captive mine to Cement Plant
- ❖ Crushing of limestone
- ❖ Grinding of limestone, coal and other raw material
- ❖ Raw material preparation and blending operations
- ❖ Preheating
- ❖ Calcination in the Kiln
- ❖ Clinker cooling and stocking
- ❖ Cement grinding and packing
- ❖ Quality and process control
- ❖ Cement packing and dispatch.

Dry process of cement manufacture utilising the pre-calciner technology is adopted. The clinkerization process along with the technological advances in the area of grinding, homogenization, pre-calciner as well as packing of cement will be incorporated.

The basic raw materials used in the cement plant are Limestone, Gypsum, Coal Iron Ore and Clay/Silica. Process flow diagram and detail of manufacturing process is given below:

Process flow diagram



Raw Material Crushing, storage, handling and Grinding:

Limestone from the mine is blended to arrive at the proper feedable quality (subjected to the receipt of quality of coal) and supplied to the Cement plant by tipper trucks/ dumpers to the plant for optimum utilisation of resources. A hammer crusher will be employed to crush the raw material to -25 mm size. Crushed

limestone is taken to the limestone bunker. Limestone from the bunker is extracted by set of weigh feeders and delivered to a set of belt conveyors for further feeding to the raw mill.

The ROM limestone from the mine is unloaded in the hopper at the plant and transported to the double impactor crusher by an apron feeder. To maintain a buffer stock, ROM limestone is taken to uncovered storage for use during peak winter season. A hammer crusher will be employed to crush the raw material to -25 mm size. Crushed limestone is taken to the limestone bunker. Limestone from the bunker is extracted by set of weigh feeders and delivered to a set of belt conveyor for further feeding to the raw mill

A limestone crusher of 180 TPH has been installed in the existing cement plant. TIPL proposes to install an additional Limestone crusher of capacity 200 TPH in the existing plant area.

The flow chart for the crushing of limestone and Coal is given below:

Flow chart for the crushing of Limestone and Coal

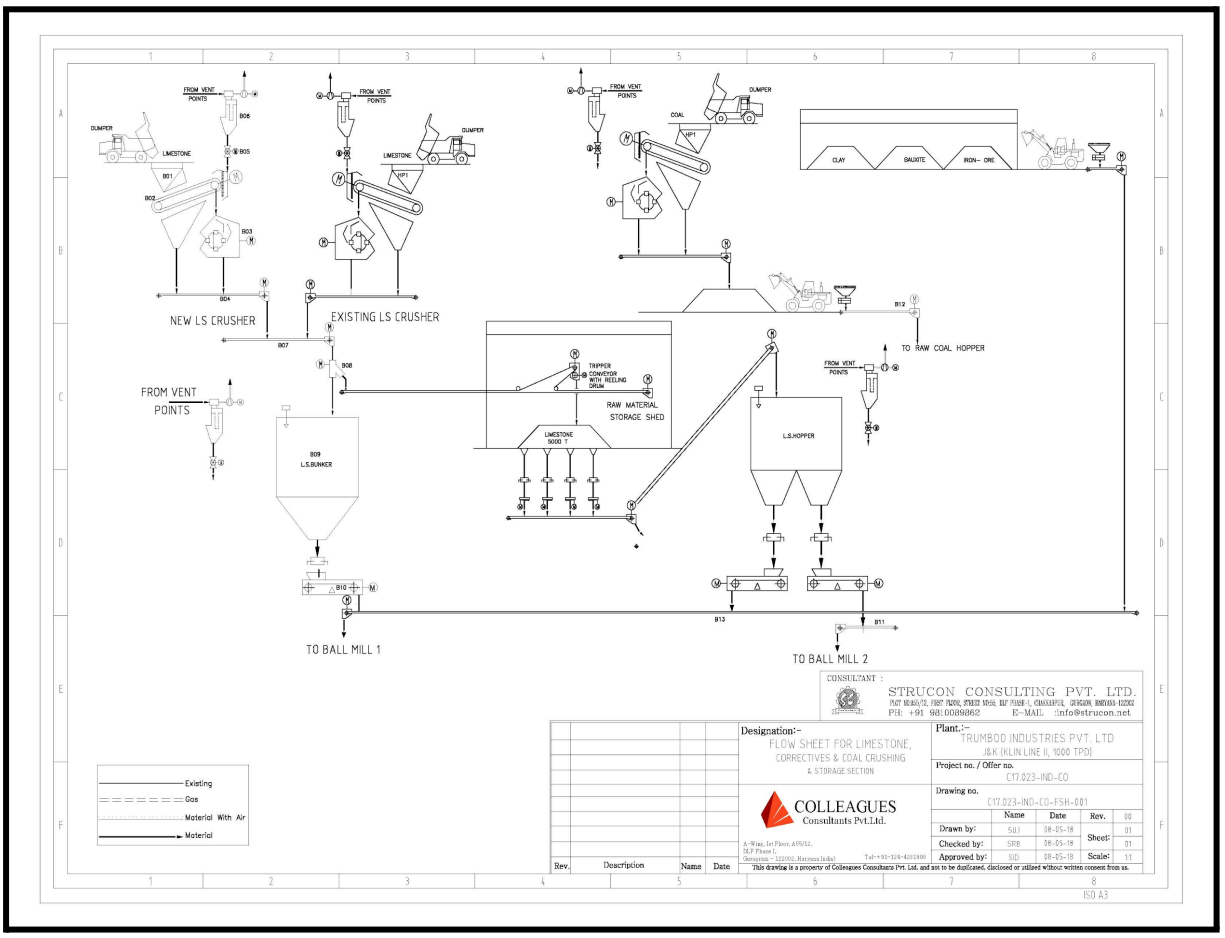


Figure 13. Flow Chart for the crushing of Limestone & coal

Stacking

The crushed limestone is stacked longitudinally with stacker as per the required quality given by Quality Control Dept. The capacity of the existing limestone stockpile is 20000 T. There will be no change in the capacity of the stockpile of limestone after expansion.

Raw material grinding

Based on the raw mix design three raw material hoppers have been provided in the raw mill section. Hoppers are covered and vented through a dust filter. Raw materials and additives are withdrawn from the hoppers by electronic weigh feeders to maintain its proportion as per raw mix design. Discharge from the weigh feeders is conveyed by a belt conveyor and is fed to a VRM/Ball Mill for grinding of raw material. After grinding coarse fraction is separated and returned to the mill by the classifier followed by air slide and impact scale. Material thus separated is further ground inside the mill while the fines i.e. product is sucked by the Separator ID fan through a battery of cyclones where the product is separated from the gas stream.

Flow Sheet showing the grinding of the Raw Material

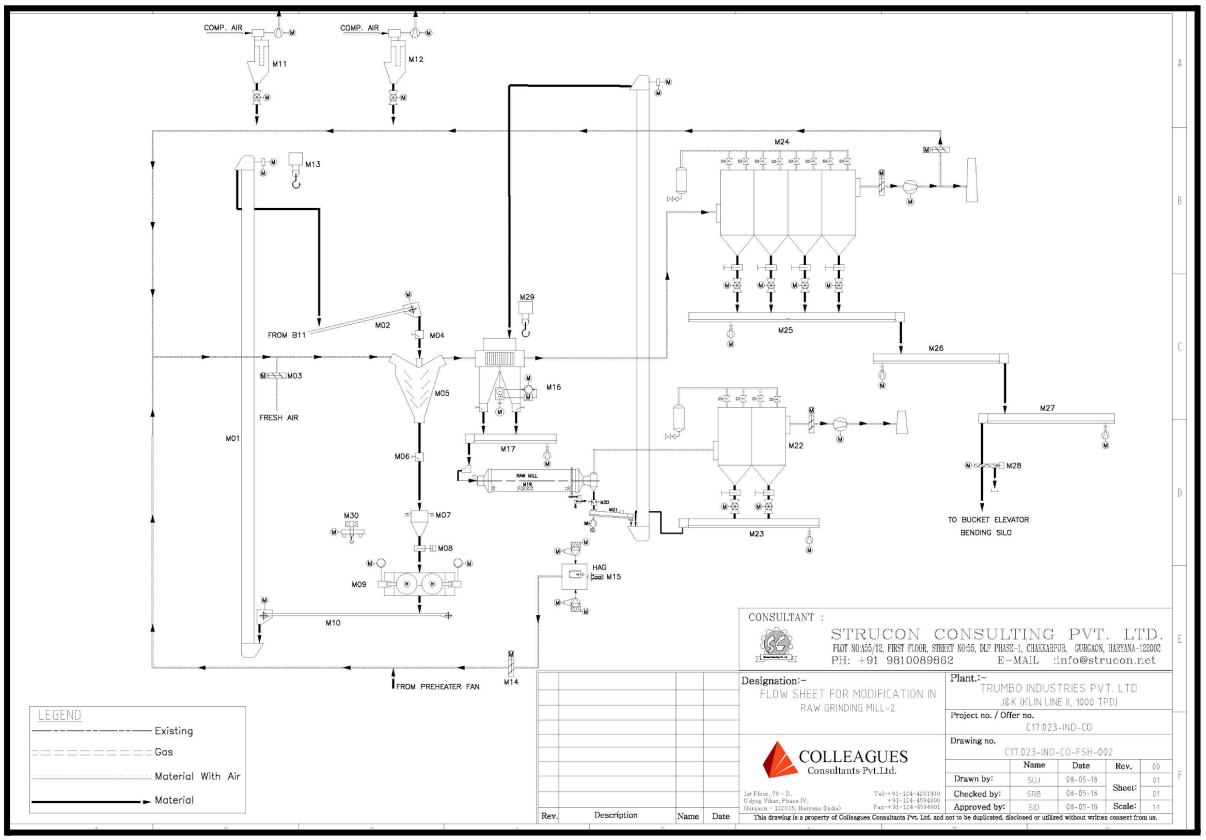


Figure 14. Flow Sheet Showing the Grinding of Raw Material

Fuel (Coal / Petcoke) Grinding and Handling:

Raw coal is unloaded from trucks to storage yards. Coal from the storage yard is transported by conveyor belt to the crusher unit where size is reduced up to 25mm and conveyed to raw coal hopper. Coal crusher is in operation for sizing the coal for the required size. Water spray system has been provided to control the fugitive dust generated during unloading of coal. Flow chart for the coal crushing is given in the Fig. below

Existing crusher is sufficient for the proposed expansion. No additional crusher will be required after expansion.

Flow sheet for new coal storage and Grinding Section

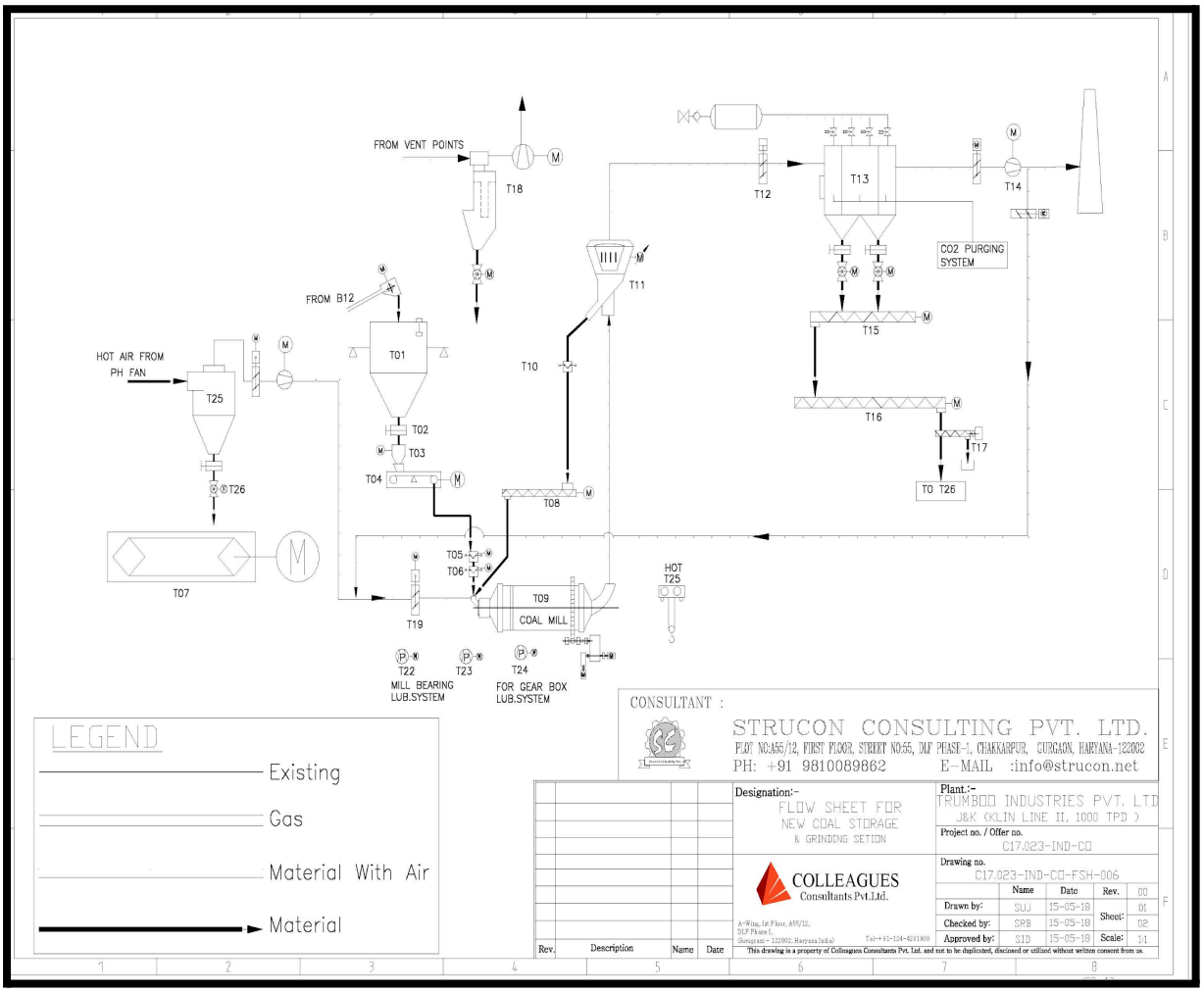


Figure 15. Flow sheet for new coal storage & Grinding section

Flow Sheet for New coal mill bins

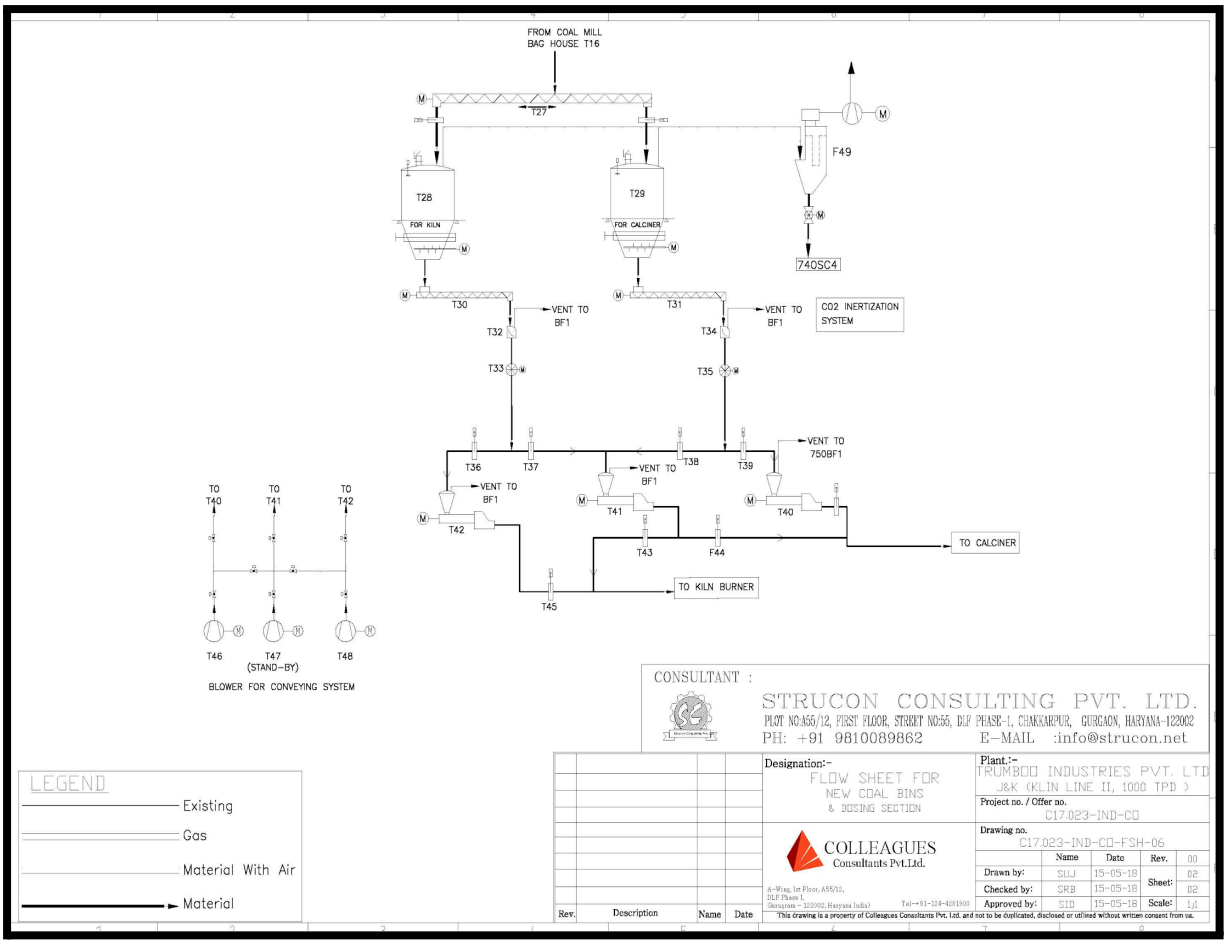


Figure 16. Flow Sheet for New Coal Mill bins

Raw Mill Homogenising & Kiln Feed System

In the raw mill department various raw meal components are proportioned, however, the composition of raw material varies over a period. The variation in the raw material composition is controlled and evened out such that it is acceptable to kiln for a stable operation.

A continuous homogenising & storage silo of RCC is provided for homogenising the raw meal Blended materials from continuous flow silo is conveyed by air slide and discharged to a bucket elevator which, in turn, discharges it to a load cell hopper known as kiln feed bin. Controlled materials discharged from the kiln feed bin are sampled for quality control and fed to the bucket elevator for feeding to the pre-heater.

Recirculation system is provided at the discharge of a bucket elevator which takes the material back to the blending silo when the kiln is not operating for a short duration. Kiln feed bin and bucket elevator is vented by a separate dust filter.

Same will be installed for the proposed line II also.

Pyro- Processing

A single stream of Six stage preheater of the latest proven high efficiency, low pressure drop design with in-line pre-calciner is provided for preheating of raw meal. Pre-heater consists of a system of cyclones connected with gas ducts. The gas is sucked by the pre-heater fans through the kiln and pre- heater system. Raw meal is introduced in the gas duct to stage cyclones. Gas and raw meal are intimately mixed as they enter the gas duct. The heat exchange between the gas and raw meal takes place in the gas ducts and separation of the heated raw meal takes place in the cyclones. This separated raw meal is fed to the gas duct of the next stage cyclone.

Raw meal from Stage-VI cyclone is fed to the pre-calciner. Fuel and combustion air are fed to the pre-calciner at a point, where they are all intensely mixed and combustion of fuel takes place and the heat is transferred to raw meal. The gas velocities and length of the pre-calciner duct are so arranged that the required degree of pre-calcination is easily achieved.

The combustion air for the fuel fired in pre calciner is taken from the cooler 1st grate through a dust settling chamber and tertiary air duct.

The pre-calcined raw meal (about 90% pre-calcination) enters the Stage- V cyclone of the pre-heater and is separated and fed to the kiln inlet.

The kiln is equipped with a three-channel burner. Control on the axial air and swirl air allows for a precise control on the flame under all conditions. Kiln is fired with pulverised coal and the latest design swirl chamber burner has been provided for generation of low NOx and greater heat transfer. The process of the pyro-processing is shown in the flow sheet below:

Flow sheet for the pyroprocessing, Clinker cooler and storage

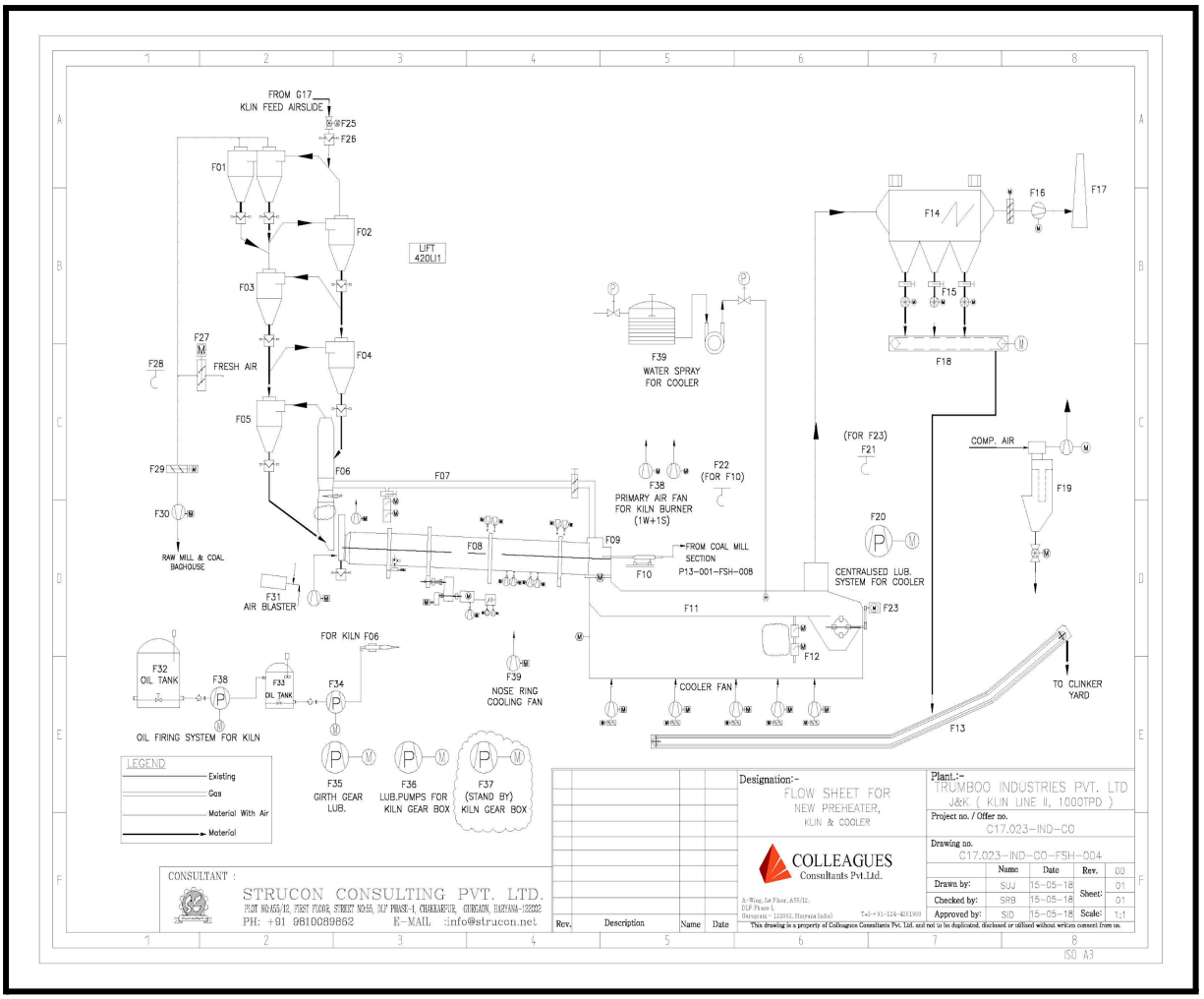


Figure 17. Flow sheet for pyro processing, Clinker Cooler & Storage

Cement Clinker Cooling:

The clinker formed in the kiln is cooled in a third generation reciprocating grate cooler with maximum heat recovery by addition of cooling air, from the red-hot clinker and subsequent utilisation of the same as tertiary air in the calciner.

Secondary air required for combustion in the kiln I sucked by the pre-heater fan from the cooler. This reduces the overall energy consumption for the clinkerization process.

Adequate number of cooling air fans are provided to supply necessary cooling air. An Electrostatic precipitator has been provided for dedusting of dust laden cooler gas to meet pollution norms and the gas is vented to the atmosphere. The spillage from the cooler is collected in the hopers below the grates and discharged to the drag chain conveyor.

The cooled clinker is discharged to a deep bucket conveyor. Spillage from the cooler as well as the dust collected in the ESP hopper is also discharged to the same deep bucket conveyor for further transport to the clinker stockpile.

New Grate Cooler with gearbox, motor, refractory, grate plates, hoppers, casing, lubrication system with compressors and all other accessories along with 4 numbers cooler cooling fans to handle 1,000 TPD additional production of clinker.

Cement Clinker Storage & Cement Clinker Dispatch:

Clinker from the grate cooler are stored in a tent type storage hall with a central column for minimising dust generation. Presently 10000 T capacity of clinker storage is being used in the existing cement plant. TIPL proposed to install an additional 20000 T clinker storage capacity after expansion of the cement plant.

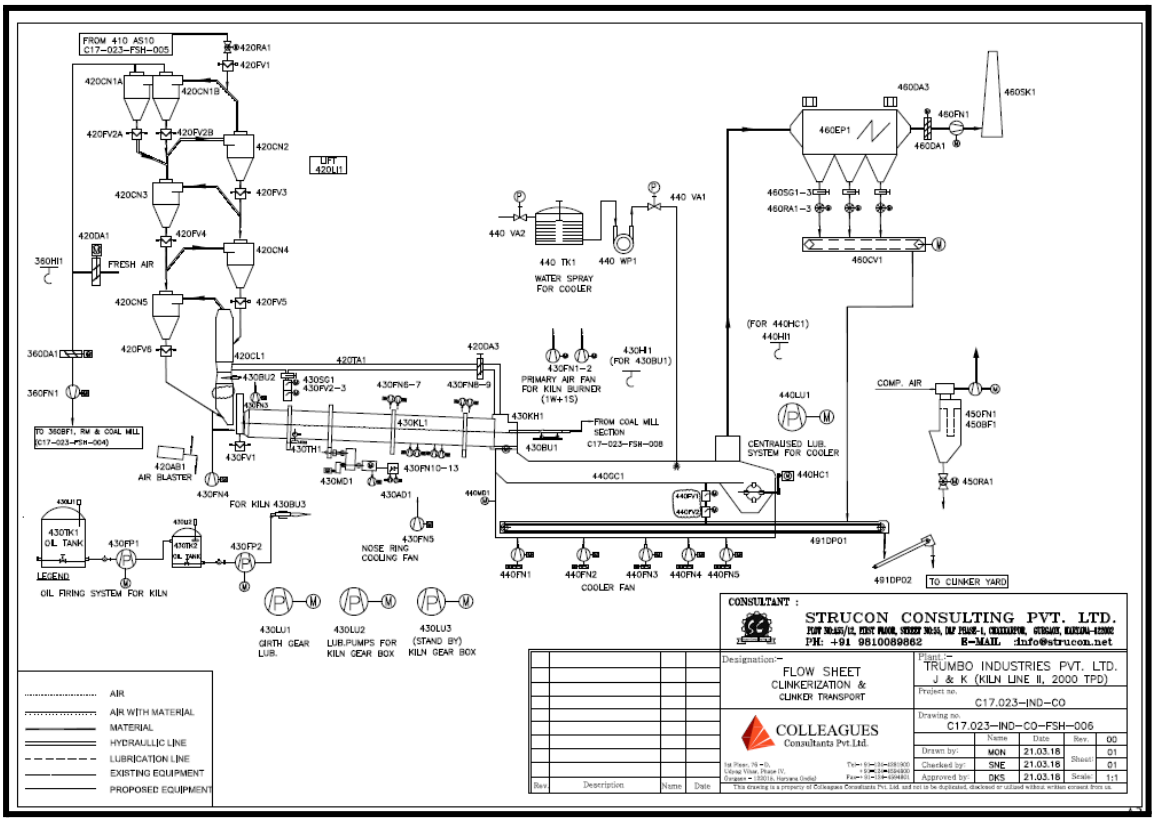


Figure 18. Flow Sheet for clinkerisation

Cement Grinding:

Clinker is extracted using a set of vibrating feeders and delivered to a pair of belt conveyors followed by a common belt for gypsum & clinker for taking to cement mill feed hoppers.

The system provided consists of one no. closed circuit clinker grinding system with ball mill. Proportioned quantity of clinker and gypsum to be ground is extracted from the hoppers by electronic weight feeder. Mixture of clinker & gypsum thus extracted is transported to the ball mill by a belt conveyor.

Ground material from the mill is discharged via an air slide to a bucket elevator which in turn discharges it to a high efficiency separator. The material is fed into the centre of the distribution plate and evenly dispersed throughout the separating chambers. The finished material is collected in externally mounted high efficiency cyclones. The coarse material from the separator is fed back to the mill via an air slide and a solid flow meter.

The separated finished material is fed to the cement transport system by air slides. Mill venting is achieved by a bag dust filter along with other auxiliary vents.

Bag house/ Bag filters will be installed in raw mill/kiln, coal mill, clinker stockpile and every transfer point to control emission.

Flow sheet for the clinker grinding and cement storage

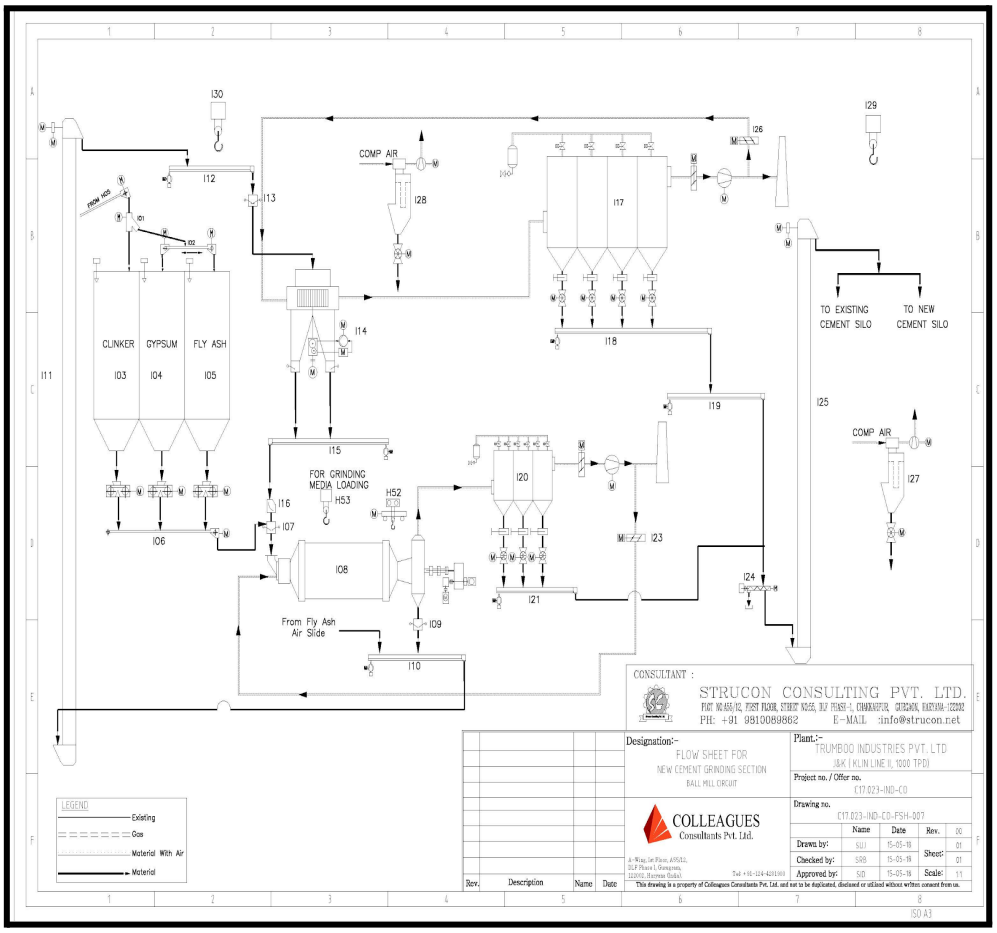


Figure 19. Flow Sheet for the Clinker Grinding & Cement

Cement Packing

The cement produced is stored in RCC float bottom type silo. For feeding the cement to the packing section, an air slide and bucket elevator is used. Cement from the bucket elevator is discharged to the vibrating screen. Foreign materials, if any, are separated in the vibrating screen and cement is dropped to the packer bin located below. 1 No Electronic rotary packing machine will be installed. Bagged cement will be delivered to the two-platform mounted type truck loaders for loading on trucks.

Flow sheet for Packing and Dispatch of cement

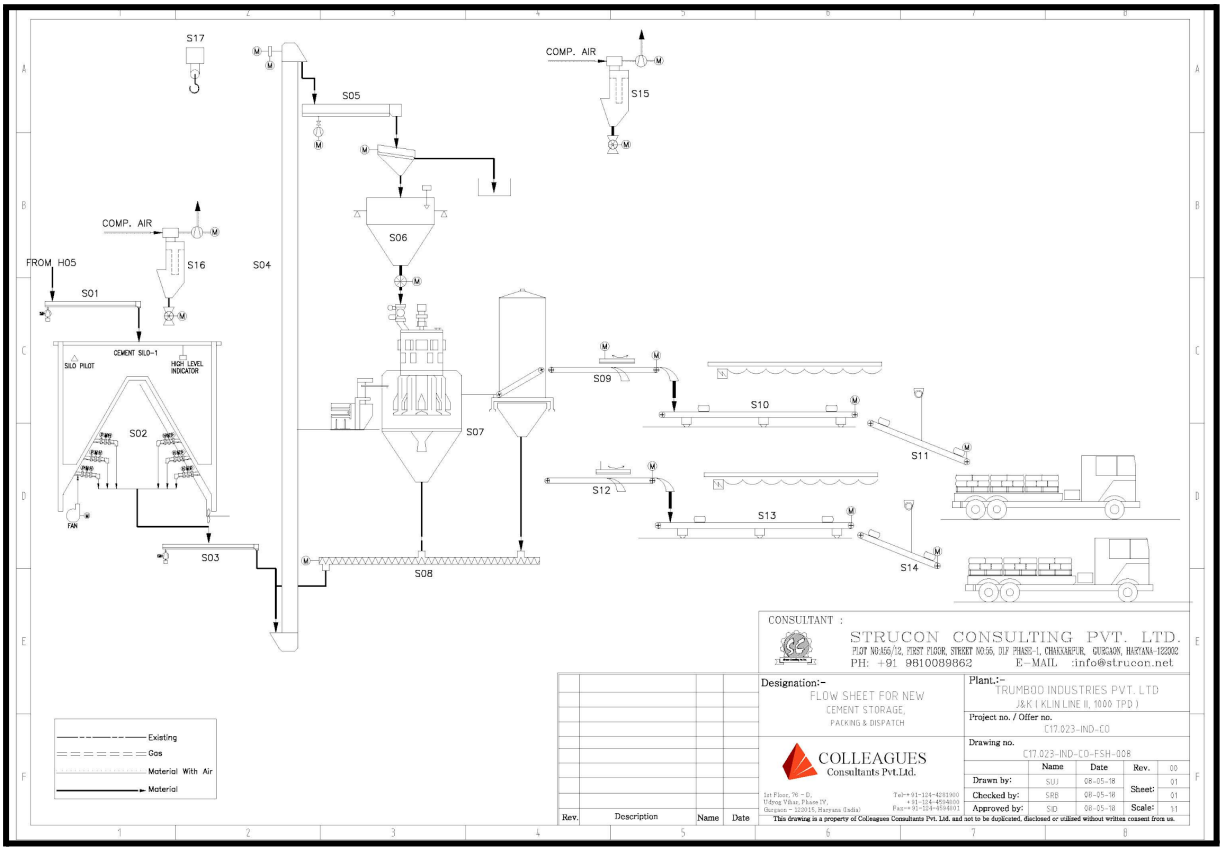
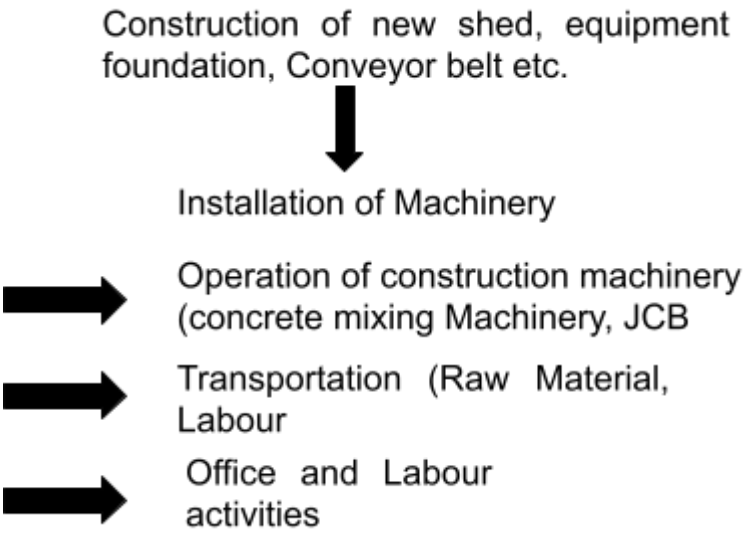


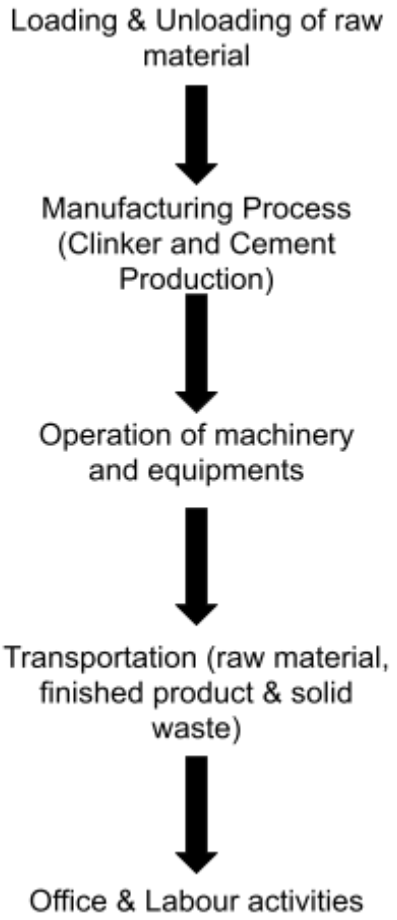
Figure 20. Flow sheet for packing & Dispatch of cement

2.14 Flow chart of activities during construction and operational phase

2.14.1 During construction phase



2.14.2 During operational phase



2.15 Environmental issue of the project

Table 18. Environment Issue of the Project

S. No.	Activities	Associated issues	Control System
1.	**Air Pollution**		
	These are derived from the combustion of fuels & The main gaseous pollutants relevant to cement & clinker manufacturing machineries.	-Process emissions will be from the stack attached to the Clinker cooler & Raw ill/ kiln and vents of Limestone crusher, coal & gypsum crusher, coal mill cement mill, packing section, from which pollutants/gases PM, SO_2, NO_2 will be released in the form of gases which will degrade the ambient air quality of the area by increasing GLC and may cause eye irritation and acute respiratory illness to the people nearby.	Pollution load details are given in Section 2.17 and the details of APCS and other control measures are detailed in Section 2.19
	Operation of DG sets (in case of emergency)	-Generation of Particulate Matter, SO_2, NO_2 & CO, etc.	Detail of adequate measures for control of emissions are given in Section 2.19
2.	**Noise Pollution**		
	Operation of Machineries and Equipments- STP, DG sets (emergency use only), Pumps, manufacturing process area and other machineries etc.	-During the manufacturing process, noise and vibration may be generated from the equipment and the machineries which may cause speech interference, annoyance, hearing impairment, headache and disturbance of peace of mind in the workers.	Detail of noise management measures are given in Section 2.21
	Transportation of staffs, raw material, waste, finished product	-Due to transportation of materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects on workers like annoyance, speech interference, headache, Auditory impact, increase in heartbeat of elderly people.	
3.	**Water Pollution**		
	Generation of industrial and domestic wastewater, & cement plant makeup and domestic use by staff.	-Improper disposal of waste generated may affect the quality of groundwater. The waste water, if not properly disposed off, can deteriorate the surface water quality of nearby water bodies by increasing the no. of pathogens, BOD, COD, TSS, and making water unfit for consumption. -Spillage of oil,if in any case encounters with water bodies can deteriorate the groundwater & surface water body, which in turn may affect aquatic life also.	Pollution load from effluent generated in the industry is given in Section 2.17. Water and wastewater management is given in Section 2.18.
4.	**Solid waste, Hazardous waste and Non-Hazardous waste**		

	Daily activities of the staff and workers.	Biodegradable Waste generation may lead to odour problems if not stored properly.	Pollution load from effluent generation is given in Section 2.17. Details of waste management is given in Section 2.20.
	Operation of the industrial activity will generate the hazardous waste	-Chemical degradation of soil may occur due to disposal of solid waste on the soil or spillage of raw materials on soil. -Used oil, used grease will be generated which is hazardous and may cause harm if it comes into contact with skin.	
	Operation of DG sets (emergency use only), will result in the generation of used oil.	Chemical Degradation of soil may if any spillage/leakage occurs.	

2.16 Pollution load summary

Effluent (After expansion)

Table 19. Pollution Load Summary (Effluent)

Parameters	Unit	Waste Water stream i.e. STP Inlet
Effluent	KLD	37
Suspended Solids	kg/day	3.7
COD	kg/day	14.8
BOD	kg/day	9.25

Waste Details

Table 20. Pollution Load Summary (Waste Details)

Process Waste	Unit	Quantity of generation (Line I)	Quantity of generation (Line I)	Total quantity (Line I +Line II)
STP Sludge (Non- Hazardous)	kg/day	0	-	9
Dust from Bag filter (Non hazardous)	TPD	96	96	192
Used Oil (Hazardous)	KLPA	2,500	800	3,300

Emissions from Machinery for Process

Table 21. Pollution Load Summary (Emission from Machinery for Process)

Stack Name for Line -I	Emission rate (with APCD) for Line -I (kg/day)	Stack Name for Line -II	Emission rate PM (with APCD) for Line -II (kg/day)
Limestone Crusher (Vent)	PM10- 1.44 PM2.5- 0.576	**Limestone Crusher (Vent)**	PM10- 1.44 PM2.5- 0.576
Raw Mill/ Kiln	PM10- 43.2 PM2.5- 21.6 SO_2- 4.8384 NO_x- 17.28 CO-5.616	**Raw Mill/ Kiln**	PM10- 43.2 PM2.5- 21.6 SO_2- 4.8384 NO_x- 17.28 CO-5.616
Coal Mill	PM10- 4.752 PM2.5- 3.024	**Coal Mill**	PM10- 4.752 PM2.5- 3.024
Cement Mill	PM10- 21.6 PM2.5- 12.96	**Cement Mill**	PM10- 21.6 PM2.5- 12.96
Clinker Cooler	PM10- 6.7392 PM2.5- 3.456	**Clinker Cooler**	PM10- 6.7392 PM2.5- 3.456
Packing Unit	PM10- 4.32 PM2.5-1.728	**Packing Unit**	PM10- 4.32 PM2.5-1.728

2.17 Water & wastewater management

During Construction Phase:

Source of water: The water required during construction of the project will be 26 KLD out of which 10 KLD will be used for domestic activities of the labour and 16 KLD for construction purposes. 10 KLD will be sourced from the inhouse borewell supply and 16 KLD for construction purposes will be sourced from mobile STP treated water. Domestic wastewater will be generated from labours which will be treated in mobile STP.

During Operation Phase:

Source of fresh water: Groundwater from borewells

Existing (Line- I): Total water requirement of the existing cement plant is 75 KLD which consists of water required for Domestic water (16 KLD), Cement plant make up water (50 KLD), Gardening (8 KLD) and Dust suppression (1 KLD) which is total fresh water and waste water generated is 19 KLD which is disposed off to two soak pit via septic tank.

Proposed (Line- II): Total water requirement for the proposed line will be 114 KLD out of which water required for Domestic water (9 KLD), Cement plant make up water

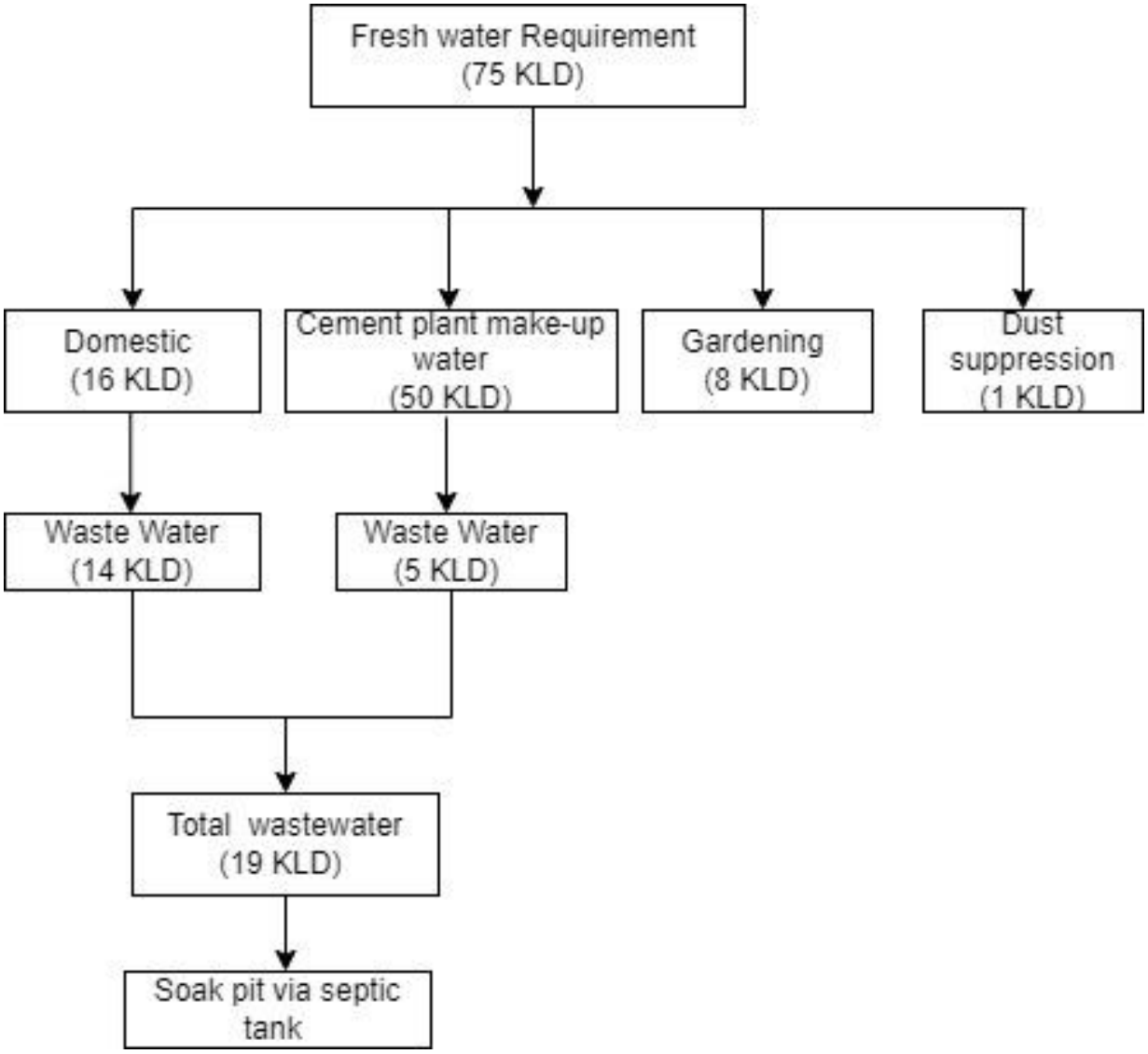
(88 KLD), Gardening (12 KLD) and Dust suppression (5 KLD). Waste water generated will be 37 KLD which will be treated in STP of 50 KLD and treated water of 35 KLD will be reused for gardening (20 KLD), dust suppression (6 KLD) & cement plant make-up water (9 KLD).

Total (Line- I + Line- II): Total water requirement of the project after expansion will be 189 KLD, which consists of Domestic water (25 KLD), Cement plant make up water (138 KLD), Gardening (20 KLD) and Dust suppression (6 KLD) & the waste water generated from domestic & cement plant cooling will be 37 KLD which will be treated in STP of 50 KLD and treated water of 35 KLD will be reused for gardening (20 KLD), dust suppression (6 KLD) & cement plant make-up water (9 KLD).

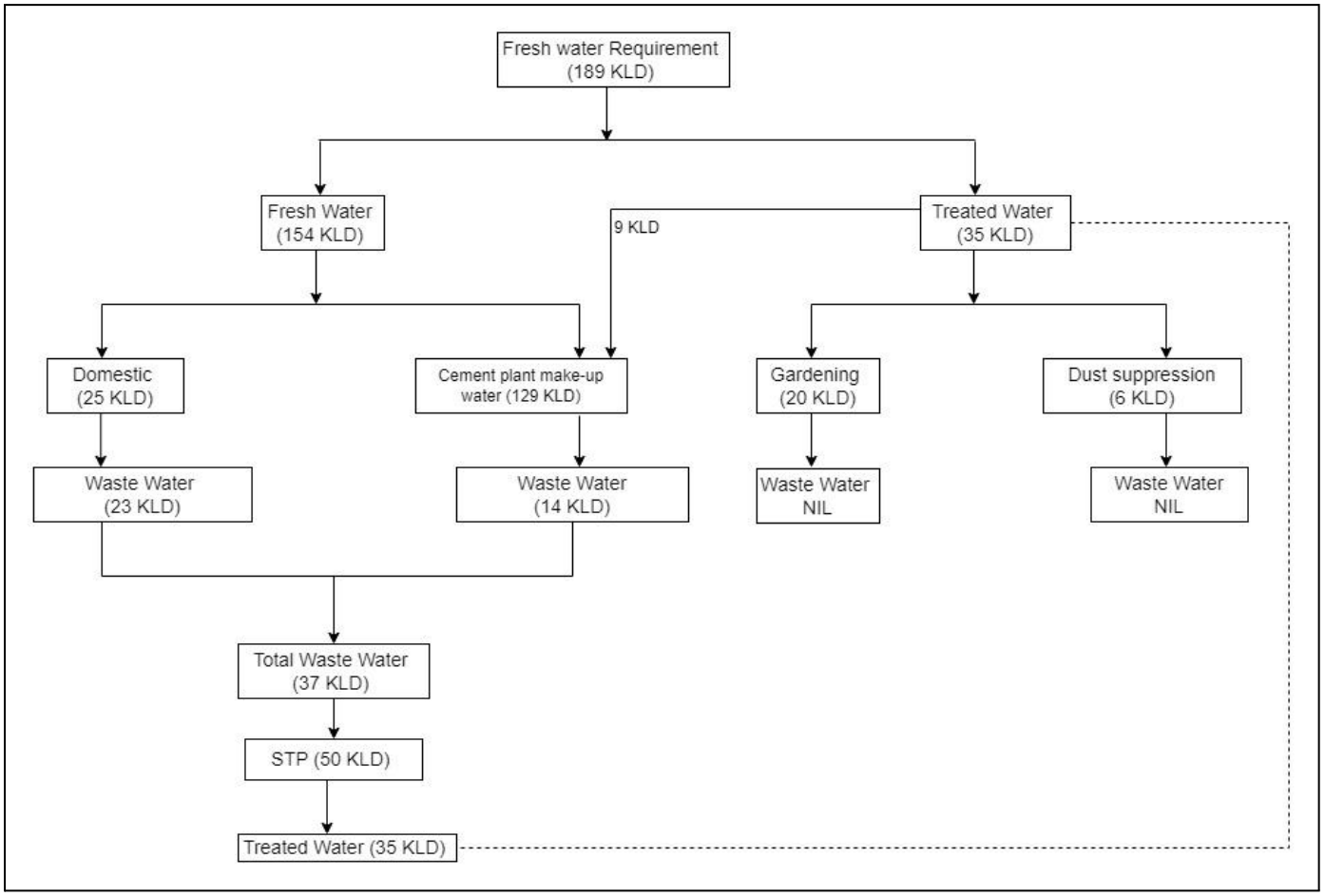
Table 22. Water & Wastewater management

Water Usage	Water Requirement (KLD)			Wastewater Generation (KLD)		
	Existing	Proposed	Total	Existing	Proposed	Total
Domestic water	16	9	25	14	9	23
Cement plant make-up water	50	88	138	5	9	14
Gardening.	8	12	20	0	0	0
Dust suppression	1	5	6	0	0	0
Total	**75**	**114**	**189**	**19**	**18**	**37**

Existing Water Balance



Total after Expansion



2.17.1 Treatment scheme of STP

Adequate sewerage system will be there in the plant premises. One STP of 50 KLD will be installed of MBBR technology and will be used to treat the wastewater.

Design Criteria of MBBR Technology

TREATMENT PROCESS:

The sewage treatment plant (MBBR) will be installed to treat the raw sewage having the following characteristics:

TECHNOLOGY OF MBBR PROCESS:

- Biofilm Carrier element.
- Stay in suspension in the reactor.
- Provide very large effective biofilm surface area, where the treatment takes place
- Standard waste water treatment plant configuration is two or more reactors in series, followed by a settling chambers and/ or tertiary treatment unit.
- It is an advanced High rate waste-water treatment process.
- High Treatment Efficiency
- Low capital, Operation, Maintenance and replacement cost.

MBBR PROCESS WORKS

MBBR Process is a process that treats the sewage / wastewater in a smallest possible reactor with the help of free floating media which occupies active biomass. The salient feature of MBBR Process offered by us includes:

- Small footprint area
- Will easily upgrade the STP, without any civil modification or additional civil work
- Suits perfectly with any shape of reactor
- High surface area media used in the process last for a long period

- Low energy requirement due to the use of high efficiency advanced diffused aeration system

BENEFITS

- Compact footprint
- Expandable
- Durable non-clogging media
- Stable process
- Lower sludge volume with DAF clarifier
- Lower power consumption
- Ease of operation

Hydraulic Flow Diagram of STP based on MBBR Technology:

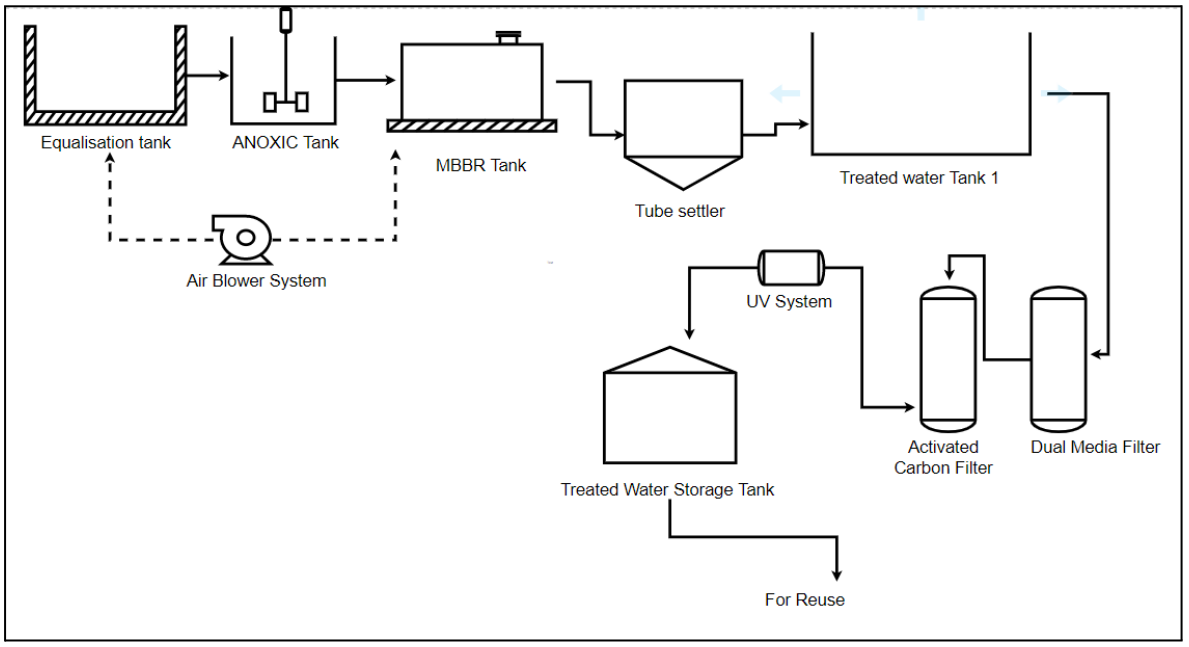


Figure 21. Hydraulic Flow Diagram of STP Based on MBBR Technology

2.17.2. Wastewater characteristics from different activities

Table 23. Characteristics of Wastewater & Treated Water

CHARACTERISTICS OF WASTEWATER & TREATED WATER				
Parameters	**Unit**	**Waste Water stream i.e. STP Inlet**	**Treated water STP Outlet**	**Standard of STP Outlet**
pH	----	7.8	8.00	6.5-9
TSS	mg/L	70-100	<10	20
COD	mg/L	350-400	<50	50
BOD	mg/L	200-250	<10	10
Oil & Grease	mg/L	7.5	<3	<10

2.17.3 Rainwater harvesting

Roof top rainwater will be collected and stored in pits that will help in recharging the groundwater. At present there are no existing rain water harvesting pits at the site.

Average Annual rainfall- 556 mm

Peak day rainfall- 50 mm/hr

Table 24. Rain Water Harvesting

Particulars	**Area (in m2)**	**Harvesting Factor**	**Intensity of Rainfall in mm per 20 minutes**	**Total Volume of rain water available for harvesting in cub. m per 20 minutes**	**Intensity of Annual Rainfall in mm**	**Annual Potential of rainwater harvesting in cub. m**
Plant Roof area (including roof of Guest house, Admin building, canteen, mosque, ESP, cooler building, bag house, CCR &	3,114	0.90	50	140	556	1,558

both cement mills)						

Average rainy days in an year considered are 102 days. Total water to be harvested will be 15.71 KLD. Hence, a tank of 3m x 3m x 2m capacity will be constructed for storage of rainwater.

2.18 Air emission management

During Construction Phase for Line II

- Water sprinkling will be done at the location where dust generation is anticipated.
- No excavation of soil will be carried out without adequate dust mitigation measures in place.
- No loose soil or sand for Construction & Demolition Waste or any other construction material that causes dust will be left uncovered.
- Frequently sprinkling will be done.
- Construction material and waste will be stored only within earmarked areas and road side storage of construction material and waste will be prohibited.
- Only covered vehicles carrying construction material and machinery and waste will be permitted.

During Operation Phase

1. High efficiency Pollution control equipment has been installed in the existing unit and will be installed in the proposed installation of new line-II of the cement plant. There will be three main types of emissions from the cement plant that are fugitive emissions, emissions from utilities & process emission.

2.18.1 Control of air emission

A. The fugitive emissions is controlled by:

Table 25. Fugitive Emission Control Measure

S.No	Source	Fugitive Control measures
1	Loading and Unloading Area	-Enclosures has been provided for all unloading operations, except wet materials like gypsum. The enclosures for the unloading sides could be flexible curtain type material covering up to height of dumpers discharged from the roof. -A dust suppression system has been provided to spray water.

		Same will be followed for the proposed expansion.
2	Material Handling Section	-All transfer point locations are fully enclosed. -Bag filter is provided for all the material transfer points. -The enclosures from all sides with the provision for access doors, which is kept closed during operation, spillages periodically removed. Same will be followed for the proposed expansion.
3	Clinker Stock Piles Section	-The enclosures has a venting arrangement located at the transfer point where the clinker is dropped to the stockpile. -Extracted dust captured in bag filters is recycled in the system through suitable arrangement. -Covered stockpile has been provided for clinker storage further construction of shed will be done for storage of clinker for proposed expansion. Same will be followed for the proposed expansion.
4	Storage Piles	-Storage is done in covered sheds. -Automatic dust cleaning system employed for removing the dust on the floors has been deployed -Water sprinkling arrangements in the raw material stockyards and cement bags loading areas. -Development of greenbelt has been done all around the plant boundary & will be further continued in the proposed expansion. Same will be followed for the proposed expansion.
5	Cement Packing Section	-Adequate ventilation for the packing hall has been provided for venting out suspended particulars thereby ensuring dust free work environment. -The spilled cement from the packing machine is collected properly and sent for recycling. Same will be followed for the proposed expansion.
6	Roads	-Road sweeping machines/ Mist fogging system has been installed. -The roads in the plant area is paved to prevent dust emissions. -Water sprinkling is practised during transport activities in order to control emissions due to transportation activity Same will be followed for the proposed expansion.

A. The Utilities emissions shall be controlled by:

Table 26. Utilities Emission Control

Source & Capacity	Stack Height in m	Stack Diameter (m)	Exit Flow rate (m3/sec)	Emission Concentration of PM10 (g/s)	Emission Concentration of PM2.5 (g/s)	Emission Concentration of NO2 (g/s)	Emission Concentration of SO2 (g/s)	Emission Concentration of CO (g/s)
DG Set : Existing 3x1,500 kVA	35	0.25 m	3.84	0.050	0.020	0.288	0.18	0.230
DG Set : Proposed 1x1,500 kVA	35	0.25 m	3.84	0.050	0.020	0.288	0.18	0.230

C. The Process emissions shall be controlled by:

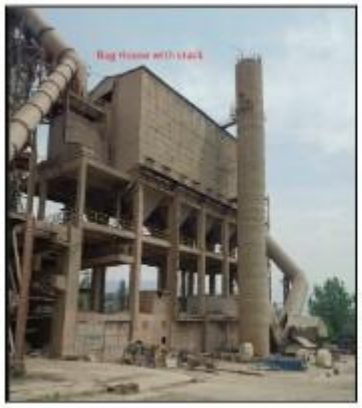
- Provision of ID Fan Vent will be there for limestone crusher, Coal & gypsum Crusher.
- NO_X is generated in the high temperature combustion process of the cement kiln. The following measures will be adopted to control the NO_X emission:
  - Stable operating conditions will be maintained by installing automatic kiln control system
  - Staged combustion process will be developed in the preheater.
- To control the SO_2 emission the following measures will be adopted:
  - Fuel mix will be used having Low sulphur content.
  - Absorbents will be used in the exhaust gas before filters
- Carbon dioxide emissions in the cement industry are produced both through the combustion of fossil fuels and waste fuels, and the calcination of limestone. To control the CO_2 emission the following measures will be adopted:
  - Cement will be produced by dry process

Besides, a permanent monitoring system will be installed as per CPCB guidelines. List of pollution control equipment to be installed at every transfer point is given below

Table 27. Emission Control Process System

Existing Emission Control Process System												
Stack Name	**Stack ID**	**APCS**	**Height of stack from ground (m)**	**Diameter (m)**	**Exit Flow (m3/sec)**	**Emission Concentration of PM 10 (g/s) with APCD**	**Emission Concentration of PM 2.5 (g/s) with APCD**	**Emission Concentration of NO2 (g/s) with APCD**	**Emission Concentration of SO2 (g/s) with APCD**	**Emission Concentration of CO (g/s) with APCD**	**Operational hours in a day**	**Standards GSR 612(E) dated 25.08.2014 & amended vide GSR 496 (E) dated 9.05.2016**
Limestone Crusher (Vent)	STACK 01 (2 nos.)	2 Pulse Jet Bag Filter	15 (Vent)	0.7	3.98	0.025	0.010	–	—		10-16	PM- 30 mg/Nm3 SO2- 100 ,700 & 1,000 mg/Nm3 when pyritic sulphur in the limestone is less than 0.25%, 0.25% to 0.5% & more than 0.5% resp. NO2- 600 mg/Nm3
Raw Mill/Kiln	STACK 02	Bag House	40	3	3.92	0.50	0.25	0.20	0.056	0.065	20-24	
Clinker Cooler	STACK 03	ESP	40	2	3.92	0.078	0.040	–	–	–	20-24	
Coal Mill (Vent)	STACK 04	Bag Filter	10 (Vent)	0.6	3.33	0.055	0.035	–	–	–	20-24	
Cement Mill (Vent)	STACK 05	Bag Filter	10 (Vent)	0.6	0.34	0.25	0.15	–	–	–	20-24	
Gypsum crusher (Vent)	STACK 06	Pulse Jet Bag Filter	10 (Vent)	0.6	–	–	–	–	–	–	20-24	
Coal crusher (Vent)	STACK 07	Pulse Jet Bag Filter	10 (Vent)	0.6	–	–	–	–	–	–	20-24	
Packing unit (Vent)	STACK 08 (2 nos.)	2 Pulse Jet Bag Filters	Vent	0.6	0.70	0.075	0.030	–	–	–	10-16	
Additional Process emission control systems after expansion												
Stack Name	**Stack ID**	**APCS**	**Height of stack**	**Diameter (m)**	**Exit Flow (m3/sec)**	**Emission Concentration**	**Emission Concentration**	**Emission Concentration**	**Emission Concentration**	**Emission Concentration**	**Operational hours in a day**	**Standards**

			from ground (m)			**of PM 10 (g/s) with APCD**	**of PM 2.5 (g/s) with APCD**	**of SO2 (g/s) with APCD**	**of NOx (g/s) with APCD**	**of CO (g/s) with APCD**		
Limestone Crusher (Vent)	STACK 9	Pulse Jet Bag Filter	15 (Vent)	0.7	3.98	0.025	0.010	–	—		10-16	PM- 150 mg/Nm3 SO2- 200 mg/Nm3 NO2- 500 mg/Nm3
Raw Mill/Kiln	STACK 10	Bag House	40	3	3.92	0.50	0.25	0.20	0.056	0.065	20-24	
Clinker Cooler	STACK 11	ESP	40	2	3.92	0.078	0.040	–	–	–	20-24	
Coal Mill (Vent)	STACK 12	Bag Filter	10 (Vent)	0.6	3.33	0.055	0.035	–	–	–	20-24	
Cement Mill (Vent)	STACK 13	Bag Filter	10 (Vent)	0.6	0.34	0.25	0.15	–	–	–	20-24	
Gypsum crusher (Vent)	STACK 14	Pulse Jet Bag Filter	10 (Vent)	0.6	-	–	–	–	–	–	4-8	
Coal crusher (Vent)	STACK 15	Pulse Jet Bag Filter	10 (Vent)	0.6	-	–	–	–	–	–	15-20	
Packing unit (Vent)	STACK 16	2 Pulse Jet Bag Filter	Vent	0.6	0.70	0.075	0.030	–	–	–	10-16	



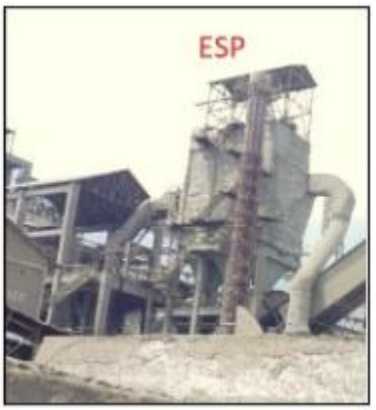


Figure 22. Existing APCS

2.19 Solid hazardous waste management

Table 28. Solid Waste Management

SOLID WASTE MANAGEMENT					
Category	**Type of Waste**	**Existing (Kg/day)**	**Proposed (kg/day)**	**After Expansion (kg/day)**	**Treatment Method**
Biodegradable	Organic Waste	21	12	33	Organic waste will be composted and used as manure
Non-Biodegradable	Recyclable Waste (Plastic, paper, wood, glass, etc)	32	18	50	Inorganic waste will be sent to authorised recycler
	Total	**53**	**30**	**83**	

2.19.1. Process waste (NON- HAZARDOUS)

Table 29. Non- Hazardous Waste Management (Process)

NON-HAZARDOUS WASTE MANAGEMENT (PROCESS)					
Process Waste	**Unit**	**Quantity of generation (Existing)**	**Quantity of generation (Proposed)**	**Quantity of generation (Total after expansion)**	**Treatment/Disposal**
STP Sludge	kg/day	0	-	9	Used as manure for plantation, OWC proposed for expansion

	TPD (4T/hr)	96	96	192	100% dust is collected from bag filters/ ESP and will be recycled in cement manufacturing.

2.19.2. Hazardous waste

Table 30. Hazardous Waste Management

S.No.	Waste	Category (as per HWM Rules,2016)	Unit	Quantity of Generation (Existing)	Quantity of Generation (Proposed)	Quantity of Generation (Total after expansion)	Disposal
1	Used Oil	5.1	KLPA	2,500	800	3,300	It will be sent to authorised vendor i.e. M/s Royal Refiners & agreement is valid till 24.03.2024

2.19.3. E-waste management

Table 31. E-Waste Management

Waste	Unit	Quantity of Generation (Existing)	Quantity of Generation (Proposed)	Quantity of Generation (Total after expansion	Disposal
E- waste	TPA	0.012	0.012	0.024	Sell/dispose to authorised vendor

2.19.4 Battery waste management

Table 32. Battery Waste Management

Waste	Unit	Quantity of Generation (Existing)	Quantity of Generation (Proposed)	Quantity of Generation (Total after expansion	Disposal
Battery Waste	TPA	0.024	0.024	0.048	Sell/dispose to authorised vendor

2.20 Noise management

2.20.1 During Construction Phase

- During installation of machinery, expected noise levels will be in the range of 80-100 dB, which will decrease with increase in distance.

- There will be some noise generation due to movement of vehicles carrying materials and it can be managed by properly regulating the movement of vehicular traffic so that the ambient air quality with respect to noise is not adversely affected.
- To prevent any occupational hazard, earmuffs/earplugs will be given to the workers working around or operating plant/ machinery emitting high noise levels. Use of plants or machinery will be minimised during night hours. Careful planning of machinery operation and scheduling of operation will be done to minimise such impact.

During Operation Phase

Exposure of high noise levels to workers for a long duration may lead to certain occupational diseases. To mitigate the high noise level, the following measures have been adopted. Same will be followed for proposed installation of new line-II.

- Noise attenuating devices like earplugs and earmuffs are being provided to the workers exposed to high noise levels.
- About 33% of land has been earmarked for the green belt and plantations and sufficient green belt has been developed around the cement plant. Also, plantation outside the plant boundary will be carried out on the land owned by the company.
- Regular monitoring of noise level will be carried out and corrective measures in concerned machinery will be adopted accordingly.
- About 20 m height boundary wall has been already constructed through out the plant boundary which acts as a noise barrier.
- Noise generating machinery is kept in the covered sheds.
- Improved mufflers & silencers have been provided in the machinery generating high noise.

The same will be followed for proposed expansion.

Additionally,

- All the latest machines will be purchased for the plant and due care will be given to generation of noise by the equipment.

- The installation of DG sets of capacity 3 x 1500 KVA (already installed) & 1*1500 KVA (to be installed for emergency use only) will be bought acoustically enclosed and kept on the surface.

2.21 Parking provision

Adequate parking provision of 0.15 ha. I.e. 1500 sqm has been provided on the surface. After expansion total 0.28 ha. I.e. 2800 sqm of area will be allotted for parking space Also, separate loading & unloading areas will be provided within the project premises. Parking provision of 112 ECS will be provided within the plant premises.

Table 33. Parking Provision

Parking provision	No. of vehicles	ECS
Number of trucks	30	60
Number of cars	20	20
Number of two wheelers/ cycles	64	32
Total ECS		**112**

2.22 Plantation & green belt

Green belt/greenery will be developed along most of the periphery of the project area as well as along roads. Also, green belt development will be done outside the project boundary in the land owned by the company.

The following characteristics have been taken into consideration while selecting plant species for green belt development and tree plantation.

- They will be fast growing and tall trees.
- They will be perennial and evergreen.

Since tree trunks are devoid of foliage, scrub should form there to give coverage to the trunks. The trees will maintain regional ecological balance and conform to soil and hydrological conditions. Indigenous species will be preferred. Before planting of trees, seedlings, saplings, grass species, shrubs, soil preparation, soil amendments etc are to be undertaken well in advance. For proper survival and healthy growth of plant species a nursery will also be maintained at the site. It is ensured that proper

density of plants will be maintained at site. Post plantation care is also necessary and will be maintained in a planned and scientific manner.

- Total green area after expansion = **1.76 ha. (existing) + 2.32 ha (proposed) = 4.08 ha i.e. 33% of the total plot area will be developed as green area after expansion**
- **Total no. of trees required to be planted = 4.08 ha*2,500 nos./ha = 10,200 no. Out of 10,200 nos. trees, 4,500 trees have already been planted, remaining trees 5,700 no.** will be planted during expansion. After considering 80% survival rate, **7,125 no.** of saplings will be planted.
- A 2 m wide greenbelt around the plant boundary will be developed as greenbelt and green cover as per CPCB/MoEF&CC, New Delhi guidelines. Local and native species will be planted with a density of 2,500 trees per hectare. Total no. of 7,125 saplings will be planted and nurtured in the remaining 2.32 hectares in 5 years.
- Species already planted are Chestnut, Sweet Chestnut, Poplar, Willow, Babool tree, Peach Tree, Plum, Elm, Thuja, Chunar, Discoria, Apple tree, Pear Tree, Deodar.

Table 34. Details of Year wise Green belt Plantation

Tree Species proposed	No. of trees	No. of Sapling to be planted	Year Wise Distribution				
			Year 1	Year 2	Year 3	Year 4	Year 5
Thuja	700	800	160	160	160	160	160
Willow	690	760	152	152	152	152	152
White Willow	685	790	158	158	158	158	158
Mulberry	710	820	164	164	164	164	164
Spruce (Cypress)	715	1060	212	212	212	212	212
Poplar	730	1025	205	205	205	205	205
Chestnut	730	970	194	194	194	194	194
Apricot	740	900	180	180	180	180	180
Total	**5,700**	**7,125**	**1,425**	**1,425**	**1,425**	**1,425**	**1,425**

Existing plantation photographs







Figure 23. Existing Plantation Photographs

Green Belt Layout Plan



Figure 24. Green Belt layout

Table 35. Green Belt Layout Legend

	Existing Plantation
	Proposed Plantation
	Inside green belt
	Outside boundary green area yet to be developed

2.23 Safety measures

Safety in design and operations are of paramount importance. The company will be taking initiative to implement an integrated process safety management system for all new processes and developments. Following initiatives considered:

- Process Safety Information (PSI) for all products
- Process Hazard Analysis (PHA) for all products
- Equipment safety study

Safety in Design

Following are the strategies to improve the safety of the people and plant:

- Use of proven technologies and equipment.
- Use of the latest safety process know-how.
- Modern risk assessment techniques to design effective safeguarding systems for all critical locations in the process.
- Design plants in accordance with applicable codes and standards and maintain standard engineering practises during detailed engineering.
- Occupational Health.
- Fixed detection system with alarms and data logging.
- Trained personnel made fully aware of the hazards of process and operations. Personnel will also be informed of the health hazards.
- Emergency showers and eyewash facilities at appropriate locations.
- Health surveillance programs.

Fire Safety

- Smoking is prohibited
- Source of water equipped with diesel driven pumps.
- Arrangement of pipe lines along and around vulnerable areas.
- Alternative water supply arrangements.
- Provision of valves at appropriate points to enable supply of water at the required place/area or divert the same to another direction/pipeline.
- Vehicle access will be strictly controlled.
- Ventilation will be sufficient to cope with the maximum expected vapour levels in the building.
- Storage area vents to the atmosphere will be sized for fire-heated emergency vapour release.
- Electrical equipment will be explosion-proof to meet national electrical code requirements.
- Hydrants shall be strategically placed with adequate hoses.
- Lighting grounded. Tall vessels and structures will be fitted with lightning conductors that are securely grounded.
- Water sprinkling methods are used to avoid overheating in coal storage areas.
- Coal storage risk mitigation – Proper ventilation has been provided around the coal storage shed. Existing industry is having multipurpose fire tender to balance the fire hazard. Same shall be maintained for proposed Line-II.

2.24 Project cost & implementation schedule

The total cost of the project is Rs. **250.52 Crores** (Existing Rs. 85.52 crores and proposed Rs. 165 crores). . The proposed project will be operational within 14 months of getting Environmental clearance and consent order from SPCB.

2.25 Occupational health & safety

Action plan for the implementation of OHS standards as per OHSAS/NIOSH/ACGIH will be followed as given below:

- Occupational health surveillance programmes are being done six monthly & and their records are being maintained.

- Medical dispensary comprising qualified doctor, male nurse, and Pharmacist in general shift and also 24 x 7 emergency service available at the existing plant.
- Health check-up camps are being organized on a regular basis at company dispensary/nearby locations for nearby people.
- Proper medical facility arrangements are being provided in case of any accident.
- Label Precautions and First Aid facilities are being provided.
- Emergency plan is being prepared and mock drills of the on-site emergency are being conducted.
- Employers and employees are being made aware of the hazardous properties of materials in their workplaces, and the degree of hazard each poses.
- Inspection of the industrial activity is being done at least once in a year and an annual status report on the compliance with the Rules is being submitted.
- An Environment, Health and Safety (EHS) Manager is available, who handles all the safety issues related to man, machine & materials.
- Exterior refuge or safe areas include parking lots, open fields or streets which will be located away from the site of the emergency and which provide sufficient space to accommodate the employees.
- A mixture of coal dust and coke dust can be potentially explosive and will be avoided by removing sources of ignition such as glowing coal, sparks, welding, grinding, static, electricity, smoking etc., away from the stockpiles.
- Coal storage risk mitigation – Proper ventilation has been provided around the coal storage shed. Existing industry is having multipurpose fire tenders to balance the fire hazard. Water pipeline for fire fighting has also been installed.
- To avoid ESP overvoltage risk, Used Microprocessor Based Parameter Control Unit will be used to Avoid high Voltage & to maintain the Specified Voltage & Current within limits.
- Specific written instructions must be obtained before any welding, burning, grinding or other flame heat producing work commences in coal processing areas.

Same shall be followed after expansion.

Personal Protective Equipment

The level of risk of exposure to particular dust will dictate the appropriate personal protective equipment (PPE) required such as side dust mask and appropriate gloves, footwear, respiratory protection, fire-resistant clothing, helmet.

- **Respirators:** An effective respiratory protection program has been established and maintained. A dust mask will be provided to workers.
- **Clothing:** Workers wear appropriate protective clothing to prevent skin exposure.
- **Skin Protection:** Workers wear gloves and clothing to protect skin.
- **Eye Protection:** Workers wear goggles when required.
- **Eyewash facility:** Common workplaces will be equipped with an Eyewash facility.
- **Head protection:** Helmet will be mandatory in plant premises.

Same shall be followed after expansion.

Worker Health Checkup Plan

Trumboo Industries Private Limited is committed to take care of the health of its employees. The company is conducting pre-employment and post-employment medical tests for its employees besides various educational and awareness programs on health and safety. A full-time medical assistance centre will be always available to its employees to carry out any first aid.

Pre-Employment Tests: Any employee who joins the Plant goes under company prescribed pre-employment medical examination tests from a MBBS qualified doctor. The medical fitness report is required to be submitted on or before joining the organization. If some new employee reports for his/her joining without a Medical Examination and fitness report; he/she is not allowed to join until the Medical Examination and fitness report is produced to the HR department. Such incidents are also reported to the HR Head.

Annual / Bi-annual Medical Tests: Annual/Bi-annual Medical tests are being conducted in the months of January and July respectively. All those employees who are being exposed to hazardous raw materials/processes, are being examined twice a year. Presently, following departments are involved in hazardous process and covered for medical examination:

- Production
- EHS
- Quality Control

- Mechanical
- Electrical
- Instrumentation
- Packing

Apart from the employees of above-mentioned departments, employees of other departments are also covered for medical examination if they are also exposed to hazardous processes due to any reason. The cost of pre-employment and during employment medical examinations are being borne by the company.

Exposure of workers to Raw Materials and safety Measures:

All our concerned employees are being given shop floor and classroom awareness training on raw materials that are being used. The detailed data of raw materials are being shared with them for their knowledge and awareness. This detailed data is also made available in medical centres for everybody's information.

Precautions taken due to Covid-19

1. Thermal screening of all incoming persons.
2. Aarogya Setu application must be mandatory to be installed by all persons.
3. It will be mandatory to wear a face mask.
4. Social distancing will be followed.
5. Sanitization of all areas including toilets to be done in every shift.
6. Gathering of more than 5 persons will not be permitted.

