

ENVIRONMENTAL IMPACT ASSESSMENT STUDY FOR

ENHANCEMENT OF CEMENT PRODUCTION
OF STANDALONE GRINDING UNIT FROM 4.0 MILLION TPA TO 7.0
MILLION TPA AT VILLAGES: HOTGI STATION & HIPLE, TEHSIL: SOUTH
SOLAPUR, DISTRICT: SOLAPUR (MAHARASHTRA)

Proposal No. SIA/MH/IND1/440147/2023

DRAFT EIA REPORT FOR PUBLIC HEARING

Project Proponent

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3(b) type of activity, Category 'B' – Brown Field Project

Baseline Data Generation carried out during March – May 2023 by

NABL Approved Lab: JM EnviroLab Pvt. Ltd.

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

1.1 Project Name and Location

M/s UltraTech Cement Limited (UTCL), Unit: Hotgi Cement Works (HCW) is operating a standalone cement grinding unit of capacity 4.0 MTPA at Villages: Hotgi Station and Hiple, Tehsil: South Solapur, District: Solapur (Maharashtra). Earlier Environment clearance was obtained from MoEF & CC, New Delhi vide **F. No. J-11011/1031/2007-IA II (I)** dated 4th July, 2008 in the name of M/s. Birla Super Cement (A Division of Grasim Industries Ltd.). Thereafter, M/s. UltraTech Cement Ltd. (UTCL) took over M/s Birla Super Cement (A Division of Grasim Industries Ltd.). Transfer of EC from M/s Birla Super Cement (A Division of Grasim Industries Ltd.) to M/s. UltraTech Cement Limited was obtained from MoEF&CC, New Delhi vide **F. No. J-11011/1031/2007-IA II (I)** dated 15th April, 2020. The existing grinding unit also obtained consent for Operation (CFO) from MPCB vide letter no. 0000147160/CR/2212001191 dated 16.12.2022 valid up to 31.10.2023. Renewal of the CFO is applied vide UAN No. MPCB-CONSENT-0000180259 dated 30.08.2023.

HCW is proposing to augment the cement production capacity of Standalone Grinding Unit from 4.0 Million TPA to 7.0 Million TPA at Villages: Hotgi Station & Hiple, Tehsil: South Solapur, District: Solapur (Maharashtra).

The Standard Terms of Reference (TOR) for cement production capacity of Standalone Grinding Unit from 4.0 Million TPA to 7.0 Million TPA issued by the State Level Environment Impact Assessment Authority (SEIAA), Maharashtra vide F. No. SIA/MH/IND1/440147/2023 dated 14th August, 2023. Based on the ToR conditions stipulated by SEIAA, Maharashtra, Draft EIA/EMP has been prepared.

1.1.1 Products and Capacities

The existing plant capacities as approved and as operating are given in the **Table – E1** along with the proposed expansion capacities.

TABLE- E1: IMPLEMENTATION STATUS OF EXISTING EC & CONSENTS

S.No.	Project Activity	Granted Capacity as per EC on 4th July., 2008	Existing Installed Capacity as per Consent for Operation	Remarks
1.	Cement	4.0 Million TPA	4.0 Million TPA	Implemented
2.	CPP	25 MW	--	Not Implemented
3.	D.G. Set	6 MW	1 x 750 kVA	Partially Implemented

1.1.2 Capital Cost of the Project, Estimated time of Completion

The capital cost along with the cost for Environmental Protection Measures for the existing and proposed project has been given in **Table E2**.

TABLE-E2: PROJECT COST DETAILS

S. No.	Particular	Cost of the Project		
		Existing	Proposed	After Expansion
1.	Total Cost of the Project	Rs. 480.16 Cr.	350 Cr.	Rs. 830.16 Cr.
2.	Cost for Environmental Protection Measures			
	a. Capital Cost	Rs. 48.0 Cr.	25.0 Cr.	Rs. 73.0 Cr.
	b. Recurring Cost	Rs. 4.0 Cr/Annum	1.75 Cr/Annum	Rs. 5.75 Cr/Annum

1.1.3 Project Site Details

a.) Nature of Land

The total land area available with UTCL (Hotgi Cement Works) is 98.39 Ha. The proposed expansion will be done within this existing plant premises. No forest land is involved.

b.) Environmental settings

The project site accessibility and Environmental settings from 10 Km radius from the plant site is described below:

- Nearest Town- Solapur (~15 km in NW direction)
- Nearest State/National highway- NH-150 E (6.55Km, in NE direction), NH-465 (7.60 Km in NW direction), & NH-52 (11.6 Km in WNW direction)
- Nearest Railway Stations are: Hotgi Railway Station (~0.45 km in WNW).
- Nearest Airport- Solapur Airport (~9.5 km in NW)
- Water Bodies within the 10km radius are given below:
 - Sina River(~9.50Km in WSW direction)
 - Velsankar Lake at Hanamgaon Talav (~4.90Km in NE direction)
 - Lake at Hotgi Pazar Talav (~4.80Km in NW direction)
- Seismic Zone-Zone III [as per IS 1893 (Part-I): 2002]
- Other Industries within 10-km aerial radius: Thermal Power plant of NTPC, Pruthviraj Bricks Industries, M/s. Chettinad Cement Corporation Limited, and Zuari Cement Ltd

