Executive Summary

M/s. Ambuja Cements Limited (Unit: Farakka)

EXPANSION PROJECT

Expansion in Cement Production Capacity (1.25 MTPA to

3.0 MTPA) of Existing Stand-alone Grinding Unit

Village-Kendua,PO-Srimantapur, PS-Farakka, Dist-Murshidabad,Pin-742 212, West Bengal.

2022

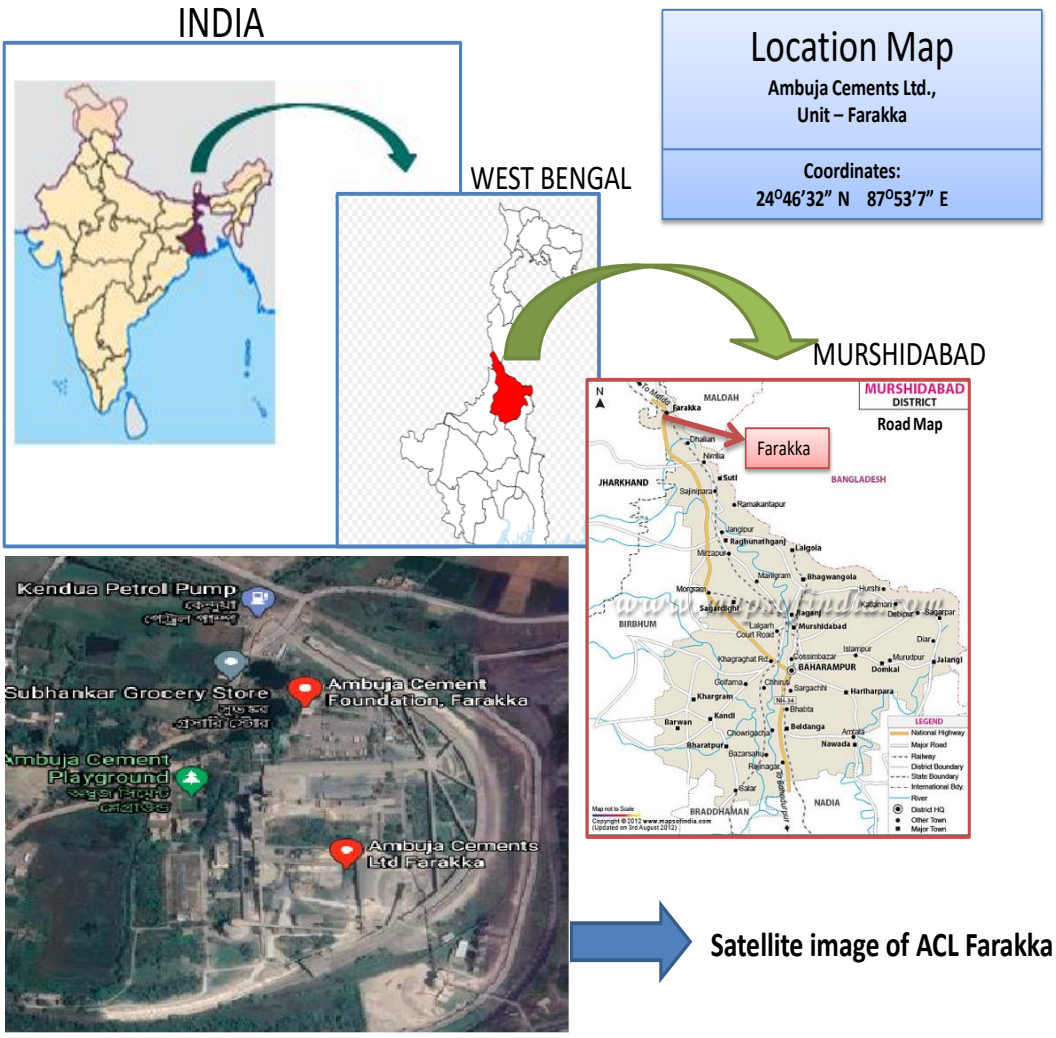
Contents

1 Project Name and Location

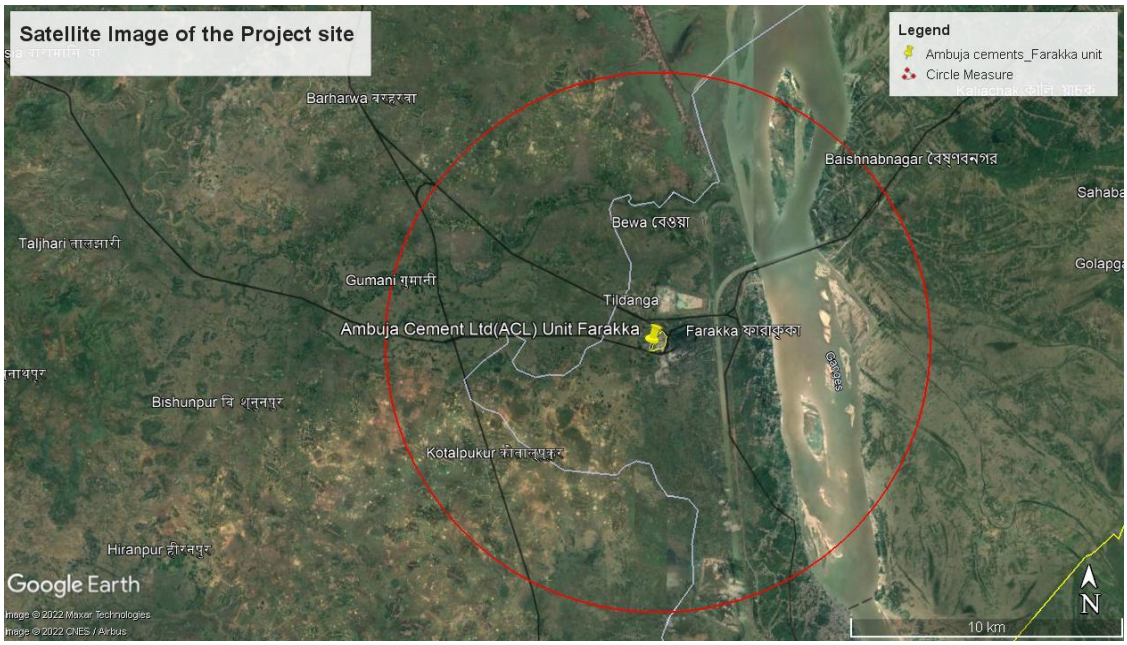
M/s. Ambuja Cements Limited (Unit: Farakka) is one of the well-known manufacturers engaged in making Cement. The existing manufacturing unit is located at Village: Kendua, PO: Srimantapur, PS: Farakka, Dist: Murshidabad ,Pin-742 212, West Bengal, Khatian No. 257,341,2103, JL No.038,039,026,on a land of 72.8 Acre (294611.1 sqm.).
The latitude and longitude of the project site are given below:

Latitude	Longitude
24°46'23.46"N	87°52'55.98"E
24°46'38.25"N	87°53'03.80"E
24°46'32.24"N	87°53'19.26"E
24°46'45.64"N	87°53'13.82"E