LIST OF MEDICAL TESTS DURING PRE AND POST EMPLOYMENT

Table 36. List of Medical Test during Pre & post Employment

S.No.	Pre-Employment Medical Tests	Post-Employment Medical Tests	
		Annual Medical Tests (January- February every year)	Bi-Annual Medical Tests (July-August)
1.	Physical Examination: 1. Chest Examination 2. Weight 3. Height 4. Pulse 5. B.P.	Physical Examination: 1. Chest Examination 2. Weight 3. Height 4. Pulse 5. B.P.	Physical Examination 1. Chest Examination 2. Weight 3. Height 4. Pulse 5. B.P.
2	Urine Routine Examination -Physical Examination -Macroscopic Examination	Urine Routine Examination -Physical Examination -Macroscopic Examination	N.A.
3	Haematology	haematology	N.A

	-Haemoglobin -TLC -DLC -Polymorphs -Lymphocytes -Eosinophils -Monocytes -ESR (Wintrobe) -S. Creatinine -S.Cholesterol	-Haemoglobin -TLC -DLC -Polymorphs -Lymphocytes -Eosinophils -Monocytes -ESR (Wintrobe) -S. Creatinine -S.Cholesterol	
4	Liver Function Tests (LFT)(For those workers only directly exposed to chemicals)	Liver Function Tests (LFT) (For those workers only directly exposed to chemicals)	N.A.
5	Chest X-ray P.A. View, Skinogram of Chest	Chest X-ray P.A. View, Skinogram of Chest	N. A
6	Vision test for near & far, colour vision, night blindness, squint	Vision test for near & far, colour vision, night blindness, squint	Vision test for near & far, colour vision, night blindness, squint
7	Random Blood Sugar	Random Blood Sugar	N.A.
8	ECG	ECG	N.A.
9	Blood Group	Blood Group	N.A.
10	Ultrasound (Abdomen)	N. A	N.A.
11	Spirometry Test	Spirometry Test	N.A.
12	Colour Blindness Test	Colour Blindness Test	Colour Blindness Test
13	Audiometry Test	Audiometry Test	Audiometry Test
14	Abdomen (Tenderness, Liver, Spleen, Tumour)	Abdomen (Tenderness, Liver, Spleen, Tumour)	Abdomen (Tenderness, Liver, Spleen, Tumour)
15	Nervous System (History of fits or epilepsy, Paralysis, Mental Health)	Nervous System (History of fits or epilepsy, Paralysis, Mental Health)	Nervous System (History of fits or epilepsy, Paralysis, Mental Health)
16	Locomotor System	Locomotor System	Locomotor System
17	Skin, Hernia, Hydrocele	Skin, Hernia, Hydrocele	Skin, Hernia, Hydrocele

2.25.1 Plan of budget for occupational health and safety

Table 37. Budget for Occupational health & Safety

S.No	Description	Existing Unit (Lacs)	Proposed Unit (Lacs)	After Expansion (Lacs)
1	Workers will be subjected to primary health check-up. Regular Medical check-up & First Aid facility will be organised. Workers will be provided with PPE like masks, gloves, goggles & ear muffs. Health Safety provisions & fire safety provisions.	6	8	**14**
2	Signages, Boards, Alarms shall be provided	8	9	**17**
3	EHS training will be provided, Conduct of Mock drills, Training programme on health & Safety etc	4	6	**10**
4	Insurance for worker & Tie up with ESI Hospital	8	10	**18**
Total (in Lacs)		**26**	**33**	**59**

2.25.2 Public health and safety

Table 38. Budget for Public Health & Safety

Sr. No.	Impact	Mitigation	Existing Unit (Lacs)	Proposed Unit (Lacs)	After Expansion (Lacs)
1	Health and Safety	Health Check-up camps shall be organised. Support to the primary Health centre. Public addressing system	5	7	**12**
Total			5	7	**12**

3. Description of environment

3.1. Introduction

To cover environmental baseline studies, following aspects have been covered: -

The baseline data is generated through field study within the impact zone (Core Zone and Buffer Zone) for various components of the environment viz. Air, Noise, Soil, Water, Land, Ecology and Socioeconomic. The baseline environmental studies have been done for **Post Monsoon Season (October 2022- December 2022)** by Perfact Researchers Pvt. Ltd. in a study area of 10 km radius from the project site. While generating the baseline status of the physical and biological environment of the study area, the concept of impact zone has been considered. The impact zone selection is based on preliminary screening and modelling studies. The data collection had been done as given below:

- Field Survey and site visit
- Primary monitoring of key environmental parameters like Air, Noise, Soil, Water, Land, Ecology and Socio Economic survey during the post monsoon season
- Consultation with local people, government departments such as the Forest department, Panchayats etc.
- Literature review on secondary information available for the study area

3.2. Base map of the area

3.2.1. Google image of the project site

Map showing Study area & Close view of the study area with 1 km Buffer radius is already given at section no. 2.3 & 2.3.1

3.2.2. Topographical map

Topographical Map with 15 km radius is already given at section no. 2.3.2

3.2.3. DEM map

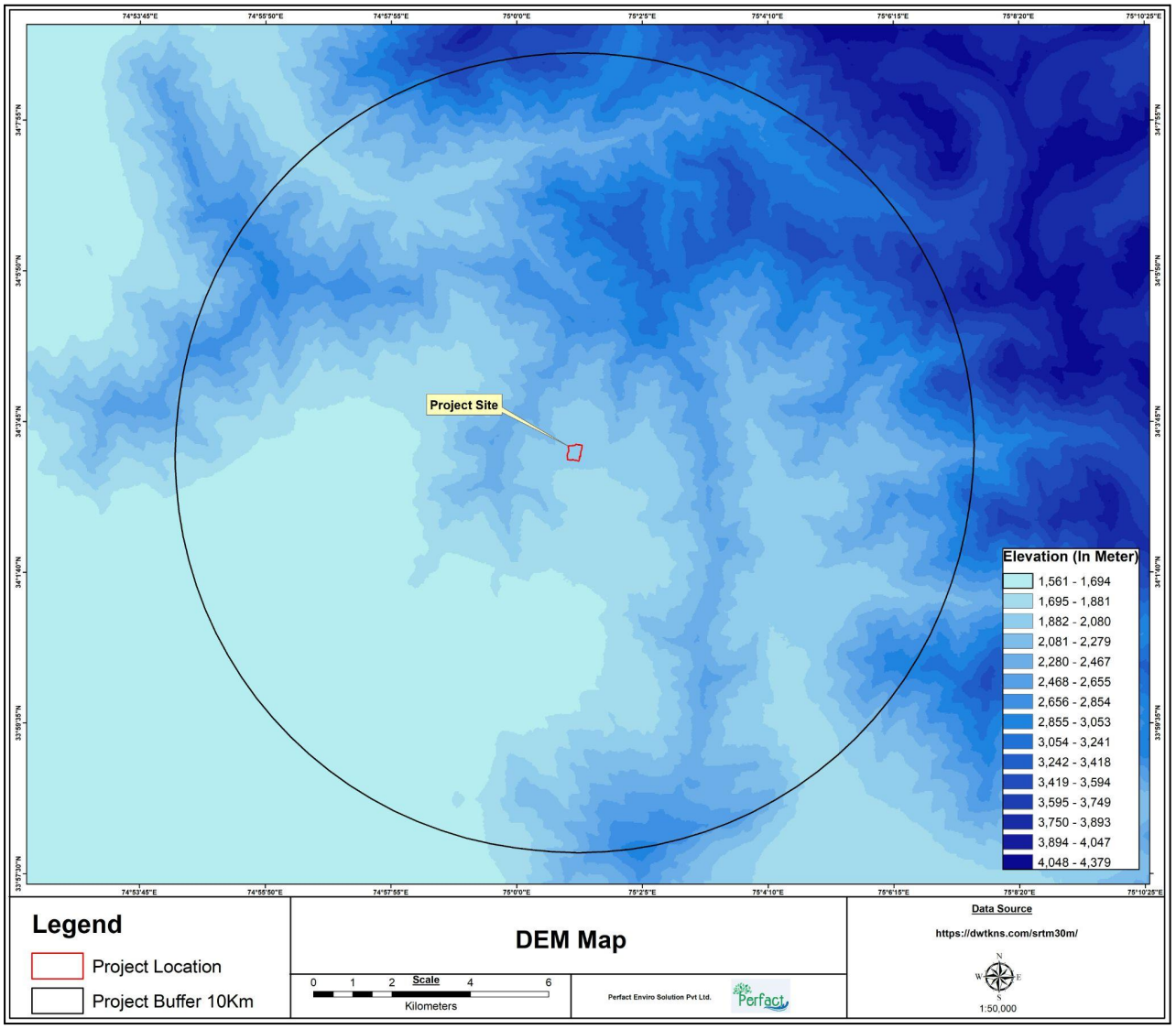


Figure 29. DEM Map

Digital Elevation Model

Digital Elevation Models are data files that contain the elevation of the terrain over a specified area, usually at a fixed grid interval over the "Bare Earth". The intervals between each of the grid points will always be referenced to some geographical coordinate system. This is usually either latitude-longitude or UTM (Universal Transverse Mercator) coordinate systems. The closer together the grid points are located, the more detailed the information will be in the file. The details of the peaks and valleys in the terrain will be better modelled with small grid spacing than when the grid intervals are very large. Elevations other than at the specific grid point locations are not contained in the file. As a result, peak points and

valley points not coincident with the grid will not be recorded in the file. For practical purpose this "Bare Earth" DEM is generally synonymous with a Digital Terrain Model (DTM)

(A) DATA USED

DEM Data: Shuttle Radar Topographic Mission (SRTM) data

Data Source: http://srtm.csi.cgiar.org

Software Used: Arc GIS

(B) METHODOLOGY

Shuttle Radar Topographic Mission (SRTM) data has been used for creation of the Digital Elevation Model of the study area. The SRTM data has vertical accuracy of 16m and the spatial resolution of 90m.

1st Stage:

The first processing stage involves importing and merging the 1-degree tiles into continuous elevation surfaces in Arc GRID format.

2nd Stage:

Resampling the data at 23m is done and a contour interval of 5m through the usual process of interpolation is created.

3rd Stage:

SRTM data is converted in grid format through Arc GIS to obtain elevation information of study area. Contours are then generated at 2.0 m interval through 3D analyst of Arc GIS and then are interpolating with raster data.

4th Stage:

Integration of DEM with contour map showing 3D view for analysis of surface is done.

(C) Interpretation

It is very clear from the DEM that the elevation varies from 1561 m to 4379 m in the whole study area. The altitude of the buffer zone of the project area varies from 3759m AMSL on the North-eastern periphery to 1586m AMSL on the

South-Western periphery. The general slope of the buffer zone of the project area is towards south-west.

3.2.4 Village map

Village Map with 10 km radius is given below:

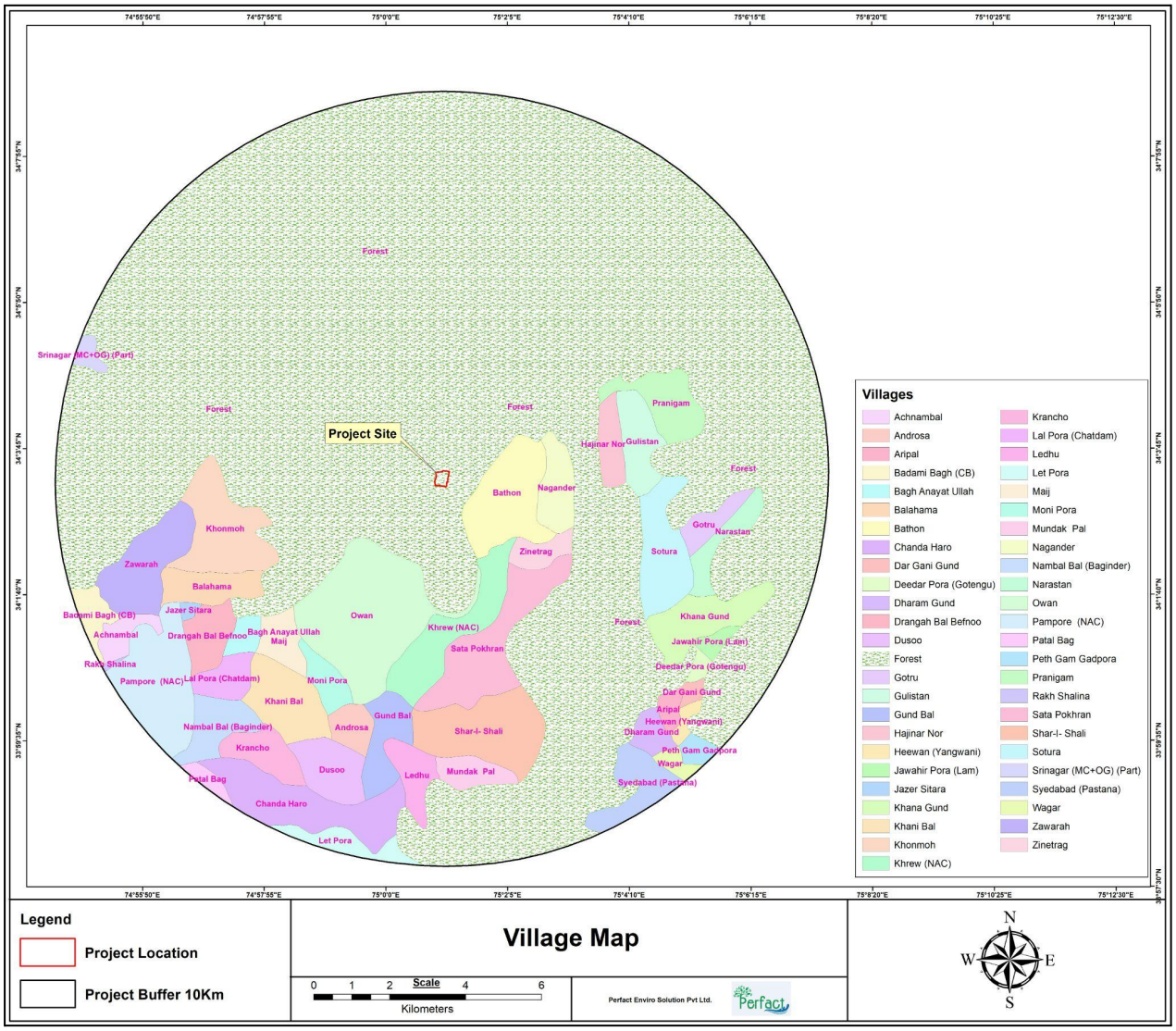


Figure 30. Village Map

3.3. Methodology of baseline data collection

Table 39. Methodology of Baseline Data

S.No.	Functional Area	Methodology
1.	Micro-Meteorological Data	Site specific Micro-Meteorological Data has been used for the study. The important parameters considered are temperature, humidity & wind speed.
2.	Ambient Air Quality	The ambient air quality monitoring was done to assess the ambient air quality in the **Post Monsoon Season (October 2022- December 2022)**. The guidelines for selections of ambient air monitoring stations given in IS – 5182 part 14, 2000 were followed.
3.	Water Quality	To assess the water quality of the proposed area, Grab, Composite sampling done for water sample collection. Water samples were taken as per the Standard Methods (IS & APHA, 23rd Edition 2017). Necessary precautions were taken for the preservation of samples. The physical parameters viz. pH, temperature and conductivity were measured at site using a portable water analyser.
4.	Ambient Noise Quality	At each station noise level was monitored for 24-hours. For each measurement, dB (A) readings were taken for every 15 minutes for 24 hrs once in a season to get Leq values.
5.	Soil Quality	Augur method was used for soil sampling and samples were collected at 15 cm depth after removing the upper crust.
6.	Topography, Land-form and Land Use	The land use/ land cover map has been generated on a 1:50,000 scale using Satellite imagery, topographical maps, Survey of India and ground truth information.
7.	Biological Environment	Primary and secondary data collection has been done by the Ecology and Biodiversity team for the study of flora and fauna in the core and Buffer Zone.
8.	Socio Economic Environment	For demography and socioeconomics, block wise data has been collected and used for the assessment of impacts.

3.4 Land use

3.4.1 Introduction

Information on land use/ land cover is the basic prerequisite for land resource evaluation, environmental assessment, utilisation and management. A considerable degree of land transformations is being witnessed as a result of growing population pressure on the finite land resources consummating in deterioration of the environment. As a precursor, it is necessary to understand the

'cause and effect' of the transformations through scientific studies. The scope of the present study is limited to mapping the current land use / land cover pattern, their assessment, spatial distribution and extent using remote sensing and GIS techniques. The land environment will mainly deal with the land use, land cover within and buffer zone.

3.4.2 Methodology

Image processing software and GIS Software were used for the project. 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. The methodology applied comes under following steps:

- Satellite imagery for the Area of Interest was created through image processing software.
- Geometric correction includes correction for geometric distortions due to sensor, earth geometry variations and conversion of the data to real world coordinates.
- Image enhancement is one of the important image processing functions primarily done to improve the appearance of the imagery to assist in visual interpretation and analysis.
- Google image is used as a reference map for base layer preparation.
- Visual interpretation techniques have been used for digitization of geographical features for different land use and vegetation cover classes based on spatial patterns of geographic features.

Flow Chart for Methodology of LULC Map Preparation

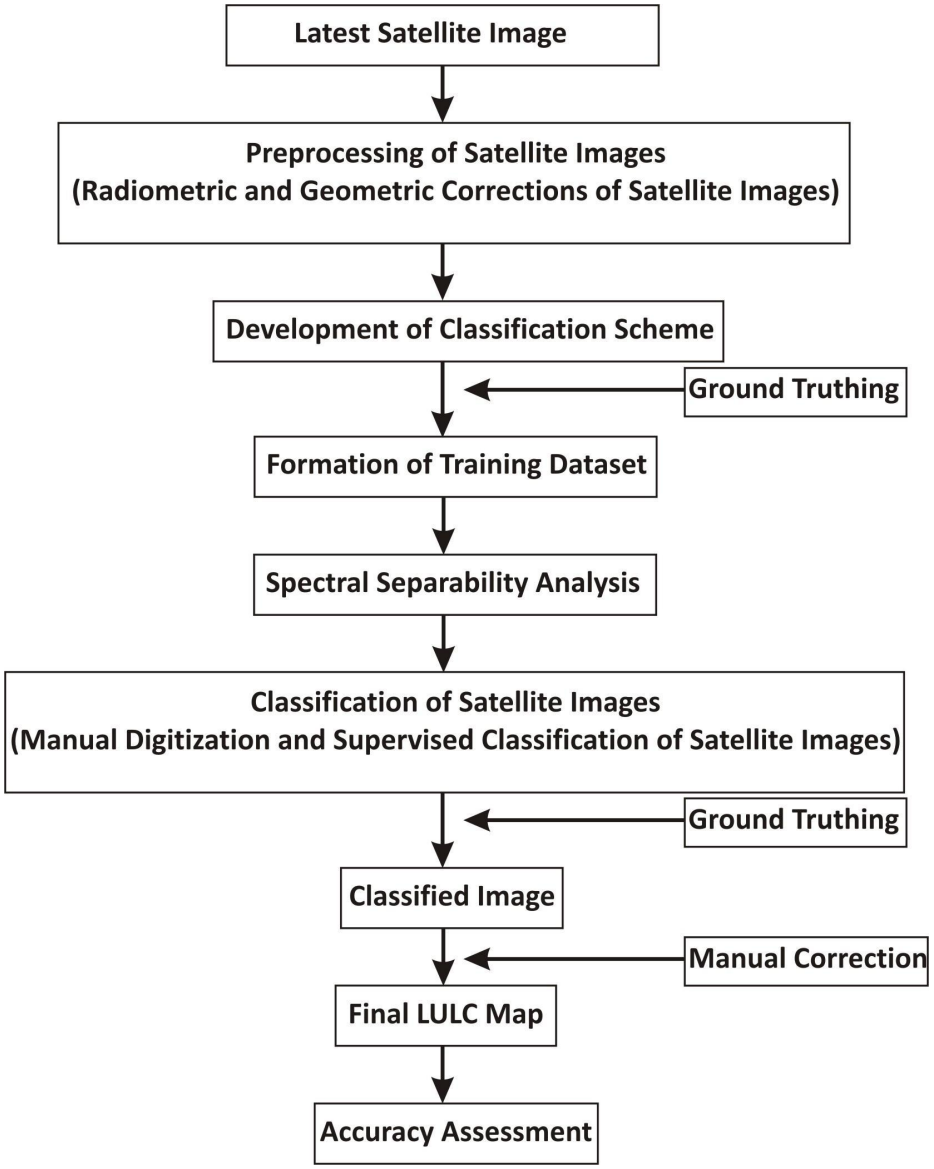


Figure 31. Flow Chart for Methodology of LULC Map Prapartion

RESULTS AND CONCLUSIONS:

Land use Buffer zone:

The land use/ land cover map has been generated on 1:50,000 scale using Satellite Imagery and ground truth information. Based on the methodology developed for the present land use/ land cover, categories have been grouped under the following major land use/land cover categories.

Table 3-15; Detail of Land use breakup for Buffer Zone

Table 40. Land Use Break up of Buffer Zone

S No.	Category	Area in SQ Km	Area in Ha	Percentage
1	Agriculture Land	91.40	9140.42	26.95
2	Barren Land	25.55	2555.39	7.54
3	Built-up, Mining	1.33	133.17	0.39
4	Built-up, Rural	3.71	370.68	1.09
5	Built-up, Urban	15.80	1579.87	4.66
6	Forest, Deciduous	8.93	892.60	2.63
7	Forest, Evergreen/Semi Evergreen	124.22	12422.30	36.63
8	Forest, Scrub Forest	63.67	6366.71	18.78
9	Grass/Grazing	1.35	135.17	0.40
10	Water Bodies, Pond/Reservoir	3.14	313.63	0.92
11	Water Bodies, River/Canal	1.48	148.23	0.44
	Total	**339.10**	**33,909.94**	**100.00**

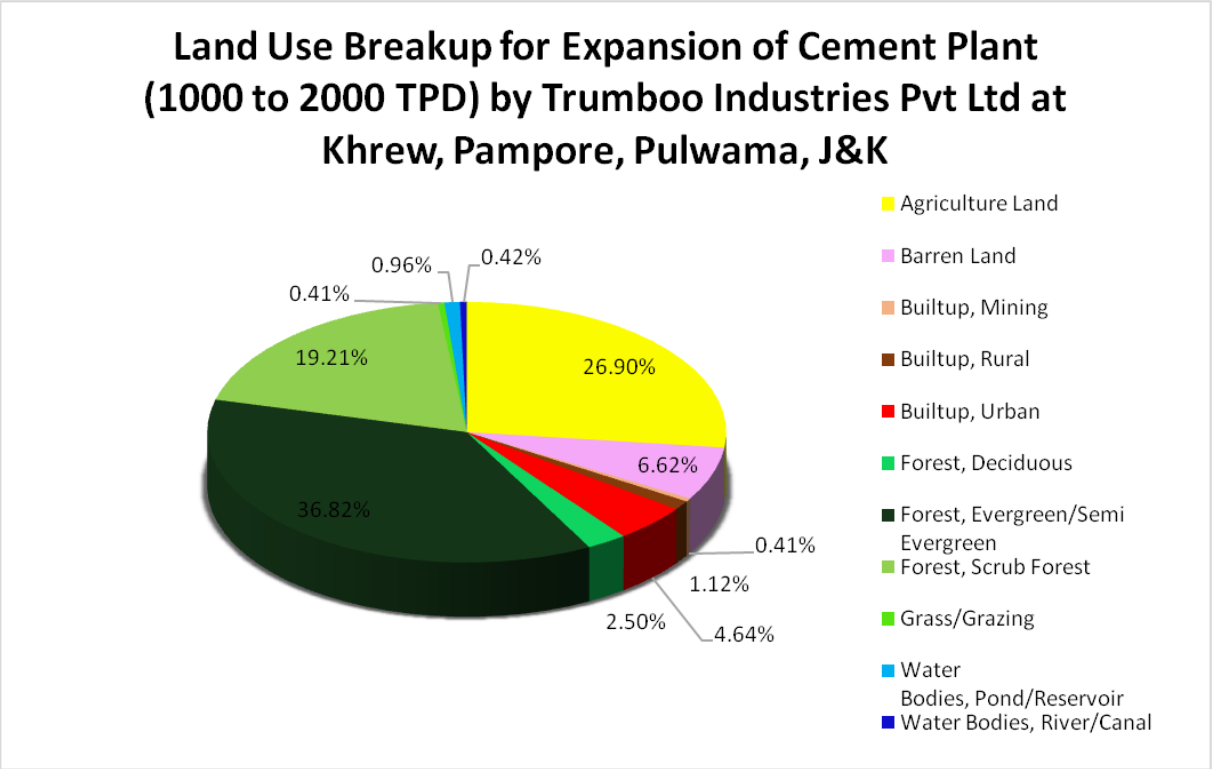


Figure 32. Land Use Breakup Expansion of Cement Plant

Built-up land:

Built-up land includes the urban or rural settlements. The village locations and their area extent have been extracted from the existing Satellite Imagery. The major built-up area is about 2083.72 hectares which is 6.14 percent of the total 10 km radius study area.

Agriculture Land:

Based on Satellite Imagery and ground truth the total Agriculture land is about 9140.42 hectares which is 26.95 percent of the total study area.

Forest:

Based on Satellite Imagery and ground truth the land use is mainly forest land. The total forest area is about 19681.61 hectares which is 58.04 percent of the total study area.

Waste/ Barren land:

Based on Satellite Imagery and ground truth Waste/ Barren land their area extent has been extracted. The Barren land area is about 2555.39 hectares which is 7.54 percent of the total 10 km radius study area.

Water bodies:

Based on Satellite Imagery and ground truth Water bodies their area extent has been extracted. This area is about 461.86 hectares which is 1.36 percent of the total 10 km radius study area.

Grass/Grazing:

Based on Satellite Imagery and ground truth grass/grazing area extent has been extracted. This area is about 135.17 hectares which is 0.40 percent of the total 10 km radius study area.

Land Use Map

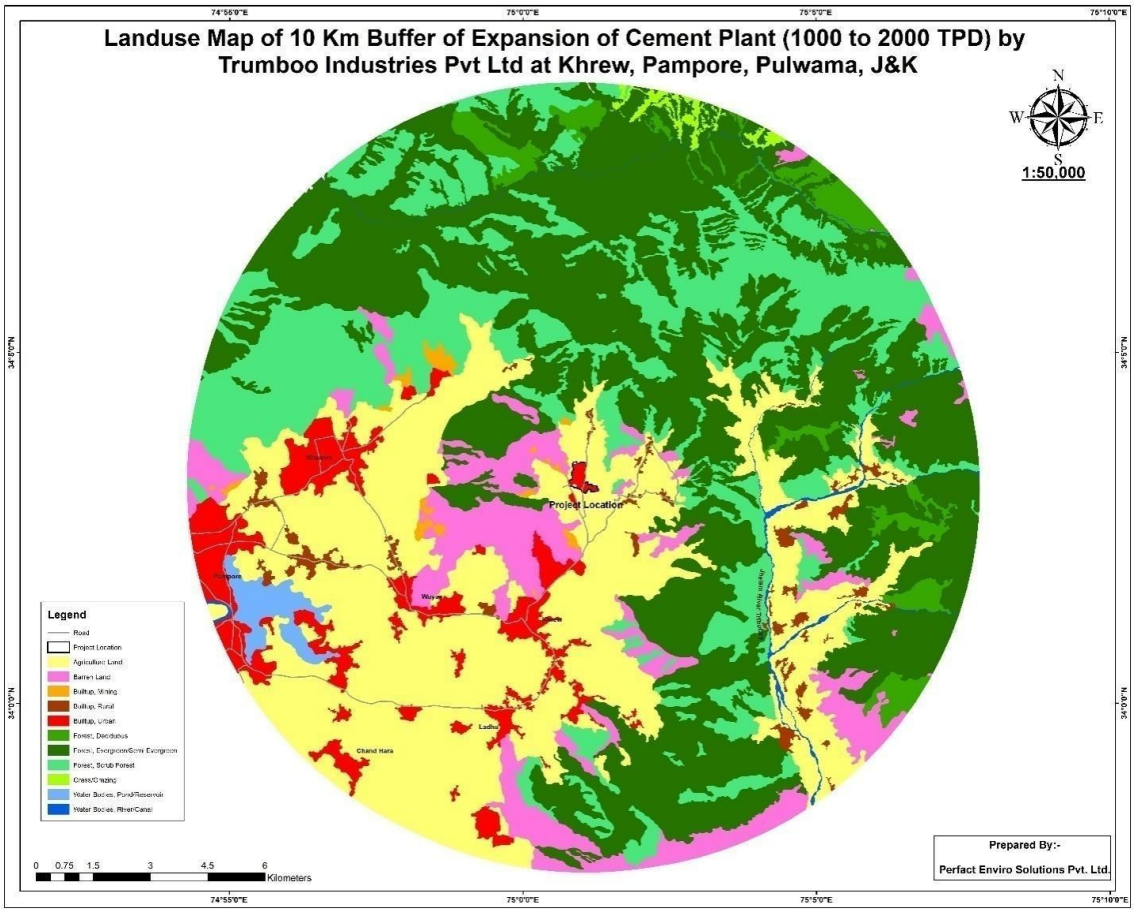


Figure 33. Land Use Map

3.5. METEOROLOGY

Before dwelling on the various aspects of air quality, it would be in the fitness of things to discuss the meteorological status of the area as the dispersion of fugitive emission depends largely on the meteorological conditions of the area. The selection of sampling stations is mainly guided by the predominant wind direction during the monitoring season in the area.

3.5.1 Climate condition (as per global modelling and assimilation office (GMAO)(2015) merra-2,2010-2019)

The Important parameters considered are Temperature, Relative Humidity, Wind Speed, Wind Direction and Rainfall. The extract of Maximum, Minimum values

(month wise) of above said parameters from Global Modeling and Assimilation Office (GMAO) (2015), MERRA-2, 2010-2019) are given below in the tables:

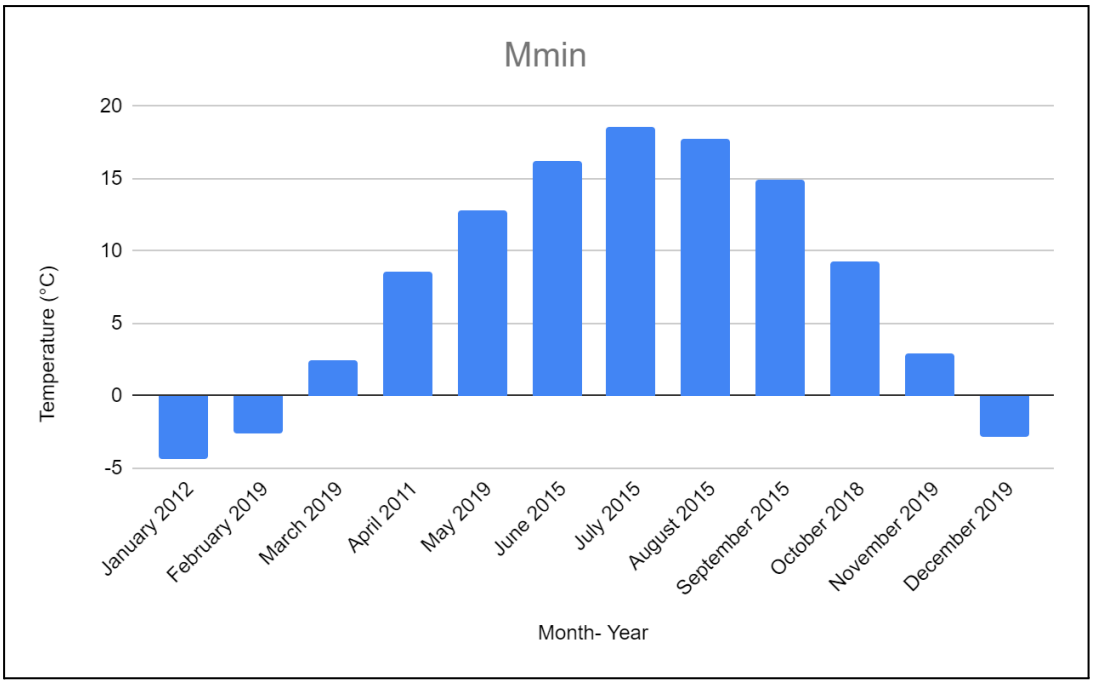
3.5.2 Temperature

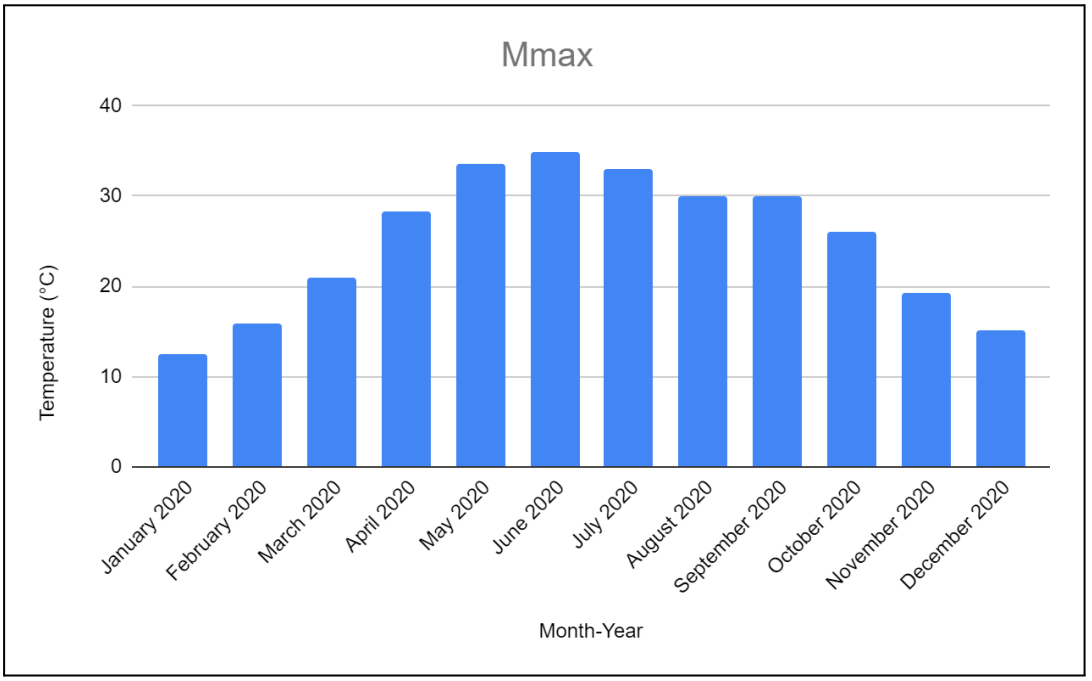
The Maximum monthly average temperature of the area in ten Years (2010-2020) was recorded as 34.95 °C in June 2020, whereas the minimum temperature of the area was recorded as -4.44 °C in January 2020.

Table 41. Temperature

Month	Year	Mmax	Year	Mmin
January	2020	12.50	2012	-4.44
February	2020	15.89	2019	-2.64
March	2020	20.98	2019	2.40
April	2020	28.22	2011	8.51
May	2020	33.51	2019	12.80
June	2020	34.95	2015	16.24
July	2020	32.91	2015	18.53
August	2020	29.98	2015	17.74
September	2020	29.91	2015	14.87
October	2020	26.08	2018	9.29
November	2020	19.30	2019	2.91
December	2020	15.14	2019	-2.83

(Source: *Global Modeling and Assimilation Office (GMAO) (2015), MERRA-2 tavg1_2d_slv_Nx: 2d,1-Hourly,Time-Averaged,Single-Level,Assimilation,Single-Level Diagnostics V5.12.4, Greenbelt, MD, USA, Goddard Earth Sciences Data and Information Services Center (GES DISC), Accessed [2nd February 2020] DOI:10.5067/VJAFPLI1CSIV)*


Mmin
20
15
10
5
0
-5
Temperature (°C)
January 2012
February 2019
March 2019
April 2011
May 2019
June 2015
July 2015
August 2015
September 2015
October 2018
November 2019
December 2019
Month- Year


Mmax
40
30
20
10
0
Temperature (°C)
January 2020
February 2020
March 2020
April 2020
May 2020
June 2020
July 2020
August 2020
September 2020
October 2020
November 2020
December 2020
Month-Year

3.5.3 Relative Humidity

From the data, the Maximum relative humidity was recorded as 75.67 % in August, 2020. Minimum relative humidity was recorded as 26.30 % in December 2016. The most humid month is August while the least humid month is December.

Table 42. Relative Humidity

Month	Year	Max	Year	Min
January	2017	73.17	2010	33.54
February	2019	75.64	2018	47.00
March	2019	74.11	2010	48.64
April	2015	67.82	2020	35.62
May	2019	58.40	2020	28.58
June	2017	57.71	2012	37.80
July	2015	74.83	2012	51.25
August	2020	75.67	2014	61.15
September	2014	69.67	2017	54.45
October	2014	57.80	2020	30.70
November	2019	67.80	2016	29.10
December	2019	62.32	2016	26.30

(Source: *Global Modeling and Assimilation Office (GMAO) (2015), MERRA-2 tavg1_2d_slv_Nx: 2d,1-Hourly,Time-Averaged,Single-Level,Assimilation,Single-Level Diagnostics V5.12.4, Greenbelt, MD, USA, Goddard Earth Sciences Data and Information Services Center (GES DISC), Accessed [2nd February 2020] DOI:10.5067/VJAFPLI1CSIV)*

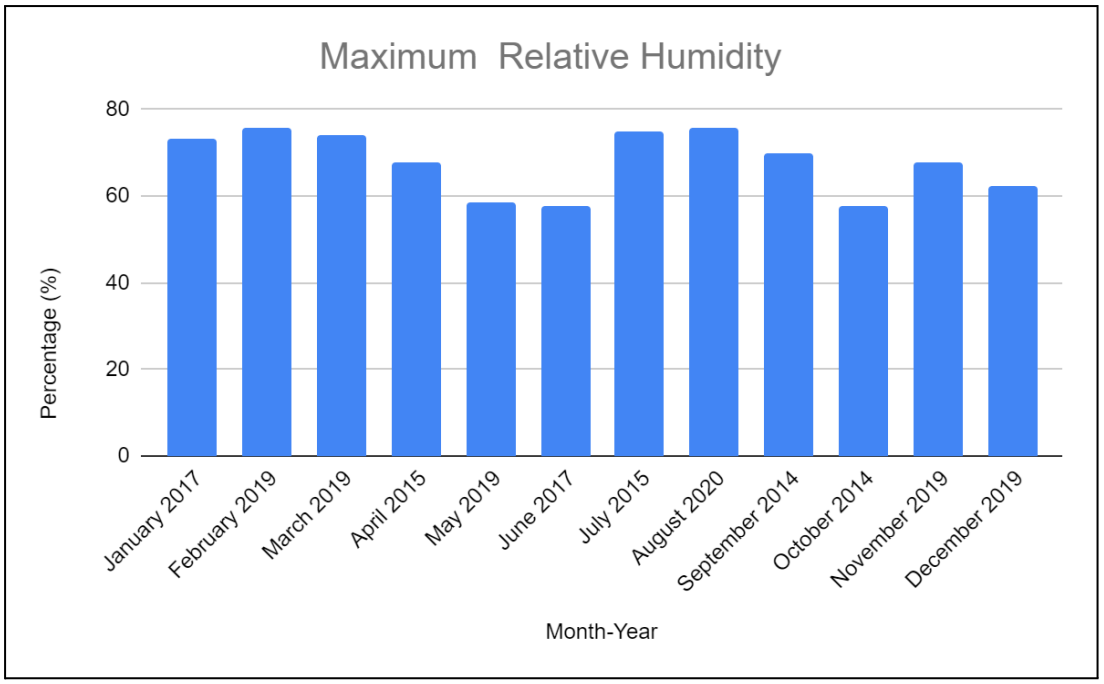


Figure 34. Maximum Relative Humidity

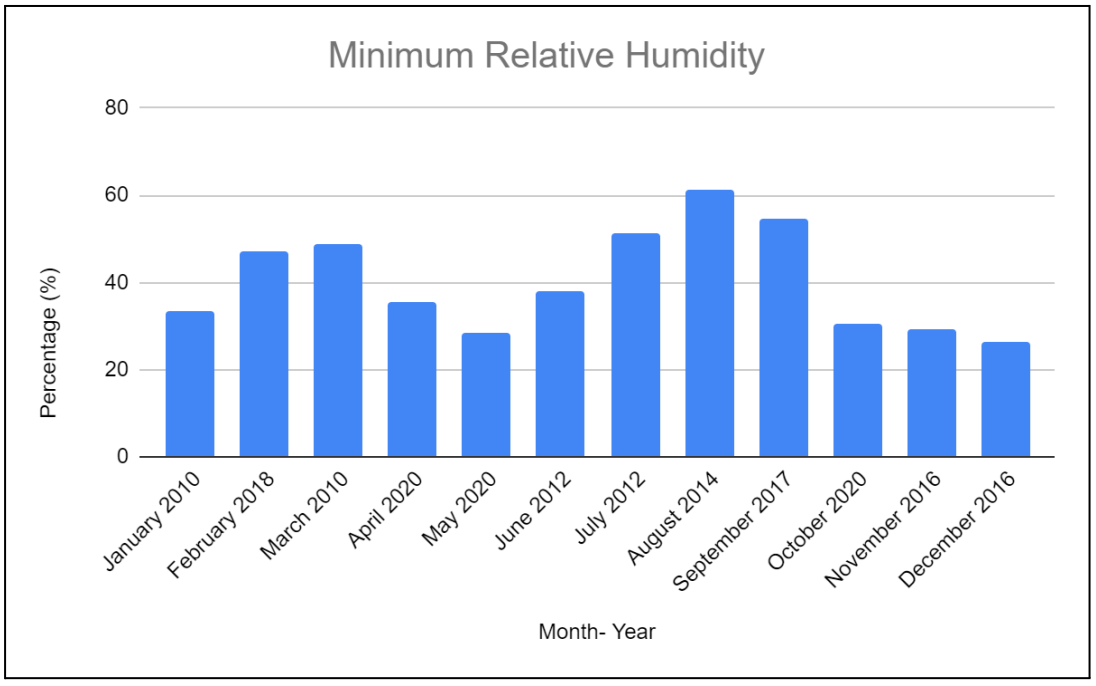


Figure 35. Minimum Relative Humidity

3.5.4 Rainfall

The maximum rainfall was recorded in August (upto 505.76 mm) in 2013. The months July to September receive maximum rainfall.

Table 43. Rainfall

Month	Year	Rainfall Max (mm)	Year	Rainfall Min (mm)	Average Rainfall (mm)
January	2020	60.17	2011	2.40	14.80
February	2013	42.82	2020	2.16	25.67
March	2016	133.83	2010	17.63	55.24
April	2017	146.67	2020	10.52	98.47
May	2010	146.64	2020	2.25	83.15
June	2013	157.47	2012	41.68	103.62
July	2015	458.45	2020	91.68	266.40
August	2013	505.76	2020	110.24	277.75
September	2014	212.69	2020	31.86	97.44
October	2018	62.89	2020	2.01	27.15
November	2019	57.47	2016	2.66	22.77
December	2018	8.94	2020	0.14	5.27

(Source: *Global Modeling and Assimilation Office (GMAO) (2015), MERRA-2 tavg1_2d_slv_Nx: 2d,1-Hourly,Time-Averaged,Single-Level,Assimilation,Single-Level Diagnostics V5.12.4, Greenbelt, MD, USA, Goddard Earth Sciences Data and Information Services Center (GES DISC), Accessed [2nd February 2020] DOI:10.5067/VJAFPLI1CSIV)*

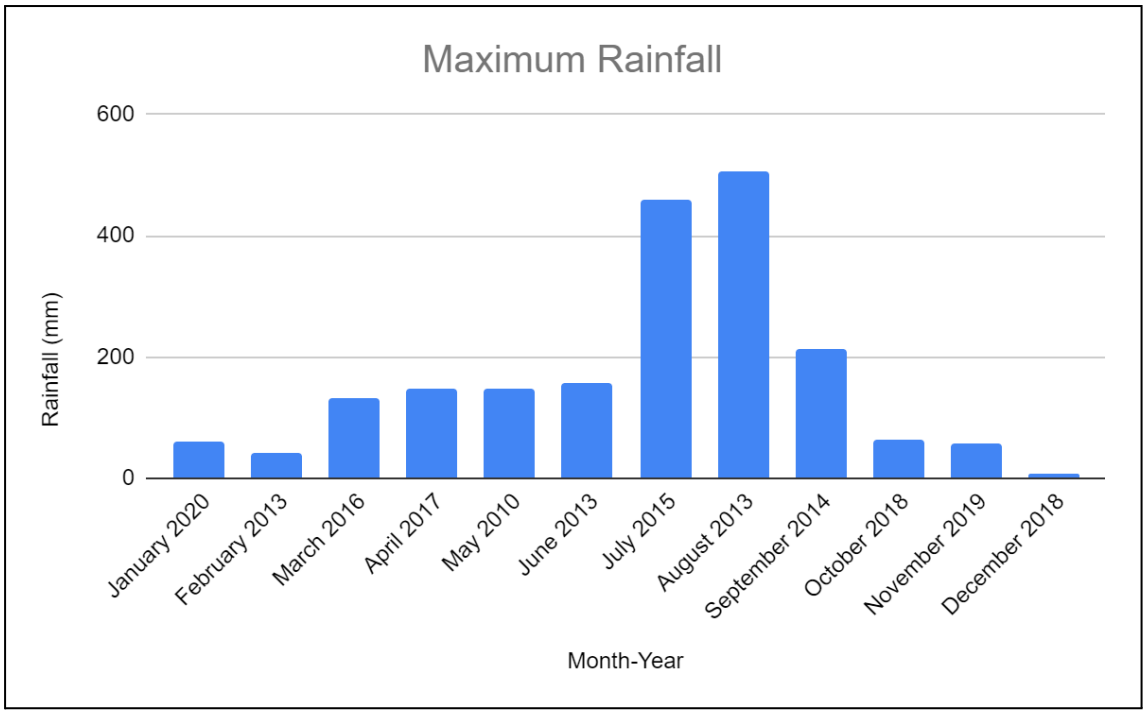


Figure 36. Maximum Rainfall

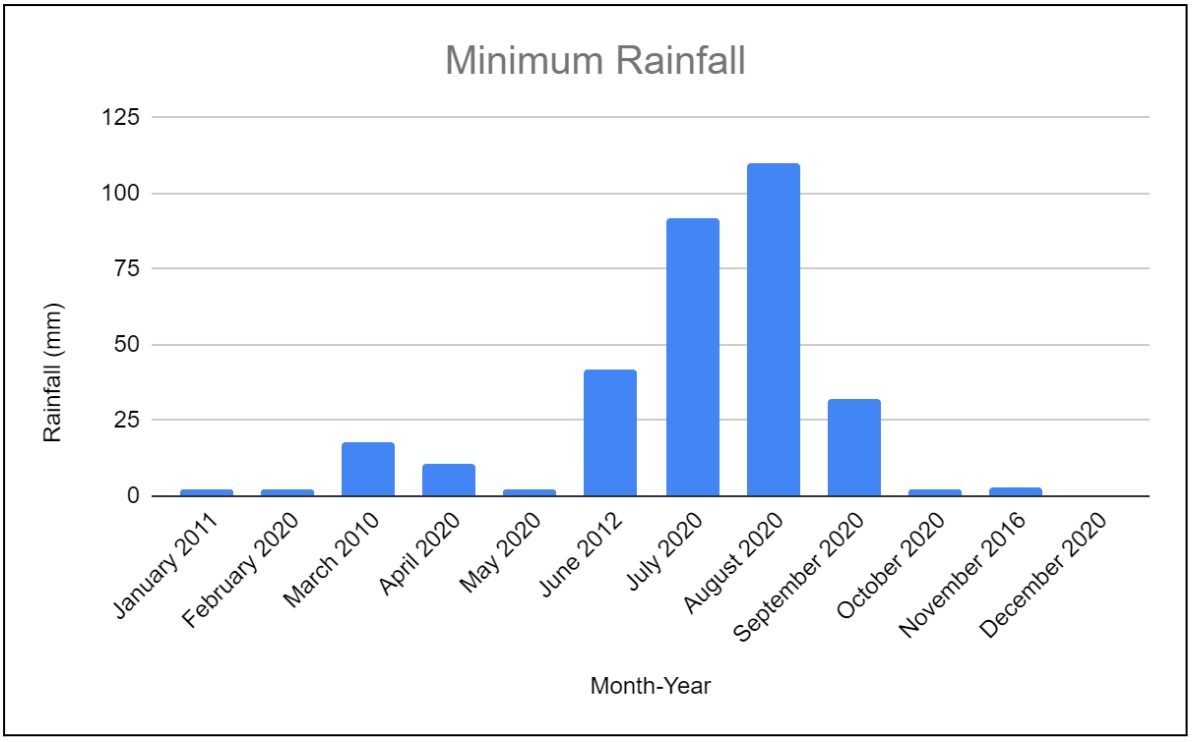


Figure 37. Minimum Rainfall

3.5.5 Wind speed

Wind speed normally was in the range of 3.03 m/sec in February 2020 to 0.61 m/sec in October 2011.

Table 44. Wind Speed

Month	Year	Max Wind speed (m/sec)	Year	Min Wind speed (m/sec)
January	2020	2.25	2010	1.08
February	2020	3.03	2018	1.28
March	2020	2.28	2010	1.11
April	2020	2.51	2010	0.86
May	2020	2.61	2017	0.78
June	2020	1.87	2010	1.00
July	2020	2.54	2010	1.74
August	2020	2.66	2011	1.63
September	2020	2.07	2014	1.10
October	2020	2.39	2011	0.61
November	2020	2.43	2010	0.78
December	2020	2.87	2016	0.85

(Source: *Global Modeling and Assimilation Office (GMAO) (2015), MERRA-2 tavg1_2d_slv_Nx: 2d,1-Hourly,Time-Averaged,Single-Level,Assimilation,Single-Level Diagnostics V5.12.4, Greenbelt, MD, USA, Goddard Earth Sciences Data and Information Services Center (GES DISC), Accessed [2nd February 2020] DOI:10.5067/VJAFPLI1CSIV)*

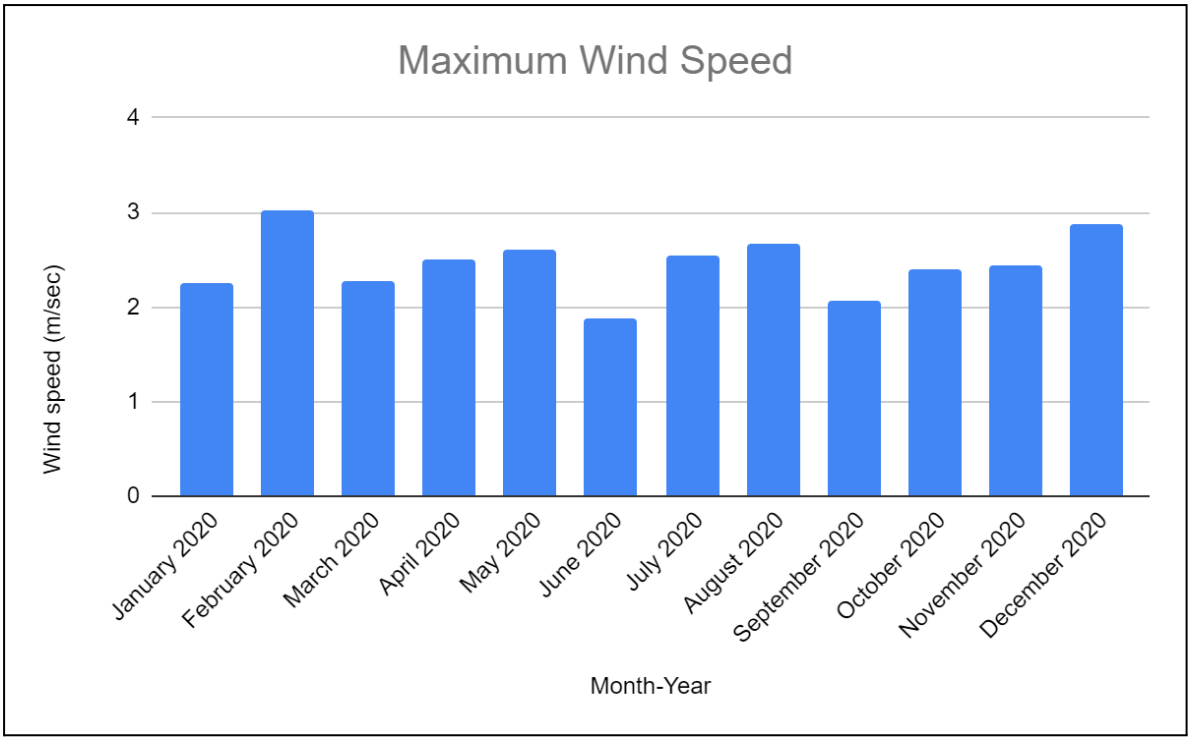


Figure 38. Maximum Wind Speed

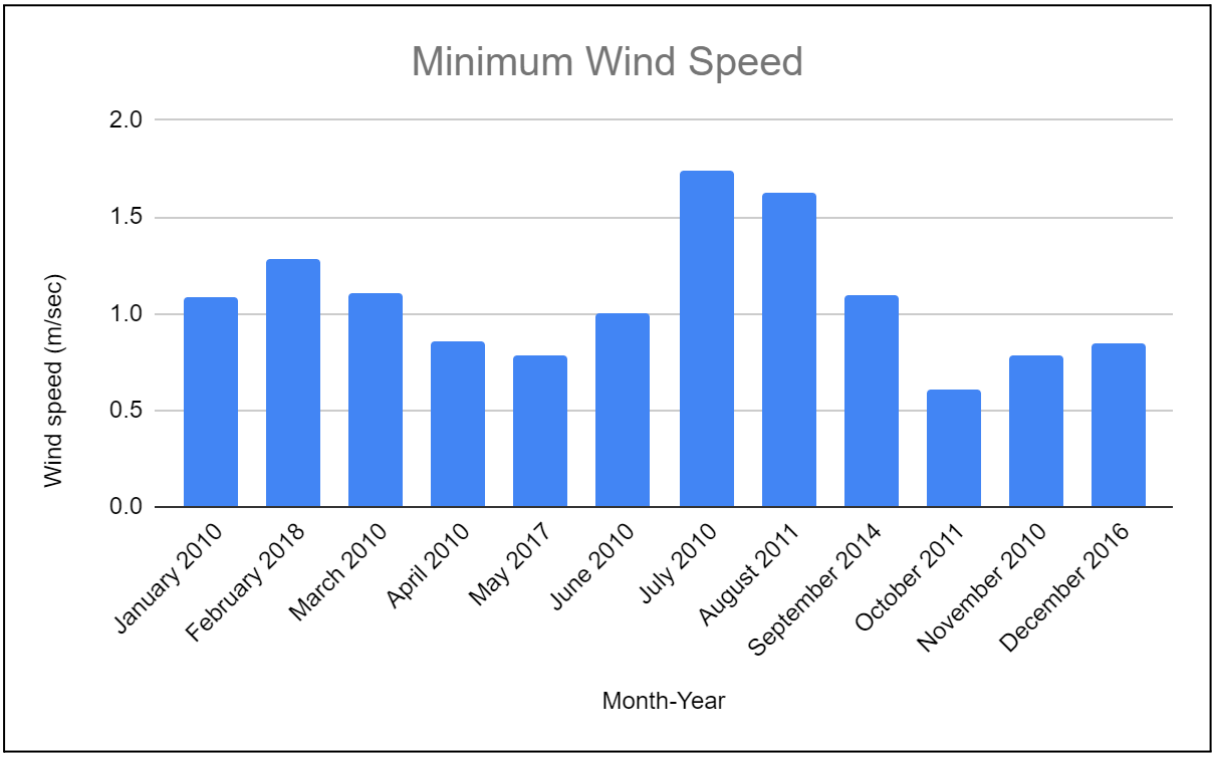


Figure 39. MInimum Wind Speed

3.5.6 Wind direction

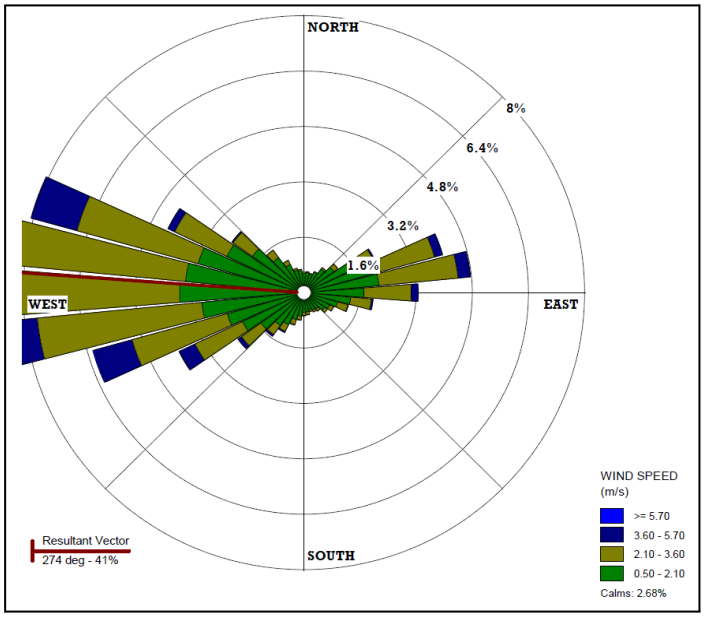
The annual windrose shows that predominant wind is arriving from the West to East at the project site. The season wise predominant wind directions are given below:

Winter : E-W
Summer : W-E
Post Monsoon : ENE-WSW

Table 45. WInd Direction

Month	Wind Direction	
	Direction	Calm
January	North North East	23 %
February	West South West	25 %
March	West South West	31 %
April	South West	33 %
May	South West	34 %
June	South South West	41 %
July	South South West	46 %
August	South South West	38 %
September	South WEst and South South West	27 %
October	North East and North North East	17 %
November	North North East	25 %
December	North North East	30 %

WIND ROSE DIAGRAM
Windrose Diagram Annual (2010- 2020)



Note:

- The longest spoke shows the predominant wind direction i.e. the wind blew from the W (more than 8.0% of the time).
- The different colours of each spoke provide details of the speed of the wind in m/s from each direction. Thus, most of the time, the wind is blowing at a speed between 2.10- 3.60 m/s (Greenish brown colour).

WIND ROSE DIAGRAM WINTER (2010-2020)

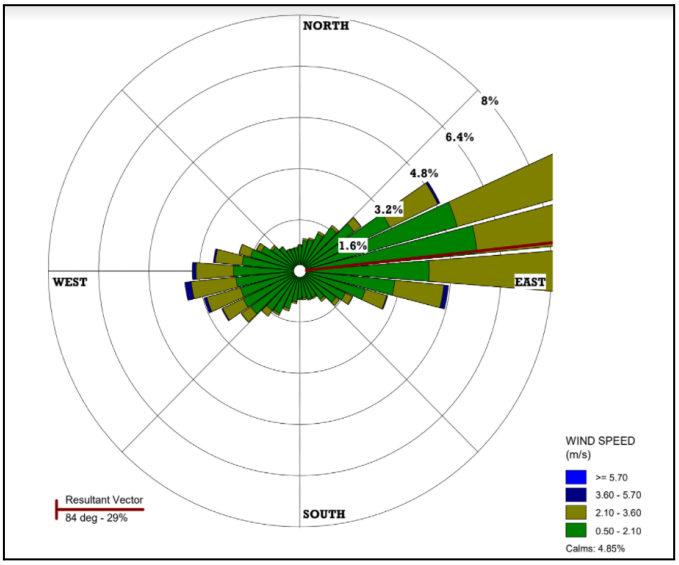


Figure 40. Wind Rose Diagram Winter

Note:

- The longest spoke shows the predominant wind direction i.e. the wind blew from the E (more than 8% of the time).
- The different colours of each spoke provide details of the speed of the wind in m/s from each direction. Thus, most of the time, the wind is blowing at a speed between 2.10- 3.60 m/s (greenish brown colour) and 0.50-2.10 (green colour).

WIND ROSE DIAGRAM POST MONSOON (2010-2020)

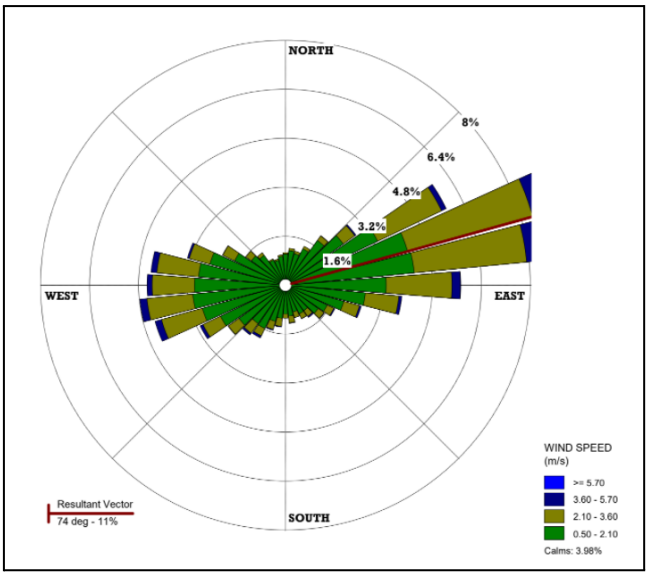


Figure 41. Wind Rose Diagram Post Monsoon

Note:

- The longest spoke shows the predominant wind direction i.e. the wind blew from the ENE (more than 8% of the time).
- The different colors of each spoke provide details of the speed of the wind in m/s from each direction. Thus, most of the time, the wind is blowing at a speed of 2.10-3.60 m/s (Greenish Brown Colour).

WIND ROSE DIAGRAM SUMMER (2010-2020)

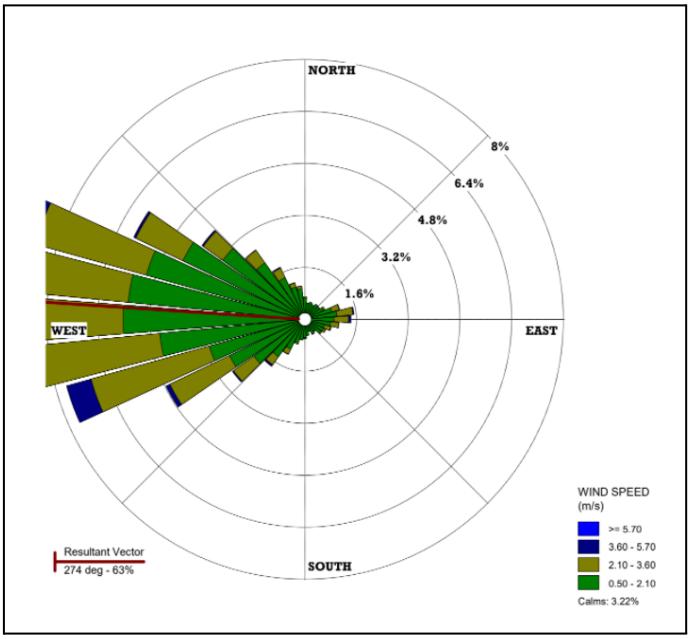


Figure 42. Wind Rose Diagram Summer

Note:

- The longest spoke shows the predominant wind direction i.e. the wind blew from the W (more than 8% of the time).
- The different colors of each spoke provide details of the speed of the wind in m/s from each direction. Thus, most of the time, the wind is blowing at a speed of 2.10-3.60m/s (Greenish brown colour).

3.6. Micro- meteorological data

A weather station was installed near the site for hourly monitoring of temperature, humidity, wind speed & wind direction for the month of October 2022 to December 2022. Average data is given below:

Table 46. Micro- Meteorological Data

Month	Temperature(°C)			Relative Humidity (%)			Wind speed (m/s)		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
1st Oct. -31st Oct. 2022	18.07	-8.88	5.47	95.64	15.74	58.93	8.12	0.13	2.20
1st Nov. - 30th Nov. 2022	8.24	-8.84	-0.56	89.54	20.27	49.06	4.69	0.04	1.92
1st Dec -31st Dec 2022	7.35	-8.95	-3.33	95.29	24.01	56.94	7.58	0.09	2.11

i. **Temperature:** Temperature of the area varies from -8.95^{0}C to 18.07^0 C.

ii. **Relative Humidity:** The relative humidity varies from 15.74 to 95.64 %.

iii. **Wind Speed:** Wind speed normally is in the range of 0.04 m/s in Nov to 8.12 m/s in Oct.

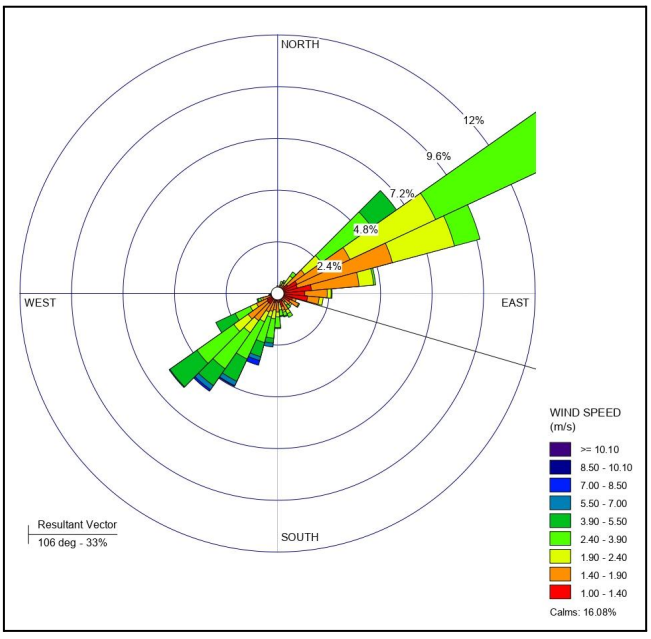


Figure 43. Micro Met Wind Rose

Note:

- The longest spoke shows the predominant wind direction i.e. the wind blew from the ENE (more than 12% of the time).
- The different colors of each spoke provide details of the speed of the wind in m/s from each direction. Thus, most of the time, the wind is blowing at a speed of 2.40-3.90m/s (Fluorescent green colour).

3.7 Ambient air quality

The ambient air quality monitoring was done to assess the ambient air quality. Monitoring was carried out at seven stations for the month of **October 2022-December 2022**. The guidelines for selections of ambient air monitoring stations given in IS – 5182 parts 14, 2000 were followed. These guidelines state that, "when the objective of air sampling is to identify the contribution from specific sources of pollution, the sampling locations should be located in the upwind and the downwind of such sources".

3.7.1 Sampling station selection and rationale of pollutant measure

Selection of sampling stations was done as per IS 5182 (P-14) 2000 and guideline of CPCB NAAQS, 2009.

Criteria for site selections:

The selection of the ambient air quality monitoring sites in the core zone and buffer zone (around the project area) was based on screening the region for such important factors as meteorological conditions, sensitive environmental locations,human settlement and the surrounding geographical features.

● The meteorological features considered were wind speed and direction.

● Environmental sensitivity was considered with regards to the proximity and density of human settlements to the project site and location of such sensitive places as schools and hospitals around the project site.

The desktop study was conducted to critically analyse the above factors using wind rose map, topographical map, and land use map to check for the correct representation of the locations around the project site.

Based on the above factors, the location of Air sampling stations at Eight stations for the month of October 2022 - December 2022 monitoring season is shown below:

3.7.2 Ambient air sampling locations

Table 47. AMbient Air Sampling Locations

Station No.	Location	Distance & Direction from project area	Latitude	Longitude	Type of Project area / study area	Environmental Significance
A1	Onsite	North West	34° 3'23.13"N	75° 0'53.95"E	Industrial	Existing ambient air quality at core zone
A2	Onsite	South West	34° 3'14.96"N	75° 0'53.77"E	Industrial	
A3	Bathon Village	1.35 km, ESE	34° 2'53.74"N	75° 1'48.59"E	Residential area	Existing air quality at Buffer Zone
A4	Zantrag Village	1.68 km, ENE	34° 3'36.05"N	75° 2'7.65"E	Residential area	
A5	Nagander	2.25 km, ESE	34° 2'54.89"N	75° 2'26.21"E	Residential area	
A6	Khrew Village	4.03 Km,SSW	34° 1'15.27"N	74°59'59.19"E	Residential area	
A7	Satura	5.53 km, ESE	34° 2'22.60"N	75° 4'27.29"E	Residential area	
A8	Khanagund	6.10 km, SE	34° 1'34.82"N	75° 4'24.70"E	Residential area	

The predominant wind direction is from NE

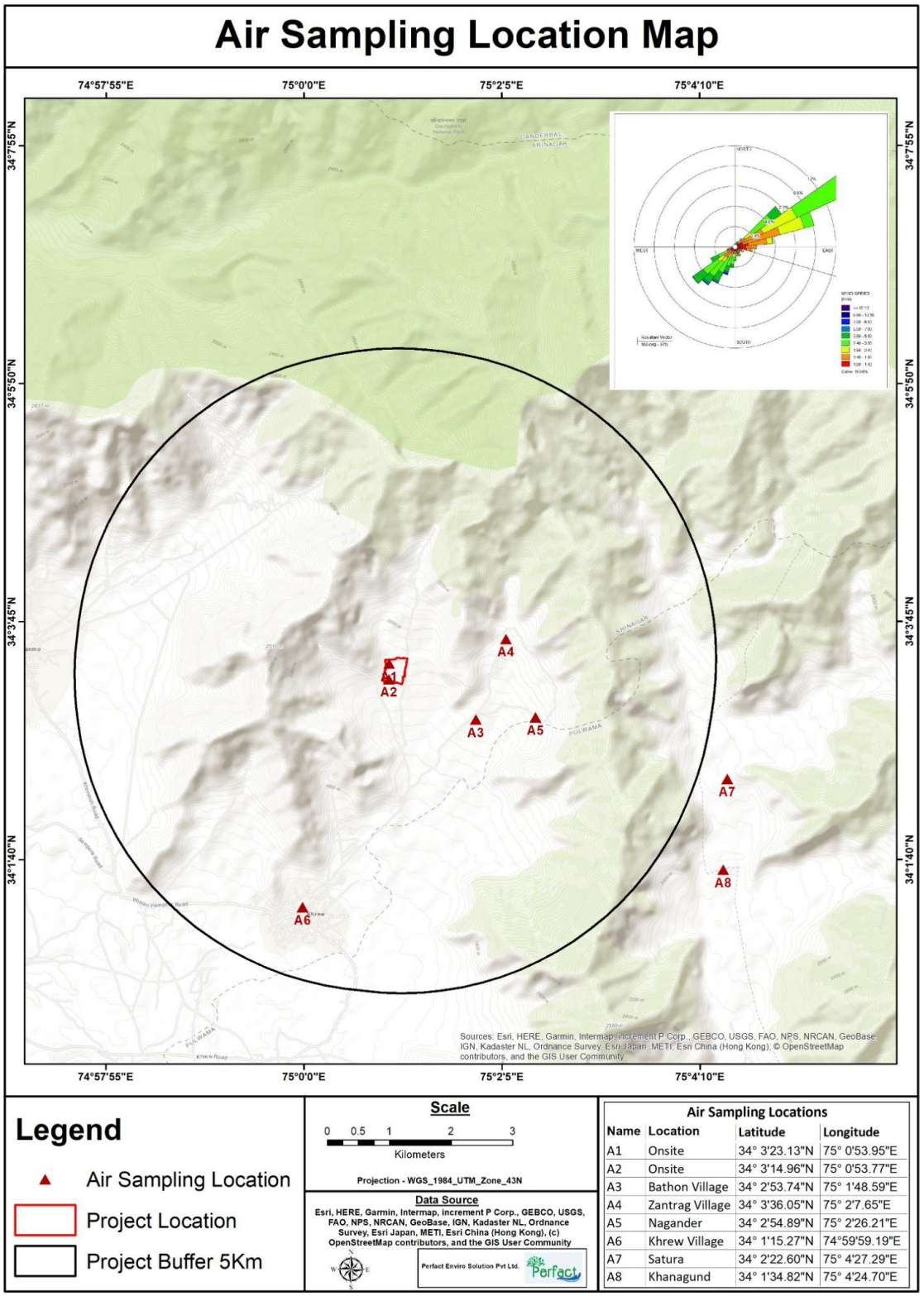


Figure 44. Air Sampling Location Map

Quality assurance during pre sampling and post sampling period:

Prior to conducting sampling and following post sampling protocols, all the performance checks were followed to avoid sampling bias and measurement errors.

- The equipment was checked for any leakage, flow rate calibration, dust free filter holders,appropriate pre sampling processing of filter papers and their handling.
- The filter papers were desiccated for 24 hours both prior and post sampling to remove any moisture content. These were handled with non serrated forceps for preventing any wear and tear.
- The filter papers were transported in air- tight zipper bags to prevent any contamination.
- The absorption solutions were transferred in cold boxes to prevent contamination and exposure to sunlight. (http://indiaenvironmentportal.org.in/files/NAAQSManualVolumeI-1.pdf)

Sampling instrument placement: The standard guidelines were followed while placing the sampler at the sampling locations (IS 5182 (Part 14): 2000).

- The sampler was kept at greater than 3 m height to avoid impact of windblown dust.
- The samplers were maintained at >20 m distance from trees and more than twice the height of the hindrances such as buildings and other structures to ensure unrestricted airflow for sampling.
- To avoid impact from road dust, the equipment was kept at a minimum distance of 50m from paved roads and 100 m from unpaved roads.

3.7.4. Sampling procedure

Respirable Dust Samplers were used to collect samples for PM_{10} and $PM_{2.5}$ in ambient air at a flow rate of 1.2 m^3 /min. The ambient air was sucked through the cyclone and filter paper by a blower. Samples of gases were drawn at a flow rate of 0.5 litres per minute and were analysed in the laboratory.

Monitoring was conducted in respect of the following parameters:

- Particulate Matter (PM_{10})
- Particulate Matter ($PM_{2.5}$)
- Sulphur Dioxide (SO_2)
- Oxides of Nitrogen (NO_2)
- Carbon Monoxide (CO)

This procedure was adopted because there are no short-term variations and low concentration of gaseous pollutants was expected.

3.7.5. Analytical method followed for ambient air quality monitoring

- **Particulate Matter ($PM_{2.5}$) (USEPA Quality Assurance HandBook (Vol.II) Part II, Quality Assurance Guideline Document, 2.12):** Particulate Matter ($PM_{2.5}$) was analysed by the Gravimetric Method. Particulate matter was collected on the 37 mm diameter glass microfiber Filter Paper. PM2.5 value is determined from the values of volume of air passed through Ambient Fine Dust Sampler.
- **Particulate Matter (PM_{10}) (IS: 5182 Part 23:2006): Particulate Matter (PM_{10}) was analysed by the Gravimetric Method. It was carried out by Respirable Dust sampler as per IS:** 5182(Part 23):2006. Particulate matter was collected on the GF/A Filter Paper. Particles with aerodynamics diameter less than the cut-point of the inlet are collected by the filter. The mass of these particles is determined by the difference in filter weight prior to and after sampling.
- **Sulphur dioxide (SO_2) (IS: 5182; Part – II – 2001):** Sulphur dioxide is absorbed by aspirating a measured air sample through a solution of Potassium or sodium tetrachloromercurate, TCM. This procedure results in the formation of a dichloro sulphite mercurate complex. The Sulphite Ion produced during sampling is reacted with sulphamic acid, formaldehyde and pararosaniline to form an azo dye and then determined colorimetrically.
- **Nitrogen Oxides (IS: 5182; Part – VI – 2006):** Nitrogen dioxide is collected by bubbling air through a sodium hydroxide- sodium arsenite solution to form a stable solution of sodium Nitrite. The Nitrite Ion Produced during sampling is reacted with hydrogen peroxide, Sulphanilamide and NEDA to form an azodye and then determined colorimetrically.
- **Carbon monoxide (CO) (IS:5182; Part -10-1999):** Samples containing Carbon monoxide in the range of 0 to 100 mg/m^3 are analyzed on a non-dispersive infrared absorption gas analyser, namely, an electro-optical spectrophotometer with no spectral dispersion component. It may consist of a single or double source of infrared energy and one or more infrared detectors separated by an optical cell or cells to one or more of which the sample flows, whereby the specific spectral absorption of the component of interest is determined.

3.7.6. Ambient air quality results

3.7.6.1. Baseline date: post monsoon season (October- December- 2022):

At each station ambient air quality parameters i.e PM10, PM2.5, SO2, NOx & CO, were monitored twice a week for 3 months (October 2022- December 2022) 24 hourly at uniform intervals:

Table 48. Ambient Air Quality Results (PM 2.5 & PM10)

Sampling station No.	Name of Location	Max	Min	Mean	98th Percentile	Max	Min	Mean	98th Percentile
		PM2.5 (Standard – 60 µg/m3)				PM10 (Standard – 100 µg/m3)			
A1	Onsite	52.02	30.61	41.80	49.53	91.77	62.38	75.395	87.72
A2	Onsite	49.04	28.85	39.40	46.69	86.51	58.8	71.06	82.68
A3	Bathon Village	55.1	32.42	44.27	52.46	97.2	66.07	79.85	92.9
A4	Zantrag Village	41.5	24.42	33.55	39.52	73.22	49.77	60.15	69.98
A5	Nagander	45.19	26.59	36.31	43.03	79.72	54.19	65.49	76.2
A6	Khrew Village	65.98	38.82	53.02	62.82	116.4	79.12	95.62	111.25
A7	Satura	59.33	34.91	47.67	56.49	104.67	71.15	85.98	100.04
A8	Khanagund	62.61	36.84	50.31	59.61	110.46	75.08	90.74	

(Source of Standards: G.S.R 826(E) dated 16th November 2009 of MoEF, Laboratory engaged: Perfact Researchers Pvt. Ltd.

Table 49. Ambient Air Quality Results (SO2 & NO2)

Sampling station No.	Name of Location	Max	Min	Mean	98th Percentile	Max	Min	Mean	98th Percentile
		SO2 (Standard – 80 µg/m3)				NO2 (Standard – 80 µg/m3)			
A1	Onsite	9.48	5.95	7.68	9.14	28.4	16.32	21.19	24.36
A2	Onsite	8.94	5.61	7.24	8.61	26.77	15.38	19.97	22.96
A3	Bathon Village	10.04	6.3	8.14	9.68	30.08	17.28	22.44	25.79
A4	Zantrag Village	7.57	4.75	6.13	7.29	22.66	13.02	16.90	19.43
A5	Nagander	8.24	5.17	6.68	7.94	24.67	14.17	18.40	21.16
A6	Khrew Village	12.03	7.54	9.75	11.59	36.02	20.69	26.87	30.89
A7	Satura	10.82	6.78	8.76	10.42	32.39	18.61	24.17	27.78
A8	Khanagund	11.41	7.16	9.25	11	34.19	19.64	25.51	29.31

(Source of Standards: G.S.R 826(E) dated 16th November 2009 of MoEF, Laboratory engaged: Perfact Researchers Pvt. Ltd.)

Table 50. Ambient Air Quality Results (CO)

Sampling station No.	Name of Location	Max	Min	Mean	98th Percentile
	CO (Standard – 2 mg/m3)				
A1	Onsite	0.85	0.49	0.63	0.73
A2	Onsite	0.8	0.46	0.59	0.69
A3	Bathon Village	0.9	0.52	0.67	0.77
A4	Zantrag Village	0.68	0.39	0.50	0.58
A5	Nagander	0.74	0.43	0.55	0.63
A6	Khrew Village	1.08	0.62	0.80	0.93
A7	Satura	0.97	0.56	0.72	0.83
A8	Khanagund	1.03	0.59	0.76	0.88

(Source of Standards: G.S.R 826(E) dated 16th November 2009 of MoEF, Laboratory engaged: Perfact Researchers Pvt. Ltd.)

3.7.7. Air quality index

As per CPCB guidelines, the worst sub index in a location is the AQI of that region (Source: https://cpcb.nic.in/National-Air-Quality-Index/). The results show that PM10 has the worst/ highest sub index over all the sampling sites. Therefore, the PM10 has been considered for calculating the overall AQI. The table given below shows the Air Quality Index (AQI) range & category:

AQI RANGE	AQI CATEGORY	AQI RANGE	AQI CATEGORY
Good (0–50)	Minimal Impact	Poor (201–300)	Breathing discomfort to people on prolonged exposure
Satisfactory (51–100)	Minor breathing discomfort to sensitive people	Very Poor (301–400)	Respiratory illness to the people on prolonged exposure
Moderate (101–200)	Breathing discomfort to the people with lung, heart disease, children and older adults	Severe (>401)	Respiratory effects even on healthy people

(*Computed using: CPCB, AQI CALCULATOR*)

Table 51. AQI Value

Sampling Station	Highest Sub-index Parameter	AQI Value	AQI Range
A1	PM10	75	Satisfactory
A2	PM10	71	Satisfactory
A3	PM10	80	Satisfactory
A4	PM10	60	Satisfactory
A5	PM10	65	Satisfactory
A6	PM10	96	Satisfactory
A7	PM10	86	Satisfactory
A8	PM10	91	Satisfactory

3.7.8. Data interpretation

The ambient air quality results are summarised in the above tables.

Core zone

The mean value of PM_{10} ranges from (71.06 -75.39 µg/m^3) & $PM_{2.5}$ ranges from (39.40-41.80 µg/m^3), SO_2 ranges from (7.24-7.68 µg/m^3), NO_2 ranges from (19.97-21.19 µg/m^3) & CO ranges from (0.59-0.63mg/m^3) which are within the limits of National Ambient Air Quality Standards (NAAQS).

As per the Air Quality Index by CPCB, the air quality of the core zone is found to be Satisfactory in the Post Monsoon season.

Buffer zone:

The mean value of PM_{10} ranges from (60.15-95.62 µg/m^3), $PM_{2.5}$ ranges from (33.55 - 53.02 µg/m^3), SO_2 ranges from (6.13- 9.75 µg/m^3), NO_2 ranges from (16.90 - 26.87 µg/m^3) & CO ranges from (0.50 - 0.80 mg/m^3) which are within the limits of National Ambient Air Quality Standards (NAAQS). As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be Satisfactory during the sampling campaign.

3.8 Noise level

3.8.1 Methodology

At each station noise level was monitored for 24-hours simultaneously. For each measurement, dB (A) readings were taken for every 15 minutes for 24 hrs in a season to get Leq values. As per CPCB guidelines, the site of an area will be selected such that it meets the land use pattern e.g. Commercial, Residential,

Industrial. To assess the noise level of the proposed area, following stations were selected.

3.8.2 Ambient noise sampling station

Criteria for site selection:

The baseline study of noise levels in the study area of 10 km has been carried out by selecting the noise monitoring locations based on the following criteria:

The site selection for noise quality monitoring were selected following the CPCB guidelines

1. As per CPCB guidelines, the sites of an area for noise quality monitoring were selected such that it meets the land use pattern e.g. Commercial, Residential, Industrial, and silent zone. Silence zone is defined as an area comprising not less than 100 m around hospitals,educational institutions and courts. As per the site location, the type of location that was selected: industrial location, roads, and residential area lies within the core and buffer area.
2. The presence of Noise sensitive receptors (environmental and ecological) in the vicinity of the project site were selected for noise quality monitoring. These included schools, hospitals, old age homes, religious places, etc.
3. Proximity of the noise generating source to the human settlements.

The major source of noise in the site surrounding the area is increased urbanization, vehicular movement at day time and ambient base noise at night. The impacts from these sources are expected to be captured in the levels of noise measured in the site-specific background noise monitoring study.

Based on the above factors, overall 10 stations were selected (2 Onsite locations, Bathon village, Nagander, Zentrag village, Khrew village, Satura, Khanagund, Approach Road, Zantrag road) to assess the noise level of the proposed area.

Quality Assurance:

The noise level meter was calibrated immediately prior to and following each measurement event to check for the accuracy of measurement using an acoustic calibrator.

Table 52. Ambient Noise Sampling Station

Sampling station No.	Name of Location	Distance & Direction from project area	Latitude	Longitude	Type of Project area / study area	Environmental Significance
N1	Onsite	North West	34° 3'23.13"N	75° 0'53.95"E	Industrial	Existing ambient noise quality at core zone
N2	Onsite	South West	34° 3'14.96"N	75° 0'53.77"E	Industrial	
N3	Bathon Village	1.35 km, ESE	34° 2'53.74"N	75° 1'48.59"E	Residential area	Existing noise quality at Buffer Zone
N4	Zantrag Village	1.68 km, ENE	34° 3'36.05"N	75° 2'7.65"E	Residential area	
N5	Nagander	2.25 km, ESE	34° 2'54.89"N	75° 2'26.21"E	Residential area	
N6	Khrew Village	4.03 Km,SSW	34° 1'15.27"N	74°59'59.19"E	Residential area	
N7	Satura	5.53 km, ESE	34° 2'22.60"N	75° 4'27.29"E	Residential area	
N8	Khanagund	6.10 km, SE	34° 1'34.82"N	75° 4'24.70"E	Residential area	
N9	Approach road	0.05 Km, E	34° 3'14.94"N	75° 1'4.03"E	Commercial area	
N10	Zantrag road	1.4Km, E	34° 3'15.73"N	75° 1'57.51"E	Commercial area	

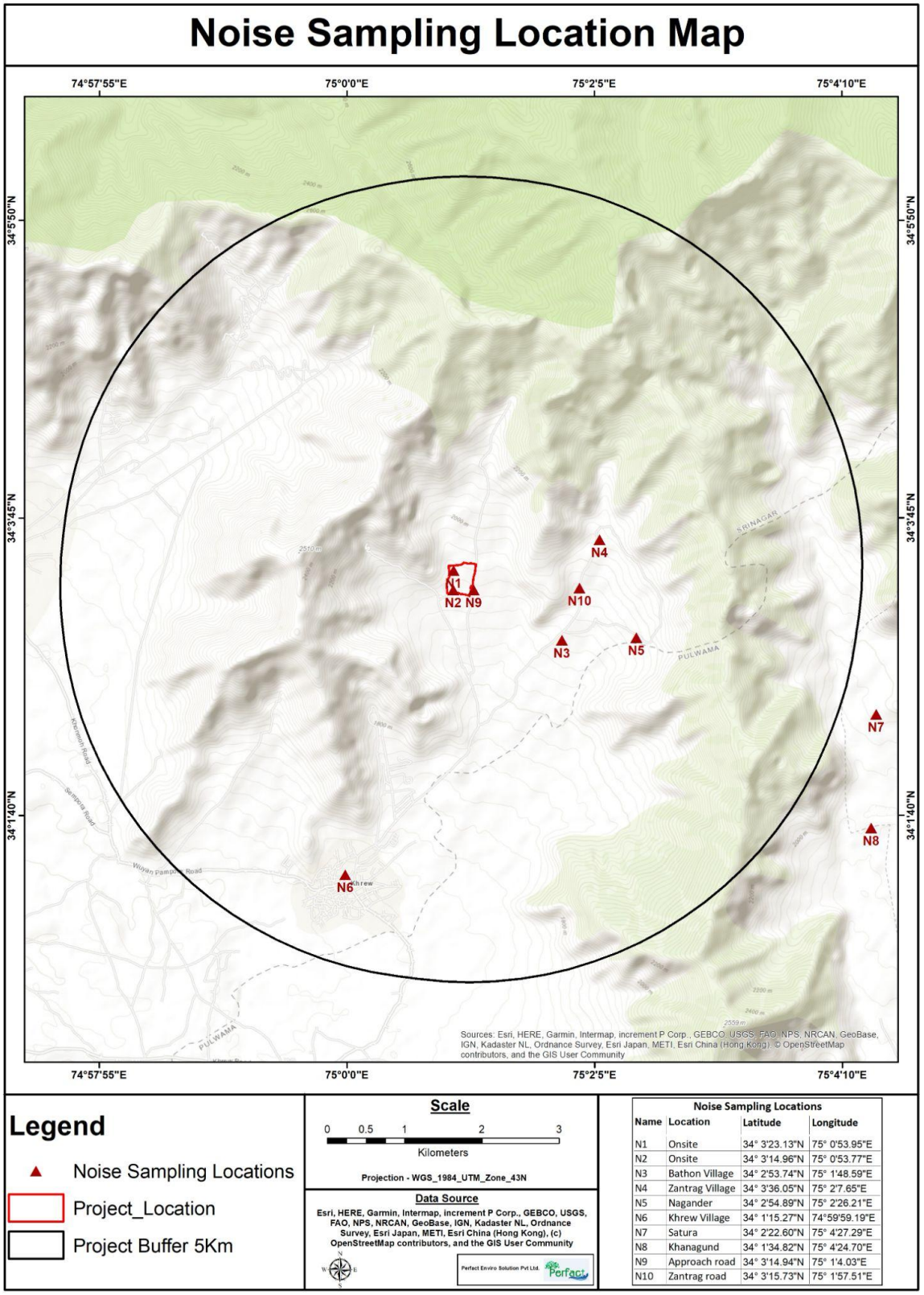


Figure 45. Noise Sampling Location Map

3.8.4. Results and discussion

Table 53. Ambient Noise Results

Sampling station No.	Location	Zone	Leq Day noise level dB(A)	Leq Night noise level dB(A)	Day time (6.00 A.M to 10.00 P.M)	Night time (10.00 P.M to 6.00 A.M)
					Standard (Leq in dB(A)	Standard (Leq in dB(A)
Core zone noise quality						
N1	Onsite	Industrial Area	57.4	50.4	75	70
N2	Onsite	Industrial Area	57.2	50.1	75	70
Buffer zone noise quality						
N3	Bathon Village	Residential area	55.8	46.1	55	45
N4	Zantrag Village	Residential area	55.7	46.3	55	45
N5	Nagander	Residential area	54.6	45.6	55	45
N6	Khrew Village	Residential area	55.1	47.3	55	45
N7	Satura	Residential area	53.3	47.1	55	45
N8	Khanagund	Residential area	55.3	46.3	55	45
N9	Approach road	Commercial area	58.5	51.4	65	55
N10	Zantrag road	Commercial area	61.5	57.6	65	55

(Source of Standards: CPCB standards for Noise Pollution (Regulation & control) Rules, Laboratory: Perfact Researchers Pvt. Ltd.)