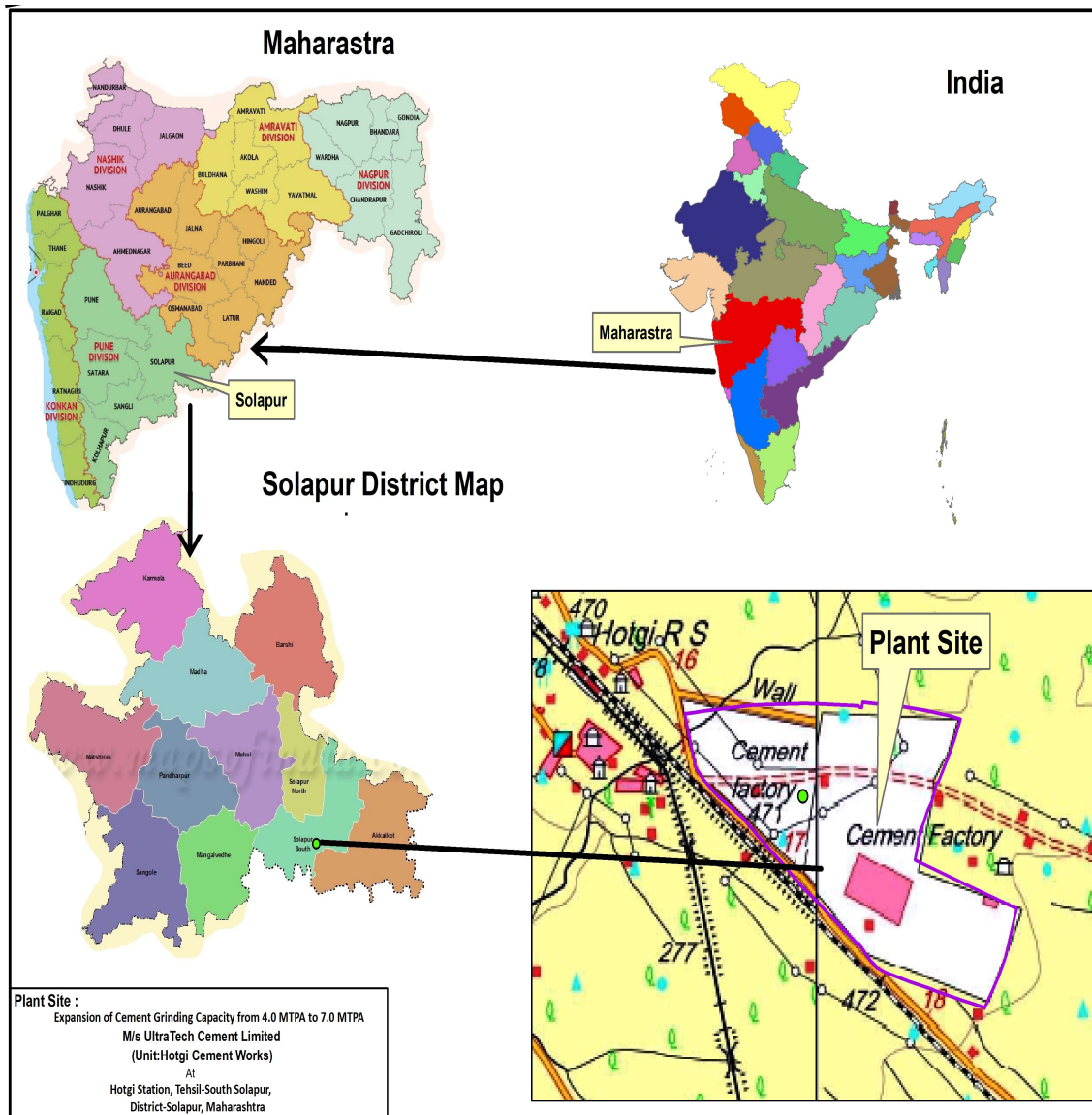


FIGURE-E1: LOCATION MAP

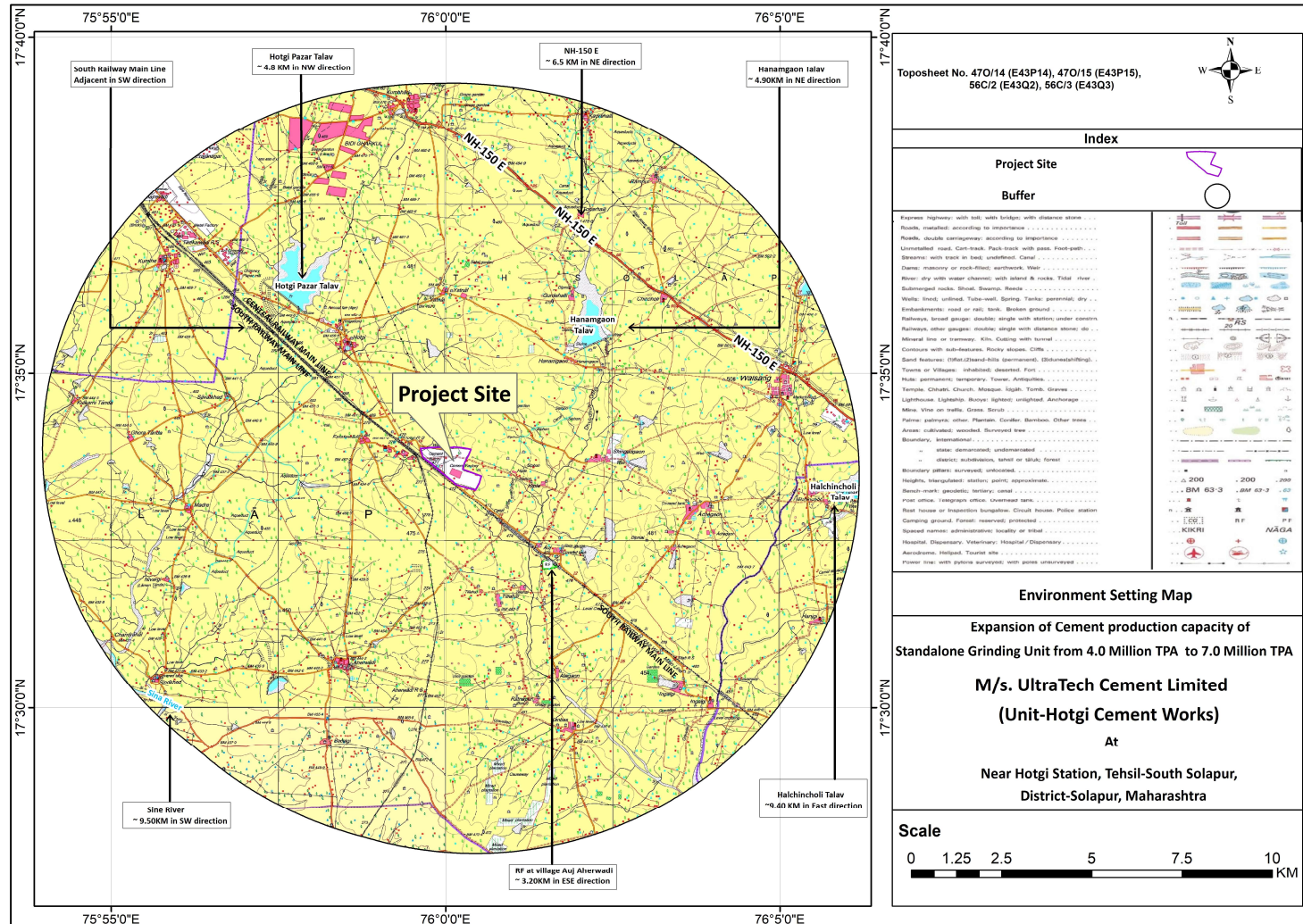


FIGURE- E2: ENVIRONMENT SETTING MAP

The site is well connected with communication facilities like telephone, fax, wireless and as such, no constraints are envisaged in this aspect as the Tehsil and District headquarters are near to the site.

2.0 PROJECT DESCRIPTION

2.1 Process Description in Brief

Major steps involved in the process of Grinding Unit are given as below:

- Clinker storage & handling
- Fly Ash storage & handling
- Gypsum storage & handling
- P.I. (Performance Improver) handling
- Hot Air Generator (HAG)
- Slag Storage & handling
- Slag Grinding
- Cement production and storage
- Cement packing & dispatch

Process flowchart for the grinding unit has given in **Figure E4**.