Location of Project Site



Location of Project Site on Google Map



2 Products and capacities

Particulars	*Existing*	*Subsequent Modification/Addition*
Cement Grinding Mill	*1 x 150 TPH*	-
Packing Plant	*2 x 240 TPH ;16 spout*	-
Wagon tippler	*1400 TPH*	-
Wagon loader machine	*11 x120 TPH*	-
Steel cord belt bucket elevator	*250-550 TPH (5 nos.)*	-
Truck loader machine	*8 x120 TPH*	-
Belt conveyor(Material -clinker, gypsum, cement bags)	*41 x 120-1500 TPH (41 nos.)*	
Screw conveyor(Material - fly ash , cement)	*10-52 TPH (7 nos.)*	
Pneumatic Pump Conveying	*45-55 TPH (3 nos.)*	

Truck tippler(Hydraulic Truck unloaders of 70 MT standing capacity for valvo FH12 340 Trailor tippler, Model - 70T / 55 deg)	***2 x 45 TPH***	
Vertical Roller Mill	***-***	***1 x 260 TPH***
Mechanical systems for clinker unloading, conveying to covered storage	***-***	***1 x 50000 T***
Gypsum, slag unloading, conveying to covered stockpile	***-***	***Gypsum (2 x 4000T)*** ***Slag (2 x 4000T)***
Covered shed for Wet flyash, Slag and coal	***-***	***Wet flyash (12000T) Slag (32500 T)*** ***coal (2000 T)***
Steel silo for special cement	***-***	***1 x 2000T***
Rotary packers with connection to existing truck/trailer/ rail loading facility.	***-***	***2 x 240 TPH***

3 **Requirement of land, raw material, water, power, fuel, with source of supply**

- **Land:** The existing manufacturing unit is located at Village: Kendua, PO: Srimantapur, PS: Farakka, Dist: Murshidabad ,Pin-742 212, West Bengal, Khatian No. 257,341,2103, JL No.038,039,026,on a land of 72.8 Acre (294611.1 sqm.) land. Expansion will be on the said land.
- **Raw material:**

Name of Raw Material	**Quantity dry basis (MTPA)**	**Source**	**Distance & Mode of Transportation**
Clinker	0.74	Ambuja Bhatapara	~878 km by rail
Fly ash		NTPC Farakka	7 Km by road/pipeline

	0.53	Sagardighi, WBPDCL	72 Km by road
		Sambalpur	632 km by rail
		Bakeshwar	135 Km by Road
Gypsum	0.079	Paradeep	779 km by rail
		Visakhapatnam	1163 km by rail
		Jatia Chemical	401 km by road
Slag	0.401	Bhushan , Tata , JSPL	1063 km (max distance) by rail

- **Water:** The required water will be sourced from Ground water. The company has already obtained the permission for the same. The estimated demand for expansion project is 150 KLD for meeting the entire requirements for domestic consumption, gardening and Industrial uses. The water will be also available from Rain Water Harvesting (RWH) system. The details break up of existing and proposed water requirement is given below:

Particulars	Requirement for Existing Plant (KLD)	Requirement for Proposed Plant (KLD)	Total (KLD)
Cement Plant (process & operations)	80	120	200
Plant (Domestic Drinking)	120	30	150
Residential Quarters/Colony (Domestic+Drinking)	50	-	50
Total (Existing + Proposed)	**250**	**150**	**400**

- Water supply is obtained from Ground water.
- 2.6 KLD water will be available from Rain Water Harvesting (RWH) system.
- **Power:** Total power requirement for the Expansion is 10 MW and the Power will be available from WBSEDCL and existing DG set (For back up).
- Apart from this there are existing D.G. set of 1250 KVA as backup unit.

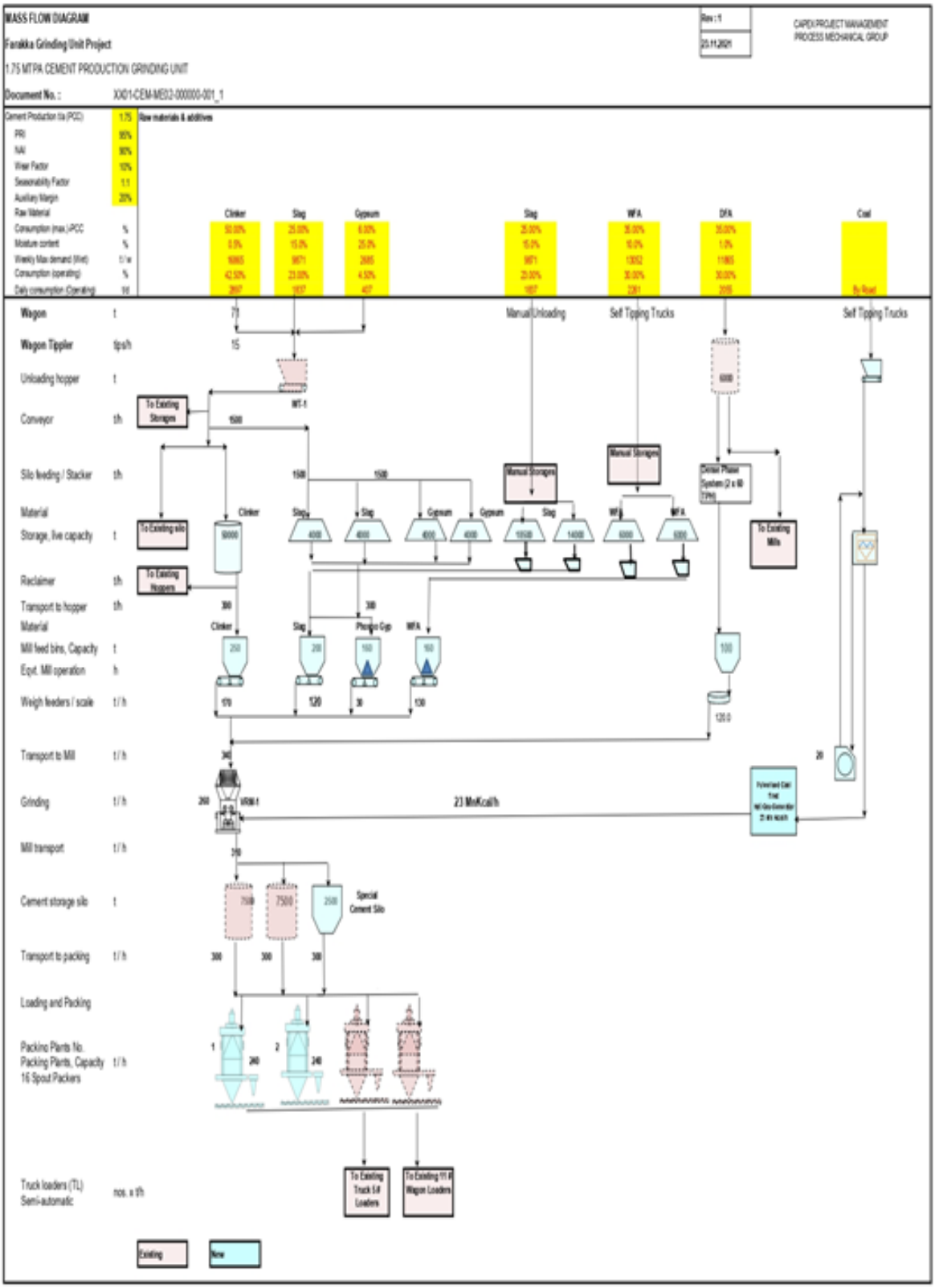
Power Requirement (MW)	Existing	Proposed	Total
	8 (MVA)	10 (MVA)	18 (MVA)
	Source: WBSEDCL and existing DG set (For back up).		