The Ambient Noise Quality results are summarised above. The results are discussed below:

Core Zone (Industrial area): N1, N2 : N1 & N2: The ambient noise level during day time at the proposed project site varies from 57.2 dB (A) to 57.4 dB (A) which are within the standard limit of Industrial area ~ 75 dB (A). During night the noise level at the project site ranges from 50.1 dB (A) to 50.4 dB (A) which are within the standard limit of Industrial area 70.0 dB (A).

Buffer Zone:

Residential Area:

N3: The ambient noise level at Bathon Village is 55.8 dB (A) which is slightly higher than the daytime noise standard limit of Residential area of ~ 55.0 dB (A). During night the noise level was recorded 46.1 dB (A) which is also slightly higher than the night-time noise standard limit of ~ 45.0 dB (A). The slightly higher noise level compared to standard limit may be regarded to the residential and other local activities occurring within the village.

N4: The noise level at Zantrag Village is 55.7 dB (A) which is slightly higher than the daytime noise standard limit of Residential area of ~ 55.0 dB (A). During night the noise level was recorded 46.3 dB (A) which is also slightly higher than the night-time noise standard limit of ~ 45.0 dB (A). The slightly higher noise level compared to standard limit may be regarded to the residential and other local activities occurring within the village.

N5: The ambient noise level at Nagander is 54.6 dB (A) which is within the daytime noise standard limit of Residential area of ~ 55.0 dB (A). During night the noise level was recorded 45.6 dB (A) which is higher than the night-time noise standard limit of ~ 45.0 dB (A). The slightly higher noise level compared to standard limit may be regarded to the activities occurring within the residential and other local activities occurring within the village.

N6: The ambient noise level at Khrew Village is 55.1 dB (A) which is slightly higher than the daytime noise standard limit of Residential area of ~ 55.0 dB (A). During night the noise level was recorded 47.3 dB (A) which is also higher than the night-time noise standard limit of ~ 45.0 dB (A). The slightly higher noise level compared to standard limit may be regarded due to the Pampore -Zantrang road passing within the village and also due to local activities in the village.

N7: The ambient noise level at Satura is 53.3 dB (A) which is within the daytime noise standard limit of Residential area of ~ 55.0 dB (A). During night the noise level was recorded 47.1 dB (A) which is higher than the night-time noise standard limit of ~ 45.0 dB (A). The slightly higher noise level compared to standard limit may be regarded to the residential and other local activities occurring within the village.

N8: The ambient noise level at Khanagund is 55.3 dB (A) which is slightly higher than the daytime noise standard limit of Residential area of ~ 55.0 dB (A). During night the noise level was recorded 46.3 dB (A) which is higher than the night-time noise standard limit of ~ 45.0 dB (A). The slightly higher noise level compared to standard limit may be regarded to the residential and other local activities occurring within the village.

Commercial Area:

N9: The noise level of Approach road is 58.5 dB (A) which is within the standard limit of commercial area of ~ 65 dB (A). During night the noise level is 51.4 dB (A) which is within the standard limits of commercial area ~ 55 dB (A).

N10: The noise level of Zantrag road is 61.5 dB (A) which is within the standard limit of commercial area of ~ 65 dB (A). During night the noise level is 57.6 dB (A)

which is higher within the standard limits of commercial area ~ 55 dB (A). The increased noise level in night time is due to vehicular movement on the Pampore Zantrang Road.

3.9. Hydrology & geology

3.9.1 Geomorphology

Core Zone

This zone has undulating topography. The maximum elevation 1970m AMSL is found at the northeast corner of the core zone and minimum elevation 1922m AMSL towards SSE of the project site.

Buffer Zone

The study area forms part of the Jhelum sub basin of the Indus basin. The study area is characterised by hilly and mountainous towards the northeast and southwest with a broad intermountain valley. About 65% of the area is covered by highly dissected structural hills and valleys mainly in the North, East and western part of the study area and the rest 35% of the area comprises alluvial plains,Moderately and low dissected structural hills and valleys as shown in the map below. The altitude of the hill ranges up to 3700 m AMSL. The Valley area in the central part of the district has flat to mildly undulating topography with its elevation about 1600 m AMSL.

The altitude of the buffer zone of the project area varies from 3759m AMSL on the North-eastern periphery to 1586m AMSL on the South-Western periphery. The general slope of the buffer zone of the project area is towards south-west.

Soil in hilly areas is poor and fertile in plain areas. Productivity in higher ranges is poor while in central regions is fertile.

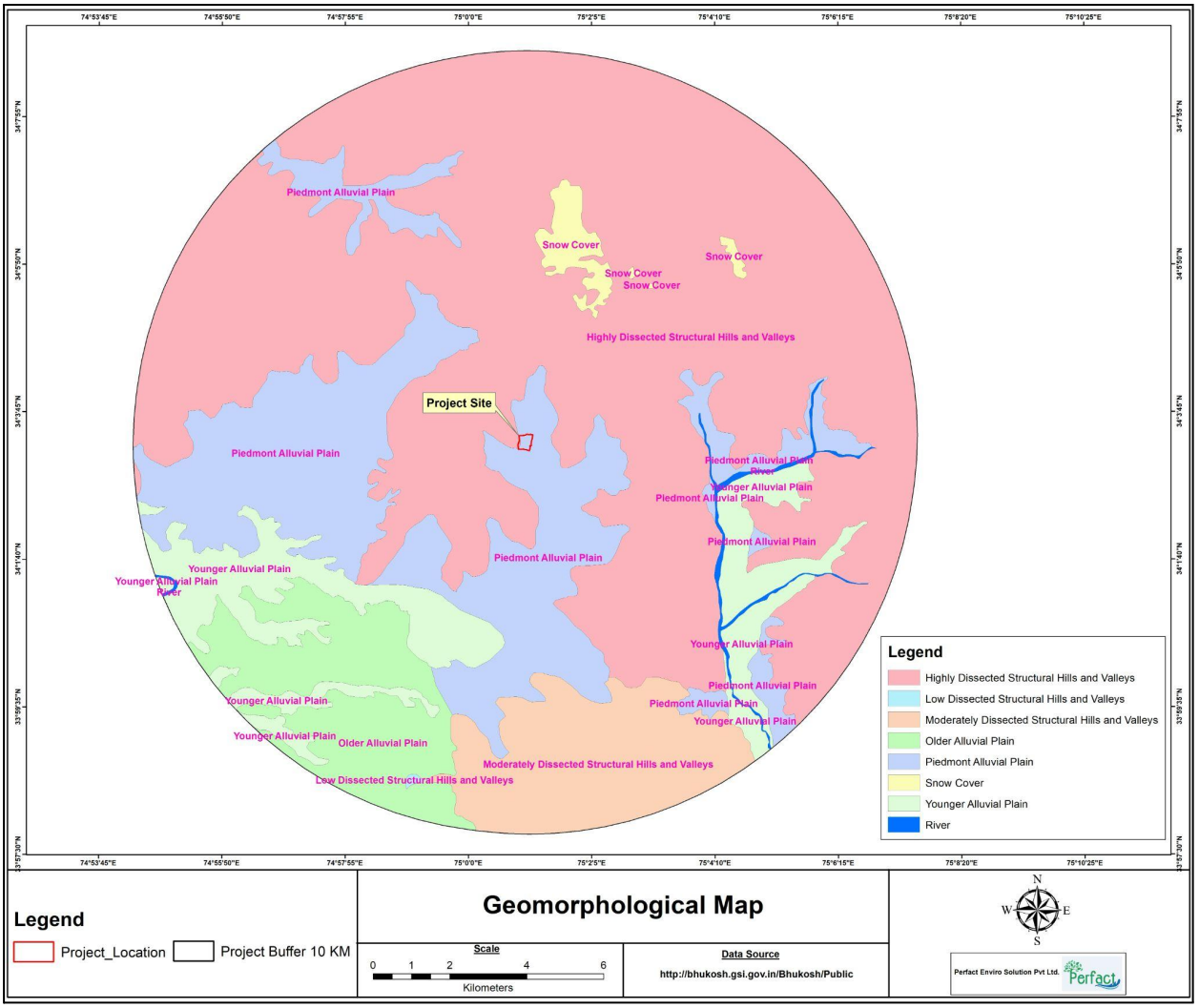


Figure 46. Geomorphological Map

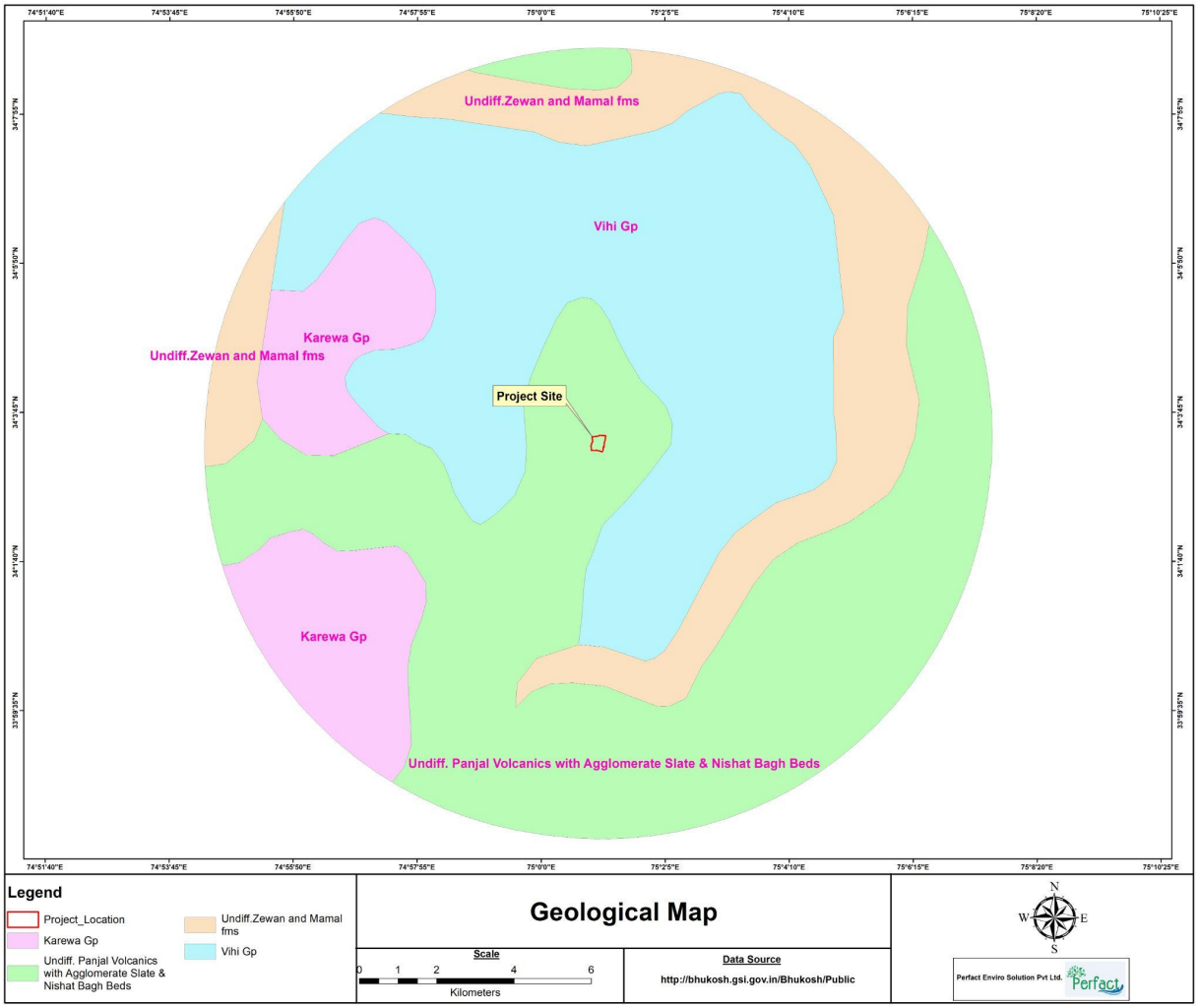
3.9.2 GEOLOGY

Regional Geology:-

The rock types belonging to various age groups starting from Panjal Traps and other Permo-carboniferous formations to recent ones(Scree, talus and clays) are encountered in this area. A generalized stratigraphic sequence of this region in the descending order of age group(bottom to top) is summarized in table as given below:

Table 54. Regional Geology

Age	**Rock Formations**
Recent	Recent Deposits(Talus,scree and clays)
Pleistocene	Karewa(clay,silt and sands)
——————————————————————unconformity——————————————————————	
Triassic Formations	
(a)Upper Triassic	(Predominantly Calcareous)
(b)Middle Triassic	(Calcareous & Argillaceous)
(c)Lower Triassic	(Silicious & Calcareous)
Permian	Zewan Series(bottom Argillaceous, Top Calcareous)
Permo	Gangamopteris Beds(represented by carboniferous novaculites)
Carboniferous	Panjal Traps



3.9.3 Drainage

There is no perennial source of water in the project area. Study area has a dendritic pattern of drainage. 1st and 3rd order ephemeral streams passing from the lease area and ultimately joins the jhelum river at 9.64 km in west of the project site.

Study area has 1st to 5th order of streams. The major river in the study area is Jhelum river which flows (S-W), located at 9.64 km in SW direction. The tributary of Jhelum river flows N-S direction at a distance of 4.96 km from project area. Besides, the area comprises various water bodies such as drains, lakes etc.

The drainage Map of the study area is given below:-

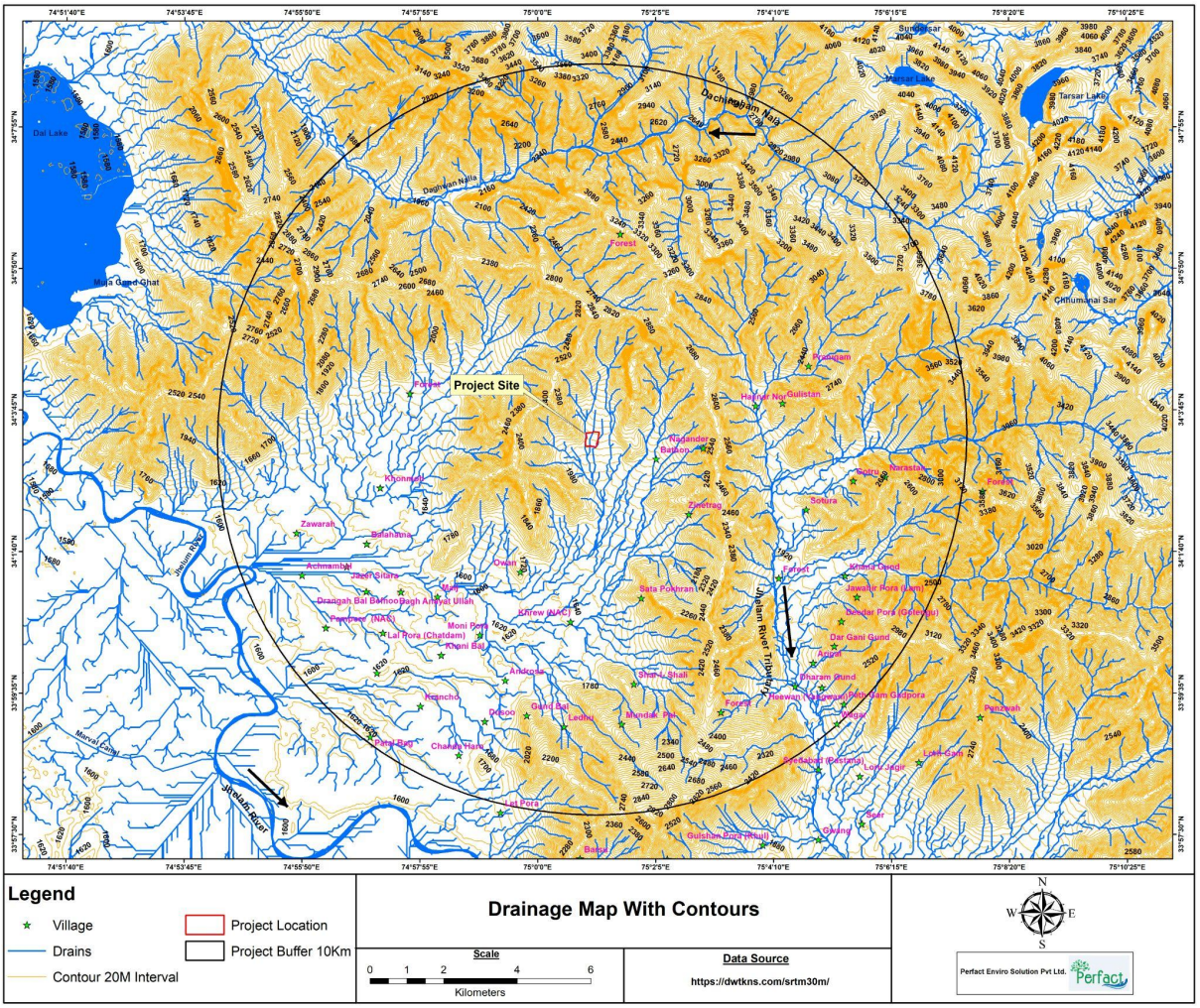


Figure 47. Drainage Map with Contour

3.9.4 Flood History

Kashmir valley faced widespread floods and landslides due to incessant rainfall and cloudbursts in September 2014 The Jhelum River Valley suffered record flooding in September 2014 as a result of abnormally high and widespread rainfall particularly in the southern part of the catchment. The rainfall across the southern catchment in the first week of September averaged 433mm

Jhelum river located from project site at a distance of 9.64 km at the Ram Munshibagh (Srinagar) gauge site located at about 16 km from project site, HFL of

1589.20 m was recorded at 02.00 hours on 8th September 2014, which was 9.0 m above MSL of zero at gauge station of 1580.20 m.

At the Sangam gauge site which located at about 22 km from core zone, HFL (highest flood level) of 1595.28 m AMSL was recorded at 01.00 hours on 6 September 2014, However, the minimum elevation of the core zone is 1922m AMSL, which is more than 327m higher than the recorded HFL, consequently, no flood threat is envisaged.

3.9.5 Geohydrology

As per CGWB reports the fissured formation includes the semi-consolidated to consolidated rock formations exposed in the district are of igneous, metamorphic and sedimentary origin. These form low and high hill ranges throughout the district. Fractured and jointed igneous, metamorphic rocks and the scree/talus deposits in the foothills form low to moderate potential aquifers with poor to moderate yields. Occurrence and movement of the ground water is mainly controlled by secondary porosity originated due to fracturing and faulting and related tectonic disturbances and weathering. Ground water oozes in the form of springs, seepages in the hilly areas and is utilised for domestic purposes. There are numerous springs in the area generally concentrated along the contact zones and also in the hilly area. At some places shallow hand pumps and tube wells are constructed for ground water development. The yield of the shallow tube wells and hand pumps constructed along these secondary porous zones varies from 3-35 m3 /hr.

The unconsolidated sediments comprising fluvio-glacial and lacustrine deposits of Karewas and recent alluvium, terrace deposits and alluvial fan deposits constitute the porous aquifer system of the district. The sediments consist of sand, gravel, cobbles, pebbles, boulders inter layered with thick clay beds that form the prolific aquifer system. Occurrence and movement of groundwater is mainly controlled by the primary intergranular porosity in the soft sedimentary comprising Quaternary alluvium and the Karewa formations. This unconsolidated sedimentary deposit forms a multi-layer major aquifer system in the area. The

sedimentary formation is +300m thick in the district as revealed by the study and ground water exploration carried out by CGWB. Ground water in the district occurs in phreatic and confined conditions in these formations. The depth of the tube wells ranges from 40 m at Ratnipora to 306 m at New Karewa. The water table occurs under artesian conditions in some areas. The yield of the tube wells ranges from 300 lpm at Hayatpora to 2980 lpm at Khonmoh for drawdowns ranging from 25 m to 0.41 m respectively. The depth to water level ranges from 0.50 m agl (artesian free flowing) at Tahab to 44.24 m at Hayatpora. The transmissivity values range from 63 m 2 /day to 100 m2 / day.

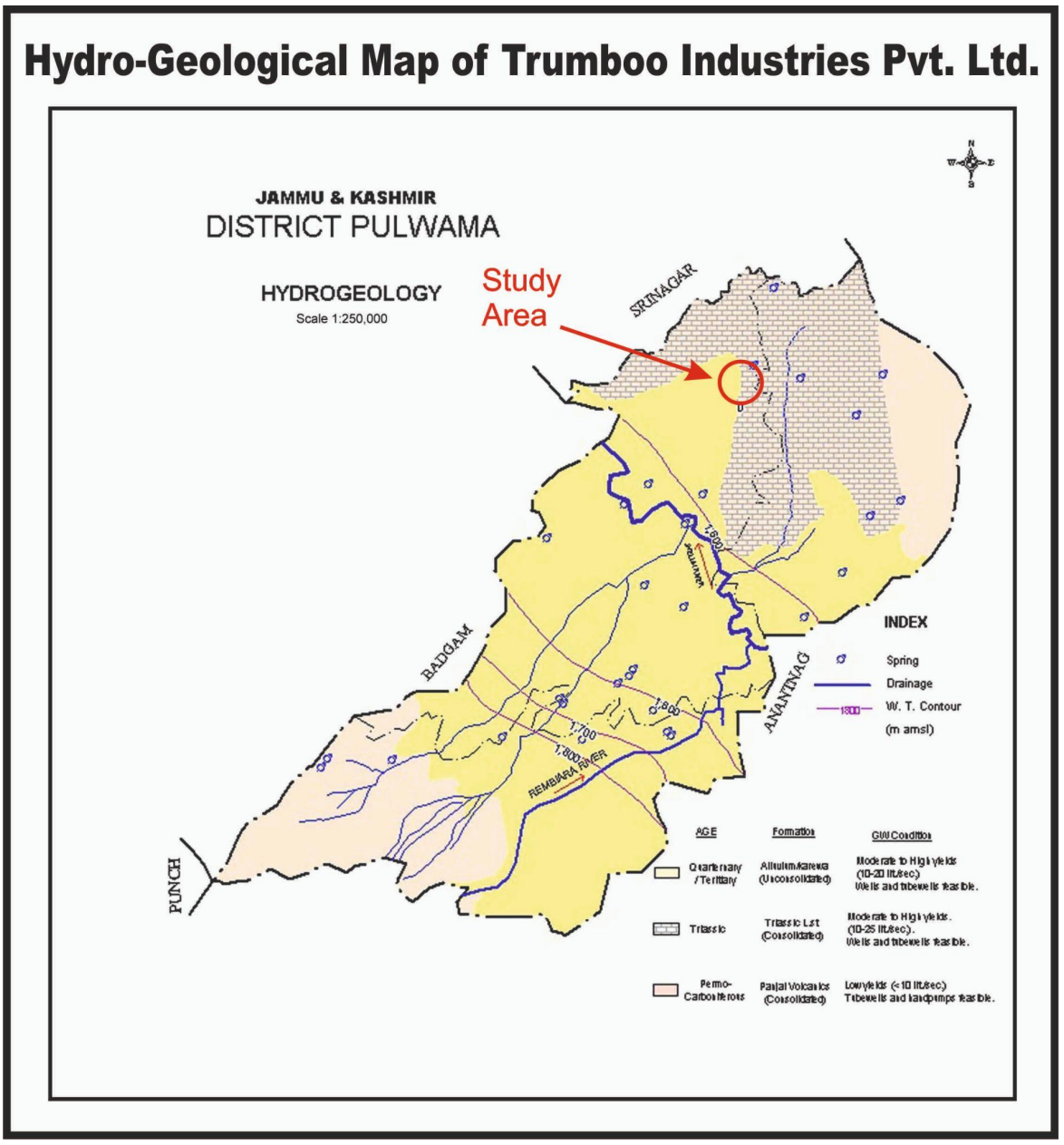
3.9.6 Groundwater Development

Precipitation in the form of rain and snow in the district is the major source of ground water recharge apart from the influent seepage from the perennial rivers, streams and lakes, irrigated fields and inflow from upland areas. As per CGWB report 2013 of Jammu region the pampore tehsil in which the project site falls under the safe category as the groundwater recharge is more than the withdrawal. Details are given in the table below:

Table 55. Groundwater Development

1	Total Geographical Area	MCM	1,398.00
2	Valley Area	MCM	1,050.00
3	Net Ground Water Availability	MCM	279.94
4	Net annual Groundwater Draft	MCM	102.16
5	Allocation For Domestic & Industrial Use up to 2025	MCM	123.68
6	Stage of Ground Water Development	%	27.42

Source: CGWB report of Pulwama District (2013)



3.10 WATER QUALITY

3.10.1 SAMPLING STATION

To assess the water quality of the proposed area, the following 10 stations (7 groundwater & 5 surface water) were selected. Location of Water sampling stations is described below and location below:

3.10.2 Groundwater sampling locations

Table 56. Groundwater Sampling Location

Station No.	Location	Distance & Direction from Distance & Direction from Project area	Latitude	Longitude	Environmental Significance
W1	Onsite (Borewell)	West	34° 3'18.46"N	75° 0'51.17"E	Existing Ground water quality at Core Zone
W2	Bathon Village (Spring water)	1.57 km, E	34° 3'8.03"N	75° 2'2.97"E	Existing Ground water quality at Buffer zone
W3	Zantrag Village (Spring water)	1.68 km, NE	34° 3'36.05"N	75° 2'7.65"E	
W4	Nagander (Tubewell) (Hand pump)	2.70 km, E	34° 2'53.68"N	75° 2'44.47"E	
W5	Nagbal Khrew Village (Spring water)	4.03 Km,SSW	34° 1'10.40"N	74°59'58.87"E	
W6	Shar Shali spring	5.14 km S	34° 0'29.85"N	75° 0'28.84"E	
W7	Ladhoo - Spring	6.64 km S	33°59'53.38"N	74°59'38.94"E	

3.10.3. Surface water monitoring locations

Table 57. Surface Water Monitoring Location

Station No.	Location	Distance & Direction from Project area	Latitude	Longitude	Environmental Significance
SW1	Satura(Upstream) Tributary of Jhelum	4.5 km E	34° 3'22.48"N	75° 3'57.62"E	Existing Surface water quality at Buffer zone
SW2	Khanagund (D/s) Tributary of Jhelum	5.74 km SE	34° 1'33.90"N	75° 4'9.69"E	
SW3	Aripal (D/s) Tributary of Jhelum	6.82 km SE	34° 0'41.96"N	75° 4'17.08"E	
SW4	Narastan (Upstream) Tributary of Jhelum	7.35 km E	34° 3'15.14"N	75° 5'48.96"E	
SW5	Sarbal Lake	8.25 km SW	34° 0'37.46"N	74°56'30.86"E	

3.10.4 Criteria of selection of sampling locations

Water sampling locations were selected on the basis of following criteria: source of water, flow of water, geological structure (hydrogeology), use of water, depth of water table etc.

Groundwater samples were collected from 7 locations namely Onsite (Borewell), Bathon Village, Zantrang Village, Nagander Village. Nagbal Khrew Village, Shar Shali Spring & Ladoo spring. Samples were collected from taps, borewells, and other ground water resources like the mouth of the springs.

Surface water samples were collected from 5 locations namely Satural (Upstream) Tributary of Jhelum, Narastan (Upstream) Tributary of Jhelum, Aripal (Downstream) Tributary of Jhelum, Khanagund (Downstream) Tributary of Jhelum, Sarbal Lake

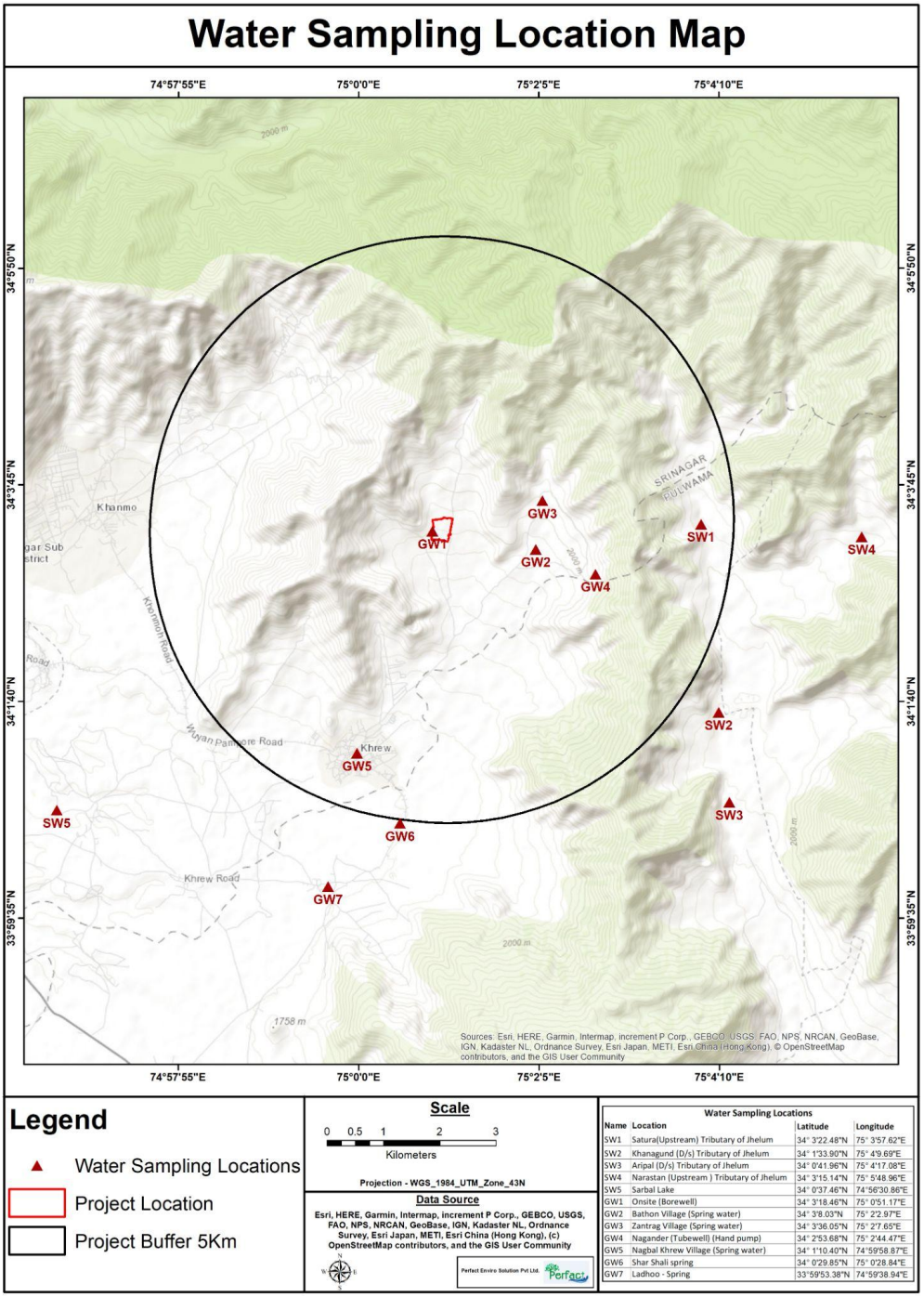
Quality assurance for sampling

- Water samples were taken as per the Standard Methods (IS & APHA, 23rd Edition 2017).
- Prior to sampling all the materials (sampling equipment, water collection bottles, storage boxes) were thoroughly cleaned and sterilised in the laboratory.
- Precautions were taken to prevent any contamination while handling the sample bottles,i.e. neither the bottle lip nor the interior surface were touched during sampling.
- Before collecting the sample, the water bottle was rinsed three times by shaking it followed by which the water was discarded downstream.
- In the monitoring site, samples were collected upstream with water flowing directly towards the sample collector to avoid any human caused contamination.
- The samples were collected thrice from each spot and were stored in a cold box. The samples were transported between laboratory and sampling sites within these cold boxes.

3.10.5 Sampling frequency and sampling techniques

As per the standard practice grab sampling was done for 7 groundwater locations, while composite sampling was done for Surface Water. Water samples were taken as per the Standard Methods (IS & APHA, 23rd Edition 2017). Necessary precautions were taken for preservation of samples.

The physical parameters viz. pH, temperature and conductivity were measured at site using a portable water analyzer.



Quality assurance during sample analysis:

- The collected samples were transferred to the laboratory and analyzed for the selected water quality parameters.

- All samples were analyzed according to the methods described in the American Public Health Association Standard Method for Water and Wastewater Analysis (APHA, 2005).
- All the chemicals used in the analysis were of analytical grade. Double deionized water (Mili-Q system, Millipore) water was used for analysis purposes throughout the study.
- Both the glassware and the sample containers used for the analysis were thoroughly cleaned and rinsed with double distilled water before analysis.

As evident from the sampling locations for water quality assessment represented surface and groundwater. The results of water quality assessment are presented below:

3.10.8. Ground water quality results

Table 58. Ground water quality Results

Sample Code	-	IS 10500:2012 (Drinking water standard)	Existing Groundwater Quality at Buffer Zone						
			GW1 Onsite Borewell	GW2 Bathon Village (Spring water)	GW3 Zantrag Village (Spring water)	GW4 Nagander (Tubewell) (Hand pump)	GW5 Nagbal Khrew Village (Spring water)	GW6 har Shali spring	GW7 adhoo - Spring
Colour	Hazen	**5**	<1	<1	<1	<1	<1	<1	<1
Odour	--	**Agreeable**	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	NTU	**1**	<1	<1	<1	<1	<1	<1	<1
pH		**6.5-8.5**	7.71	7.5	7.57	7.36	7.54	7.41	7.07
Temperature	°C	**-**	24.1	23.2	23.2	24.1	23.2	24.1	24.1
Conductivity	µmho/cm	**-**	442	463	388	613	513	704	577
Total Dissolved Solids	mg/l	**500**	221	231	194	306	256	352	289
Chloride (as Cl)	mg/l	**250**	5.67	12.76	1.42	8.51	7.80	7.80	7.09
Fluoride (as F)	mg/l	**1**	<0.1	<0.1	0.65	<0.1	<0.1	<0.1	<0.1
Total Hardness	mg/l	**200**	200	240	228	296	248	320	264
Calcium (as Ca)	mg/l	**75**	67.2	70.4	62.4	89.6	68.8	104.0	96.0

Magnesium (as Mg)	mg/l	**30**	7.78	15.55	17.50	17.50	18.47	14.58	5.83
Iron (as Fe)	mg/l	**0.3**	<0.1	<0.1	<0.1	<0.1	<0.1	0.327	0.515
Sulphate (as SO4)	mg/l	**200**	17.05	49.59	38.48	45.27	33.82	18.04	17.82
Nitrate Nitrogen	mg/l	**45**	17.39	2.99	4.68	0.25	14.62	3.15	12.97
Alkalinity	mg/l	**200**	210	226	188	302	242	358	270
Aluminium (as Al)	mg/l	**-**	0.119	<0.02	0.297	0.639	0.153	0.678	0.04
Phosphate	mg/l	**-**	0.05	0.05	0.04	0.07	0.05	0.35	0.07
Sodium (as Na)	mg/l	–	2.51	1.75	1.72	5.86	6.33	12.93	8.91
Potassium (as K)	mg/l	–	0.37	0.18	0.27	0.51	0.23	5.63	0.22
TSS	mg/l	**-**	3.0	36.0	38.0	48.0	32.0	42.0	40.0

Total Chromium (Cr^{6-}), Selenium (Se), Lead (Pb), Arsenic (As), Cadmium (Cd), Mercury (Hg), Copper (Cu), Manganese (Mn), Nickel (Ni), Boron (B), Nitrite Nitrogen, Zinc (Zn) and Oil and Grease are below detection level - BDL (Source of standards: IS: 10500, Laboratory: Perfact Researchers Pvt. Ltd. (NABL Accredited)

s

3.10.7 Ground water quality results interpretations

Core zone: The water quality of the core zone of borewell shows that

- **Total Dissolved Solids (TDS)** is 221 mg/l which is within the drinking water standard (IS:10500) i.e. 500 mg/l.
- The **Total Hardness** is 200 mg/l which is equal to drinking water standards (IS:10500) i.e. 200 mg/l.
- The **Alkalinity** is 210 mg/l which is slightly higher than the drinking water standards (IS:10500) i.e. 200 mg/l.
- The **Fluoride** content is <0.1 mg/l which is within the drinking water standards (IS:10500) i.e. 1 mg/l.
- The **Calcium** Concentration is 67.2 mg/l which is within the drinking water standards (IS:10500) i.e. 75 mg/l.
- The **Magnesium** Concentration is 7.78 mg/l which is within the drinking water standards (IS:10500) i.e. 30 mg/l.
- The **Chloride** Concentration is 5.67mg/l which is within the drinking water standards (IS:10500) i.e 250 mg/l.

Buffer zone: The water quality of the core zone of borewell shows that

- The **Total Dissolved Solids (TDS)** of the sampling locations **W2, W3, W4, W5**, **W6, W7** ranges from 194 mg/l to 352 mg/l which are within the drinking water standard (IS:10500) i.e. 500 mg/l.
- The **Total Hardness** of the sampling locations ranges from 228 mg/l to 320 mg/l. Total Hardness of all sampling locations were found higher than the drinking water standards (IS:10500) i.e. 200 mg/l. The hardness contributed due to seepage and run off from soil. Hardness is normally considered an aesthetic water quality factor because of the unpleasant taste that a high concentration of calcium and other ions give to water. It reduces the ability of soap to produce lather and cause scale formation in pipes and plumbing fixtures.
- The **Alkalinity** of the sampling locations ranges from 188 mg/l to 358 mg/l. Alkalinity of all sampling locations are higher than the drinking water standards (IS:10500) i.e. 200 mg/l except for Zantrang Village (Spring water) which is 188 mg/l.
- The **Fluoride** content in the sampling locations ranges from <0.1 mg/l to 0.65 mg/l. Fluoride content of all sampling locations are within the drinking water standards (IS:10500) i.e. 1 mg/l.
- The **Calcium** Concentration of sampling locations ranges from 62.4 mg/l to 104.0 mg/l. Calcium levels of sampling locations are higher than the drinking water standards (IS:10500) i.e. 75 mg/l except for Bathon Village, Zantrag

Village & Nagpal Khrew Village spring waters. High calcium levels may adversely affect the absorption of essential minerals in the body.

- The **Magnesium** Concentration of sampling locations ranges from 5.83 mg/l to 18.47 mg/l. Magnesium levels of sampling locations are within the drinking water standards (IS:10500) i.e. 30 mg/l.
- The **Chloride** Concentration of all the sampling locations ranges from 1.42 mg/l to 12.76 mg/l. Chloride levels of all the sampling locations are within the drinking water standards (IS:10500) i.e 250 mg/l.

3.10.8 Surface water quality results

Table 59. Surface Water Quality Results

S. No.	Parameter	Unit	IS 10500:2012 (Drinking water standard)	SW1 Satura(Upstream) Tributary of Jhelum	SW2 Khanagund Downstream Tributary of Jhelum	SW3 Aripal(D/s) Tributary of Jhelum	SW4 Narastan(Upstream) tributary of Jhelum	SW5 Sarbal Lake
1	Colour	Hazen	**5**	<1	<1	<1	<1	<1
2	Odour	--	**Unobjectionable**	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	Turbidity	NTU	**5**	<1	<1	<1	<1	1.770
4	pH Value		**6.5-8.5**	7.77	7.83	7.46	8.11	7.38
5	Temperature	°C	_	23.2	24.1	24.1	23.2	24.1
6	Conductivity	µmho/cm	_	56.7	53.9	331	80.1	974
7	Total Dissolved Solids	mg/l	**500**	28.4	27	166	40	487
8	Chloride (as Cl)	mg/l	**250**	5.67	4.96	5.67	4.25	40.41
9	Fluoride (as F)	mg/l	**1**	<0.1	<0.1	0.22	<0.1	<0.1
10	Total Hardness	mg/l	**200**	36.00	32.00	152.00	38.00	336.00
11	Calcium (as Ca)	mg/l	**75**	9.6	8.0	49.6	9.6	116.8
12	Magnesium (as Mg)	mg/l	**30**	2.92	2.92	6.80	3.40	10.69
13	Iron (as Fe)	mg/l	**0.3**	0.268	0.204	<0.1	<0.1	0.460

14	Sulphate (as SO4)	mg/l	**200**	7.29	6.06	15.41	9.95	6.67
15	Nitrate Nitrogen	mg/l	**45**	4.04	6.89	7.26	4.71	8.29
17	Alkalinity	mg/l	**200**	26	24	156	36	444
20	Phosphate	mg/l	_	0.05	0.04	<0.01	0.06	0.05
21	Sodium (as Na)	mg/l	_	1.5	1.7	4.5	2.0	61.9
22	Potassium (as K)	mg/l	_	0.1	0.2	0.8	0.2	19.3
33	BOD	mg/l	_	5.73	11.03	11.48	5.88	18.38
34	COD	mg/l	_	16.0	24.0	24.0	16.0	48.0
35	DO	mg/l	_	4.6	3.8	3.75	4.25	3.15
36	TSS	mg/l	_	51.6	53.0	6.0	20.0	45.0

BDL = Below detection limit, Selenium (Se), Zinc (Zn), Lead (Pb), Arsenic (As), Cadmium (Cd), Mercury (Hg), Copper (Cu), Manganese (Mn), Total Chromium (Cr_6^-), Boron (B), Aluminium (Al),Ammonical Nitrogen, Nitrite Nitrogen and Oil and Grease is below detection level (Source of standards: IS: 10500, Laboratory: Perfact Researchers Pvt. Ltd. (NABL Accredited

Table 60. Surface Water Criteria as per CPCB

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	pH between 6.5 and 8.5 Dissolved Oxygen 6 mg/l or more Biochemical Oxygen Demand 5 days 20 ^{0}C 2 mg/l or less
Outdoor bathing (Organised)	B	pH between 6.5 and 8.5 Dissolved Oxygen 5 mg/l or more Biochemical Oxygen Demand 5 days 20 ^{0}C 3 mg/l or less
Drinking water source after conventional treatment and disinfection	C	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more Biochemical Oxygen Demand 5 days 20 ^{0}C 3 mg/l or less
Propagation of Wildlife and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4 mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25 ^{0}C micro mhos/cm Max.2250 Boron Max. 2mg/l

(Source: Surface Water quality criteria as per CPCB)

3.10.13. Data interpretation

- The Surface water quality of the Satural (Upstream) Tributary of Jhelum (SW1) shows that all the parameters are within the CPCB Surface Water Quality Criteria and BOD is 5.73 mg/l & DO is 4.6 mg/l. Thus it can be concluded based on the results that the surface water quality of the collected sampling location can be placed in Class “D” i.e. Propagation of Wildlife and Fisheries as per CPCB surface water quality- Designated Best Use Water Quality Criteria.
- The Surface water quality of the Khanagund (Downstream) Tributary of Jhelum (SW2) shows that all the parameters are within the CPCB Surface Water Quality Criteria and BOD is 11.03 mg/l and DO is 3.8 mg/l. Thus it can be concluded based on the results that the surface water quality of the collected sampling location can be placed in Class “E” i.e. Irrigation, Industrial Cooling, Controlled Waste disposal as per CPCB surface water quality- Designated Best Use Water Quality Criteria.
- The Surface water quality of the Aripal (Downstream) Tributary of Jhelum (SW3) shows that all the parameters are within the CPCB Surface Water Quality Criteria and BOD is 11.48 mg/l and DO is 3.75 mg/l. Thus it can be concluded based on the results that the surface water quality of the collected

sampling location can be placed in Class "E" i.e. Irrigation, Industrial Cooling, Controlled Waste disposal as per CPCB surface water quality- Designated Best Use Water Quality Criteria.

- The Surface water quality of the Narastan (Upstream) Tributary of Jhelum (SW4) shows that all the parameters are within the CPCB Surface Water Quality Criteria and BOD is 5.88 mg/l and DO is 4.25 mg/l. Thus it can be concluded based on the results that the surface water quality of the collected sampling location can be placed Class "D" i.e. Propagation of Wildlife and Fisheries as per CPCB surface water quality- Designated Best Use Water Quality Criteria.
- The Surface water quality of the Sarbal Lake (SW5) shows that all the parameters are within the CPCB Surface Water Quality Criteria and Total hardness, Calcium & Alkalinity is higher than the drinking water standards and BOD is 18.38 mg/l and DO is 3.15 mg/l. Thus it can be concluded based on the results that the surface water quality of the collected sampling location can be placed in Class "E" i.e. Irrigation, Industrial Cooling, Controlled Waste disposal as per CPCB surface water quality- Designated Best Use Water Quality Criteria.

3.11. Soil quality

Soil quality of the study area in hilly areas is poor and fertile in plain areas. Productivity in higher ranges is poor while in central regions is fertile.

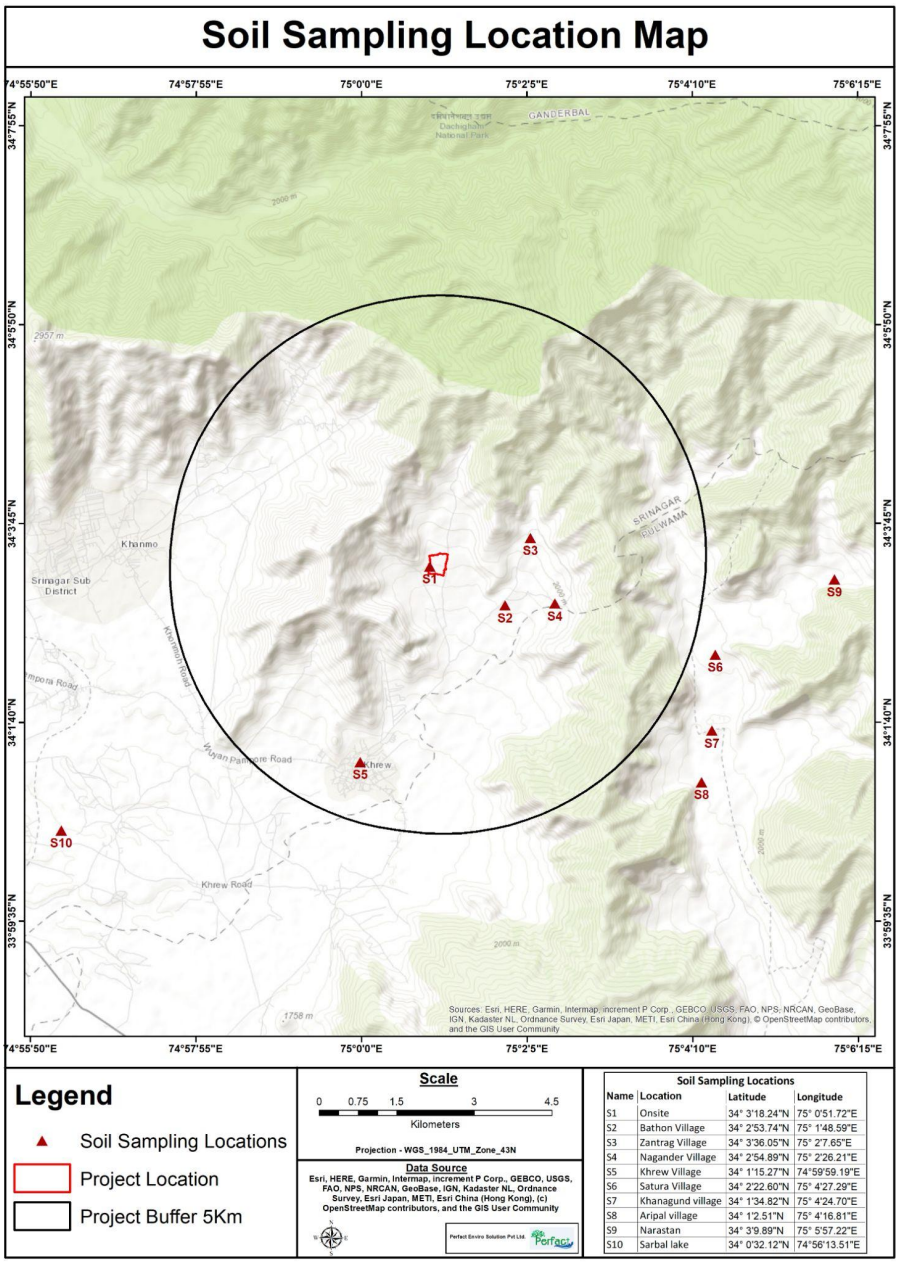
3.11.1. Sampling location

Table 61. Soil Quality Sampling Location

Sampling station No.	Name of Location	Distance & Direction from project area	Latitude	Longitude	Type of Project area / study area	Environmental Significance
S1	Onsite	West	34° 3'18.24"N	75° 0'51.72"E	Mountain & hill soil	Existing soil quality at Core Zone
S2	Bathon Village	1.35 km, ESE	34°2'53.74"N	75°1'48.59"E	Mountain & hill soil	Existing soil quality in Buffer Zone
S3	Zantrag Village	1.68 km, ENE	34°3'36.05"N	75° 2'7.65"E	Mountain & hill soil	
S4	Nagander Village	2.25 km, ESE	34°2'54.89"N	75°2'26.21"E	Mountain & hill soil	
S5	Khrew Village	4.03 Km,SSW	34°1'15.27"N	74°59'59.19"E	Mountain & hill soil	
S6	Satura Village	5.53 km, ESE	34°2'22.60"N	75°4'27.29"E	Mountain & hill soil	
S7	Khanagund village	6.10 km, SE	34°1'34.82"N	75° 4'24.70"E	Mountain & hill soil	

S8	Aripal village	6.54 Km, SE	34° 1'2.51"N	75° 4'16.81"E	Mountain & hill soil	
S9	Narastan	7.75 km E	34° 3'9.89"N	75° 5'57.22"E	Mountain & hill soil	
S10	Sarbal lake	8.34 km SW	34° 0'32.12"N	74°56'13.51"E	Mountain & hill soil	

Map showing Soil Sampling location.



The sampling design is a fundamental part of data collection for scientifically based decision making. A well-developed sampling design plays a critical role in ensuring that data are enough to draw the conclusions needed. The samples are collected to

determine nutrient content, composition, and other characteristics such as the acidity or pH level.

3.11.3. Sampling procedures of analysis

Prior to soil sampling, any waste material including leaves, grasses etc, were removed from the surface. Augur method was used and samples were collected at 15 cm depth after removing the upper crust. Materials such as stone, leaves, roots, sticks, etc., if present were removed. To prevent any contamination samples were kept closed on clean and tight polythene bags for transportation to the laboratory. In the laboratory, samples from each spot were well mixed with hands on a clean polythene sheet. About 1 kg of soil was retained after the quartering process. This sample was kept for some time for air-drying at room temperature, stored in a polythene bag with a label at the top. Samples were analysed for bulk density, pH, nitrogen, phosphorus, calcium, magnesium and organic contents. Soil Quality Results are summarised below:

3.11.4. Physical and chemical properties of soil

Table 62. Soil Results

Parameter	Unit	S1 Onsite	S2 Bathon	S3 Zantrang	S4 Nagander village	S5 Khrew village	S6 Satura	S6 Khangund	S8 Aripal village	S9 Narastna	S10 Sarbal lake
Physical Properties of soil											
Color	-	Dull Reddish Brown 5/3	Blackish 2/1	Dull Reddish Brown 5/3	Yellowish 8/4	Blackish brown 3/1	Dull Reddish Brown 5/3	Dull Reddish Brown 5/3	Dull Reddish Brown 5/3	Dark black 3/2	Dull Reddish Brown 5/3
Texture	**Sand %**	8.4	10.3	6.8	11.3	3.8	19.5	15.6	23.4	7.1	5.6
	Silt %	20.9	18.2	22.6	42.2	11.5	36.5	37.5	19.1	41.2	20.3
	Clay %	70.6	71.4	70.4	46.4	84.7	43.9	46.9	57.4	51.6	73.9
Moisture content	**%**	2.9	1.5	2.0	1.4	1.2	2.8	2.5	2.9	1.9	2.7
Electrical Conductivity	**µS/cm**	107.40	137.6	185.90	151.60	117.80	121.70	138.90	144.80	514.70	104.90
Bulk Density	**g/cc**	1.00	1.02	1.04	1.11	1.05	1.24	1.01	1.02	1.01	1.06
Porosity	**%**	54.1	52.0	53.3	48.9	55.5	50.0	50.5	51.7	47.8	52.8
Chemical Properties of soil											
pH	**-**	6.83	7.73	6.97	6.75	7.98	6.57	7.14	6.94	6.73	6.86
Texture Class	-	**Clay**	**Clay**	**Clay**	**Silty Clay**	**Clay**	**Clay**	**Clay**	**Clay**	**Silty Clay**	**Clay**
Organic Matter	**%**	0.98	0.59	0.59	1.18	1.31	3.01	1.08	2.39	1.01	0.95
Available Nitrogen	**mg/kg**	65.8	70.0	81.2	60.2	75.6	92.4	105.0	57.4	88.2	75.6
Available Calcium	**mg/kg**	35.7	34.1	35.2	34.6	30.2	25.3	31.7	**30.5**	92.1	26.0

Available Magnesium	**mg/kg**	20.3	23.5	28.8	25.9	21.5	21.2	23.3	26.5	32.8	22.4
Available Potassium	**mg/kg**	7.0	11.2	15.0	10.0	9.2	9.5	11.2	15.5	17.8	8.8
Nitrate Nitrogen	**mg/kg**	39.2	46.2	51.8	37.8	50.4	60.2	67.2	36.4	58.8	57.4
Available Phosphorus	**mg/kg**	9.6	14.9	8.2	15.2	16.1	21.2	13.4	20.5	15.5	9.9
Chloride	**mg/kg**	62.1	79.9	124.3	97.6	62.1	71.0	79.9	88.8	186.4	62.1
Cation Exchange Capacity	**meq/ 100gm**	21.6	22.4	20.7	19.3	21.7	20.6	21.2	18.9	19.3	22.6
Available Sulphur	**mg/kg**	1.5	1.2	1.4	2.5	1.7	3.0	1.4	1.3	1.2	1.8
Available Sodium	**mg/kg**	32.0	34.5	38.8	36.2	32.2	32.5	34.4	35.5	57.4	31.9
Bicarbonate	**mg/kg**	61.0	109.8	73.2	61	122.0	48.8	97.6	85.4	61.0	61.0

(Laboratory: M/s Perfact Researchers Pvt. Ltd (NABL Accredited:

Table 63. Existing Soil Quality at Core Zone

Parameters	Result in mg/kg (0-15 cm)	Low mg/kg (0-15 cm)	Medium mg/kg (0-15 cm)	High mg/kg (0-15 cm)	Remarks
Nitrogen	65.8	<156	157-313	>314	Low
Potassium	7.0	<67	67.1-156	>156	Low
Phosphorus	9.6	<5.5	5.6-13.9	>14.0	Medium

3.11.8 Data interpretation

Core Zone: The samples collected from the core zone sites show that the soil texture in the core zone is Clayey, Colour is Dull Reddish Brown, pH is 6.83. Amount of primary nutrients like Organic matter is 0.98 %, the available nitrogen 65.8 mg/kg is low and available Potassium 7.0 mg/kg is low while the available Phosphorus 9.6 mg/kg is in the medium range. Thus it can be concluded that soil is low fertile in the Core Zone.

Buffer Zone: The samples collected from the buffer zone sites show that the soil texture in the buffer zone is Clay and Silt Clay, Color is blackish to Dull Reddish Brown, pH ranges from 6.73 - 7.98. Amount of primary nutrients like Organic matter 0.59 -3.01 %, the Available Nitrogen 57.4-105.0mg/kg is lower in range, the Available Phosphorus 8.2-21.2 mg/kg is medium to high in range, Available Potassium 8.8-17.8mg/kg is low in range, Primary nutrient profile shows that soil is average fertile due to the availability of low amount of nitrogen, available potassium.

3.12. Ecology & biodiversity

Biological Environment

Complete study has been done on the ecological environment of the study area and given below.

About the Project:

Plant and animal communities are indicators of the environment. They respond not only to one environmental factor, but also to an interacting group of factors. These communities influence and react sensitively to change in the balance of environmental stresses. A detailed knowledge of the diversity of the area definitely helps in managing the area properly following suitable mitigation practices. The study was conducted in the project area to assess all possible consequences on the biological environment.

Floral and faunal surveys are conducted for assessing the biological diversity and its status over a period of time that form an integral part of Impact Assessment Techniques.

The present study is highlighting the various issues pertaining to floristic diversity and faunal wealth.

The industry is involved in production and manufacture of cement. The Ministry of Environment & Forests, Govt. of India, made environmental clearance (EC) for certain development projects mandatory through its notification of 27.01.1994 under the Environment Protection Act, 1986. Keeping in view of the experience gained in the environmental clearance process over a period of one decade, the MoEF&CC came out with Environment Impact Notification, SO 1533(E), dated 14.09.2006. It has been made mandatory to obtain environmental clearance for all **Cement Plants** and the project lies under **Item 3(b), Category B1** as per EIA Notification 2006 and its subsequent amendments.Trumboo Industries Private Limited (TIPL) is presently operating a cement plant having a cement and clinker capacity of 3.3 Lakhs TPA (0.33 million TPA) & 3.135 Lakhs TPA (0.31 million TPA) respectively to produce ordinary portland cement (OPC) in an area of 12.38 ha at Village Khrew, Taluka: Pampore, District-Pulwama, Jammu & Kashmir. Considering demand in the state of J&K. TIPL has decided to expand the cement manufacturing capacity in the existing plant area by adding another manufacturing line of 3.3 Lakhs TPA (0.33 million TPA) to produce 6.6 Lakhs TPA (0.66 million TPA) ordinary Portland cement.

Introduction of the project highlighting the Environmental sensitivity:

There is no Reserve or Protected forest within the 10 Km Buffer Zone. However, one wildlife Sanctuary Dachigam National Park in 3.12 Km, N. 3 water bodies Jhelum River Tributary (4.5 Km, East), Sarbal Lake (8.25 Km, SW).

Ecological Sensitivity in the Study area

Map showing ecological sensitivity of the site location.

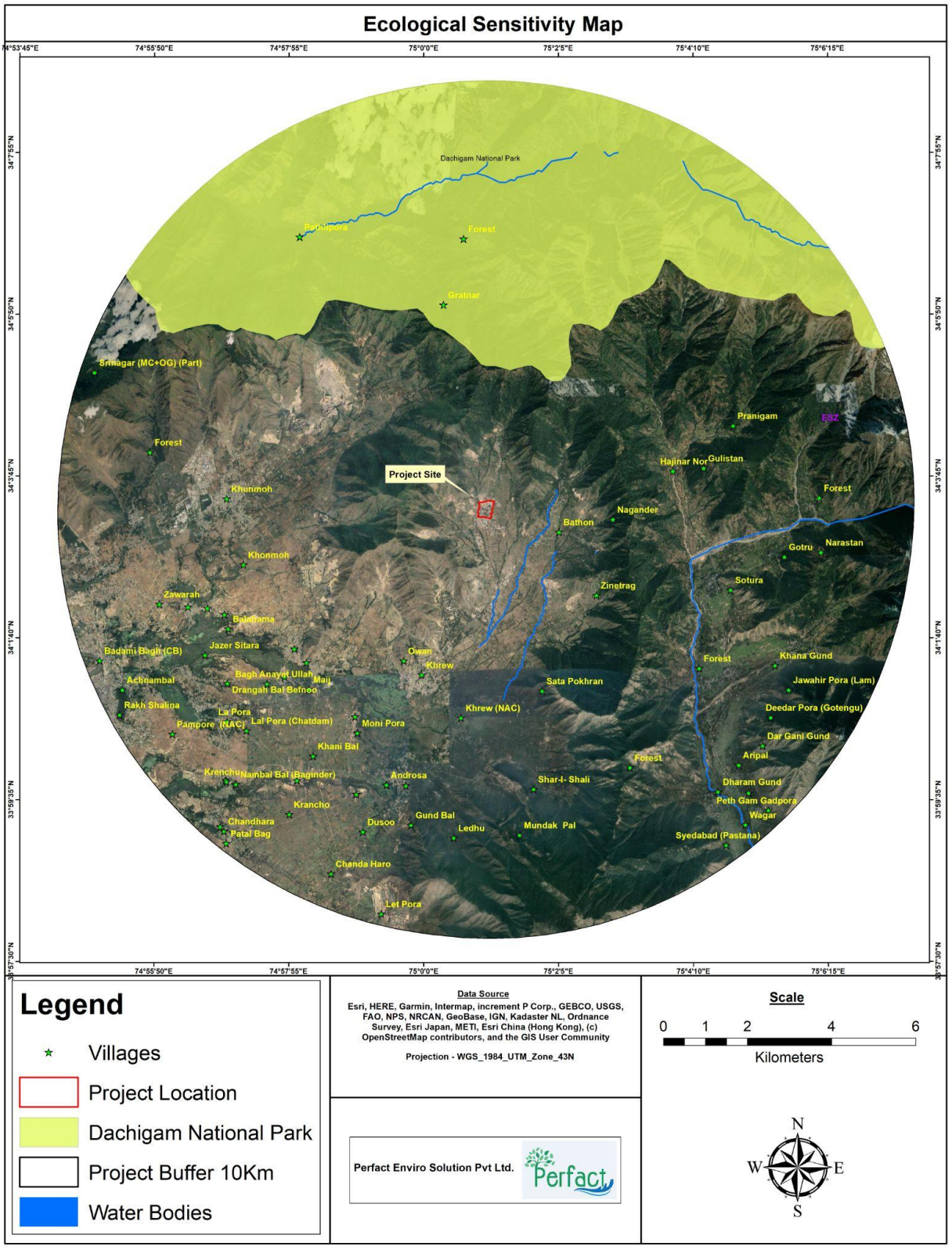


Figure 48. Ecological Sensitivity Map

Table 64. Ecological sensitive area & distance

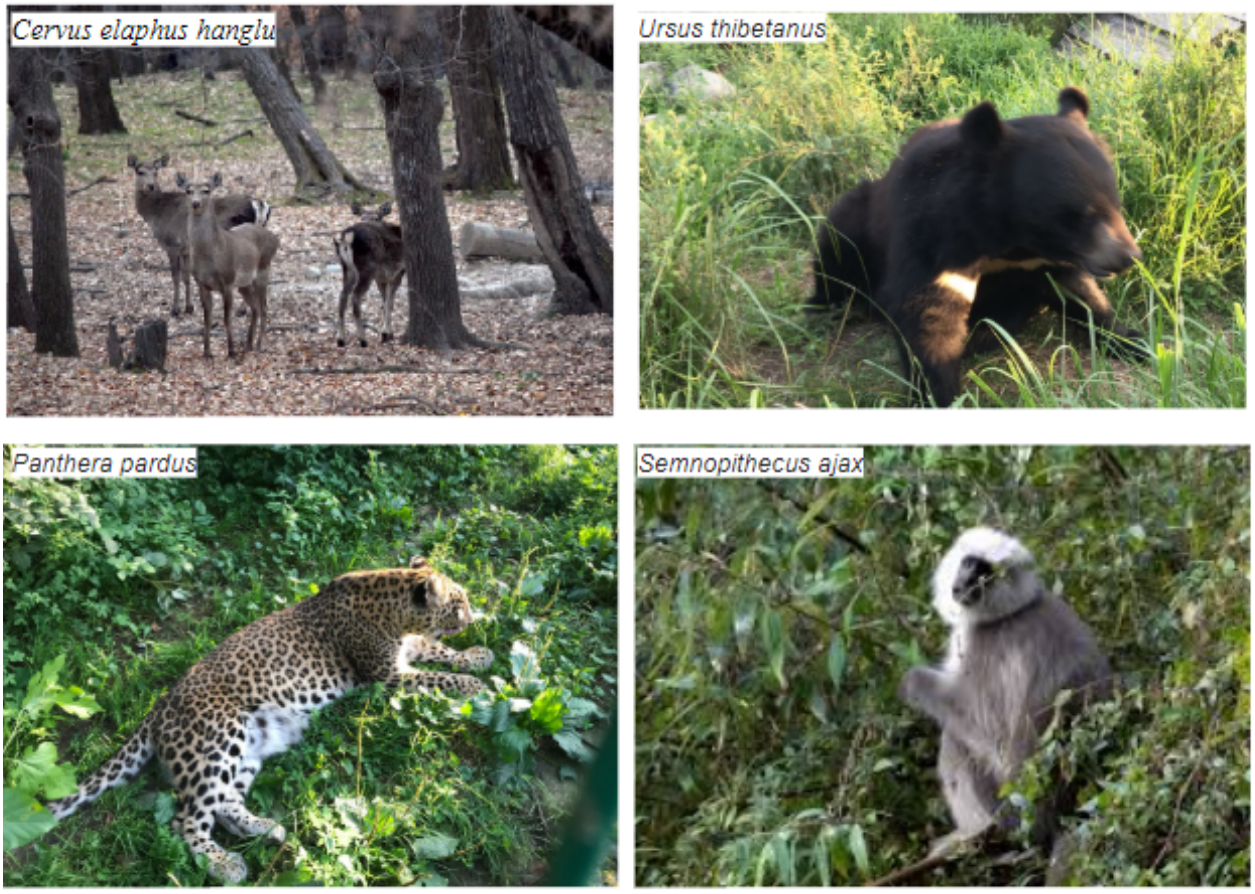
Location	Distance and direction
Forest / Wildlife Sanctuary	
Dachigam National Park	3.12 Km N
Water bodies	
Jhelum River tributary	4.5 km E
Sarbal Lake	8.25 Km SW
Jhelum River	9.73 Km SW

Objective

In view of the TOR, 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.

Description of Dachigam National Park

Dachigam National Park is about 18 km upper east of Srinagar and covers a region of 141 km^2 i.e. 22.5 km long, 8 km wide while the altitude ranges between 1,700 and 4,000 m. The National Park is divided into lower and upper Dachigam regions and is encased between a crease of the Zanskar go, which frames the northwest part of the central Himalaya. The National Park is one of the last regions on earth where the last Kashmir Stag (Hangul) can be spotted. Other Species is in the area other than Hangul are species like Kashmir musk deer (*Moschus cupreus*), Kashmir gray langur (*Semnopithecus ajax*), Himalayan serow (*Capricornis thar*), Asiatic black bear (*Ursus thibetanus*), Himalayan brown bear (*Ursus arctos isabellinus*), and Leopard (*Panthera pardus*). The Lower Dachigam altitude varies from 1700 to 3500 m and due to this variation, there is an abundant variety of vegetation with expansive leaf mesophyll forest of *Acer caesium*, *Morus alba*, *Ulmus wallichiana*, *Ulmus villosa*, *Rhus succedanea*, *Juglans regia*, and *Parrotiopsis jacquemontiana* and variety of conifers like *Cedrus deodara*, *Pinus wallichiana*, *Picea smithiana*, and *Abies pindrow* developing in an altitudinal succession (Ahmad 2006; Ahmad et al. 2009, 2015). Upper Dachigam varies from 2000 m to 4700 m in altitude and its vegetation inclination of subalpine network of forest is followed by scrub vegetation of *Betula utilis* and *Rhododendron campanulatum* sprinkled with meadows of herb-rich fields above 3300 m. Champion and Seth (1968) have classified the vegetation of Dachigam National Park as 'typically Himalayan moist temperate forest: subalpine forest and alpine forest'.



Photographs taken during field survey

Sampling Site Selection

Primary Survey

Floral composition of the area was evaluated. For the primary survey core zone area (within mine premises) and buffer zone area (10 KM radius of the periphery of the mine lease) was divided in view of Natural vegetation; Rivers and water bodies in vicinity; according to habitat types followed by the random sampling method, surveys, exploration, collection, and preparation of specimens toward building an inventory of floral diversity of the area. Phyto-sociological studies were conducted to assess the composition, diversity, distribution, and their status in nature. This was cross-checked with the traditional knowledge of the people of the study region.

Study of fauna species was observed at different times during day and night like standard transect walk, visual encounter survey etc. Seasonal variations have also been studied. While doing the survey, photographs were taken for identification of species.



Terrestrial Study

The sampling sites within 10 kms radius of the periphery of the mine lease were selected. The details of the selected sites are given below:

Table 65. Terrestrial Study

Sampling Code	Location	Study Zone	Distance & Direction
E1	Within the plant site	Core Zone	--
E2	Jhelum River tributary	Buffer Zone	4.5 E
E3	Khrew Area	Buffer Zone	3.71 SW
E4	Village Wuyan	Buffer Zone	5.36 SW
E5	Bathan Area	Buffer Zone	1.12 NE
E6	Sangar Area	Buffer Zone	4.18 NW

Methodology

Environmental indicators of biological parameters mainly include

- Species composition of flora and fauna
- Flora –Phyto-sociological parameters (type, density, frequency, etc.)
- Fauna -distribution, abundance, rarity, migratory, species diversity, habitat requirements, habitat resilience, economic significance, commercial value, etc.
- Fisheries – migratory species, species with commercial/ recreational value, etc.

Flora and Fauna of the study area was studied within a 10 km radius of the periphery of the mining area.

Methodology Terrestrial Floral Study

Depending upon the vegetation & size of the area, two methods were adopted for this survey [Michael (1964), Trivedi et. al (1987) and Odum (1971)].

I. Belt Transect Method.
II. Plot Quadrat Method.

I. Belt Transect Method

Belt Transect Method was adopted to evaluate the general data like distance, height, canopy cover and circumference of the plants as well as the broad vegetation pattern of the area. For the present study, 100 m. distance was covered by studying a total of 10 points at a distance of 10 meter apart on both sides i.e., left and right of each point, forming a 10 m. belt at each selected location. Visual observations were also carried out by visualizing the area beyond the 10 m. on both sides i.e. left & right.

- Points to be noted:

$$\frac{\leftarrow 10m. \rightarrow \leftarrow 10m. \rightarrow}{10\ \text{m. belt (width)}}$$

  - Circumference
  - Canopy
  - Height
  - Distance

Visual Verifications: Beyond 10 meters on both sides of transect and after 100 m. length at both ends of the transect

Plot Quadrat Method

Plot quadrat method was adopted to evaluate the phyto-sociological parameters like density, diversity and vegetative cover of the plants. The size of the quadrate was

selected by the species-area curve method. For the present survey, 10 X 10 m plots were selected for vegetation patterns. The various phyto-sociological parameters were calculated as given below:

Density- it was calculated as plants / m2 by using Quadrat method.

Diversity- Diversity was calculated with the help of Shannon & Weaver (1948) diversity index.

H= -

Where, Pi = n/N

n= No. of individual species.

N= Total No. of species.

$$\textbf{Frequency} = \frac{\text{Total number of quadrats in which species occurred}}{\text{Total number of quadrats studied}} \times 100$$

$$\textbf{Abundance} = \frac{\text{Total number of individuals of species in all quadrats}}{\text{Total number of quadrats in which species occurred}}$$

$$\textbf{Density} = \frac{\text{Total number of individuals of a species}}{\text{Total number of quadrats studied}}$$

$$\textbf{Relative Frequency} = \frac{\text{Frequency of the species}}{\text{Total frequency of all species}} \times 100$$

$$\textbf{Relative Density} = \frac{\text{Density of the species}}{\text{Total density of all species}} \times 100$$

$$\textbf{Relative Abundance} = \frac{\text{Abundance of the species}}{\text{Total abundance of all species}} \times 100$$

Methodology Terrestrial Faunal Study

A ground survey was carried out in the Study Area and interaction with villagers.

Secondary Data Collection

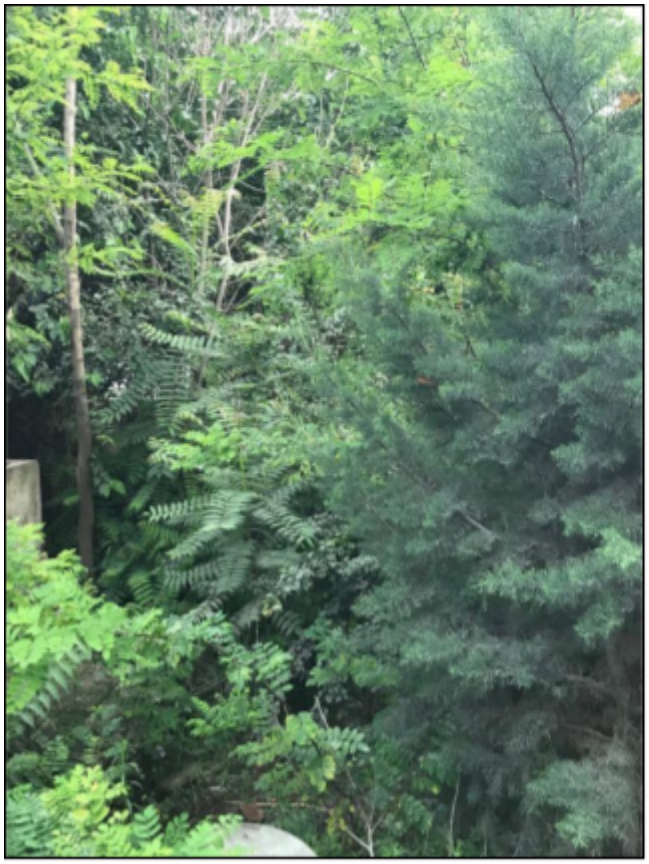
Compilation of secondary data with respect to the study area was done from literature, Conservation plan, reviewing published research articles available with the Forest Department and Wildlife Authorities.

Description of Core Zone with flora and Fauna Details:

Flora & Fauna of Study Area:

Core Zone: Since, the existing project is already in operational and proposed project is only expansion of cement plant from 1000 TPD (3.3 Lakh TPA) to 2000 TPD (6.6 Lakh TPA) within the existing plant. Hence, no alternative site has been selected. Flora of core zone already present at the site are Cupressus torulosa (Himalayan Cypress), Populus nigra (Black poplar), *Vachellia nilotica* (Gum arabic tree), *Juglans regia* (Persian walnut) and *Picea smithiana* (Indian Spruce).

Existing plantation at site







Fauna of core Zone

Table 66. Fauna of Core Zone

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Reptiles:			
1	Garden Lizard	*Calotes minor*	IV
2	Rock Lizard	*Petrosaurus mearnsi*	-
3	Common Indian garden lizard	*Calotes versicolor*	IV
4	House lizard	*Hemidactylus flaviviridis*	-
5	Minor snake-eyed skink	*Ablepharus grayanus*	-
6	Golden skink	*Eutropis carinata*	-
Mammals:			
1	Three striped palm squirrel	*Funambulus palmarum*	IV
2	Rhesus Macaque	*Macaca mulatta*	II
3	Grey Mongoose	*Herpestes edwardsii*	II

4	Indian porcupine	*Hystrix indica*	IV
5	Goat	*Capra aegagrus hircus*	-
6	Mule	*Equus asinus × Equus caballus*	-
7	Sheep	*Ovis aries*	-
Aves:			
1	Crow	*Corvus splendens*	V
2	Pigeon	*Columba livia*	IV
3	Red-vented Bulbul	*Pycnonotus cafer*	IV
4	Jungle Myna	*Acridotheres fuscus*	IV
5	Asian Koel	*Eudynamys scolopaceus*	-
6	Barn swallow	*Hirundo rustica*	-
Insects:			
1	Butterfly	*Rhopalocera spp.*	-
2	Common Castor	*Ariadne merione*	-
3	Wasps	*Vespa orientalis*	-
4	Dragonfly	*Agrian sp*	-
5	Honey Bee	*Apis indica*	-
6	House fly	*Musca domestica*	-

Buffer Zone

In the Buffer Zone varieties trees, shrubs, herbs, Ornamental plants, weeds and grasses are found such as *Cedrus deodara, Pinus roxburghii, Prunus dulcis*. List of Trees, Shrubs, Herbs Ornamental spices are:

Table 67. Flora of Buffer Zone

S.No	Botanical Name	Common Name	Family
1	*Abies pindrow*	West Himalayan fir	Pinaceae
2	*Acer caesium*	Maple tree	Sapindaceae
3	*Aesculus indica*	Indian horse-chestnut	Sapindaceae
4	*Betula utilis*	Himalayan Birch	Betulaceae
5	*Cedrela serrata*	Darle	Meliaceae
6	*Cedrus deodara*	Himalayan cedar	Pinaceae
7	*Celtis australis*	European nettle tree	Cannabaceae
8	*Crataegus songarica*	Hawthorn	Rosaceae
9	*Cupressus torulosa*	Himalayan cypress	Cupressaceae
10	*Dalbergia sissoo*	Shisham	Fabaceae
11	*Euonymus fimbriatus*	Fringed spindle tree	Celastraceae

12	*Ficus auriculata*	Tiembla	Moraceae
13	*Ficus palmata*	Fagura	Moraceae
14	*Ficus religiosa*	Pipal	Moraceae
15	*Fraxinus floribunda*	Himalayan Ash	Oleaceae
16	*Juglans regia*	Persian walnut	Juglandaceae
17	*Melia azedarach*	Darek	Meliaceae
18	*Morus alba*	White mulberry	Moraceae
19	*Morus nigra*	Black mulberry	Moraceae
20	*Morus serrata*	Kimmu	Moraceae
21	*Olea europaea subsp. cuspidata*	Brown olive	Oleaceae
22	*Parrotiopsis jacquemontiana*	Parrotia	Hamamelidaceae
23	*Phoenix humilis*	Khajoor	Arecaceae

Table 68. Flora of Buffer Zone

S.No	Botanical Name	Common Name	Family
1	*Abies pindrow*	West Himalayan fir	Pinaceae
2	*Acer caesium*	Maple tree	Sapindaceae
3	*Aesculus indica*	Indian horse-chestnut	Sapindaceae
4	*Betula utilis*	Himalayan Birch	Betulaceae
5	*Cedrela serrata*	Darle	Meliaceae
6	*Cedrus deodara*	Himalayan cedar	Pinaceae
7	*Celtis australis*	European nettle tree	Cannabaceae
8	*Crataegus songarica*	Hawthorn	Rosaceae
9	*Cupressus torulosa*	Himalayan cypress	Cupressaceae
10	*Dalbergia sissoo*	Shisham	Fabaceae
11	*Euonymus fimbriatus*	Fringed spindle tree	Celastraceae
12	*Ficus auriculata*	Tiembla	Moraceae
13	*Ficus palmata*	Fagura	Moraceae
14	*Ficus religiosa*	Pipal	Moraceae
15	*Fraxinus floribunda*	Himalayan Ash	Oleaceae
16	*Juglans regia*	Persian walnut	Juglandaceae
17	*Melia azedarach*	Darek	Meliaceae
18	*Morus alba*	White mulberry	Moraceae
19	*Morus nigra*	Black mulberry	Moraceae
20	*Morus serrata*	Kimmu	Moraceae
21	*Olea europaea subsp. cuspidata*	Brown olive	Oleaceae
22	*Parrotiopsis jacquemontiana*	Parrotia	Hamamelidaceae
23	*Phoenix humilis*	Khajoor	Arecaceae

24	*Phyllanthus emblica*	Ambla	Phyllanthaceae
25	*Picea smithiana*	Indian Spruce	Pinaceae
26	*Pinus roxburghii*	Chir pine	Pinaceae
27	*Pinus wallichiana*	Himalayan pine	Pinaceae
28	*Pistacia integerrima*	Zebrawood	Anacardiaceae
29	*Platanus orientalis*	Chinar	Platanaceae
30	*Populus caspica*	Silverleaf poplar	Salicaceae
31	*Populus nigra*	Black poplar	Salicaceae
32	*Prunus armeniaca*	Apricot	Rosaceae
33	*Prunus cerasifera*	Cherry plum	Rosaceae
34	*Prunus cornuta*	Himalayan bird cherry	Rosaceae
35	*Punica granatum*	Anar	Lythraceae
36	*Pyrus malus*	Apple	Rosaceae
37	*Pyrus pashia*	Wild Pear	Rosaceae
38	*Quercus dilatata*	Mohru Oak	Fagaceae
39	*Quercus robur*	Pedunculate oak	Fagaceae
40	*Quercus rubra*	Red Oak	Fagaceae
41	*Rhododendron arboreum*	Burans	Ericaceae
42	*Robinia pseudoacacia*	Black locust	Fabaceae
43	*Salix alba*	White willow	Salicaceae
44	*Salix babylonica*	Weeping willow	Salicaceae
45	*Senegalia catechu*	Catechu	Fabaceae
46	*Taxus wallichiana*	Himalayan yew	Taxaceae
47	*Toxicodendron succedaneum*	Wax tree	Anacardiaceae
48	*Ulmus wallichiana*	Himalayan elm	Ulmaceae
49	*Ulmus villosa*	Cherry Bark Elm	Ulmaceae
50	*Ziziphus mauritiana*	Chinese date	Rhamnaceae
51	*Prunus dulcis*	Almond	Rosaceae

(Source: Data from Dachigam National Park)

Table 69. List of Shrubs, Herbs, Climbers, Ferns & Grasses:

S.No	***Botanical Name***	**Common Name**	**Family**
1	*Agrostis pilosula Trin.*	Bent or bentgrass	Poaceae
2	*Anaphalis margaritacea*	Pearly Everlasting	Asteraceae
3	*Androsace rotundifolia*	Roundleaf Rock Jasmine	Primulaceae
4	*Androsace sempervivoides*	Evergreen Rock Jasmine	Primulaceae
5	*Anemone obtusiloba*	Anemone	Ranunculaceae
6	*Aquilegia fragrans*	Fragrant columbine	Ranunculaceae
7	*Aquilegia pubiflora*	Hairy-flowered Columbine	Ranunculaceae

8	*Aralia cachemirica*	Kashmir Aralia	Araliaceae
9	*Arenaria serpyllifolia*	thyme-leaf sandwort	Caryophyllaceae
10	*Artemisia dubia*	krinidru	Asteraceae
11	*Artemisia parviflora Roxb.*	mugwort	Asteraceae
12	*Asperugo procumbens*	madwort	Boraginaceae
13	*Asperula oppositifolia*	woodruff	Rubiaceae
14	*Aster diplostephioides*	creeping aster	Asteraceae
15	*Astilbe rivularis*	River Astilbe	Saxifragaceae
16	*Asyneuma thomsonii*	Thomson's Bellflower	Campanulaceae
17	*Berberis Aquifolium*	Oregon Grape	Berberidaceae
18	*Berberis vulgaris*	Barberry	Berberidaceae
19	*Bothriochloa pertusa*	Beardgrass	Poaceae
20	*Bupleurum swatianum*	Margined Chinese	Apiaceae
21	*Campanula aristata Wall*	Long-Sepal Bellflower	Campanulaceae
22	*Campanula cashmeriana*	Bell flower	Campanulaceae
23	*Campanula latifolia*	great bellflower	Campanulaceae
24	*Carpesium abrotanoides*	Pig's Head,	Asteraceae
25	*Chaerophyllum acuminatum*	West Himalayan Chervil	Apiaceae
26	*Chaerophyllum reflexum*	Kashmir Chervil	Apiaceae
27	*Clematis connata*	Himalayan Clematis	Ranunculaceae
28	*Clematis montana*	Anemone clematis	Ranunculaceae
29	*Codonopsis ovata*	Kashmir Bonnet Bellflower	Campanulaceae
30	*Crocus sativus*	Saffron crocus	Iridaceae
31	*Cynodon dactylon*	Dhoob	Poaceae
32	*Dactylis glomerata*	Cat grass	Poaceae
33	*Daphne mucronata*	Kuttilal	Thymelaeaceae
34	*Delphinium denudatum*	Jadwar	Ranunculaceae
35	*Digitaria sanguinalis*	Crab grass,	Poaceae
36	*Dioscorea deltoidea*	Yam	Dioscoreaceae
37	*Dryopteris filix-mas*	Male fern	Dryopteridaceae
38	*Epilobium parviflorum*	hoary willowherb	Onagraceae
39	*Epipactis gigantea*	stream orchid,	Orchidaceae
40	*Euphorbia helioscopia*	spurge	Euphorbiaceae
41	*Euphorbia prolifera*	Pine Spurge	Euphorbiaceae
42	*Ferula assa-foetida*	Hing	Apiaceae
43	*Ferula jaeschkeana Vatke.*	giant fennel	Apiaceae
44	*Galinsoga parviflora*	Gallant soldier	Asteraceae
45	*Galium asperuloides*	Rough Goosegrass	Rubiaceae

46	*Galium verum*	Lady's Bedstraw	Rubiaceae
47	*Gaultheria trichophylla*	Himalayan snowberry	Ericaceae
48	*Gentiana marginata*	Clustered Summer Gentian	Gentianaceae
49	*Genum elatum Wallich.*	Avens	Rosaceae
50	*Hedera nepalensis*	Himalayan ivy	Araliaceae
51	*Hemerocallis fulva*	Orange day-lily	Asphodelaceae
52	*Heracleum lanatum*	cow parsnip	Apiaceae
53	*Hydrangea macrophylla*	French hydrangea,	Hydrangeaceae
54	*Hypericum perforatum*	Saint John's wort	Hypericaceae
55	*Impatiens bicolor*	Bicolor Balsam	Balsaminaceae
56	*Impatiens grandiflora*	Himalayan Balsam	Balsaminaceae
57	*Indigofera heterantha*	Himalayan indigo	Fabaceae
58	*Iris germanica*	Bearded iris	Iridaceae
59	*Isolepis setacea*	Bristleleaf bulrush.	Cyperaceae
60	*Juncus articulatus*	Joint leaf rush	Juncaceae
61	*Juniperus communis*	Common juniper	Cupressaceae
62	*Juniperus recurva*	Himalayan Juniper	Cupressaceae
63	*Lonicera quinquelocularis*	translucent honeysuckle	Caprifoliaceae
64	*Lotus corniculatus*	Bird's-foot trefoil	Fabaceae
65	*Nymphoides peltatum*	floating heart	Menyanthaceae.
66	*Origanum vulgare*	wild marjoram	Lamiaceae
67	*Orobanche solmsii*	broom-rape	Orobanchaceae.
68	*Pedicularis pectinata*	marsh lousewort	Orobanchaceae.
69	*Phleum alpinum*	alpine cat's-tail	Poaceae
70	*Picris hieracioides*	hawkweed	Asteraceae
71	*Pimpinella diversifolia*	Pimpinella	Apiaceae
72	*Plantago lanceolata*	Ribwort Plantain	Plantaginaceae
73	*Poa alpina*	alpine bluegrass	Poaceae
74	*Poa annua*	Annual bluegrass	Poaceae
75	*Potentilla atrosanguinea*	Himalayan cinquefoil	Rosaceae
76	*Primula macrophylla*	Large Leaf Primrose	Primulaceae
77	*Primula rosea Royle.*	Himalayan meadow primrose	Primulaceae
78	*Rhododendron anthopogon*	Dwarf Rhododendron	Ericaceae
79	*Rosa brunonii*	Himalayan Musk Rose	Rosaceae
80	*Rubus ulmifolius*	thornless blackberry	Rosaceae
81	*Rumex acetosella*	red sorrel	Polygonaceae
82	*Rumex nepalensis*	Jangali Palak	Polygonaceae
83	*Salvia moorcroftiana*	Salvia	Lamiaceae

84	*Saussurea albescens*	Pink Saw-Wort	Asteraceae
85	*Saxifraga sibirica*	Bract Saxifrage	Saxifragaceae
86	*Scandix pecten-veneris L.*	shepherd's-needle	Apiaceae
87	*Sedum adenotricha*	Hairy Sepal Sedum.	Crassulaceae
88	*Seseli libanotis*	moon carrot	Apiaceae
89	*Siberian Saxifrage*	bract saxifrage	Saxifragaceae
90	*Silene coronaria*	Rose campion	Caryophyllaceae
91	*Smilax aspera*	kukurdara	Smilacaceae
92	*Solidago virgaurea*	woundwort	Asteraceae
93	*Sorbaria tomentosa*	Rehder	Rosaceae
94	*Spiraea canescens*	Grey Stem Spiraea	Rosaceae
95	*Spiranthes sinensis*	Chinese spiranthes	Orchidaceae
96	*Stellaria media*	chickweed	Caryophyllaceae
97	*Tanacetum dolichophyllum*	Kitam	Asteraceae
98	*Taraxacum officinale Webr.*	common dandelion	Asteraceae
99	*Thalictrum minus*	meadow-rue	Ranunculaceae
100	*Thymus serpyllum*	Breckland thyme	Lamiaceae
101	*Tragopogon dubius*	Yellow Salsify	Asteraceae
102	*Tulipa clusiana*	lady tulip	Liliaceae
103	*Tussilago Farfara Linn.*	coltsfoot,	Asteraceae
104	*Verbena officinalis*	Bhek Paadee	Verbenaceae
105	*Veronica persica*	Figwort	Scrophulariaceae
106	*Viburnum cotinifolium*	Smoketree	Adoxaceae
107	*Viola indica*	Indian Violet	Violaceae

Quantitative Analysis of Species by Belt Transect Method: In the Study Area the most dominating species is Poplar (*Populus nigra*) followed by Deodar (*Cedrus deodara*).