2.2 Other Project Associated Activities

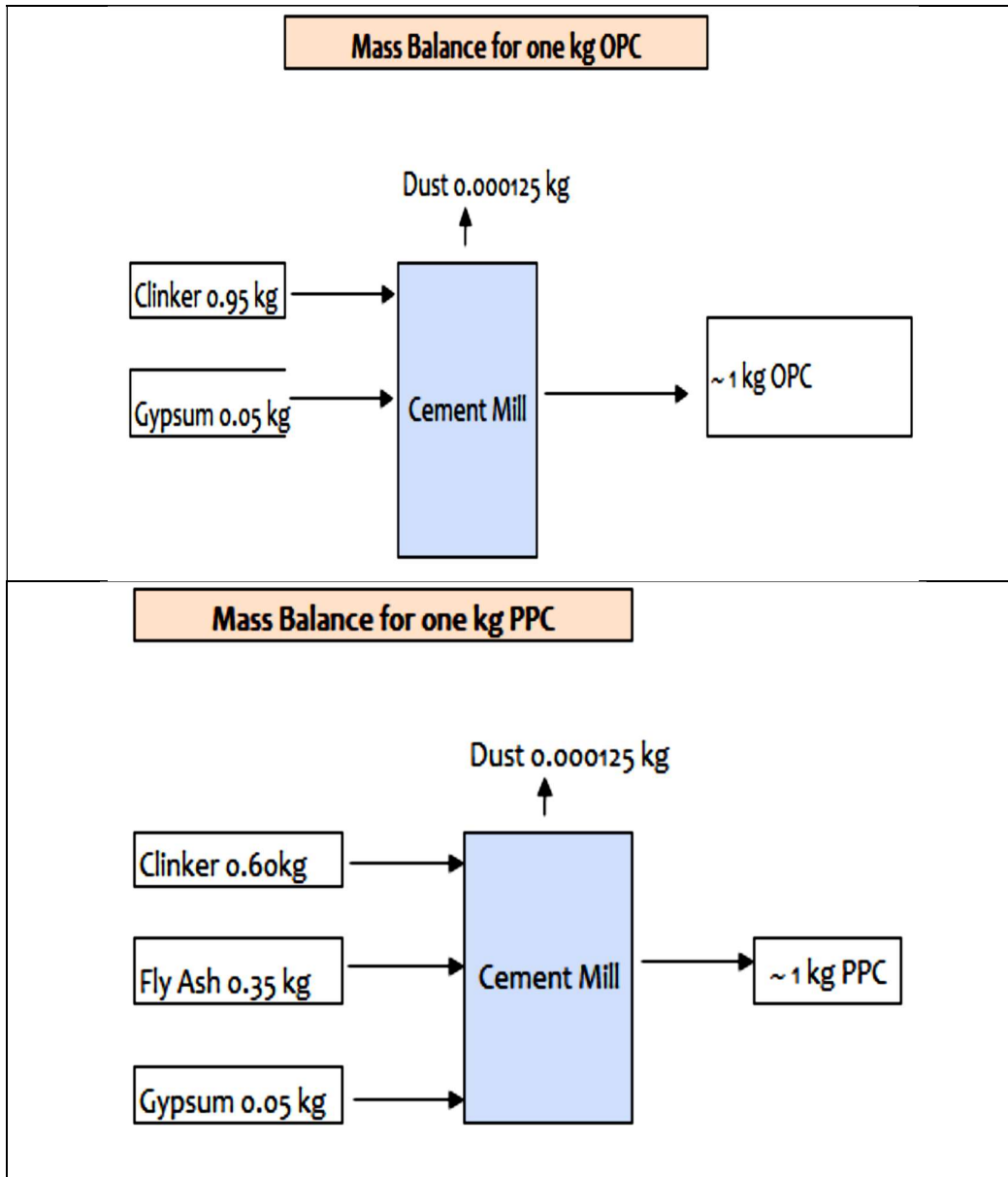
2.2.1 D.G. Set:

DG Sets (1x750 KVA) is being/ will be operated for power back up in case of emergency.

- a. The fuel oil is heated for free flow to D.G. Set.
- b. It is transferred for settling-to-settling tank to remove unwanted material. Fuel oil is further centrifuged.
- c. After centrifuging, the fuel oil is transferred to another service tank, heated, filtered and injected into engine for combustion.
- d. The engine generates power and produces electricity.

2.3 Material Balance

Mass balance diagram for manufacturing of cement at the plant are given in **Figure E3**.



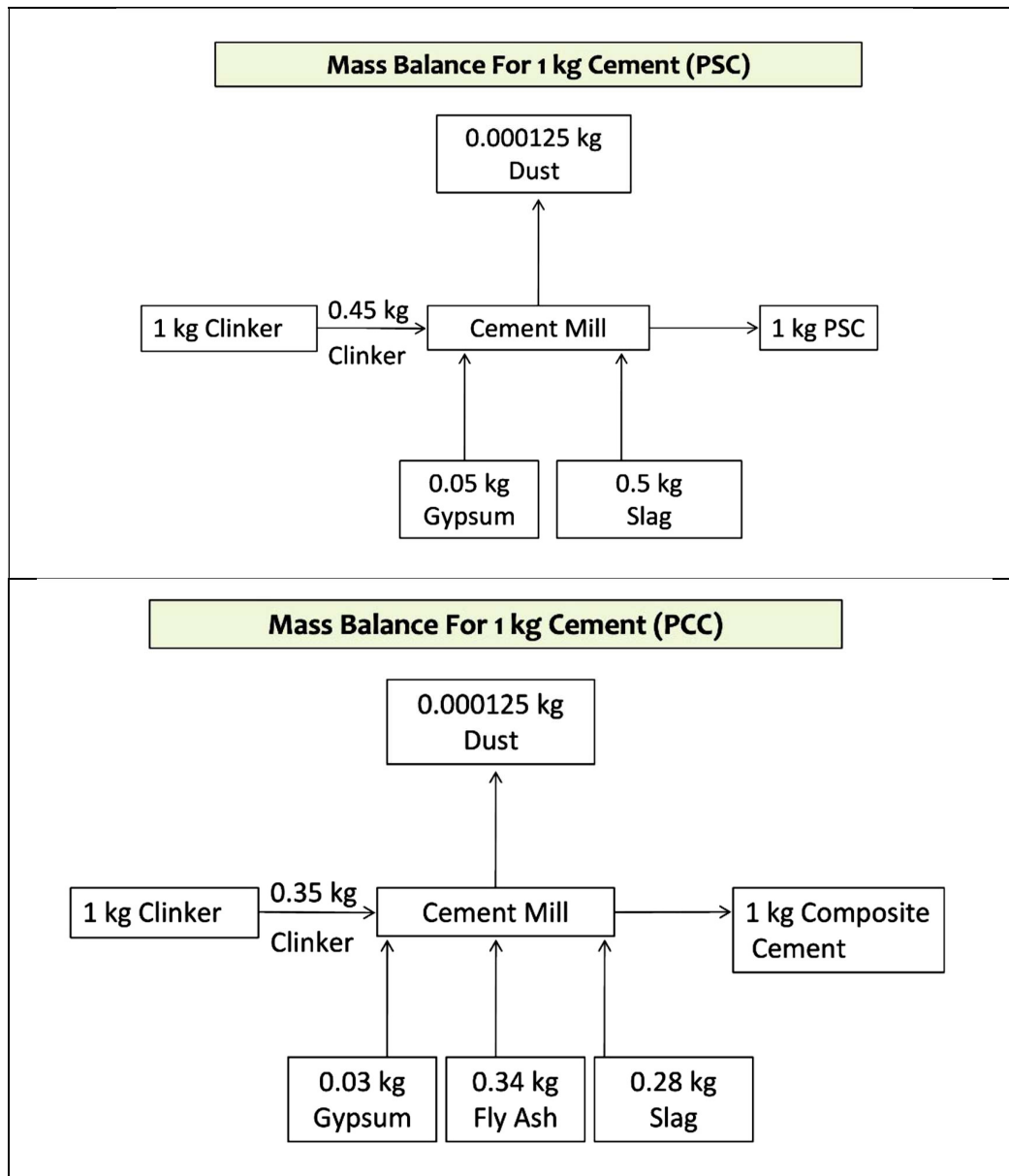


FIGURE-E3: MATERIAL BALANCE DIAGRAM

2.4 Raw Material & Fuel Requirement

Clinker is main raw material to produce gray cement by the process of grinding. Few of the additives will be added to clinker while grinding in the ball mill as substitute to clinker. In HCW, Fly Ash is being used in the existing plant whereas Slag will also be used in the proposed expansion, in addition to Fly Ash. Pozzolana, when used as a replacement, are generally substituted for 10 -50 % of clinker.