- **Fuel:** The only fuel required is Diesel. It will be required for Existing D.G. approx. 1500 L per month.
- **Manpower:** The total manpower for the proposed project is estimated at 140 numbers. The implementation of industrial laws and regulations and locational factors of labour employment will also have to be considered.

Employee	Total
Permanent	
Existing:	360
Proposed:	140
Total	500
Contractual	
Existing:	-
Proposed:	1000

4 **Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.**

The proposed project includes enhancement in Cement Production Capacity (Cement – 1.25 to 3.0MTPA) by Installation of VRM at Village: Kendua, PO: Srimantapur, PS: Farakka, Dist: Murshidabad (West Bengal).


MASS FLOW DIAGRAM
Farakka Grinding Unit Project
1.75 MTPA CEMENT PRODUCTION GRINDING UNIT
Document No. :
XOD1-CEM-ME02-000000-001_1
Rev : 1
25.11.2021
CAPEX PROJECT MANAGEMENT
PROCESS MECHANICAL GROUP
Raw materials & additives
Clinker
Slag
Gypsum
Slag
WFA
DFA
Coal
Wagon
Wagon Tippler
Unloading hopper
Conveyor
Silo feeding / Stacker
Material
Storage, live capacity
Reclaimer
Transport to hopper
Material
Mill feed bins, Capacity
Eqvt. Mill operation
Weigh feeders / scale
Transport to Mill
Grinding
Mill transport
Cement storage silo
Transport to packing
Loading and Packing
Packing Plants No.
Packing Plants, Capacity
16 Spout Packers
Truck loaders (TL)
Semi-automatic
Manual Unloading
Self Tipping Trucks
Self Tipping Trucks
To Existing Storages
To Existing silo
To Existing Hoppers
Manual Storages
Manual Storages
To Existing Mills
23 MnKcal/h
Special Cement Silo
To Existing Truck S.F Loaders
To Existing Wagon Loaders
Existing
New

Gaseous emission: The major sources of air pollution will be from the particulate emissions from the stack. The emissions from these sources will be passed through bag filters and then will be disposed through ~30 m high stacks. The particulate concentration from the bag filters will remain within 30 mg/Nm3. All the stacks will have emission monitoring facilities

Liquid effluent: There will be no effluent generation as the proposed plant will use water for only cooling purpose in manufacturing process. Domestic wastewater generated will be treated through STP/Soak pit. No plant effluent will be discharged in to public water ways or drains..

Solid and hazardous waste: No solid waste is being / will be generated from the cement plant. Dust collected from the APCEs is being / will be totally recycled back into the process. Sludge generated from Soak pit/STP is being/will be used as manure in green belt development / plantation.

5 Measures for mitigating the impact on the environment and mode of discharge or disposal

Air Pollution:

The details of the stack emission and stack data are given in below. All the stacks will have emission monitoring facilities. The major sources of air pollution will be from the emission from the following:

1. The emission from Cement Ball Mill
2. Dust emission from Packer(Main) Cement packing process
3. Dust emission from Wagon Tippler
4. Dust emission from 1X1250 KVA DG

The major sources of air pollution will be from the particulate emissions from the stack. The emissions from these sources will be passed through bag filters and then will be disposed through ~30 m high stacks. The particulate concentration from the bag filters will remain within 30 mg/Nm3

Existing and Proposed Air Pollution control devices: The performance of the existing APC has been discussed below.

Existing Stack No.	Stack Attached to	Stack height (m)	Dia of Stack (m)	Temp. (^{0}C)	Velocity (m/s)	PM (mg/Nm^3)	APC System & Air Volume As given in Test Report
1.	Cement Ball Mill	47.7	1.40	93	8.43	1.9	Individual Bag Filter is attached as APC System. Volume- 37562.06 Nm^3/hr
1.	Packer(Main) Cement packing process	34.50	1.00	42	9.27	14.0	Bag Filter Volume- 24485.45 Nm^3/hr
1.	Wagon Tippler	19.1	2.10	37	7.76	13.0	Bag Filter 91852.56 Nm^3/hr
1.	1X1250 KVA DG	10	0.28	212	16.87	98	Nil

Proposed Air Pollution control devices:

Proposed Stack No.	Stack Attached to	Stack height(m)	Dia of Stack	Temp. (^{0}C)	Velocity (m/s)	PM (mg/Nm^3)	APC System & Air Volume As given in Test Report
1	Cement Mill	~ 44.0	2800 mm (Bottom to top)	90	~14	< 30 mg / Nm3	Bag Filter Volume- 68000 m^3/hr
2.	(2 Nos.) packer	30	1000 mm (Bottom to top)	80-100	~11	< 30 mg / Nm3	Bag Filter Volume- 28000 m^3/hr Each

Technical Details of Proposed APC:

Bag Filter for VRM	
Gas volume	680000 m3/Hr.
Air to Cloth ratio	1.0 to 1.2
Total filtering area	~11300 m2
No. of Filter Bag	~2900 Nos
No. of Module	16
No. of Filter Bag in each module	182
Bag size (dia x long)	149 mm x 8000 mm
ID Fan	1x680000 m3/Hr
Temperature	90˚C
Compressed air quantity	~Later during detail Engg
Pressure drop across the bag filter	150 mmWC
Size and qty. of solenoid valve	182 Nos / 80 NB
Size of Rotary Air lock	~500 mm Sq
Geared motor	Later after detail Engg
Pulse duration	Later after detail Engg
Pulse Interval	Later after detail Engg
Expected outlet Particulate Matter	< 30 mg / Nm3
Stack diameter (m)	2800 mm
Flue gas velocity (m/sec)	~14

Bag Filter for Packer(for 1 packer)

Bag Filter for Packer(for 1 packer)	
Gas volume	28000 m3/ Hr.
Air to Cloth ratio	1.0 to 1.2
Total filtering area	~380 m2.
No. of Filter Bag	~225 Nos
No. of Module	1
No. of Filter Bag in each module	NA.
ID Fan	1x28000 m3/ Hr.
Temperature	80-100˚C
Bag size (dia x long)	150 mm x 3600 mm.
Compressed air quantity	Later after detail Engg.
Pressure drop across the bag filter	150 mmWC
Size and qty. of solenoid valve	15
Size of Rotary Air lock	300 mm Sq
Geared motor	Later after detail Engg.
Pulse duration	Later after detail Engg.
Pulse Interval	Later after detail Engg.
Expected outlet Particulate Matter	< 30 mg/Nm3
Stack diameter (m)	1000 mm
Flue gas velocity (m/sec)	~ 11

The dust concentration level in the chimney will be periodically monitored. Corrective steps will be taken, if the concentration is not as per the acceptable limits. The particulate concentration from the bag filters will remain within 30 mg/Nm^3.

Water Pollution:

Water used for cooling at various stages of cement manufacturing will be totally absorbed in the process or will be subjected to evaporation & recycling. Hence, no waste water is being / will be discharged from the cement plant.

Domestic waste water generated from plant and residential facilities will be treated in STP/Soak pit and treated water will be used for gardening, dust suppression, washing and process cooling.

Solid waste:

No solid waste is being / will be generated from the cement plant. Dust collected from the APCEs is being / will be totally recycled back into the process. Sludge generated from Soak pit/STP is being/will be used as manure in green belt development / plantation.

Noise Pollution:

Noise from operation of equipments like operation of Ball mills, DG and equipment in line of production process will be generated. Noise level will be kept below the prescribed limit by CPCB.