Fauna of Buffer zone

The study area is full of diversity of birds & animals. It consists of a 10 km radius and it covers village, agricultural land and vacant land so the following varieties of fauna are found.

Table 70. Fauna of Buffer Zone

S.No	Zoological Name	Common Name	Schedule
Mammals			
1	*Cervus elaphus hanglu*	Kashmir stag (hangul)	I
2	*Panthera pardus*	Leopard	I
3	*Paradoxurus hermaphroditus*	Asian palm civet	II
4	*Canis aureus*	Indian jackal	II

5	*Vulpes vulpes*	Himalayan red fox	II
6	*Moschus chrysogaster*	Alpine musk deer	I
7	*Ursus arctos isabellinus*	Himalayan brown bear	I
8	*Ursus thibetanus*	Asian black bear	II
9	*Martes flavigula*	Yellow-throated marten	II
10	*Semnopithecus entellus*	Grey Langur	II
11	*Felis chaus*	Jungle Cat	II
12	*Marmota caudata*	Long-tailed marmot	II
13	*Capricornis thar*	Himalayan serow	I
14	*Hystrix indica*	Indian crested porcupine	IV
15	*Macaca mulatta*	Rhesus macaque	II
16	*Funambulus palmarum*	Three striped palm squirrel	IV
17	*Macaca mulatta*	Rhesus Macaque	II
18	*Herpestes edwardsii*	Grey Mongoose	II
19	*Hystrix indica*	Indian porcupine	IV
20	*Capra aegagrus hircus*	Goat	-
21	*Equus asinus × Equus caballus*	Mule	-
22	*Ovis aries*	Sheep	-
Birds			
23	*Acridotheres fuscus*	Jungle myna	IV
24	*Acridotheres tristis*	Common myna	IV
25	*Aegithalos niveogularis*	White-throated bushtit	-
26	*Aerodramus brevirostris*	Himalayan swiftlet	-
27	*Alcedo atthis*	Common kingfisher	IV
28	*Alectoris chukar*	Chukar	-
29	*Apus affinis*	Little swift	-
30	*Argya caudata*	Common babbler	IV
31	*Argya striata*	Jungle babbler	IV
32	*Asio otus*	Long-eared owl	-
33	*Athene noctua*	Little owl	-
34	*Bubo bubo*	Eurasian eagle-owl	-
35	*Cecropis daurica*	Red-rumped swallow	-
36	*Cephalopyrus flammiceps*	Fire-capped tit	-
37	*Columba leuconota*	Snow pigeon	IV
38	*Columba livia*	Rock pigeon	IV
39	*Corvus macrorhynchos*	Jungle crow	IV
40	*Corvus splendens*	House crow	IV
41	*Cuculus canorus*	Common cuckoo	IV

42	*Cuculus micropterus*	Indian cuckoo	IV
43	*Culicicapa ceylonensis*	Grey-headed canary-flycatcher	IV
44	*Dendrocopos himalayensis*	Himalayan woodpecker	IV
45	*Emberiza cia*	Rock bunting	-
46	*Emberiza leucocephalos*	Pine bunting	-
47	*Emberiza stewarti*	White-capped bunting	-
48	*Falco tinnunculus*	Common kestrel	I
49	*Ficedula subrubra*	Kashmir Red Breasted Flycatcher	-
50	*Hieraaetus pennatus*	Booted eagle	-
51	*Hirundo rustica*	Barn swallow	-
52	*Hypsipetes leucocephalus*	Black bulbul	IV
53	*Ithaginis cruentus*	Blood Pheasant	I
54	*Lophophorus impejanus*	Himalayan monal	I
55	*Luscinia pectoralis*	Himalayan rubythroat	-
56	*Milvus migrans*	Black kite	-
57	*Motacilla cinerea*	Grey wagtail	-
58	*Motacilla maderaspatensis*	White-browed wagtail	-
59	*Oriolus kundoo*	Golden Oriole,	-
60	*Parus major*	Great tit	-
61	*Parus monticolus*	Green-backed tit	-
62	*Parus xanthogenys*	Himalayan black-lored tit	-
63	*Passer montanus*	Eurasian tree sparrow	-
64	*Passer rutilans*	Russet sparrow	-
65	*Picus canus*	Grey-headed woodpecker	IV
66	*Prunella collaris*	Alpine accentor	-
67	*Psittacula himalayana*	Slaty-headed parakeet	-
68	*Psittacula krameri*	Rose-ringed parakeet	-
69	*Ptyonoprogne concolor*	Dusky crag martin	-
70	*Pucrasia macrolopha*	Koklass pheasant	-
71	*Pycnonotus leucogenys*	Himalayan bulbul	-
72	*Pyrrhula aurantiaca*	Orange bullfinch	-
73	*Spilopelia chinensis*	Spotted dove	-
74	*Streptopelia decaocto*	Eurasian collared dove	-
75	*Streptopelia orientalis*	Oriental turtle dove	-
76	*Sturnus vulgaris*	Common starling	-
77	*Tachymarptis melba*	Alpine swift	-
78	*Tetraogallus himalayensis*	Himalayan snowcock	-
79	*Upupidae*	Common Hoopoe	-

80	*Urocissa erythroryncha*	Red-billed blue magpie	-
Butterflies			
81	*Papilio machaon*	Common Yellow swallow tail	-
82	*Pieris brassicae*	Large Cabbage White	-
83	*Pieris canidia*	Old world swallowtail	-
84	*Pontia daplidice*	Bath white	-
85	*Cepora nerissa*	common gull	-
86	*Colias fieldii*	dark clouded yellow	-
87	*Gonepteryx rhamni*	Common brimstone	-
88	*Colias erate*	eastern pale clouded yellow	-
89	*Lycaena phlaeas*	American copper	-
90	*Zizeeria karsandra*	Dark grass blue	-
91	*Cupido lacturnus*	Orange-crowned Cupid	-
92	*Talicada nyseus*	the red Pierrot,	-
93	*Udara akasa*	white hedge blue	-
94	*Chilades pandava*	plains Cupid	-
95	*Chilades lajus*	the lime blue	-
96	*Libythea lepita*	common beak	-
97	*Libythea myrrha*	the club beak	-
98	*Danaus genutia*	the common tiger	-
99	*Danaus chrysippus*	plain tiger	-
100	*Aulocera padma*	the great satyr	-
101	*Aulocera swaha*	common satyr	-
102	*Ypthima baldus*	Common five-ring	-
103	*Ypthima asterope*	the African ringlet	-
104	*Argyreus hyperbius*	Indian fritillary	-
105	*Phalantha alcippe*	Himalayan Small Leopard	-
106	*Phalanta phalantha*	common leopard	-
107	*Limenitis trivena*	Indian white admiral	-
108	*Athyma opalina*	Himalayan sergeant	-
109	*Neptis columella*	Short banded sailer	-
110	*Apatura ambica*	Indian purple emperor	-
111	*Aglais caschmirensis*	Indian tortoiseshell	-
112	*Aglais urticae*	Small tortoiseshell	-
113	*Polygonia egea*	Southern comma	-
114	*Kaniska canace*	the blue admiral	-
115	*Junonia orithya*	blue pansy	-
116	*Junonia iphita*	chocolate soldier,	-

117	*Parasarpa dudu*	the white commodore	-
118	*Pieris napi*	Green-veined white	-
119	*Aporia leucodice*	Himalayan blackvein	-
Reptiles			
120	*Calotes minor*	Garden Lizard	IV
121	*Petrosaurus mearnsi*	Rock Lizard	-
122	*Calotes versicolor*	Common Indian garden lizard	IV
123	*Hemidactylus flaviviridis*	House lizard	-
124	*Ablepharus grayanus*	Minor snake-eyed skink	-
125	*Eutropis carinata*	Golden skink	-
126	*Naja naja*	Indian cobra	II
127	*Macrovipera lebetina*	Blunt-nosed viper	-
Aquatic (Jhelum River)			
128	*Schizothorax esocinus*	Chirruh snowtrout	-
129	*Schizothorax plagiostomus*	Snow carp	-
130	*Schizothorax labiatus*	Kunar snowtrout	-
131	*Schizothorax curvifrons*	Sattar snowtrout	-
132	*Schizothorax niger*	Common snowtrout	-
133	*Triplophysa kashmirensis*	Ray-finned fish	-
134	*Triplophysa marmorata*	Ray-finned fish	-
135	*Cyprinus carpio communis*	Scale carp	-
136	*Cyprinus carpio specularis*	Mirror carp	-
137	*Crossocheilus diplocaulus*	Algae eaters	-

Source: Site Survey and Secondary literature.

ENDANGERED SPECIES

Endangered and threatened animals of India have been listed in the Schedule I of the Wildlife (Protection) Act, 1972 (amended in 2002).
08 Schedule I species mentioned in the study area within a 10 km radius.

Table 71. Schedule-I Species in buffer Zone

S.No	Zoological Name	Common Name	Schedule
1	*Cervus elaphus hanglu*	Kashmir stag (hangul)	I
2	*Panthera pardus*	Leopard	I
3	*Moschus chrysogaster*	Alpine musk deer	I
4	*Ursus arctos isabellinus*	Himalayan brown bear	I
5	*Falco tinnunculus*	Common kestrel	I
6	*Capricornis thar*	Himalayan serow	I

7	*Ithaginis cruentus*	Blood Pheasant	I
8	*Lophophorus impejanus*	Himalayan monal	I

3.13 Socio-economic environment

3.13.1 Introduction

Proposed expansion project for Trumboo Industries Pvt. Ltd. is located at Khrew, Tehsil-Pampore in Pulwama district of J & K UT. It is a Cement manufacturing Plant.

3.13.2 Objective of Study

The main objectives of the study are as follows:

1. To analyse the demographic details of urban and rural areas lie within the 10 Km radial distance from the project site through secondary (Census of India data, 2011 and village directory of Pulwama, Jammu and Kashmir and primary (Field visit) data.
2. To collect primary information about current and past social issues in the community on livelihoods.
3. The comparison and analysis of primary and secondary data to know the actual condition of the villages and to predict the expected changes due to project activities.
4. To prepare a list of possible impacts due to the project activities during its operation phase and their mitigation measures

3.13.3 Methodology

1. Study has been conducted based on the details collected through secondary sources (mainly census 2011) and through primary data collected by the socio-economic team of 2 persons of M/s Perfact Enviro Solutions Pvt. Ltd nearby the project site. The details from different villages have been collected by conducting face to face interviews with the villagers or village head during site visits 16/11/2022 to 24/11/2022 & 06/12/2022 to 08/12/2022.
2. The study was conducted in three parts which are described below:
3. The secondary data for the district Pulwama, J&K was analysed using the district census handbook, 2011 for the literacy rate, demographic details and work profile of the district.
4. The social impact assessment has been done by primary survey and through discussion with the people in villages.
5. This is with reference to TOR; the owner has decided to undertake the development programmes for the villages lying near the project site. During the Survey, demands of the community were noted and will be implemented under the Corporate Environment Responsibilities by the project owner.

3.13.4 Concept & definitions

a. **Study Area:** The study area, also known as impact area, has been defined as the sum total of core area and buffer area with a distance of 10 Kilometers from the periphery of the core area. The study area includes all the landmarks both natural and manmade, falling therein.
b. **QoL:** The Quality of Life (QoL) refers to the degree to which a person enjoys the important possibilities of his/her life. The 'Possibilities' result from the opportunities and limitations each person has in his/her life and reflect the interaction of personal and environmental factors. Enjoyment has two components: the experience of satisfaction and the possession or achievement of some characteristic.
c. **Household:** A group of persons who normally live together and take their meals from a common kitchen are called a household. Persons living in a household may be related or unrelated or a mix of both. However, if a group of related or unrelated persons live in a house but do not take their meals from the common kitchen, then they are not part of a common household. Each such person is treated as a separate household. There may be one member households, two member households or multi-member households.
d. **Sex Ratio:** Sex ratio is the ratio of females to males in a given population. It is expressed as 'number of females per 1000 males'.
e. **Literates:** All persons aged 7 years and above who can both read and write with understanding in any language are taken as literate. It is not necessary for a person to have received any formal education or passed any minimum educational standard for being treated as literate. People who are blind but can read in Braille are also treated as literates.
f. **Literacy Rate:** Literacy rate of population is defined as the percentage of literates to the total population aged 7 years and above.
g. **Labour Force:** The labour force is the number of people employed and unemployed in a geographical entity. The size of the labour force is the sum total of persons employed and unemployed. An unemployed person is defined as a person not employed but actively seeking work. Normally, the labour force of a country consists of everyone of working age (around 14 to 16 years) and below retirement (around 65 years) that are participating workers, that is people actively employed or seeking employment. People not counted under the labour force are students, retired persons, stay-at-home people, people in prisons, permanently disabled persons and discouraged workers.
h. **Work:** Work is defined as participation in any economically productive activity with or without compensation, wages or profit. Such participation may be physical and/or mental in nature. Work involves not only actual work but also includes

effective supervision and direction of work. The work may be part time, full time, or unpaid work in a farm, family enterprise or in any other economic activity.

i. **Worker:** All persons engaged in 'work' are defined as workers. Persons who are engaged in cultivation or milk production even solely for domestic consumption are also treated as workers.
j. **Main Workers:** Those workers who had worked for the major part of the reference period (i.e. 6 months or more in the case of a year) are termed as Main Workers.
k. **Marginal Workers:** Those workers who did not work for the major part of the reference period (i.e. less than 6 months) are termed as Marginal Workers
l. **Work participation rate:** The work participation rate is the ratio between the labour force and the overall size of their cohort (national population of the same age range). In the present study the work participation rate is defined as the percentage of total workers (main and marginal) to total population.
m. **APL:** It stands for Above Poverty Line. In India, a measure of persons who live above its nationally designated poverty threshold. According to the World Bank a person is regarded as in the APL category if he/she is living on more than 1.9 international dollars a day.
n. **BPL:** It stands for Below Poverty Line. Below Poverty Line is an economic benchmark used by the government of India to indicate economic disadvantages and to identify individuals and households in need of government assistance and aid. According to the World Bank a person is regarded as in the BPL category if he/she is living on less than 1.9 international dollars a day.

3.13.5 Socio study using secondary data (CENSUS OF INDIA, 2011)

Overview of the study area

The District is centrally located in the valley of Kashmir. The economy of the District mainly depends on the Agriculture Sector. The District is famous for Rice production. Besides the Rice Production District, Pulwama is famous for quality Saffron production all over the world. The District is also famous for production of milk which is largest in the union territory and is known as “Anand of Kashmir”.

The Pulwama District as per census 2011 consists of 327 census villages, out of which 08 are un-inhabited. The villages have been grouped into 8 Tehsils viz, Pulwama, Awantipora, Tral, Pampore, Kakapora, Aripal, Rajpora & Litter, 11 CD Blocks Viz Tral, Aripal, Dadsara, Awantipora, Pampore, Kakapora, Pulwama, Shadimarg, Achgoze, Lassipora and Newa. Five Municipal Councils: Viz Tral, Pampore, Khrew, Awantipora and Pulwama. The total population of the District is 5.60 lac, as per census 2011. The geographical area of the District is 1090 sq. Km and the administrative center of the

District is situated at Pulwama, which is 31 Km. from Srinagar, 85.65% of the population live in Rural areas and 14.35% in Urban areas.

The District is reported to be one of the prettiest spots on the earth, because of its congenial climate, innumerable springs, streams, waterfalls, fragrant flowers, delicious fruits and other natural sceneries. Besides, District Pulwama is famous all over the world for saffron cultivation which is mainly grown in Karewa lands of Pampore, Kakapora and Pulwama blocks of the district.

There are some important shrines and temples in the District and to name a few, Khankah Tral built by Mir Syed Ali Hamadani RH, the great saint and scholar of Iran. and Jawala Mukhi Temple at Khrew Pulwama. Besides the town, Awantipora presents the remnants of the buildings and sculptures of the time of the king of Awantiwarman.

Study Area

The study area means the 10 km radius of the proposed project. Topographical map, Village Map and Google earth maps were used to identify the villages in a 10 km radius.

Village Map showing the study area is given below:

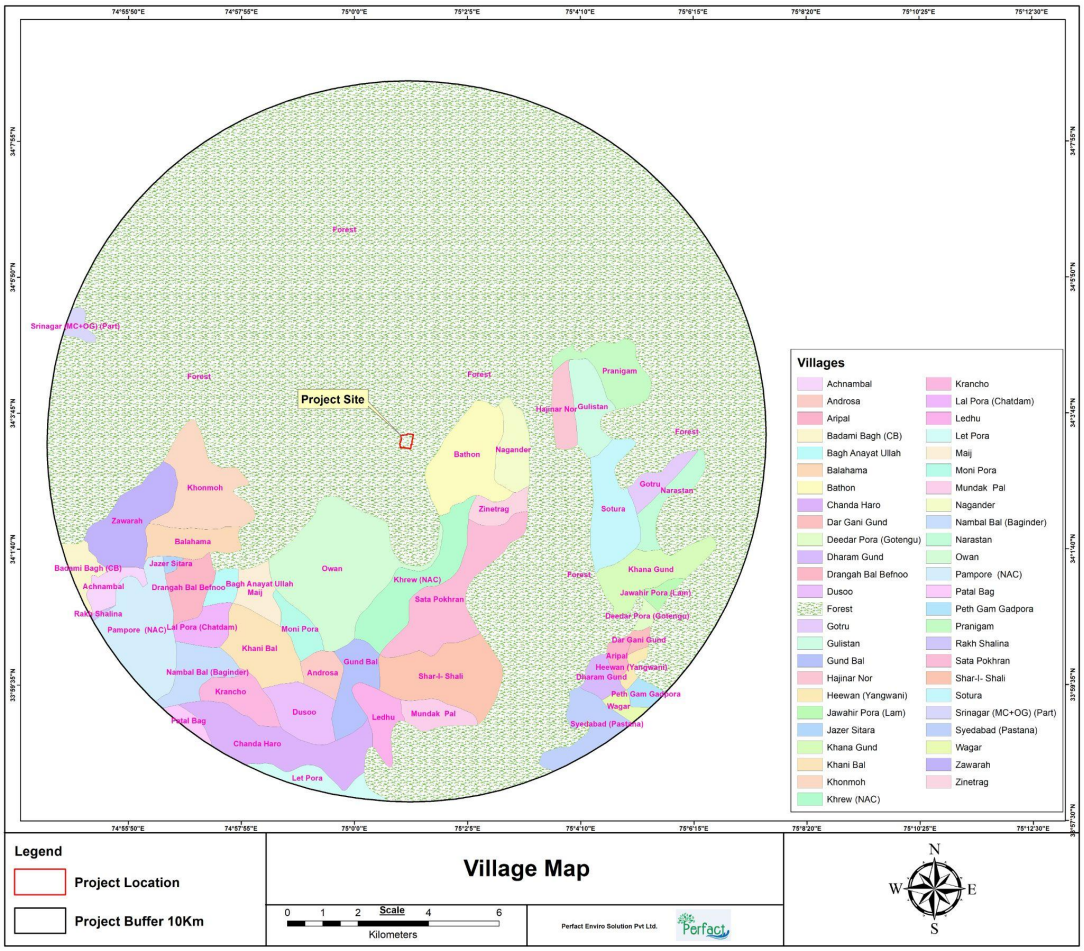


Figure 49. Village Map

Source: Google earth & Survey of India

The Study includes Part of the District Pulwama and Part of the District Srinagar in Jammu & Kashmir UT. The total population of the study area is 109474 constituting 16911 households.The sex ratio of the study area as per census 2011 records is 898, whereas the sex ratio of the district Pulwama involved is 912 and district Srinagar is 900.

List of villages In Study Area

The administrative structure of villages within study area is given ahead -

Table 72. List of Village in Study Area

Zone	District	Sub-district	Number of Villages	Number of Urban areas
0-2 Km	Pulwama	Pampore	3	-
2-5 Km	Pulwama	Pampore	3	1
		Tral	7	
5-10 Km	Pulwama	Pampore	15	1
		Tral	15	
		Awantipora	1	
	Srinagar	Srinagar	-	1
Total			**44**	**3**

The District-wise list of villages falling within the study area is given below-

2. District Pulwama

Table 73. List of Villages falling in Pulwama district

Sl No.	Name of Village		Sl No.	Name of Village		Sl No.	Name of Village	
	0-2 Km			**5-10 Km**		31	Jawahir Pora (Lam)	SE
1	Bathon	N	15	Moni Pora	SW	32	Deedar Pora (Goteng)	SE
2	Nagander	NNE	16	Maij	SW	33	Dar Gani Gund	SE
3	Zinetrag	NW	17	Bagh Anayat Ullah	SW	34	Heewan (Yangwani)	SE
	2-5 Km		18	Befroo (DrangahBal)	SW	35	Aripal	SE
4	Sata Pokhran	SSW	19	Lal Pora (Chatdam)	SW	36	Dharam Gund	SE
5	Woyan	SW	20	Krancho	SW	37	Peth Gam Gadpora	SE
6	Shar-I- Shali	SSW	21	Khani Bal	SW	38	Wagar	SE
7	Pranigam	NE	22	Dusoo	SW	39	Syedabad (Pastana)	SE
8	Gulistan	NE	23	Androsa	SW	40	Loru Jagir	SE
9	Hajinar Nor	NE	24	Gund Bal	SW	41	Lorh Gam	SE
10	Sotura	E	25	Mundak Pal	SSW	42	Panzwah	SE
11	Gotru	ENE	26	Ledhu	SSW	43	Seer	SE
12	Nigistan	E	27	Chanda Haro	SW	44	Gwang	SE
13	Khana Gund	SE	28	Patal Bag	SW	45	Gulshan Pora (Khul)	SSE
	Urban Area		29	Let Pora	SSW		**Urban Area**	
14	Khrew (MC)	SW	30	Barsu	SSW	46	Pampora (MC)	SW

Source: Census of India, 2011

2. District Srinagar

Table 74. List of villages falling in District Srinagar

Sl No.	Villages	
		5-10 Km
1.	Khonmoh (CT)	WNW

Source: Census of India, 2011

3.13.6 Demographic profile of area

A study was undertaken with respect to demography, occupational pattern, literacy rate and other important socio-economic indicators of these wards to reveal the socio-economic structure of the entire project area. The summary is given below:

1.District Pulwama

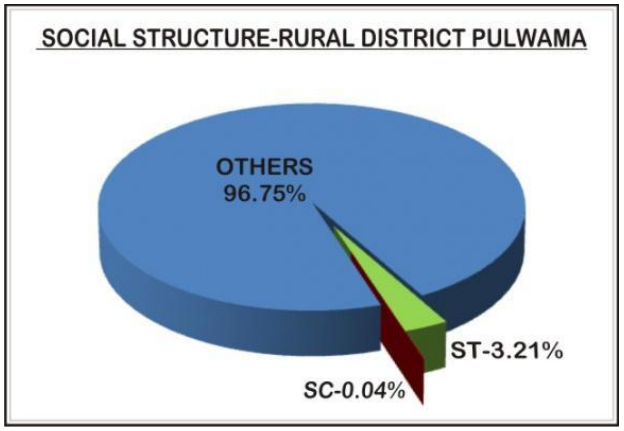
A) Rural Villages

Population

The total population of the study area is 75,279 constituting 11,963 households. The rural sex ratio of the study area as per census 2011 records at 896,whereas the sex ratio (Rural) of the districts involved is 935.

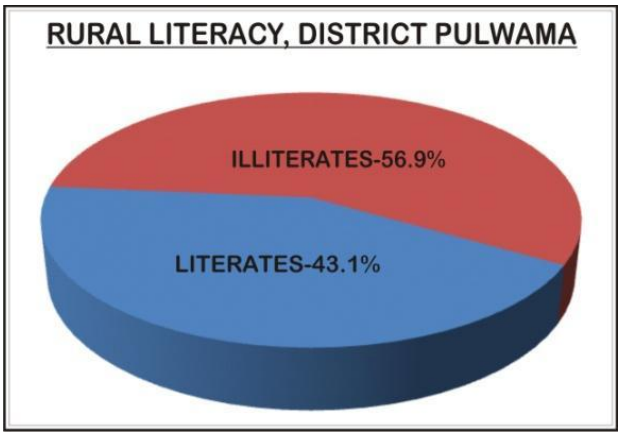
Social Structure

The proportion of Scheduled Caste (SC) population within the study area is 0.04% whereas this proportion in the districts (Rural) is 0.01%. The proportion of Scheduled Tribes (ST) population within the study area is 3.21% whereas this proportion in the districts involved is 4.62%. Graphical representation of social structure in the study area is shown alongside:



Literacy

The total proportion of literate people within the study area is 43.1% of total population. The proportion of Male literates and female literacy within the study area is 48.17% and 32.44% respectively. Rural Literacy within the study area is depicted alongside:



Detailed profile of study area is given below:

Demographic Features of the study area based on Census data 2011

Table 75. Demographic Feature of the Study Area Based on Census Data 2011

Sl No.	Name	No. of HHs	Total Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
1.	Bathon	130	862	950	0	10.56	56.21	75.65	35.04
2.	Nagander	64	351	721	0	0	58.96	71.43	42.11
3.	Zinetrag	117	616	956	0	0	64.72	85.5	43.30
4.	Sata Pokhran	216	1,342	1061	0	13.64	52.27	67.45	37.48
5.	Woyan	932	5,874	1003	0	0	64.12	75.87	52.63
6.	Shar-I- Shali	853	6,178	634	0	5.45	62.81	76.08	41.31
7.	Pranigam	154	870	938	0	92.3	17.35	26.97	6.97
8.	Gulistan	51	316	1000	0	5.38	56.41	70	42.11
9.	Hajinar Nor	71	348	923	0	99.43	18.18	26.87	8.40
10.	Sotura	531	2,920	997	0	28.49	51.18	63.7	38.69
11.	Gotru	232	1,148	1011	0	43.21	49.89	61.67	37.75
12.	Nigistan	232	1,356	968	0	35.84	44.19	53.36	34.78
13.	Khana Gund	270	1,588	965	0	0	64.92	77.53	51.74
14.	Moni Pora	137	983	1002	0	0	53.99	63.05	44.91
15.	Maij	260	1,759	918	0	3.01	60.50	70.64	49.72
16.	Bagh Anayat Ullah	21	141	1136	0	0	66.39	72.88	60.32
17.	Befroo (Drangah Bal)	133	903	1016	0	0	64.83	72.68	57.03

Sl No.	Name	No. of HHs	Total Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
18.	Lal Pora (Chatdam)	235	1,434	962	0	0	52.54	61.38	43.72
19.	Krancho	119	783	1105	0	0	64.29	73.9	55.45
20.	Khani Bal	358	2,486	1016	0	0	64.02	74.57	53.83
21.	Dusoo	109	778	1,026	0	0	71.07	79.55	62.93
22.	Androsa	166	1,058	1,046	0	0	61.28	70.04	53.01
23.	Gund Bal	89	616	962	0	0	74.65	83.98	64.73
24.	Mundak Pal	203	1,256	1,019	0	18.95	58.45	69.85	46.86
25.	Ledhu	823	4,604	973	0	5.63	65.33	77.83	52.8
26.	Chanda Haro	520	3,551	929	0	0	69.96	81.93	57.78
27.	Patal Bag	450	2,639	1,022	0	0.19	50.56	58.74	42.63
28.	Let Pora	828	6,131	767	0.46	0.16	70.53	82.24	54.87
29.	Barsu	440	2,904	945	0	0.72	63.17	74.7	51.17
30.	Jawahir Pora (Lam)	248	1,307	1,008	0	35.2	50.23	60.87	39.89
31.	Deedar Pora Gotengu	63	355	983	0	52.96	37.58	33.95	41.45
32.	Dar Gani Gund	164	1,030	904	0	0	64.68	76.81	51.07
33.	Heewan (Yangwani)	48	288	1,072	0	50.35	41.33	54.46	28.32
34.	Aripal	182	2,142	282	0	0.05	85.38	95.13	48.34
35.	Dharam Gund	94	515	880	0	0	71.17	86.21	54.72
36.	Peth Gam Gadpora	214	1,132	919	0	0	74.63	84.69	63.64
37.	Wagar	193	1,132	1,000	0	0	48.79	61.06	36.62
38.	Syedabad (Pastana)	406	2,465	918	0	0	55.75	69.44	41.09
39.	Loru Jagir	301	1,733	1,010	0	0	60.94	73.21	48.63
40.	Lorh Gam	423	2,324	963	0	13.47	59.9	73.52	45.28
41.	Panzwah	211	1,251	1,041	0	14.15	58.97	72.8	45.81
42.	Seer	147	884	978	0	0	45.77	51.42	39.66
43.	Gwang	89	467	914	0	0	34.74	44.08	24.48
44.	Gulshan Pora (Khul)	436	2,459	935	0	22.16	58.66	70.31	46.43
		11,963	**75,279**	**896**	**0.04**	**3.21**	**43.10**	**48.17**	**32.44**

Source: Census of India, 2011

It may be seen from the above table that the total rural population of the study area is 75,279, varying between 141 in Bagh Anayat Ullah to 6,178 in Shar-I- Shali. Sex ratio was found to be varying from very low 282 in Aripal to as good as 1046 in Androsa. The proportion of SC% was observed as Nil in all the villages except in Let Pora (0.46%). The proportion of ST% was observed as nil in 50% villages, however it varies from 0.05% in Aripal to 99.43% in village Hajinar Nor. The overall literacy rates were found to be varying from 18.18% Hajinar Nor to 85.38% in Aripal. Female literacy rates of Hajinar Nor (8.4%) was observed to be minimum across all villages of the study area.

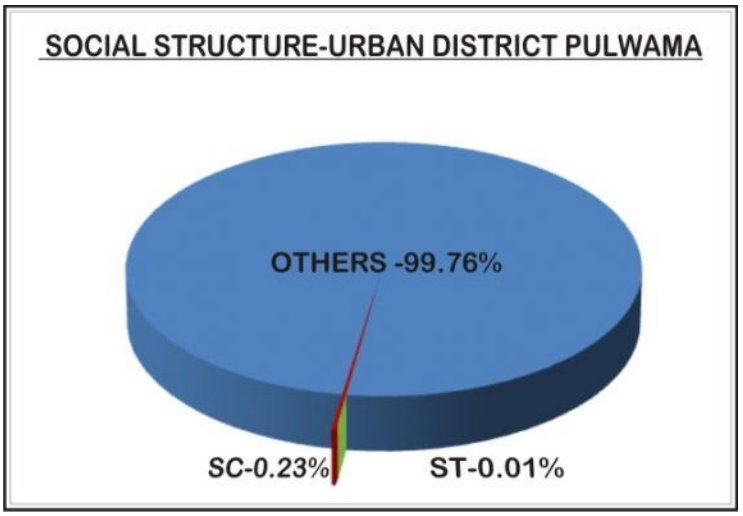
B) Urban Areas

Population

The total population of the study area is 31,531 constituting 4,732 households. The urban sex ratio of the study area as per census 2011 records at 974,whereas the sex ratio of the districts (Urban) involved is 789.

Social Structure

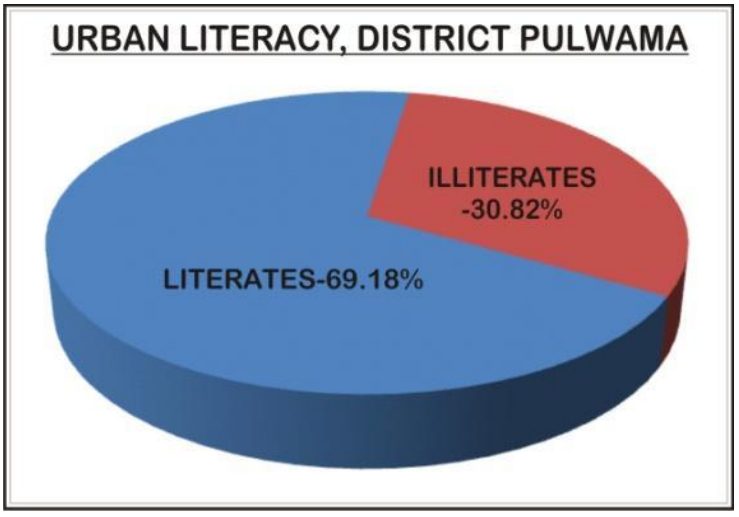
The proportion of Scheduled Caste (SC) population within the study area is 0.01% whereas this proportion in the districts (Urban) involved is 0.43%. The proportion of Scheduled Tribes (ST) population within the study area is 0.23% whereas this proportion in the districts (Urban) involved is 0.52%. Graphical representation of social structure in the study area is shown alongside:



Literacy

The total proportion of urban literate within the study area is 69.18% of total population. The proportion of Male literates and female literacy within the study area is 77.55% and 60.72% respectively. Urban Literacy within the study area is depicted alongside:

Detailed profile of the study area is given below:



Demographic Features of the study area based on Census data 2011

Table 76. Demographic Features of the Study Area Based on Census Data 2011

Sl. No.	Name	No. of HHs	Total Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
45	Khrew (MC)	1,343	9,851	984	0.04	0.03	65.78	75.02	56.49
46	Pampora (MC)	3,389	21,680	970	0	0.32	70.69	78.68	62.61
		4,732	**31,531**	**974**	**0.01**	**0.23**	**69.18**	**77.55**	**60.72**

Source: Census of India, 2011

It may be seen from the above table that the total population of the study area is 31531. Sex ratio was found to be varying from 970 in Pampora (MC) to 984 Khrew (MC). The proportion of SC% was observed to be varying between Nil in Pampora (MC) to 0.04% in Khrew (MC). The proportion of ST% was observed 0.03% in Khrew (MC) to 0.32% in Pampora (MC). The overall literacy rate was found to be 69.18%. Female literacy rates of Khrew (MC) (56.49%) was observed to be minimum.

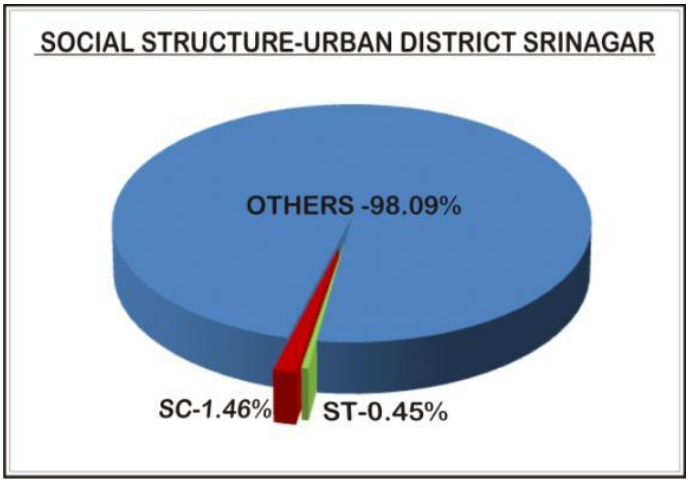
2.District Srinagar (Urban Area)

Population

The total urban population of the district falling within the study area is 2664 constituting 216 households. The sex ratio of the study area as per census 2011 records at 321, whereas the Urban sex ratio of the districts involved is 899.

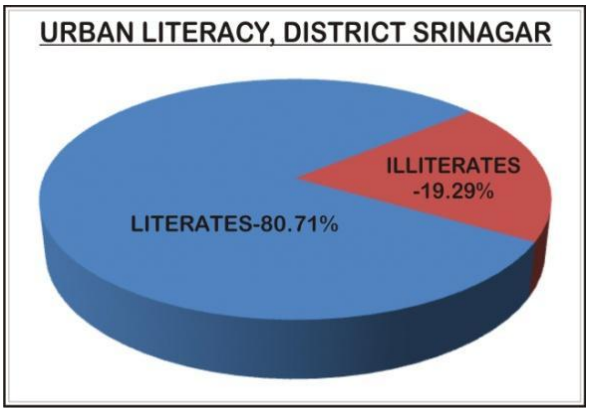
Social Structure

The proportion of Scheduled Caste (SC) population within the study area is 1.46% whereas this proportion in the districts involved is 0.09%. The proportion of Scheduled Tribes (ST) population within the study area is 0.45% whereas this proportion in the districts involved is 0.48%. Graphical representation of social structure in the study area is shown alongside:



Literacy:

The total proportion of literate people within the study area is 80.71% of total population. The proportion of Male literates and female literacy within the study area is 88.18% and 55.22% respectively. Urban Literacy within the study area is depicted alongside:



Demographic Features of the study area based on Census data 2011

Table 77. Demographic Features of the Study Area Based on Census Data 2011 of District Srinagar

Sl No.	Name	No. of HHs	Total Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
47	Khonmoh (CT)	216	2,664	321	1.46	0.45	80.71	88.18	55.22
		216	**2,664**	**321**	**1.46**	**0.45**	**80.71**	**88.18**	**55.22**

Source: Census of India, 2011

It may be seen from the above table that the total urban population of the district Srinagar falling in the study area is 2664. Sex ratio was very low as 321. The proportion of SC% was observed at 1.46%. The proportion of ST% was observed 0.45%. The overall literacy rates were found to be varying from 80.71% and Female literacy rates was 55.22%.

Work Profile of Study Area

1) District Pulwama Rural Area:

The work profile of the study area is depicted in the table given below —

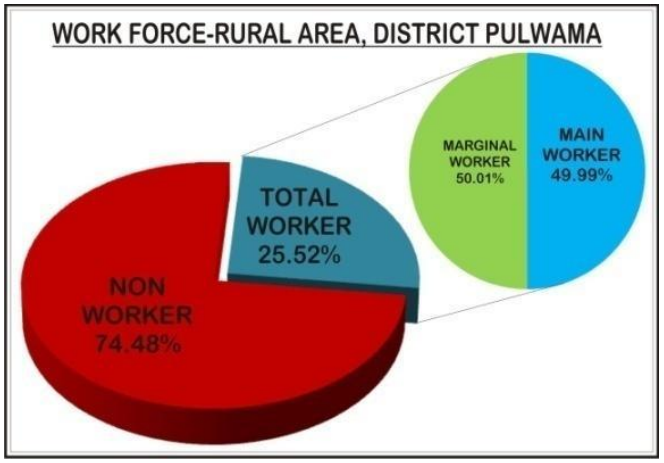
Table 78. Work Profile of the district Pulwama (rural areas)

Sl. No.	Name	Total Population	Total Worker %	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %
1.	Bathon	862	64.39	51.71	48.29	13.51	86.49
2.	Nagander	351	63.25	56.76	43.24	21.62	78.38
3.	Zinetrag	616	61.69	48.68	51.32	37.37	62.63
4.	Sata Pokhran	1,342	54.55	54.37	45.63	25.55	74.45

Sl. No.	Name	Total Population	Total Worker %	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %
5.	Woyan	5,874	31.21	85.76	14.24	60.17	39.83
6.	Shar-I- Shali	6,178	43.72	87.86	12.14	66.94	33.06
7.	Pranigam	870	32.18	79.64	20.36	3.57	96.43
8.	Gulistan	316	28.16	94.38	5.62	23.60	76.40
9.	Hajinar Nor	348	28.74	89.00	11.00	1.00	99.00
10.	Sotura	2,920	39.66	61.31	38.69	19.43	80.57
11.	Gotru	1,148	40.07	55.65	44.35	12.17	87.83
12.	Nigistan	1,356	38.20	66.60	33.40	33.40	66.60
13.	Khana Gund	1,588	52.77	51.31	48.69	20.05	79.95
14.	Moni Pora	983	35.10	81.16	18.84	42.32	57.68
15.	Maij	1,759	29.85	79.24	20.76	56.57	43.43
16.	Bagh Anayat Ullah	141	29.08	95.12	4.88	9.76	90.24
17.	Befroo (Drangah Bal)	903	48.50	50.46	49.54	6.16	93.84
18.	Lal Pora (Chatdam)	1,434	42.89	59.19	40.81	23.58	76.42
19.	Krancho	783	30.52	69.87	30.13	49.37	50.63
20.	Khani Bal	2,486	36.28	65.74	34.26	71.06	28.94
21.	Dusoo	778	62.21	52.89	47.11	25.21	74.79
22.	Androsa	1,058	63.04	52.32	47.68	37.63	62.37
23.	Gund Bal	616	48.21	51.18	48.82	22.22	77.78
24.	Mundak Pal	1,256	40.68	66.73	33.27	59.88	40.12
25.	Ledhu	4,604	29.08	89.84	10.16	55.19	44.81
26.	Chanda Haro	3,551	36.24	69.93	30.07	42.35	57.65
27.	Patal Bag	2,639	29.29	83.96	16.04	62.61	37.39
28.	Let Pora	6,131	44.04	80.89	19.11	67.89	32.11
29.	Barsu	2,904	24.55	90.74	9.26	37.45	62.55
30.	Jawahir Pora (Lam)	1,307	50.65	50.91	49.09	15.86	84.14
31.	Deedar Pora Gotengu	355	29.58	98.10	1.90	38.10	61.90
32.	Dar Gani Gund	1,030	40.87	63.18	36.82	25.42	74.58
33.	Heewan (Yangwani)	288	33.33	73.96	26.04	5.21	94.79
34.	Aripal	2,142	70.63	92.20	7.80	84.67	15.33
35.	Dharam Gund	515	48.74	49.40	50.60	47.41	52.59
36.	Peth Gam Gadpora	1,132	25.71	82.47	17.53	52.92	47.08
37.	Wagar	1,132	32.86	82.53	17.47	60.22	39.78
38.	Syedabad (Pastana)	2,465	34.69	80.35	19.65	37.66	62.34
39.	Loru Jagir	1,733	31.74	68.00	32.00	75.09	24.91
40.	Lorh Gam	2,324	28.06	79.75	20.25	49.54	50.46
41.	Panzwah	1,251	28.22	83.00	17.00	28.05	71.95
42.	Seer	884	27.94	85.02	14.98	13.77	86.23
43.	Gwang	467	25.05	94.02	5.98	30.77	69.23
44.	Gulshan Pora (Khul)	2,459	34.57	64.12	35.88	41.29	58.71
		75,279	**25.52**	**74.66**	**25.34**	**49.99**	**50.01**

Source: Census of India, 2011

It may be observed from the table above that the proportion of the workers is 25.52% of the total population of the study area. The proportion was found to be varying from 24.55% in Barsu to 70.63% in Aripal. The work force was mainly constituted by male to the tune of 74.66. It was also observed that an overwhelming majority 49.99 of the workers were main workers. Workforce graph is given alongside:



B) Urban Areas:

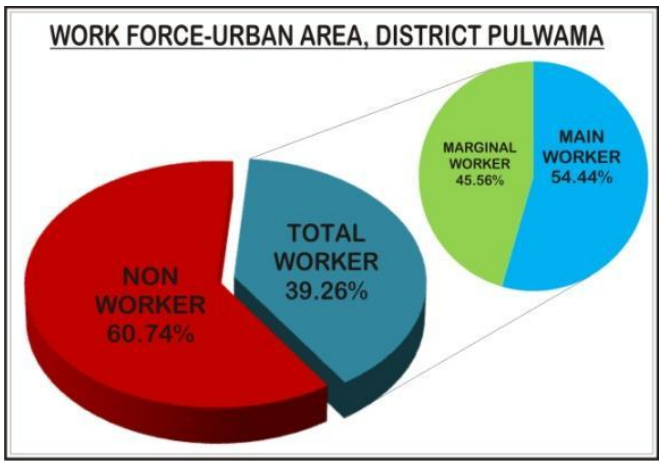
The work profile in urban areas of the study area is depicted in the table given below —

Table 79. Work Profile of the district Pulwama (Urban Areas)

Sl. No.	Name	Total Population	Total Worker %	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %
45.	Khrew (MC)	9,851	50.36	56.2	43.8	43.7	56.3
46.	Pampora (MC)	21,680	34.21	74.02	25.98	61.62	38.38
		31,531	**39.26**	**66.88**	**33.12**	**54.44**	**45.56**

Source: Census of India, 2011

It may be observed from the table above that the proportion of the workers is 39.26% of the total population of the study area. The proportion was found to be varying from 34.21% in Pampora (MC) to 50.36% in Khrew (MC). The work force was mainly constituted by males to the tune of 66.88%. It was also observed that an overwhelming majority 54.44% of the workers were main workers. The workforce is shown alongside.



2. District Srinagar Urban Area:

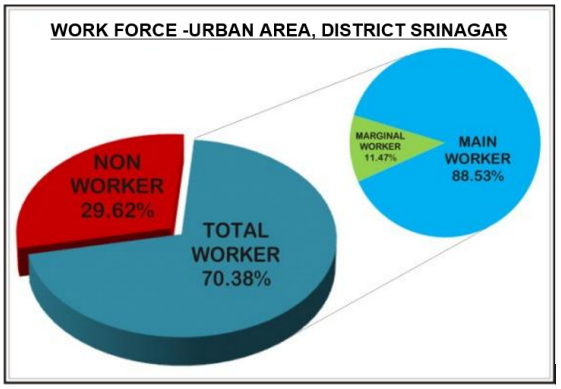
The work profile of the study area is depicted in the table given below —

Table 80. Work profile in District Srinagar Urban Area

Sl. No.	Name	Total Population	Total Worker %	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %
47.	Khonmoh (CT)	2,664	70.38	90.45	9.55	88.53	11.47
		2,664	**70.38**	**90.45**	**9.55**	**88.53**	**11.47**

Source: Census of India, 2011

It may be observed from the table above that the proportion of the workers is 70.38% of the Total population of the study area. The work force was mainly constituted by male to the tune of 90.45. It was also observed an overwhelming majority 88.53 of the workers were main workers. The workforce is shown alongside.



Amenities

Village-wise detail of infrastructural facilities with appreciate to training, scientific facility, water delivery, conversation and transportation facility and power supply, and banking centres are presented in following Analysis of statistics of villages indicates that infrastructural facilities/simple amenities are to be had in most of the villages, as summarised

Table 81. Amenities available in the Study Area

Educational Facilities				
Govt Pre-Primary School (Nursery/LKG/UKG)	Govt Primary School	Govt Middle School	Govt Secondary School	Govt Senior Secondary School
Nil	39	35	10	3

Health Care					
Primary Health Centre	Primary Health Sub Centre	Maternity and Child Welfare Centre	TB Clinic	Hospital Allopathic	Dispensary

7	5	4	Nil	3	7				
Drinking water Facilities					**Communication Facilities**				
Covered Well	Uncovered Well	Hand Pump	Tube Wells/ Borehole	Tank/ Pond/ Lake	Post Office	Sub Post Office	Tele-phone	Public Call Office /Mobile	
8	5	17	16	5	6	5	19	11	
Road Facilities							**Transportation Facilities**		
Open Kuccha Drainage	Black Topped (pucca) Road	Gravel (kuchha) Roads	Water Bound Macadam	All Weather Road	Foot path		Public Bus Service	Taxi	Vans
31	20	44	Nil	44	44		14	14	12
Bank Facilities				**Power Facilities**					
Commercial Bank	Cooperative Bank	Agricultural Credit Societies	Self - Help Group (SHG)	Power Supply For Domestic Use	Power Supply For Agriculture Use	Power Supply For Commercial Use	Power Supply For All Users		
2	1	3	3	44	4	17	44		

Source: Census of India, 2011

Primary Field Survey

Primary Socio-economic surveys were conducted in the following 8 villages with help of different representatives of villages in the study area. The sampling methods followed are proportionate and purposive methods for selecting respondents (male and female) during household survey. For the official information about the villages were collected from the village Sarpanch/Gram panchayat member/Govt. School Teachers, Post Office & AnganWadi. All sampling locations selected based on distance & direction as below:

Table 82. Primary Field Surveyed Villages

Sr. No.	Village Name	Direction from Core Zone	Distance Range in Km
1	Zantrag village	Project Area	0-2km
2	Bathon village	N	0-2km
3	Satta pakhran village	S SW	2-5km
4	Khrew village	SW	2-5km

The result of the survey conducted is summarised as below:

Population details

Table 83. Population Details

Sr. No	Villages/Town	HouseHold in census 2011	HouseHold during survey	Population in census 2011	Population during survey
1	Zantrag village	117	185	616	855

2	Bathon village	130	17	862	1200
3	Satta pakhran village	216	250	1342	1662
4	Khrew village	1,343	1,550	9,851	11,561

The population in all the villages increased.

Occupation

During the survey it was found that Agriculture, Service, Labour, Private Job, Private Business etc. were principal work in the villages. Area wise occupation details is tabulated and presented below:

Table 84. Occupation Details

Sl. No.	Name of Village Surveyed	Agricultural & Labour	Private Job	Govt. Job	Self Employed
		Values are in percentage (%)			
1	Zantrag village	40	30	5	25
2	Bathon village	50	30	5	15
3	Satta pakhran village	50	20	5	25
4	Khrew village	30	45	10	15

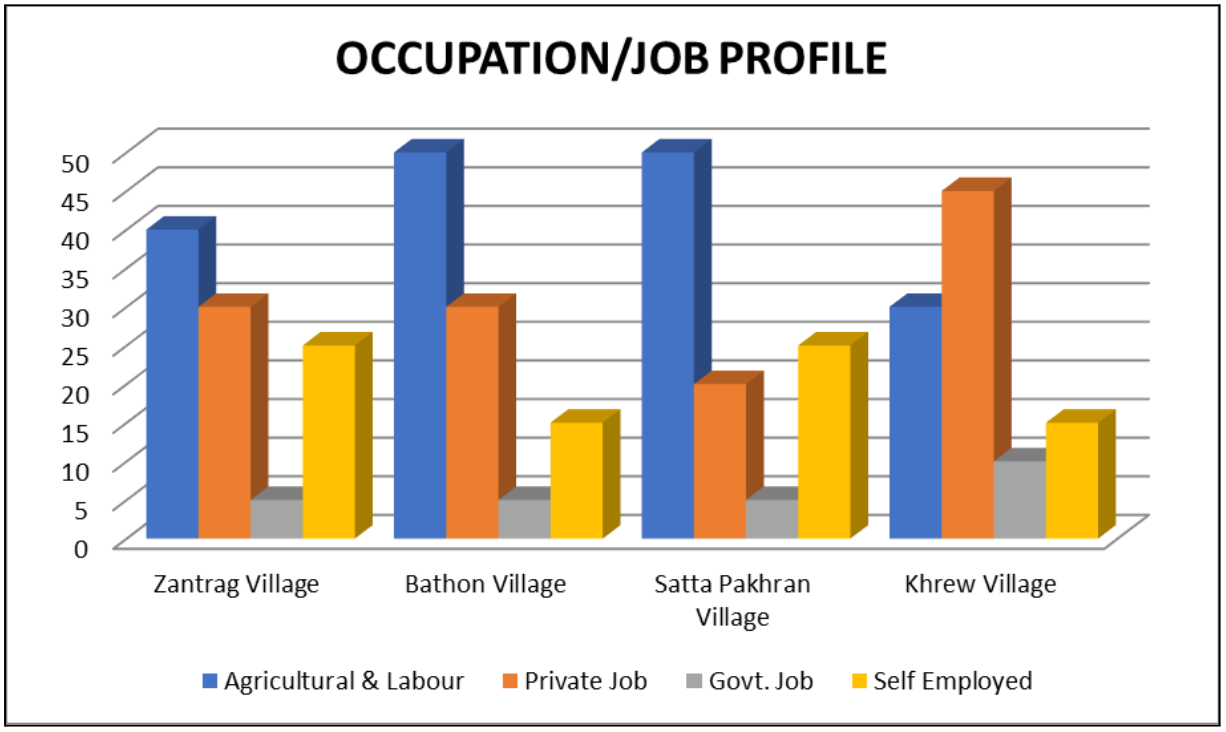


Figure 50. Occupation. / Job Profile

Other infrastructure facilities

Table 85. Other Infrastructure Facilities

Sl. No.	Village	School	Hospital	Post office	Bank	Market	Electricity
1	Zantrag village	Aganawadi,Primary School,Middle School,High School	NIL	NIL	NIL	Private Shop	YES
2	Bathon village	Aganawadi,Primary School	NIL	NIL	NIL	Private Shop	YES
3	Satta pakhran village	Aganawadi,Primary School,Middle School	NIL	NIL	NIL	Private Shop	YES
4	Khrew village	Aganawadi, Primary School,Middle School,High School, Senior Secondary School	Hospital Private, clinic Private	Yes	Yes	Local Market	YES

Water source

Main water sources in the surveyed area were bore well and community supply.

Main crops

Agriculture plays an important role in the economy of the District. The agriculture products like paddy, oil seeds, fodder, saffron & milk are the main contributors to the Gross Domestic Product (GDP) of the District. Area sown more than once is about 0.30 lac hectares & the productivity of the land in the district is higher than in any other District in the Union Territory. District Pulwama is famous for saffron cultivation which is mainly grown in Karewa lands of Pampore, Kakapora and Pulwama blocks. The area under saffron cultivation during 2010-11 was 2414 hectares. Among the fruits, apple, almonds, walnut & cherry are the important one produced in this District.

Sanitation

All surveyed areas had 80-100% toilet facility; sanitation facility was satisfactory. During the survey, it was observed that drainage lines were mixed type (open, semi pakka, covered etc).

Main commodities details

Main commodities have been taken from DCHB 2011. Main commodities of the district are paddy, oil seeds, fodder, saffron & milk.

3.14 Traffic survey

The traffic study was done on the nearby road ascertain the present traffic was on the road and thereafter impact be because of the addition of traffic due to the Proposed Expansion of Cement Plant.

Methodology:

1. Manual counting of vehicle plying on the roads
2. To maintain the precision of the report, manual shift is given to the surveyor.
3. The vehicles are then calculated by converting the same in PCU values.

PCU values are used to convert various vehicles into one standard vehicle i.e. Passenger car units

Table 86. Vehicle PUC Value

S. No.	VEHICLE TYPE	PCU VALUE
1	Car	1
2	Two-wheeler	0.5
3	Truck/ Bus	4.5
4	Auto	1.2
5	LCV	2
6	Tractor and Trailer	5
7	Cycle rickshaw	0.5

FACTORS and ASSUMPTIONS: Version Factor (Ref: IRC 106, 1990)

Survey conducted details:
Traffic survey was carried out on both sides (up & down) of the Pampore-Zantag Road and Approach Road. Vehicles were observed and the count was recorded for 17 hours. The table below represents the total no. of vehicles over 17-hour duration.

I. Traffic Analysis: Pampore-Zantrang Road, 2 Lane -7.5 Meters

Table 87. Traffic Analysis (Pampore- Zantrang Road)

Hours	Baseline					Incremental					
	Car	Bus/ Truck	Two Wheeler	Others/ Auto	PCU/ Hr	PCU/Hr	Incremental PCU/Hr	Capacity of Road in PCU/Hr	LOS Baseline	LOS Incremental	% increase
06:00- 07:00	48	116	55	11	343	29	372	2550	0.135	0.146	8.48
07:00- 08:00	54	128	57	13	380	34	414	2550	0.149	0.162	9.01
08:00-09:00	66	130	63	17	403	58	461	2550	0.158	0.181	14.29
09:00-10:00	75	114	66	12	373	58	431	2550	0.146	0.169	15.44
10:00-11:00	64	108	64	14	350	14	365	2550	0.137	0.143	4.11
11:00-12:00	53	110	59	11	338	35	372	2550	0.132	0.146	10.23
12:00-13:00	56	116	55	13	354	14	368	2550	0.139	0.144	4.07
13:00-14:00	53	102	57	12	320	29	349	2550	0.126	0.137	8.99
14:00-15:00	46	112	53	10	331	14	345	2550	0.130	0.135	4.35
15:00-16:00	55	107	50	9	325	35	360	2550	0.127	0.141	10.71
16:00-17:00	50	114	56	13	345	14	359	2550	0.135	0.141	4.17
17:00-18:00	61	100	54	14	325	32	357	2550	0.127	0.140	9.75
18:00-19:00	54	114	57	13	350	58	408	2550	0.137	0.160	16.46
19:00-20:00	61	111	65	11	351	39	390	2550	0.137	0.153	11.24
20:00-21:00	64	110	63	12	352	14	366	2550	0.138	0.144	4.09
21:00-22:00	62	109	57	11	343	29	372	2550	0.135	0.146	8.40
22:00-23:00	46	105	53	10	314	42	356	2550	0.123	0.140	13.28
Average	57	112	58	12	347	38	379	2550	0.14	0.15	9.24

Summary of Traffic Survey

Table 88. Summary of Traffic Survey

	Parameter	Existing	Proposed
Pampore-Zantag Road	WIDTH (m)		7.5
	Carrying Capacity (PCU/ Hr)		2,550
	Traffic (PCU/Hr)	347	38
	LOS	0.14 i.e. Cat "A"	0.15 i.e cat "A"

II. Traffic Analysis: Approach Road, 2 Lane -6 Meters

Table 89. Traffic Analysis (Approach Road)

Hours	Baseline	Incremental				

	Car	Bus/ Truck	Two Wheeler	Others/Auto	PCU/Hr	PCU/ Hr	Incremental PCU/Hr	Capacity of Road in PCU/Hr	LOS Baseline	LOS Incremental	% increase
06:00- 07:00	2	94	11	1	216	29	245	2550	0.085	0.096	13.51
07:00- 08:00	3	108	15	2	251	34	285	2550	0.098	0.112	13.67
08:00-09:00	5	110	17	1	257	58	314	2550	0.101	0.123	22.44
09:00-10:00	8	98	15	3	235	58	292	2550	0.092	0.115	24.54
10:00-11:00	4	92	16	1	216	14	230	2550	0.085	0.090	6.68
11:00-12:00	2	96	14	5	226	35	261	2550	0.089	0.102	15.28
12:00-13:00	4	100	13	4	235	14	250	2550	0.092	0.098	6.12
13:00-14:00	2	98	14	3	228	29	257	2550	0.089	0.101	12.62
14:00-15:00	5	95	10	2	221	14	236	2550	0.087	0.092	6.50
15:00-16:00	2	94	15	2	219	35	254	2550	0.086	0.099	15.92
16:00-17:00	2	102	12	3	236	14	250	2550	0.093	0.098	6.10
17:00-18:00	4	86	10	2	201	32	232	2550	0.079	0.091	15.79
18:00-19:00	2	98	11	2	226	58	283	2550	0.088	0.111	25.54
19:00-20:00	1	88	10	1	201	39	240	2550	0.079	0.094	19.62
20:00-21:00	3	94	10	2	217	14	232	2550	0.085	0.091	6.63
21:00-22:00	2	88	15	3	207	29	236	2550	0.081	0.092	13.93
22:00-23:00	1	80	10	1	183	42	225	2550	0.072	0.088	22.79
Average	3	95	13	2	222	38	254	2550	0.09	0.10	14.57

Summary of Traffic Survey

Table 90. Summary of Traffic Survey (Approach Road)

	Parameter	Existing	Proposed
Approach Road	WIDTH (m)		6
	Carrying Capacity (PCU/ Hr)		2,550
	Traffic (PCU/Hr)	222	38
	LOS	0.09 i.e. Cat "A"	0.10 i.e cat "A"

Table 91. LOS Value as per IRC 106:1990

S.no	LOS Value (Ratio of V:C) (V/C)	Category	Inference based on IRC 106: 1990
1	0-0.2	A	Represents a condition of free flow; individual users are generally unaffected by others in the traffic and this condition is generally considered in the Excellent Category.
2	0.2-0.4	B	Represents a condition of stable flow; individual users have a level of comfort and convenience but less than that of A.
3	0.4-0.6	C	Represents a condition of zonal stable flow; individual users are starting in a bit of discomfort; users start to feel inconvenience due to presence of other users on the road. General level of discomfort increases and there is a noticeable decline in convenience.

4	0.6-0.8	D	Represents the level of stable flow; Level of comfort of users is poor and discomfort is significant in the flow of traffic. This category traffic streams are extremely susceptible to traffic problems.
5	0.8-1	E	Represents operating conditions close to capacity level; freedom to traffic stream is low and the speed is relatively uniform but very less. Comfort and convenience is relatively poor and discomfort is visible.
6	1 or above	F	Breakdown Flow; These streams often break down, susceptible to long delays and therefore there is huge discomfort in these streams.

Conclusion :

The carrying capacity of the Pampore-Zantag Road is much higher than the proposed traffic volume. The traffic (to & fro) from the Proposed Expansion of Cement Plant will not create any traffic congestion.

The volume/capacity ratio is being same from 0.14 to 0.15 with LOS being “A” to “A” only

4. Anticipated environmental impact & mitigation measures

Prediction of impacts is the most important component in the Environmental Impact Assessment studies. Several scientific techniques and methodologies are available to predict impacts of developmental activities on physical, ecological and socio-economic environments. Such predictions are superimposed over the baseline (pre-project) status of environmental quality to derive the ultimate (post-project) scenario of environmental conditions. The prediction of impacts helps to minimise the adverse impacts on environmental quality during pre-and post-project execution.
Generally, the environmental impacts can be categorised as either primary or secondary. Primary impacts are those, which are attributed directly by the project and secondary impacts are those, which are indirectly induced and typically include the associated investment and changed patterns of social and economic activities by the proposed actions.

4.1. Impact assessment methodology

For the proposed project, the impact assessment shall be performed in following steps:

- Identification of interactions between activities and environmental receptors.
- Identification of potentially significant environmental impacts.

Based on this preliminary identification, environmental indices that are likely to be impacted due to the project are:

- **Land use / Land cover:** The land use of existing land has already changed to an industrial unit. No further additional land will be there for expansion.
- **Air quality:** Dust generation during construction/installation, vehicle movement, loading/unloading, manufacturing process, transportation and operation of DG set, APCS, etc.
- **Noise:** Vehicle movement during construction, operation of DG set, APCS, manufacturing process, loading/unloading.
- **Water:** Disposal of waste water from construction activity/ labour, process water (cement makeup), washing and other domestic use.
- **Soil:** Excavation activity & soil contamination.

- **Storage and handling** of raw material, solid and hazardous waste.
- **Ecology and Biodiversity:** Construction activities and emission from operational activities may have an effect on the fauna and the existing plantation of the study area.
- **Socio – Economic:** There will be both Positive and negative impact. Positive impact due to creation of jobs and increase in indirect income. Indirect impact on the surrounding environment due to air emissions, solid waste generation and Noise generation
- **Occupational health, community Health and safety:** Occupational risk during various activities associated with construction and the running of the project.

4.2. Potential impacts during construction/ installation phase of Line-II

4.2.1. Activity - construction of new line II, equipment foundation etc.

Aspects:

- Increased dust generation & dust emission
- Water requirement & Deterioration of water quality
- Noise emission through construction
- Soil erosion
- Stagnation of wastewater & run off water
- Generation of construction & demolition waste
- Increased noise level
- Generation of C&D waste

Table 92. Construction of New Line II, Equipment Foundation etc.

Environmental component	Impact	Proposed Mitigation
Air Environment	• Increased PM value generation may lead to respiratory problems like occupational respiratory diseases, asthma etc. to workers. • Increased dust generation due to construction activity and handling of C&D waste may lead to degradation of air quality which would be harmful for workers & nearby people.	• Water sprinkling will be done to reduce the dust generation. • Construction and Demolition Waste generated will be properly stacked and covered within the project site for due course of time before reuse or disposal. • Nose masks will be provided to the labourers working in dust-prone areas.

	• Handling of C&D waste can cause the generation of dust which can cause problems in breathing to the construction workers and nearby population. Emission of VOCs from paints can cause irritation in eyes, nose and throat, and can cause difficulty in breathing and nausea.	• Flexible dust suppression systems (water spray) will be done as per the requirement at the construction site.
Water Environment	• For construction activities, 26 KLD water will be required. Utilisation of fresh water may impact the water demand of the vicinity. • During the construction period, stagnation of water & run off water may lead to breeding of mosquitoes & water runoff can lead to soil erosion and Soil runoff if comes in contact to water body, may deteriorate its quality.	• STP treated water will be used for construction purposes, as much as possible as compared to fresh water. • During the construction period, runoff from the construction site will not be allowed to stand (water logging) or enter the roadside or nearby drain. • The runoff due to rain water from the site will be collected and reused.
Land Use	• There is no impact	• None
Soil Environment	• Soil erosion may occur if soil is disturbed, left bare, and exposed to the abrasive action of wind and water.	• Proper care will be taken while stacking/storage of excavated material.
Ecology & Biodiversity	• Increased PM level will result in deposition of dust on leaves which may cause decrease in transpiration rate of flora with dense foliage in surrounding areas. • Increased noise & vibration may cause disturbance of existing flora & fauna.	• Water sprinkling will be done to reduce the dust generation. • All activities will be carried along within the site where there is no habitat of flora & fauna and the exposure of noise to the vicinity is very less due to noise barriers. However, all machineries will be checked and maintained properly to reduce the noise level.
Noise & Vibration	• Noise generation along with vibration due to operation of concrete mixer (85 dB(A)), handling of construction materials, loading and unloading of C&D waste and masonry works may cause psychological & physiological effects like annoyance, headache, Auditory impact, increase in heart rate and blood pressure in elderly people, workers & people in the vicinity.	• The noise will be limited only for specified periods of construction and most of the activities will be carried in the daytime only. • Provision of protective devices like earmuffs/plugs to the workers will be done. -Ready Mix concrete will be used instead of a concrete mixer so no noise generation will be there due to it. • Proper training will be given to the workers regarding handling of construction materials. Workers will not be allowed to throw the construction materials like bricks, debris, etc. from height. • Loading and unloading of C&D waste will be done from loaders/excavators directly to tippers/trucks to ensure minimal noise generation. Workers will be provided with ear plugs/ear muffs. • Machines and equipment will be properly greased, lubricated and regularly maintained and shall be provided with vibration isolators and noise damping, construction will be done during the day time only, proper barricading of the project site will be done and maintained during the construction.

		• Appropriate PPE like ear plugs and muffs will be provided to the workers at the project site. Also, acoustic flooring using tiles will be done in the admin building so that it acts as a noise absorber. • Proper barricading will be done around the project site which helps in controlling noise emission to & from the site to some extent.
Hydrology & Geology	• Excavation will disturb the natural drainage of the area.	• The drainage of the core zone will be modified. Drains will be constructed to channelize the surface runoff.
Solid & Hazardous waste	• Construction debris & waste materials like cement bags, steel in bits and pieces and packaging materials etc. generated will decrease the aesthetic value of the site, dust emissions and unhygienic environment.	• Recyclable waste construction material will be sold to authorised recyclers. • The construction debris will be used within the site for filling floors, roads, aggregate for mortar etc. to the extent feasible. Remaining will be disposed off at the C&D waste disposal facility.

4.2.2. Activity- Installation of machinery of line II

Aspects:

- Emission of dust
- Increase in PM level
- Generation of noise

Table 93. Activity- Installation of machinery of Line II

Environmental components	**Impact**	**Proposed Mitigation Measures**
Air Environment	• Dust will be generated due to the installation of the machinery and other equipment within the project site, which may cause respiratory problems to the workers and decrease the aesthetic look of the area.	• Water sprinkling will be done to reduce the dust generation. • Flexible dust suppression systems (water spray) will be used. • Soil or mud that will be generated from the project site during the installation of machinery will be properly stacked and covered within the project site for due course of time and if required water sprinkling will be done on the muck so that it may not blow off.
Water Environment	• No major impact envisaged	• None
Land Use	• None	• None
Soil Environment	• None	• None
Socio-Economic	• Positive impact by introduction of employment during the activity	• Increased earnings lead to better living conditions and better infrastructure in the area.

Ecology & Biodiversity	• Increased PM level will result in deposition of dust on leaves which may cause decrease in transpiration rate of flora.	• Water sprinkling will be done to reduce the dust generation.
Noise & Vibration	• Drilling and hammering for installation of different equipment /machinery may generate noise and vibration. • Drilling at high frequency may cause damage to nerves, tendons and muscles of the driller which may cause vibration white finger and may also cause psychological effects like annoyance and headache.	Drilling machines will be of reputed make and in good condition and drillers may be provided anti-vibration gloves and earmuffs /plugs.
Hydrology & Geology	• Spillage of Oil & chemicals, if in any case encounters with water bodies can deteriorate the groundwater & surface water body which in turn may affect life also.	• The hazardous waste generated will be used oil/used grease only. Used Oil/used grease will be stored in HDPE drums and kept in covered rooms under lock and key and will be sold to authorized vendors only or burnt in kiln after necessary permission.
Solid & Hazardous Waste	• None	• None

4.2.3. Activity- operation of construction / installation of machinery (DG set, heavy machinery etc.)

Aspects:

- Used oil generation
- Dust generation
- Oil & chemical spillage
- Noise generation

Table 94. Operation of Construction/ Installation of Machinery (DG Set, Heavy Machinery etc.)

Environmental components	**Impact**	**Proposed Mitigation Measures**
Air Environment	• Emissions from the use of construction machinery will cause respiratory problems to the workers at site and nearby population. • Pollutants emitted from the stack will increase the Ground Level Concentration of pollutants which will affect the respiratory health of people in the nearby area. • Generation of dust from the operation of construction machinery. • Spillage of Diesel, used oil, chemicals may result in emission of VOCs in the air environment which will cause irritation	• Adequate stack will be provided in order to minimise the GLC. Low Sulphur fuel will be used in operation of DG sets. Personal Protective Equipment like nose masks will be provided to the construction workers. • Proper maintenance of construction equipment/ machinery, etc. • Dust suppression and water sprinkling systems will be installed for suppression of particulates.

	in eyes, nose and throat, difficulty breathing and nausea.	
Water Environment	• Spillage of oil & chemicals, if in any case encounters water bodies can deteriorate the ground-water & surface water body. Which in turn may affect life also.	• The hazardous waste generated from the plant is used oil. Due permission from concerned SPCB, J&K has been taken to burn the used oil in kilns or disposed to authorised vendors.
Land Use	• None	• None
Soil Environment	• Spillage of diesel, chemicals, if in any case encounters with soil & the contaminated soil.	• Procedures for maintenance of equipment would ensure that this risk is minimised, and clean-up response is rapid if any spill occurs. • Lubricating waste oil will be collected separately in HDPE drums and handed over to the authorised outside agency.
Socio-Economic	• Noise due to operation of DG Set and machinery can cause Hypertension and irritability in behaviour. • Impact due to sudden slip/breakage of machinery can cause injury to workers.	• Acoustically enclosed DG Sets can reduce the noise level to tolerable limits. • Provision of Ear Plugs to workers can reduce the impact of noise on Ears of workers. • Care will be taken so that there is no slip of the machine. Also proper regular maintenance will be done so that no breakage of machines happens in the project site.
Ecology & Biodiversity	• Increase in PM level will result in deposition of dust on leaves which may cause decrease in transpiration rate of flora	• Water sprinkling will be done at the site to reduce dust emission.
Noise & Vibration	• Noise and vibration generated due to the operation of DG set and other machinery and equipment may cause physiological and psychological effects on labourers like annoyance, problems like speech interference, sleep disturbance, headache, Auditory impact, increase in heartbeat of elderly people. Running of DG sets will cause vibration generation in the immediate surrounding of DG set area.	• DG sets will be bought acoustically enclosed meeting the norms prescribed by CPCB and will be for emergency use only. • Already 20m height wall has been constructed all around the plant boundary which acts as a noise barrier. Also, there is an existing plantation which helps in attenuation of noise level. • Less noise producing machinery will be purchased and will be properly lubricated and regularly maintained. • Machineries will be equipped with vibration isolators wherever possible. • Provision of protective devices like ear muffs /plugs to the workers will be done.
Hydrology & Geology	• Leakage of Diesel/ petrol from vehicles, if in any case comes in contact with the water body then it may deteriorate the groundwater	• Spillage will be managed by detection of leaks in the first place from boxes, structures or vessels.
Solid & Hazardous Waste	• None	• None

4.2.4. Activity- transportation (raw material, labour)

Aspects:

- Vehicular emission
- Diesel/petrol leakage
- Road congestion and breakage of roads
- Dust emission
- Noise generation

Table 95. Activity- transportation (raw material, labour)

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	• Gaseous emissions from vehicles used for transportation will affect the health of construction workers and nearby population. • Leakage of petrol/diesel may result in emission of VOCs in the air environment which may cause irritation in eyes, nose and throat, difficulty in breathing and nausea. • Transportation of construction material shall result in dust emission which will affect the respiratory health of construction workers and nearby population	• Vehicles with valid PUC certificates will be used for transportation of construction material. • The vehicle used for transportation will comply with the conditions stipulated by SPCB in addition to the requirements mentioned in Motor Vehicle Act, 1988 (59 of 1988). Construction material will be transported in closed and covered trucks. • Water sprinkling will be carried out for dust suppression from movement of transport vehicles. • Plantation of trees around the project periphery will be carried out.
Water Environment	• If dust emitted gets deposited on the water body, it can deteriorate the water quality. • If raw material falls down near or on the water body it can deteriorate the water quality.	• The vehicles carrying construction material and construction debris will be cleaned before it is permitted to ply on the road.
Land Use	• None	• None
Soil Environment	• Contamination of soil would occur due to Diesel/ petrol seepage into the soil if it occurs.	• Maintenance of vehicles would ensure that this risk is minimised, and clean-up response is rapid if any spill occurs.
Socio-Economic	• Vehicular emission like SO_2, NOx etc. can impact the health of workers and create irritation in eyes, breathing issues, bronchitis etc. • Increased PM2.5 and PM10 Level will result in deposition of dust particles in lungs leading to bronchitis and breathing problems. • Diesel and petrol leakage can cause blast/ fire in the area leading to human loss/ inflammable material. Leakage also leads to loss of precious resources. • Road congestion/ increase in traffic can lead to accidents, delay in reaching a place.	• Only PUC controlled vehicles will be allowed to bring material to the project site. • Regular periodic interval sprinkling shall be done to avoid dust emissions. • Maintenance shall be done in the vehicles, so as to avoid Leakage of Petrol/diesel. No wastage of resource shall be permitted. • Proper traffic movement and traffic planning shall be permitted so that there are no incidents of accidents/ traffic jams.

Ecology & Biodiversity	• Vehicular emission like SO_2, NOx etc. can inhibit the growth of plants and premature leaves senescence. Increased PM Level will result in deposition of dust on leaves which may cause decrease in transpiration rate of flora	• Vehicles used in the transportation of construction material will have a PUC certificate. • Water sprinkling will be done to reduce the dust generation Dust suppression systems (water spray) will be provided as per requirement at the construction site.
Noise & Vibration	• Due to transportation of construction materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects on workers like annoyance, speech interference, headache, Auditory impact, increase in heartbeat of elderly people. There will not be much impact due to vibration on project	• Barriers of noise absorbing materials with adequate height will be maintained throughout the boundary of the project site. Plantation within the project site will be done which will dampen the noise.
Hydrology & Geology	• Vehicular emission & dust emission if deposited over the surface of the water body may deteriorate the water quality and thereby affecting aquatic life and making water unfit for consumption. • If raw material falls down near or on the water body it can deteriorate the water quality.	• Transportation vehicles used for disposal of used oil will be covered. Measures will be taken to avoid spillage of oil & it will be given to approved and experienced vendors only to reduce the risk of litter.
Solid & Hazardous Waste	• Due to improper handling of raw material & waste during transportation, littering of waste will occur leading to unhygienic conditions.	• Proper care will be taken while handling of raw material & waste during transportation to avoid littering of it on roads and sites.

4.2.5. Activity- working and daily activity of labour

Aspects:

- Solid waste & E-waste generation
- Water requirement & waste water disposal

Table 96. Activity- working and daily activity of labour

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	• Biodegradable Waste generation may lead to odour problems if not stored properly & treated within time.	• The generated organic waste will be composted & used as manure for plantation.

Water Environment	• For approx. 350 labours, 16 KLD of water will be sourced from the existing borewell and this will lead to waste water generation. The waste-water if not properly disposed off, then it can deteriorate the surface water quality of nearby water bodies by increasing the no. of pathogens, BOD, COD, TSS etc. and making water unfit for consumption. It will also affect aquatic life.	• The water required during construction of the project will be used for domestic and flushing activity of the labour which will be sourced from existing Borewell. Domestic wastewater will be generated from labours and will be treated in mobile STP. • Temporary toilets will be provided.
Land Use	• None	• None
Soil Environment	• Impact on soil due to improper disposal of solid waste & liquid waste includes the leaching from biodegradable waste and effect on flora from spillage of waste on soil.	• During the construction phase, 13 KLD of domestic wastewater will be generated which will be treated in mobile STP.
Socio-Economic	• Generation of Solid waste may cause nuisance due to bad smell if not properly managed & treated. • Generation of Waste water may cause unhygienic conditions in the area if not disposed of properly.	• Solid waste generated during the construction phase will be sent to an allocated solid waste storage area where it will be composted and further used as manure. No waste shall be allowed to create spillage in the area. • Wastewater shall be channelised to mobile STP in which the wastewater shall be treated and the treated water shall be used in sprinkling and green areas.
Ecology & Biodiversity	• None	• None
Noise & Vibration	• None	• None
Hydrology & Geology	• Disposal of untreated waste water if it infiltrates into the ground-water may deteriorate the quality of ground-water.	• 13 KLD of domestic wastewater will be generated which will be treated in mobile STP during the construction phase.
Solid & Hazardous Waste	• For approx. 350 labours, 53 kg/day of solid waste will be generated. Improper storage and disposal of Biodegradable waste will enhance the risk of microbial contamination, population, will enhance the risk of disease occurrence and cause foul smell. It will attract the vectors.	• Solid waste from the labours will be properly collected, stored in respective colour coded containers. • Total 53 kg/day of solid waste will be generated, out of this 21 kg/day will be organic waste which will be composted into manure and will be used for plantation and the rest 32 kg/day will be inorganic waste which will be given to authorized vendors. • Recyclable materials like aluminium, steel, wood pieces, cement bags, plastic containers, cartons, glass etc. will be given to recyclers. • E-waste if generated will be sent to authorised vendors.