Gypsum is added to clinker to decrease its setting time and thus cement hardens readily on mixing with water. About 5% Gypsum will be added in grinding process.

HFO/HSD is used in DG Sets to meet the emergency power requirement.

The raw material quantity, source along with distance and modes of transportation are given in below **Table E3** and Fuel requirement is given in **Table E4**.

TABLE-E3: RAW MATERIAL REQUIREMENT

S. No.	Name of Raw Material	Quantity (MTPA)			Source	Distance & Mode of Transportation
		Existing Quantity (Million TPA)	Proposed Quantity (Million TPA)	Total Quantity After Expansion (Million TPA)		
1	Clinker	3.0	2.25	5.25	RCW, Malkhed and other UTCL units also	170 Kms By Rail
2	Gypsum	0.2	0.15	0.35	Jaigad & Bagheria and other near by sources	450 Kms By Road & Rail
3	P.I. (Performance Improver)	0.2	0.15	0.35	RCW, Malkhed and other UTCL units	170 Kms By Rail
4	Fly Ash	1.4	1.05	2.45	NTPC, Solapur and other nearby sources also	5 Kms by Road
5	Slag	0.0	1.0	1.0	Sona Alloys & other nearest sources	200Kms by Road

Note: *In Total Cement production will be done 7.0 Million TPA only either from various options as OPC, PPC, PSC& PCC

TABLE-E4: FUEL REQUIREMENT

S. No.	Name of Fuel	Existing Quantity	Proposed Quantity	Total After Expansion Quantity	Calorific value (Kcal. /kg)	Source	Distance & Mode of transportation
1.	HSD (Kg/Hr)	230Kg/hr	-	230Kg/hr	8000-10,000	Domestic Market	~ 30 Km Road

2.5 Resources Requirement

Existing plant and the proposed expansion project require various resources which are described below.

2.5.1 Land Requirement

The total area acquired for this standalone grinding unit is 98.39 Ha located in the Survey nos., 35 A,35 B,36, 37/1/B, 37/1/C, 37/1/D, 37/1/E, 37/1A/1/1, 37/1A/1/2, 37/2/1, 37/2/2, 37/2/3, 37/2/4, 37/2/5 37/2/6, 37/1A/2, 38/1,38/2,39,40/1,40/2,41 A,41 B,42,43 A,43 B,43 C/1, 43 C/2 ,43D (43/3) (Village: Hotgi Station), 53/1/1, 53/2, 53/1/2, 72, 73 (Village: Hipale) at Tehsil-South Solapur, District-Solapur, Maharashtra. The entire land area is under possession of M/s UltraTech Cement Ltd.

Out of the total Project area, approx. 43.69 ha (i.e., 44.40%) has already been developed under greenbelt and plantation.

Plant area Break-up is given in **Table E5**.

TABLE-E5: PROJECT AREA BREAK-UP


S. No.	Unit	Existing Area in Ha.	Proposed Expansion in Ha.	Total Area after Proposed Expansion in Ha.
1.	Cement Mills Including Hopper building, Cement Silos, Bag go down and packing plant	3.20	7.0	10.20
2.	Storage Sheds- Line-1, Line-2 & New Limestone shed	0.65	0.0	0.65
3.	Solar Power Plant- 1 MW & Switch yard	2.0	0.0	2.0
4.	Rail yard Including BCCW silos & Wagon Tippler	16.0	0.0	16.0
5.	RMH & Store yard	3.0	0.0	3.0
6.	Concreted truck Yard, All roads & parking Area	8.0	0.0	8.0
7.	All Office building- Admin, CCR, OHC, Loco room, Canteen, Store, Security, Logistic, Transporter offices & Packing Plant office etc	0.5	0.0	0.5
8.	STP & Rain water Harvesting	0.15	0.0	0.15
9.	Land Under green belt	43.69	0.0	43.69
10.	Available open Land excluding all constructions & Green belt	21.20	(-7.0)	14.20
Total area		98.39	0.0	98.39
*Note:7.0 Ha area is converting for Expansion of Cement Grinding unit (i.e., Cement Mill-III) from Open land and the total area will be remains same.				

2.5.2 Water Requirement

The total water requirement of Grinding Unit after proposed expansion will be 245 KLD; out of which, the existing water requirement is 200 KLD and additional water requirement for proposed expansion will be 45 KLD, which is being / will be sourced from Ground Water. The details of the total water requirement are given in **Table E6**.

TABLE-E6: WATER REQUIREMENT

S. No.	Purpose	Existing Requirement	Proposed Requirement	Total Requirement After Expansion
		Grinding Unit		
1.	Process	45	10	55
2.	Cooling water	40	10	50
3.	Dust Suppression	20	8	28

	Expansion of Cement production capacity of Standalone Grinding Unit from 4.0 Million TPA to 7.0 Million TPA at Villages: Hotgi Station & Hiple, Tehsil: South Solapur, District: Solapur (Maharashtra)
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4.	Drinking & Domestic	45	15	60
5.	Green Belt / Plantation	50	2	52
Total Water Requirement (in KLD)		200	45	245

2.5.3 Power Requirement

The total power requirement for the grinding unit is 21 MW, which will be sourced from Maharashtra State Electricity Distribution Company Limited / Grid and DG Set for backup. 1MW of Solar power plant is installed within the plant site.

2.5.4 Manpower Requirement

Details of manpower requirement for the grinding unit is given in **Table E7** below.