Proper noise abatement measures will be taken and persons working just close to machines and machine operators are provided with personal protective equipment viz. Ear plugs/Ear defenders etc. for further protection. Maintenance of which will be ensured.

Noise may be sourced from the following areas:

- Raw Material Handling Sections
- Charging operation, Product handling.
- Generator Area
- Compressor, Pumps, Fans
- Traffic Movement

Following mitigative measures is taken to minimize the noise.

- ✓ Appropriate specifications of Equipment / Machinery.
- ✓ Proper and timely oiling, lubrication and preventive maintenance is carried out for the machineries and equipments.
- ✓ Well lubrication of the rotating equipments.

- ✓ Provision of enclosures to reduce noise transmission.
- ✓ Provision of vibration Isolators to reduce vibration.
- ✓ To minimize the adverse effect on the health, ear muffs/ earplugs are provided to the workers working under high noise area.
- ✓ Provide acoustic enclosure for rotating equipment, silencer for DG set.
- ✓ Proper maintenance – reduction of noise at source.
- ✓ Vehicle will be periodically serviced and maintained
- ✓ Housing of Blowers / Compressors in sound proof buildings
- ✓ Green belt area will be developed to prevent the noise pollution outside the factory premises.

6 Capital cost of the project, estimated time of completion

- An indicative estimated capital cost of the proposed Plant is Rs. **300.00 Cr.**

Fund Allocation for the proposed project

S. No.	Particular	Unit	Value
1.	Capital Cost of the project	Crores.	300.0
2.	Environment Management Protection Cost	Crores	8.0
3.	Recurring Cost/annum	Crores	0.08
4.	Total Investment	lakh	30000

- **Time of completion:**

The tentative project schedule is given below:

- ➢ 18.12.2021 → Submission of Form-1/PFR
- ➢ 22.12.2021 → TOR issued from SEIAA
- ➢ April, 2022 → Draft EIA submission for Public Hearing
- ➢ June, 2022 → Public Hearing
- ➢ July, 2022 → Submission of Final EIA to SEIAA for EC
- ➢ September, 2022 → Consideration of Project by SEAC (Industry)

7 Site selected for the project

01.	The proposed project site is located as **Latitudes** and **Longitudes are** Latitude: 24°46'23.41"N; 24°46'38.25"N; 24°46'32.24"N; 24°46'45.64"N Longitude: 87°52'55.98"E; 87°53'03.80"E; 87°53'19.26"E; 87°53'13.82"E
02.	The project site is well connected to National Highway 33 which is at 1.86 KM (approx) towards NE from Plant Site
03.	Village: Kendua, PO: Srimantapur, PS: Farakka, Dist: Murshidabad ,Pin-742 212, West Bengal, Khatian No. 257,341,2103, JL No.038,039,026.
04.	Expansion will be within existing land area. Total area 72.8 Acre (294611.1 sqm.).
05.	Netaji Subhas Chandra Bose International Airport is about 300 km in S direction from Plant Site.
06.	The nearest railway station is Tildanga 1.74 Km (approx) towards NW direction from the proposed project site.
07.	Kanli river is at distance of 1.29 km West of the project Site.
08.	Bhagirathi Canal is at distance of 1.6 km East of the project Site.

Within 10 km other industries:

Sl. No.	Name of The Industries	Type of industries
Farakka area		
1	NTPC Farakka, Super Thermal Power Station	Thermal Power

8 Baseline environmental data

The study area comprises an area of about 10 km around the proposed project site at Village: Kendua, PO: Srimantapur, PS: Farakka, Dist: Murshidabad ,Pin-742 212, West Bengal, Khatian No. 257,341,2103, JL No.038,039,026.

The proposed project site is located as **Latitudes** and **Longitudes are**

Latitude	Longitude
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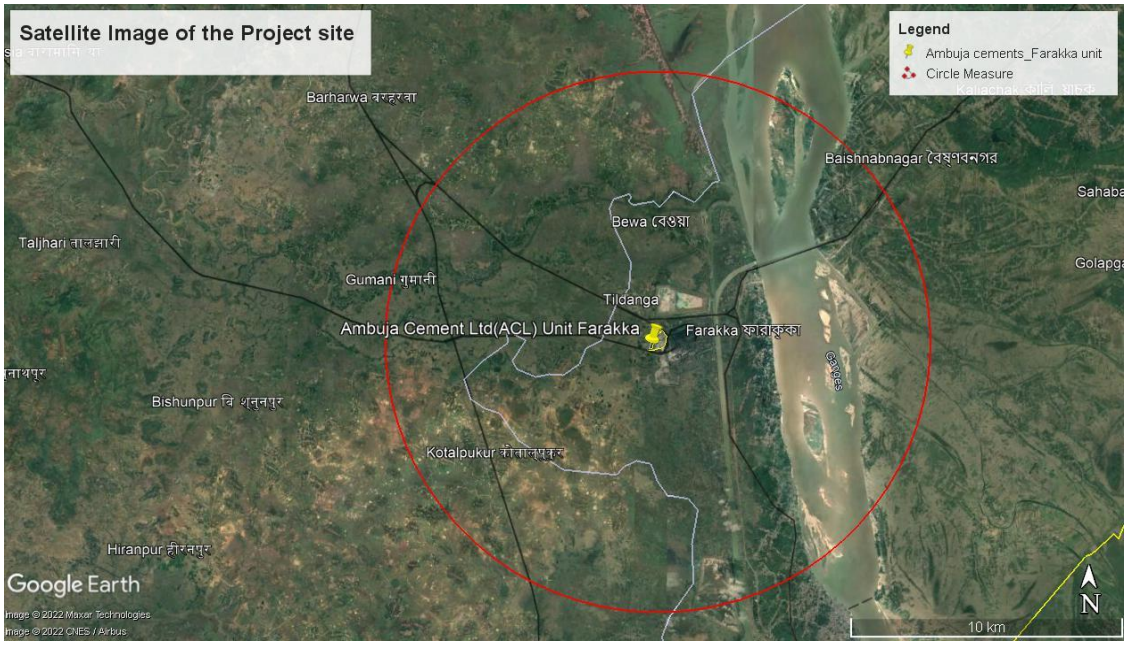
Map of Project Site



Climate

Usually a mixed climate is seen in Farakka area throughout the year. Average temperature during summer season is 32°C whereas at the cold season, temperature is generally 20°C. Maximum temperature during summer may rise up to 45 °C while minimum temperature during winter comes down to 6°C. Average rainfall is 1179.64 millimetres with the bulk of rainfall occurring around the July-September period. March to May is dry summer intervened by tropical cyclonic storms. June to September is wet summer while October is autumn. Winter season starts from about the middle of November and continues till the end of February.