4.3. Operational phase

4.3.1. Activity:loading & unloading storage of raw material

Aspects:

- Generation of PM, and dust
- Spillage of raw material
- Generation of noise
- Generation of solid waste, packaging material

Table 97. Activity:loading & unloading storage of raw material

Environmental Components	Impact	Mitigation Measures
Air Environment	• Dust and Particulate matter will be generated due to storage of raw material, loading and unloading within the project site such as Iron ore, gypsum, limestone, clay/ silica, coal, which may cause respiratory problems to the workers and decrease the aesthetic look of the area. • Cement dust will be generated in the packing section which causes respiratory problems for workers.	• Workers will be trained properly regarding handling of raw materials/chemicals, appropriate PPEs like nose mask and goggles will be provided to the workers. • If required, water will be sprayed at the dust generation point. • To control fugitive emissions, water sprinkling at coal & limestone storage yards. • For proposed expansion installation of mist fogging system will be done to control air emission. • Storage of raw materials will be done in covered sheds. And water sprinkling will be done to avoid dust generation. • Water tankers will be deployed for water sprinkling at all the raw material stock yards and cement loading areas.
Water Environment	• Impact due to the cement industry's water environment is insignificant due to loading, unloading & Storage activities. • Emissions from material handling, loading, and unloading may pollute the surrounding air, and the dust particles in air may settle on water bodies and can pollute the water body.	-Water tankers have been deployed for water sprinkling at coal & limestone storage yards. -For dust emissions from roads, all loading and unloading areas, Road Sweeping machines have been deployed for cleaning dust. -Same will be followed for proposed installation of new line-II in addition to installation of mist fogging system.
Land Use	• None	• None
Soil Environment	• Changes in soil texture due to settling of air borne dust. This will lead to change in porosity, permeability & other such physical characteristics of soil of the area.	• Soil samples will be collected and tested at regular intervals for the nearby areas. This will help in mitigation of any harmful impact on soil due to the project activity, if any.

Socio-Economic	• Loading - Unloading of raw material may lead to dust generation in turn leads to generation of PM2.5 and PM10. The increased PM will increase breathing issue and deposition in lungs leading to bronchitis • Noise due to operation of DG Set and machinery can cause Hypertension and irritability in behaviour. • Generation of Solid waste may cause nuisance due to bad smell if not properly managed & treated. •	• Regular periodic interval sprinkling shall be done to avoid dust emissions. • Acoustically enclosed DG Sets can reduce the noise level to tolerable limits. • Provision of Ear Plugs to workers can reduce the impact of noise on ears of workers. • 33 kg/day of biodegradable waste will be composted into manure and used in plantations. No waste shall be allowed to create spillage in the area.
Ecology & Biodiversity	• Spillage of waste, fuel or raw material on soil during loading - unloading activities can inhibit the growth of plants and cause premature leaves senescence. Increased PM level will result in deposition of dust on leaves which may cause a decrease in transpiration rate of flora.	• The loading unloading activity will be done with a safe zone defined and in a marked safe area. All systems and connections will be maintained and checked regularly so that connections are leak proof. • Water sprinkling will be done to reduce the dust generation.
Noise & Vibration	• Loading and unloading of raw materials will not cause much significant impact on noise level of the area, it may only cause physiological effect like annoyance to the workers	• Proper training will be given to the workers for handling raw materials. If required, PPE will be provided to the workers.
Hydrology & Geology	• Spillage of waste, material, Oil & any other storage material, if in any case encounter with a water body can deteriorate the groundwater & surface water body.	• Procedures for maintenance of equipment would ensure that this risk is minimised, and clean-up response is rapid if any spill occurs.
Solid & Hazardous Waste	• Solid waste like discarded containers, chemicals and HDPE bags will be generated, which may cause harm if come into contact. • Improper handling of raw material may cause its littering thereby generating the waste.	• The HDPE bags are used for Cement Packaging, which are recyclable. • The raw materials clinker,coal, and gypsum will be stored in covered sheds, and finished product cement will be stored in silos so that no littering of raw material will be done while handling and storing the raw material. • The spilled cement from the packing machine is collected properly and sent for loading in the packer circuit. The spilled cement on the shop floor is swept by sweeping machines periodically. Same will be followed for the proposed expansion.

4.3.2. ACTIVITY- MANUFACTURING PROCESS-CLINKER & CEMENT PRODUCTION **(**CRUSHING**,** GRINDING**,** PYROPROCESSING AND STORAGE**)**

Aspects:

- Generation of PM, NO_2, SO_2 due to burning of coal
- Emissions from various chimneys of process machinery in cement integrated plant
- Generation of Noise & Vibration
- Generation of wastewater

Table 98. ACTIVITY- MANUFACTURING PROCESS-CLINKER & CEMENT PRODUCTION (CRUSHING, GRINDING, PYROPROCESSING AND STORAGE)

Environmental Components	Impact	Proposed Mitigation Measures
Air Environment	-Process emissions will be from the stack attached to the Limestone Crusher, Gypsum crusher, Coal Crusher, Coal Mill Area, Raw Mill / Kiln Area, Clinker Cooler Area, Cement Mill Area & Packing Unit Area, from which pollutants/gases PM, SO2, NO2 will be released in the form of gases which will degrade the ambient air quality of the area by increasing GLC and may cause eye irritation and acute respiratory illness to the people nearby. **It is evident from the Air modelling through software AERMOD has been performed considering inputs for both point & line sources i.e stacks for Line I & II, DG set & traffic respectively** that the maximum predicted increase in GLC of PM10 and PM2.5 is 5.09 and 3.01 µg/m3, SO2 is found to be 0.536 µg/m3, NO2 is found to be 0.647 µg/m3 and CO is found to be 0.008 mg/m3. Post-project air quality for PM10, PM2.5,, SO2, NO2 & CO is within the limits for the core zone and buffer zone as per the Ambient Air Quality standard NAAQS. The maximum GLC does not have a significant impact on environment/ ambient air quality on sensitive receptors of the project. **Air modelling details with isopleth are given in section 4.4 & Detailed air quality modelling report is given in Section D.** ● Increase in PM levels will affect the respiratory health of plant workers and nearby populations. ● Emission of particulate matters and gases from the operation of machineries and equipments will deteriorate the ambient air quality of the area and will affect the respiratory health of workers and nearby population ● Utilisation of non-renewal fuel i.e., (coal), scarcity of coal.	-The air emissions are being controlled by proper mitigating measures such as regular dust suppression by sprinkling of water which helps in reducing the effect. In addition, periodical monitoring is being done and results are analysed. In case any change shows adverse effects, it is attended for improvements. -APCS are provided to the clinker & cement manufacturing unit to reduce PM emissions to less than 30 mg/Nm^3 as per the revised standards of MoEFCC/CPCB norms. -In Existing: For effective dispersion of the pollutants vent height of 10 m for Cement mill, vent for packing unit, 15 m for limestone crusher, 10m Gypsum crusher, 10 m coal crusher, 10 m coal mill & stack height of 40 m Raw mill/Kiln and 40 m for clinker cooler has been maintained based on the CPCB requirements. - For the proposed expansion, vent height of 10 m for Cement mill, vent for packing unit, 15 m for limestone crusher, 10m Gypsum crusher, 10 m coal crusher, 10 m coal mill & stack height of 40 m Raw mill/Kiln and 40 m for clinker cooler will be provided and maintained. - APCS for Line-I : Pulse Jet Bag Filter, Bag House, Electrostatic Precipitator - APCS for Line-II : Pulse Jet Bag Filter, Pulse Jet, Bag House, Electrostatic Precipitator. -All the personnel working in dust/noise prone areas are provided with appropriate personal appropriate protective equipment (PPE) such as helmets, safety shoes, safety goggles, industrial grade gloves, safety harnesses, nose masks. ● Same shall be followed after expansion.

Water Environment	• Utilisation of water may impact the water demand of the vicinity and improper disposal of waste-water generated may affect the quality of nearby surface water body & ground water. • Improper disposal of waste generated may affect the quality of ground-water. • If dust emitted gets deposited on the water body it can deteriorate the water quality. • The industrial wastewater if not properly disposed off, then it can deteriorate the surface water quality of nearby water bodies by increasing the no. of pathogens, BOD, COD, TSS and making water unfit for consumption. It will also affect aquatic life.	• Total water requirement for the project after expansion will be 189 KLD out of which fresh water demand is 154 KLD which will be sourced through borewell. • Water used will be partially subjected to evaporation and partially recycled and hence, no wastewater will be discharged from the plant premises. • In the existing phase wastewater of 19 KLD is generated which is disposed off in two soak pit via septic tank. After proposed expansion, a total of 37 KLD of wastewater will be generated which will be treated in STP of 50 KLD and the treated water will be utilised for greenbelt development, dust suppression & cement makeup water.
Land Use	• No impact	• None
Soil Environment	• Chemical degradation of soil may occur due to disposal of waste-water, solid waste on the soil or spillage of chemicals on soil. • Changes in soil texture due to settling of air borne dust.	• All the process & hazardous waste is being collected and kept in a separate room and appropriate disposal/treatment is being done. The existing unit is a ZLD unit and shall be followed after expansion also. No disposal of waste or waste water is being done on soil. • Regular monitoring of soil is being done. • Procedures for maintenance of equipment would ensure that this risk is minimised and clean-up response is rapid if any spill occurs. • Same shall be followed after expansion.
Socio-Economic	• NO_2, SO_2, PM and other gaseous emissions from the manufacturing process may cause eye irritation and acute respiratory illness to the people nearby. • Increased noise from machinery may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers.	• APCS & adequate stack height will be provided to the clinker & cement manufacturing unit to reduce PM emissions to less than 30 mg/Nm^3. • Stationary machineries and equipment will be properly enclosed by enclosures and provided with dampeners for minimising noise generated due to vibration of machineries. Earplugs will be provided to workers to reduce the impact from noise.
Ecology & Biodiversity	• NO_2, SO_2, PM and other gaseous emissions from the manufacturing process inhibit the growth of plants and promote premature leaves senescence. • Increased dust emission can lead to climate change which eventually will result in a decrease in plant/tree cover. • Increased noise will cause disturbance of existing fauna. • Impact on aquatic life of nearby surface water. • Spillage of waste on soil can inhibit the growth of plants and promote premature leaves senescence.	• APCS and an adequate stack has been provided to process machinery causing air emissions. • Water sprinkling is being done to reduce dust generation. • Dust suppression systems (water spray) are placed as per requirement. • Process machinery (Cement mill, packing unit, limestone crusher, Gypsum crusher, coal crusher, coal mill, Raw mill/Kiln and for clinker cooler) are being provided with Improved mufflers & silencers have been provided in the machinery generating high noise. • All measures are taken to avoid spillage of waste and chemicals on soil. • Green areas with native tree species are developed all around the periphery of the project which serve as the habitat of the fauna

		and act as a buffer for the noise and helps in mitigating the noise and air pollution. ● Same shall be followed after expansion.
Noise & Vibration	● During the manufacturing process, noise and vibration may be generated from the Raw mill Kiln, coal mill, cement mill, primary crusher, secondary crusher, blower room, compressor room which may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers.	● Process machinery (Cement mill, packing unit, limestone crusher, Gypsum crusher, coal crusher, coal mill, Raw mill/Kiln and for clinker cooler)are being provided with Improved mufflers & silencers have been provided in the machinery generating high noise ● Machineries of the reputed make and less noise producing have been purchased. ● Stationary machineries and equipment are properly enclosed by enclosures and are provided with dampeners for minimising noise generated due to vibration of machineries. ● It is re-checked and assured that mufflers systems, vibration damping systems etc. are ● installed in engines of machineries which help in reduction of noise. ● Silencers of all the machineries and equipment are checked and old worn out machineries are replaced by new and less noisy machineries/equipment. ● Sufficient oiling and lubrication are done to all the parts of the machineries to ensure that minimal noise is generated. ● A 20m height boundary has been constructed all over the plant boundary which acts as a noise barrier. ● Same shall be followed after expansion.
Hydrology & Geology	● Due to spillage of wastewater, spillage of raw material may cause chances of contamination of surface water as well as ground water. However, the probability of the same is very low.	● In the existing phase wastewater of 19 KLD is generated which is disposed off in two soak pit via septic tank. After proposed expansion, a total of 37 KLD of wastewater will be generated which will be treated in STP of 50 KLD and the treated water will be utilised for greenbelt development, dust suppression & cement makeup water. ● Water used in the process will be partially subjected to evaporation and partially recycled and hence, no wastewater will be discharged from the plant premises. ● Used oil and spent oil will be generated, which will be stored at separate storage areas designated and maintained as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and will be sold to the authorised recycler. ● Equipment will be kept well maintained, so that they may remain leakage free.
Solid & Hazardous Waste	● The main solid waste generated from the cement plant is cement dust. ● When the dust is washed with rain, it can also pollute water bodies. ● Sludge may cause nuisance if not maintained properly.	● Road sweeping machine will be deployed for cleaning dust. ● Used oil and spent oil will be generated, which will be stored at separate storage areas designated and maintained as per Hazardous and Other Wastes (Management and

	• Used oil will be generated which cause health hazards if not properly.	Transboundary Movement) Rules, 2016 and will be sold to the authorised recycler.

4.3.3. Activity- operation of machinery & equipment (DG sets, STP)

Aspects:

- Generation of waste gases; PM_{10}, SO_2, NO_2, $PM_{2.5}$, CO
- Generation of used oil
- Water requirement
- Generation of noise & vibration
- Generation of waste water
- Requirement of fuel
- Spillage/leakage
- Generation of hazardous waste

Table 99. Activity- operation of machinery & equipment (DG sets, STP)

Environmental Components	Impact	Mitigation Measures
Air Environment	• Flue gas emission (PM_{10}, $PM_{2.5}$, SO_2, NO_x & CO) will be from a stack attached with D.G. a set in which diesel will be used as fuel which may degrade the ambient air quality and also cause eye irritation, acute respiratory disorders and may also affect the immune system of the people living nearby and also of the workers.	• DG set for existing plant is (3x1,500 kVA) stack of maximum height of 35 m and DG set for proposed expansion will be (1x1,500 kVA) stack of maximum height of 35 m provided and will be used in case of emergency only. • Appropriate PPEs are being provided to the workers. • Frequent work area monitoring is being done to ensure fugitive emission is under control. • Green belt/greenery has been developed along most of the periphery of the project area as well as along roads. Green area in the plot will be 4.08 Ha (33% of plot area). Also, additional green belt development is proposed outside the plant boundary in the proposed expansion. • Regular maintenance of valves, pipes etc. is being done. • Proper ventilation will be provided for the proposed STP for odour control. • Same shall be followed after expansion.

Water Environment	• The wastewater if not properly disposed off, then it can deteriorate the surface water quality of nearby water bodies by increasing the no. of pathogens, BOD, COD, TSS etc and making water unfit for consumption. It will also affect aquatic life.	• In the existing phase wastewater of 19 KLD is generated which is disposed off in two soak pit via septic tank. After proposed expansion, a total of 37 KLD of wastewater will be generated which will be treated in STP of 50 KLD and the treated water will be utilised for greenbelt development, dust suppression & cement makeup water. • It will be a Zero-Liquid Discharge Project. • All the treated waste-water will be utilised in the green area, dust suppression & cement plant makeup, no untreated /treated water will be discharged.
Land Use	• None	• None
Soil Environment	• Chemical Degradation of soil may occur due to disposal of waste water on the soil from leakages/spillage in wastewater pipelines & STP or used oil from DG sets.	• Proper care is being taken for disposal of used oil. Proper channelization of wastewater treatment facilities will be done. Sumps will be made and proper channelization of spillage shall be made.
Socio-Economic	• DG sets emission exhales PM, SO2, NO2, CO. This increases eye irritation, breathing issues and skin irritation. • Used oil and Hazardous waste improper storage can create health issues • Noise & vibration generated which may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers. • Spillage and leakage of DIesel/petrol may lead to fire and loss of natural resource	• Proper stack height of 35m has been provided from Ground level. Proper channelisation will help in preventing these issues. • Used oil and hazardous waste is collected in a leak proof storage drum at an isolated place. • DG set is kept in an acoustically enclosed room with the provision of mufflers and silencers. Machineries/pumps of the reputed make and less noise producing have been purchased. • All measures shall be taken so as to prevent the leakage of Petrol. Diesel • Same shall be followed for proposed expansion.
Ecology & Biodiversity	• PM, NO_2, SO_X & other gaseous emission from the DG sets inhibit the growth of plants and premature leaves senescence. Untreated water on soil can deteriorate the plant/tree growth.	• DG sets for Line-II will be installed with appropriate stack height. • No untreated water will be discharged for the green area.
Noise & Vibration	• During the operation of DG sets, STP, noise and vibration may be generated which may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers.	• DG is kept in an acoustically enclosed room with the provision of mufflers and silencers and will be kept on the surface. DG set will only be used in case of emergency. Machineries/pumps of the reputed make and less noise producing have been purchased. • STP will be kept in a restricted area and the workers will be provided with appropriate PPEs. • Silencers of all the machinery and equipment are checked and old worn out machinery is replaced by new and less noisy machinery/ equipment.

		● Sufficient oiling and lubrication is being done to all the parts of the machineries to ensure that minimal noise is generated. ● Green belt/greenery has been developed along most of the periphery of the project area as well as along roads. Greenbelt area in the plot after expansion will be 4.08 Ha (33.% of plot area) along with vertical green. ● A 20m height boundary has been constructed all over the plant boundary which acts as a noise barrier. ● Same shall be followed after expansion.
Hydrology & Geology	● Due to spillage/leakage of the used oil, chemicals used STP for wastewater treatment, untreated wastewater, the chances of contamination of surface water as well as ground water increases.	● In the existing phase wastewater of 19 KLD is generated which is disposed off in two soak pit via septic tank. After proposed expansion, a total of 37 KLD of wastewater will be generated which will be treated in STP of 50 KLD and the treated water will be utilised for greenbelt development, dust suppression & cement makeup water. ● All probable leakage areas such as pipelines, joints, pumps and structure of bioreactor/ storage vessels are inspected and maintained proactively. ● Used oil is being stored in HDPE drums in an isolated room under lock & key & will be sent to approved recyclers for disposal/burnt in kiln. ● Same shall be followed after expansion.
Solid & Hazardous Waste	● Used oil will be generated which are hazardous, which may cause harm if come into contact. ● STP sludge and any other may cause nuisance if not maintained properly.	● Proper care of waste is being taken while handling & transportation, appropriate PPE are used. ● There is no generation of hazardous waste from the process in the project. ● Used lubricating oil/grease (2500 KLPA) is being generated, is being stored at separate storage areas designated and maintained as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. It is being burnt in kilns on site or sent to the approved recycler. After expansion 3300 KLPA used oil will be generated which will be sent to approved recyclers or burnt in kiln. ● Same shall be followed after expansion. ● STP sludge of 9 kg/day will be composted in OWC & the compost formed will be used as manure for plantation

4.3.4. Activity- transportation of raw material , finished products, waste

Aspects:

- Vehicular emission and dust emission
- Littering of solid waste
- Road congestion & breakage of roads
- Noise Generation
- Spillage/leakage of raw material

Table 100. Transportation of Raw Material, Finished Products, Waste

Environmental Components	Impact	Mitigation Measures
Air Environment	• Gaseous emission from vehicles used for transportation will affect the respiratory health of staff and nearby population. Vehicular transportation also generates excessive dust and can lead to respiratory ailments. • Dust generation will be high if the movement of vehicles is done on breached roads. Increased dust emission may cause respiratory problems to nearby Population. **-Air modelling through software AERMOD has been performed considering inputs for both point & line sources i.e stacks for Line I & II & traffic respectively.** As per the report post-project air quality for PM10, PM2.5,, SO2 & NO2 is within the limits for the core zone and buffer zone as per the Ambient Air Quality standard NAAQS. The maximum GLC does not have a significant impact on environment/ ambient air quality on sensitive receptors of the project. **Air modelling details with isopleth are given in section 4.4 & Detailed air quality modelling report is given in Section E.**	• Vehicles with valid PUC certificates are being used for transportation. • Plantation all around the periphery & roads will be done to combat emissions. Proper maintenance of vehicles is being done periodically to ensure no leakage from the vehicles. • Proper maintenance and cleaning of vehicles and tires is being done in order to reduce dust generation. • Proper maintenance, cleaning of vehicles and tires, and sprinkling of water is done in order to reduce dust generation. • Same will be followed during proposed expansion.
Water Environment	• The transportation of the raw material & products is being done through trucks. If dust emitted or spillage/leakage gets deposited on the water body it can deteriorate the water quality.	• Trucks are fully covered during transportation of raw material & waste to the project site by road. • Transportation of the Clinker will be done through a conveyor belt. • Spillage of diesel or oil will be managed by detection of leaks in the first place from boxes, structures or vessels.
Land Use	• None	• None
Soil Environment	• Chemical degradation of soil would occur due to spillage of oil, diesel, waste, coal (fuel) & other raw material on soil during transportation.	• Procedures for maintenance of equipment would ensure that this risk is being minimised and clean-up response will be rapid if any spill occurs. Lubricating waste oil is being collected separately in HDPE drums. • Trucks are fully covered during transportation of raw material & waste like used oil etc. by road. • Same shall be followed after expansion.
Socio-Economic	• Dust and emission from movement of vehicles are likely to cause some impacts on the working	• Flexible dust suppression systems (water spray) is being used as per requirement.

	population within the immediate vicinity of the project site. ● Trucks are used for the transportation of raw material which cause traffic congestion in the area. ● Accidental leakage of the chemical during transportation can cause fire.	● Dust suppression systems (water spray) is being used as per requirement. ● The present road conditions are reasonably good for proposed movement of traffic. Roads will be maintained. ● Preventive maintenance is being carried out for vehicles and pollution check on a periodic basis. ● Materials are fully covered during transportation to the project site by road. ● Proper First Aid facility is being provided within the transportation vehicle in case of any accidental release. ● Same shall be followed after expansion.
Ecology & Biodiversity	● Increased noise due to vehicular transportation will cause disturbance of existing avi-fauna, however, avifauna is not restricted to one place for a long time, thus it will not result in their displacement.	● Vehicles used in the transportation of construction material have a PUC certificate. ● Water sprinkling is being done to reduce the dust generation ● Dust suppression systems (water spray) is being done as per requirement at the construction site. Vehicular movement for transportation of raw material is being carried mostly in day-time and will try to avoid unnecessary honking with the help of sign boards. ● Same shall be followed after expansion.
Noise & Vibration	● Due to transportation of construction materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects on workers like annoyance, speech interference, headache, Auditory impact, increase in heartbeat of elderly people. ● There will not be much impact due to vibration on project	● Silencers are checked in the vehicles used for transportation of materials. ● No honking zone is maintained. ● Only PUC certified vehicles are allowed for transportation. ● Maintenance of vehicles is being done on a regular basis. ● Plantation within the project site is being done which will dampen the noise. ● Same shall be followed after expansion.
Hydrology & Geology	● Due to spillage of waste there may be chances of contamination of surface water as well as ground water increases	● Measures are being taken to avoid spillage of waste. ● Same shall be followed after expansion.
Solid & Hazardous Waste	● Accidental litter off of any waste material, may cause potential health impacts while transporting it to their disposal site.	● If used oil is being transported to authorized vendors, it will be transported in HDPE drums and as per specifications of vendors. ● The waste being transported to various recyclers will be securely packed and transported to the authorized recyclers.

4.3.5. Activity- working & daily activity of staff, visitor

Aspects:

- Solid waste & E-waste generation
- water requirement

- waste water disposal

Table 101. Working & Daily Activity of Staff, Visitor

Environmental Components	Impact	Mitigation Measures
Air Environment	• Bio-degradable Waste generation may lead to odour problems if not stored properly.	• Total 83 kg/day solid waste will be generated out of which 33 kg/day of biodegradable waste will be composted and used in plantations, and recyclable waste of 50 kg/day will be given to authorised recyclers.
Water Environment	• Waste water, if not properly disposed off, can deteriorate the surface water quality of nearby water bodies. • Disposal of untreated domestic wastewater may deteriorate water quality of surface & ground water by increase in the no. of pathogens, BOD, COD, TSS etc in surface/ground and thereby affecting aquatic life and making water unfit for consumption.	• After expansion total wastewater of 37 KLD will be generated which will be treated in the proposed STP of 50 KLD & the treated water will be reused within the plant for gardening, dust suppression & cement makeup water. • No waste water will be disposed off outside the unit and will be used within the plant.
Land Use	• None	• None
Soil Environment	• Impact on soil due to improper disposal of solid waste includes, the leaching from biodegradable waste and effect on flora from spillage of waste on soil.	• All solid waste (organic) is being converted into manure & used for plantation & for proposed expansion OWC is proposed and the compost obtained will be used as manure for plantation. • Recyclable waste will be handed over to authorised vendors. • Same shall be followed after expansion.
Socio-Economic	• Improper storage and disposal of solid waste, may decrease the aesthetic value of the industry and lead to an increase in risk of disease occurrence of persons. • There may occur foul smells which will cause nuisance to staff. • Direct & indirect employment generation	• All solid waste from the proposed project is being properly collected, stored and disposed off. • Total 550 employees will be required after expansion. It will increase the social condition of the people..
Ecology & Biodiversity	• No significant impact	• None
Noise & Vibration	• No significant impact	• None
Hydrology & Geology	• Infiltration of silt and sand may occur with improper storm-water harvesting. • Untreated waste-water, if infiltrated to ground-water it may deteriorate water quality of ground water by increase in the no. of pathogens, BOD, COD, TSS etc in ground water and thereby affecting and making water unfit for consumption.	• Storm water channelization from rooftop to RWH pits will be done to recharge the ground-water. • The generated domestic wastewater from the existing plant is disposed off in a soak pit via septic tank & after expansion of the plant, the wastewater will be treated in STP of 50 KLD and treated water will be reused in greenbelt development, dust suppression & cement plant makeup water required for cooling. Proper closed channelization will be done.

Solid & Hazardous Waste	• Improper storage and disposal of Biodegradable waste will enhance the risk of microbial contamination, population and will enhance the risk of disease occurrence and cause foul smell. It will attract the vectors. • Improper recyclable waste, E-waste disposal could be flammable also sometimes	• During the existing phase, total of 53 kg/day of solid waste is generated out of which 21 kg/day of biodegradable waste and 32 kg/day of recyclable waste is generated while after the expansion of the plant, total of 83 kg/day of solid waste is generated out of which 33 kg/day of biodegradable waste and 50 kg/day of recyclable waste will be generated which will be given to approved recyclers.. • Biodegradable waste will be used as manure within the plant site whereas recyclable wastes will be given to the approved recyclers. • E-waste if generated will be sold to approved recyclers.

4.4. Air quality modelling (AERMOD)

The input parameters for air quality modelling (AERMOD)

Table 102. Input parameters for air quality modelling

Input		**Description**
Modelling Software Used		AERMOD View-Version 9.9.0
Control Pathway		
Terrain		Elevated
Dispersion Coefficient		Rural
Meteorology Pathway		
1	Met Input Data	AERMET Meteorological data of one year
2	Latitude:	Plant Location as shown earlier
3	Longitude:	
4	Datum	WGS 84
5	Base Elevation:	0 m from the sea level
Receptor		Uniform Cartesian Grid 1 with 100 m receptor spacing
Source Pathway (Emission Sources)		DG set emission- 4 hours per day, Stationary Emission Sources- 10-16 & 20-24 hours per day. Vehicular emissions - 14-16 hr per day

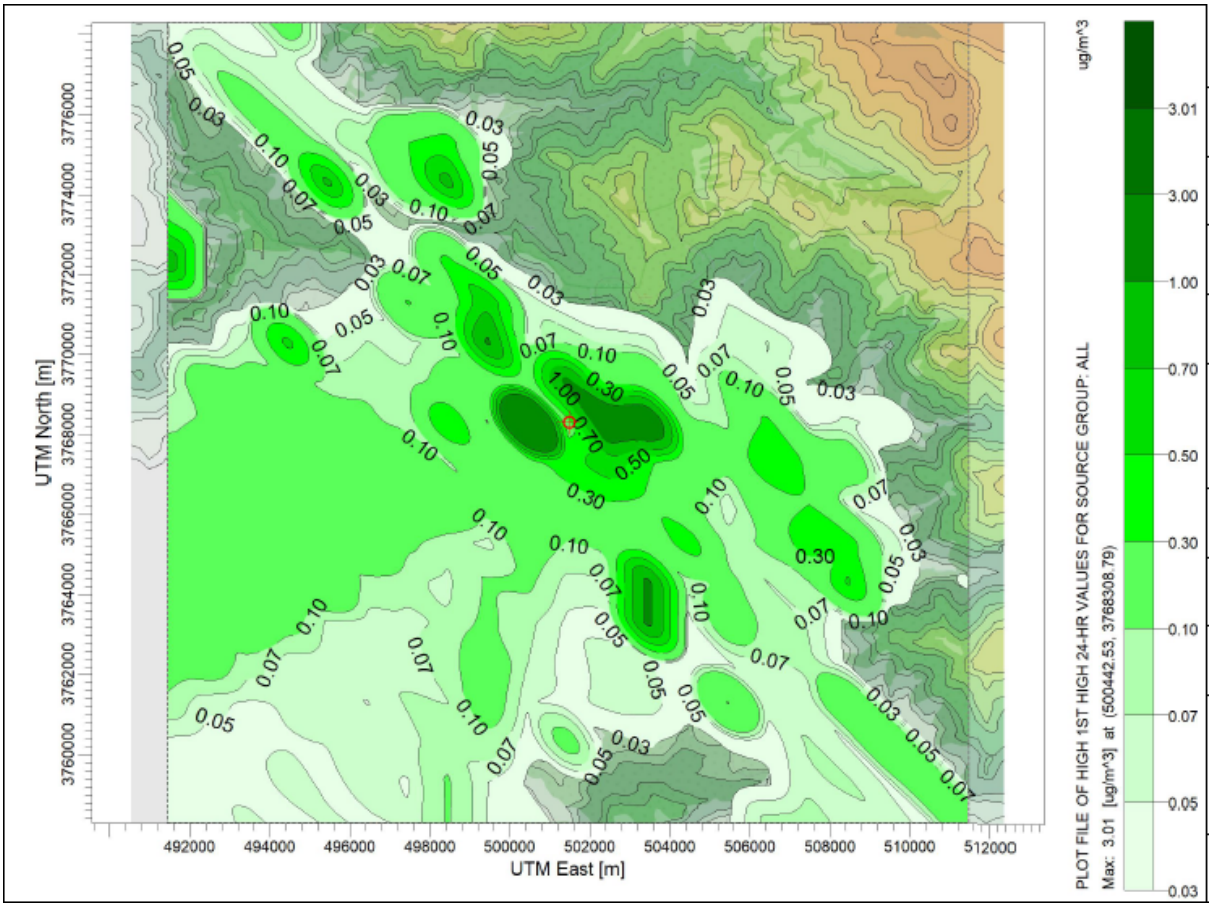


Figure 51. Predicted maximum GLC concentration from proposed project for PM 2.5

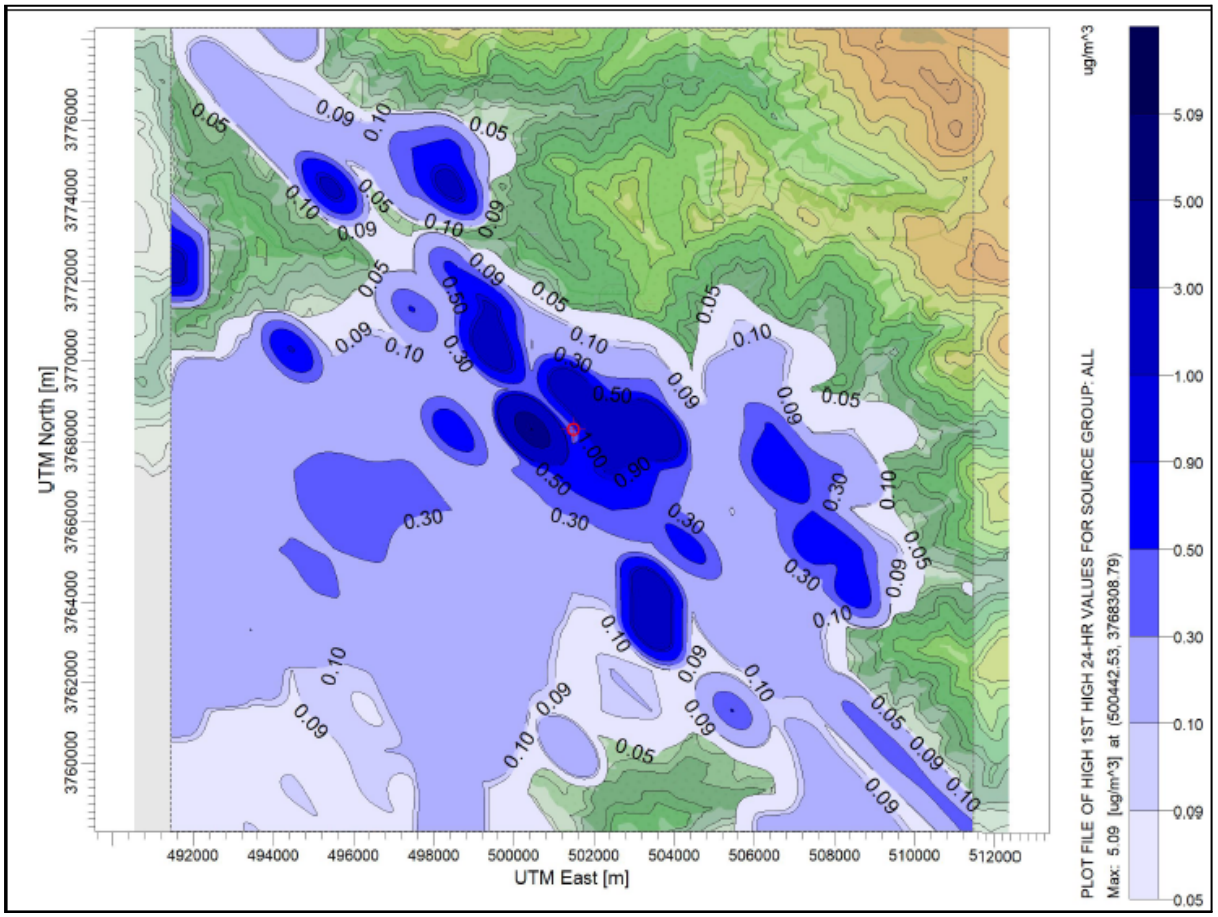


Figure 52. Predicted maximum GLC concentration from proposed project for PM10

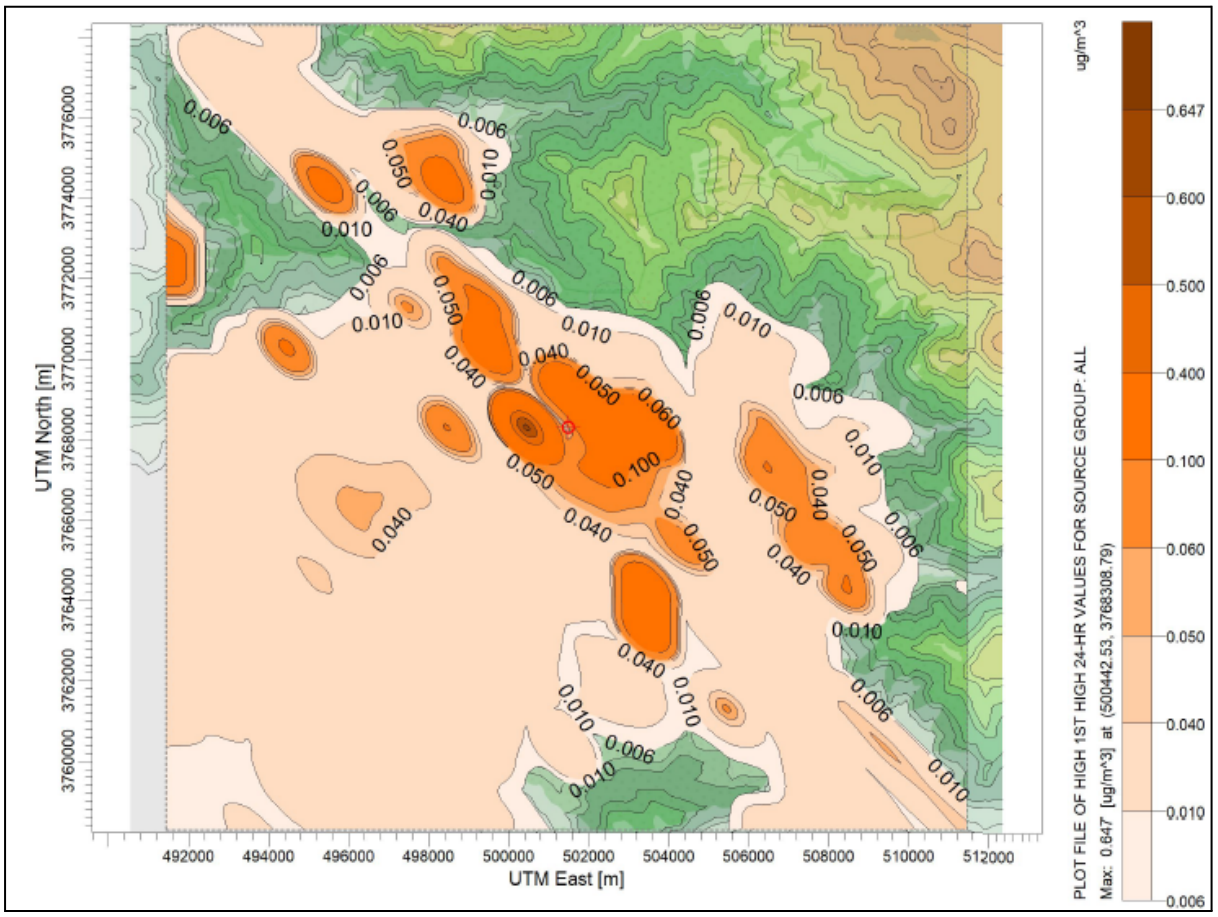


Figure 53. Predicted maximum GLC concentration from proposed project for NO2

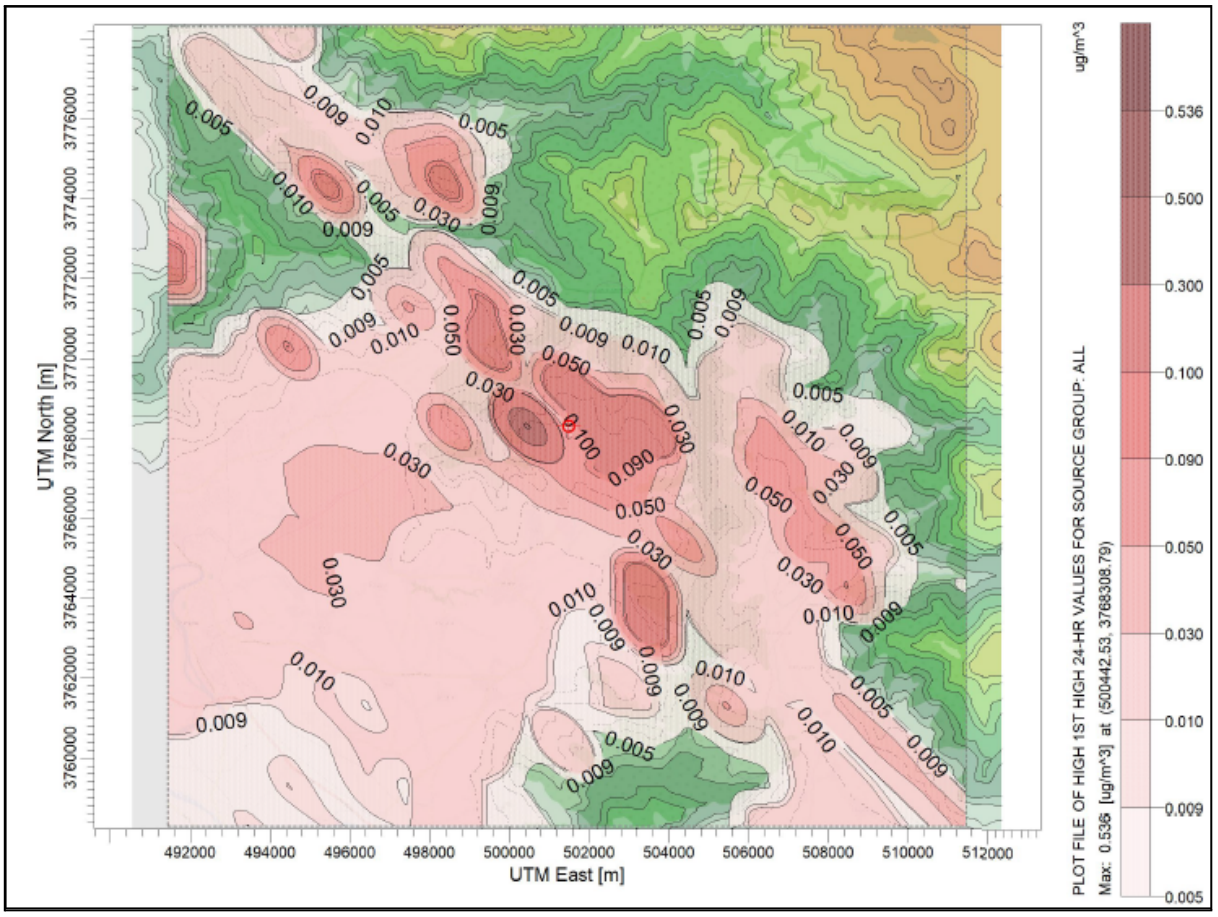


Figure 54. Predicted maximum GLC concentration from proposed project for SO2

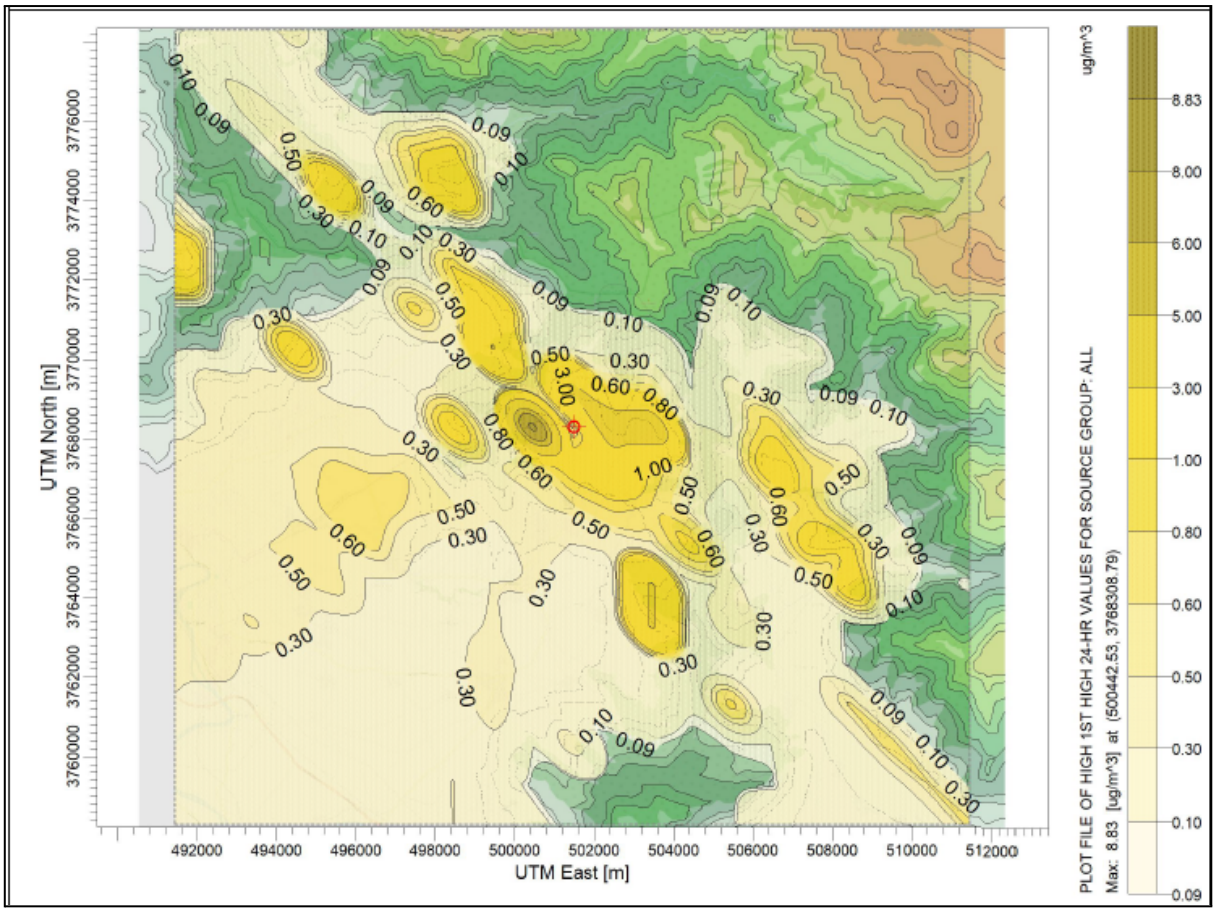


Figure 55. Predicted maximum GLC concentration from proposed project for CO

Predicted Ambient air quality for impact of PM2.5

With available ambient air quality data and incremental concentrations computed through mathematical modelling the following post project ambient air quality has been predicted. The maximum GLC for $PM_{2.5}$ modelling will be 3.01 µg/m^3.

Table 103. Predicted post project ambient air quality for PM 2.5

Location	Background Concentration $PM_{2.5}$ (µg/m3)	Predicted Incremental Concentration $PM_{2.5}$ (µg/m3)	Post Project Air Quality $PM_{2.5}$ (µg/m3)	NAAQS (µg/m3)
Onsite	41.8	0.70	42.5	60
Onsite	39.4	0.70	40.1	
Nagander	36.31	0.50	36.81	
Bathon Village	44.27	0.10	44.37	
Zantrag Village	33.55	0.07	33.62	
Satura	47.67	0.03	47.7	
Khanagund	50.31	0.07	50.38	
Khrew Village	53.02	0.03	53.05	

PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF PM10

With available ambient air quality data and incremental concentrations computed through mathematical modelling the following post project ambient air quality has been predicted. The maximum GLC for PM_{10} modelling will be 5.09 µg/m^3.

Table 104. Predicted post project ambient air quality for PM10

Location	Background Concentration PM10 (µg/m3)	Predicted Incremental Concentration PM10 (µg/m3)	Post Project Air Quality PM10 (µg/m3)	NAAQS (µg/m3)
Onsite	75.395	1.00	76.395	100
Onsite	71.06	1.00	72.06	
Nagander	65.49	0.70	66.19	
Bathon Village	79.85	0.30	80.15	
Zantrag Village	60.15	0.09	60.24	
Satura	85.98	0.05	86	
Khanagund	90.74	0.15	90.89	
Khrew Village	95.62	0.04	95.66	

PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF NO2

With available ambient air quality data and incremental concentrations computed through mathematical modelling (Gaussian Plume) the following post project ambient air quality has been predicted. The maximum GLC for NO_2 modelling will be 0.647 µg/m^3 which would be on road.

Table 105. Predicted post project ambient air quality for NO2

Location	Background Concentration NO_2 (µg/m3)	Predicted Incremental Concentration NO_2 (µg/m3)	Post Project Air Quality NO_2 (µg/m3)	NAAQS (µg/m3)
Onsite	21.19	0.400	21.59	80
Onsite	19.97	0.400	20.37	
Nagander	18.4	0.100	18.5	
Bathon Village	22.44	0.040	22.48	
Zantrag Village	16.9	0.010	16.91	
Satura	24.17	0.01	24.18	
Khanagund	25.51	0.040	25.55	
Khrew Village	26.87	0.006	26.876	

PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF SO2

With available ambient air quality data and incremental concentrations computed through mathematical modelling (Gaussian Plume) the following post project ambient air quality has been predicted. The maximum GLC for SO_2 modelling will be 0.536 µg/m^3.

Table 106. Predicted post project ambient air quality for SO2

Location	Background Concentration SO_2(µg/m3)	Predicted Incremental Concentration SO_2 (µg/m3)	Post Project Air Quality SO_2 (µg/m3)	NAAQS (µg/m3)
Onsite	7.68	0.100	7.78	80
Onsite	7.24	0.100	7.34	
Nagander	6.68	0.090	6.77	
Bathon Village	8.14	0.009	8.149	
Zantrag Village	6.13	0.005	6.135	
Satura	8.76	0.005	8.765	
Khanagund	9.25	0.030	9.28	
Khrew Village	9.75	0.005	9.755	

PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF CO

With available ambient air quality data and incremental concentrations computed through mathematical modelling (Gaussian Plume) the following post project ambient air quality has been predicted. The maximum GLC for CO modelling will be 0.008 mg/m3.

Table 107. Predicted post project ambient air quality for CO

Location	Background Concentration CO2(mg/m3)	Predicted Incremental Concentration CO(mg/m3)	Post Project Air Quality CO (mg/m3)	NAAQS (mg/m3)
Onsite	0.63	0.003	0.633	2
Onsite	0.59	0.003	0.593	2
Nagander	0.55	0.001	0.551	2
Bathon Village	0.67	0.0005	0.67	2
Zantrag Village	0.5	0.0001	0.5	2
Satura	0.72	0.0001	0.72	2
Khanagund	0.76	0.0005	0.76	2
Khrew Village	0.8	0.0001	0.8	2

Maximum predicted increase of PM2.5 is found to be 3.01µg/m3, PM10 is found to be 5.09 µg/m3, SO2 is found to be 0.536 µg/m3, CO is found to be 0.008mg/m3 and NO2 is found to be 0.647 µg/m3. From the results generated by AERMOD in the form of Isopleth and results of the same in table above shows that the post-project air quality for PM10 & PM2.5 ,CO, SO2& NO2 is within the limits for the core zone and buffer zone as per the Ambient Air Quality standard NAAQS. The maximum GLC does not have a significant impact on environment/ ambient air quality on sensitive receptors of the project. Appropriate Measures will be identified and proper installation of air control devices will be done to control the source and impact of air pollution.

4.5. Summary

4.5.1. Air environment

Aspects of project activities which would increase the emission of PM, SOX, NOX & CO generation, dust generation which could lead to increase in ground concentration level (GLC), respiratory problems, human death, damage to flora and fauna and aesthetic properties in the environment and increase the level of air pollutants to other aspect of environment indirectly. In the proposed plant the main sources of emissions will be from stacks attached to Cement mill, packing unit, limestone crusher, Gypsum crusher, coal crusher, coal mill Raw mill/Kiln and for clinker cooler. Plantation of trees, installation of water sprinkling systems and dust compression systems in the nearby areas, provision of proper nose masks to labourers, etc. will be done. Vehicles with valid PUC certificates will be used for transportation of construction material and raw material.

4.5.2. Water environment

The activities which would probably pose a negative impact on the water environment would be, working & daily activities of staff, visitors, transportation. The aspects of the activities may be generation of waste water, scarcity of water, and deterioration of water quality which could lead to deterioration of aquatic life, generation of water-borne diseases to nearby population. To minimise such impacts, domestic wastewater in the construction phase will be treated in the mobile STP and wastewater generated during the operation phase after expansion will be treated in STP of capacity 50 KLD. The treated wastewater shall be used for water sprinkling, green belt and as cement make up water. The unit will be a zero liquid discharge project. The total water requirement after expansion will be 189 KLD out of which 75 KLD is the existing demand of the plant and the proposed water demand of 114 KLD. Fresh water of 154 KLD after expansion will be taken from existing borewells & remaining 35 KLD will be sourced from STP treated water.

4.5.3. Land use

Topography of the existing cement industry is undulating. The expansion of the proposed project will be within the existing plot area only, no additional land is required for the expansion.

Information on land use/ land cover is the basic prerequisite for land resource evaluation, environmental assessment, utilization and management. A considerable degree of land transformations is being witnessed as a result of growing population pressure on the finite land resources consummating in deterioration of the environment. As a precursor, it is necessary to understand the ‘cause and effect' of the transformations through

scientific studies. The scope of the present study is limited to mapping the current land use / land cover pattern, their assessment, spatial distribution and extent using remote sensing and GIS techniques. The land environment will mainly deal with the land use, land cover within and buffer zone.

4.5.4. Soil environment

The major activities which will have a negative impact on the soil environment would be loading & unloading of raw material, manufacturing process of cement, operation of machinery, handling of raw material, transportation of raw material, finished product and waste. The aspects of the activities will be soil erosion, waste generation and spillage of hazardous wastes or chemical on the soil which could lead to permanent damage to land productivity, destabilisation of landscape, decrease in permeability, damage to fertility of soil, chemical degradation and indirect negative impact on other aspects of environment like Air, Water & Ecology and Biodiversity. To minimise such impacts, mitigation measures like proper treatment and disposal of waste, proper maintenance of equipment and storage for raw material, provision and maintenance of plantation area in the project site and nearby area shall be done. Procedures for maintenance of equipment would ensure that the risk is minimised and clean-up response is rapid if any spill occurs. The tankers, HDPE drums etc., would be ISO approved and as per the specifications of internationally approved vendors so as to minimise any spillage, venting of solvent etc. therefore there would be no impact on soil after this precaution is ensured. Sump shall be made and proper channelization of spillage shall be made.

4.5.5. Socio-economic

The aspects of activities would be dust emission, gaseous emission, waste generation and socio-economic conditions in the nearby area which could impact annoyance, human death and respiratory problems to nearby population and increase in employment and revenue generation among the population in the nearby area. To minimise such impacts, mitigation measures like proper air pollution control system will be used, restriction of activities limited to project area and specific duration in daytime only, Proper segregation, good housekeeping, employment to nearby area, treatment and disposal of wastes generated from the plant would be adapted in the area.

4.5.6. Ecology- biodiversity

The major activities which would negatively impact the Ecology and Biodiversity in the project area and the surroundings would be site preparation, excavation, manufacturing process, operation of machinery & equipment, transportation, loading & unloading of raw material. The aspects of the activities would be dust emission, increase in GLC,

increase in noise level, soil erosion, noise generation, water contamination, vehicular emission and waste generation which would directly /indirectly impact in decrease in transpiration rate of flora, loss of habitat, decrease in plant/tree cover, disturbance to avi-fauna and other species, premature senescence of floral species and hence decrease in population of local faunal species in the area and the surroundings. To minimise the impacts, mitigation measures like provision of air pollution control equipment, scrubbing system to the vents, provision and proper maintenance of plantation area, installation of water sprinkling systems and dust suppression systems, provision of noise barriers, maintenance of vehicular movement near the project site and proper disposal and treatment of wastes generated from the project site. Vehicular movement for transportation of raw material will be carried out only in day-time and will try to avoid unnecessary honking with the help of sign boards. Green belt/greenery will be developed along most of the periphery of the project area as well as along roads. Also, additional green belt will be developed outside the project boundary within the land owned by the company.

4.5.7. Noise vibration

The major activities which would negatively impact the environment would be the operation of machinery (Cement mill, packing unit, limestone crusher, Gypsum crusher, coal crusher, coal mill Raw mill/Kiln and clinker cooler). The aspects of the activities would be an increase in noise level and increased noise generation which could lead to physiological and psychological problems to workers and nearby population, increased vibration in the nearby areas and an indirect decrease in the biological diversity in the nearby area. To minimise such impacts, mitigation measures like restriction of activities in the limited project area and for daytime only, proper maintenance of equipment and machinery, maintenance of noise barriers, provision of protective devices like earmuffs, compactors, silencers etc., installation of plantation area in the nearby area, provision of No-Honking Zone in the area, maintenance of vehicular and traffic movement etc. would be adapted in the project site.

4.5.8. Hydrology & geology

The major activities which will be most probable to negatively impact the hydrology and geology would be excavation, operation of machinery, transportation and daily activities. The aspects of the activities would affect natural drainage, can lead to spillage of oil or chemicals, or wastewater. Improper disposal of the latter can deteriorate the quality of receiving water bodies. However, the unit is a zero liquid discharge unit and will continue to be after further expansion. Further, to minimise impacts from spillage of oil or chemicals and wastewater, mitigation measures, proper channelization of waste water and proper disposal, and Proper treatment of Wastewater will be adapted in the project site.

4.5.9. Solid & hazardous waste

The main solid waste generated from the cement grinding unit is cement dust collected from bag filters, which is recycled back to the unit, Waste oil and grease drained out of gear boxes and other equipment, Scrapped automobile batteries and domestic waste. To minimise such impact following mitigation measures will be adopted:

- Entire cement dust will be recycled into the process. Hence no solid waste from process manufacturing will be available for disposal in the cement plant.
- The HDPE bags will be used for Cement Packaging, which are recyclable.
- The biodegradable waste will be converted into manure and will be used for plantation.

4.5.10. Traffic

The activities which would probably be responsible for traffic congestion would be transportation of raw material for which trucks, tempo and conveyor belt will be used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it will subject existing roads to more stress. To control the impact, dust suppression systems (water spray) will be used as per requirement at the construction site. Construction materials will be fully covered during transportation to the project site by road. Vehicle flow during shift changes shall be regulated by allowing exits in a phased manner. The present road conditions are reasonably good for proposed movement of traffic. Preventive maintenance will be carried out for vehicles and pollution checks on a periodic basis will be mandatory. All the activities will be done for a limited period of time. The traffic survey for the proposed project was conducted and details are given in Chapter 3 Section 3.13.

5. Analysis of alternative

5.1. Description of alternatives

The proposed project is an expansion of a cement plant. The assessment for the site is presented below:

- **Land:** The project is located on land measuring 12.38 Ha. and is in possession of Trumboo Industries Pvt Ltd.
- **Facilities & Utilities:** The site has well laid access to roads, and is in near vicinity to the Pampore- Zantrang Road which is connected to NH-44.. Electricity supply, fuel, water, transportation network drainage system also exists.
- The ambient air quality, noise quality and soil quality at and around the project site is well within the limits.
- Easy availability of raw material and exporters of finished products are available nearby.
- The site is well connected with roads and railway networks.
- No Rehabilitation and resettlement requirements.

5.2. Alternative manufacturing methods

Methods for the manufacturing process of the Cement and Clinker plant are adopted in consideration with the following factors:

- Economically sound
- Eco-friendly
- Less Pollution generation (waste water, solid waste etc.)

Some alternative methods and techniques adopted to run the plant more efficiently and eco-friendly are

- **Use of Conveyor Belt for Clinker Transportation**

Use of conveyor belts for clinker transportation within the unit would reduce road dust generation.

- **Waste Reuse and Waste Recycling**

  Currently, the plant recycles dust collected in the bag filters and ESPs back into the process of cement manufacturing and will continue the same after expansion, thus reducing the quantity of waste generated.

After necessary permissions, hazardous waste i.e. used oil will be burnt in the kiln .

The production of Cement and Clinker with optimal resources in terms of fossil fuel, water, and other raw materials has been considered. Thus, the unit will continuously put efforts to upgrade the processes to the best available technology for sustainable environmental protection and resource conservation.

- **Energy Saving Measures**

- Green CFLs / LED shall be provided in common utility areas.
- Energy efficient motors shall be used for water pumping.
- Transformer will be having efficiencies as per ECBC Norms.
- Adhering to light power densities (LPD) as per ECBC Norms.
- Polycarbonate/FRP roofing will be provided to reduce uses of electricity during day time.
- Colony street light will be provided through renewable energy (solar) to the extent possible.
- Water distribution will be done through gravity instead of using motors/pumps.
- Timer provision will be installed in street light post and common utility areas
- Motion sensor base light will be provided in office and office common areas.

6. Environmental monitoring programme

6.1. Details of monitoring to judge effectiveness of measures

To check the efficiency of the system with proposed modifications a regular monitoring programme has been drawn. The program has been outlined for the construction and operation phase. In order to facilitate this, the regular site inspections and their noting will be documented by the PP/Contractor. The organisational structure (Environment Management Cell or EMC) of the M/s Trumboo Industries Pvt Ltd. is discussed in Chapter 10 Section 10.2.1.

6.1.1. During construction phase

Table 108. Environment Monitoring Plan during construction Phase

Sr. No	Type of Monitoring	Frequency of Monitoring	Parameter	Location	Number Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility
1	Ambient Air Quality	Six Monthly	Particulate Matter ($PM_{2.5}$) Particulate Matter (PM_{10}) Sulphur Dioxide (SO_2) Nitrogen Oxides (NO_2)	2 in Core Zone and 4 in buffer zone	12	5,500	66,000	-EMC (Air Incharge) & Contractor
2	Stack	Six Monthly	-	None as DG set shall not be used	0	0	0	-
3	Water Quality for drinking water	Six Monthly	All parameters mentioned in IS:10500	One drinking water sample	2	7,500	15,000	-EMC (Water Incharge) & Contractor
4	Water Quality for Construction purpose	Six Monthly	All parameters mentioned in IS:456	One construction water sample	2	7,500	15,000	-EMC (Water Incharge) & Contractor
5	Ambient Noise Level	Six Monthly	Day and Night noise level	2 Locations	4	2,000	8,000	-EMC (Noise Incharge) & Contractor
6	DG Set Room Noise Level	Six Monthly	-	DG set will only be used in case of emergency	0	0	0	-
7	Soil Quality	Six Monthly	All parameters to check soil Fertility	Two Locations in core zone and 4 locations in buffer zone (Umlaper, Lumshnong, Narpuh, and Umbadoh Village)	12	4,000	48,000	-EMC (Soil Incharge) & Contractor
Total Cost (Rs)							**1,52000**	

6.2. During operational phase (After Expansion)

Table 109. Environment Monitoring Plan during operation Phase

Monitoring	Frequency of Monitoring	Parameters	Location	Numbers Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility	Records to be maintained
Air & Stack								
Ambient Air Quality	Six-Monthly	PM_{10}, $PM_{2.5}$, SO_2, NO_2, parameters as per Cement Industry standards G.S.R. 497(E) dated 10th May 2016	2 Onsite Location in different direction and 4 Buffer location (Bathon Village, Zantrang Village, Khrew Village & Nagander Village)	16	5,500	88,000	• EMC (Air Incharge) • External Laboratory analyst & incharge	Test Report
DG sets, and Process Machinery	Daily, Verification during Audit	Operational hrs and the exit velocity	4-DG Stack, 4 stacks in plant area Raw mill/ kiln (both for existing & proposed line) and Clinker Cooler (both for existing & proposed line)	8	500	4,000	• EMC (Air Incharge) • 3rd Party environment consultant	log books
Stack emission for point sources	Six-Monthly	PM_{10}, $PM_{2.5}$, SO_2, NO_2, parameters as per Cement Industry standards G.S.R. 612 (E) dated 25.08.2014 and amended vide G.S.R. 496 (E) dated 9th May 2016 & G.S.R. 497(E) dated 10th May 2016 .	4-DG Stack, 4 stacks in plant area Raw mill/ kiln (both for existing & proposed line) and Clinker Cooler (both for existing & proposed line)	16	6,500	1,04,000	• EMC (Air Incharge) • External Laboratory analyst & incharge	Test Report
Water & Wastewater								

Water Quality	Six monthly	Monitoring for relevant parameters as per Drinking water standard IS – 10500 Parameters as per Cement Industry standards G.S.R. 612 (E) dated 25.08.2014 and amended vide G.S.R. 496 (E) dated 9th May 2016 & G.S.R. 497(E) dated 10th May 2016 .	One Drinking Water (existing borewell within the plant)	2	7,500	15,000	• EMC (Water Incharge) • External Laboratory analyst & incharge	Test Report
Waste Water Quality (Treated & Untreated)	Daily Monthly	**Daily-**BOD, COD, TSS, TDS, pH, Oil & Grease **Monthly-** BOD, COD, TSS, TDS, pH, Oil & Grease Parameters as per Cement Industry standards G.S.R. 612 (E) dated 25.08.2014 and amended vide G.S.R. 496 (E) dated 9th May 2016 & G.S.R. 497(E) dated 10th May 2016 .	STP Inlet and Outlet (2 nos.)	24	6,000	1,44,000	• EMC (Water Incharge) • Internal Laboratory analyst & incharge for daily parameters • External Laboratory analyst & incharge for monthly parameters	Test Report & Logbooks
Ground water and Surface water	Six Monthly	Monitoring for relevant parameters as per Drinking water standard IS – 10500 and as CPCB Surface water quality criteria	Satura (Tributary of Jhelum River) and 2 groundwater samples (Bathon & Khrew)	6	7,500	45,000	• External Laboratory analyst & incharge	Test Report

Water Metering	Daily in Logbook, Verification during Audit	Monitoring of Water quantity usage, waste water inflow and treated water outflow	Existing borewell, Process Water, Gardening, STP Inlet and Outlet (2 nos.)	5	1,200	6,000	• EMC (Water Incharge) • External Environmental consultant	Logbooks
Noise								
Day & Night level Noise Monitoring	Six Monthly	Leq (night), Leq (day), Leq (24 hourly)	12 onsite location(Main gate, STP, DG, kiln, raw mill, cement mill, limestone crusher) both for line I & II and 4 Buffer location (Bathon, Zantrang village, Khrew Village, Pampore Zantrang road)	32	2,000	64,000	• EMC (Noise Incharge) • External Environmental consultant	Test Report
Soil								
Qualitative and Quantitative Parameters	Six Monthly	All Parameters to check soil fertility in the soil	Four samples from four corners and one composite sample will be prepared and 4 Buffer location (Bathon, Zantrang village, Khrew Village, Nagander Village)	18	4,000	72,000	• EMC (Soil Incharge) • External Environmental consultant	Test Report
Waste Generation Monitoring / Record Keeping								
Records of generation, handling, storage, transportation and disposal	Daily	Hazardous, Non Hazardous, E-waste, Organic waste, recyclable waste, manure generated	-	5	500	2,500		Logbooks

Sludge Characteristics and Quantity	Characteristics And Quantity- Daily	TCLP test and Quantity	STP Sludge (1 nos.)	2	5,000	10,000	• External Laboratory analyst & incharge	Test Report
Ecology and Biodiversity Monitoring								
Green belt & plantation monitoring	Annually	Survival rate of the planted Trees, Greenbelt development status & Green area in m^2	-	1	30,000	30,000	• EMC (gardener) • External	Logbooks
Social Monitoring								
Checking effectiveness of the Corporate Social Activities	Annual	Cost spent and where it is carried out	-	1	30,000	30,000	CSR Team	Logbooks
Power and energy monitoring								
Energy savings	Annual	Energy consumption in terms of 1. Quantity of fossil fuels 2. Power drawn	-	1	50,000	50,000	Utility Team	Logbooks
Sum Total. (Estimates)								**6,64,500**

6.2.1.Work zone monitoring

Work zone monitoring is being carried out by the EHS department every month for gaseous pollutants and dust. Records will be kept in standard Form as per Factories Rules. Location for sampling will be identified. Same shall be followed after expansion.

6.3. Submission of six monthly compliances

As per the standard environment clearance conditions, six monthly compliances of the conditions mentioned in the CTO letter are being submitted to various concerned officials of SPCB and Regional office of CPCB. After expansion, six monthly compliances of the conditions mentioned in the Environmental Clearance letter will be submitted to various concerned officials of MoEF, SPCB and Regional office of CPCB. These compliances will be submitted in the months of June and December for the periods April to September and October to March respectively every year for construction phase until the construction is completed and operation phase for the life of the project.

6.4. Environmental audit

Annual Environment Audit is being conducted to check the compliance of environmental conditions. Form V statement and report is being submitted to MoEF&CC R.O. and Jammu & Kashmir State Pollution Control Board. Same shall be followed after expansion.

6.5. Compliance of environmental of approval

6.5.1. CGWA clearance

NOC for construction of private well within the plant premises for extraction of groundwater has been received from the office of the executive engineer, PHE Ground water Division, Srinagar vide letter no. PHE:GWD:589 dated 15.05.2007.

6.5.2. Forest clearance

Not Applicable. No forest land is involved in the project.

6.5.3. Conservation plan

Conservation plan has been prepared for 8 Schedule I species found in the buffer zone namely *Cervus elaphus hanglu* (Kashmir stag (hangul)), *Panthera pardus* (Leopard), *Moschus chrysogaster* (Alpine musk deer), *Ursus arctos isabellinus* (Himalayan brown bear), *Falco tinnunculus* (Common kestrel), *Capricornis thar* (Himalayan serow), *Ithaginis cruentus* (Blood Pheasant), *Lophophorus impejanus* (Himalayan monal). Conservation plan has been approved by Wildlife Warden, Central Division, Srinagar, J&K vide letter no. WLWC/Estt/2020-21/1254 dated 04.09.2020 and the same has been attached in Section D of the EIA report.

6.5.4. Annual returns

The Proponent with the help of 3rd party Environmental consultants annually submit the Environment Audit with the Form V statement, FORM IV of Hazardous & Other wastes (six monthly), CTO Compliance. Similarly six monthly EC compliance will be submitted to MoEF&CC R.O. and Regional State Pollution Control Board (Jammu & Kashmir) after the grant of the Environmental clearances. Same shall be followed after expansion.

7. Additional studies

7.1. Public consultations

As the project falls under Category B1 of Schedule 3(b) according to EIA Notification, 2006 and its subsequent amendments, public hearing is applicable for the project as per Para 7(i) III (b) of the EIA Notification, 14th September, 2006. Therefore, the EIA report is being submitted to the J&K State Pollution Control Board for conducting public consultation as per Appendix IV of EIA Notification, 2006.

7.2. Risk assessment

Risk is the potential that a chosen action or activity will lead to a loss of human or property.

Risk assessment is a step for Risk Management. Risk assessment is the determination of qualitative and quantitative value of risk related to a situation or hazard.

Hazard is a situation that poses a level of threat to life, health or environment.

Disaster is a natural or man-made hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life or drastic change in environment.

Risk assessment involves the following:

- Hazard Identification
- Vulnerability Analysis
- Risk Analysis
- Emergency Plan

7.2.1. Hazard identification

The proposed project is an Expansion of the Cement plant by M/s Trumboo Industries Pvt. Ltd.. There may be following types of hazards associated with the operation of the unit:

Natural Hazard:

1. Earthquake
2. Flooding

3. Heavy rainfall

Man Made Hazard:

- Fire & explosion
    - Diesel Storage Area
    - Short circuiting
    - Coal Storage Area
    - Storage of Lubes, Grease, etc.
- Electrical and Thermal
    - Electrical room
    - Non insulated wires
    - H.T. Installation and L.T. Installation
- Mechanical/ Accident
    - Kiln and Coal Mill (ESP, Bag Filters, Bag House,)
    - Equipment area and Automobile workshop
    - Transportation
    - Pre- heater
    - Packing Plant (Silos and PP bags)

7.2.2. Vulnerability analysis

The vulnerable analysis is done on all the hazards as below:

Table 110. Vulnerability Analysis

S.No.	Hazard Identification	Severity (1-5)	Likelihood (1-5)	Severity x Likelihood (1-25) (Hazards scoring 1-9 are less serious hazards & 9-25 are very serious hazards & require risk assessment)	Proposed General Mitigation Measure/ Control
Natural hazard					
1	Earthquake	5	4	20	Buildings/ All structures shall be designed to withstand shakes up to 8.0 on the Richter scale.
2	Flood	5	2	10	Drainage in the site will be provided to prevent built-up of water.
Man-made hazard					
1	Fire/ Explosion	5	4	20	Leakage of oil, explosion due to internal combustion in coal storage area can lead to fires/explosions. These are mitigated by proper procedure and authorization of material to be used. All control measures for firefighting will be installed and all the aspects of rules and legislations under Explosives Act shall be covered. Workers are trained to leave using the nearest exit stairs or ground exit in case of fire. It is also recommended to have systematic checks and audits of all near misses, accidents and or other maintenance be done.
2	Electrical	2	2	4	All the electrical fitted areas will be insulated. Periodic replacement of damaged line, sign danger at the hazard places, electrical insulation mat will be provided.

3	Mechanical Failure/ Accident	2	2	4	• Sparkling of the mechanical equipment can cause fire. Periodic replacement of critical components of the machine. Sign danger at the hazard places. • Any person working on equipment with moving parts is personally ensured that the equipment is de-energized, isolated and locked/tagged out.
4	Thermal	4	4	16	Since coal will be used as a fuel in the process which can cause burning. The storage area will have restricted entry.
5	Toxic	2	1	1	Used Oil is stored in HDPE drums and kept in covered rooms under lock and key and is sold to authorised vendors only. Same will be followed for the proposed expansion.

All points in the above table shall be covered in the detailed HIRA (Hazard Identification and Risk Assessment) study to be done by the proponent. This shall be outside the scope of EIA and shall be done as part of Health and Safety compliance under Factories act and the explosives act. Proponents shall engage competent agencies for this study and this shall be done prior to the operation phase.

7.3. Risk analysis

The risk is the likelihood of harmful effects big or small due to hazard, together with severity of harm suffered. Risk also depends on the number of people exposed to hazard.

Risk analysis provides severity of harm from a particular type of hazard. As it is a cement Manufacturing unit all the precaution measures while handling, storage of raw material and coal are being taken and the same will be followed after expansion.

7.3.1. Earthquake

The area under study falls in Zone-V, according to the Indian Standard Seismic Zoning Map, which is a high damage risk zone.

7.3.2. Flooding

The elevation of the site is about 1922 m to 1970 mwith respect to mean sea level. Flooding is infrequent in and around the plant area.

The Satura (tributary of the Jhelum river)is located 4.5 km East of the project & Jhelum river is approx. 9.73 km SW from the project site.

7.3.3. Fire & explosion

Fire in the plant is mainly caused due to carelessness. Fire can also result from heat generated due to internal conditions in coal storage.

7.3.4. Electrical

The electrical current can pass to the floor & metals due to inadequate insulation and/or accidently.

7.3.5. Mechanical

The mechanical fault can cause the risk & hazard. Mechanical hazards are created by powered operation of equipment or tools.

7.3.6. Thermal

Thermal hazards are objects or substances that transfer energy as heat. Thermal heat can be generated from the process machinery, D.G sets, coal and the vehicles in the area.

7.3.7. Terrorism

Proper screening through machineries will be done In order to avoid any terrorist/unwanted people entering the plant.

7.4. On-site emergency planning

An onsite emergency is caused by an accident or hazard that takes place within the plan area and the effects are confined to the plant area.

The onsite emergency plan consists of the following key elements:

- Planning as per hazard analysis
- Preventive measures
- Emergency response procedure
- Recovery procedure

7.4.1. Planning

Disaster Management cell will be put into place. It has the following members to share the responsibility

- Site Controller (Administrator of complex)
- Incident Controller (Asst. Administrator)
- Personal Manager
- Communication Officer
- Fire Officer

- Security Officer
- Engineering In-charge
- Fire pump attendant
- First Aid Team

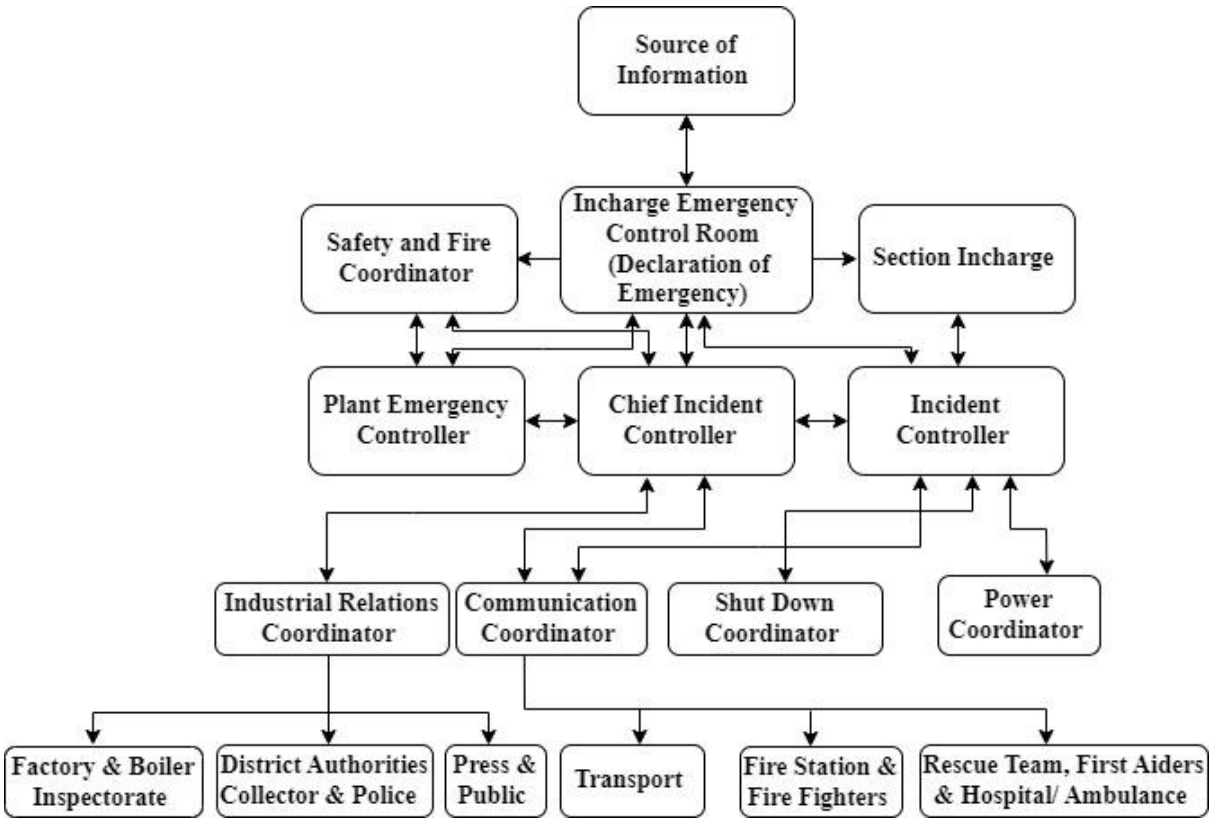


Figure 56. Disaster Management Cell

7.5. Preventive measures

7.5.1. Earthquake

The project is situated in the Seismic zone-V area. During expansion, special attention will be given to the structural design of foundation, elements of masonry, plain concrete, reinforced concrete, pre-stressed concrete, and structural steel. All applicable guidelines will be followed in this regard to ensure the safety of the building.

7.5.2. Flooding

Proper designing of drainage systems for domestic as well as storm water will be done.

7.5.3. Fire and life safety

Safety Precautions

1. Smoking is prohibited.
2. Vehicle access is strictly controlled.
3. Ventilation is sufficient in working areas.
4. Electrical equipment are explosion-proof to meet national electrical code requirements.
5. Hydrants are strategically placed with adequate hoses..
6. It is ensured that combustible materials such as wooden supports, oil buckets etc. are not kept in the storage and process areas as well as road tankers loading/unloading sites where there is maximum possibility of presence of flammable hydrocarbons in large quantities, to reduce the probability of secondary fires.
7. Small spills are remediated with sand, earth, or other non-combustible absorbent material, and the area then flushed with water. Larger spills are diluted with water and diked for later disposal.
8. Lighting grounded. Tall vessels and structures are fitted with lightning conductors that are securely grounded.
9. Water sprinkling methods are used to avoid overheating in coal storage areas.
10. Coal storage risk mitigation – Proper ventilation has been provided around the coal storage shed. Existing industry is having multipurpose fire tender to balance the fire hazard.

The same will be followed after expansion.

Precaution in Case of Fire

- All practicable measures are taken to prevent outbreak of fire and its spread, both internally and externally, to provide and maintain :-
  a) Safe means of escape for all person in the event of a fire, and
  b) The necessary equipment and facilities for extinguishing fire.
- Effective measures are taken to ensure that all the workers are familiar with the means of escape in case of fire and have been adequately trained in the routine to be followed in such cases.
- The area in front of the admin building is designated an assembly point in case of an emergency and a display board is placed.

Same shall be followed after expansion.

Fire Fighting Personal Protective Equipment

Due consideration will be given to hazards from heat exposure. Therefore, fire-fighters wear full-face, positive pressure, self-contained breathing apparatus or an airline. Suitable materials include polyvinyl plastic, neoprene or rubber.

7.5.4. Mechanical

Mechanical hazards are created by powered operation of equipment or tools.

Mechanical hazards can occur at :

1. Process machinery at Cement Mills (Grinding Units) & Silo Cleaning Operation
2. DG set room
3. Vehicular Movement and Transportation
4. Loading/Unloading Operation and Storage

a. Loading/Unloading Operation and Storage

- Approach of heavy goods vehicles for unloading material
- Work inside silo/ hopper
- Airborne dust

- Work near conveyor's moving parts
- Unclean platforms causing staggering or falls
- Motor overloading

b. Cement Mills (Grinding Units)

- Failure of rotating parts of machinery
- Falling of personnel from height
- Fall of material from height
- Hurling of mill parts
- Exposure to noise
- Contact with hot material
- Manual handling of loads

c. Silo Cleaning Operation

- Work in confined space
- Improper use of lifting equipment
- Use of hand held equipment during cleaning

Following preventive measures will be taken:

1. Periodic replacement of critical components of the machine.
2. Proper training to operators of machines.
3. Safe distance demarcating on Process machinery.
4. Signs of danger at the hazard places.
5. Any worker working on equipment with moving parts personally ensures that the equipment is de-energized, isolated, locked/tagged out.
6. Any worker working from position with the potential risk for a fall from a height to use all protection.
7. Appropriate PPE is provided to all workers exposed to open processes or systems. The same will be followed after expansion.

8. In case of accidents, immediate and proper medical care is provided at the plant site and nearby hospital or nursing home. The same is to be followed after expansion.

Same will be followed after expansion.

7.5.5. Thermal and electrical

Thermal hazards are objects or substances that transfer energy as heat Cement & Clinker unit can have

- Coal storage area
- Hot machines/ equipments
- ESP over voltage
- H.T installation and L.T. Installation,

that can cause thermal hazards.

The thermal hazard can cause burn of skin; following preventive measures are taken:

- The open flame area like the canteen is restricted from entry. The same will be followed in future. Operators in the thermal hazard area are provided with protective gears like gloves, goggles etc. The same will be followed after expansion.
- For emergency first aid, a room is provided and is well maintained.
- D.G set room will be restricted for entry.

  Additionally, after expansion,

- For emergency occupational, health & safety centre will be provided and will be well maintained.
- To avoid ESP overvoltage risk, Used Microprocessor Based Parameter Control Unit will be used to Avoid high Voltage & to maintain the Specified Voltage & Current within limits.

7.6. Emergency response procedure

Even after all the preventive measures for any emergency following infrastructure has been provided:

1. There is an Emergency Control Room.
2. Assembly area is demarcated for Industry in the area in front of the main Admin building and a display board is given for easy identification.
3. Communication systems have been installed which include the intercom, megaphone, and public address system. The same will be maintained.
4. Fire alarms are installed at vulnerable places. Additional fire alarms in vulnerable areas will be installed after expansion.
5. Fire extinguishers are provided in the emergency control room for ease of access.
6. The safe zones (at the time of emergency) are displayed at different locations. The same will be followed after expansion.
7. The First Aid facility is available in the Control room and will be maintained.

In case of emergency following action shall be taken:

1. The emergency will be declared in case of following:
   i) Fire alarm buzzing (Fire hazard)
   ii) Vibration/Earthquake feeling (Earthquake)
   iii) Water logging above 30 cm (Flood)
   iv) Security alarm from main gate. (Security risk/Terrorism)
2. On declaration of emergency, communication will be made to residents for any type of emergency.
3. All the residents of the affected area will be moved to the safe zone.
4. The control measures will be done as per the emergency action plan for each type of hazard..
5. All the members of the disaster management cell will take charge of their respective duties.
6. Outside help like fire tender, police ambulance etc. will be called by site controller or Incident controller.