TABL- E7: MANPOWER REQUIREMENT

Particulars	Manpower Requirement		
	Existing Manpower	Proposed Manpower	Total
Manpower during Construction			
• Regular/Permanent	-	20	720
• Contractual/Temporary	-	700	
Manpower during Operation			
• Regular/Permanent	80	10	90
• Contractual/Temporary	350	50	400

2.6 Sources of Pollution

The major sources of pollution from the existing and proposed cement grinding unit are given below:

- Source Emissions from grinding activity through 40 & 61-mts stack, and bag dust collectors with 99% efficiency- details are given in **Table E8**
- Fugitive emissions from material handling and material transfer points
- Solid waste generation- details are given in **Table E9**
- Noise from the plant operations- details given in **Table E10**

TABLE-E8: DETAILS OF APCES INSTALLED AT PLANT

S. No.	Location of APCE	Type of APCE	Emission characteristics
1.	Cement mill	Bag House	PM
2.	Cement mill hopper	Bag Filter	PM
3.	Cement Silos	Bag Filters	PM
4.	Packing plant	Bag Filters	PM
5.	Transfer points	Bag Filters	PM
6.	Clinker Silo	Bag Filter	PM
7.	Fly Ash Silo	Bag Filter	PM
8.	Clinker Unloading point	Bag Filter	PM
9.	D.G. Set	Stack Height as per CPCB	Gaseous emissions

TABLE-E9: DETAILS OF SOLID HAZARDOUS WASTE GENERATION& MANAGEMENT

S. No	Name of the Hazardous waste	Stream	Quantity		Disposal Option
			Existing	After Expansion	
1	Used /Spent Oil	5.1 of Schedule-1	20.0 TPA	~25.0 TPA	Will be sold to CPCB Authorized recycler
2	Waste Residue containing Oil	5.2 of Schedule-1	1.0 TPA	~2.0 TPA	
3	Empty barrels/ Containers/liners contaminated with hazardous chemicals/ wastes	33.1 of Schedule-1	0.5 TPA	~1 TPA	

TABLE-E10: DETAILS OF NOISE LEVELS

S. No.	Location	Noise Levels (dB (A))
1	Compressor House	78-90
2	Pump House	85-89
3	Cement mill	85-90
4	Packing plant	85-90

3.0 BASELINE ENVIRONMENT STUDIES

The baseline study was conducted within a 10 Km radius from the periphery of the plant site. Baseline data for environmental attributes like ambient air, meteorology, water, hydrology, land use, soil, geology, noise, socio-economic, ecology and biodiversity etc. were collected. The study was conducted during the Summer season from **March to May 2023**. The Baseline Data Monitoring (BDM) was carried out by our associate laboratory – M/s JM EnviroLab Pvt. Ltd., Gurgaon. Further, a buffer area extending to 10 km radii from the project site has also been studied, though with a lesser degree of detail in order to understand the land use and places of environmental sensitivity of the area.

3.1 Meteorological Data

As per 30 years meteorological data of Solapur IMD Station from 1981-2010, the summer begins in early March and lasts until June. April and May are the hottest months. Monsoon begins in late June. October and November see the retreat of the monsoon and a return of high temperatures until late November. Atmosphere is generally dry except during the monsoon period.

The site micrometeorology is described below in **Table E11**

**TABLE E11- MICROMETEOROLOGY AT SITE
(SUMMER SEASON- MARCH TO MAY 2023)**

Month	Temperature (OC)		Relative Humidity (%)		Wind Speed (m / sec.)		Cloud Cover (okta)
	Max.	Min.	Max.	Min.	Max.	Min.	
March, 2023	39.8	17.6	82.2	10.1	8.0	0.1	1
April, 2023	42.1	19.3	74.2	11.1	8.0	0.1	1
May, 2023	43.2	24.3	88.4	10.2	8.5	0.1	2

Source: Meteorological Station at Site

3.2 **Baseline Environmental Data (Air, Noise, Water, & Soil)**

The baseline data monitoring studies have been carried out for three months covering Summer season (March' 2023 to May' 2023).

3.2.1 **Soil-Quality**

Six soil samples were collected and analyzed in and around the plant area to assess the present soil quality of the region. The pH of the soil indicates that the soil is slightly to above alkaline in nature. The organic matter levels in the study area is very poor. The nitrogen, phosphorous, potassium concentrations were observed to be in the range of 'medium' to 'sufficient' category. This indicates that soil fertility is good with nitrogen and potassium sufficient in soil samples in the study area. Based on the results, it is evident that the soils are not contaminated by any pollution sources.

3.2.2 **Meteorology**

Meteorological data at the site was monitored during March' 2023 to May'2023 representing Pre-Monsoon season. It was observed that the during study period, temperature ranged from 17.6°C to 43.2°C and the relative humidity recorded in the range of 10.1% to 88.4%.

3.2.3 **Ambient Air Quality**

Ambient Air Quality Monitoring (AAQM) was carried out at 8 locations with a frequency of two days per week for three months during Pre-Monsoon Season (Mar., 2023 to May., 2023). The minimum and maximum values of PM10 and PM2.5 for all the 8 AAQM stations were found between 46.2 to 85.6 $\mu\text{g}/\text{m}^3$ and 26.9 to 54.5 $\mu\text{g}/\text{m}^3$, respectively. The results thus obtained indicate that the concentrations of PM_{2.5}, PM₁₀, SO₂, NO_x and CO in the ambient air are well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.

3.2.4 **Water Quality**

To assess the physical and chemical properties of water in the region, water samples from 6 ground water and 3 surface water locations were collected and analyzed from various water sources around the project site.

- ❖ The ground water quality results are given below:
 - pH ranges in between 7.22 to 7.96
 - Total hardness in the range of 370.42 to 515.44 mg/l
 - Sulphates in the range of 70.86 to 98.63 mg/l

The results indicate ground water is in conformity with IS-10500 standards.

- ❖ The surface water quality results are given below:
 - pH ranges in between 7.79 to 7.93
 - Total hardness in the range of 180.14 to 220.18 mg/l
 - Sulphates in the range of 31.67 to 40.36 mg/l

The results indicate surface water is in conformity with IS-10500 standards

3.2.5 Noise Levels

Ambient noise levels were measured at 6 locations around the project site. The daytime and night time noise levels in all the residential locations were observed to be within the permissible limits.

3.2.6 Ecological Environment

Based on the field studies and review of published literature, it is observed that there is no schedule-I species and sanctuaries or national park in 10 km radius from plant area.

3.2.7 Social Environment

The study area (10 km radius) area has a total population of 76,026 according to 2011 census. Total male population is about 51.0 % and total female population is around 49.0 %. The average literacy rate 64.31 % is moderate in the region

3.3 Biological Environment

Aegle marmelos (Bael), Azadirachta indica (Neem), Albizzia lebbeck (Sirish), Mangifera indica (Aam), Acacia Nilotica (Babul), etc. are dominant trees in the study area. Nerium indicum (Kanher), Calotropis procera (Rui), Annona squamosa (Sitaphal) are the common shrubs in the study area.

Tribulus terrestris (Sarata), Cassia tora (Takla), Alocasia cucullate (Dwarf elephant ears), etc are common herbs in the study area. Cynodon dactylon (Doob), Cyperus castaneus etc. are common grass in the study area Other palm species such as Cocos nucifera (coconut), Areca catechu (Beetle nut) etc. are also found common during the survey.

Funambulus palmarum (Five palm striped Squirrel), Rattus rattus (Common Rat), Capra hircus aegagrus (Goat), and Bos taurus (Cow) are common mammals that are found in study area. Calotes versicolor (Garden lizard), etc., are common reptiles that are found in study area. Indian pond frog, Indian bull Frog etc are common Amphibians that are found in study area.

3.4 Socio-Economic Environment

An essential part of environmental study is socio-economic environment incorporating various facts related to socio-economic conditions in the area, which deals with the total environment. Socio economic study includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature of aesthetic significance such as temples, etc. at the baseline level. This helps in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

It can undoubtedly be said that this proposed expansion in grinding unit will provide direct and indirect employment and improve the infrastructural facilities and standards of living of the area. In the nearby areas, gross economic production will increase substantially due to the proposed the grinding unit in the area.