Weather summary during study period

1	Predominant Wind direction	:	FROM NORTH WEST TO NORTH EAST
2	Average Wind Speed	:	1.29 m/s
3	Minimum Temperature	:	12.5 ^{0}C
4	Maximum Temperature	:	34.5 ^{0}C
5	Mean Temperature	:	23.5 ^{0}C
6	Minimum Humidity	:	36%

7	Maximum Humidity	:	95%
8	Mean Humidity	:	65.5%
9	Total Rainfall	:	84.6 mm

Land use

Land Use Details

S.No	DESCR_1	DESCR_2	AREA (Sqkm)	Percentage
1	Wetland / Waterbodies	River / Stream / Canals	53.97	17.03
2	Builtup	Urban	14.31	4.51
3	Agriculture	Crop land	177.06	55.85
4	Builtup	Rural	27.60	8.79
5	Barren / Unculturable wastelands	Scrub land	3.22	1.03
6	Grass / Grazing land	Grass / Grazing land	0.29	0.09
7	Forest	Deciduous	3.73	1.19
8	Wetland / Waterbodies	Waterbodies	1.96	0.62
9	Agriculture	Plantation	15.49	4.93
10	Agriculture	Fallow	16.45	5.24
11	Builtup	Mining	1.28	0.41
12	Wetland / Waterbodies	Inland wetland	0.04	0.01
13	Barren	fly ash dumping zone	2.47	0.77
Total area			317	100.00

Ambient Air Quality

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM_{10} for all the 08 AAQM stations were found to be 59.20 µg/m^3 and 87.20 µg/m^3 at A4 and A6 respectively, while for $PM_{2.5}$ it varies between 30.10 µg/m^3 to 53.60 µg/m^3 at A2, A3, A7 , A8 and A1 respectively. As far as the gaseous pollutants SO_2 and NO_2 are concerned, the prescribed CPCB limit of 80 µg/m^3 for residential, rural and industrial areas has never surpassed at any station. The minimum and maximum concentrations of SO_2 were found to be BDL. The minimum and maximum concentrations of NO_2 were found to be 11.80 µg/m^3 to 28.20 µg/m^3 respectively. The Maximum and P98 levels for PM_{10} and PM_2 have remained below the ambient air quality standard.

Ambient Air Quality

Stations		PM10 ($\mu g/m^3$)	PM2.5 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)
Project Site	Mean	78.94	47.64	BDL	20.20	BDL

Ground water Quality

Ground Water sampling Locations are:

GW1: Tubewell water near Project site

GW2: Tubewell water near Tildanga Village

GW3: Dug Well , Talipur Village

GW4: Dug Well water, Garaipara

GW5: Tubewell Water near NTPC More

GW6: Tubewell Water , Andhua village

GW7: Tubewell Water, Jafarganj

GW8: Tap Water from Farakka Township area

Ground water quality for chemical parameters of eight locations around the proposed plant site has been measured as per APHA (23rd Edition), 2017. Ground water analysis report is given in Annexure 6.0.

Surface water Quality

Surface Water sampling Locations are:

SW1 Farakka Feeder Canal, Khuntipara

SW2 Pond near Farakka Barrage Township

SW3 Canal near Andhua Village

SW4 Pond near Kalai Danga

SW5	Pond near Ghoraipara
SW6	River Ganga near Farakka Lock gate
SW7	Pond near Bewa Village
SW8	Pond at Farakka

Sampling and analysis of eight numbers of surface water samples was done to assess the surface water quality for this study. The method for sampling & analysis was followed as per APHA (23rd Edition), 2017. The results are furnished in Annexure 7.

Noise Level Survey

Noise levels were measured in different category of area surrounding the proposed project site. Some sensitive areas were also covered to assess the existing noise level in day & night. The noise report prepared by Envirocheck laboratory is depicted at Annexure 5.0 of EIA.

Outside Ambient noise level during day time is expected to be within 55 dBA and during night time to be 45 dBA (EPA (GSR 1063(E), 1989). The noise results show that due to traffic and other noise sources, it cannot be maintained at a number of places.

Soil Quality

In order to assess the quality of soil in the study area, three numbers of soil samples were collected during the field survey. The results of soil analysis are presented in Annexure 8.0 of EIA.

The analysis results show that soil is basic in nature as pH value ranges from 7.10 to 7.48. The concentration of Nitrogen, Phosphorus and Potassium has been found to be in good amount in the soil samples. Soil texture is Sandy Loam at project site. Soil for agricultural land is fertile and suitable for crop production.

Ecology study (Flora and Fauna)

Flora

The most common natural tree species found within the study area are Bot (*Ficusbenghalensis*), Mango (*Mangiferaindica*), Khenjur (*Phoenix sylvestris*), Chatim (*Alstoniascholaris*), Eucalyptus (*Eucalyptus paniculata*) etc.

There are also several natural species of shrubs, herbs and climbers observed within the study area**.**

Ecological study along with list of plant is given in EIA report.

A full checklist of vascular plant species as recorded during the field survey has been made. The growth form of the plant species as categorized are big trees, medium trees, small trees, thorny

trees, tall palm, herbs, small herbs, aquatic herbs, shrubs, small shrubs, under shrubs, climbing shrubs, lianas and climbers.

Rare and Endangered Plant Species

The International Union for Conservation of Nature and Natural Resources (IUCN) designated the term "rare" and 'endangered' plant species in the "Red Data Book". As per IUCN 's "Red Data Book", none of the taxa are found in this region could be marked as rare or endangered plant species.

Medicinal Plant Species

It was observed during the field survey of the study area, that the medicinal plant species occurred in a sporadic manner and only a few number of medicinal plant species could be identified and the list of the medicinal species are presented in EIA report**.**

Agricultural Crops

The study area is under the sub region of fairly hot and humid climate with sandy loam and medium water holding capacity. The annual rainfall is 1179.64 mm and length of growing periods for crops is 150 – 180 days. Rice is the most important crop. Wheat, Oil seeds, pulses are the main commercial crop. Other main crops are sugarcane, potato, chillies, ginger etc.

Fruit trees are – Mango, Jackfruit, Tamarind, Banana, Kul, Bel, Nona, Ata etc. The garden vegetable are Alliums, Bet, Cucurbita, Tomato, beans, pea, potato etc.

Plan of Genetic and Economic Importance:

A large number of plant species of the study area have economic utility like timber, medicine, food, fuel wood. Such plant species may be used for afforestation programme under "social forestry". It was also observed during the sample survey that none of the species could be considered as unique to this place, whose germplasm needs to be conserved in the region under ex-situ condition.

Faunistic Status of the Study area

A faunistic checklist of the study is presented in EIA report.

In the district wild animals of bigger type do not exist now. Few wild animals like Monkeys, Jackals, Snipes, wild Duck, Pigeons, Teals, Geese etc. are found in the district.

Among the Ducks, Pintail, Pochard and Brahminy are very common. Snakes like Cobra, Darrash, Karait etc. are found to be in existence all over the district and they mostly appear in more numbers at the aftermath of floods. The black-faced monkey is however found in abundance.

Aquatic Status of the Study area

This aquatic ecology study was carried out in different water bodies within the study area. Two sampling stations have been selected for analyzing different parameters of water as required for

aquatic ecology survey. This aquatic ecology survey was carried out along with the terrestrial ecology survey.

Socio-economic condition

The population of West Bengal makes up 7.8% of India's total population. As per Census of India 2011,the concerned State- West Bengal has population of 9.13 crores, an increase from figure of 8.02 crore in 2001 census. As per projection, population of West Bengal in 2019 is 9.98 crore. The total population growth in this decade was 13.8% while in previous decade it was 17.8%. The population of West Bengal formed 7.5%of India in 2011. Sex ratio was 950, population density per square kilometre was 1028, and literacy rate was 76.3%- male literacy 81.7% and female literacy being 70.5%.

In 2019 the State's literacy rate is over 77%, falling well above the national rate of 74%. Nearly 20% of people in West Bengal live below poverty line, but this has declined from almost 32% just ten years ago. Over the last ten years, West Bengal's population grew by almost 14%. This is down from nearly 18% in the previous decade. Though growth of the State has slowed, there is no indication that it will significantly drop or stop, leaving the future clear for continued population growth.