7.6.1. Roles and responsibility

Responsibilities of Chief Emergency Controller (CEC)

- Has the final authority on all matters related to - declaration of emergency, firefighting, rescue operation, calling outside agencies for assistance, transportation, liaison, evacuation, media, clear signal for emergency etc.
- Call key Officials and ensure their accountability.
- Report to Corporate level and civil authorities.

Responsibility of Site Emergency Controller

- Will assess the nature of emergency and accordingly activate onsite emergency plan and off site emergency plan (if required).
- Ensure emergency services and key persons are put in services
- Ensure proper medical aid rendered to casualties. Direct instructions to shut down the plant operations within the affected area, for safety of personnel, minimum damage to plant, property and the environment and guide the course of actions
- Direct evacuation of persons.

Responsibility of Section in-Charge

- Immediately raise the alarm & inform the Safety & Fire Coordinator.
- Immediately inform the Chief Incident Controller as well as Incident controller.
- Try to evacuate the trapped person as soon as possible.

Responsibility of Incident Controller

- On hearing the information, the incident controller should rush to the spot as early as possible with all appropriate PPE. Following actions also be performed by the Incident Controller.
- Direct all emergency operations within the affected area
- Direct rescue and firefighting operations till safety and fire coordinator reaches to the spot Ensure that all persons are evacuated

Responsibility of Shutdown Controller

- Contact Chief Emergency controller / Site Emergency Controller at site.
- Give instructions to representative plants for shut down and follow up the action taken Ensure proper shut down of the plant.

Responsibility of Power Coordinators

- Arrange for safe electrical circuits needed by the Incident Controller/ Shut down Controller
- Ensure power supply without interruption for the critical equipments and their functions as advised by shutdown controller/ Site emergency controller

Responsibility of safety and fire fighter coordinators

- Ensure the availability of all safety equipment and appropriate PPE
- Arrange for the search of missing persons
- Ensure the preservations of evidences for the investigation of the incident
- Ensure that the on-site emergency operations are carried out safely
- Pass instructions to restrict entry of visitors / vehicles to plant. Fire tenders and ambulances from mutual aid industries shall be allowed inside

Responsibility of Communication Coordinator

- Inform concerned Authority of Fire Station/Internal Fire Fighter & First Aider Team
- Arrange vehicles to bring the key personnel from their residence
- Inform the hospitals to be ready for receiving the injured persons & for treatment
- Ensure the safe transport of the injured persons to the hospital
- Arrange for needed financial support for the emergency operations through DOD concerned.
- Arrange for rehabilitations of persons and mobilise additional medical facilities, if required

Responsibility of Industrial Relations facilities Coordinator

- Maintain good relations with nearby industries/villages
- Ensure that the emergency in the plant does not get adverse publicity
- Request help from police, if necessary
- Give report to press and public with the concurrence of the Site Emergency Controller

7.6.2. Recovery procedure

The recovery procedure will depend on the type of emergency. Recovery procedure shall be followed by the engineering section to restore the essential services.

7.7. Off site emergency management plan

If an accident takes place in an industry/ unit & its impacts are felt outside its premises, the situation is called an “Off-site Emergency”. A major emergency may affect areas outside the work and thus an off-site emergency management plan is important.

Cause of off-site emergency

In a cement manufacturing and grinding industry, the coal storage area, & transportation of raw materials, or a problem in the plant utilities may cause off- site emergencies to occur.

The main objectives of the off-site emergency plan are: -

i. To save lives and injuries.

ii. To prevent or reduce property losses and

iii. To provide for quick resumption of normal situations or operations

7.7.1. Vulnerability analysis

The vulnerable analysis is done for the hazards that may cause offsite emergency as given below:

Table 111. Vulnerability Analysis (offsite emergency)

Activity	Hazard	Severity (1-5)	Likelihood (1-5)	Severity x likelihood (1-25) (1 – Hazard with Least Concern & 25 - Hazard with Highest Concern)	Vulnerability Radius
Clinker & crushed limestone transportation (Conveyor belt)	Mechanical Breakdown	1	1	1	Approximately 50 m
Coal Storage	Fire	4	2	8	Approximately 200 m

7.8. Preventive measures

7.8.1. During transportation

Following measures will be adopted to ensure safe transportation:

- The raw materials and products will be covered for transportation
- Vehicles will not be overloaded
- Maintenance of the conveyor belt will be done every now and then.
- Repairing of the conveyor belt will be done as fast as possible.

7.8.2. Emergency response procedures

The duty of preparing and keeping up to date the 'Off-site Emergency Plan' is placed on the District Emergency Authority. Also, occupiers are charged with the responsibility of providing the above authority with such information, relating to the industrial activity under their control, as they may require for preparing the off-site emergency plan.

As per the rules, the main component of the Off-Site Emergency Plan is coordination with the District Authority. The District Authority (i.e. District Collector, Factory Inspector etc.) in conjunction with the company & nearby industries under mutual aid scheme and relevant emergency services should have an off-site emergency plan considering the following:

- Incidents at the site including fires and/or explosions would likely cause concern among the local population. People will be advised to stay away from the area, and relevant actions will be followed.

7.8.3. Roles and responsibilities

Table 112. Roles and responsibilities (off site Emergency)

S.No.	Name or Designation	Location	Contact Number
1.	Deputy Commissioner,	Pulwama	
2.	ADM	Pulwama	
3.	Supt. of Police	Pulwama	241237, 8491942801
4.	A.E.E. Flood Control	Pampore	9906078322
5.	Chief Medical Officer,	Pulwama	241412, 241205
6.	BMO	Pampore	223449, 9419026244, 7298130005
7.	Regional Director, Kashmir, J&K Pollution Control Board	Regional Office, Srinagar	9419168518
8.	Industries Functional Manager	Pulwama	8713099657
9.	Incharge Fire Station	Pampore	222041, 9906457549
10.	Incharge Fire Station	Khrew	245200, 9906530178

The roles of the various parties that may be involved in the implementation of an off-site plan are described below:

A) ROLE OF THE POLICE

- Protecting life and property and controlling traffic movements.
- Controlling bystanders, evacuating the public, identifying the dead and dealing with casualties and informing relatives of dead or injured.

B) ROLE OF THE FIRE AUTHORITIES

- The control of a fire is normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site incident controller on arrival at the site.
- Fire authorities having major hazard works in their area should have familiarised themselves with the location on site of all stores of flammable materials, water and foam supply points and fire-fighting equipment.

C) ROLE OF THE HEALTH AUTHORITIES

- Health authorities, including doctors, surgeons, hospitals, ambulances and so on, have a vital part to play following a major accident and they should form an integral part of any emergency plan.

D) ROLES OF THE GOVERNMENT SAFETY AUTHORITY

- In the event of an accident, local arrangements regarding the role of the factory inspector will apply.
- In the aftermath, factory inspectors may wish to ensure that the affected areas are rehabilitated safely.

A. Functions of the State Crisis Group

i. Assist the State Government in the planning, preparedness and mitigation of major industrial accidents at a site in the State;

ii. Continuously monitor the post-accident situation arising out of a major industrial accidents in the State and forward a report to the Central Crisis Group;

iii. Review the progress report submitted by the District Crisis Groups;

B. Functions of the District Crisis Group

i. Assist the preparation of the district off-site emergency plan;

ii. Review all the on-site emergency plans prepared by the occupier of Major Accident Hazards installation for the preparation of the district off-site emergency plan;

iii. Assist the district administration in the management of chemical accidents at a site lying within the district;

iv. Ensure continuous information flow from the district to the Centre and State Crisis Group regarding accident situation and mitigation efforts;

v. Forward a report of the chemical accident to the State Crisis Group; and Conduct mock-drill of a chemical accident at a site each year.

C. Functions of the Local Crisis Group

i. Prepare local emergency plan for the industrial pocket;

ii. Ensure dovetailing of the local emergency plan with the district off-site emergency plan;

iii. Respond to all public inquiries on the subject.

7.8.4. Recovery procedures

The recovery procedure depends on the type of emergency. Recovery plans based on different emergencies are prepared. Recovery procedure will be followed by the engineering section to restore the essential services.

7.9. Emergency control team

7.9.1. Key personnel

The key personnel involved in Emergency (Onsite & Offsite) are given below:

1. Emergency Controller – Plant Head
2. Incident Controller – EHS Manager
3. Security Supervisor
4. Utilities Manager
5. Fire fighter
6. Evacuation members [Emergency Response Team (ERT) Members]
7. First Aid provider
8. Rescue members

7.9.2. Chain of command during emergency

The organisational chart for coordination within the industry as well as the external agencies is given below:

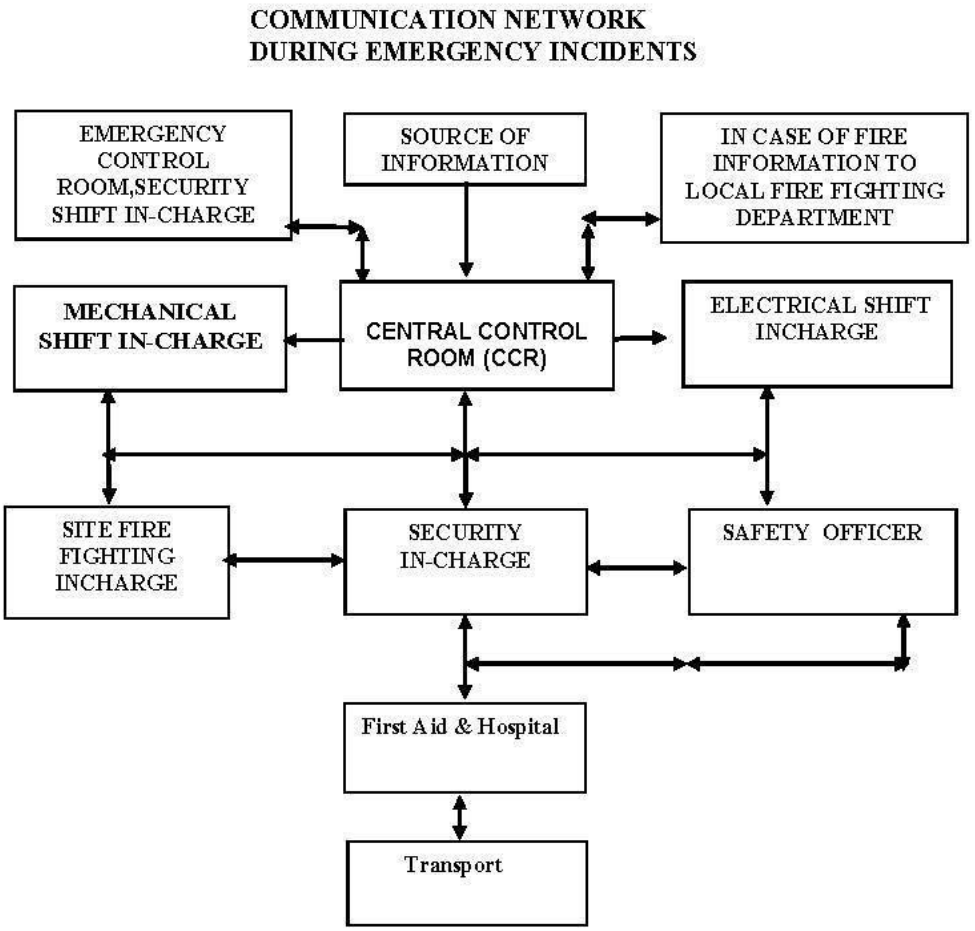


Figure 57. Chain of command during emergency

7.10. R&R action plans

R&R is not applicable as there are no village or residents in the project land area The complete land area is in possession by M/s Trumboo Industries Pvt. Ltd.

8. Project benefits

8.1. Improvements in the physical infrastructure

The beneficial impact of the proposed project on the civic amenities will be substantial after commencement of the project activities. The basic requirement of the community will be strengthened by extending healthcare facilities to the community, building/strengthening of existing roads and renovation of nearby schools in the area will help in uplifting the living standards of local communities.

8.2. Improvements in the social infrastructure

With the implementation of the expansion of the existing plant, the increasing industrial activity will boost the commercial and economic status of the locality, and the socio-economic status of the local people will improve substantially. The required skilled and unskilled laborers will be utilized maximum from the local area. The land rates in the area will improve in the nearby areas due to the proposed activity. This will help in upliftment of the social status of the people in the area. Vocational Training institutions will also come-up and will lead to improvement of working skill of the people in the area. Primary health the medical facilities will certainly improve due to the proposed project.

8.3. Employment potential – skilled, semi-skilled and unskilled

Cement industry is a large and growing industry with huge economic benefits due to selling of products. The project will create extra opportunities of direct and indirect employment for which skilled and unskilled manpower will be needed.

About 350 people will be employed during construction of the project. 550 people will be employed during the operational stage of the project & there will be indirect

employment opportunities & business opportunities such as in transportation, workshop, packing, repair & maintenance, supply of machineries etc. The project will be beneficial in the government's target of increasing the production capacity.

The industries will require raw materials, skilled and unskilled laborers. It will be available from the local area. Due to increasing industrial activities, it will boost the commercial and economic status of the locality, to some positive extent.

8.4 Improvements in Quality of Environment

Cement industries are notoriously known for being a heavy pollution industry and can deteriorate the quality of the surrounding environments through their operational activities. However, Trumboo Industries Private Limited will use technological advances to reduce their impact on the environment in the following ways:

- The industry also aims to use dust collected in bag filters and ESPs back into the process to minimise the quantity of waste generated by the plant.
- About 33% of total plot area will be developed as green area thus will help in improvement in the quality of the environment. Also, outside boundary green areas will be developed in the land owned by the company.

8.5 Other tangible benefits

- Project will gain income and upsurge the turnover of Trumboo Industries Private Limited.
- Cement availability will increase at local, regional, national as well as international levels.
- Overall the regional economy will elevate with avenues for various ancillary industries and increased business opportunities.
- Government will be able to generate increased revenue by way of various taxes and levies.

9. Environmental cost benefit analysis

As per EIA Notification 2006, Chapter 9 i.e. Environmental Cost Benefit Analysis to be prepared if recommended at the Scoping Stage.

However, during the Scoping Stage, no such conditions are mentioned in the TOR letter.

10. Environment management plan

10.1. Introduction

The Environment Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all stakeholders including the project proponents, contractors and subcontractors, including consultants, understand the potential environmental risks arising from the proposed project and take appropriate actions to properly manage that risk. Adequate environment management measures need to be incorporated during the entire planning, construction and operating stages of the project to minimise any adverse environmental impact and assure sustainable development of the area.

The Environment Management Plan presented below will be followed and regular monitoring of relevant parameters as stated in the post – project monitoring schedule will be carried out. The Environment Management Plan will be proactive in nature and will be upgraded if new facilities or modification of existing facilities, with environmental concerns, come up at a later stage.

10.2. Organisational Role and Responsibility

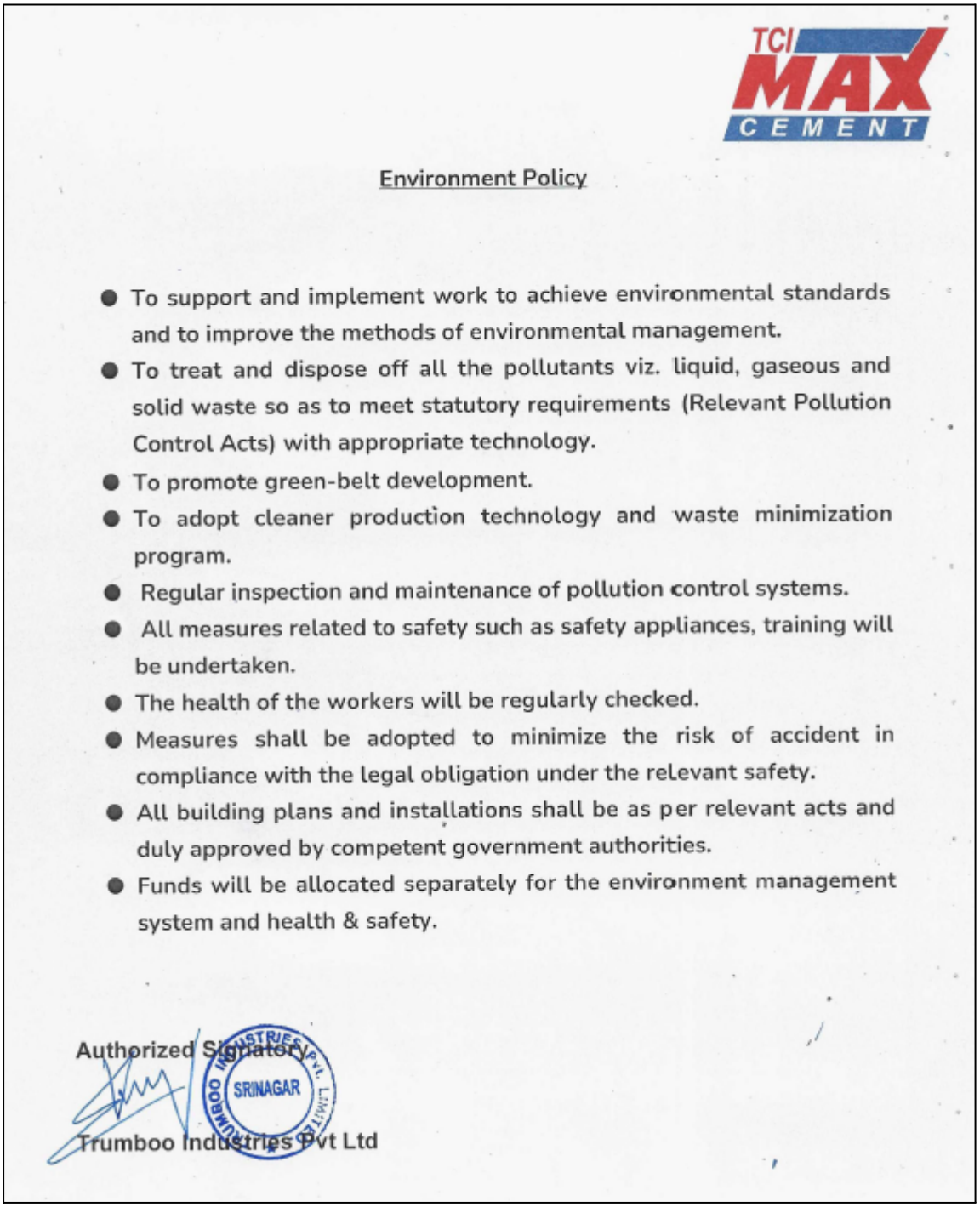
Trumboo Industries Pvt. Ltd. understands the responsibility to operate the industries properly with respect to the Environment and the health and safety of its employees and the other people who are associated with the project and maybe get affected by the activities and to conduct the operations of the industries with proper protection and safety to the environment.

The EHS Policy of the industry given below:

Management Policy

The company has a written policy for the safety, Health and Environment Management. Through this policy, the company management commits itself to the following objectives.

- Preventing Environmental Pollution & Climate Change by continual improvement in environmental performance with an effective Environmental Management Plan.
- Compliance with all environmental legislations, regulations under the EIA Notification and amendments thereof.
- Make efficient use of natural resources by conserving energy and water, minimising waste, and recycling wherever possible.
- Due care of the requirements relevant to waste management by ensuring the safe keeping, transportation and subsequent recovery or disposal of waste.
- Use recycled construction materials whenever these can be commercially justified.
- Keep transport use to a minimum and regularly service vehicles to maintain their efficiency.
- Promote environmental awareness & climate change amongst employees, local communities and interested parties through proactive communication and training.
- Management shall review the suitability and effectiveness of environmental objectives and targets through a periodic management review process.
- The policy shall be communicated to employees at all levels, local communities and stakeholders for compliance of environmental Terms of Reference.
- To impart training to employees and motivate them to safeguard the environment.
- To strive to continually improve environmental performance by audit and review, change in environmental policy as per prevailing situations from time to time



TCI MAX CEMENT

Environment Policy

- To support and implement work to achieve environmental standards and to improve the methods of environmental management.
- 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 promote green-belt development.
- To adopt cleaner production technology and waste minimization program.
- Regular inspection and maintenance of pollution control systems.
- All measures related to safety such as safety appliances, training will be undertaken.
- The health of the workers will be regularly checked.
- Measures shall be adopted to minimize the risk of accident in compliance with the legal obligation under the relevant safety.
- All building plans and installations shall be as per relevant acts and duly approved by competent government authorities.
- Funds will be allocated separately for the environment management system and health & safety.

Authorized Signatory

TRUMBOO INDUSTRIES PVT. LIMITED SRINAGAR

Trumboo Industries Pvt Ltd

Figure 58. Environment Policy

Environment Management

- Periodic review of environmental status;
- Implementation and maintenance of green belt buffer areas;
- Review of STP, DG, operations and maintenance of APCS;

- Monitoring of collection and treatment of waste;
- Compliance to conditions stipulated in Environmental Clearances (EC) and consents;
- Implementation of EMP;
- Undertake awareness activities for industries and residential areas.

Social Management

- Undertake continuous engagement with local community;
- Address grievances of the complex, local community and residents.

10.2.1. Role of project proponent (top management)

Trumboo Industries Pvt. Ltd. will have ultimate responsibility for implementing the provisions of the EMP. This will include the management of environmental impacts, monitoring of contractor performance as well as development of mechanisms for dealing with environmental problems. The proponent will also ensure that the activities of its contractors during the construction phase are conducted in accordance with Good practice measures, implementation of which will be required through contractual documentation. In order to facilitate this, the regular site inspections and their noting will be documented by the PP/Contractor. The organisational structure of the Trumboo Industries Pvt. Ltd. is presented below:

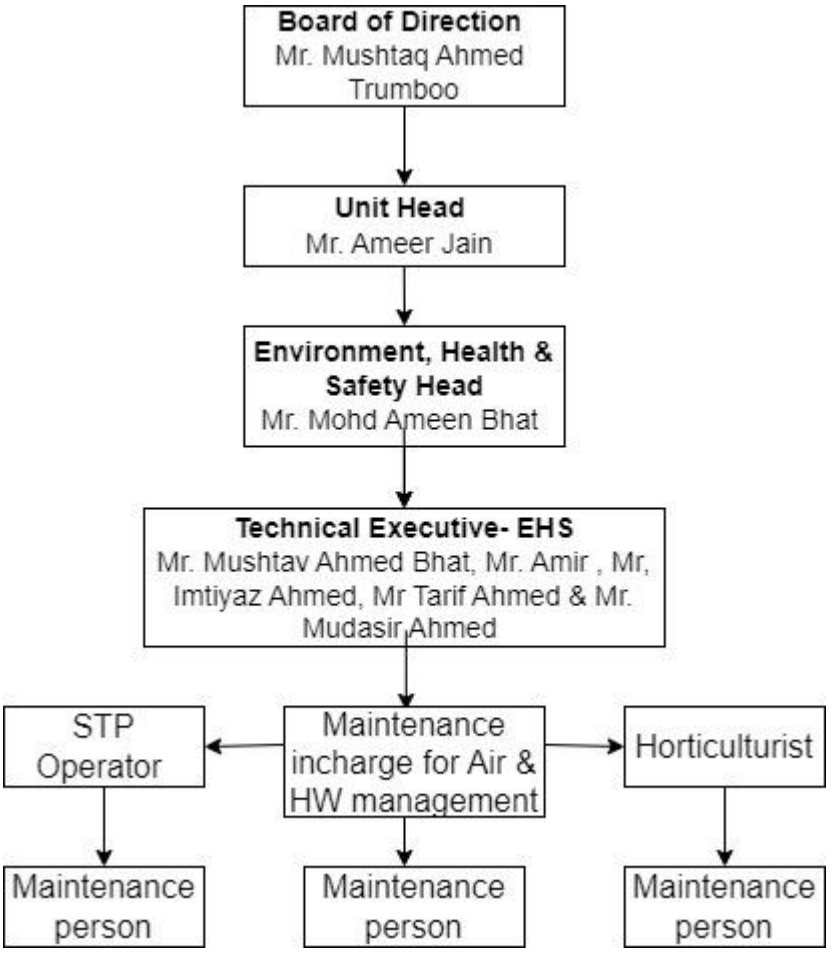


Figure 59. Environment management cell

10.2.2. Role of contractor

Contractors will also be expected to demonstrate commitment to the environmental monitoring programs at all levels in the contractor's management structure. It will be ensured the following:

- The Contractors involved in the project will be responsible for implementation of and adherence to, all the mitigation measures outlined in the EIA;
- Appropriate experienced and qualified personnel are employed as the Contractor's Environmental Manager
- All the environmental incidents to be reported to the Trumboo Industries Pvt. Ltd.limited at the earliest;
- To maintain records of all the inspection conducted;

- A program of regular self-inspection and audit will be developed and implemented and results reporting will be done to the Trumboo Industries Pvt. Ltd. cement limited EHS team on a regular basis.

10.2.3. Inspection, monitoring and audit

This will increase the effectiveness of the EMP. Through this process Trumboo Industries Private Limited will ensure the conditions stipulated in the Environmental Clearance (EC), Consent to Establish (CTE), Consent to Operate (CTO) etc are complied with. The Audit will be conducted by the team for the implementation of the management system. The entire process of inspection and audit will be documented and findings of the above will be implemented by the Trumboo Industries Private Limited

10.2.4. Monitoring, Reporting and Documentation

- Reporting of environmental, health, safety and social performance reports or check list, incident record register etc. will be developed and implemented through a program of reporting and reviewing throughout the project.
- Reports from inspection, audits and other improvement program will be regularly communicated;
- All complaints and enquiries will be addressed with records maintained in an assigned register by the safety officer of each contractor;
- Internal and external reporting mechanisms will be developed, internal reporting will comprise the concerned officials from the Environment management team, the representatives of the contractors and the top management of Trumboo Industries Private Limited.
- The internal reporting will be undertaken on quarterly basis while the external reporting will be undertaken half yearly.
- Annual environmental report known as 'Environment statement' as per FORM V of the EPA Rules, 1986, six monthly compliance reports as per EC of MoEFCC, compliance reports as per CTE/CTO etc. will be submitted to the regulatory authorities.

All the above reports will be documented in the documentation system as per the requirement of MoEFCC and other relevant regulatory authorities.

10.2.5. Internal monitoring, reporting and communication

The EHS head will be responsible for the internal monitoring. Inspection and audit findings along with the improvement program will be reported to the senior

management regularly. Records should be maintained for regulatory, monitoring and operational issues.

10.2.6. Documentation

It is the most important step in the implementation of the Environment Management plan. Trumboo Industries Private Limited has a well established record keeping and management system as per the requirement. Responsibilities will be assigned to the relevant personnel ensuring that the EMP documentation and records are maintained. Typical record keeping requirements for the proposed project is summarized below.

- Master Environment Management System document
- Legal register
- Operation control Procedures
- Work Instructions
- Incident reports
- Emergency preparedness and response procedure
- Training records
- Monitoring reports
- Audit reports
- Compliance Report
- Safety Committee meeting record.
- Complaints/Suggestions register and issue attended/closed
- Solid Waste and Hazardous waste generation, Handling and Disposal
- Quantity of wastewater and Treated water generated and its quality
- Survival rate/ratio of the Trees planted.
- Environmental Permits / Consents from MOEF
- Employee environmental, health and safety records
- Equipment inspection and calibration records, where applicable
- Vehicle maintenance and inspection record

10.2.7. EMP review & amendments

The EMP will be reviewed periodically to update it addressing any changes in the organisation, process or regulatory requirements. The EHS Head has all the mandate for coordination of the actions required for environment mitigation and management and monitoring the progress of the proposed management plans and various action plans to be implemented for the project.

10.3. Environment management plan

An Environment Plan has been developed following the identification of impacts and mitigation measures. The mitigation measures suggested will be as according to the monitoring schedule.

The EMP includes the following:

- Mitigations suggested for adverse environmental and social impacts and associated risks;
- Personnel responsible for implementing the mitigation measures at various stages of the project;
- The mitigation measures suggested in Chapter 4 would be implemented. This will reduce the impact on the environment due to the expansion of the project. To facilitate easy implementation, the recommendations suggested are grouped in different phases.

10.3.1. Environment Management Plan during Construction Phase

Table 113. EMP During Construction Phase

S. No.	Parameters	Mitigation Measures
1.	Air Environment	• Water sprinkling with a fixed sprinkling system will be done at the location where dust generation is anticipated. • No excavation of soil will be carried out without adequate dust mitigation measures in place. • No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust shall be left uncovered. • Sprinkling will be done frequently by a fixed and/or mobile sprinkling system. • Construction material and waste should be stored only within earmarked area and road side storage of construction material and waste will be prohibited • Only covered vehicles carrying construction material and machinery and waste will be permitted. • Construction and Demolition Waste processing and disposal sites will be identified and required dust mitigation measures be notified at the site. • To minimize the occupational health hazard, proper masks shall be provided to the workers who are engaged in dust generation activity.

2.	Water	• The water required during construction of the project will be used for domestic and flushing activity of the labour which will be sourced from Existing Borewell and water for construction purposes will be sourced from mobile STP treated water. Domestic wastewater will be generated from labours and will be treated in mobile STP. • Runoff from the site will not be allowed to stand (water logging), same shall be channelized to the nearby drain.
3.	Noise	• During the installation stage, expected noise levels shall be in the range of 80-100 dB(A), which will decrease with increase in distance. Hence most of the activities will be carried out during the day time. • There will be some noise generation due to movement of vehicles carrying materials during installation phase and as this is only a temporary phenomenon it can be managed by properly regulating the movement of vehicular traffic so that the ambient air quality with respect to noise is not adversely affected. • To prevent any occupational hazard earmuffs/earplugs will be given to the workers working around or operating plant/ machinery emitting high noise levels. Hence most of the activity carried out mostly in the day. Careful planning of machinery operation and scheduling of operation shall be done to minimize such impact.
4.	Solid Waste Management	• Total 83 kg/day of solid waste will be generated, out of this 33 kg/day will be organic waste which will be composted in OWC & further used as manure for plantation and the rest 50 kg/day will be inorganic waste which will be given to authorised recyclers. • C&D waste generated will be managed as per construction and demolition waste management rules 2016.

10.3.2. Environment Management Plan during Operation Phase

Table 114. EMP during Operation Phase

S. No.	Parameters	Mitigation Measures
1.	Air Environment	• Emissions to the atmosphere through process stacks shall be controlled within acceptable limits by installation of pollution control equipment like pulse jet bag filters,, electrostatic precipitators, Bag House. Provision of ID Fan Vent is there for Existing limestone, coal & gypsum Crusher and same shall follow for proposed expansion. • In Existing: For effective dispersion of the pollutants vent height of 10 m for Cement mill, vent for packing unit, 15 m for limestone crusher, 10m Gypsum crusher, 10 m coal crusher, 10 m coal mill & stack height of 40 m Raw mill/Kiln and 40 m for clinker cooler has been maintained based on the CPCB requirements. • For the proposed expansion, vent height of 10 m for Cement mill, vent for packing unit, 15 m for limestone crusher, 10m Gypsum crusher, 10 m coal crusher, 10 m coal mill & stack height of 40 m Raw mill/Kiln and 40 m for clinker cooler will be provided and maintained. • - APCS for Line-I : Pulse Jet Bag Filter, Bag House, Electrostatic Precipitator

		- APCS for Line-II : Pulse Jet Bag Filter, Pulse Jet, Bag House, Electrostatic Precipitator. ● Green area in the plot will be 4.08 Ha (33% of plot area) shall be developed. The plantation work for green belt development will be carried out as per CPCB guidelines.
2.	Water	● Total water requirement will be 189 KLD which consists of water requirement for the domestic, gardening, cement plant makeup water, dust suppression. ● For fresh water usage, the surface water will be sourced from existing borewells which will be used for domestic purposes, Cement Plant Cooling water, treated water generated from STP will be used for Cement Plant make up water, Gardening & dust suppression.
3.	Noise	To reduce Ambient Noise level the following measures will be adopted-: ● Noise generating units like machinery area, canteen etc. will be well insulated with enclosed doors. Earmuffs will be used while running equipment of the Industry. ● Maintenance of vehicles and machinery will be done in a sustainable manner to ensure best performance and less loss. ● Vehicle and people flow during shift changes will be regulated by allowing exits in a phased manner. ● The green belt will help in reducing noise levels in the complex as a result of attenuation of noise generated due to plant operations and transportation. ● Boundary wall of 20m height acts as noise barrier which will be regularly maintained in case of any damage.
4.	Waste Management	● Total 83 kg/day solid waste will be generated out of which 33 kg/day of biodegradable waste will be composted and used in plantation, and recyclable waste of 50 kg/day will be given to authorised recyclers/burnt in kiln as per permission obtained. ● Used oil/Used grease of 3300 KLPA, will be burnt at kiln /will be given to an authorized recycler as per the permission obtained under Hazardous waste rules 2016. ● E-waste will be 0.024 TPA, Battery waste of 0.048 TPA, shall be sold/disposed of to authorized vendors. ● Non hazardous Waste: 9 kg/day of STP sludge will be used as manure for plantation,
5.	Occupational Health & Safety Management Plan	Action plan for the implementation of OHS standards as per OHSAS/USEPA/NIOSH/ ACGIH is being followed as given below: ● Occupational health surveillance programmes will be done six monthly & and their records will be maintained. ● At the project site, an emergency First Aid facility will be provided. A room will be provided separately with provision of bed and an experienced doctor. ● Health check-up camps will be organized on a regular basis at company dispensary / nearby locations for nearby people to evaluate exposure of the workers to chemicals during pre-placement and periodic medical monitoring. ● Proper medical facility arrangements will be provided in case of any accidental release. ● Label Precautions and First Aid facility will be provided. ● Emergency plans will be prepared and mock drills of the on-site emergency will be conducted. ● Employers and employees will be made aware of the hazardous properties of materials in their workplaces, and the degree of hazard each poses. ● Inspection of the industrial activity will be done at least once a year and an annual status report on compliance with the Rules shall be submitted.

		• An Environment, Health and Safety (EHS) Manager will be available, which handles all the safety issues related to man, machine & materials. • Exterior refuge or safe areas include parking lots, open fields or streets which will be located away from the site of the emergency and which provide sufficient space to accommodate the employees.
5.	Socio-Economic Management Plan	• The Industry will require raw materials, skilled and unskilled laborers. It will be available from the local area. Due to increasing industrial activities, it will boost the commercial and economical status of the locality, to some positive extent. • In the operation phase, the proposed plant will require a significant workforce of nontechnical and technical persons. About 350 people will be deployed during construction of the project and 550 people will be employed during the operational stage of the project.
6.	Greenbelt Development Plan	• Green belt area in the plot will be 4.08 Ha (33 % of plot area) along with vertical green. • Total 10,200 nos. of trees will be planted after expansion. • **Plantation Maintenance:** it is important to clear or cut the unnecessary vegetation "Weed" regularly. This will help the required seeds to grow properly and increase the survival rate.

10.4. EMP implementation budget

Table 115. EMP Capital Cost

Sr. No.	Particulars	Existing Unit (Lacs)	Proposed Unit (Lacs)	Total After Expansion (Lacs)
1	Air management including water sprinkling system for dust suppression, vacuum sweeper for cleaning dust, APCS	370	425	795
2	Solid Waste management	5	7	12
3	Wastewater management	25	100	125
4	Noise pollution control	10	15	25
5	Landscaping / plantation	13	21	34
6	Rain water harvesting	0	100	100
7	Social Activities *	300	79.05	379.05
	Total	**723**	**747.05**	**1470.05**

Table 116. EMP recurring cost

Sr. No.	Particulars	Existing Unit (Lacs)	Proposed Unit (Lacs)	After Expansion (Lacs)
1	Air management including water sprinkling system for dust suppression,	185	190	375

	vacuum sweeper for cleaning dust, APCS			
2	Solid Waste management	2	3	5
3	Wastewater management	5	8	13
4	Landscaping / plantation	4.5	7	11.5
5	Noise pollution control	2	3	5
6	Rain water harvesting	-	5	5
7	Environment monitoring	6	6.64	12.64
	Total	**204.5**	**222.64**	**427.14**

10.5 Social Activities Budget

As per Office Memorandum of MOEF F.No.22-65/2017-IA.III dated 30th September 2020, deliberation on the commitments made by Project Proponent for Environment Clearance in lieu of Corporate Environment Responsibility (CER). It is directed that all the activities proposed by the Proponent shall be a part of the Environment Management Plan.

Expenditures of Social Activities

Table 117. Expenditures done of Social Activities

Sl No.	Major Head	1 April, 2012 to 31 March, 2013 (Rs. in Lacs)	1 april, 2013 to 31 March,2014 (Rs. in Lacs)	1 April, 2014 to Dec, 2014 (Rs. in Lacs)	1 Apr 2017 to 30 Sep 2017 (Rs. in Lacs)	1 Oct 2017 to 31 March 2018 (Rs. in Lacs)
1	**Public welfare Expenditure (PWE) Including activities like Zakat, Education, Widow fund, Sports, water reservoir tanks, playground**	23.64	23.52	34.79	35.89	93.21
2	**Environmental related Expenses (ERE) Including activities like plantation/wildlife, salary of gardeners**	26.99	35.28	26.24	19.49	128.7
	Total	**50.63**	**58.8**	**61.03**	**55.38**	**221.91**

Table 118. Cost spent on Social activities FY 2020-21

Sl No.	Major Head	FY 2020/21
1	Education	2,11,200
2	Medical Facility to Community	4,69,440
3	Electric Pole for Tubewell of Village Bathen	1,20,000
4	Cricket Stadium upgradation of Village Khrew	6,20,000
5	Construction of house Dilshada Akhtar R/O Khrew	2,87,000
6	Widow Fund	1,002,000
	Total	**27,09,640**

Table 119. Cost spent on Social activities FY 2021-22

Sl No.	Major Head	FY 2021/22
1	Education	2,11,200
2	Medical Facility to Community	1,50,000
3	Tubewell of Village Bathen	1,250,000
4	Distribution Transformer 63 KVA 11/6/6/33 KVA for tubewell of Village Bathen	5,34,000
5	Stabilizer 63 KVA for tubewell of Village Bathen	1,90,000
6	Widow Fund	1,292,400
7	Cricket kits for Village Bathen	17,500
	Total	**3627600**

Table 120. Cost spent on Social activities FY 2022-23

Sl No.	Major Head	FY 2022/23
1	Education	2,11,200
2	Medical Facility to Community	2,000,00
3	Public Welfare (Construction of Shop etc for Village Bathen)	3,22,000
4	Cricket Tournament expenses at Village Bathen	1,250,000
5	Widow Fund	1,292,400
6	Cricket kits for Village Bathen	19,000
	Total	**3294600**

Table 121. Proposed Social activities Budget

S.No	Type of activities proposed	Cost Proposed Rs. in Lakhs)					
		1st year (Rs in Lakhs)	2nd year (Rs in Lakhs)	3rd Year (Rs in Lakhs)	4th year (Rs in Lakhs)	5th Year (Rs in Lakhs)	Total (Rs in Lakhs)
1.	Drinking water & Sanitation for a school nearby	2.11	2.11	2.11	2.11	2.11	10.55

2.	Medical Facility	2.0	2.0	2.0	2.0	2.0	10.0
3.	Rain water harvesting in village Bathen	1.5	1.5	1.5	1.5	1.5	7.5
4.	Skill development	10.0	10.0	10.0	10.0	10.0	50
5	Expenditure in sports	0.20	0.20	0.20	0.20	0.20	1.0
6	Cleanliness, Hygiene including garbage collection and plastic waste segregation	0.1	0.1	0.1	0.1	0.1	
	Total	**15.91**	**15.91**	**15.91**	**15.91**	**15.91**	**79.05**

10.6 Wildlife Conservation Plan Budget

Table 122. Wildlife Conservation Plan Budget

S. No.	Component	1st year	2nd year	3rd year	4th year	5th Year	Total cost (In Rs lakhs)
1	Food Availability and improvement of Habitat-Plantation of edible fruit bearing trees/conifer plants (In consultation with Department of Wildlife Protection) for herbivorous animals which will lead to the improvement of habitat. Also provision of availability of food grains near the water bodies will be provided.	7	7	10	5	5	34
2	Purchase and providing equipments to Wildlife Warden, Central Division, Department of Wildlife Protection for their field staff to strengthen night/day patrolling viz night vision binoculars, camera traps & waterproof tents.	5	2.5	5	5	2	19.5
3	Purchase and providing of rescue and rehabilitation vehicles to the Wildlife Department including tranquillising equipment.	15	-	-	-	-	15
4	Construction of Habitat Management Centre at Batthen (Outside the plant premises) which shall be utilized for conducting of awareness programmes for locals/students/ educated youths/ Local representatives to educate them to minimize their dependence on Wildlife Forests like fodder, fuel wood etc and combating poaching activities for the best improvement and protection of wildlife	3.5	4	3	3	2	15.5

5	Fencing around the Project Boundary so that no wild animals wander into the project site and cause any mishaps. Also, ensure a strict watch on the fence so that no wild animal is able to enter the Plant area.	-	2.5	2.5	0.5	0.5	6
Total		**30.5**	**16**	**20.5**	**13.5**	**9.5**	**90**

10.5. ENVIRONMENTAL Cost Summary

Table 123. Environmental Cost Summary

S.No	Cost Summary	Cost for Total after Expansion (Rs. in Crores)	% of the project Cost
1	Project Cost	250.52	100
2	Capital cost for Environment Management Plan (including social activities cost)	14.70	5.87
3	Recurring cost for Environment Management Plan	4.27	1.70
4	Social Activities (included in EMP capital)	3.79	1.51
5	Wildlife Conservation Plan	0.9	0.36
6	Occupational Health and Safety	0.59	0.24
7	Public Health and Safety	0.12	0.047

11. Summary & Conclusion

11.1. Project description

Trumboo Industries Private Limited (TIPL) is proposing to enhance the production capacity of Existing cement plant from cement and clinker capacity of 3.3 Lakhs TPA (0.33 million TPA) & 3.135 Lakhs TPA (0.31 million TPA) respectively over the existing land area of 12.38 ha located at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir.

The project falls under category 'B1' of Schedule 3(b) as per EIA notification 2006 and its subsequent amendments as the capacity of the proposed cement plant is less than 1 MTPA. The project attracts general conditions as the Dachigam National Park is located at 3.12 km N from the plant site, hence will be appraised at Central Level. The ESZ of the aforementioned National Park is not notified hence the default ESZ of 10 km has been considered and accordingly, NBWL clearance application was applied vide Proposal No. FP/JK/IND/4774/2020. NBWL clearance has been granted by the Standing Committee vide letter no. F.No.6-132/2021-WL dated 02.05.2022. The distance from Dachigam National Park i.e. 3.12 km N has been authenticated by the Chief WildLife Warden, Jammu & Kashmir.

The plant has been in operation since 2010 for which CTE was obtained from Jammu and Kashmir State Pollution Control Board vide letter no 200 of 2004 dated 16.08.2004. The Consent to operate has been obtained for the existing capacity from time to time. Latest CTO has been granted by the Jammu & Kashmir State Pollution Control Board to M/s Trumboo Industries Pvt. Ltd. vide letter no. PCC/digital/22062773946 of 2022 dated 11.08.2022, which is valid up to June 2026.

Certified Compliance report on CTO has been issued by RO, MoEF, Srinagar, Kashmir vide letter no. PCC/RDK/PS/2023/97-98 dated 29.04.2023.

The major raw material requirement for proposed expansion of cement plant will be limestone, clay/silica, iron ore, gypsum, and coal The total plant area is 12.38 ha out of which 4.08 ha area is earmarked for the green belt development.

Existing power requirement for 3.3 Lakhs TPA (0.33 million TPA)capacity is 9 MW. After expansion to 6.6 Lakh TPA(0.66 million TPA) capacity, the power requirement will go up to 18 MW. The entire power requirement will be drawn from the power

grid of the state government. Existing DG Sets for power backup are of 3 x 1500 KVA capacity, an additional one DG set of 1 x 1500 KVA is proposed for expansion.

The total water requirement after the expansion of the plant is 189 KLD. Source of the fresh water will be borewell.

At present 350 employees are employed, additionally 200 employees will be employed for expansion.

The cost of the project will be 250.52 Crores (Existing- 85.52 Cr & Proposed- 165 Cr)

EIA study has been conducted prior to the commissioning of expansion of production and in accordance with **Standard Terms of Reference (TOR)** for the proposed project vide File No. **J-11011/204/2016-IA.II(I)** dated **15.01.2021 was granted by MOEF&CC.**

11.2. Description of the environment

Study Period: Monitoring was carried out **for Post Monsoon Season from October 2022- December 2022.** The results for the same have been summarised below:

The baseline data is generated through field study within the impact zone (Core Zone and Buffer Zone i.e. 10 Km from Project Boundary) for various components of the environment viz. Air, Noise, Water, Soil, Land, Traffic, Ecology and Socioeconomic. The baseline environmental quality has been assessed for the Post Monsson Season (**October 2022- December 2022.**) (by NABL accredited laboratory Perfact Researchers Pvt Ltd, New Delhi) in a study area of 10 Km radius from the project site. The baseline data obtained is summarised below:

- **Land Use:**

Core Zone: The proposed cement manufacturing unit will be located in an area of 12.38 ha. The expansion of the proposed project will be within the existing plot area only, no additional land is required for the expansion.

Buffer Zone: Out of total 10 km radius study area i.e. 33909.94 Ha, built up area is about 2083.72 hectares (6.14 %), agriculture land is about 9140.42 hectares (26.95%), Forest land area is about 19681.61 hectares (58.04%), waste/barren land is about 2555.39 hectares (7.54%), water bodies area is about 461.86 hectares (1.36%) and Grass/ Grazing land is about 135.17 hectares (0.40%) of the total 10 km radius study area.

Natural Hazard: The area under study falls in Zone-V , according to the Indian Standard Seismic Zoning Map which is classified as High Risk Zone intensity.

Geology: This zone has undulating topography. The maximum elevation 1970m AMSL is found at the northeast corner of the core zone and minimum elevation 1922m AMSL towards SSE of the project site. The altitude of the buffer zone of the project area varies from 3759m AMSL on the North-eastern periphery to 1586m AMSL on the South-Western periphery. The general slope of the buffer zone of the project area is towards south-west. Soil in hilly areas is poor and fertile in plain areas. Productivity in higher ranges is poor while in central regions is fertile. The rock types belonging to various age groups starting from Panjal Traps and other Permo-carboniferous formations to recent ones(Scree, talus and clays) are encountered in this area.

Hydrology: There is no perennial source of water in the project area. Study area has a dendritic pattern of drainage. 1st and 3rd order ephemeral streams passing from the lease area and ultimately joins the jhelum river at about 9.8 km in west of the project site.

Ambient Air Quality:

Core Zone: **Core zone**

The mean value of PM_{10} ranges from (71.06 -75.39 µg/m^3) & $PM_{2.5}$ ranges from (39.40-41.80 µg/m^3), SO_2 ranges from (7.24-7.68 µg/m^3), NO_2 ranges from (19.97-21.19 µg/m^3) & CO ranges from (0.59-0.63mg/m^3) which are within the limits of National Ambient Air Quality Standards (NAAQS).
As per the Air Quality Index by CPCB, the air quality of the core zone is found to be Satisfactory in the Post Monsoon season.

Buffer zone:

The mean value of PM_{10} ranges from (60.15-95.62 µg/m^3), $PM_{2.5}$ ranges from (33.55 - 53.02 µg/m^3), SO_2 ranges from (6.13- 9.75 µg/m^3), NO_2 ranges from (16.90 - 26.87 µg/m^3) & CO ranges from (0.50 - 0.80 mg/m^3) which are within the limits of National Ambient Air Quality Standards (NAAQS). As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be Satisfactory during the sampling campaign.

Ambient Noise levels: The ambient noise level during day time at the proposed project site varies from 57.2 dB (A) to 57.4 dB (A) which are within the standard limit of Industrial area ~ 75 dB (A). During night the noise level at the project site ranges from 50.1 dB (A) to 50.4 dB (A) which are within the standard limit of Industrial area 70.0 dB (A).

In the residential area of Buffer Zone, noise levels at the day time range from 53.3 dB(A)- 55.8 dB(A) and at night time it ranges from 45.6 dB (A) to 47.3 dB (A). The

daytime noise level in commercial areas (buffer zone) range from 58.5 dB(A) to 61.5 dB(A) during the day while it goes down to 51.4 to 57.6 dB(A) during the night. The noise levels in the region seem to be slightly higher than the ambient noise standards which could be attributable to vehicular and residential activities.

Soil Quality: Core Zone: The samples collected from the core zone sites show that the soil texture in the core zone is Clayey, Colour is Dull Reddish Brown, pH is 6.83. Amount of primary nutrients like Organic matter is 0.98 %, the available nitrogen 65.8 mg/kg is low and available Potassium 7.0 mg/kg is low while the available Phosphorus 9.6 mg/kg is in the medium range. Thus it can be concluded that soil is low fertile in the Core Zone.

Buffer Zone: The samples collected from the buffer zone sites show that the soil texture in the buffer zone is Clay and Silt Clay, Color is blackish to Dull Reddish Brown, pH ranges from 6.73 - 7.98. Amount of primary nutrients like Organic matter 0.59 -3.01 %, the Available Nitrogen 57.4-105.0mg/kg is lower in range, the Available Phosphorus 8.2-21.2 mg/kg is medium to high in range, Available Potassium 8.8-17.8mg/kg is low in range, Primary nutrient profile shows that soil is average fertile due to the availability of low amount of nitrogen, available potassium.

Surface Water Quality: The results of water quality of surface water SW1 (i.e. Satural (Upstream) Tributary of Jhelum), SW4 (Narastan (Upstream) Tributary of Jhelum) shows that it is meeting the criteria class “D” i.e. Propagation of Wildlife and Fisheries as per CPCB surface water quality- Designated Best Use Water Quality Criteria defined by CPCB and SW2 (Khanagund (Downstream) Tributary of Jhelum), SW3 (Aripal (Downstream) Tributary of Jhelum), SW5 (Sarbal Lake) shows that it is meeting Class “E” i.e. Irrigation, Industrial Cooling, Controlled Waste disposal as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The majority of the water quality parameters in the selected sites were within their respective drinking water quality standards except for SW5 in which Total hardness, Calcium & Alkalinity is higher than the drinking water standards.

Ground Water Quality: Core zone: The water quality of the core zone of borewell shows that Total dissolved solids, total hardness, fluoride, calcium, Magnesium, Chloride, however alkalinity is slightly higher than drinking water standards (IS:10500).

Buffer zone: The water quality of the core zone of borewell shows that Total dissolved solids (TDS) of the sampling locations ranges from 194 mg/l to 352 mg/l, fluoride of the sampling locations ranges from <0.1 mg/l to 0.65 mg/l, calcium of the sampling locations ranges from 62.4 mg/l to 104.0 mg/l, magnesium concentration of sampling locations ranges from 5.83 mg/l to 18.47 mg/l, Chloride Concentration of all the sampling locations ranges from 1.42 mg/l to 12.76 mg/l are within the

drinking water standard (IS:10500) while total hardness ranges from 228 mg/l to 320 mg/l & alkalinity ranges from 188 mg/l to 358 mg/l which is higher than the drinking water standards.

Biological Environment: Flora of core zone already present at the site are Cupressus torulosa (Himalayan Cypress), Populus nigra (Black poplar), Vachellia nilotica (Gum arabic tree), Juglans regia (Persian walnut) and Picea smithiana (Indian Spruce).

As per the Indian WildLife (Protection) Act, 1972,08 Schedule I species mentioned in the study area within a 10 km radius namely Cervus elaphus hanglu (Kashmir stag (hangul)), Panthera pardus (Leopard), Moschus chrysogaster (Alpine musk deer), Ursus arctos isabellinus (Himalayan brown bear), Falco tinnunculus (Common kestrel), Capricornis thar (Himalayan serow), Ithaginis cruentus (Blood Pheasant), Lophophorus impejanus (Himalayan monal)

Socioeconomic Environment: The total population of the study area is 109474 constituting 16911 households.The sex ratio of the study area as per census 2011 records is 898, whereas the sex ratio of the district Pulwama involved is 912 and district Srinagar is 900.

During the primary survey it was found that Agriculture, Service, Labour, Private Job, Private Business etc. were principal work in the villages. Main water sources in the surveyed area were bore well and community supply.

Agriculture plays an important role in the economy of the District. The agriculture products like paddy, oil seeds, fodder, saffron & milk are the main contributors to the Gross Domestic Product (GDP) of the District. Among the fruits, apple, almonds, walnut & cherry are the important one produced in this District. All surveyed areas had 80-100% toilet facility; sanitation facility was satisfactory. During the survey, it was observed that drainage lines were mixed type (open, semi pakka, covered etc).

Main commodities have been taken from DCHB 2011. Main commodities of the district are paddy, oil seeds, fodder, saffron & milk.

The project will generate employment opportunities for the local people which will reduce unemployment and enhance the lifestyle of the community.

11.3. Anticipated environmental impact and mitigation measures

Air Quality Management Plan

For Construction Phase

- Water sprinkling shall be done at the location where dust generation is anticipated.
- No excavation of soil shall be carried out without adequate dust mitigation measures in place.
- No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust shall be left uncovered.
- Sprinkling shall be done frequently by a fixed sprinkling system.
- Construction and Demolition Waste processing and disposal sites shall be identified and required dust mitigation measures be notified at the site.
- To minimize the occupational health hazard, proper masks shall be provided to the workers who are engaged in dust generation activity.

For Operation Phase

- There are 3 x 1,500 KVA DG sets in the existing unit. For proposed expansion DG sets of 1x1,500 KVA (emergency use only), stack height of 35 m above ground level shall be provided to control air emissions. To control fugitive emissions, water sprinkling at coal & limestone storage yards. Raw material and product kept under sheds, Road Sweeping machines & mist fogging system have been deployed for cleaning dust. Same shall be followed for proposed expansion.
- Process emissions will be from the stack attached to the Limestone Crusher, Gypsum Crusher, Coal crusher, Coal Mill Area, Raw Mill / Kiln Area, Clinker Cooler Area, Cement Mill Area & Packing Unit Area, from which pollutants/gases PM, SO2, NO2 will be released in the form of gases.
- Emissions to the atmosphere through process stacks shall be controlled within acceptable limits by installation of pollution control equipment like Pulse Jet Bag Filter, Bag House, Electrostatic Precipitator. Provision of ID Fan Vent is there for Limestone Crusher, Gypsum Crusher & Coal Crusher and same shall follow for proposed expansion.
- Green belt area in the plot will be 4.08 Ha (33% of plot area). Also, outside green belt development will be done in the land owned by the company.

Noise Level Management Plan

For Construction Phase

- During the installation stage, expected noise levels shall be in the range of 80-100 dB(A), which will decrease with increase in distance. Hence most of the activities shall be carried out during the day.
- Regulating the movement of vehicular traffic so that the ambient noise quality with respect to noise is not adversely affected.

- To prevent any occupational hazard, earmuffs/earplugs shall be given to the workers working around or operating plant/ machinery emitting high noise levels.

For Operation Phase

To reduce Ambient Noise level the following measures will be adopted-:

- Noise attenuating devices like earplugs and earmuffs are being provided to the workers exposed to high noise levels.
- About 33% of land has been earmarked for the green belt and plantations.
- Noise generating machinery is kept in the covered sheds.
- Improved mufflers & silencers have been provided in the machinery generating high noise.
- There are 3 x 1500 KVA DG sets in the existing unit. However, for the proposed installation of new line-II. DG set of capacity 1x1500 KVA (for emergency use only) shall be bought acoustically enclosed and kept on surface.
- A 20m height boundary wall has been constructed all around the plant boundary which acts as a noise barrier, same will be maintained for the proposed expansion.

Solid & Hazardous Waste Management plan

For Construction Phase

- Total 53 kg/day of solid waste will be generated, out of this 21 kg/day will be organic waste and the rest 32 kg/day will be inorganic waste which will be given to authorized vendors.
- C&D waste generated will be managed as per construction and demolition waste management rules 2016.

For Operational Phase

- Total 83 kg/day solid waste will be generated out of which 33 kg/day of biodegradable waste will be composted in the proposed OWC and further will be used as manure for plantation, and recyclable waste of 50 kg/day will be given to authorized recyclers.
- Used oil/Used grease of 3300 KLPA, will be given to an authorized recycler/ burnt at kiln as per the permission obtained under Hazardous waste rules 2016.
- E-waste will be 0.024 TPA, Battery waste of 0.048 TPA, shall be sold/disposed of to authorized vendors.
- Non hazardous Waste: 9 kg/day of STP sludge will be Used as manure for plantation and 192 TPD of Dust from APCS/Bag filter/ ESP residue will be recycled in cement manufacturing.

Wastewater & Effluent Management Plan

For Construction Phase:

Source of water: The water required during construction of the project will be 26 KLD out of which 10 KLD will be used for domestic activities of the labour and 16 construction purposes. 10 KLD will be sourced from the inhouse borewell supply and 16 KLD for construction purposes will be sourced from mobile STP treated water. Domestic wastewater will be generated from labours which will be treated in mobile STP.

For Operation Phase:

Source of fresh water: Groundwater from borewells

Total water requirement of the project will be 189 KLD, out of which 75 KLD of water is required during the existing phase which consists of water required for Domestic water (16 KLD), Cement plant make up water (50 KLD), Gardening (8 KLD) and Dust suppression (1 KLD) while the proposed water demand will be 114 KLD, out of which water required for Domestic water (9 KLD), Cement plant make up water (88 KLD), Gardening (12 KLD) and Dust suppression (5 KLD). Waste water generated during existing phase is 19 KLD which is disposed off to two soak pit via septic tank after expansion the waste water generated will be 37 KLD which will be treated in STP of 50 KLD and treated water of 35 KLD will be reused for gardening (20 KLD), dust suppression (6 KLD) & cement plant make-up water (9 KLD).

Biological Environment Management Plan

- Greenbelt area in the plot will be 4.08 Ha (33% of plot area) along with vertical green.
- Total 10,200nos. of trees will be planted after expansion.

Socio Economic Environment management plan

- The Industry will require raw materials, skilled and unskilled laborers. Maximum will be available from the local area. Due to increasing industrial activities, it will boost the commercial and economical status of the locality, to some positive extent.
- In the operation phase, the proposed plant would require a significant workforce of nontechnical and technical persons. About 350 people will be employed during construction of the project and 550 people will be employed during the operational stage of the project after expansion.

11.4. Environmental monitoring programme

Trumboo Industries Pvt. Ltd.. will ensure that the environmental performances of all the activities are monitored throughout the execution of the various project activities. Monitoring will include all the aspects and parameters related to the process emissions from the manufacturing process, storage area, work zone area, quantities of waste generated, effluent generation and its characteristics, Environmental quality of components like Air, water, Soil, Noise are being verified that they meet the prescribed standards. Occupational health and safety monitoring will include Effective Health and safety management of the workers engaged, periodic health check up, reporting of all the incidents in the plant during the installation and operation phase. All the reports will be periodically submitted to the concerned regulatory authorities as compliance, audit reports.

11.5. Additional studies

Public consultation for the project will be held as per the guidelines of J & K State Pollution Control Board. The project is situated in the Seismic zone-V area and is a high risk zone. Proper measures will be taken during the construction to avoid damage and loss. To avoid flooding or water logging in the area due to the existing nearby river, the site shall be raised above the existing road level. All measures shall be taken as per law.

A detailed fire safety and management plan as well as on-site and off-site management plan have been developed for the site.

Some General safety measures

- Occupational health surveillance programmes shall be done six monthly & and their records will be maintained.
- At the project site, an emergency First Aid facility will be provided. A room will be provided separately with provision of bed and an experienced doctor.
- Health check-up camps will be organised on a regular basis at company dispensary / nearby locations for nearby people to evaluate exposure of the workers to chemicals during pre-placement and periodic medical monitoring.
- Proper medical facility arrangements will be provided in case of any accidental release.
- Label Precautions and First Aid facility will be provided.

- Emergency plans will be prepared and mock drills of the on-site emergency will be conducted.
- Employers and employees will be made aware of the hazardous properties of materials in their workplaces, and the degree of hazard each poses.
- Inspection of the industrial activity will be done at least once a year and an annual status report on compliance with the Rules shall be submitted.
- An Environment, Health and Safety (EHS) Manager will be available, which handles all the safety issues related to man, machine & materials.
- Exterior refuge or safe areas include parking lots, open fields or streets which will be located away from the site of the emergency and which provide sufficient space to accommodate the employees.

11.6. Project benefits

The benefits due to the proposed project are given below:

- After expansion additional employment opportunities will lead to a rise in income and improve standard of living. The expansion of existing industry would also generate jobs for the labourers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to local youth.

- Since many of the products are import substitutes – Make in India theme will get a boost. The country will be able to save valuable foreign exchange.

11.7. Environment management plan

The effective management system involves proper and regular monitoring of the environment components for continual improvement. Based on the project descriptions and the activities associated, the Environment Management plan has been prepared for all the valued Components for which the Budget of Rs. 1470.05 lakhs as capital cost & Rs 427.14 lakhs/Year as recurring cost has been proposed by the Trumboo Industries Pvt. Ltd. Work zone monitoring shall be carried out by the EHS department every month for gaseous pollutants and dust. Records will be kept in standard Form as per Factories Rules. Location for sampling shall be identified. Quarterly and half yearly monitoring will be done

11.8. Conclusion

Thus, it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan, the operation of the project will have no major impact on the environment.

12. Disclosure of consultants engaged

About Environmental Consultant

Perfact Enviro Solutions Pvt. Ltd, established by experienced environmental and related experts, provides specialised services in the field of Environment and Pollution Control for all types of Industrial, Construction, Nuclear Sciences, Biodiversity Mining, Aerial Ropeway and other related fields. Our transparent and professional approach, commitment to excellent quality and service, and timely deliveries have contributed to create a name in the field of environment. We have a core group of highly qualified experts from various fields like Environment, Forestry, Chemistry, Civil Engineering, Geology, Social Sciences, Electronics and Telecommunication with rich and diversified experience in the field of environment and pollution control. Perfact Enviro Solutions Pvt. Ltd management, experience, excellence, professionalism and ultimate satisfaction has helped in achieving the heights of success in their specialised field of environment.

Core Team

Table 124. Core Team

Sr. No.	Name of the Expert	Qualification	Experience (yrs)
1	Mr. Praveen Bhargava, Managing Director	Pursuing Ph.D , M.Sc (Chemistry), M.Phil (Chemistry),	33
2	Mrs. Rachna Bhargava, Director & C.E.O	Pursuing PhD, M.Sc. (Environment Sc.) Advanced EMS Auditor	28
3	Mr. Nipun Bhargava	Pursuing Ph.D, M.Phil (Chem) M.Tech Chemical Engineering, B.E (Hons) Chemical Engineering	6
4	Prof. R. P. Mathur, Mentor	Ph.D	60
5	Dr Vinay Bhargava, Mentor	Ph.D	52
6	Mr. Santosh Pant, Director	M. Tech	42
7	Mrs. Akta Chugh, Director	M Sc Chemistry	14
8	Mrs. Rachna Dogra, Director	M Phil Chemistry	10
9	Dr. Anil Kumar	PhD(Chem)	40

ACCREDITATIONS OBTAINED

- ISO-9001:2015 Certification
- ISO-14001:2015 Certification
- QCI – NABET Scheme for Accreditation of EIA Consultant Organizations

Declaration by Experts contributing to the EIA Expansion of Cement Plant capacity from 3.3 lakhs TPA to 6.6 lakhs TPA and clinker production from 3.135 lakh TPA to 6.27 Lakhs TPA located at Village- Khrew, Tehsil- Pampore, District- Pulwama, Jammu & Kashmir by M/s Trumboo Industries Pvt. Ltd. hereby certify that I was a part of the EIA team under the capacity of EIA coordinator from October 2022 to till date that prepared the above EIA.

EIA Coordinator: Mr. Nipun Bhargava

Period of Involvement: October 2022 to till date

TM to EC: Ms. Neha Aggarwal

Assistant to EC: Mrs Urvi Pritam

Office address: -

Perfact Enviro Solutions Pvt. Ltd.
5th floor, NN Mall, Mangalam Palace,
Sector – 3, Rohini, New Delhi – 110085

Table 125. List of EIA Expert

S. No.	Functional Areas	Name of Expert/s	Involvement (Period of task)
1.	EIA Coordinator	Mr. Nipun Bhargava	I had visited the site along with the FAEs to understand the project site and the study area. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: October 2022 to till date
2.	AP	Mrs Urvi Pritam	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring ; based on the results and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: October 2022 to till date
3.	WP	Mr. Nipun Bhargava	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources have prepared Sampling plan & collected samples ; based on the results from the lab and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: October 2022 to till date

4.	RH	Mr. Nipun Bhargava	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I prepared the Impact Mitigation measures. Period of Involvement: October 2022 to till date
5.	SE	Mr. Manoj Pant	I had visited the site to collect the baseline status of socio-economic conditions up to 3 km radius. Studied Villages in study area using Topographical map and extracted Secondary data from Census of India. Then was involved in preparing a socio economic study report using the primary survey and secondary data which includes impact and mitigation measures. Period of Involvement: October 2022 to till date
6.	NV	Mrs Urvi Pritam	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution sources have prepared the Impact Mitigation measures. Period of Involvement: October 2022 to till date
7.	SHW	Mr. Praveen Bhargava	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources have prepared the Impact report and suggested Mitigation measures and development of EMP. Period of Involvement: October 2022 to till date
8.	HG	Mrs. Saloni Sharma	The physical observation of the study area including Ground water sources and its water quality was made. After studying the Water pollution sources, the Impact report was prepared and Mitigation measures were suggested Period of Involvement: October 2022 to till date
9	Geo	Mrs. Saloni Sharma	I had visited the site to assess the physical observation of the study area. After studying the site, an Impact & mitigation report is prepared. Period of Involvement: October 2022 to till date
10	SC	Mr Chandrashekhar Jha	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: October 2022 to till date
11	LU	Mr. Rajneesh maurya	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: October 2022 to till date
12	EB	Mrs. Seema Srivastava	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, prepared the Impact report and suggested Mitigation measures Period of Involvement: October 2022 to till date

13	AQ	Mr. Nipun Bhargava	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modelling results and development of EMP. Period of Involvement: October 2022 to till date

List of Team Members Involved (TM to EIA Coordination)

Table 126. List of Team Members (TM to EIA Coordination)

S. No	Sector	Name of Expert(s)	Involvement (Period & Task)
1	3 (b)- Cement Plant	Ms. Neha Aggarwal	I had understood the project. Coordinated with the experts and prepared the Environment Impact Assessment Report along with the EIA coordinator. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: October 2022 to till date

List of Team Members to FAE Involved

Table 127. List of Team Member to FAE Involved

S. No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)
1	AQ	Mrs Shweta Rajput	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modelling results and development of EMP. Period of Involvement: October 2022 to till date
2	LU	Mrs Cipia Mehta	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: October 2022 to till date
3	WP	Mrs. Disha Patel	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources based on the results from the lab and the site specific details along with Project Specific Details obtained , I have given my inputs related the Impact Mitigation measures to FAE. Period of Involvement: October 2022 to till date
4	EB	Mrs. Deepika Arora, Mrs. Disha Patel	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, had given my inputs regarding the Impact report and suggested Mitigation measures to FAE Period of Involvement: October 2022 to till date

5	SHW	Mrs. Charmi Shah	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources had given my inputs regarding the Impact report and suggested Mitigation measures to FAE Period of Involvement: October 2022 to till date

SECTION D- ANNEXURES

Annexure 1: Consultant Accreditation

National Accreditation Board
for Education and Training
(Member - International Accreditation Forum & Pacific Accreditation Cooperation)

May 29, 2023

QCI/NABET/ENV/ACO/23/2766

Perfact Enviro solutions Pvt Ltd
5th floor, NN Mall, Delhi-110085

Sub.: Extension of Validity of Accreditation till Aug 28, 2023 – regarding
Ref.. 1. Certificate no NABET/EIA/1922/SA 0143
2. Request e-mail dated May 29, 2023

Dear Sir/Madam

This has reference to the accreditation of your organization under QCI-NABET EIA Scheme, the validity **Perfact Enviro solutions Pvt Ltd,** is hereby extended till Aug 28, 2023 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after the expiry of the above-stated date.

With best regards.

(A K Jha)
Sr. Director, NABET

National Accreditation Board
for Education and Training
(Member - International Accreditation Forum & Pacific Accreditation Cooperation)

March 02, 2023

QCI/NABET/ENV/ACO/23/2692

Perfact Enviro solutions Pvt Ltd
5th floor, NN Mall, Delhi-110085

Sub.: Extension of Validity of Accreditation till June 01, 2023 – regarding
Ref.. Certificate no NABET/EIA/1922/SA 0143

Dear Sir/Madam

This has reference to the accreditation of your organization under QCI-NABET EIA Scheme, the validity Perfact Enviro solutions Pvt Ltd, is hereby extended till June 01, 2023 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after the expiry of the above-stated date.

With best regards.



(A K Jha)
Sr. Director, NABET

Quality Council of India

National Accreditation Board for Education & Training

Certificate of Accreditation

Perfact Enviro Solutions Pvt Ltd.,

5th Floor, NN Mall, Sector - 3, Rohini, New Delhi-110085

*The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –*

Sl.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals - Open cast only	1	1 (a) (i)	A
2	Thermal power plants	4	1 (d)	B
3	Metallurgical industries (ferrous & non ferrous)	8	3 (a)	B
4	Cement plants	9	3 (b)	B
5	Chlor-alkali industry	13	4 (d)	A
6	Leather/skin/hide processing industry	15	4(f)	A
7	Chemical Fertilizers	16	5 (a)	A
8	Pesticides industry and pesticide specific intermediates	17	5 (b)	A
9	Petro-chemical complexes	18	5 (c)	A
10	Manmade fibers manufacturing	19	5 (d)	B
11	Petrochemical based processing	20	5 (e)	A
12	Synthetic organic chemicals industry	21	5 (f)	A
13	Distilleries	22	5 (g)	A
14	Sugar Industry	25	5(j)	B
15	Isolated storage & handling of Hazardous chemicals	28	-	B
16	Air ports	29	7(a)	A
17	Industrial estates/ parks/ complexes/ Areas, export processing zones(EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
18	Common hazardous waste treatment, storage and disposal facilities	32	7 (d)	B
19	Bio-medical waste treatment facilities	32A	7 (da)	B
20	Aerial ropeways	35	7(g)	A
21	Common effluent treatment plants (CETPs)	36	7 (h)	B
22	Common Municipal Solid Waste Management Facility (CMSWMF)	37	7 (i)	B
23	Building and construction projects	38	8 (a)	B
24	Townships and Area Development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SA AC minutes dated October 05, 2021 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/21/2141 dated November 22, 2021.The accreditation needs to be renewed before the expiry date by Perfact Enviro Solutions Pvt. Ltd., New Delhi following due process of assessment.

Sr. Director, NABET
Dated: November 22, 2021

Certificate No.
NABET/EIA/1922/SA 0143

Valid up to
26.11.2022

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

Annexure 2: Land papers along with english translation of land papers

P1

2006-07

اراضی شعبہ ہذا موضع بٹھوں تحصیل پانیوں ضلع بلوہ مربعہ سال

۱	۲	۳	۴	۵	۶	۷	۸	۹	۱۰	۱۱	۱۲		۱۳
نمبر شمار	نمبر کھاتہ	نام کاشتکار یا حالات	نام مالک و احوال	نام کاشتکار یا حالات	نام کاشتکار یا حالات	رقبہ زیر کاشت	رقبہ زیر کاشت	کیفیت	کیفیت	حوالہ اشتہارات			
3	4		پیر رحیم بخش پانچ حصہ و محمد الرشید پانچ حصہ پسران و خیلی پانچ حصہ و خلیفہ پانچ حصہ و مہران رحمان لون ساکنان نندھانی			107	۱۰ ۰ ۰ / ۱۲						
21	45		رحیم بخش لون ساکنہ	خودکاشت		109	۱۰ ۰ ۰ / ۱۲				272		
31	72		مہمہ شش حصہ و نصیبان شش حصہ و علی شش حصہ و راجہ سہ حصہ پسران رحمان سہ حصہ بیٹا احمد شاہ ساکنان نندھانی بجو 3/12 حصص۔	مہمہ پسر احمد حصہ دار بکھو و نصیبان پسر احمد حصہ دار بکھو و علی پسر احمد حصہ دار بکھو۔		136 142	۱۰ ۰ ۰ / ۱۲ ۱۰ ۰ ۰ / ۱۲				253		
36	92		غلام و دھقان پسران رحیم بخش ساکنان نندھانی۔	خودکاشت		141	۱۰ ۰ ۰ / ۱۲						
37	93		شاہ اللہ پسر فادر شاہ ساکنہ	خودکاشت		112	۸ ۰ ۰ / ۱۲				368		
38	94		ثناء اللہ و بشیر احمد پسران فادر شاہ ساکنان نندھانی۔	خودکاشت		140	۱۰ ۰ ۰ / ۱۲						
52	131		نبی و جبار و سلطان پسران رحمت بخش ساکنان نندھانی۔	خودکاشت		143	۱۰ ۱۰ ۰ / ۱۲				433		
53	132		محمد نصیبان چار سو شش حصہ و محمد اشرف چار سو شش حصہ پسران دوالی چار سو شش حصہ بیوہ احمد بخش نندھانی مجموعہ 2553 حصص۔	محمد نصیبان پسر احمد حصہ دار بکھو و محمد اشرف پسر احمد حصہ دار بکھو و دوالی بیٹا احمد حصہ دار بکھو۔		145	۱۰ ۰ ۰ / ۱۲						
54	134		لعل پسر سلطان بخش ساکنہ	خودکاشت		110	۱۰ ۰ ۰ / ۱۲				256		
56	136		نبی و جبار و سلطان پسران محمد بخش ساکنان نندھانی۔	خودکاشت		146	۱۰ ۰ ۰ / ۱۲						

CONT. ON PAGE ②

D-7

2006-07

... موضع ٹھون تحصیل پانیو، ضلع بلوچستان مرتبہ سال

نمبر شمار	نمبر خسرہ	نام مالک سوا حوال	نام کاشتکار سوا حوال	رقبہ زیر کاشت	رقبہ زیر آبپاشی	نمبر شمار	رقبہ زیر کاشت	رقبہ زیر آبپاشی	حوالہ انتقال	
									نمبر	سال
69	162	امال پسر رحمان ملہر ساکنہ ۱	خود کاشت ۱	108			۱۰-۱۲ نہر سے کنوں			
71	168/171	علی اللہ بخش سوجھو بیسی قوم لغاری کل سوجھو بیسی قوم لغاری جریب ۲ حصہ سوجھو اسکاون قوم ۲ حصہ سوجھو اسکاون قوم لغاری وغیرہ سوجھو اسکاون قوم بیسو کمال ملہر ساکن ۲ حصہ ۱۶۱۵ حصص ۱۶۱۵ حصص -	علی اللہ پسر جب خود ۱	151			۹-۵-۲ نہر سے کنوں			
			اچی دوست جب	150			۵-۵-۰ نہر سے کنوں			
	169		غنی پسر جب خود ۱ -	106			۵-۳-۰ نہر سے کنوں			
	172		محمد پسر کمال خود ۱ نگہ ۲ حصہ کمال خود ۱ نگہ وغیرہ بیسو کمال خود ۱ نگہ -	105			۱۰-۵-۰ نہر سے کنوں			
81	187	عبدالرشید وغیرہ ۲ احمد پسران عبدالغفار ملہر ساکن ۲ حصہ -	خود کاشت	135			۱۲-۲-۰ نہر سے کنوں			
85	192	شفیقہ چار سو انتیس قوم زوجہ دوست محمد وغیرہ ۲ احمد وغیرہ ۲ سو اٹھاون قوم پسر ۲ زوجہ ۲ احمد ساکن ۲ حصہ ۱۸۷۶ حصص -	خود کاشت	138			۷-۲-۰ نہر سے کنوں			
	193		شفیقہ زوجہ احمد خود ۱ نگہ وغیرہ احمد خود ۱ نگہ	139			۷-۲-۰ نہر سے کنوں			
30	65	رمضان اٹھارہ قوم ۲ علم اٹھارہ قوم پسران رحمن شاہ ساکن ۲ حصہ ۲ حصص ۶۲۲ حصص -	خود کاشت	146			۱۲-۰-۰ نہر سے کنوں			
99	216	غنی پسر خالق خالق پسر صدیق زرعی ساکن ۲ حصہ	غنی پسر خالق خود ۱ -	113			۱۲-۳-۰ نہر سے کنوں		348	۲۰۰۶-۰۷

نوٹ:- بحکم انتقال نمبر 23 مورخہ 19 بمطابق 1.06 رقبہ 2 بیسو 2 بیسو 2 بیسو

محکم دعویٰ نمبر 15 بیع بالوفا مدعیہ زاہدہ بیگم بنام اشفاق اللہ ولد عبدالاحد قوم سکن موضع

محکم دعویٰ نمبر 29 بیع بالوفا مدعیہ زاہدہ بیگم بنام اشفاق اللہ ولد عبدالاحد قوم سکن موضع

محکم دعویٰ نمبر 54 بیع بالوفا مدعیہ زاہدہ بیگم بنام مشتاق احمد ولد عبدالاحد قوم سکن موضع

محکم دعویٰ نمبر 58 بیع بالوفا مدعیہ زاہدہ بیگم بنام وسیم احمد ولد محمد شفیع قوم سکن موضع

محکم دعویٰ نمبر 31 بیع بالوفا مدعیہ زاہدہ بیگم بنام اشفاق اللہ ولد عبدالاحد قوم سکن موضع

مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 17 بیع بالوفا مدعیہ زاہدہ بیگم بنام شاہ اللہ ولد فقیر شاہ قوم سکن موضع

مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 41 بیع بالوفا مدعیہ زاہدہ بیگم بنام شاہ اللہ ولد فقیر شاہ قوم سکن موضع

مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 35 بیع بالوفا مدعیہ زاہدہ بیگم بنام محمد شفیع ولد ملک ایران احمد شاہ قوم سکن موضع

مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 61 بیع بالوفا مدعیہ زاہدہ بیگم بنام عبدالرشید ولد عبدالغفار قوم سکن موضع

مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 63 بیع بالوفا مدعیہ زاہدہ بیگم بنام فاروق اللہ ولد عبدالغفار قوم سکن موضع

مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 32 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] حدود شفیعہ و فاطمہ زوجہ ان امیر کبیر

بیمان نام مشتاق احمد ولد عبدالاحد قوم سکن موضع مدعیہ شدنی منظور ہوئے۔

محکم دعویٰ نمبر 16 بیع بالوفا مدعیہ زاہدہ بیگم بنام عبدالرزاق ولد [illegible] اشفاق اللہ ولد عبدالاحد قوم سکن موضع مدعیہ شدنی منظور ہوئے۔

محکم دعویٰ نمبر 28 بیع بالوفا مدعیہ زاہدہ بیگم بنام عبدالرزاق ولد [illegible] وسیم احمد ولد محمد شفیع قوم سکن موضع مدعیہ شدنی منظور ہوئے۔

محکم دعویٰ نمبر 27 بیع بالوفا مدعیہ زاہدہ بیگم بنام شاہ اللہ ولد فقیر شاہ قوم سکن موضع وسیم احمد ولد محمد شفیع قوم سکن موضع مدعیہ شدنی منظور ہوئے۔

محکم دعویٰ نمبر 30 بیع بالوفا مدعیہ زاہدہ بیگم بنام شاہ اللہ ولد فقیر شاہ قوم سکن موضع وسیم احمد ولد محمد شفیع قوم سکن موضع مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 14 بیع بالوفا مدعیہ زاہدہ بیگم بنام غلام الرحیم ولد [illegible] وسیم احمد ولد محمد شفیع قوم سکن موضع مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 25 بیع بالوفا مدعیہ زاہدہ بیگم بنام غلام الرحیم ولد [illegible] اشفاق اللہ ولد عبدالاحد قوم سکن موضع مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 49 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] وسیم احمد ولد محمد شفیع قوم سکن موضع مدعیہ شدنی منظور ہوئے۔

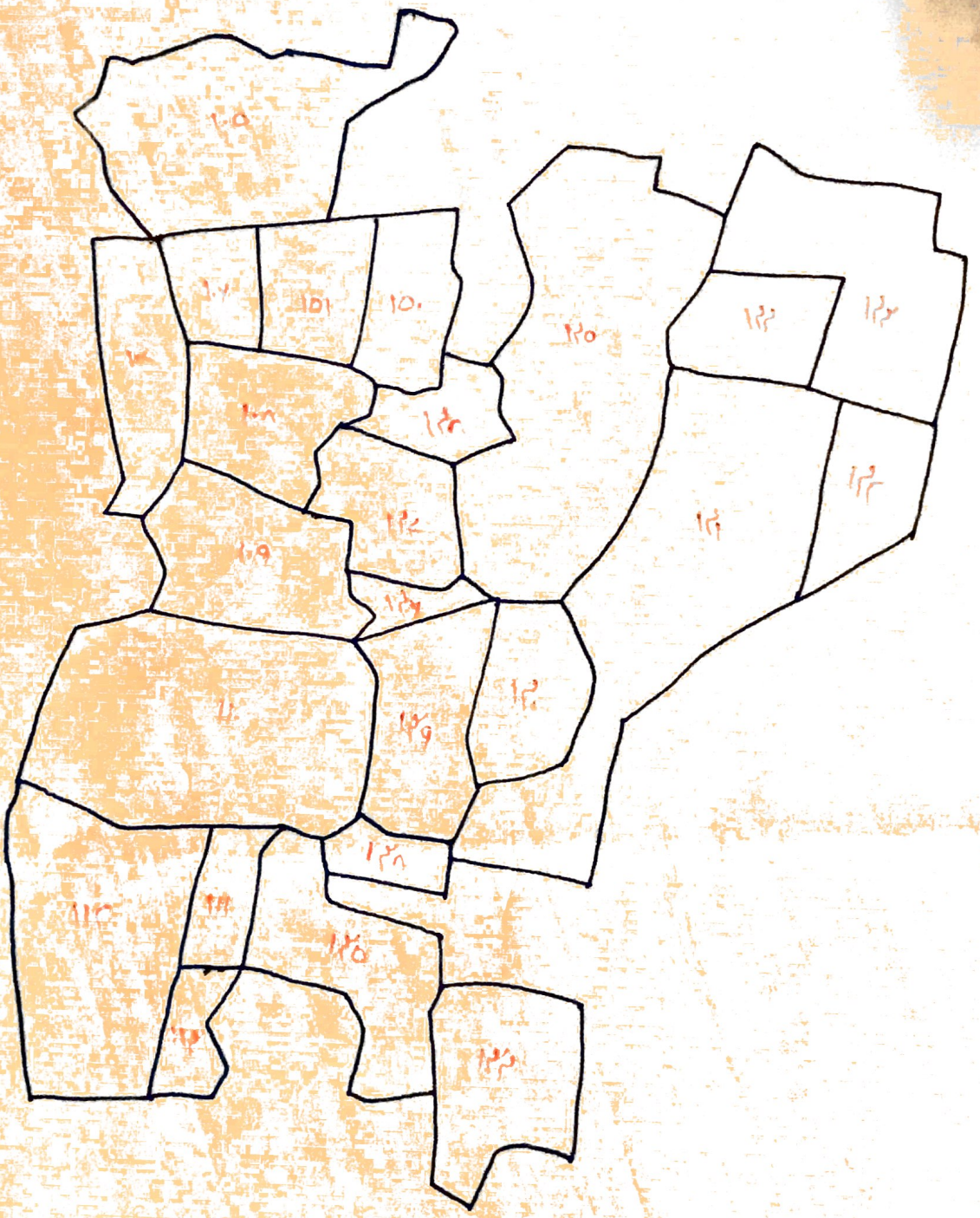
محکم دعویٰ نمبر 11 بیع بالوفا مدعیہ زاہدہ بیگم بنام محمد شفیع ولد ملک ایران احمد شاہ قوم سکن موضع محمد نبی ولد محمد شفیع قوم سکن موضع مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 13 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] اشفاق اللہ ولد عبدالاحد قوم سکن موضع حال السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 20 بیع بالوفا مدعیہ زاہدہ بیگم بنام غلام الرحیم ولد [illegible] مشتاق احمد ولد عبدالاحد قوم سکن السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 22 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] مشتاق احمد ولد عبدالاحد قوم سکن السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 24 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] اشفاق اللہ ولد عبدالاحد قوم سکن سوئیر حال السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 42 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] مشتاق احمد ولد عبدالاحد قوم سکن موضع السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 45 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] وسیم احمد ولد محمد شفیع قوم سکن موضع حال السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 46 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] اشفاق اللہ ولد عبدالاحد قوم سکن السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 3 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] وسیم احمد ولد محمد شفیع قوم سکن موضع حال السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 18 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] وسیم احمد ولد محمد شفیع قوم سکن موضع حال السید نشاط مدعیہ شدنی منظور ہوئے۔ محکم دعویٰ نمبر 55 بیع بالوفا مدعیہ زاہدہ بیگم بنام [illegible] مشتاق احمد ولد عبدالاحد قوم سکن موضع حال السید نشاط مدعیہ شدنی منظور ہوئے۔

اسطور اشفاق اللہ و مشتاق احمد ولدان عبدالاحد قوم سکن موضع حال السید و وسیم احمد ولد محمد شفیع قوم سکن موضع حال السید نشاط مدعیہ شدنی منظور ہوئے۔

[illegible] مدعیہ شدنی منظور ہوئے۔

محکمہ شدہ ۵۰۹ [illegible] مشتاق احمد ولد عبدالاحد قوم سکن السید نشاط مدعیہ شدنی منظور ہوئے۔

Tehsil Peshawar



نوٹ: مستقل رہائشی شکل احمدی کی اندراج کی گئی ہے۔ مکمل 18 1/2 15

Extract of Jamabandi 2006-2007 Village/Estate Khrew Tehsil Pampore District Pulwama

s.No	Khewat No.	Khata No.	Name of Land Owner with parentage	New Khasra Number	Total Land		Kind of Soil	Mutation No.	Remarks
					Kanal	Marla			
1	1073	1153	Mushtaq Ahmad S/o Ab Ahad Trumboo , Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	3173	3	6	Madani	104	
2	1071	1150	Mushtaq Ahmad S/o Ab Ahad Trumboo , Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	3171	4	11	Madani	104	
3	1545	1654	Ab Ahad Trumboo S/o Lasa joe Trumboo R/o Barzulla srinagar	3298	2	1	Madani	3823	
				3299	1	15			
				3300	5	18			
				3301	11	4			
				3302	7	9			
				3303	2	11			
				3304	4	5			
				3305	2	1			
Total Land (A)					37	4			
4	1546	1655	Ishfaq Ahmad Trumboo S/o Ab. Ahad Trumboo R/o Barzulla	2881	5	10	Madani	3823	
				3295	8	0	Madani		
				2879	3	15	Banjri Qadeem		
Total Land (B)					17	5			
Grand Total (A+B)					54	9			

The Contents of the docs is Verified by me
in accordance with original docs

Hajra Ahmad Lone
(Advocate)
J&K High Court

Scanned with CamScanner

Extract of Jamabandi 2006-2007 Village/Estate Khrew Tehsil Pampore District Pulwama

s.No	Khewat No.	Khata No.	Name of Land Owner with parentage	New Khasra Number	Total Land		Kind of Soil	Mutation No.	Remarks
					Kanal	Marla			
4	1657	1804	Mushtaq Ahmad S/o Ab Ahad Trumboo , Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	3170	7	4	Madani	440	Shamlat Dah
				3172	12	3	Madani		
				7389/3173/1	4	1	Madani		
				7391/3177	2	15	Madani		
Total land					26	3			
		TOTAL LAND IN HECTARE			4.51				

Note: All the Entries are as per the revenue records as reported

Dated:_____

Attested Translation true copy

the contents of document are true & correct to the best of my knowledge & belief nothing has been concealed therefrom

Fayaz Ahmad Lone
(Advocate)
J&K High Court

Scanned with CamScanner

Extract of Jamabandi 2004-2005 Village/Estate Bhatan Tehsil Pampore District Pulwama

s.No	Khewat No.	Khata No.	Name of Land Owner with parentage	New Khasra Number	Total Land		Kind of Soil	Mutation No.	Remarks
					Kanal	Marla			
1	3	4	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	107 Min	3	0	Madani	23	
2	3	4	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	107 Min	4	0	Madani	26	
3	21	45	Nuzhat Rasol D/o Gh Rasool Trumboo R/o Jawahar Nagar	109 Min	4	0	Madani	8	
4	21	45	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	109 Min	4	0	Madani	12	
5	31	72	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	134	5	0	Madani	35	
6	31	72	Umer Trumboo S/o M. Shafi R/o Ishber Nishat	142	4	0	Madani	11	
7	36	92	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	141	4	0	Madani	14	
8	36	92	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	141	4	0	Madani	25	
9	37	93	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	112	8	0	Madani	17,41	
10	37	93	Gh Mohmad S/o Gani Joo Wani R/o Srinagar	112	4	0	Madani	6	
11	37	93	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	112	2	9	Madani	27	
12	38	94	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	140	1 3	10 19			
13	38	94	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	140	4	0	Madani	30	

The Contents of this document is translated by me in light of original script provided by the Court.