3.5 Land Use & Land Cover

The details of LULC study in the 10 Km radius of the plant site has given in **Table E12**.

TABLE-E12: LULC STATUS OF THE STUDY AREA

Sr. No.	Land Use	Area (Ha)	Area (%)
Built-up Land			
1	Human Settlement	1365.49	3.80
2	Industrial area	762.36	2.12
Agricultural land			
3	Vegetation/Plantation	4167.91	11.59
4	Cropland/agricultural land	27925.62	77.64
Waste Lands			
5	Open Scrub Land/Waste Land	828.43	2.30
Water Body			
6	Surface Water bodies	180.39	0.50
Other			
7	Mine Area	191.90	0.53
8	Railway	41.85	0.12
9	Road	430.55	1.20
10	Others(Solar Plant & Power House)	66.68	0.18
11	Reserve Forest (R.F.)	6.34	0.02
Total		35967.52	100

3.6 Traffic Study

Due to the expansion project, there will be addition of Trucks/Troller vehicles in the existing traffic. The LOS value is “C-Good/Average/Fair” for NH-465 E. Thus, it can be concluded that the present road network is good enough to bear the increased traffic load. However, internal and nearby roads will be maintained as and when needed to facilitate transportation.

4.0 ANTICIPATED IMPACTS & MANAGEMENT PLAN

The anticipated impacts and management plan for the proposed expansion project is given in **Table E13**.

TABLE- E13: IMPACT ANALYSIS AND MITIGATION MEASURES

Sl. No.	Attributes	Impact	Mitigation	Management Plan
Construction Phase				
1	Air	Increase in Particulate Matter (dust) and NO _x concentration due to leveling, grading, earthwork and foundation works and Heavy vehicular movement.	<ul style="list-style-type: none"> Measures to suppress the particulate matter during site preparation. Measures to reduce SO₂, NO_x due to vehicular movement. 	<ul style="list-style-type: none"> Development of sufficient vegetation. Construction equipment having valid PUC certificate will be deployed during the activity to restrict exhaust emission.

Sl. No.	Attributes	Impact	Mitigation	Management Plan
				<ul style="list-style-type: none"> • Proper upkeep and maintenance of vehicles • All vehicles will be maintained in well condition by regular preventive maintenance to reduce the exhaust level. • Speed of vehicles within the plant premises will be limited to 10 km/hr. • Treated sewage water will be used for dust suppression
2	Water	Domestic wastewater will be generated from the construction site.	Proper treatment of waste water generated and reutilization of the same.	Domestic waste water (35 KLD) generated from office toilets, canteen and guest house will be treated in STP of 44 KLD capacity and treated water from STP will be used for greenbelt development / plantation. No water/effluent will be discharged outside the plant boundary
3	Soil	<ul style="list-style-type: none"> • Topsoil removal • Soil Compaction - Compaction is a common problem during the construction activity due to the movement of large number of heavy machineries over the soil. • Soil Contamination - Due to the accumulation of cement, used for construction purpose, on the top soil results in the lack of oxygen and hence, reducing the soil porosity. 	<ul style="list-style-type: none"> • Reutilization of topsoil and prevention of runoff of the same. • Measures to minimize wastage of materials. • Segregation and recycling of wastes generated. 	<p>Topsoil for the site preparatory activities will be kept with surrounding barricade and will be reutilized for landfilling and greenbelt area.</p> <p>Other waste generated from the construction activity will be utilized in leveling of land.</p> <p>To reduce the soil compaction, working on the wet soil will be avoided</p> <p>Mention quantity, disposal methods like authorized recyclers for waste oil and buyback arrangement for used batteries etc.</p>

Sl. No.	Attributes	Impact	Mitigation	Management Plan
		Soil Degradation -Soil stockpiling during the construction phase will increase the risk of mixing of top soil with the sub-soil components & other construction material, thereby reducing its quality.		
4	Noise	<ul style="list-style-type: none"> • Movement /operation of transport and construction vehicles / equipment • Transportation of equipment, materials and people • Other important activities involved in construction stage such as excavation, earthmoving, compaction, concrete mixing, crane operation, steel erection, mechanical /electrical installation. • Piling work during laying down of foundation for infrastructure. 	<ul style="list-style-type: none"> • Measures to reduce noise level of vehicles and machineries. • Keeping the noise levels as prescribed by CPCB- 90 dB (A). 	<ul style="list-style-type: none"> • Speed of vehicles within the plant premises will be limited to 10 km/hr. • Construction activities & HEMM operations will be during the daytime only. • Equipment will be kept in good condition to keep the noise level within the prescribed norms. • Barricading the construction site
5	Biological Environment	<ul style="list-style-type: none"> • Particulate matter emission may cause migration of wild animals and birds. • Fugitive emissions (dust) may impact the terrestrial flora. • Increased noise level due to running of machinery may scare the wild fauna and force them to migrate to other areas. 	<ul style="list-style-type: none"> • Awareness programmes for employees to protect the nature. • Proper maintenance of machineries by oiling and greasing at regular intervals 	<ul style="list-style-type: none"> • Training/education will be provided to employees for giving awareness of the importance to conserve nature. • Use of water sprinklers on roads to avoid particulate matter. • Transport vehicles and machinery will be properly maintained and periodically checked for pollution level to reduce noise and gaseous emission

Sl. No.	Attributes	Impact	Mitigation	Management Plan
				in the surrounding environment.
6	Occupational Health & Safety	<ul style="list-style-type: none"> Exposure to dust, Noise exposure, Physical hazards 	<ul style="list-style-type: none"> Distribution of PPEs should be done. Annual Health Surveillance Assessment. 	<ul style="list-style-type: none"> Ear plugs, ear muffs & all necessary protective equipment will be provided to Workers. Well-equipped Occupational Health Centre with adequate paramedical staff Routine and special medical investigation related to occupational health Health surveillance and maintenance of health record Rules and procedure for effective implementation of Safety Health and Environment policy and made to know all employees.
Operation Phase				
1	Air	Dispersion of particulate matter from the material transfer points & packing plant	<ul style="list-style-type: none"> Use of efficient APCEs to control the fugitive dust emissions. Maintaining proper stack height. 	<ul style="list-style-type: none"> Air pollution control equipment such as bag filters and stack height of 30 m at Cement Mill. Bag filters will be provided before venting out the gases. The bag filters used will be 99.9 % efficiency. Dust extraction arrangement for packing machines will be provided and dust collected in Bag filters will be recycled back to the process.
2	Water	Domestic waste water will be generated	Proper treatment of waste water generated and reutilization of the same.	Domestic waste water (35 KLD) generated from office toilets, canteen and guest house will be treated in STP of 44 KLD