The District Murshidabad is situated on the left bank of the river Ganga. The district is very fertile. Covering an area of 5.341 km2 (2,062 sq mi) and having a population 7,103,807 (according to 2011 census). It is a densely populated district and ninth most populous in India (out of 640). Baharampur city is the headquarters of the district.

It borders Malda district to the north, and to the north-west, Birbhum to the west, Bardhaman to the south-west and Nadia district due south. The international border with Bangladesh's Rajshahi division is on the east.

The district comprises two distinct regions separated by the Bhagirathi River. To the west lies Rath, a high, undulating continuation of the Chota Nagpur plateau. The eastern portion, the bagri, is a fertile, low-lying alluvial tract, part of the Ganges Delta. The district is drained by the Bhagirathi and Jalangi rivers and their tributaries. Bhagirathi is a branch of the Ganges and flows southwards from Farakka barrage where it originates from the Ganges.

The concerned CD Block Farakka had a population of 2,74,111 in 2011 of which 1,39,226 were males and 1,34,885 were females; hence the sex ratio was 969. Population growth in the last decade was 24.72%. SC and ST population were 11.93% and 1.88% respectively. Population density in 2011 was 2100 per sq km.

9 Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk

Mechanical injury to body parts: In a plant there are several places where workers are likely to be involved with accidents resulting in injury to body parts. The places are workshop, during mechanical repair work in different units, during construction work, road accidents due to vehicular movement, etc., Workers exposed to mechanical accident-prone areas will be given personal protective equipment. The non-respiratory PPE includes tight rubber goggles, safety helmets, welders hand shields and welding helmets, plastic face shields, ear plugs, ear muffs, rubber aprons, rubber gloves, shoes with non-skid soles, gum boots, safety shoe with toe protection. All safety and health codes prescribed by the BIS shall be implemented. Safety data sheets of the hazardous chemicals shall be displayed at specific locations.

Potential Hazard Identification

S. No.	Operation process Equipment /areas	Possible Hazardous	Precautionary measures	Measures to be taken if any hazard occurs
1.	Electrical Panel	Electrical Shock possible due to short-circuit.	Earth leakage circuit breaker is installed.	In an event of electric leakage main supply should be immediately shut off.
2.	Electrical transformer	Electrical power	Shock proof insulated PCC Platform.	Immediate Cut off the power supply, treat the injured for electrical shock
		Fire 1	Firefighting equipment: (i) Sand buckets. (ii) Fire extinguisher.	Immediately fight fire with available resources, summon outside help if necessary.
3.	Diesel Oil/ Transformer Oil etc. storage.	Fire hazard may be possible if directly comes	Fire proof system made available and fighting equipment like Foam, extinguishers and hydrant	Proper care is to be taken while storing and keeping the oil drums.

		in contact.	system, etc., are kept	
4.	Lab Chemicals Storage area	In case of bottle breakage, causes burns and damage to respirator systems due to inhalation	1. Proper care should be taken while handling the chemicals. 2. First Aid Box should be available at Site with all necessary and required medicines. 3. Firefighting equipment like Extinguishers, sand buckets should be available always.	Instruction Boards to be displayed for knowledge of other workers to take care of the situation in the event of occurrence. Installation of Fire Estinguisher Equipment's to take care of fire hazards in the factory are being installed.

- **Risk mitigation measures**
- Appropriate storage facilities shall be provided for special requirements such as for substances that are flammable and incompatible by-product and waste types shall be kept separate.
- All hazardous storage systems shall be designed with safety features as appropriate and recommended to enhance the safety against design failure.
- Pumps of reliable quality shall be installed. Arrangements shall be made around the pumps so that leaks from glands, valves or joints can be contained locally.
- All lighting and electrical equipment in the unloading area and flammable chemicals storage area shall be suitable to the area classification approved by Competent Authority.
- Safety showers and eyewash fountains shall be provided in section where caustic soda, acid and other corrosive or reactive chemicals are handled.
- Pressure detectors shall be installed for gas transportation pipelines, the indication of which shall be seen in the control room. This would enable the control room to detect any leakage in the pipelines forwarding fuels / products.
- Minor leaks could occur in routine operations, like pump seal failure, flange leak, sample point valve left open or drain valve left open. These shall be checked regularly by a preventive maintenance program and rectified immediately.
- Corrosion protection methods for pipelines shall be done. All locations where the above ground pipelines are close to traffic movement, protection like crash guards shall be provided.

10 Likely impact of the project on air, water, land, flora-fauna and nearby population

Construction phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Transportation of construction material	Air Pollution (Dust & Gases))	Transportation of construction material by trucks and exhaust emission from vehicles	Direct Negative	Short Term	Reversible	Medium, Regular emission checks shall be performed.
	Noise Pollution	Noise generated from loading /unloading and movement of vehicles	Direct Negative	Short Term	Reversible	Insignificant, Regular vehicle maintenance shall be done. PPE shall be provided.
Construction activities	Air Pollution (Dust & Gases)	Operation of construction machinery, welding & others	Direct Negative	Short Term	Reversible	Insignificant. PPE shall be provided to workers
	Noise Pollution	Generation from construction activities	Direct Negative	Short Term	Reversible	Significant. PPE shall be provided to workers
	Land use	Storage of spares, Refractory, Setting up of project	Direct Negative	Short Term	Reversible	Insignificant. Storage is temporary and during construction period only

Operational phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Transportation of the clinker, gypsum, fly ash and slag to the Site						
Raw Material transportation, storage and Handling.	Air Pollution (Dust & Gases)	Haul road dust emission. Gaseous emissions due to Vehicle exhaust	Direct Negative	Short Term	Reversible	• Covered trucks/dumpers shall be used for transportation of the raw materials. • Tarpaulin shall be provided in open yard area. • Regular vehicle maintenance and pollution check shall be done. • Besides, the management will ensure proper usage of the personal protective equipment (PPE) by the workers to avoid any exposure to dust.
	Noise Pollution	Noise pollution due to unloading of raw material and vehicle movement	Direct Negative	Short Term	Reversible	• Loading, unloading will be done in covered area from low height. • PPE shall be provided to the workers working in the area.
Raw Material transportation, storage and Handling	Air Pollution (Dust Emission)	Transportation of raw materials like clinker, gypsum, fly ash and slag to the Site.	Direct	Short Term	Air Pollution (Dust Emission)	Transportation of raw materials will be done using covered vehicle.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	**Duration**	**Reversibility**	**Significance, Mitigative measures**
	Air Pollution (Dust Emission)	The raw materials is emptied to the storage yard. While unloading there are dust emission to the atmosphere	Direct Negative	Short Term	Reversible	Low, The unloading will be done in covered area. Also, there **water sprinkling** will be practiced to minimize dust emission. The management will also ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust.
	Land	Spillage of raw material on the land	Direct Negative	Short Term	Reversible	The raw material storage yard will be made of RCC. Hence no contamination of the land is envisaged.
Operation & Maintenance of Cement Mill / VRM	Air,	Grinding process: dust emission from Stack, Fugitive emission	Direct Negative	Long Term	Reversible	The grinder will be entirely covered but a proper dust extraction system consisting Bag filter to be provided to ensure that no dust emission to the atmosphere take place. Besides, the management will also ensure proper usage of the personal protective equipments by the workers. viz. Dust Mask, Ear Plug , Goggle etc.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Noise Pollution	Grinding process	Direct Negative	Short Term	Irreversible	Moreover preventive maintenance will be done to ensure minimum noise. Preventive maintenance and suitable mountings shall be used to ensure minimum noise.
	Land Contamination	Land contamination due to dust	Direct Negative	Short Term	Irreversible	The grinding area will be made of RCC, hence no ground contamination will occur.
DG Set						
Operation of the DG Set	Air Pollution	Flue gas emission and Used oil generation	Direct Negative	Short Term	Reversible	The DG will be operated in case of power failure only. Green DG sets shall be installed (As Per CPCB & TOR Guidelines)
	Noise Pollution	Generation of noise during DG Set operation	Direct Negative	Short Term	Reversible	The DG Sets will have acoustic enclosure to minimize the noise.
Domestic Waste						
Operation and of Domestic utilities	Water Pollution	Operation of Washroom, toilets – Wastewater generation	Direct Negative	Long Term	Reversible	The sewage will be disposed into septic tank and soak pits / STP. No discharge from Soaking Pits
Greenbelt Development						