Fayaz Ahmad Lone
(Advocate)
J&K High Court

Scanned with CamScanner

Extract of Jamabandi 2004-2005 Village/Estate Bhatan Tehsil Pampore District Pulwama

s.No	Khewat No.	Khata No.	Name of Land Owner with parentage	New Khasra Number	Total Land		Kind of Soil	Mutation No.	Remarks
					Kanal	Marla			
14	52	131	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	143 Min	4	0	Madani	13	
15	52	131	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	143 Min	4	0	Madani	20	
16	52	131	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	143 Min	4	0	Madani	22	
17	52	131	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	143 Min	3	0	Madani	42	
	53	132	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	144 Min					
	56	136	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	145 Min					
18	53	132	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	145 Min	4	0	Madani	45	
19	53	132	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	145 Min	4	0	Madani	46	
18	53	132	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	145 Min	4	0	Madani	47	
19	53	132	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	145 Min	4	0	Madani	53	
20	54	134	Gh Mohmad S/o Gani joo Wani R/o Srinagar	110 Min	4	0	Madani	10	
21	54	134	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	110 Min	12	0	Madani	15,37,29	
22	54	134	Gh Mohmad S/o Gani joo Wani R/o Srinagar	110 Min	5	4	Madani	54,59	
23	56	136	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	144 Min	4	0	Madani	24	
24	69	162	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	108	3	0	Madani	19	
25	69	162	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	108	4	0	Madani	9	

Fayaz Ahmad Lone
(Advocate)
J&K High Court

Scanned with CamScanner

Extract of Jamabandi 2004-2005 Village/Estate Bhatan Tehsil Pampore District Pulwama

s.No	Khewat No.	Khata No.	Name of Land Owner with parentage	New Khasra Number	Total Land		Kind of Soil	Mutation No.	Remarks
					Kanal	Marla			
26	71	168	Yasmeena Begum W/o M. Shafi Trumboo R/o Ishber Nishat	151 Min	4	0	Madani	5	
27	71	171	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	150 Min	4	0	Madani	18	
28	71	169	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	106	4	0	Madani	4	
29	71	172	Shazia W/o Waseem Ahmad Trumboo R/o Ishber Nishat	105 Min	4	0	Madani	7	
30	81	187	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	135 Min	4	0	Madani	63	
31	81	187	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	135 Min	4	0	Madani	6	
32	85	192	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	138 Min, 139	3	2 1/2	Madani	33	
33	85	192	Ishfaq Ahmad S/o Ab. Ahad Trumboo R/o Ishber Nishat	139 Min	4	0	Madani	16	
34	85	192	Waseem Ahmad S/o M. Shafi Trumboo R/o Ishber Nishat	139 Min	3	1 1/2	Madani	28	
35	93	214	Mushtaq Ahmad S/o Ab Ahad Trumboo R/o Gupt Ganga Ishber Nishat	113	2	12	Madani	31	
36	30	65	M. Shafi Trumboo S/o Ab. Ahad Trumboo R/o Ishber Nishat	148 Min	4	0	Madani	3	
			TOTAL LAND IN HECTARE		**7.87**				

Note: All the Entries are as per the revenue records as reported

Dated:_____

Fayaz Ahmad Lone
(Advocate)
J&K High Court

Attested translation true copy

Scanned with CamScanner

Annexure 3: NOC to Abstract Ground Water

OFFICE OF THE EXECUTIVE ENGINEER PHE GROUND WATER DIVISION SRINAGAR

NO:PHE:GWD: 589

D A T E D :- 15-05-2007

M/S Trumboo Industries
PVT,LTD,
IInd Floor Baba Building
poloview residency road
Srinagar

SUBJECT:- Issuance of no objection certificate

REFERENCE: Your letter NO:NI:L Dated:- 17-5-2007

*****

Dear Sir,

Please refer your letter cited above on the subject.In this regard it is to intimate that this office has no objection in construction of private well within your own premises (Known to Them) at your cost risk and responsibility under rules/norms.

YOURS SINCERELY

Executive Engineer
PHE Ground Water Division
Srinagar

(J)

Annexure 4: NBWL Clearance copy

F. No. 6-132/2021-WL
Government of India
Ministry of Environment, Forest and Climate Change
(Wildlife Division)

3rd Floor, Jal Wing,
Indira Paryavaran Bhawan,
Jor Bagh Road, New Delhi -110003.

02 May, 2022

To,
The Principal Secretary,
Department of Forests,
Union Territory of Jammu & Kashmir,
Civil Secretariat, Forest Complex, Exchange road,
Jammu (J&K)-180001.

Sub: Proposal for upgradation and expansion of existing cement plant (area 12.38 ha) by Trumboo Industries Pvt. Ltd.-FP/JK/IND/4774/2020-reg.

Sir,

Reference is invited to the subject mentioned above. The 67th Meeting of Standing Committee of National Board for Wild Life was held on 25th March, 2022 through Video Conference under the Chairmanship of Hon'ble Minister for Environment, Forest & Climate Change.

2. After discussions, the Standing Committee decided to recommend the proposal subject to the following conditions:

1. The Project Proponent shall carry out the works only after obtaining clearance from State Pollution Control Board.
2. The existing Plant shall be upgraded and operated as per the latest CPCB Guidelines. The User agency shall submit an affidavit to the effect that such guidelines shall strictly be adhered to.
3. The area will be utilized only for the purpose of expansion of existing cement plant and no new plant under this garb shall be established. Also the mining activity in the leased-out area shall be carried out and no new area shall be brought under mining activity under the grab of the clearance.
4. Green belt as envisaged under EC/TOR and to the extent of three rows of plantations to act as a buffer around the existing cement plant and mining site shall be raised at the cost of the user agency.
5. No waste material (Industrial/Solid/Liquid waste) shall be dumped in the area between the boundary of the Dachigam National Park and boundary of Khrew Khonmoh Conservation Reserve.
6. Total pollution load from the area shall be monitored by the State Pollution Control Board to keep it within the permissible limits.
7. A Monitoring Committee shall be constituted under Regional Wild Life Warden Kashmir, Wild Life Warden Central, Members from User Agency and a representative from SPCB for implementing these conditions and also the conditions as envisaged in Environmental clearance.
8. That the area should not be used for any other purpose other than specified herein.

9. That the activity of the agency shall remain limited to the area in question which shall be properly demarcated and consolidated by way of fencing.
10. That the applicant should abide by the provisions of the Wild Life (Protection) Act and the Ministry of Environment, Forests and Climate Change, Government of India's guidelines and other legislations.
11. The activities of user agency in the area shall be liable to periodic checks by the Department and stoppage of any activity shall be enforced, if it is found that any violation to the envisaged conditions of the Wildlife Clearance is carried by the applicant.
12. All the conditions laid down by the State Pollution Control Board as mentioned in the letters of consent to establish and operate shall be implemented by the applicant within the project area.
13. The Environment Impact Assessment and proposed mitigation measures recommended under the report shall be implemented along with mitigation measures recommended in Report.
14. The mitigation plan for Wildlife shall be prepared in consultation with Wildlife Protection Department and an amount of Rs.30 lakhs upfront and Rs.10 Lakh annually for a period of ten years shall be deposited with State CAMPA to be used for undertaking mitigatory measures.
15. The proposed cement plant shall furnish an undertaking that it will not undertake illegal procurement of limestone from local stone query holders and shall apply for proper lease for carrying out mining as per approved mining plan.
16. The User Agency shall be responsible for obtaining requisite clearances under any other law in vogue.
17. An annual compliance certificate on the stipulated conditions shall be submitted by the project proponent to the Chief Wild Life Warden and an annual compliance certificate shall be submitted by the Chief Wild Life Warden to Government of India.

3. Details of the recommendations have been illustrated in the minutes of the meeting posted online in the "PARIVESH" portal of this Ministry.

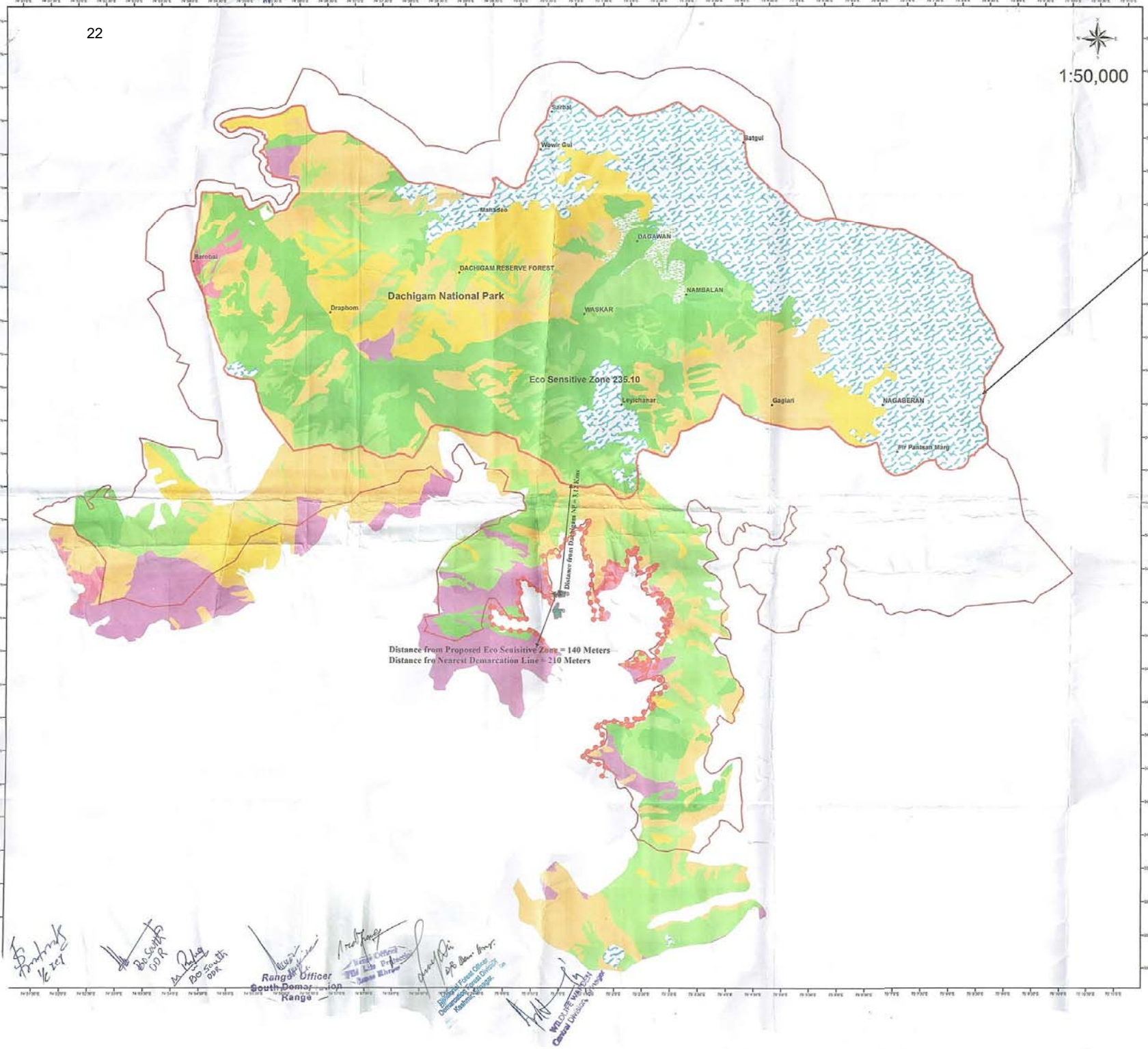
Yours faithfully,

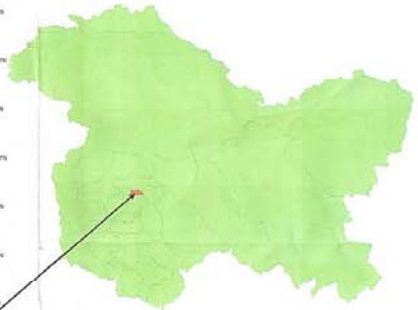
(Dr. Rajendra Kumar)
Scientist 'C'
Email: kumar.rajendra@gov.in

Copy to:

1. Chief Wild Life Warden, Union Territory of Jammu & Kashmir, Srinagar.
2. Deputy Director General of Forests (C), Integrated Regional Office, Ministry of Environment, Forests and Climate Change, Bays No.24-25, Sector 31-A, Dakshim Marg, Chandigarh-160022.
3. Inspector General of Forests, FC Division, MoEF&CC.
4. Joint Secretary, IA Division, MoEF&CC.

Annexure 5: Distance Authentication Letter & Map for Dachigam National Park





Map showing the location of

Cement Plant of M/S Tramboo Industries Pvt Ltd, Khrew

With respect to Demarcation Line Eco Sensitive Zone

&

Dachigam National Park

Legend

- Dachigam_Boundary
- Dachigam_ESZ
- Plant
- Plant
- Settlement
- Line_Demarcation_Khrew

LULC_Dachigam

- <all other values>

Descriptio

- Forest-Evergreen / Semi Evergreen-Dense/Closed
- Forest-Evergreen / Semi Evergreen-Open
- Forest-Forest Blank
- Forest-Scrub Forest
- Natural/Semi natural grassland & Grazing land-Alpine/Sub alpine
- Snow covered/Glacial area
- Wastelands-Barren Rocky/Stony waste
- Wastelands-Scrub land-Dense scrub

Annexure 6: Latest Consent to Operate

J&K Pollution Control Committee
Jammu/Kashmir (www.jkspcb.nic.in)

Consent Order

Consent No.:- PCC/digital/22062773946 of 2022 **Date:- 11/08/2022**

Consent To Operate (Renew) under Section 25/26 of the Water(Prevention & Control Pollution)Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981, as amended is granted in favour of

Sh. MUSHTAQ AHMAD TRUMBOO
M/s TRUMBOO INDUSTRIES PVT LTD
BATHEN ,KHREW,PAMPORE,PULWAMA
Pulwama, Pampore(registered with DIC vide registration No:
MUSK-k-2006/44 date: 14/06/2008)

for a period upto June-2026 for RED category of unit as per revised classification of industrial sector, subject to the following terms and conditions in a time bound manner :

1. The consent granted by the Committee is restricted to Prevention and Control of Pollution only and shall not be treated as substitute of permission required under other laws of the land.

2. The consent is granted valid for the manufacturing of the products / by-products consented quantity as under with capital investment (as per Schedule II) Rs.8552.0 lakhs . Further any change / enhancement in production capacity ,process ,raw materials shall have to be intimated to the Committee and unit holder has to apply fresh for the same

S No.	Products/BY-Products Name	Maximum Quantity	Unit
1	ORDINARY PORTLAND CEMENT	1000	Metric Tonnes/Day

3. The emissions or discharge of environmental pollutants from the Stone Crusher/Hot mix plants shall not exceed the relevant parameters and the standards for the said industry ,operation or process specified under respective schedules of the Environment (Protection) Rules ,1986 as amended from time to time

4. The unit holder shall comply to the Noise Pollution (Regulation and Control) Rules 2000 as amended take adequate measures for control of noise from its own sources within the premises so as to maintain ambient air quality standards in respect of noise to less tha 75 db(A) during day time and 70 db(A) during night time. Daytime is reckoned in between 6 am to 10 pm and night time is 10 pm to 6am.

5. Compliance under Water Act :
Service wastewater (without co processing) : All efforts shall be made by the industry for zero discharge of service wastewater . In case, the industry prefers to discharge service wastewater, the following norms shall be complied with

Parameters	Conc. in mg/l except for pH
pH	5.5 to 9.0
Suspended Solids	100
Oil & Grease	10
Temperature	Not more than 5C higher than the intake water temperature

a. The daily quantity of sewage effluent from the unit shall not exceed 0.1 KLD.
b. Daily quantity of water consumption the unit shall not exceed 2 KLD.
c. The unit holder shall take adequate safe guards for the treatment of sewerage water by way of providing septic/soakage pit and its discharge shall confirm to the following standards.

Parameters	Conc. in mg/l except for pH
pH	6-9

Total Suspended Solids	**100**
BOD(3 days at 27 degree celsius)	**30**

6. Standards of discharge of Air emissions :
a. The unit holder shall comply to National Ambient Air Quality Standards as perv EP Act 1986 (refer rule 3(3B))
b. Emission Standards Vertical Shaft Kiln (without co processing) :-

Parameters	**Conc. in mg/Nm3**
Particulate Matter(PM)	**50**
SO2	**200**
NO2	**500**

7. Compliance under Air Act :
a. The unit holder has to operate stack(s) of the following specifications :

S. No.	**Stack attached to**	**Volume Nm3/hr**	**Height (in Meters)**	**Top diameter (in Meters)**	**Velocity of gas emission m/sec**
1	**Stack AttacheD To Main Bag House And Spm,Sox, Nox PararatErs Are ProperlY LinkedTo Cpcb Server**	**1000**	**40**	**Round**	
2	**Stack attached tomain bag house and SPM,NOX,SOX parametersare properly linked with CPCB.**	**1000**	**40**	**Round**	**-**

b. The unit holder has to operate and maintain a comprehensive air pollution control system to achieve the quality of emission within the tolerance limits prescribed under environment protection act 1986

S.No.	**Pollution Control Equipments**
1	
2	Electrostatic Precipitator,

c. Fuel Consumption Details :-

S.No.	**Type of fuel**	**Maximum Quantity**	**Unit**
1	**SOUTH AFRICAN COAL**	**6 TONNES PER HOUR**	**Metric Tonnes/Day**
2	**South African coal**	**6 t0nnes per day**	**Metric Tonnes/Day**

8. The unit shall not discharge any fugitive emissions from the unit.

9. The unit holder shall comply with any other condition laid down or directions issued in due course by the J & K Pollution Control Committee under the provisions of Air (Prevention and Control of Pollution) Act, 1981.

10. The unit holder shall abide by the directions of the Committee which will be issued from time to time.Any infringement/ violation or trangression of the statutory enactments of pollution control acts by the unit, shall be sufficient cause to prosecute the violator in conformity with relevant section of Air/Water Acts and Environment Protection Act in force.

11. The unit shall be under surveillance monitoring of J & K Pollution Control Committee

12. The unit holder shall have to get the samples of emissions/effluents analysed from the laboratory of J&K PCC or laboratories approved by J&K PCC after every Six months to the check the efficacy of Pollution Control Devices (PCDs) installed in the unit

13. The unit holder shall raise green belt of suitable plant species within the premises of unit.

14. The above conditions shall be enforced inter-alia under the provision of the Water (Prevention and Control of Pollution) Act 1974, Air (Prevention and Control of Pollution) Act 1981 and Environment (Protection) Act

1986

15. The unit holder shall adhere to the standards terms and conditions of Water / Air Act and compliance of environment standards of EP Act 1986

16. **The unit holder shall keep on-line monitoring system functional all the time for monitoring of emissions and effluents from the unit as per the directions of Central Pollution Control Committee , on this in case of non compliance an action under Water (Prevention & Control of Pollution) Act 1974 , Air (Prevention & Control of Pollution) Act 1981 and Environment (Protection) Act 1986 shall be taken by the Committee**

17. In case of violation of above mentioned conditions or any public complaint the consent shall be withdrawn and unit holder shall shift the unit to another suitable site at his own risk and responsibility

18. The unit holder should apply 60 days in advance for renewal of consent before expiry the date of this Consent Order.

Specific Conditions:-

1. The unit holder shall ensure the operation of on-line monitoring system in efficient manner to achieve the level of pollutants as per norms and submit monitoring report after every six months. The unit holder shall not run the unit in case of failure of APCDS.
2. The unit holder shall ensure up gradation of Emission Control Measures, proper sprinkling of water regularly, Movement of Trucks for raw material as well as product under proper cover sheet.
3. That unit holder shall submit the compliance of conditions of consent to the central office and DO office as well on half yearly basis.
4. That unit holder shall carry out the monitoring of APCDs from the JKPCC lab once in a year besides SMR which shall be verified by the JKPCC Lab.
5. Unit holder shall maintain the APCDs and keep them operational during the operation of the unit, in case of default the consent / Authorization shall be with drawn.
6. The unit shall remain under surveillance of the JKPCC regularly,
7. The unit holder shall install with other unit holders the on line monitoring system as recommended in the carrying capacity report of JKPCC for constant monitoring of ambient air in the area.

19. **In case of violation of above mentioned conditions or any public complaint the consent shall be withdrawn**

* This consent is issued purely from environmental angle and the Committee shall not be responsible for any claim, counter claim, ownership, partnership etc of the unit.

'By Order'

(J.N.Sharma)
Environmental Engineer

Member Secretary 16/08/22

Copy to the :

1. Regional Director PCC Kashmir for information and ensure the implementation of conditions as above.
2. General Manager DIC Pulwama for information.
3. D.O PCC Pulwama for the direction to monitor the conditions of the consent regularly and status report be furnished to RD.
4. P.A to Chairman J&K PCC for the information of Chairman
5. M/s Trumboo Industries Pvt Ltd , Bathen ,Khrew,Pampore,Pulwama for compliance of above said conditions.
6. Office file

The unit holder shall comply to environment standards as notified under the environment protection Act 1986, read with the Water (Prevention & Control of Pollution) Act 1974 & Air (Prevention & Control of Pollution) Act, 1981 which can also be downloaded from the website www.jkspcb.nic.in or at www.cpcb.nic.in

"This is computer generated document from OCMMS by JKPCC

Annexure 7: Certified Compliance Report of CTO

Government of Jammu & Kashmir
J&K Pollution Control Committee
Office of the Regional Directorate-Kashmir
Sheikh-ulk-Alam Complex, Rajbagh, Behind Government Silk Factory, Srinagar-190008
(Email: regionaldirectorkmr@gmail.com : Tele/fax 0194 2311842)
Online Consent Login : www.jkocmms.nic.in
सत्यमेव जयते
J&K PCC www.jkspcb.in

PCC/RDK/KS/2023/92-98
Dt:- 29-04-2023

Director,
Trumboo Industries Pvt Ltd.
Rajbagh Extension, Srinagar.

Subject : **Certificate of Compliance of Consent to Operate No. PCC/digital/22062773946 of 2022 Dt. 11/08/2022 in favour of M/s Trumboo Industries Pvt Ltd.**

Ref : Your office Letter No. 798/TIPL/23-24 Dt. 25/03/2023

Dear Sir,

With regard to subject and reference cited above enclosed, please find, herewith the report submitted by Divisional Officer, PCC Pulwama vide his office No. PCB/DO/Pul/1198/2023 Dt. 06/04/2023 as per the devised format, for information as desired.

29.04.2023

(Rafi Ahmad Bhat), SFS
Regional Director

29/4/2023

Encl : Report

Copy for information to :

1. Member Secretary, JKPCC, Jammu for information Pl.

GOVERNMENT OF JAMMU AND KASHMIR

J&K POLLUTION CONTROL COMMITTEE, PULWAMA

Regional Director,
PCC (Kmr)

No:-PCB/DO/PUL/1198/2023 Date.06/04/2023

Subject:-Certification of Compliance of Consent to operate no PCC/digital/22062773946 of 2022 dated 11-08-2022 favour of Sh. Mushtaq Ahmad Trumboo granted to M/s Trumboo Industries Pvt.Ltd.

Sir,

Kindly find enclosed herewith Certification of Compliance of Consent to operate no PCC/digital/22062773946 of 2022 dated 11-08-2022 in favour of Sh. Mushtaq Ahmad Trumboo granted to M/s Trumboo Industries Pvt.Ltd. for further necessary action.

PS(T)
Examine & put up
10/4

Yours faithfully,

Divisional Officer
Pollution Control Committee
District Pulwama

Divisional Officer
JKPCC Pulwama

1094
08/4

1. The consent granted by the Committee is restricted to Prevention and Control of Pollution only and shall not be treated as substitute of permission required under other laws of the land.

   Complied.
   Project Proponent has started Construction after getting Proper & Valid CTE and started Production after obtaining CTO.

2. The consent is granted valid for the manufacturing of the products / by-products consented quantity as under with capital investment (as per Schedule II) Rs.8552.0 lakhs. Further any change / enhancement in production capacity process raw materials shall have to be intimated to the Committee and unit holder has to apply fresh for the same

S No.	Products/By-Products Name	Maximum Quantity	Unit
1	ORDINARY PORTLAND CEMENT	1000	Metric Tonnes/Day

Complied.

Agreed to Comply .

3. The emissions or discharge of environmental pollutants from the Stone Crusher/Hot mix plants shall not exceed the relevant parameters and the standards for the said industry operation or process specified under respective schedules of the Environment (Protection) Rules ,1986 as amended from time to time
   Complied.
   Project Proponent is complying with all relevant parameters.

4. The unit holder shall comply to the Noise Pollution (Regulation and Control) Rules 2000 as amended take adequate measures for control of noise from its own sources within the premises so as to maintain ambient air quality standards in respect of noise to less than 75 dB(A) during day time and 70 dB(A) during night time. Day time is reckoned in between 6 am to 10 pm and night time is 10 pm to 6am.
   Complied.
   Project Proponent is complying with all relevant parameters.

F.I (Pvt)

5. Compliance under Water Act:

Service wastewater (without co processing): All efforts shall be made by the industry for zero discharge of service wastewater. In case, the industry prefers to discharge service wastewater, the following norms shall be complied with.

Parameters	Conc. in mg/l except for pH
pH	5.5 10 9.0
Suspended Solids	100
Oil & Grease	10
Temperature	Not More Than 5C higher than the intake water temperature

Complied

This is zero discharge unit. There is no water used in process.

A. The daily quantity of sewage effluent from the unit shall be as per consent.

Complied .

B. Daily quality of water consumption from the unit shall be as per consent.

Complied .

C. The unit Holder shall take adequate safe guards for the treatment of sewerage water by way of providing septic/soakage pit and its " discharge shall confirm to the following standards.

Parameters	Conc.in mg/l except for Ph
pH	6-9
Total Suspended Solids	100
BOD(3days at 27 degree Celsius	30

Project Proponent is disposing sewage waste through soakage pits .

Standards of discharge of Air emissions:

a. The unit holder shall comply to National Ambient Air Quality Standards as perv EP Act 1986 (refer rule 3(3b))

Complied

Unit holder is complying with the required Standards.

F.I (Rob).

b. Emission Standards Vertical Shaft Kiln (without co processing)

Parameters	Conc.in mg / Nm3
Particulate Matter (PM)	50
SO2	200
NO2	500

Not Applicable, This plant is based upon Rotatory kiln Technology and complying with all applicable standards.

6. Compliance Under Air Act

a. The unit holder has to operate stacks(s) of the following specifications

S.no	Stack attached to	Volume Nm3/hr	Height (in Meters)	Top diameter (in Meters)	Velocity of gas emission m/sec
1	Stack attached to mining bag house and Spm, Sox,Nox Para rat Ers Are Properly Linked To Cpcb Server	1000	40	Round	
2	Stack attached tomain bag house and SPM, NOX, SOX parametersare property linked with CPCB.	1000	40	Round	

b. The unite holder has to operate and maintain a comprehensive Air pollution control system to achieve the quality of emission within the tolerance limits prescribed under environment protection Act 1986

S.No	Pollution Control Equipment
1.	Bag House
2.	Electrostatic Precipitator

c. Fuel Consumption Detail :-

S.No.	Type of fuel	Maximum Quantity	Unit
1	SOUTH AFRICAN COAL	6 TONNES PER HOUR	Metric Tonne /Day

Specific Condition

1	The unit holder shall ensure the operation of on-line monitoring system in efficient manner to achieve the level of pollutants as per norms and submit monitoring report after every six months. The unit holder shall not run the unit in case of failure of APCDS	**PP Agreed to comply**
2	The unit holder shall ensure up gradation of Emission Control Measures ,proper sprinkling of water regularly, Movement of Trucks for raw material as well as product under proper cover sheet	**Complied** **Proper water sprinkling is being carried out regularly and Movement of Trucks for raw material under proper coverage as well as product remains in a closed shed.**
3.	That unit holder shall submit the compliance of conditions of consent to the central office and DO office as well as on half yearly basis.	**PP Agreed to comply**
4	The unit holder shall carry out the monitoring of APCD from JKPCC lab once in a year besides SMR which shall verified by the JKPCC Lab	**Agreed to comply**
5	Unit holder shall maintain the APCDs and keep them operational during the operation of unit, in case of default of consent /Authorisation shall be withdrawn.	**Agreed to comply** **All PCDS which include ESPS ,bag Filter ,RPJs provided to every section of unit .The unit holder covered all sections properly , Adequate plantation adopted, boundary walls provided around the periphery ,internal roads black topped .AMC have been done with Shreetecs Pvt Ltd and Prima Equipment Pvt Ltd for APCDs maintenance ,Data uploading and Calibration of equipments**
6	The unit shall remain under surveillance of the JKPCC regularly.	**Complied** **Further the unit is under surveillance of JKPCC regularly**
7	The unit holder shall install with other unit holders the on line monitoring system as recommended in the carrying capacity report of JKPCC for constant monitoring of ambient air in the area.	**Agreed to Comply.**

Certified that M/S Trumboo Industries Pvt Ltd Located at Bathyn ,Khrew ,Pulwama complied all the above mentioned conditions in granted CTO (R) under norms .

S.No.	Condition	Compliance
8.	The unit shall not discharge any fugitive emission from the unit	**Complied** **Regular water sprinkling is carried out to control fugitive emission. Raw material is transported under proper cover**
9.	The unit shall comply with any other condition laid down or direction issued in due course by the J&K Pollution Control Committee under the provision of Air (Prevention and Control of Pollution)Act,1981	**Complied** **PP is compiying with all the condition laid down by J&K PCC**
10.	The unit holder shall abide by the directions of the committee which will be issued from time to time. Any infringement /violation or transgression of the statutory enactments of pollution control acts by the unit shall be sufficient cause to prosecute the violator in conformity with relevant section of Air/water Acts and Environment Protection Act in force.	**Complied**
11.	The unit shall be under surveillance monitoring of J&K Pollution control Committee	**Complied** **The unit is under surveillance monitoring of J&K Pollution control Committee**
12.	The unit holder shall have to get the samples of emissions /effluent analysed from the laboratory of J&K PCC after every six months to check the efficacy of Pollution Control Devices (PCDs) installed in the unit.	**Agreed to comply .** **The unit holder is submitting SMR to JKPCC quarterly.**
13.	The unit holder shall raise green belt of suitable plant species within the premises of unit.	**Complied** **Adequate Plantation of suitable species is being carried out every season by the Unit holder**
14.	The above conditions shall be enforced inter –alia under the provision of the Water (Prevention and Control of Pollution) Act 1981 and Environment (Protection)Act	**Complied**
15	The unit holder shall adhere to the standards and conditions of Water/Air Act and compliance of environment standard of EP Act 1986	**Complied**
16	The unit holder shall keep on-line monitoring system functional all the time for monitoring of emissions and effluents from the unit as per the direction of Central Pollution Control committee, on this in case of non-compliance an action under water (Prevention & Control of Pollution)Act,1974 , Air(Prevention & Control of Pollution) Act 1981 and Environment (Protection) Act 1986 shall be taken by the committee.	**Complied** **The PP has installed online continuous stack monitoring equipment in two (ESP and Kiln)to monitor data transmitted to the SPCB and CPCB's servers. As per data shown during the visit the levels are within the limit .Inter locking system is also provided .**
17	In case of above violation of above mentioned conditions or any public complaint the consent shall be withdrawn and unit holder shall be withdrawn and unit holder shall shift the unit to another suitable site at his own risk and responsibility	**Agreed to comply**
18	The unit holder should apply 60days in advance for renewal of consent before expiry the date of this consent order	**Agreed to comply**
19	In case of violation of above mentioned condition or any public complaint the consent shall be withdrawn.	**Agreed to comply**

Certified that M/S Trumboo Industries Pvt Ltd Located at Bathyn ,Khrew ,Pulwama complied all the above mentioned conditions in granted CTO (R) under norms .

D-34 (Pul).

Annexure 8: Hazardous waste agreement

36

सत्यमेव जयते

INDIA NON JUDICIAL

Government of Jammu and Kashmir

e-Stamp

Certificate No.	:	IN-JK20588571645039V
Certificate Issued Date	:	21-Mar-2023 02:24 PM
Account Reference	:	NEWIMPACC (SV)/ jk12528204/ COURT ROAD/ JK-SN
Unique Doc. Reference	:	SUBIN-JKJK12528204338949052l1206V
Purchased by	:	MS Royal Refiners and Trumboo Industries Pvt Ltd
Description of Document	:	Article 5 Agreement or Memorandum of an Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	MS Royal Refiners and Trumboo Industries Pvt Ltd
Second Party	:	Not Applicable
Stamp Duty Paid By	:	MS Royal Refiners and Trumboo Industries Pvt Ltd
Stamp Duty Amount(Rs.)	:	10 (Ten only)

Please write or type below this line

AGREEMENT VALID TILL
24.03.2024

B/W
ROYAL REFINERS
AND
TRUMBOO INDUSTRIES Pvt Ltd.

RD 0002225241

Statutory Alert:
1. The authenticity of this Stamp certificate should be verified at www.shcilestamp.com/ or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

D-36

MS ROYAL REFINERS AND TRUMBOO INDUSTRIES PVT LTD MS ROYAL REFINERS AND TRUMBOO INDUSTRIES PVT LTD MS ROYAL REFINERS AND TRUMBOO INDUSTRIES PVT LTD MS ROYAL REFINERS AND TRUMBOO INDU

AGREEMENT

1. Whereas the **M/S Royal Refiners**, Prop. Mushtaq Ahmad S/O Mohammad Sultan Bagow R/O Jawahar Nagar Srinagar GSTIN No 01AAVFR4242CIZG, having its office at Industrial Estate Rangreth, Budgam Kashmir (J&K), with activity **"Reclamation of used Engine Oil/Lubricants "**has obtained Authorisation from State Pollution Control Committee (JKSPCC) for collection ,transportation and reclamation of oil generated by Industrial units
2. Whereas **M/S Royal Refiners** offers to provide services to the generator on user place principal for collection ,transportation ,treatment and disposal of oil .
3. Whereas the generator is a industrial unit namely "**Trumboo Industries Pvt Ltd" situated at Bathyn ,Khrew, Pulwama with line of activity as Manufacturing of cement** agrees to avail the services being provided by **M/S Royal Refiners** with the terms and conditions as listed on succeeding paras. **The agreement is valid for one year from the date of effect .**
4. **M/S Royal Refiners** have entered into an agreement for collection of used Engine Oil /spent oil /lubricants /Grease etc we.f. 24.03.2023 and the rate has been fixed as per market which may be increased or reduced from time to time as per market for which both the parties agree.
5. **MS Trumboo Industries Pvt Ltd**, Srinagar Kashmir shall not sell the used Engine oil to any other firm during the contract period.
6. Both parties shall meet all the rules and regulations of the pollution control committee and acts governing the waste management

ROYAL REFINER
Industrial Area Rangreth

TRUMBOO INDUSTRIES PVT LIMITED
Srinagar

7. **M/S Royal Refiners** shall collect the waste /oil from the unit as and when informed on the prevailing rates and shall pay all the transportation charges thereof.
8. **M/S Royal Refiners** office shall transport segregated waste in closed container vehicle to its treatment plant .
9. **M/S Trumboo industries Pvt Ltd** shall take all the steps to ensure that the waste is handled without adverse effect to human health and environment
10. **M/S Trumboo Industries** shall Establish a common secured waste collection site within its premises for collecting and final disposal to **M/S Royal refiners**
11. The generator of waste shall obtain authorisation from Pollution control board.
12. The generator shall put segregated waste in the closed container and shall handover to **M/S Royal Refiners.**
13. **M/s Royal refiners** shall make the payment instantly after collection of waste/oil from **M/S Trumboo Industries Pvt Ltd** and no credit period shall be given to **M/S Royal Refiners**.

THE AGREEMENT IS VALID FOR ONE YEAR W.E.F 24.03.2023 UPTO 24.03.2024

ROYAL REFINERS
Industrial Area Rangreth

TRUMBOO INDUSTRIES PVT. LIMITED
Srinagar

M/S Royal Refiners.
Prop. Mushtaq Ahmad
S/O Mohammad Sultan Bagow
R/O Jawahar Nagar
Srinagar

Trumboo Industries Pvt Ltd.
Director
Mushtaq Ahmed Trumboo
Bathyn,Khrew,Pulwama

NOTARY PUBLIC
Shamima Azad
DISTRICT COURT
SRINAGAR
Regd. No. 500
GOVT. OF J&K

...that the statement declared
...before me at Srinagar on this
this day 24/03/23
by M/S Royal Refiners
who is identified by
SHAMIMA AZAD

Annexure 9: Environment Policy

Environment Policy

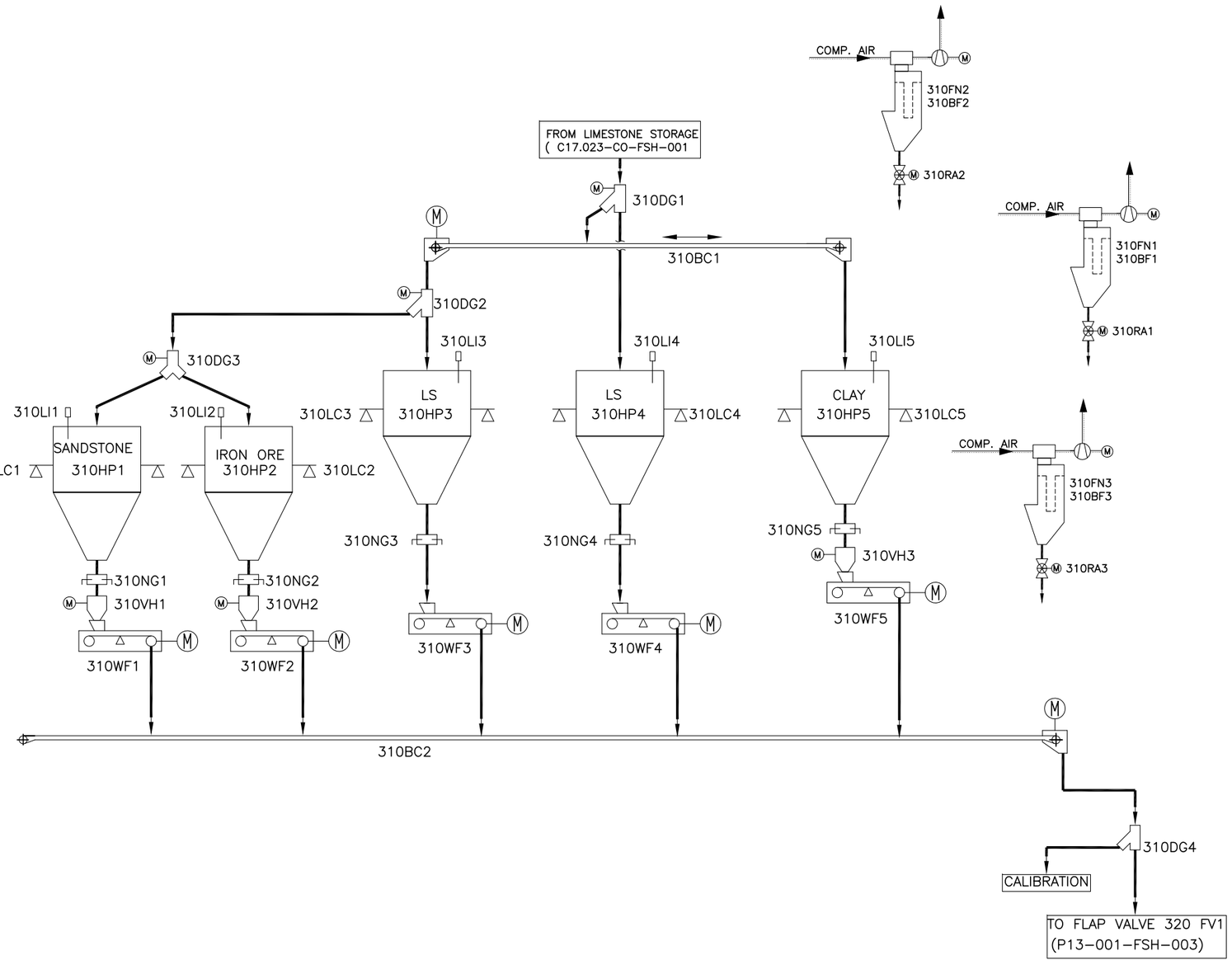
- To support and implement work to achieve environmental standards and to improve the methods of environmental management.
- To treat and dispose off all the pollutants viz. liquid, gaseous and solid waste so as to meet statutory requirements (Relevant Pollution Control Acts) with appropriate technology.
- To promote green-belt development.
- To adopt cleaner production technology and waste minimization program.
- Regular inspection and maintenance of pollution control systems.
- All measures related to safety such as safety appliances, training will be undertaken.
- The health of the workers will be regularly checked.
- Measures shall be adopted to minimize the risk of accident in compliance with the legal obligation under the relevant safety.
- All building plans and installations shall be as per relevant acts and duly approved by competent government authorities.
- Funds will be allocated separately for the environment management system and health & safety.

Authorized Signatory

TRUMBOO INDUSTRIES PVT. LIMITED SRINAGAR

Trumboo Industries Pvt Ltd

Annexure 10: Process Flow Sheet for clinker section



LEGEND

- AIR
- AIR WITH MATERIAL
- MATERIAL
- HYDRAULLIC LINE
- LUBRICATION LINE
- EXISTING EQUIPMENT
- PROPOSED EQUIPMENT

Rev.	Description	Name	Date

CONSULTANT :

STRUCON CONSULTING PVT. LTD.
PLOT NO:A55/12, FIRST FLOOR, STREET NO:55, DLF PHASE-1, CHAKKARPUR, GURGAON, HARYANA-122002
PH: +91 9810089862 E-MAIL :info@strucon.net

Designation:-
FLOW SHEET
NEW RAW MILL
FEED BIN

Plant.:-
TRUMBO INDUSTRIES PVT. LTD.
J & K (KILN LINE II, 2000 TPD)

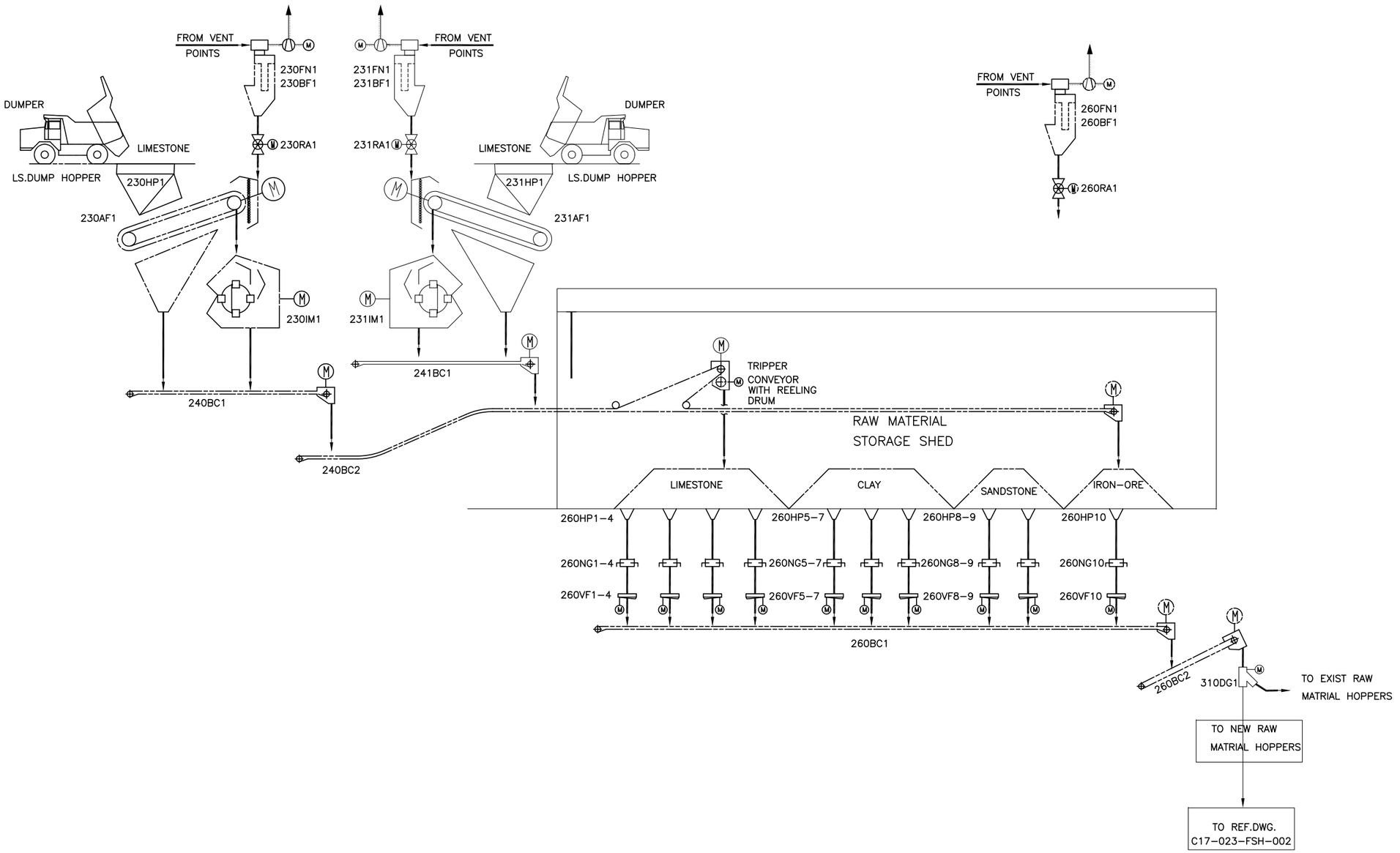
Project no.
C17.023-IND-CO

Drawing no.
C17.023-IND-CO-FSH-002

COLLEAGUES
Consultants Pvt.Ltd.
1st Floor, 76 - D,
Udyog Vihar, Phase IV,
Gurgaon - 122015, Haryana (India)
Tel-+91-124-4281900
+91-124-4594800
Fax-+91-124-4594801

	Name	Date	Rev.	00
Drawn by:	MON	21.03.18	Sheet:	01
Checked by:	SNE	21.03.18		01
Approved by:	DKS	21.03.18	Scale:	1:1

This drawing is a property of Colleagues Consultants Pvt. Ltd. and not to be duplicated, disclosed or utilized without written consent from us.



LEGEND

- AIR
- AIR WITH MATERIAL
- MATERIAL
- HYDRAULLIC LINE
- LUBRICATION LINE
- EXISTING EQUIPMENT
- PROPOSED EQUIPMENT

Rev.	Description	Name	Date

CONSULTANT :

STRUCON CONSULTING PVT. LTD.
PLOT NO:A55/12, FIRST FLOOR, STREET NO:55, DLF PHASE-1, CHAKKARPUR, GURGAON, HARYANA-122002
PH: +91 9810089862 E-MAIL :info@strucon.net

Designation:-
FLOW SHEET
RAW MAERIAL CRUSHING & STORAGE SECTION

Plant.:-
TRUMBO INDUSTRIES PVT. LTD.
J & K (KILN LINE II, 2000 TPD)

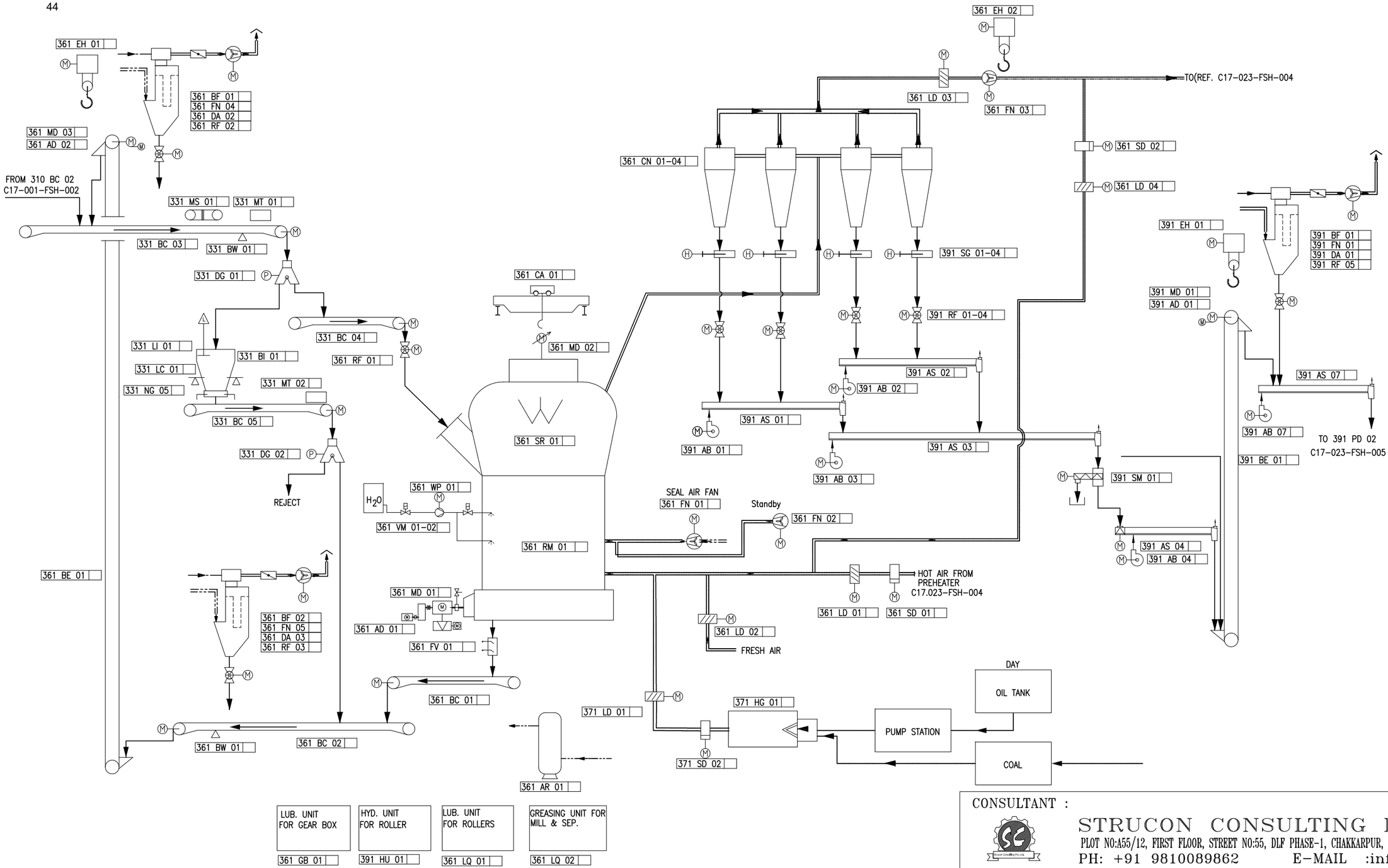
Project no.
C17.023-IND-CO

Drawing no.
C17.023-IND-CO-FSH-001

COLLEAGUES Consultants Pvt.Ltd.
1st Floor, 76 - D, Udyog Vihar, Phase IV, Gurgaon - 122015, Haryana (India)
Tel-+91-124-4281900 +91-124-4594800 Fax-+91-124-4594801

	Name	Date	Rev.	00
Drawn by:	MON	21.03.18	Sheet:	01
Checked by:	SNE	21.03.18		01
Approved by:	DKS	21.03.18	Scale:	1:1

This drawing is a property of Colleagues Consultants Pvt. Ltd. and not to be duplicated, disclosed or utilized without written consent from us.



LEGEND

- AIR
- AIR WITH MATERIAL
- MATERIAL
- HYDRAULLIC LINE
- LUBRICATION LINE
- EXISTING EQUIPMENT
- PROPOSED EQUIPMENT

CONSULTANT :

STRUCON CONSULTING PVT. LTD.

PLOT NO:A55/12, FIRST FLOOR, STREET NO:55, DLF PHASE-1, CHAKKARPUR, GURGAON, HARYANA-122002

PH: +91 9810089862 E-MAIL :info@strucon.net

Rev.	Description	Name	Date

Designation:-
FLOW SHEET
RAW MILL GRINDING

Plant.:-
TRUMBO INDUSTRIES PVT. LTD.
J & K (KILN LINE II, 2000 TPD)

Project no.
C17.023-IND-CO

Drawing no.
C17.023-IND-CO-FSH-003

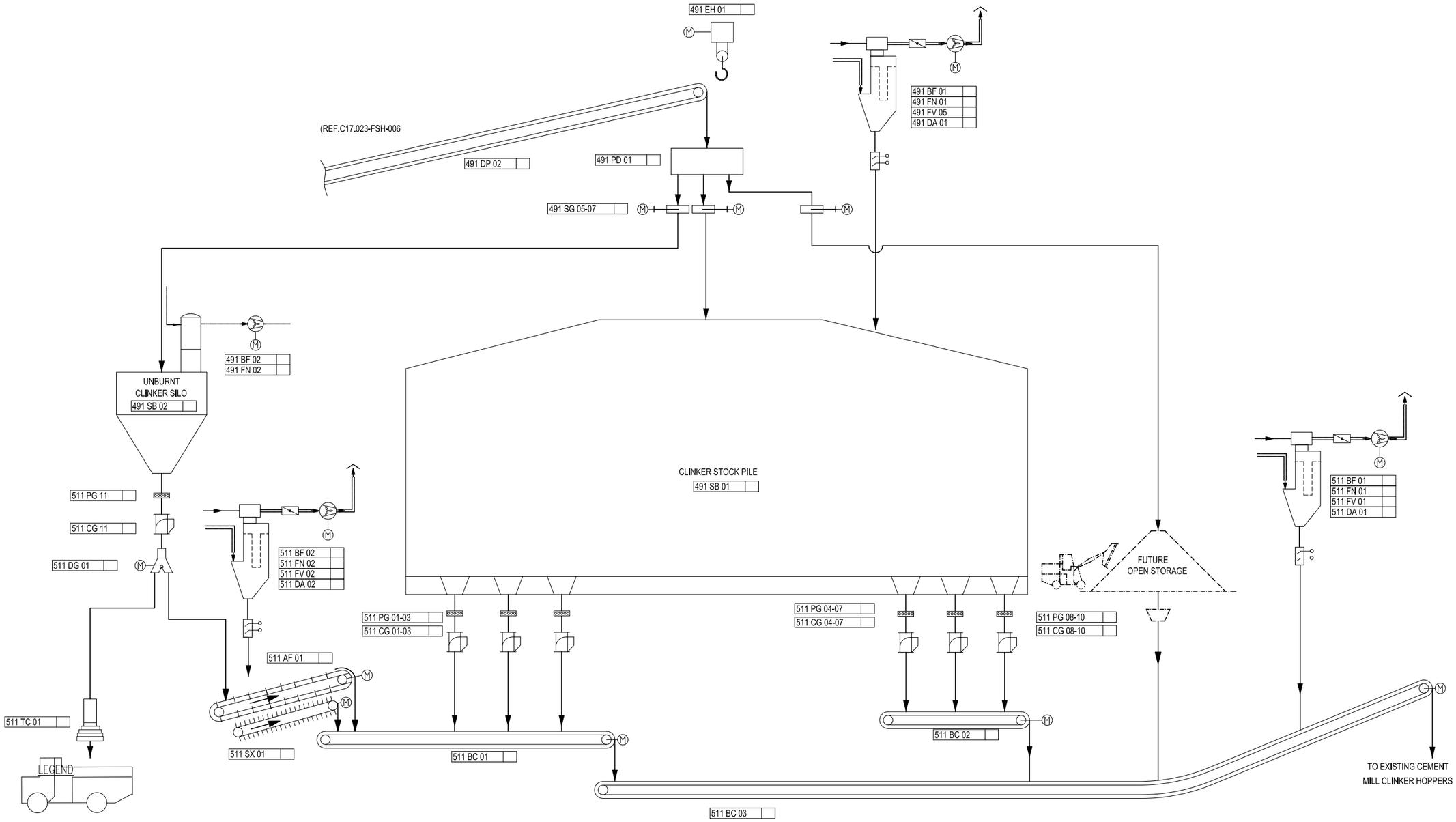
	Name	Date	Rev.	00
Drawn by:	MON	21.03.18	Sheet:	01
Checked by:	SNE	21.03.18		01
Approved by:	DKS	21.03.18	Scale:	1:1

COLLEAGUES
Consultants Pvt.Ltd.

1st Floor, 76 - D,
Udyog Vihar, Phase IV,
Gurgaon - 122015, Haryana (India)

Tel-+91-124-4281900
+91-124-4594800
Fax-+91-124-4594801

This drawing is a property of Colleagues Consultants Pvt. Ltd. and not to be duplicated, disclosed or utilized without written consent from us.



AIR
AIR WITH MATERIAL
MATERIAL
HYDRAULLIC LINE
LUBRICATION LINE
EXISTING EQUIPMENT
PROPOSED EQUIPMENT

Rev.	Description	Name	Date

CONSULTANT :

STRUCON CONSULTING PVT. LTD.
PLOT NO:A55/12, FIRST FLOOR, STREET NO:55, DLF PHASE-1, CHAKKARPUR, GURGAON, HARYANA-122002
PH: +91 9810089862 E-MAIL :info@strucon.net

Designation:-
FLOW SHEET
CLINKER STOCKPILE &
TRANSFER TO CM FEED HOPPERS

Plant.:-
TRUMBO INDUSTRIES PVT. LTD.
J & K (KILN LINE II, 2000 TPD)

Project no.
C17.023-IND-CO

Drawing no.
C17.023-IND-CO-FSH-009

COLLEAGUES
Consultants Pvt.Ltd.

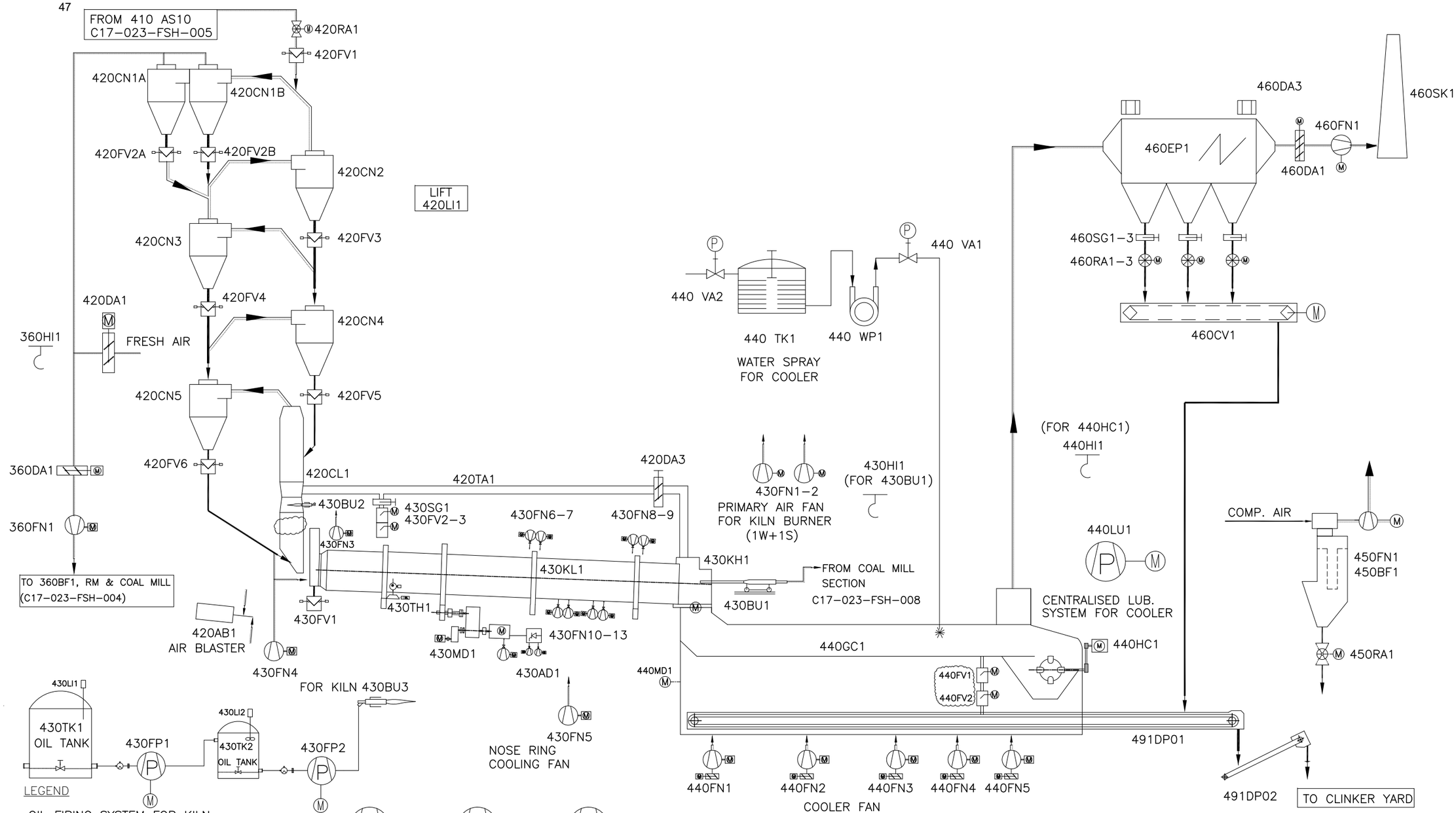
1st Floor, 76 - D,
Udyog Vihar, Phase IV,
Gurgaon - 122015, Haryana (India)
Tel-+91-124-4281900
+91-124-4594800
Fax-+91-124-4594801

	Name	Date	Rev.	00
Drawn by:	MON	21.03.18	Sheet:	01
Checked by:	SNE	21.03.18		01
Approved by:	DKS	21.03.18	Scale:	1:1

This drawing is a property of Colleagues Consultants Pvt. Ltd. and not to be duplicated, disclosed or utilized without written consent from us.

Annexure 11: Process Flow Sheet for cement section

47



AIR
AIR WITH MATERIAL
MATERIAL
HYDRAULLIC LINE
LUBRICATION LINE
EXISTING EQUIPMENT
PROPOSED EQUIPMENT

Rev.	Description	Name	Date

CONSULTANT :

STRUCON CONSULTING PVT. LTD.
PLOT NO:A55/12, FIRST FLOOR, STREET NO:55, DLF PHASE-1, CHAKKARPUR, GURGAON, HARYANA-122002
PH: +91 9810089862 E-MAIL :info@strucon.net

Designation:-
FLOW SHEET
CLINKERIZATION &
CLINKER TRANSPORT

Plant.:-
TRUMBO INDUSTRIES PVT. LTD.
J & K (KILN LINE II, 2000 TPD)

Project no.
C17.023-IND-CO

Drawing no.
C17.023-IND-CO-FSH-006

COLLEAGUES
Consultants Pvt.Ltd.

1st Floor, 76 - D,
Udyog Vihar, Phase IV,
Gurgaon - 122015, Haryana (India)
Tel-+91-124-4281900
+91-124-4594800
Fax-+91-124-4594801

	Name	Date	Rev.	00
Drawn by:	MON	21.03.18	Sheet:	01
Checked by:	SNE	21.03.18		01
Approved by:	DKS	21.03.18	Scale:	1:1

This drawing is a property of Colleagues Consultants Pvt. Ltd. and not to be duplicated, disclosed or utilized without written consent from us.

D-47

A3

Annexure 12: Conservation Plan for Schedule I Species

Office of the Wildlife Warden, Central Division Srinagar
New Theed, Harwan, Dachigam Pin code: 191123
E-mail: wlwc786@gmail.com
Ph/ Fax No. 0194-2462327

The Regional Wildlife Warden,
Kashmir Region,
Srinagar.

No: WLWC/ Estt/2020-21/1254 Dated: 4 -09- 2020.

Subject : Proposed expansion of cement plant (1000 TDP to 2000 by M/s : Trumboo Industries Pvt.Ltd (TIPL) located at village-Khrew, Tehsil Pampore, District Pulwama, Jammu and Kashmir . Wildlife Conservation plan for Schedule : Species reg.

Reference : Your endtt. No: RWLW/K/Tech/2020-21/560 Dated: 17-07-2020.

Sir,

With reference to your above cited endtt. on the subject matter. The Conservation/Management plan submitted by the above named cement plant has been perused and following changes needs to be made in the said plan.

1. The Word "Forest Department" at 7.2 (1) needs to be replaced by the Department of Wildlife Protection. **Component of Plantation of fruit bearing/conifer plants needs to be incorporated in the plan which shall be carried out in trenches.**
2. Purchase and donation with respect to items No: 2 needs to be replaced as " **Purchase and providing of equipments to Wildlife Warden, Central Division, Department of Wildlife Protection for their field staff to strengthen night/day patrolling viz night vision binoculars, Camera traps, waterproof tents.**
3. With respect to item No: 3, needs to be changed as **"Purchase and providing of rescue and rehabilitation vehicle to Wildlife Department including tranquilizing equipments".** .
4. The budgetary provision for Awareness programmes needs to be enhanced from Rs.8.50 to 15.00 lac and the component needs to be modified as **" Const. of Habitat Management Centre at Batthen (outside the plant premises) which shall be utilized for conducting of awareness programmes for locals/ students/educated youths/Local representatives to educate them to minimize their dependence on Wildlife Forests like fodder, fuel wool etc. and for combating poaching activities for the best improvement and protection of Wildlife".**

The proposed conservation plan needs to be closely monitored by the department of Wildlife Protection and sites for each component of work be got vetted by the Wildlife Warden, Central Division. The infrastructure and procurements thereof shall become the property of the department of Wildlife Protection, all these procurements/infrastructure shall be handed over to the department of Wildlife Protection properly and M/s : Trumboo Industries Pvt.Ltd shall not claim for its propriety rights.

If the above suggestions and changes are acceptable to the said firm, then this office has got no objection to recommend the Conservation Plan.

Yours faithfully,

Wildlife Warden
Central Division, Srinagar

Wildlife Conservation Plan

For

Schedule I (Endangered Species)



Prepared for
Trumboo Industries Private Limited

Prepared by
Perfact Enviro Solutions Pvt Ltd
New Delhi
Email- Info@perfactgroup.in
Website- www.perfactgroup.in
Phone- 011-49281360

-TABLE OF CONTENTS-

1. Introduction **3**

2. Schedule I Species present in the Buffer Zone **3**

3. Principle of Wildlife Conservation **4**

4. Decline of Wildlife **5**

5. SPECIFIC WILDLIFE CONSERVATION PLAN **6**

5.1. Cervus elaphus hanglu (Kashmir stag (hangul) 6

5.1.1. Taxonomy 6

5.1.2. Description 6

5.1.3. Habit and Habitat 6

5.1.4. Reproduction 7

6. Panthera pardus (Leopard) **8**

6.0.1. Taxonomy 8

6.0.2. Introduction 8

6.0.3. Distribution and Habitat 8

6.0.4. Diet and Hunting 9

6.0.5. Reproduction 9

6.1. Moschus chrysogaster (Alpine musk deer) 10

6.1.1. Taxonomy 10

6.1.2. Geographic Range 10

6.1.3. Habitat 10

6.1.4. Physical Description 10

6.1.5. Food 11

6.1.6. Reproduction 11

6.2. Ursus arctos isabellinus (Himalayan brown bear) 12

6.2.1. Taxonomy 12

6.2.2. Distribution 12

6.2.3. Description 12

6.2.4. Food & Behaviour 12

6.3. Falco tinnunculus (Common kestrel) 13

6.3.1. Taxonomy 13

6.3.2. Geographic Range 13

6.3.3. Habitat 13

6.3.4. Physical Description 13
6.3.5. Reproduction 14
6.3.6. Behaviour 14
6.3.7. Lifespan/Longevity 15
6.4. Capricornis thar (Himalayan serow) 16
6.4.1. Taxonomy 16
6.4.2. Distribution and Habitat 16
6.4.3. Morphology 16
6.4.4. Food & Behaviour 17
6.4.5. Reproduction 17
6.5. Ithaginis cruentus (Blood Pheasant) 18
6.5.1. Taxonomy 18
6.5.2. Distribution 18
6.5.3. Habit and Habitat 18
6.6. Lophophorus impejanus (Himalayan monal) 20
6.6.1. Taxonomy 20
6.6.2. Distribution and Habitat 20
6.6.3. Description 20
6.6.4. Reproduction 21
7. Conservation Measures for all the Eight Schedule I Species. 22
7.1. Project Budget 22
7.2. Year wise budget for conservation 24
8. References 25

1. Introduction

M/s Trumboo Industries Pvt. Ltd. (TIPL) proposed Expansion of Cement Plant [Production Capacity from 1000 TPD (3.3 Lakhs TPA) to 2000 TPD (6.6 Lakhs TPA)] is located at Village Khrew, P.O.Pampore, District Pulwama, J&K. at Latitude:34°3'26.14"N to 34°3'12.25"N, Longitude: 75°0'49.87"E to 75°1'4.58"E, Survey of India Toposheet No. 43 N/4.

The Plant has been in operation since 2010. Total area of the existing plant is 12.38 ha. There will be no requirement of additional land and for the proposed expansion from 1000 TPD (3.3 Lakhs TPA) to 2000 TPD(6.6 Lakhs TPA). No forest land is involved as the entire land of 12.38 ha is private land and has already been acquired by project proponent on which an existing cement plant is in operation.

Since general condition applies as Dachigam National Park is located at 3.49 Km in N direction from the plant, hence the project is considered as Category "A" Schedule 3(b) project as per EIA Notification, 2006 and amendments.

2. Schedule I Species present in the Buffer Zone

S.No	Zoological Name	Common Name	Schedule
1	*Cervus elaphus hanglu*	Kashmir stag (hangul)	I
2	*Panthera pardus*	Leopard	I
3	*Moschus chrysogaster*	Alpine musk deer	I
4	*Ursus arctos isabellinus*	Himalayan brown bear	I
5	*Falco tinnunculus*	Common kestrel	I
6	*Capricornis thar*	Himalayan serow	I
7	*Ithaginis cruentus*	Blood Pheasant	I

8	*Lophophorus impejanus*	Himalayan monal	I

3. Principle of Wildlife Conservation

Wildlife conservation is the practice of protecting wild plant and animal species and their habitat. Wildlife plays an important role in balancing the ecosystem and provides stability to different natural processes of nature like rainfall (transpiration from plant), changing of temperature (heat evolution by animals), the fertility of soil (making of manure by earthworm). The goal of wildlife conservation is to ensure that nature will be around for future generations to enjoy and to recognize the importance of wildlife and wilderness for humans and other species alike. Many nations have government agencies and NGOs dedicated to wildlife conservation, which help to implement policies designed to protect wildlife. Numerous independent non-profit organizations also promote various wildlife conservation causes.

An endangered species is defined as a population of a living species that is in danger of becoming extinct because the species has a very low or falling population, or because they are threatened by the varying environmental or prepositional parameters like (landslides, increase in temperature above the optimum temperature, acid rain). Wildlife is part of nature which maintains an equal distribution of food instead of over use of food by one human.

Wildlife management is the application of scientific knowledge and technical skills to protect, conserve, limit, enhance, or create wildlife habitat. Wildlife management also includes implementing laws regulating the use, kinds, and amounts of wildlife, people can harvest. Laws that protect existing habitat are also wildlife management tools.

4. Decline of Wildlife

Biological evolution on earth is associated with extinction of older species and descent of new species but the disappearance of species from the surface of the earth has speeded up 1000 to 10,000 times as compared to the natural disappearance, due to destructive activities of mankind. Important reasons for decline of wildlife are:

- Degradation of ecosystem
- Loss of habitat because of construction work (Urbanization)
- Loss of mobility causes deterioration of the forest, expansion of agricultural land and urbanization.
- Limitation of expansion of vegetation: land for cultivation is extended due to the population growth (settlement areas are expanding, Grazing land is declining etc).
- International trade

5. SPECIFIC WILDLIFE CONSERVATION PLAN

5.1. Cervus elaphus hanglu (Kashmir stag (hangul)

5.1.1. Taxonomy

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Cetartiodactyla
Family	*Cervidae*
Genus	*Cervus*
Species	*Cervus elaphus*
Subspecies	*Cervus elaphus hanglu*

5.1.2. Description

The Kashmir Red deer or Hangul, Cervus elaphus hanglu, is one of six Asian subspecies of Red deer and was once distributed widely in the Kashmir Himalayas along the Zanskar mountain range (Gee 1965; Schaller 1969; Prater, 1993; Nowak, 1999) of the Northwest Himalayan biogeographic region zone with the last viable population now existing in Dachigam National Park.

5.1.3. Habit and Habitat

They prefer to live in dense riverside forests between 1700 and 3600 meters of high valleys, and also in the mountain areas. Male shed their antlers between March to April and females have no horns. The weight of male Kashmir stag is between 150 to 250 kg., and the weight of female is between 100 to 160 kg. Head to body length measures about 180 to 220 cm. They are about 100 to 135 cm high at the shoulder.

Kashmir stag is a social animal. They live in groups of two to 18 individuals, sometimes found single. Kashmir stag is a herbivores animal, they feed on flowers, leaves, and tender shoots of shrubs. They also feed on Lichens, Mosses, Ferns, and Mushrooms.

5.1.4. Reproduction

Age of sexual maturity is 2 to 3 years for male and 1 to 3 years for females. Breeding season is between September to October. A stag will pursue a receptive female through the forest and uphill slopes till mating takes place. Normally one offspring per female. The gestation period is 7-8 months. After dropping their fawns, the hinds too leave the lowest part of the valley and move to the upper slopes where the best and most nutritious pastures are available, and will use these areas for raising their young till the weather turns harsh, forcing them down again.
Average lifespan of Kashmir Stag is 15 to 20 years.

6. Panthera pardus (Leopard)

6.0.1. Taxonomy

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Carnivora
Suborder	Feliformia
Family	Felidae
Subfamily	Pantherinae
Genus	*Panthera*
Species	*pardus*

6.0.2. Introduction

The leopard (*Panthera pardus*) is an old-world mammal of the Felidae family and the smallest of the four 'big cats' of the genus Panthera, along with the tiger, lion, and jaguar. Leopards that are melanistic, either all-black or very dark in coloration, are known colloquially as Black Panthers (Jacobson, et al., 2016).

6.0.3. Distribution and Habitat

As of 1996, the leopard had the largest distribution of any wild cat, although populations before and since have shown a declining trend and are fragmented outside of sub-Saharan Africa. On the Indian subcontinent, topographical barriers to the dispersal of this subspecies are the Indus River in the west, and the Himalayas in the north. In the east, the lower course of the Brahmaputra and the Ganges Delta form natural barriers to the distribution of the Indochinese leopard. Indian leopards are distributed all over India, in Nepal, Bhutan, Bangladesh and parts of Pakistan. In

the Himalayas they are sympatric with snow leopards up to 5,200 meters (17,100 ft) above sea level (Hayward, et al., 2006).

6.0.4. Diet and Hunting

Leopards are opportunistic hunters. Although mid-sized animals are preferred, the leopard will eat anything from dung beetles to 900 kg male giant elands. Their diet consists mostly of ungulates and monkeys, but rodents, reptiles, amphibians, birds and fish are also eaten. In fact, they hunt about 90 different species of animals. The leopard stalks its prey silently and at the last-minute pounces on its prey and strangles its throat with a quick bite. Leopards often hide their kills in dense vegetation or take them up trees, and are capable of carrying animals up to three times their own weight this way. Storing carcasses up trees keeps them away from other predators such as spotted hyenas, jackals, tigers and lions, though the latter will occasionally be successful in climbing and fetching the leopard kills (Balme, Hunter, & Slotow, 2007).

6.0.5. Reproduction

A male may follow a female who catches his attention. Eventually fighting for reproductive rights can take place. Depending on the region, leopards may mate all year round (India and Africa) or seasonally during January to February. The oestrous cycle lasts about 46 days and the female usually is in heat for 6-7 days. Cubs are usually born in a litter of 2-3, but infant mortality is high and mothers are not commonly seen with more than 1-2 cubs. The pregnant females find a cave, crevice among boulders, hollow tree, or thicket to give birth and make a den. Cubs open their eyes after a period of 10 days. The fur of the young tends to be longer and thicker than that of adults. Their pelage is also greyer in color with less defined spots. Around three months the infants begin to follow the mother out on hunts. At one

year of age leopard young can probably fend for themselves but they remain with the mother for 18-24 months (Balme, Hunter, & Slotow, 2007).

6.1. *Moschus chrysogaster (Alpine musk deer)*

6.1.1. Taxonomy

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Artiodactyla
Family	Moschidae
Genus	*Moschus*
Species	*M. chrysogaster*

6.1.2. Geographic Range

Moschus chrysogaster lives along the Himalayas in Nepal, northern India, southern China, Afghanistan, Bhutan, and Pakistan

6.1.3. Habitat

They usually live in forests with moderate to steep slopes (Kattel,1991). Alpine musk deer are found in oak or fir forests (Kattel,1991) and can be found up to 4500 m in mountains. Plants that may be found in its habitat include birch, rhododendron, blue pine, fir, oak, juniper, grass, lichens and shrubs. Male are quite territorial of other males and fight those which attempt to enter their territory. Members of this species are thought to use latrine sites and other strong-smelling secretions to mark their territory.

6.1.4. Physical Description

Alpine musk deer looks like a small deer with long upper canines that are visible even when the mouth is closed. It's tail is hairless except for a small tuff at the end

(Shrestha, 1989), and it has long "hair-like" ears (Sathyakumar,1993). It has an externally visible musk sac that lies between its reproductive organs and umbilicus (Shrestha, 1989). The opening to the sac lies anterior to the urethra (Shrestha, 1989). A musk deer is about 60cm tall and has a shoulder height of about 20cm (Shrestha, 1989).

6.1.5. Food

Alpine musk deer are herbivores and feed on what is seasonally available. Accordingly, they eat grasses, forbes, mosses, lichen, twigs, shoots, and plant leaves. They are ruminants, so they can quickly leave feeding grounds if threatened and further digest their food at a later time when safe from harm. Occasionally, Alpine musk deer travel great distances at night to forage for food. They may travel 3 to 7 km per night, but they always return to their usual territories by daybreak.

6.1.6. Reproduction

The mating season is December to January. Average number of offspring one per female.

6.2. *Ursus arctos isabellinus (Himalayan brown bear)*

6.2.1. Taxonomy

Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Carnivora
Family:	Ursidae
Genus:	Ursus
Species:	*U.arctos*
Subspecies:	*U. a. isabellinus*

6.2.2. Distribution

Himalayan brown bears are distributed in Jammu and Kashmir, northern Indian states including Uttaranchal and Himachal Pradesh (Sathyakumar, 2006).

6.2.3. Description

Himalayan brown bears exhibit sexual dimorphism. Males range from 1.5m up to 2.2m (5 ft - 7 ft 3in) long, while females are 1.37m to 1.83m (4 ft 6 in - 6 ft) long. They are the largest animals in the Himalayas and are usually sandy or reddish-brown in colour.