Sl. No.	Attributes	Impact	Mitigation	Management Plan
				capacity and treated water from STP will be used for greenbelt development / plantation. No water/effluent will be discharged outside the plant boundary
3	Soil	Soil degradation due to deposition of particulate matter & cement	Efficient APCEs will be provided and stacks provided at packing plant Greenbelt development	Waste will be collected & segregated into biodegradable & non-degradable. Further, biodegradable waste will be converted into compost for utilization in greenbelt development and non-degradable waste will be sold to authorized vendor from CPCB/SPCB as per scientifically in compliance of Solid Waste Management rules 2016, as amended thereof.
4	Noise	Noise generated from the operation of machineries	<ul style="list-style-type: none"> Greenbelt development, Distribution of safety equipment such as earplugs, earmuffs etc. is will be done Proper greasing & oiling of machineries at regular intervals 	<ul style="list-style-type: none"> Properly insulated enclosures will be provided to equipment making excessive noise. Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
5	Biological Environment	<ul style="list-style-type: none"> Particulate matter emissions from stack and fugitive emissions due to transportation activity & material handling may degrade the soil quality of surrounding environment that may affect the biodiversity of surrounding environment. Particulate matter emission may cause 	<ul style="list-style-type: none"> Greenbelt development Use of efficient APCEs Proper maintenance of machineries by oiling and greasing at regular intervals 	<ul style="list-style-type: none"> Training/education will be provided to employees regarding the importance to conserve nature. Bag filter with 99.9% efficiency will be installed to control particulate matter emissions from the operations. Use of water sprinklers on roads to avoid particulate matter.

Sl. No.	Attributes	Impact	Mitigation	Management Plan
		<p>migration of wild animals and birds.</p> <ul style="list-style-type: none"> Fugitive emissions (dust) may impact the terrestrial flora. The settlement of dust on the laminar surface of plants can impede the efficiency of photo-transduction and thereby, affect the productivity of plants. In some of the plant, it may also smother the leaf surface blocking stomata, resulting in reduced transpiration. Increased noise level due to running of machinery may scare the wild fauna and force them to migrate to other areas. 		<ul style="list-style-type: none"> Periodical maintenance work such as oiling and greasing will be done for machineries.
6	Occupational Health & Safety	<ul style="list-style-type: none"> Exposure to dust, Noise exposure, Physical hazards 	<ul style="list-style-type: none"> Distribution of PPEs & Periodical Health Surveillance Assessment should be done 	<ul style="list-style-type: none"> Proper maintenance of machineries Installation of compressors in closed buildings. Annual Health Surveillance Study will be carried out. Adequate dust control systems will be implanted and good housekeeping will be practiced

5.0 ALTERNATIVE ANALYSIS

5.1 Alternative Site

M/s UltraTech Cement Limited (Unit: Hotgi Cement Works) is proposed to expand the cement production capacity of Standalone Grinding Unit from 4.0 Million TPA to 7.0 Million TPA within the existing plant premises which is already under possession of the company.

Hence, no alternative sites have been analyzed for the proposed expansion project.

5.2 Alternative Technology

The existing grinding unit is using the technology- Ball mill with Roller Press. The whole technology is Dry process, energy efficient and keeps the emission under 30 mg/Nm³. This technology is one of the best and proven for standalone grinding unit; hence no alternative technology has been considered.

6.0 ENVIRONMENTAL MONITORING PROGRAM

6.1 Ambient Air, Noise, Water and Soil Quality

A monitoring schedule is very important in order to ensure that the wastewater and emissions conform to the standard for which control measures have been designed. As it is required that installation and operation of water pollution control facilities should limit concentration and quantum of pollutants released to the environment properly, regular continuous monitoring of flow and pollutants should be done. A comprehensive monitoring program for construction phase and operation phase is suggested in **Table E14**.

TABLE-E14: POST-PROJECT ENVIRONMENT MONITORING MATRIX

S. No	Attributes / Aspects	Monitoring Parameter	Location	Frequency	Responsibility
Construction Phase					
1.	Ambient Air quality Monitoring	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x as per NAAQS, 2009	04 locations in plant boundary	Twice a Week	Environment engineer
2.	Water Quality and Water level	pH, Turbidity, Colour, Odour, Taste, TDS, Total Hardness, Calcium hardness, Magnesium hardness, Chloride, Fluoride, Sulphate, Nitrates, Alkalinity, Iron, Copper, Manganese	3 locations of Water Quality and Water Level within the plant boundary.	As per CGWA NOC condition / Pre-Monsoon & Post Monsoon	Environment engineer
3.	Noise Level	Day & Night dB (A)	04 locations at Plant Boundary	Once in a Month	Environment engineer
4.	Medical Checkup	Spirometry, Audiometry, Biochemical Parameter (Sugar, Blood), ECG, Vision Test and Chest X-ray	Pre-placement Medical Checkup Periodical Examination	Yearly as per Factories Act	Environment engineer, Plant Unit Head and HR Department
Operation Phase					
1.	Meteorological monitoring	Wind speed, Wind direction, Ambient temperature, Relative humidity, Rainfall	Project Site	Hourly continuous	Environment engineer and team
2.	Ambient Air quality Monitoring	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x as per NAAQS, 2009	04 locations in plant boundary	Twice a Week	Environment engineer and team

S. No	Attributes / Aspects	Monitoring Parameter	Location	Frequency	Responsibility
3.	Fugitive Emission Monitoring	SPM	Cement Mill, Packing Plant, Raw Materials Handling Area	Monthly	Environment engineer and team
4.	Stack Monitoring	PM	Cement Mill Stack	Monthly / Continuous Online Monitoring	Environment engineer and team
5.	Water Quality	pH, Turbidity, Colour, Odour, Taste, TDS, Total Hardness, Calcium hardness, Magnesium hardness, Chloride, Fluoride, Sulphate, Nitrates, Alkalinity, Iron, Copper, Manganese	3 locations of Water Quality within the plant boundary.	As per CGWA NOC condition / Pre-Monsoon & Post Monsoon	Environment engineer and team
6.	Water Level	-	3 locations of Water Level within the plant boundary.	As per CGWA NOC condition / Pre-Monsoon & Post Monsoon	Environment Engineer
7.	Sewage Treatment Plant (inlet & Outlet)	pH, BOD, Oil & Grease, TSS	Sewage Treatment Plant (Outlet) as per CTO	Once in a Month	Environment engineer and team
8.	Noise Level	Day & Night dB (A)	04 locations at Plant Boundary	Once in a Month	Environment engineer
9.	Medical Checkup	Spirometry, Audiometry, Biochemical Parameter (Sugar level, Blood), ECG, Vision Test and Chest X-ray	Pre-placement Medical Checkup Periodical Examination	Yearly as per Factories Act	Environment engineer, Plant Unit Head and HR Department

6.2 Emission and Discharge from the Plant

The details of emission monitoring system installation are given in **Table E15**.

TABLE-E15: DETAILS OF EMISSION MONITORING SYSTEM INSTALLATION

Particulars	Off-Line Monitoring as per (3rd party monitoring – Monthly)	On-Line Monitoring Parameters
A. Stack Monitoring		
Grinding Mill	CPCB standard & Consent to Operate	PM
B. Domestic Wastewaters		
Inlet & Outlet of the STP	CPCB standard & Consent to Operate	pH, BOD, COD, TSS, Conductivity residual Cl and Fecal Coliform.