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Development and maintenance of Greenbelt	Reduction in Air Pollution and Noise Pollution	Plantation of trees within premises to cover 33% of the area	Direct Positive	Long Term	Reversible	Positive Impact due to development of a proper greenbelt along the periphery of the premises. This will act as barrier for air emission and noise
Socio-economic Development						
Employment Generation			Direct Positive			Positive Impact due to direct employment of persons from the nearby area.
						Substantial benefits in the form of contracts to local agencies for different services.
						Employment generation in transport sector for transportation of raw material and finished goods.

11 Emergency preparedness plan in case of natural or in plant emergencies

The main areas considered for management capability are as follows:

Compliance with existing Rules and Regulations: The following statutory provisions to be complied by PP:

The MSIHC Rules, 1989/2000 notified under the Environment Protection Act, 1986.

Rules on Emergency planning, Preparedness and Response for Chemical Accidents.

Factories Act, 1987 (Amended)

Public Liability Insurance Act, 1991

Air Act, 1981 and Water Act, 1974

Engineering Aspects: This includes the factory layout and following general features of the facility.

1. Demarcation with proper boundary wall
2. Green belt and buffer zone
3. Segregation of process and utility blocks
4. Access for emergency vehicle movement
5. Adequacy of exit and entry points
6. Ventilation of process area
7. Use of codes and standards
8. Third party inspection

Process Aspects**:** This include the process safety angle like reaction characterization (is the reaction well characterized in terms of runaway potential, exotherms, heat of reaction, etc.), existence of high temperature pressure alarms, back up indicators, annunciate panel, etc. and existence of process control through PLC, single loop controls, interlocks, etc.

Emergency response: It includes the emergency preparedness of the installation like

1. Working on-site emergency plan
2. Fire protection system in terms of fire water storage, hydrant, sprinkler, foam, fire alarms, smoke detectors and gas detectors
3. Emergency power
4. First aid, emergency vehicle and medical provisions
5. Back-up communication
6. Training and mock drill
7. Personnel Protective Equipment and Self-Contained breathing apparatus

Management System**:** It includes the management commitment within the organization.

Existence of professionals in key factory positions

Safety, health and environment function

ISO 14000 and ISO 9000 certification, safety and environment policy

System for recording near miss and accident investigation

Workers awareness of hazards involved

Operation and Maintenance System: This includes existence of SOP for all critical operations Inerting systems used for tanks, pipelines, etc.

Earthing system

Preventive maintenance system

System for implementing plant modifications

The aim of hazard control and disaster management is concerned with preventing accidents through standard design and efficient operation, preventive maintenance, inspection and proper usage of safety measures by which it is possible to reduce the risk of an accident. PP will coordinate with the District Administration and adopt all measures to minimize the effect of disaster. The objective shall be to localize the emergency and, if possible, eliminate it and minimize the effects of the disaster on workforce and surrounding community. This EMP formulates a procedure for controlling disaster with minimum damage to men, material and machines, evacuating the victims to safer places, rescuing the victims and providing them medical treatment, rehabilitating the affected areas, delegating specific tasks to staff (avoid overlapping of activities within various groups) and preserving relevant records as evidence in any subsequent inquiry.

1. Elimination of hazards will require prompt action by operators and emergency staff and mobilizing fire-fighting equipment, emergency shut-off valves and water sprays. To minimize the effects of a disaster, prompt operation for providing rescue, first aid, evacuation, rehabilitation and right information to people living in nearby areas is necessary.

2. Emergency team leader is called site main controller (SMC) who shall be the plant manager. He shall lead the emergency response team. In his absence the senior most person available at plant shall act as emergency team leader. Besides the top officials described above, rest of the employees shall be divided into three action teams namely A, B, C. Action team A consists of staff of section in which accident has occurred. Action team B consists of staff of non-affected section and maintenance department. Action team C consists of supporting staff i.e. security supervisor, shift supervisor and ancillary people comprising of contractor, labour.

3. Team A will initiate action in case of an emergency. Team B will help team A by remaining in their respective sections and preparing to comply with specific instructions of SMC. Team

C consisting of supporting staff will help Team A as and when required and receive direction from Team B to act. Team C will help in evacuating the affected personal to safer place, under the supervision of Team B. A multi-channel communication network will connect Site Emergency Control Room (SECR) to control rooms of various other departments and the nearest fire station, medical centre and district hospital.

4. The onsite emergency will in all probability commence with fire or burns and the victims shall be the members of operational staff on duty. In case a staff member on duty spots the emergency, he (as per site emergency procedure of which he is adequately briefed) shall go to nearest emergency (fire) alarm location. He shall try his best to inform the exact location and nature of emergency to the firefighting station. In accordance with work emergency procedure, the following key activities shall immediately take place to control the emergency.
5. On site crew shall arrive at the site of incident with fire extinguishers and necessary equipment.
6. Emergency security controller shall commence his role from main gate office.
7. Incident controller shall arrive at SECR with members of his advisory and communication team and assume absolute control of the site. He shall receive information continuously from incident controller and give decisions and directions to the following:
    - Incident Controller
    - Plant Control rooms
    - Emergency security officer
    - Site or shift medical officer
8. After all the key emergency personnel have taken up their respective positions, the incident controller shall use communication system to convey and receive the messages. At the site of incident the incident controller shall directly handle the emergency with the help of specific support group such as Team C and firefighting personnel. At the main gate, the Emergency Security Controller and Personnel Manager will contact external agencies. At the site medical center / first aid center, the Medical Officer will take control of medical

support services. Site Main Controller shall direct and decide all issues and direct the following aspects:

- Whether the incident controller requires reinforcement of manpower and facilities.
- Whether the plant operation shall be shut down or kept in running condition.
- Whether the staff in other locations shall be kept indoors or evacuated and assembled at predefined safe areas.
- Whether the missing staff members shall be searched or rescued.
- Whether off-site emergency plan shall be activated and message to that effect shall be sent to the District Headquarter / Administration.
- Whether and when outside emergency services shall be called.

Respond to any large size complaints from outside public and to assess an off-site impact arising out of the on-site emergency.

9. On receiving the message of Disaster from site main controller (SMC), fire control room attendant shall sound siren 'wailing type' for 5 minutes. Incident controller shall arrange to broadcast disaster message through public address system. On receiving the message of 'Emergency Over' from incident controller the fire control room attendant shall sound alarm 'All Clear Signal' straight for two minutes. The features of alarm system shall be explained to one and all to avoid panic or misunderstanding during disaster.