6.2.4. Food & Behaviour

Himalayan brown bears are omnivores as well as herbivores (fruits, berries, small root plants). They also prey on large mammals, including sheep and goats. They hibernate in a den during the winter and emerge during April and May.

6.3. *Falco tinnunculus (Common kestrel)*

6.3.1. Taxonomy

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Falconiformes
Family	Falconidae
Genus	*Falco*
Species	*F. tinnunculus*

6.3.2. Geographic Range

Falco tinnunculus is a widespread kestrel species, found throughout Europe, Asia, and Africa. Its range spans from Great Britain to China and as far south as South Africa. In Europe, *F. tinnunculus* is migratory and winters in southern Europe and sub-saharan Africa. However, the majority of the breeding population in Europe is non-migratory.

6.3.3. Habitat

Common kestrels prefer open, grassy fields and farmlands, which give them sufficient open areas to hunt. They can sometimes be found in forested areas and marshlands. Common kestrels occupy a wide range of altitudes, from sea level to almost 5000 m.

6.3.4. Physical Description

Falco tinnunculus is among the smallest of all raptors. Adults range in weight from 150 to 190 g, with females tending to be larger than males. Common kestrels have longer tails and wingspans relative to their body size than most other falcons, which allow them to be easily distinguished from related species. Common kestrel plumage

ranges from gray to brown. The back is usually a darker color than the breast, both are covered in dark brown or black spots. The wings are tipped in black on the dorsal side and are pale underneath. Males often have more bluish-gray heads and tails. Females are more of a reddish-brown color and have barring on the tail. In both sexes, there is a darker stripe or spot underneath each eye. Hatchlings are mostly white or very pale brown. Older juveniles have feather patterns similar to adults, but the feathers are noticeably less sleek in juveniles and down is clearly visible. Juveniles more closely resemble adult females than adult males.

6.3.5. Reproduction

Common kestrels become quite vocal during the mating season, displaying a variety of calls. One call, described as sounding like "quirrr-rr quirrr-rr," is made by both sexes during mating behaviors and by the female when she becomes interested in mating. From the beginning of courtship until egg-laying, males hunt for the females and bring them prey as gifts. During this time, females become increasingly sedentary and spend the majority of their time in the nest.

Breeding density is most affected by available resources, such as nesting sites and food. They do not make their own nests, but may rearrange materials already present in the nesting site. A clutch consists of 3 to 7 eggs which hatch in 26 to 34 days. Fledgling normally occurs within the first month after hatching, but young are still dependent on their parents until hunting skills are sufficient, which takes about 7 or 8 weeks. The young will reach sexual maturity by the next breeding season but most common kestrels do not mate during their first year of maturity.

6.3.6. Behaviour

Common kestrels are diurnal hunters and spend most of their time perching and resting within their home range. They normally spend large amounts of time in

flight only when hunting or during courtship behaviors. Predominantly solitary animals, common kestrels are usually seen alone. Pairs can be seen during the breeding season. Nonbreeding birds migrate short distances to summer and winter ranges.

6.3.7. Lifespan/Longevity

There is little data on the lifespan of *F. tunnunculus* in the wild. Predation, pollution, resource limitation, and road accidents contribute to early mortality in this species. Only about 66 % of common kestrels survive their first two years in the wild.

6.4. *Capricornis thar (Himalayan serow)*

6.4.1. Taxonomy

Phylum	Chordata
Subphylum	Vertebrata
Class	Mammalia
Order	Artiodactyla
Family	Bovidae
Subfamily	Caprinae
Genus	*Capricornis (Ogilby, 1837)*
Species	*Capricornis thar (Hodgson, 1831)*

6.4.2. Distribution and Habitat

The Himalayan serow is a goat-antelope native to the montane forests of the Himalayas (Northern India – from Jammu and Kashmir to the Mishmi Hills in Arunachal Pradesh -, Nepal, Bhutan, Tibet). It is considered a flagship species due to its specialized habitat requirements of dense and undisturbed forests.

6.4.3. Morphology

The species is characterised by its large head, long mulelike ears, thick neck and short limbs. They have a coarse coat which varies in colour from grizzled black, blackish grey-roan to red. The limbs of the Himalayan serow are reddish-brown above the knee and dirty white beneath. They show limited sexual dimorphism. The preorbital glands are enlarged and used for scent marking and indicating the estrus status of females. Adults weight is approx 90 kg, shoulder height ranges from 100-110 cm body length 140-180 cm and Horns length 23-25cm and Girth 13-15 cm.

6.4.4. Food & Behaviour

Himalayan serow are herbivores. They feed on a variety of food items, including oak leaves, shrubs, grasses, shoots, montane bamboo, ferns, moss and lichen. They are solitary, shy and nocturnal animals however, seen occasionally together male-female pair units or family groups of up to three to four individuals. Adult serows of both sexes exhibit strict intrasexual territoriality in which males and females defend separate territories against same-sex rivals.

6.4.5. Reproduction

Females are sexually mature by 2.5 years while males mature at 3 years. The breeding season is between October-November and the young are born in May-June. Young usually follow mothers and remain within the mothers' territories until they reach 2–4 years old.

6.5. *Ithaginis cruentus (Blood Pheasant)*

6.5.1. Taxonomy

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Galliformes
Family	Phasianidae
Subfamily	Phasianinae
Genus	*Ithaginis*
Subspecies	*Ithaginis cruentus affinis*

6.5.2. Distribution

The blood pheasant is a small, short-tailed pheasant that is widespread and is fairly common in eastern Himalayas, ranging across India, Nepal, Bhutan, China and northern Myanmar. The blood pheasant was the state bird of the Sikkim.

6.5.3. Habit and Habitat

They prefer scrub areas, coniferous and mixed forests. They move their range depending on the seasons, and are found at higher elevations during the summer and move to lower elevations during the winter. They are good runners, and prefer to run rather than to fly, when disturbed. They are poor fliers, the flight pattern of Blood pheasant is short and direct. These birds are secretive, shy and suspicious of humans. Believed to be monogamous. They feed on grain, grass seeds, fallen berries, shoots, tubers, termites, ants and insects. They prefer green foods and in the wild they eat mostly lichens. The call of the Blood pheasant, described as a loud “Jijiji” or “glee-glee-keweee-keweee” or “si-si-si”. Nesting and breeding season is between April

to June. The nest is located in fir and willow trees, in shrubs, under rocks, by fallen trees, or in tree holes near the ground.

6.6. *Lophophorus impejanus (Himalayan monal)*

6.6.1. Taxonomy

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Galliformes
Family:	Phasianidae
Genus:	*Lophophorus*
Species:	*L. impejanus*

6.6.2. Distribution and Habitat

Himalayan Monal is a pheasant native to Himalayan forests and shrublands at elevations of 2,100–4,500 m (6,900–14,800 ft). It is the national bird of Nepal, where it is known as the danphe or danfe. It lives in upper temperate oak-conifer forests interspersed with open grassy slopes, cliffs and alpine meadows. They have a strong preference for their habitat and even a little change in their habitat may affect them.

6.6.3. Description

It is a relatively large-sized pheasant. The bird is about 70 cm (28 in) long. The male weighs up to 2,380 g (84 oz)rams and the female 2,150 g (76 oz). The adult male has multicoloured plumage throughout, while the female, as in other pheasants, is more subdued in colour. The tail feathers of the male are uniformly rufous, becoming darker towards the tips, whereas the lower tail coverts of females are white, barred with black and red. The female has a prominent white patch on the throat and a white stripe on the tail. The first-year male and the juvenile resemble the female, but the first-year male is larger and the juvenile is less distinctly marked.

6.6.4. Reproduction

The breeding season is April through August, and they generally form pairs at this time. In winter they congregate in large coveys and roost communally.

7. Conservation Measures for all the Eight Schedule I Species.

1. Plantation details and programs: (In consultation with Department of wildlife protection) Preferred roosting trees for the herbivorous species and Native or fruit bearing species plantation would be specially taken up in the green belt area of the project and nearby area.
2. Small earthen material lined water tanks will be created in the Core-zone Green area as well as selected areas in the Buffer Zone to make sure availability of clean drinking water to the species. The availability of clean water will ensure a permanent stay of species in these areas.
3. Construction of Habitat Management Centre at Batthen (Outside the plant premises) which shall be utilized for conducting of awareness programmes for locals/students/ educated youths/ Local representatives to educate them to minimize their dependence on Wildlife Forests like fodder, fuel wood etc and combating poaching activities for the best improvement and protection of wildlife
4. For surveillance: Manpower should be strengthened by giving employees appropriate training and allowing them to gain experience. Which will be included from the adjoining villages.
5. Species susceptible to environment change: Litter burning or removal of leaf litter will be discouraged strictly. Litter removal practices destroy feeding material and removes the cover and nesting materials necessary for shelter and protection from predators.

7.1. Project Budget

The Proponent has proposed sum total of Rs. 90 Lakhs for the following-:

1. Contribution of Rs.4 Lakh each for conservation of eight species for five years.
2. Remaining Rs. 58 lakhs for the maintenance and welfare of the above mentioned schedule species.

7.2. Year wise budget for conservation

S.No	Activity & Provision	1st year	2nd year	3rd year	4th year	5th year	Total Cost (lakhs)
1	Food Availability and improvement of Habitat- Plantation of edible fruit bearing trees/conifer plants (In consultation with Department of Wildlife Protection) for herbivorous animals which will lead to the improvement of habitat. Also provision of availability of food grains near the water bodies will be provided.	7	7	10	5	5	34
2	Purchase and providing equipments to Wildlife Warden, Central Division, Department of Wildlife Protection for their field staff to strengthen night/day patrolling viz night vision binoculars, camera traps & waterproof tents.	5	2.5	5	5	2	19.5
3	Purchase and providing of rescue and rehabilitation vehicle to the	15	-	-	-	-	15

	Wildlife Department including tranquilizing equipments.						
4	Construction of Habitat Management Centre at Batthen (Outside the plant premises) which shall be utilized for conducting of awareness programmes for locals/students/ educated youths/ Local representatives to educate them to minimize their dependence on Wildlife Forests like fodder, fuel wood etc and combating poaching activities for the best improvement and protection of wildlife	3.5	4	3	3	2	15.5
5	Fencing around the Project Boundary so that no wild animals wander into the project site and cause any mishaps. Also, ensure a strict watch on the fence so that no wild animal is able to enter the Plant area.	-	2.5	2.5	0.5	0.5	6
Total		**30.5**	**16**	**20.5**	**13.5**	**9.5**	**90**

8. References

http://natureconservation.in/kashmir-stag-cervus-elaphus-hanglu-complete-detail/
https://animaldiversity.org/accounts/Falco_tinnunculus/
https://animaldiversity.org/accounts/Moschus_chrysogaster/
http://natureconservation.in/description-of-blood-pheasant-ithaginis-cruentus/
http://www.wilddocu.de/himalayan-serow-capricornis-thar/
http://cza.nic.in/uploads/documents/studbooks/english/nsHimalayan%20Serow.pdf

Annexure 13: Raw data of AAQ

AMBIENT AIR QUALITY (POST MONSOON 2022)					
A1- NW					
DATE	PM2.5	PM10	NOx	SO2	CO
01.10.2022	38.16	66.94	19.86	6.09	0.60
04.10.2022	44.44	79.43	17.82	6.52	0.53
08.10.2022	39.87	70.31	20.61	7.10	0.62
11.10.2022	38.10	68.10	19.70	7.00	0.59
15.10.2022	44.37	77.74	22.10	7.62	0.66
18.10.2022	42.02	73.74	20.19	7.68	0.61
22.10.2022	46.22	87.29	22.68	7.67	0.68
25.10.2022	43.24	73.98	16.32	9.14	0.49
01.11.2022	45.98	81.08	21.91	7.85	0.66
04.11.2022	44.71	78.68	23.35	7.84	0.70
08.11.2022	48.80	82.85	24.13	9.01	0.72
11.11.2022	49.15	80.63	17.81	7.03	0.53
15.11.2022	43.81	83.03	19.98	5.95	0.60
18.11.2022	52.02	91.77	19.51	6.99	0.59
22.11.2022	49.53	87.72	21.82	8.17	0.65
25.11.2022	40.21	79.27	22.55	7.79	0.68
03.12.2022	35.80	69.74	28.40	7.41	0.85
06.12.2022	36.27	65.84	21.29	8.52	0.64
10.12.2022	39.63	74.85	24.26	9.48	0.73
13.12.2022	38.36	71.20	19.28	7.26	0.58
17.12.2022	41.14	70.51	22.22	8.31	0.67
20.12.2022	39.13	69.42	24.36	9.04	0.73
24.12.2022	31.67	62.38	21.52	8.52	0.65
27.12.2022	30.61	62.98	16.92	6.55	0.51

A2-SE					
DATE	PM2.5	PM10	NOx	SO2	CO
01.10.2022	35.97	63.10	18.72	5.74	0.56
04.10.2022	41.89	74.88	16.79	6.15	0.50
08.10.2022	37.58	66.28	19.43	6.69	0.58
11.10.2022	35.90	64.10	18.60	6.60	0.56
15.10.2022	41.82	73.28	20.83	7.19	0.62
18.10.2022	39.61	69.51	19.04	7.24	0.57
22.10.2022	43.57	82.28	21.37	7.23	0.64
25.10.2022	40.76	69.73	15.38	8.61	0.46
01.11.2022	43.34	76.42	20.65	7.40	0.62
04.11.2022	42.14	74.17	22.01	7.39	0.66
08.11.2022	46.00	78.10	22.75	8.50	0.68
11.11.2022	46.33	76.00	16.79	6.63	0.50
15.11.2022	41.29	78.27	18.83	5.61	0.57
18.11.2022	49.04	86.51	18.39	6.59	0.55
22.11.2022	46.69	82.68	20.57	7.70	0.62
25.11.2022	37.90	74.72	21.25	7.34	0.64
03.12.2022	33.75	65.73	26.77	6.98	0.80
06.12.2022	34.19	62.06	20.07	8.03	0.60
10.12.2022	37.36	70.56	22.87	8.94	0.69
13.12.2022	36.16	67.11	18.17	6.84	0.55
17.12.2022	38.78	66.46	20.95	7.84	0.63
20.12.2022	36.88	65.43	22.96	8.52	0.69
24.12.2022	29.86	58.80	20.28	8.03	0.61
27.12.2022	28.85	59.37	15.95	6.18	0.48
A3 -Bathon Village					

DATE	PM2.5	PM10	NOx	SO2	CO
01.10.2022	40.42	70.90	21.04	6.45	0.63
04.10.2022	47.07	84.13	18.87	6.91	0.57
08.10.2022	42.22	74.47	21.83	7.52	0.65
11.10.2022	40.40	72.10	20.90	7.40	0.63
15.10.2022	46.99	82.34	23.40	8.07	0.70
18.10.2022	44.51	78.10	21.39	8.14	0.64
22.10.2022	48.95	92.45	24.02	8.12	0.72
25.10.2022	45.80	78.35	17.28	9.68	0.52
01.11.2022	48.70	85.87	23.21	8.31	0.70
04.11.2022	47.35	83.33	24.73	8.30	0.74
08.11.2022	51.68	87.75	25.56	9.55	0.77
11.11.2022	52.05	85.39	18.86	7.45	0.57
15.11.2022	46.40	87.94	21.16	6.30	0.63
18.11.2022	55.10	97.20	20.66	7.40	0.62
22.11.2022	52.46	92.90	23.11	8.65	0.69
25.11.2022	42.58	83.95	23.88	8.25	0.72
03.12.2022	37.92	73.86	30.08	7.85	0.90
06.12.2022	38.41	69.73	22.55	9.02	0.68
10.12.2022	41.97	79.28	25.70	10.04	0.77
13.12.2022	40.63	75.40	20.42	7.69	0.61
17.12.2022	43.57	74.68	23.54	8.80	0.71
20.12.2022	41.44	73.52	25.79	9.57	0.77
24.12.2022	33.55	66.07	22.79	9.02	0.68
27.12.2022	32.42	66.71	17.92	6.94	0.54
A4 -Zanetrag Village					
DATE	PM2.5	PM10	NOx	SO2	CO

02.10.2022	30.45	53.41	15.85	4.86	0.48
05.10.2022	35.46	63.37	14.21	5.20	0.43
09.10.2022	31.81	56.10	16.45	5.66	0.49
12.10.2022	30.40	54.30	15.70	5.60	0.47
16.10.2022	35.40	62.02	17.63	6.08	0.53
19.10.2022	33.53	58.83	16.11	6.13	0.48
23.10.2022	36.87	69.64	18.09	6.12	0.54
26.10.2022	34.50	59.02	13.02	7.29	0.39
02.11.2022	36.68	64.68	17.48	6.26	0.52
05.11.2022	35.67	62.78	18.63	6.25	0.56
09.11.2022	38.93	66.10	19.25	7.19	0.58
12.11.2022	39.21	64.33	14.21	5.61	0.43
16.11.2022	34.95	66.24	15.94	4.75	0.48
19.11.2022	41.50	73.22	15.56	5.58	0.47
23.11.2022	39.52	69.98	17.41	6.51	0.52
26.11.2022	32.08	63.24	17.99	6.21	0.54
04.12.2022	28.56	55.64	22.66	5.91	0.68
07.12.2022	28.94	52.53	16.99	6.80	0.51
11.12.2022	31.62	59.72	19.36	7.57	0.58
14.12.2022	30.60	56.80	15.38	5.79	0.46
18.12.2022	32.82	56.26	17.73	6.63	0.53
21.12.2022	31.22	55.38	19.43	7.21	0.58
25.12.2022	25.27	49.77	17.17	6.80	0.52
28.12.2022	24.42	50.25	13.50	5.23	0.40
A5 -Nagander					
DATE	PM2.5	PM10	NOx	SO2	CO
02.10.2022	33.15	58.15	17.26	5.29	0.52

05.10.2022	38.61	69.00	15.48	5.67	0.46
09.10.2022	34.63	61.08	17.91	6.17	0.54
12.10.2022	33.10	59.10	17.10	6.10	0.51
16.10.2022	38.54	67.53	19.19	6.62	0.58
19.10.2022	36.50	64.06	17.54	6.68	0.53
23.10.2022	40.15	75.83	19.70	6.66	0.59
26.10.2022	37.56	64.27	14.17	7.94	0.43
02.11.2022	39.94	70.43	19.03	6.82	0.57
05.11.2022	38.84	68.35	20.28	6.81	0.61
09.11.2022	42.39	71.97	20.97	7.83	0.63
12.11.2022	42.70	70.04	15.47	6.11	0.46
16.11.2022	38.06	72.13	17.36	5.17	0.52
19.11.2022	45.19	79.72	16.95	6.07	0.51
23.11.2022	43.03	76.20	18.96	7.09	0.57
26.11.2022	34.93	68.86	19.59	6.76	0.59
04.12.2022	31.10	60.58	24.67	6.44	0.74
07.12.2022	31.51	57.19	18.50	7.40	0.55
11.12.2022	34.43	65.02	21.08	8.24	0.63
14.12.2022	33.32	61.85	16.75	6.31	0.50
18.12.2022	35.74	61.25	19.31	7.22	0.58
21.12.2022	33.99	60.30	21.16	7.85	0.63
25.12.2022	27.51	54.19	18.69	7.40	0.56
28.12.2022	26.59	54.71	14.70	5.69	0.44
A6 -Khrew Village					
DATE	PM2.5	PM10	NOx	SO2	CO
02.10.2022	48.40	84.90	25.19	7.73	0.76
05.10.2022	56.37	100.75	22.60	8.27	0.68

09.10.2022	50.57	89.18	26.14	9.01	0.78
12.10.2022	48.40	86.30	25.00	8.80	0.75
16.10.2022	56.28	98.60	28.03	9.67	0.84
19.10.2022	53.30	93.53	25.61	9.75	0.77
23.10.2022	58.62	110.72	28.76	9.73	0.86
26.10.2022	54.84	93.83	20.69	11.59	0.62
02.11.2022	58.32	102.84	27.79	9.96	0.83
05.11.2022	56.70	99.80	29.61	9.94	0.89
09.11.2022	61.89	105.09	30.61	11.43	0.92
12.11.2022	62.34	102.26	22.59	8.92	0.68
16.11.2022	55.57	105.31	25.34	7.54	0.76
19.11.2022	65.98	116.40	24.74	8.87	0.74
23.11.2022	62.82	111.25	27.68	10.36	0.83
26.11.2022	51.00	100.54	28.60	9.88	0.86
04.12.2022	45.41	88.45	36.02	9.40	1.08
07.12.2022	46.00	83.51	27.01	10.81	0.81
11.12.2022	50.26	94.94	30.77	12.03	0.92
14.12.2022	48.65	90.30	24.46	9.21	0.73
18.12.2022	52.18	89.43	28.19	10.54	0.85
21.12.2022	49.63	88.04	30.89	11.46	0.93
25.12.2022	40.17	79.12	27.29	10.81	0.82
28.12.2022	38.82	79.89	21.46	8.31	0.64
A7- Satura					
DATE	PM2.5	PM10	NOx	SO2	CO
03.10.2022	43.53	76.35	22.66	6.95	0.68
06.10.2022	50.69	90.60	20.32	7.44	0.61
10.10.2022	45.47	80.19	23.51	8.10	0.71

13.10.2022	43.50	77.60	22.50	7.90	0.68
17.10.2022	50.60	88.67	25.20	8.70	0.76
20.10.2022	47.93	84.10	23.03	8.76	0.69
24.10.2022	52.71	99.56	25.86	8.75	0.78
27.10.2022	49.32	84.38	18.61	10.42	0.56
03.11.2022	52.44	92.47	24.99	8.95	0.75
06.11.2022	50.99	89.74	26.63	8.94	0.80
10.11.2022	55.65	94.50	27.53	10.28	0.83
13.11.2022	56.06	91.96	20.31	8.02	0.61
17.11.2022	49.97	94.70	22.79	6.78	0.68
20.11.2022	59.33	104.67	22.25	7.97	0.67
24.11.2022	56.49	100.04	24.89	9.31	0.75
27.11.2022	45.86	90.41	25.72	8.88	0.77
05.12.2022	40.83	79.54	32.39	8.45	0.97
08.12.2022	41.37	75.09	24.29	9.72	0.73
12.12.2022	45.20	85.37	27.67	10.82	0.83
15.12.2022	43.75	81.20	21.99	8.28	0.66
19.12.2022	46.92	80.42	25.35	9.48	0.76
22.12.2022	44.63	79.17	27.78	10.31	0.83
26.12.2022	36.12	71.15	24.54	9.72	0.74
29.12.2022	34.91	71.84	19.30	7.47	0.58
A8 -Khanagund					
DATE	PM2.5	PM10	NOx	SO2	CO
03.10.2022	45.93	80.57	23.91	7.33	0.72
06.10.2022	53.49	95.61	21.44	7.85	0.64
10.10.2022	47.99	84.63	24.81	8.55	0.74
13.10.2022	45.90	81.90	23.80	8.40	0.71

17.10.2022	53.40	93.57	26.59	9.18	0.80
20.10.2022	50.58	88.75	24.31	9.25	0.73
24.10.2022	55.63	105.07	27.29	9.23	0.82
27.10.2022	52.04	89.04	19.64	11.00	0.59
03.11.2022	55.34	97.59	26.37	9.45	0.79
06.11.2022	53.81	94.70	28.10	9.43	0.84
10.11.2022	58.73	99.72	29.05	10.85	0.87
13.11.2022	59.16	97.04	21.44	8.47	0.64
17.11.2022	52.73	99.94	24.05	7.16	0.72
20.11.2022	62.61	110.46	23.48	8.41	0.70
24.11.2022	59.61	105.57	26.27	9.83	0.79
27.11.2022	48.39	95.41	27.14	9.37	0.81
05.12.2022	43.09	83.93	34.19	8.92	1.03
08.12.2022	43.65	79.24	25.63	10.26	0.77
12.12.2022	47.70	90.09	29.20	11.41	0.88
15.12.2022	46.17	85.69	23.21	8.74	0.70
19.12.2022	49.52	84.87	26.75	10.00	0.80
22.12.2022	47.10	83.55	29.31	10.88	0.88
26.12.2022	38.12	75.08	25.90	10.25	0.78
29.12.2022	36.84	75.81	20.36	7.89	0.61

Annexure 14: Undertaking for No Violation of EIA Notification and subsequent amendments

Ref No : 587/TIPL/23-24 Dated : 06.06.2023

UNDERTAKING

I, Shri Mushtaq Ahmed Trumboo S/o Shri Abdul Ahad Trumboo authorized signatory & Director of M/s Trumboo Industries Private Limited, for the project "Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA" at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir do hereby undertake that No violation of the EIA notification 2006 and its subsequent amendments has been done and also no violation as per S.O. 804 dated 14.03.2017 and SOP dated 07.07.2021 has been undertaken.

Date:06.06.2023

Director

M/s Trumboo Industries Private Limited

TRUMBOO INDUSTRIES PVT. LTD. SRINAGAR

Annexure 15: Undertaking for No pending court case/ litigation related to Environment

Ref No :- 257/TIPL/23-24

Dated 06.06.2023

UNDERTAKING

I, Mushtaq Ahmed Trumboo S/o Shri Abdul Ahad Trumboo authorized signatory & Director of M/s Trumboo Industries Private Limited, for the project "Expansion of Cement Plant capacity from 3.3 Lakhs TPA to 6.6 Lakhs TPA and clinker production from 3.135 Lakh TPA to 6.27 Lakh TPA" at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir., do hereby solemnly affirm and declare that:

1. That, as on date, no litigation/ Court cases or show cause related to the environment have been issued against the company and none are pending in court or government authorities.

Date:06.06.2023

Director

TRUMBOO INDUSTRIES Pvt. LIMITED SRINAGAR

M/s Trumboo Industries Private Limited

Annexure 16: Annual Health Report of Workers

FORM 01

Certificate No. 16.....

Certified that Shri/Shrimati. .employed as..... Gh. Nabi Shah has been examined for an ....in. ....., ... has been examined for an initial/periodical medical examination. It is considered that Shri/Shrimati..... Gh. Nabi Shah.

(a) is medically fit for any employment.

(b) is suffering from ....and is medically unfit for

(i) any employment in mine ; or (ii) any employment below ground; or (iii) any employment or work.. . .....

(c) is suffering from.....should get this disability cured/controlled and should be again examined within a period of. ..... .months. He/She will appear for reexamination with the result of test of _____. ..and the opinion of. ..... specialist from. .....He/She may be permitted to carry on his duties during this period.

Space for affixing passport

Signature

Examining Authority

MEDICAL OFFICER
Primary Health Unit
Tirew

Name and designation in Block letters

Dr. Khurshid
M.O

Place : Kareva

Date . 25/9/2023

FORM O (CONTD.)

Report of the examination authority

(To be filled in for every medical examination whether initial or periodical of re-examination or a. .er cure/confrol of disability), Annexure to Certificate No. . . . 16 ..... as a result of medical examinationon.....

Identification Mark. . . Right side.



Left thumb impression of the Candidate

(1) General development Good/Fair/Poor

(i) Visual acuity — Distant vision (with or without glasses) Right eye. . . 6/6 . . . Left eye. 6/6

(ii) Any organic disease of eyes
(iii) Night blindness
(iv) Colour blindness
(v) Squint (to be tested in special cases)

(5) Circulatory system; Blood Pressure Pulse

(6) Abdomen
Tenderness
Liver
Spleen
Tumour

NAD

(7) Nervous System
History of fits or epilepsy

Paralysis
Mental Health

(10) Locomotor System

(11) Skin

(12) Hernia

(13) Hydrocele

(14) Any other abnormality

(15) Urine:

Reaction
Albumin
Sugar

(16). Skiagram of chest
(17) .Any other test considered necessary by the examining Authority.
(18).Any opinion of specialist considered necessary,

Signature
Examining Authority

MEDICAL OFFICER
Primary Health Unit
Tarew

Place :
Date:

Report of Medical Examination

1, Cardiolo ical Assessment:

Auscultation		
	Additional Sound	
ECG 12 leads findings		Normal/Abnormal

Enclosed ECG.

3.

4. Pathological/Microbiological Investigations:

S.No,	Tests	Findings
1.	Blood-TLC,DLC Hb ESR Platelets	WNL Abnormal
2.	Blood Sugar Random	WNL Abnormal
3,	Lipid profile	WNL/Abnormal

4.	Blood Urea Creatinine	WNL Abnormal
5.	Urine Routine	WNL/Abnormal

7, Any other Special Test Required :

Signature of the Examination Authority

MEDICAL OFFICER
Primary Health Unit
Knrew

FORM 01

Certificate No. 07.....

Certified that Shri/Shrimati. .employed ~~as~~ ..... Bashir Ahmed

Employed. ...in. .....T.C.F. .Max ..... has been examined for an initial/periodical medical examination. It is considered that Shri/Shrimati. Bashir Ahmad .....

(a) is medically fit for any employment.

(b) is suffering from ....and is medically unfit for

(i) any employment in mine ; or (ii) any employment below ground; or (iii) any employment or work.. .

.....

(c) is suffering from.. .....should get this disability cured/controlled and should be again examined within a period of. . . . . .months. He/She will appear for reexamination with the result of test of _____. ..and the opinion of. . . . . specialist from. . . . . ..He/She may be permitted to carry on his duties during this period.

Space for affixing passport

Signature
Examining Authority

MEDICAL OFFICER
Primary Health Unit
Khrew

Name and designation
in Block letters

DR. KHURSHID

Place : Khrew
Date . 25/5/2023

FORM O (CONTD.)

Report of the examination authority

(To be filled in for every medical examination whether initial or periodical of re-examination or a. .er cure/confrol of disability), Annexure to Certificate No. . . . . as a result of medical examinationon.....

Identification Mark. . . . . .

Left thumb impression
of the Candidate

(1) General development Good/Fair/Poor

(i) Visual acuity — Distant vision (with or without glasses) Right eye. . . . . Left eye. 6/6 6/6

(ii) Any organic disease of eyes
(iii) Night blindness
(iv) Colour blindness
(v) Squint (to be tested in special cases)

(5) Circulatory system; Blood Pressure Pulse

(6) Abdomen
Tenderness
Liver
Spleen
Tumour

NAD

(7) Nervous System
History of fits or epilepsy

Paralysis
Mental Health

-/31

(10) Locomotor System

(11) Skin

(12) Hernia

(13) Hydrocele

(14) Any other abnormality

(15) Urine:

Reaction
Albumin
Sugar

NAD

(16). Skiagram of chest
(17) .Any other test considered necessary by the examining Authority.
(18).Any opinion of specialist considered necessary,

Signature
Examining Authority

MEDICAL OFFICER
Primary Health Unit
Khrew

Place :
Date:

Report of Medical Examination

1, Cardiolo ical Assessment:

Auscultation	NAD	
	Additional Sound	✓
ECG 12 leads findings		Normal/Abnormal

Enclosed ECG.

3.

4. Pathological/Microbiological Investigations:

S.No,	Tests	Findings
1.	Blood-TLC,DLC Hb ESR Platelets	WNL Abnormal
2.	Blood Sugar Random	WNL Abnormal
3,	Lipid profile	WNL/Abnormal

(47)

4.	Blood Urea Creatinine	WNL Abnormal
5.	Urine Routine	WNL/Abnormal

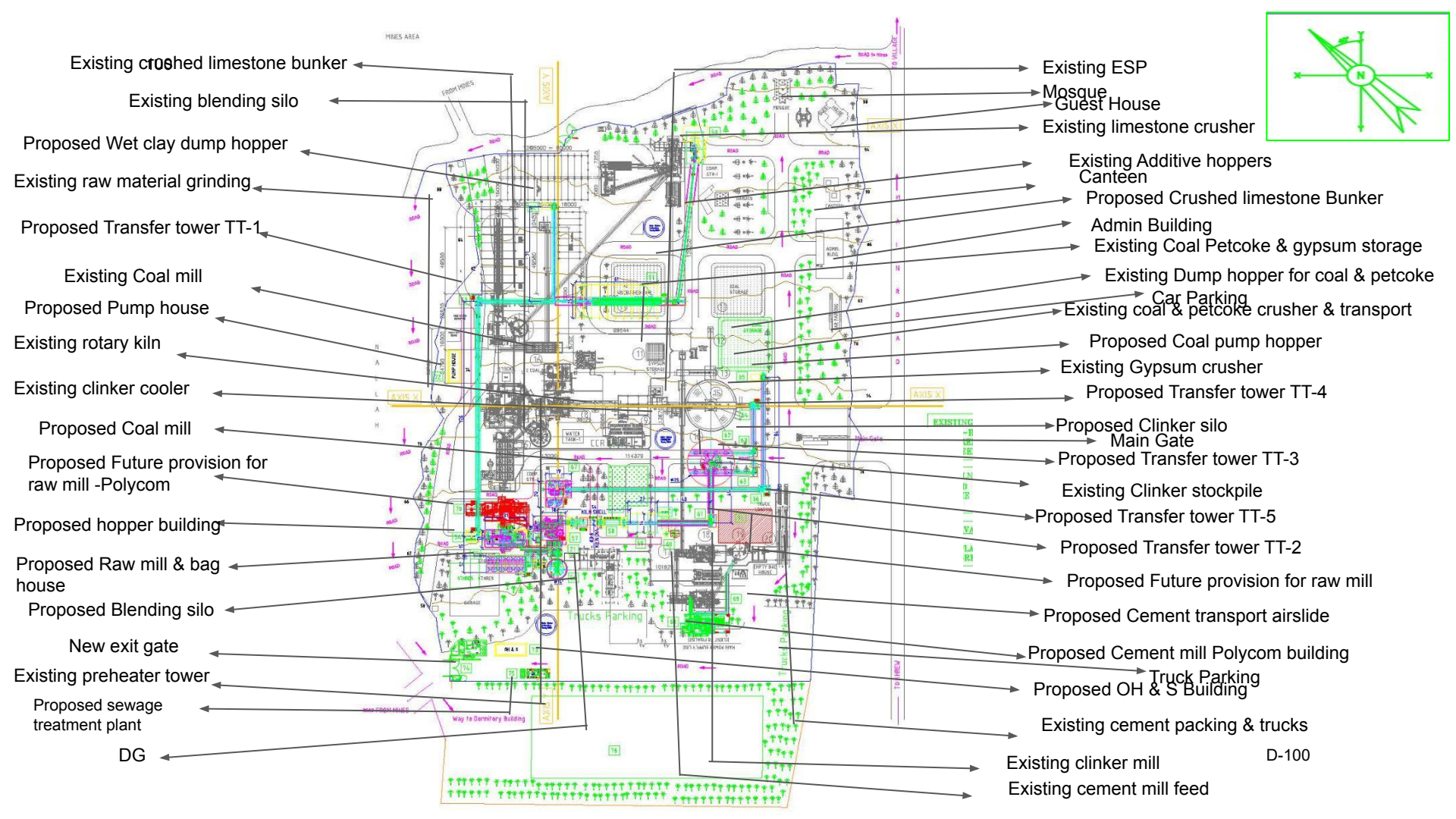
7, Any other Special Test Required :

Signature of the Examination Authority

MEDICAL OFFICER
Primary Health Unit
Khrew

Annexure 17: Layout Plan

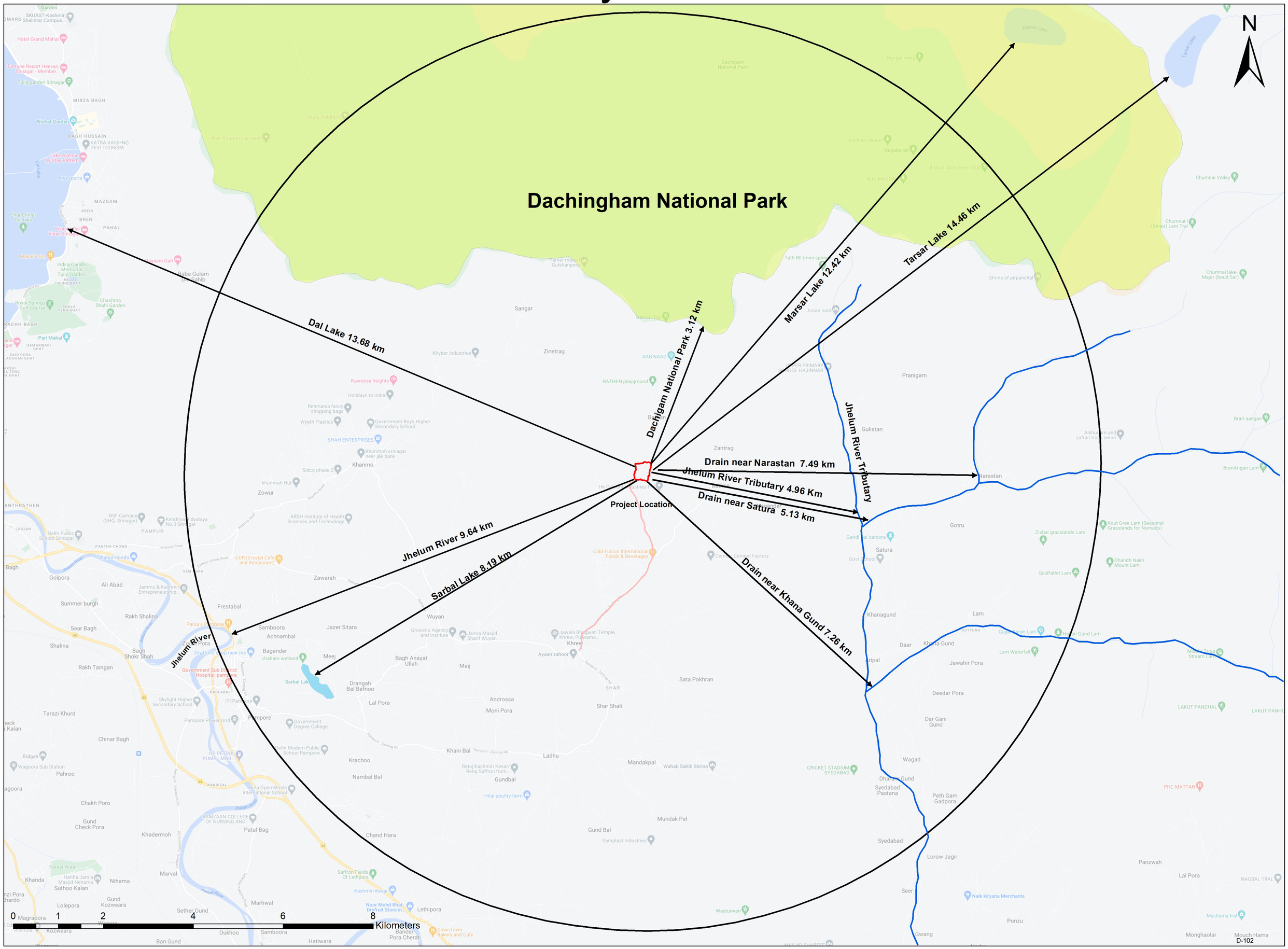

MINES AREA
FROM MINES
AXIS Y
AXIS X
ROAD To Hirwa
TO VILLAGE
MAIN GATE
NALLAH
ROAD
ROAD
ROAD


Existing crushed limestone bunker
Existing blending silo
Proposed Wet clay dump hopper
Existing raw material grinding
Proposed Transfer tower TT-1
Existing Coal mill
Proposed Pump house
Existing rotary kiln
Existing clinker cooler
Proposed Coal mill
Proposed Future provision for raw mill -Polycom
Proposed hopper building
Proposed Raw mill & bag house
Proposed Blending silo
New exit gate
Existing preheater tower
Proposed sewage treatment plant
DG
Existing ESP
Mosque
Guest House
Existing limestone crusher
Existing Additive hoppers
Canteen
Proposed Crushed limestone Bunker
Admin Building
Existing Coal Petcoke & gypsum storage
Existing Dump hopper for coal & petcoke
Car Parking
Existing coal & petcoke crusher & transport
Proposed Coal pump hopper
Existing Gypsum crusher
Proposed Transfer tower TT-4
Proposed Clinker silo
Main Gate
Proposed Transfer tower TT-3
Existing Clinker stockpile
Proposed Transfer tower TT-5
Proposed Transfer tower TT-2
Proposed Future provision for raw mill
Proposed Cement transport airslide
Proposed Cement mill Polycom building
Truck Parking
Proposed OH & S Building
Existing cement packing & trucks
Existing clinker mill
Existing cement mill feed
Trucks Parking
Way to Dormitory Building
N

D-100

Annexure 18: Topographical Map

10 Km Area Map Cement Plant at village Khrew, Tehsil Pampore, District Pulwama, Jammu & Kashmir By Trumboo Industries Pvt Ltd



Annexure 19: AQ Report

AIR QUALITY MODELING OF POINT AND NONPOINT SOURCES FOR

Proposed Expansion in Cement Capacity from 1000 TPD (3.3 Lakh TPA) to 2000 TPD (6.6 Lakh TPA)

at

Village Khrew, Tehsil Pampore,
District Pulwama, Jammu and Kashmir

Project Proponent:
Trumboo Industries Pvt. Ltd.

Prepared By:
Perfact Enviro Solutions Pvt Ltd (PESPL)
NABET Registered List of Accredited Consultant Organisations/
NABET/EIA/1922/SA 0143
Registered Address:- 5th Floor, Sector 3,
Rohini, New Delhi- 110085
Email- info@perfactgroup.in
Website- www.perfactgroup.com
Phone- +91-11-49281360

Table of Content

1 INTRODUCTION..... 5
2 METHODOLOGY.....5
2.1 Modeling procedure..... 5
2.2 EXTRAPOLATION OF WIND SPEED..... 8
2.2.1 Stability Classification..... 8
2.2.2 Dispersion Parameters..... 8
2.2.3 Rural Conditions..... 9
2.3 INPUT DATA..... 9
2.3.1 About the project and emission details..... 9
2.3.2 Location of the project..... 10
2.3.3 Sources..... 11
2.3.4 Emission characteristics of point and non point source..... 12
2.3.5 Meteorological Data..... 13
2.3.6 Ambient Air Quality Standards and Background Concentrations..... 13
2.4 PLAN AND FRAMEWORK OF COMPUTATIONS..... 14
2.4.1 Selection of Locations..... 14
2.4.2 Plan of Computation..... 15
2.4.3 Input parameters for air quality modeling:..... 15
2.5 MODEL OUTPUT FILES..... 16
2.6 RESULT AND DISCUSSIONS..... 19
2.6.1 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF PM2.5..... 19
2.6.2 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF PM10..... 19
2.6.3 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF NO2..... 20
2.6.4 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF SO2..... 20
2.6.5 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF CO..... 21
2.7 MITIGATION MEASURES..... 21
2.8 DATA INTERPRETATION..... 22
3 REFERENCES..... 23

1 INTRODUCTION

The ambient air quality Ground Level Concentration (GLC) of the area near any project is impacted due to air pollution sources in the project. The air pollution sources are of two types:

- Point Sources – Chimneys/ Stacks/ ducts/ Vents
- Non-Point Sources – Vehicles, machinery, blasting, drilling etc.

The emissions from these sources spread or disperse in the air and cause increase in the pollution level in ambient air. This causes an increase in Ground Level Concentration (GLC). This increase in GLC can be predicted for proposed project using Air Dispersion Modelling. In this study, AERMOD developed by Lakes Environmental Inc. is used to calculate incremental Ground Level concentrations (GLC) for the proposed sources of air pollution in the current expansion, for Particulate emissions, Gaseous emissions (NO_2 & SO_2).

2 METHODOLOGY

2.1 Modeling procedure

The American Meteorological Society (AMS)/Environmental Protection Agency (EPA) Regulatory Model Improvement Committee (AERMIC) was formed to introduce state-of-the-art modeling concepts into the EPA's air quality models. Through AERMIC, a modeling system, AERMOD, was introduced that incorporated air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain.(Epa and OAR 2016)

There are two input data processors that are regulatory components of the AERMOD modeling system: AERMET, a meteorological data preprocessor that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, and AERMAP, a terrain data preprocessor that incorporates complex terrain using USGS Digital Elevation Data.

The pollutants released into the atmosphere will disperse in the downwind direction and finally reach the ground at a farther distance from the source. The concentration of ground

level concentrations mainly depends upon the strength of the emission source and micrometeorology of the study area.

The AERMOD is actually a modeling system with three separate components: AERMOD (AERMIC Dispersion Model), AERMAP (AERMOD Terrain Preprocessor), and AERMET (AERMOD Meteorological Preprocessor). Special features of AERMOD include its ability to treat the vertical in homogeneity of the planetary boundary layer special treatment of surface releases, irregularly-shaped area sources, a plume model for the convective boundary layer, limitation of vertical mixing in the stable boundary layer, and fixing the reflecting surface at the stack base.

The AERMET is the meteorological preprocessor for the AERMOD. Input data can come from hourly cloud cover observations, surface meteorological observations and twice-a-day upper air soundings. Output includes surface meteorological observations and parameters and vertical profiles of several atmospheric parameters.

The AERMAP is a terrain pre-processor designed to simplify and standardize the input of terrain data for the AERMOD. Input data include receptor terrain elevation data. Output includes, for each receptor, location and height scale, which are elevations used for the computation of airflow around hills. The input file for the AERMOD model makes use of a keyword/parameter approach to specifying the options and input data for running the model.

For Air Dispersion Modelling following methodology shall be used:

AERMOD uses Gaussian plume dispersion modelling parameters, the generalised equation is given below:

$$c = \frac{Q}{2\pi u \sigma y \sigma z} exp\left(-\frac{1}{2}\frac{Y^2}{\sigma^2 y}\right)\left\{exp\left[-\frac{1}{2}\frac{(z-h^2)}{\sigma^2 z}\right] + exp\left[-\frac{1}{2}\frac{(z+h^2)}{\sigma^2 z}\right]\right\}$$

Where

c = concentration at a given point (g/m^3)

Q = emission rate (g/s)

u = wind speed (m/s)

σ_y = dispersion parameter in the horizontal (lateral) direction (m)

σ_z = dispersion parameter in the vertical direction (m)

x = direction of the wind (x = 0 at the source; x > 0 downwind).

y = horizontal direction perpendicular to the wind (y = 0 at the center of the plume; positive on your left when you look downwind).

z = vertical direction (z = 0 at the surface and positive above the surface).

As well as the effective source height h. They all have meters as units.

Plume Rise

Plume rise Δh has been determined according to Brigg's formula (CPCB guideline)

$$\Delta h = 21.425 \frac{F^{3\,4}}{U_s} \quad \text{for } F<55$$

and

$$\Delta h = 38.71 \frac{F^{3\,5}}{U_s} \quad \text{for } F>55$$

$$F = g\, V_s D^2 (T_s - T_a)/4T_s$$

Where

U_s = wind speed at stack level (m/s)

V_s = stack gas velocity (m/s)

T_s = stack gas temperature (K)

T_a = ambient temperature (K)

F = Buoyancy flux parameter (m^4/s^3)

Δh = Plume rise (m)

D = Diameter of the stack (m)

g = acceleration due to gravity, 9.807 (m/s^2)

2.2 EXTRAPOLATION OF WIND SPEED

Wind speed at stack level is calculated by power law as given below.

$U_{stack} = U_{10}(\text{Stack height}/10)^{p}$

Where U_{10} is the wind speed at 10 meter level and p is the power law coefficient (0.07, 0.07, 0.10, 0.15, 0.35 and 0.55 for stability classes A,B,C,D,E and F respectively) as per Irwin for rural areas (USEPA, 1987).

2.2.1 Stability Classification

Hourly stability is determined by the wind direction fluctuation method as suggested by Slade (1965) and recommended by CPCB (PROBES/70/1997-1998).

$\sigma_\theta = W_{dr}/6$

σ_θ, is standard deviation of wind direction fluctuation, W_{dr} is the overall wind direction fluctuation or width of the wind direction in degrees. The table for stability classes is given as under.

Table 1. Stability Class

Stability Class	σ_θ (degree)
A	> 22.5
B	22.4 – 17.5
C	17.4 – 12.5
D	12.4 – 7.5
E	7.4 – 3.5
F	< 3.5

2.2.2 Dispersion Parameters

Dispersion parameters σ_y and σ_z for open country conditions (Briggs, 1974) are used as the project is located on a flat terrain in a rural area. Atmospheric dispersion coefficients vary with downwind distance (x) from emission sources for different atmospheric stability conditions. (CPCB – PROBES/70/1997-98).

2.2.3 Rural Conditions

Table 2. Stability classification

Stability Class	σ_y	σ_z
A	$0.22x(1+0.0001x)^{-.5}$	0.20x
B	$0.16x(1+0.0001x)^{-.5}$	0.12x
C	$0.11x(1+0.0001x)^{-.5}$	$0.08x(1+0.0002x)^{-.5}$
D	$0.08x(1+0.0001x)^{-.5}$	$0.06(1+0.0015x)^{-.5}$
E	$0.06x(1+0.0001x)^{-.5}$	$0.03x(1+0.0003x)^{-1}$
F	$0.04x(1+0.0001x)^{-.5}$	$0.16x(1+0.0003x)^{-1}$

2.3 INPUT DATA

2.3.1 About the project and emission details

Trumboo Industries Private Limited(TIPL) is proposing to enhance the production capacity of Cement of Existing cement plant from 3.3 Lakh TPA to 6.6 Lakh TPA over an existing land area of 12.38 ha located at Village Khrew, Tehsil Pampore, District Pulwama, State Jammu and Kashmir.The plant is located at village Khrew, Tehsil Pampore, District Pulwama. The land acquired for the Cement plant is 12.38 ha. Out of which 4.08 ha area is earmarked to develop green belt. The district is characterized by hilly and mountainous towards the northeast and southwest with broad intermountain valley. The altitude of the hill ranges up to 3700 m AMSL. The Valley area in the central part of the district has flat to mildly undulating topography with its elevation about 1600 m AMSL The Master slope in the area is towards north west.

The altitude of the buffer zone of the project area varies from 3759m AMSL on the North-eastern periphery to 1586m AMSL on the South-Western periphery. The general slope of the buffer zone of the project area is towards the south-west. The topography is rough and rugged representing the typical scenario of the mountainous region.

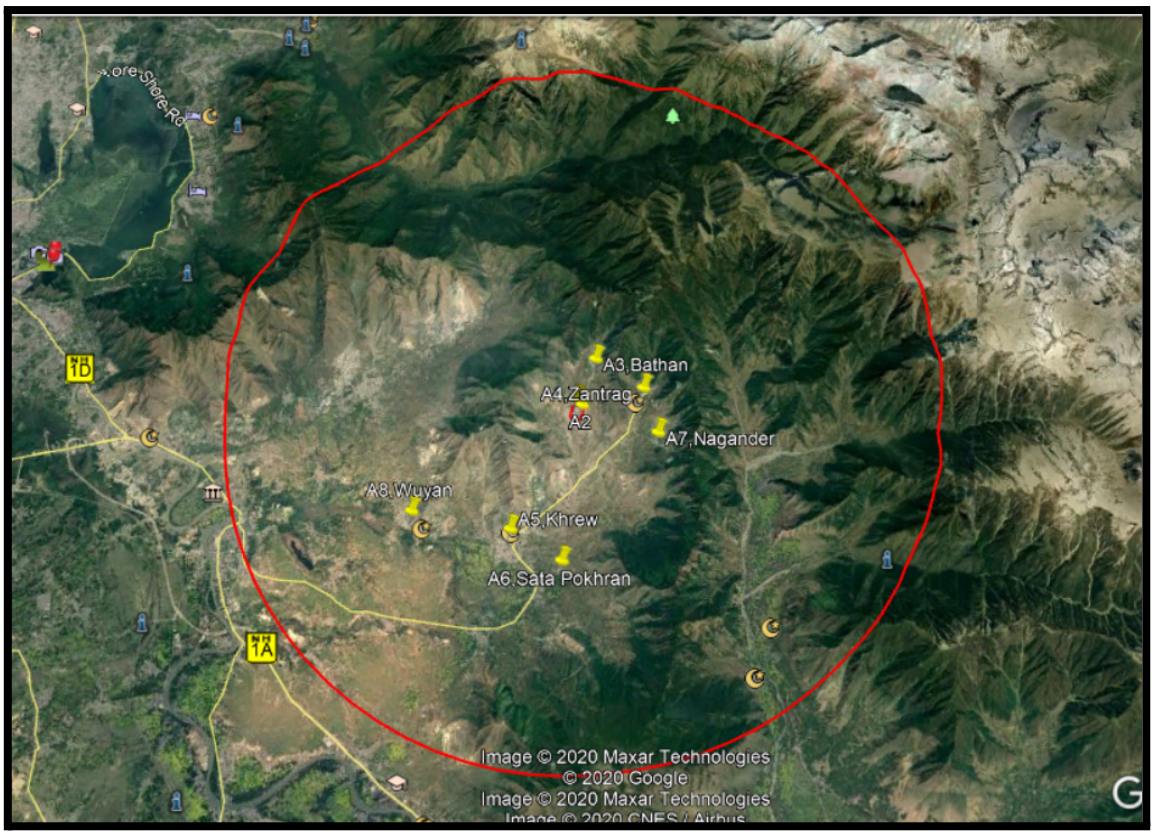


Figure 1. 10 Km area Map of the project Site

2.3.2 Location of the project

Table 3. : Location of the project site

Particulars	Latitude	Longitude
Project site	34°3'26.14"N to 34°3'12.25"N	75°0'49.87"E to 75°1'4.58"E



Figure 2. Closed eye view of the proposed project

2.3.3 Sources

A Table showing all the sources of Air Pollution (Incremental i.e. Proposed due to the proposed project) are given; other air pollutants sources have not been considered in the model because their impact has been already incorporated in baseline concentrations (Onsite and Buffer zone).

The major pollutants of air in a cement plant are the fugitive emissions due to material handling and suspended particulate matters from the various stacks.

Following are the sources of fugitive emissions in a cement plant unit:

- Transportation of raw materials
- Crushing and Grinding of raw materials
- Clinker cooler
- Cement grinding
- Loading and Unloading
- Material Handling Section
- Clinker Stock Piles Section
- Conveyor Belts and Bucket Conveyors
- Storage Piles

- Packing section
- Transportation of finished product

The emission factors have been calculated using the experimental/ practically computed (As per USEPA).

2.3.4 Emission characteristics of point and non point source

Table 4. Point and nonpoint source

S.No	Parameter	DG set (4*1500 kVA)	Limestone crusher	Raw Mill/ Kiln	Coal Mill	Cement Mill	Cooler	Packaging	Non-point source(Trucks/Car)
1	No. of units operative at any point of time	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Operational
2	Hours of operation (Hours/day)	4 Hours	10-16 hours	20-24 hours	20-24 hours	20-24 hours	20-24 hours	10-16 hours	14-16 hours
3	Exhaust diameter(m)	0.25	0.7	3.0	0.6	0.6	2.0	0.6	10- 15 cm-Truck 1-2 cm-Car
4	Stack height (m)	35	15 (Vent)	40	10 (Vent)	10 (Vent)	40	Vent	1 m for truck 0.5 m for car/two wheeler
5	Exhaust gas temperature (ºC)	600	318.15	390	330	380	390	310	-
6	Exhaust gas velocity (m/s)		12	20	17	11	20	10	-
7	Gas Exit flow rate (m3/sec)		3.98	3.92	3.33	0.34	3.92	0.70	-
7	**Emission of pollutants (g/s)**								
a	Particulate matter (PM_{10})	0.050	0.025	0.50	0.055	0.25	0.078	0.075	0.05

b	Particulate matter ($PM_{2.5}$)	0.020	0.010	0.25	0.035	0.15	0.040	0.030	0.03
c	Oxides of Nitrogen (NO_2)	0.288	--	0.20	--	--	--	--	0.0228
d	Sulphur dioxide (SO_2)	0.18	--	0.056	--	--	--	--	0.007
e	Carbon Monoxide(CO)	0.230	--	0.065	--	--	--	--	0.15

2.3.5 Meteorological Data

Meteorology plays an important factor toward regulation of ambient air quality. Variability of pollutant concentrations in a location has different characteristics based on the prevalent meteorological conditions as it encompasses many atmospheric processes that control or strongly influence the evolution of emissions of chemical species, aerosols and particulate matter (Banerjee, Barman, and Srivastava 2011).24 Hourly meteorological data project site for period of 3 months (April- June 2022) in respect of wind speed, wind direction, temperature and cloud amount are utilized in this study which were collected by M/s Perfact Researchers Pvt Ltd.. These data are used in air quality modelling software.

2.3.6 Ambient Air Quality Standards and Background Concentrations

Ambient air quality standards promulgated by Central Pollution Control Board (CPCB) for different areas are as follows:

Table 5. Ambient Air Quality Standards(as per CPCB)

S. No	Pollutant $\mu g/m^3$	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area(Notified by Central Government)
1.	Sulphur Dioxide(SO_2),	Annual* 24 hours**	50 80	20 80
2.	Nitrogen Dioxide(NO_2),	Annual* 24 hours**	40 80	30 80

3.	Particulate Matter (size less than 10µm) or PM_{10}	Annual* 24 hours**	60 100	60 100
4.	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$	Annual* 24 hours**	40 60	40 60

*Annual arithmetic mean of minimum 104 measurements in a year at particular site taken twice a week 24 hourly at uniform intervals**24 hours monitored values shall be compiled 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of the morning. The above standards are for a sampling period of 24 hours.

Table 6. Baseline concentration of air pollutants at the project site and nearby villages falling under 10 Km radius area from the site.

Location	Mean Baseline Values for PM_{10} in µg/m³	Mean Baseline Values for $PM_{2.5}$ in µg/m³	Mean Baseline Values for SO_2 µg/m³	Mean Baseline Values for NO_2 µg/m³	Mean Baseline Values forCO mg/m³
Onsite	75.395	41.8	7.68	21.19	0.63
Onsite	71.06	39.4	7.24	19.97	0.59
Nagander	65.49	36.31	6.68	18.4	0.55
Bathon Village	79.85	44.27	8.14	22.44	0.67
Zantrag Village	60.15	33.55	6.13	16.9	0.5
Satura	85.98	47.67	8.76	24.17	0.72
Khanagund	90.74	50.31	9.25	25.51	0.76
Khrew Village	95.62	53.02	9.75	26.87	0.8

2.4 PLAN AND FRAMEWORK OF COMPUTATIONS

2.4.1 Selection of Locations

The locations have been selected around the project site covering an area of 10 km radius from the centre of the project site. The entire area has been put on grid network and grid spacing has been taken as 250 m.

2.4.2 Plan of Computation

The emission rate, dispersion coefficients and other input data being now available; it was planned to compute the following:

- The 24-hourly averaged incremental concentration with hourly data.
- The identification of grid point having peak concentration for the incremental values.
- Preparation of isopleths for various pollutants.

2.4.3 Input parameters for air quality modeling:

Table 7. The input parameters for air quality modeling (AERMOD)

Input		**Description**
Modelling Software Used		AERMOD View-Version 9.9.0
Control Pathway		
Terrain		Elevated
Dispersion Coefficient		Rural
Meteorology Pathway		
1	Met Input Data	AERMET Meteorological data of one year
2	Latitude:	Plant Location as shown earlier
3	Longitude:	
4	Datum	WGS 84
5	Base Elevation:	0 m from the sea level
Receptor		Uniform Cartesian Grid 1 with 100 m receptor spacing
Source Pathway (Emission Sources)		DG set emission- 4 hours per day, Stationary Emission Sources- 10-16 & 20-24 hours per day. Vehicular emissions - 14-16 hr per day

2.5 MODEL OUTPUT FILES

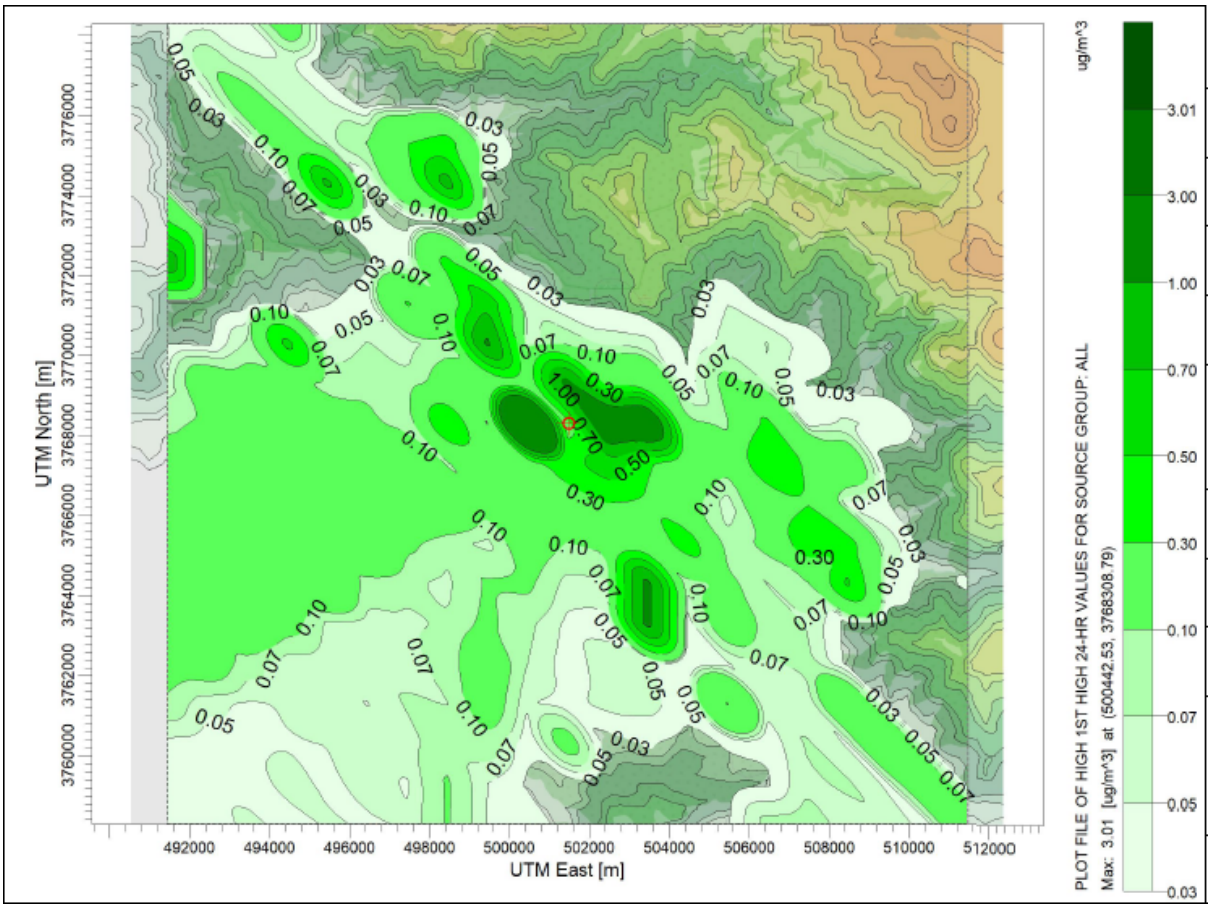


Figure 3. Predicted incremental isopleths of maximum GLCs (PM2.5 dispersion)

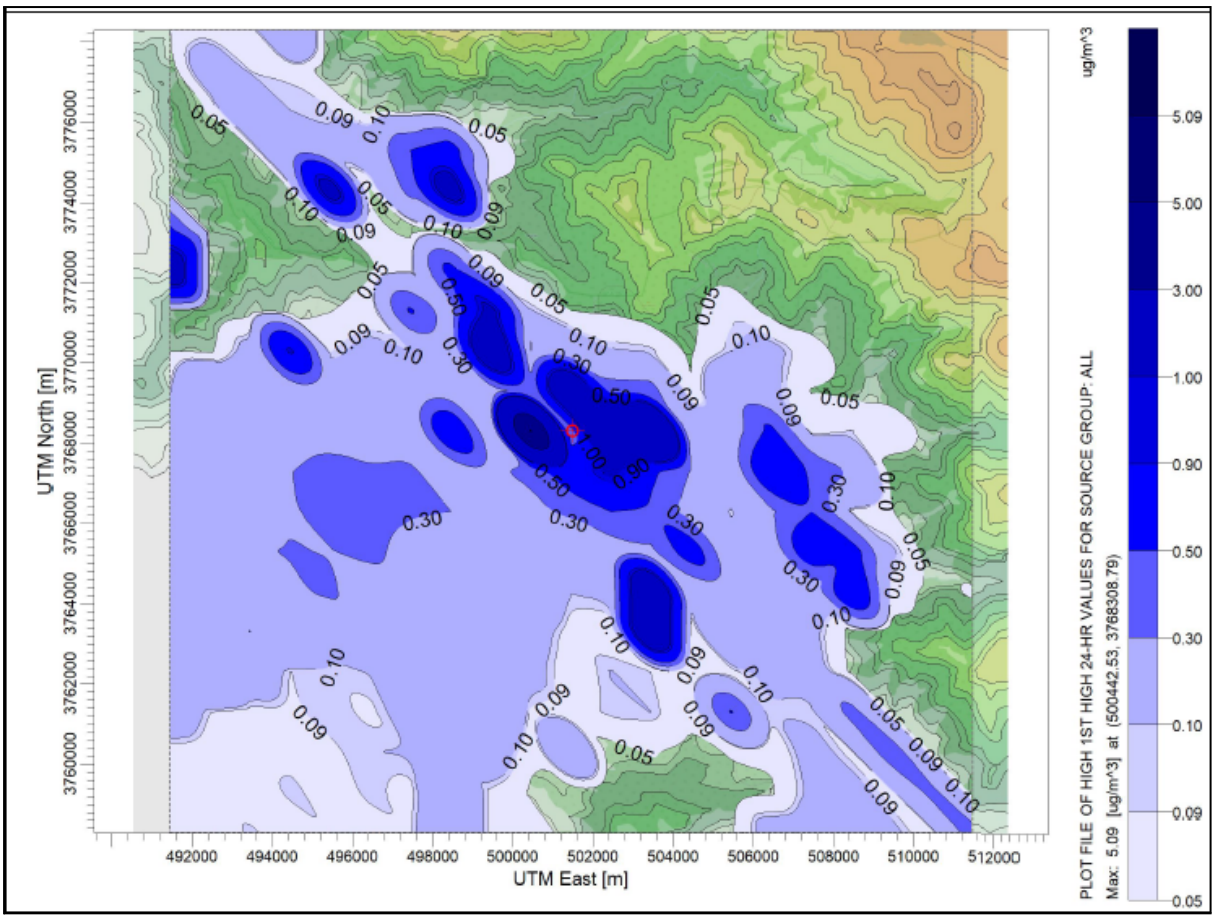


Figure 4. Predicted incremental isopleths of maximum GLCs (PM10 dispersion)

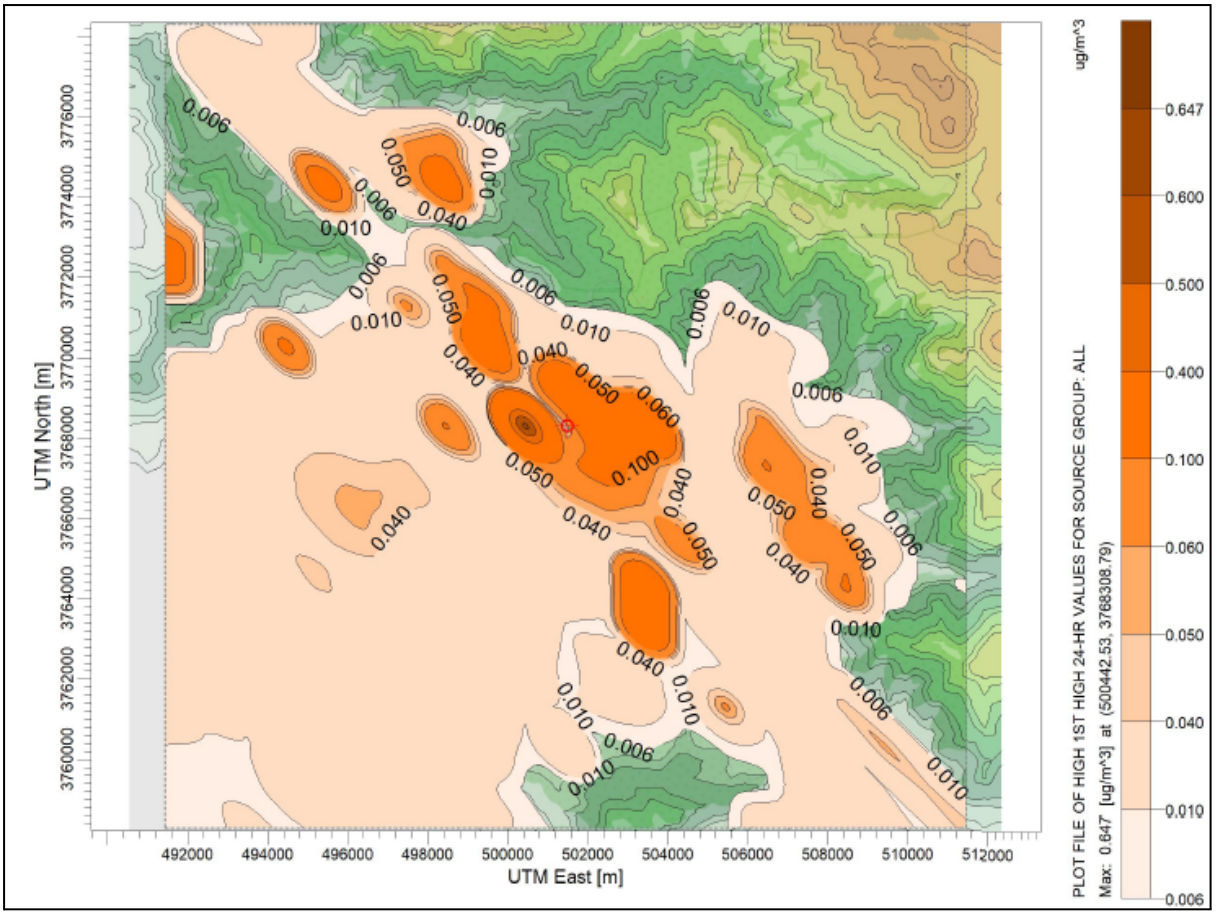


Figure 5. Predicted incremental isopleths of maximum GLCs (NO2 dispersion)

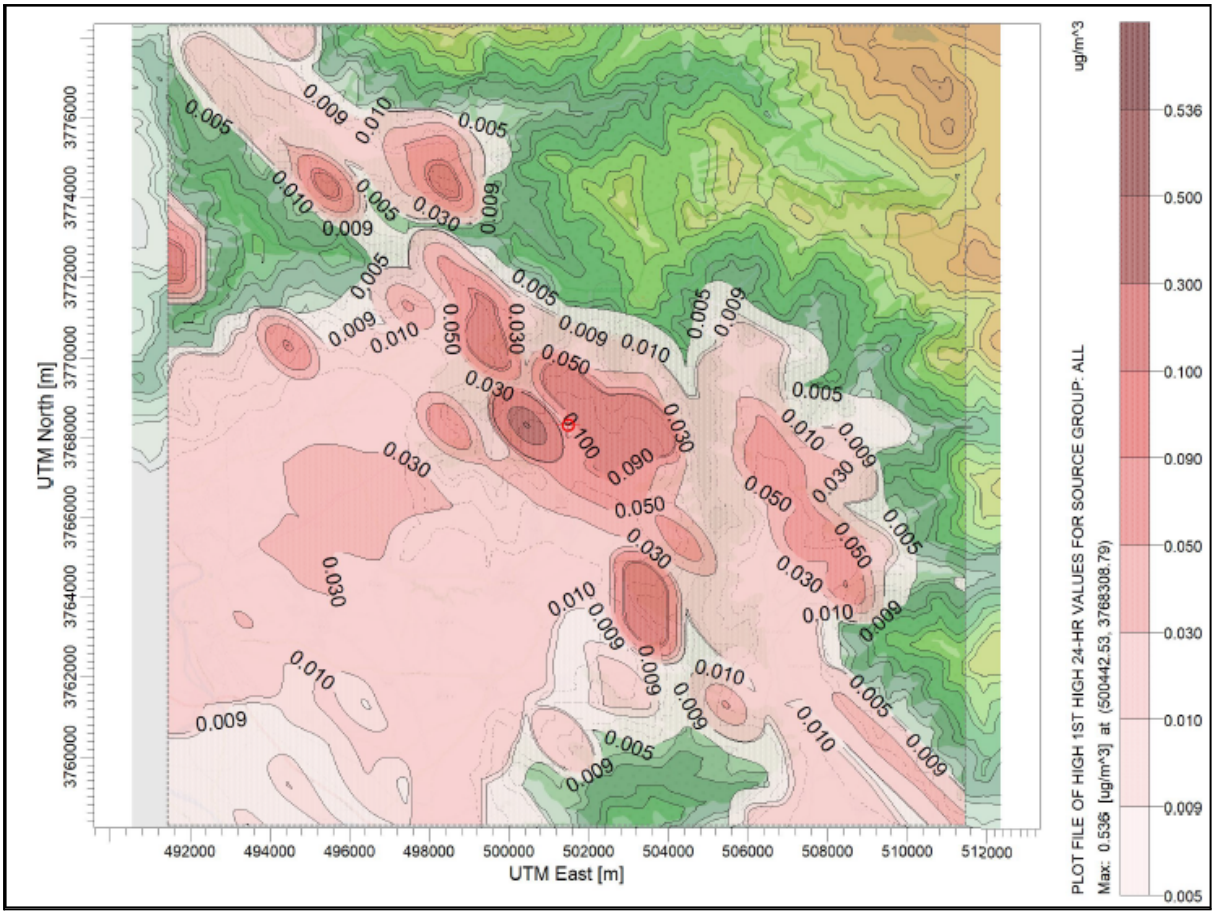


Figure 6. Predicted incremental isopleths of maximum GLCs (SO2 dispersion)

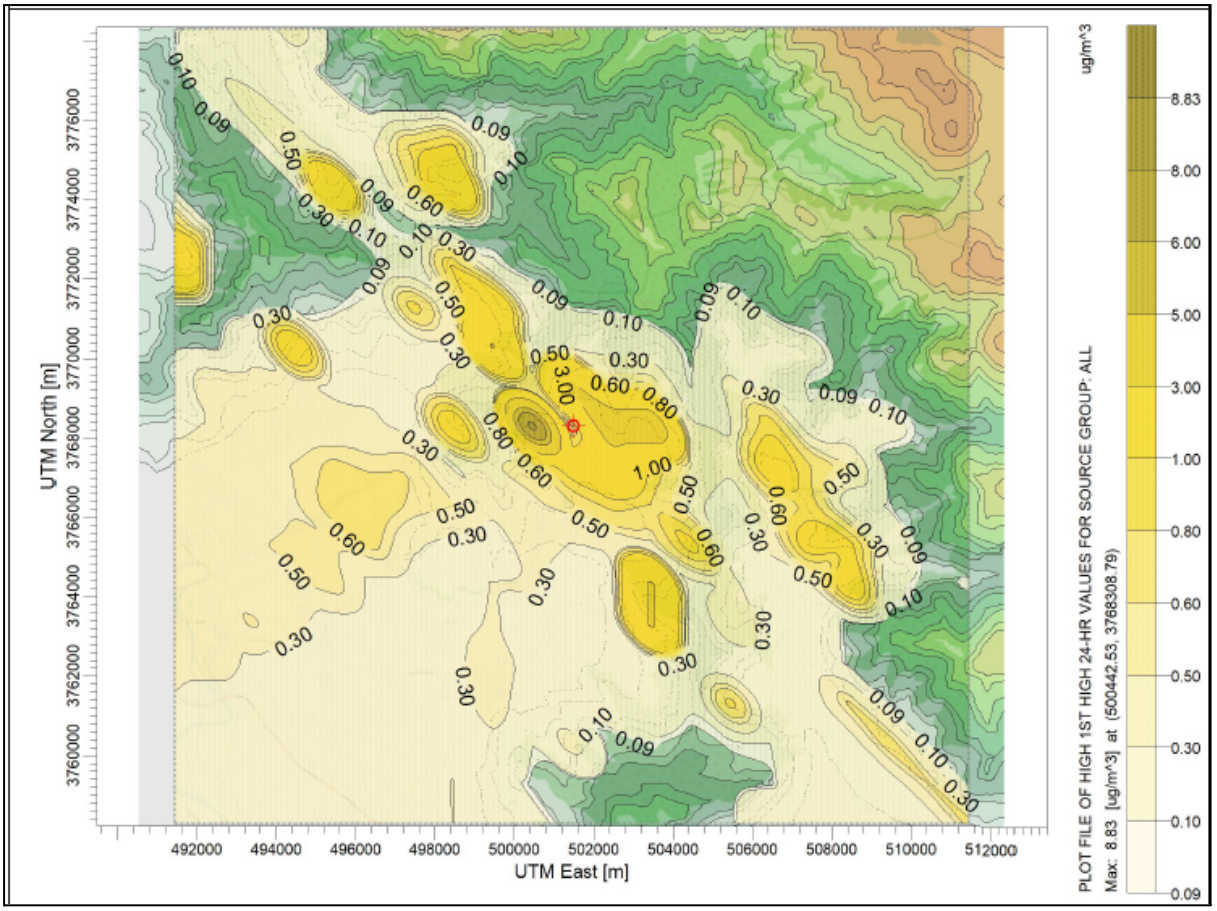


Figure 7. Predicted incremental isopleths of maximum GLCs (CO dispersion)

2.6 RESULT AND DISCUSSIONS

2.6.1 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF PM2.5

With available ambient air quality data and incremental concentrations computed through mathematical modelling the following post project ambient air quality has been predicted. The maximum GLC for $PM_{2.5}$ modelling will be 3.01 µg/m^3.

Table 8. Showing PM2.5 Dispersion Results

Location	Background Concentration $PM_{2.5}$ (µg/m3)	Predicted Incremental Concentration $PM_{2.5}$ (µg/m3)	Post Project Air Quality $PM_{2.5}$ (µg/m3)	NAAQS (µg/m3)
Onsite	41.8	0.70	42.5	60
Onsite	39.4	0.70	40.1	
Nagander	36.31	0.50	36.81	
Bathon Village	44.27	0.10	44.37	

Zantrag Village	33.55	0.07	33.62	
Satura	47.67	0.03	47.7	
Khanagund	50.31	0.07	50.38	
Khrew Village	53.02	0.03	53.05	

2.6.2 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF PM10

With available ambient air quality data and incremental concentrations computed through mathematical modelling the following post project ambient air quality has been predicted. The maximum GLC for PM_{10} modelling will be 5.09 µg/m^3**.**

Table 9. Showing PM10 Dispersion Results

Location	Background Concentration PM10 (µg/m3)	Predicted Incremental Concentration PM10 (µg/m3)	Post Project Air Quality PM10 (µg/m3)	NAAQS (µg/m3)
Onsite	75.395	1.00	76.395	100
Onsite	71.06	1.00	72.06	
Nagander	65.49	0.70	66.19	
Bathon Village	79.85	0.30	80.15	
Zantrag Village	60.15	0.09	60.24	
Satura	85.98	0.05	86	
Khanagund	90.74	0.15	90.89	
Khrew Village	95.62	0.04	95.66	

2.6.3 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF NO2

With available ambient air quality data and incremental concentrations computed through mathematical modelling (Gaussian Plume) the following post project ambient air quality has been predicted. The maximum GLC for NO_2 modelling will be 0.647 µg/m^3 which would be on road**.**

Table 10. Showing NO2 Dispersion Results

Location	Background Concentration NO_2 (µg/m3)	Predicted Incremental Concentration NO_2 (µg/m3)	Post Project Air Quality NO_2 (µg/m3)	NAAQS (µg/m3)
Onsite	21.19	0.400	21.59	80

Onsite	19.97	0.400	20.37	
Nagander	18.4	0.100	18.5	
Bathon Village	22.44	0.040	22.48	
Zantrag Village	16.9	0.010	16.91	
Satura	24.17	0.01	24.18	
Khanagund	25.51	0.040	25.55	
Khrew Village	26.87	0.006	26.876	

2.6.4 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF SO2

With available ambient air quality data and incremental concentrations computed through mathematical modelling (Gaussian Plume) the following post project ambient air quality has been predicted. The maximum GLC for SO_2 modelling will be 0.536 µg/m^3**.**

Table 11. Showing SO2 Dispersion Results

Location	**Background Concentration SO_2(µg/m3)**	**Predicted Incremental Concentration SO_2 (µg/m3)**	**Post Project Air Quality SO_2 (µg/m3)**	**NAAQS (µg/m3)**
Onsite	7.68	0.100	7.78	80
Onsite	7.24	0.100	7.34	
Nagander	6.68	0.090	6.77	
Bathon Village	8.14	0.009	8.149	
Zantrag Village	6.13	0.005	6.135	
Satura	8.76	0.005	8.765	
Khanagund	9.25	0.030	9.28	
Khrew Village	9.75	0.005	9.755	

2.6.5 PREDICTED AMBIENT AIR QUALITY FOR IMPACT OF CO

With available ambient air quality data and incremental concentrations computed through mathematical modelling (Gaussian Plume) the following post project ambient air quality has been predicted. The maximum GLC for CO modelling will be 0.008 mg/m^3**.**

Table 12. Showing CO Dispersion Results

Location	Background Concentration CO_2(mg/m3)	Predicted Incremental Concentration CO(mg/m3)	Post Project Air Quality CO (mg/m3)	NAAQS (mg/m3)
Onsite	0.63	0.003	0.633	2
Onsite	0.59	0.003	0.593	2
Nagander	0.55	0.001	0.551	2
Bathon Village	0.67	0.0005	0.67	2
Zantrag Village	0.5	0.0001	0.5	2
Satura	0.72	0.0001	0.72	2
Khanagund	0.76	0.0005	0.76	2
Khrew Village	0.8	0.0001	0.8	2

2.7 MITIGATION MEASURES

Following mitigations will be implemented during the proposed project:

- Enclosures are provided for unloading operations.
- Water is sprayed during unloading of materials to control fugitive emissions.
- All transfer point locations are fully enclosed.
- Bag filters have been provided at all the transfer points.
- Water is periodically sprayed on the stockpiles so as to retain some moisture in the top layer & to avoid wind blowing of fines.
- All the Roads inside the plant premises are concreted.
- Regular sweeping of all the roads & floors is done.
- Packing machines are equipped with dust extraction arrangement.
- Adequate ventilation for the packing hall has been provided for venting out suspended particulate thereby ensuring a dust free work environment.
- Plantation all around the periphery will be done to control the vehicular Emission and Dust emission during the transportation of Raw material, finished product and waste products.
- Preventive measures include covering of trucks and paving of access areas to unpaved areas.

2.8 DATA INTERPRETATION

The emission sources are broadly categorized as point, line and area sources, covering industrial, vehicular and domestic sources, respectively. However, for the present study, air pollution inventorization was only developed for point and line sources to establish the contribution of project site and vehicular pollution to the regional burden of air pollution. (Banerjee et al. 2011).

The ambient air quality standards and one hourly GLC values to run AERMOD for different hours of the day have been used for calculating average 24 hourly GLC of the day.

Maximum predicted increase of PM2.5 is found to be 3.01µg/m^3, PM10 is found to be 5.09 µg/m^3 SO_2 is found to be 0.536 µg/m^3, CO is found to be 0.008mg/m^3 and NO_2 is found to be 0.637 µg/m^3. From the results generated by AERMOD in the form of Isopleth and results of the same in table above shows that the post-project air quality for PM_{10} & $PM_{2.5}$,CO, SO_2& NO_2 is within the limits for the core zone and buffer zone as per the Ambient Air Quality standard NAAQS. The maximum GLC does not have a significant impact on environment/ ambient air quality on sensitive receptors of the project. Appropriate Measures will be identified and proper installation of air control devices will be done to control the source and impact of air pollution.

3 REFERENCES

1. Banerjee, T., S. C. Barman, and R. K. Srivastava. 2011. “Application of Air Pollution Dispersion Modeling for Source-Contribution Assessment and Model Performance Evaluation at Integrated Industrial Estate-Pantnagar.” *Environmental Pollution* 159 (4): 865–75.
2. Epa, U. S., and OAR. 2016. “Air Quality Dispersion Modeling - Preferred and Recommended Models,”November.https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models.