6.3 Greenbelt Development

- Total project area is 98.39 Ha, out of which approx. 43.69 ha (i.e., 44.40 %) has already been developed under greenbelt and plantation.
- The greenbelt will develop with 2500 trees/Ha and with survival rate of 90% after gap filling and development of the area allocated for greenbelt.

6.4 Social Parameters

The company will propose plans to supplement the existing governmental programs among the local population. Environmental awareness is being/will be created among people by organizing awareness camps. Keeping the view of achieving the national objective of sustainability, developmental activities will be carried out.

7.0 ADDITIONAL STUDIES

7.1 Risk assessment

Risk assessment is the measure of quantitative or qualitative value of risk related to a concrete situation and a recognized threat. Activities requiring assessment of risk due to occurrence of most probable instances of hazard and incident are both onsite and off-site. Details of Risk Assessment and mitigation measures to be adopted is given in **Table E16**.

TABLE-E16: RISK ASSESSMENT & MITIGATION MEASURES

S. No.	Activity	Associated hazards	Associated risk/ health impact	Mitigation Measures
1	Storage & handling of raw material	Dust	Air pollution due to fugitive emissions	<ul style="list-style-type: none"> • Use of PPEs. • Continuous water sprinkling • Training to workers for proper handling • Proper system with high efficiency bag filters for loading & unloading operations • Firefighting & first aid facility. • Covered Storage provision • Proper housekeeping facilities
2	APCD failure	Dust	Air pollution	<ul style="list-style-type: none"> • Regular monitoring & inspection will be done. • The plant shall be stopped on APCD failure
3	Working at height	Slip, trips & falls of operators	Physical injuries	<ul style="list-style-type: none"> • Individual alertness of the workers – by imparting training. • First aid boxes shall be provided
4	Electrical maintenance work	Electric shock, short circuits in power room	Electrical shocks, Injury or burn	<ul style="list-style-type: none"> • Regular checking and maintenance of electrical units • Individual alertness of the workers – by imparting training. • Use of PPEs • Provision of First aid box
5	Working near noise	High noise	Noise induced hearing losses	<ul style="list-style-type: none"> • Provision of PPEs to the workers.



S. No.	Activity	Associated hazards	Associated risk/ health impact	Mitigation Measures
	producing equipment			

7.2 Occupational Health Measures

Details of Occupational Health Measures to be adopted at plant is given in **Table E17**.

TABLE-E17: OCCUPATIONAL HEALTH MEASURES

Hazard	Measures
Dust	<ul style="list-style-type: none"> ▪ Implementation of adequate dust control systems and good housekeeping. ▪ Water sprinkling in the places where dust dispersion can occur. ▪ Regular sweeping of roads within plant premises ▪ Providing dust masks to employees working in handling and storage yards. ▪ Periodic work zone monitoring
Noise	<ul style="list-style-type: none"> ▪ Proper maintenance of machineries ▪ Installation of compressors in closed buildings ▪ Regular monitoring of noise level ▪ Display of noise level with permission level ▪ Display instructions for using PPEs at high noise level area ▪ Periodic health checkup for Audiometry for the individuals working in high noise area.
Electrical Hazards	<ul style="list-style-type: none"> ▪ Proper Earthing as per IS 3043 will be done ▪ Double Insulated Tools ▪ Over Load Protection ▪ Protection Against Leakages (G.F.C.I.) ▪ Lightning Protection ▪ Protection against Static Electricity and safely using ladders and scaffolds
Fire and Explosion	<ul style="list-style-type: none"> ▪ Suitable fire extinguisher, fire buckets and fire hydrant system. Dry power type in oil and fire buckets will be kept near transformer, cable, general store and office area. Hydrant line at all location in plant area along with clinker storage area. Fire tender is to be kept ready at plant main gate. ▪ Oil and Flammable Gases storage area will be fenced and declared as Fire Hazardous Area-No Smoking Area” ▪ Permit and safety instruction will be given to use welding / gas cutting in the area of oil, gas, and bag go down. ▪ Predictive interlock in transformers so as to give alarm and trip the system. ▪ Adequate height of brick walls for separation of all transformers, soak pits for storage of oil leakages from transformers will be done.
Other Hazards	<ul style="list-style-type: none"> ▪ Structural soundness of silos and buildings. ▪ Installing light arrestors at all tall buildings. ▪ Permit to be taken to work at height with work instruction to use safety belts etc. ▪ Testing of all lifting tools, tackles and pressure vessel to avoid failure. ▪ Safe working pressure maintained in air receiver. ▪ Safe working load on cranes and ropes etc. ▪ Good house-keeping & Speed limit of vehicles is/will be 20 km/hr. inside the proposed plant area.



	<ul style="list-style-type: none">▪ Display of emergency number at all suitable location.▪ Fire tender, ambulance and emergency staff ready at the plant main gate at all the time▪ First aid kits are kept at the sites and training provided▪ Use of mobile while driving, alcohol, smoking etc. are ban inside the proposed plant area.▪ Proper illumination in plant area (100 to 150 LUX), office (250 to 300 LUX) and road area (20 to 30 LUX)
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7.3 **Public consultation**

The Draft EIA/EMP report is being submitted to SPCB, Maharashtra for public hearing. Action plan will be prepared and submitted after the conduction of public hearing.

7.4 **Action Plan to Address the Issues Raised During Public Consultation**

Action plan will be provided after the completion of public hearing.

8.0 **PROJECT BENEFITS**

The proposed expansion project will provide various benefits across the nearby areas which are attributed below:

8.1 **Employment Benefits (Direct & Indirect) due to the Project**

Total manpower for the project is estimated around 60 persons in operation phase (10 Permanent and 50 Contractual) apart from this 720 manpower estimated during construction phase (20 Permanent and 700 Contractual). Recruitment is being/will be done on the basis of skills & requirement. Details of manpower requirement is given in **Table E8**.

8.2 **Economic Benefits**

Special emphasis on financial benefits is being/will be given to the local people. Business opportunities for the local people will be enhanced like transport of cement in the market, maintenance & housekeeping contract work etc.

8.3 **Social Benefits**

The operation zone for the Socio-economic development activities for the proposed project will be provided to the nearby villages of project site. The company will propose plans to supplement the existing governmental programs among the local population. Environmental awareness is being/will be created among people by organizing awareness camps. Keeping the view of achieving the national objective of sustainability, developmental activities will be carried out

9.0 **COST FOR ENVIRONMENTAL POLLUTION CONTROL MEASURES**

Capital cost for the expansion project is Rs. 350.0 Crores. The budget proposed for the proposed project and that for the environmental protection measures are given in **Table E18**.

TABLE-E18: COST BREAK UP OF EMP

S. No.	Description of item	Cost (Rs. In Cr)			
		Existing Project	Annual Recurring	Proposed Expansion Project	Annual Recurring
1.	Air Pollution Control Systems	44.89	0.17	22.7	0.15
2.	Sewage Treatment Plant/Water Treatment Plant	0.12	0.04	0.1	0.05
3.	Environmental Monitoring Instruments and Laboratory	1.37	0.12	0.8	0.1
4.	Greenery Development & maintenance	0.60	0.20	0.5	0.15
5.	Safety and Risk Management	1.02	0.60	0.9	0.7
6.	Others	-	0.60	-	0.6
Total		48.0	1.73	25.0	1.75