10. On receiving the signal following actions shall be taken:

All the members of advisory committee, personnel manager, security controller, etc. shall reach the SECR.

The process unit persons will remain ready in their respective units for crash shutdown on the instruction from SECR.

The persons from other sections will report to their respective officer.

The concerned section will take immediate action to remove contractor's personnel outside the plant gate.

11. When the incident has eventually been brought under control as declared by the incident controller, the SMC will send two members of his advisory team as incident site for the following purpose:

To conduct an on-the-spot assessment of total damage and prevalent condition with particular attention to possibility of recurrence of the emergency situation, which may be temporarily under control.

To inspect other parts of site which might have been affected by impact of incident.

To inspect the personnel collection centers and roll call centers, to check if all persons on duty have been accounted for.

To inspect all the control rooms of the plant in order to assess and record the status of respective plants and to supervise any residual action that is deemed necessary.

12. Once the emergency situation comes under control, the advisory team shall return to SECR with their observations, report and submit the findings in writing to SMC. Based on the reports, SMC shall communicate further directives to all emergency management sub-centers and finally declare and communicate termination of emergency and authorize step by step restoration of normal operation of the affected plant. Emergency security controller and personnel manager shall deal with all the members of public and other local bodies from the main gate office. During the entire period of emergency, the site shall remain out of bounds to external visitors except for the following officials:

    District fire personnel

    District hospital ambulance staff

    Civil/ Defense personnel

    District administration

    Factory Inspectorate Officers and Labour Commissioner

    Officers of State Pollution Control Board

    Insurance authorities.

13. In view of vulnerability to fire, effective measures have been considered to minimize fire hazard. Fire protection is envisaged through hydrant and sprinkler system, designed as per the standard recommendations.

14. For detection and protection of the plant against fire hazard, any one or a combination of the following systems will protect susceptible areas:

- Hydrant system
- Medium velocity spray system
- Portable fire extinguishers

- Fire alarm system

15. Fire hydrant points shall be provided at all necessary places. Medium velocity spray system shall be provided for protection of transformers, cable galleries and coal storage areas. Water for hydrant, spray and sprinkler systems shall be supplied from the fire-water pumps located in water pump house. The hydrant system shall be designed as an ordinary hazard class. Adequate number of portable and mobile chemical fire extinguishers (Carbon dioxide, dry chemical powder, foam types) shall be provided at strategic locations throughout the plant. Fire detection, heat detection, hydrocarbon detection and alarm system shall be provided to detect fire/ heat/ smoke/ hydrocarbons in vulnerable areas of the plant.

12 Issues raised during public hearing and response given

Public Hearing will be carried out for the expansion project.

13 CSR plan with proposed expenditure

The Industry intends to undertake CER activities in and around their Plant. A total amount of Rs. 22,500,000 (Rs. Two crore twenty five lakh only) would be utilized for CER program over a period of 5 years. The said amount is 0.75% of the total project cost.

5 YEARS CER PLANNING							
	Project Cost	**Rs. 30000,00,000.00**					
	Budget for CER (0.75%)	**Rs. 22,500,000**					
SL. No.	**CER DETAILS**	**5 YEAR CER PLANNING (RS.)**					**TOTAL (Rs.)**
		1ST YEAR	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**5TH YEAR**	
1	Water Resource Management	6,00,000	5,00,000	5, 00,000	4, 00,000	4, 00,000	24,00,000.00
2	Agro Based Livelihood	8, 00,000	10, 00,000	8, 00,000	8, 00,000	6, 00,000	40,00,000.00
3	Skill and Entrepreneurship Development	6, 00,000	8, 00,000	8, 00,000	8, 00,000	7, 00,000	37,00,000.00
4	Women Empowerment	5, 00,000	3, 00,000	5, 00,000	4, 00,000	5, 00,000	22,00,000.00
5	Health & Sanitation	5, 00,000	4, 00,000	5, 00,000	5, 00,000	7, 00,000	26,00,000.00

6	Rural Infrastructure Development	7, 00,000	6, 00,000	5, 00,000	5, 00,000	5,00,000	28,10,000.00
7	Establishment	45, 00,000	45, 00,000	46, 00,000	44, 00,000	45, 00,000	2,25,00,000.00
	TOTAL COMMITMENT (0.75% OF TOTAL BUDGET)						**2,25,00,000.00**

14 Occupational Health Measures

Occupational health and safety monitoring programs shall verify the effectiveness of prevention and control strategies. The selected indicators shall be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The performance and achievements of the OHSMS responsible for all management of all environments, Health & Safety aspects shall be reassessed on annual basis. The occupational health and safety monitoring program shall include:

Safety inspection, testing and calibration: They shall carryout inspection and testing of all safety features and hazard control measures for plant operation. This shall include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection shall verify that issued personal protective equipment (PPE) continues to provide adequate protection and is being worn as required.

- All instruments installed or used for monitoring and recording of working environment parameters shall be regularly tested and calibrated, and the respective records maintained.
- Surveillance of the working environment shall be carried out.
- Surveillance of workers health: When extraordinary protective measures are required, workers shall be provided appropriate and relevant health surveillance prior to first exposure and at regular intervals thereafter. ACL will provide appropriate and relevant health surveillance to workers with special emphasis to the dust prior to first exposure and at regular intervals thereafter.

15 Post project monitoring plan

Description	Number of Monitoring Stations	Frequency
Ambient Air Quality	8 (upwind and downwind direction inside the plant boundary	Weekly
Parameters – PM_{10}, $PM_{2.5}$, SO_2, NO_2		

Component	Location	Parameter	Monitoring & Analysis Method	Monitoring Frequency
Stack Emissions Monitoring	Wagon Tippler (Process activity, tripling of Clinker) Cement Ball Mill (Cement Grinding Process Activity). Packer (Main) Bag Filter	PM SO_2 NOx CO_2	SPM & SO_2 – CPCB Method NO_X – USEPA Method 7 O_2 – Orsat analysis CO_2 – Orsat Analysis Duration of sampling – Isokinetic method using stack monitoring kit	Every week

Component	Location	Parameter	Monitoring & Analysis Method	Monitoring Frequency
Groundwater Quality	Bore well No.- 1 Bore Well No.- 2	pH Odour Taste Turbidity TDS Total hardness Calcium Magnesium Chloride Total Alkalinity as $CaCO_3$ Iron as Fe Sulfate as SO_4 Fluoride as F Nitrate as NO_3 Arsenic as As	Standard Methods of APHA	Once during pre-monsoon and once during post monsoon

Noise monitoring shall be carried at near to the high noise generating areas viz. Railway siding area beside fly ash silo, Wagon loading area, plant gate, Packing plant Control room, Colony area, once in a month and shall be compared with as per the requirement of Occupational Safety and Health Administration (OSHA) Standards.

Monitoring of Ambient noise levels will be monitored once every quarter during day time (6 AM to 10 PM) and night time (10 PM to 6 AM) at plant boundary (nearest and furthest)

16 **Conclusion**

It can be concluded that on positive implementation of mitigation measures and environmental management plans, the project activities during the construction and operation phase would have manageable & largely have reversible impacts on the environment. Therefore, there will be negligible impact on the environment and on balance; the project would be favorable to surrounding communities and the region. Thus the project is environmentally sustainable.