

EXECUTIVE SUMMARY
OF
DRAFT ENVIRONMENTAL IMPACT
ASSESSMENT REPORT

FOR

Expansion of Integrated Cement Project
(Clinker - 2.85 to 6.15 MTPA, Cement - 4.75 to
10 MTPA and WHR - 45 MW) by Installation of new Line-II

Villages: Upparwahi & Kukkudsat (Taluka: Korpana) and
Villages: Bhendvi & Hardona (Taluka: Rajura),
District: Chandrapur, Maharashtra

APPLICANT



M/s. Ambuja Cements Limited

(Unit: Maratha Cement Works)

Villages: Upparwahi & Kukkudsat (Taluka: Korpana) and
Villages: Bhendvi & Hardona (Taluka: Rajura), District: Chandrapur, Maharashtra - 442 908

E-mail: sanjeewkumar.singh@ambujacement.com

Phone: 0124 - 4565328, 0124 - 4531180

INDEX

S. No.	Particulars	Page No.
i.	Project name and location (Village, District, State, Industrial Estate (if applicable))	1
ii.	Products and capacities - If expansion proposal, then existing products with capacities and reference to earlier EC.	1
iii.	Requirement of land, raw material, water, power, fuel with source of supply (Quantitative)	2
iv.	Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes. Material balance shall be presented.	4
v.	Measures for mitigating the impact on the environment and mode of discharge or disposal	7
vi.	Capital cost of the project, estimated time of completion	8
vii.	Site selected for the project-Nature of land- agricultural (single/double crop), barren, Govt./private land, status of its acquisition, nearby (in 2-3 km) water body, population, within 10 km other industries, forest, eco-sensitive zones, accessibility (Note- in case of industrial estate this information may not be necessary).	8
viii.	Baseline environmental data- air quality, surface and ground water quality, soil characteristic, flora and fauna, socio economic condition of the nearby population.	9
ix.	Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.	11
x.	Likely impact of the project on air, water, land, flora-fauna and nearby population	12
xi.	Emergency Preparedness Plan in case of natural or in plant emergencies	13
xii.	Issues raised during public hearing (if applicable) and response given	13
xiii.	Socio-Economic Development Plan with proposed expenditure	13
xiv.	Occupational Health Measures	13
xv.	Post project monitoring plan	15



EXECUTIVE SUMMARY

i) Project name and location (Village, District, State, Industrial Estate (if applicable))

M/s. Ambuja Cements Limited (Unit: Maratha Cement Works) is now proposing Expansion of Integrated Cement Project (Clinker - 2.85 to 6.15 MTPA, Cement - 4.75 to 10 MTPA and WHR - 45 MW) by Installation of new Line-II at Villages - Upparwahi & Kukkudsat (Taluka - Korpana) and Villages – Bhendvi & Hardona (Taluka - Rajura), District - Chandrapur, Maharashtra.

As per EIA Notification dated 14th Sept., 2006, as amended thereof; the project falls under Category “A”, Project or Activity ‘3(b)’ Cement Plants.

ToR issued by MoEFCC, New Delhi vide letter no. J-11011/292/2006-IA.II (I) dated 04th March, 2021 and as amended on 26th May, 2022

ii) Products and capacities - If expansion is proposed, then existing products with capacities and reference to earlier EC.

a) Existing granted products with capacities along with proposed project proposal

S. No.	Particulars	Unit	Existing Granted Capacity (Line - I)	Proposed Line - II	Total Capacity after Expansion
1.	Clinker	Million TPA	2.85	3.3	6.15
2.	Cement (OPC, PPC, PSC, Composite & Masonry Cement)	Million TPA	4.75	5.25	10
3.	WHR	MW	-	45	45
4.	CPP	MW	60	-	60
5.	D.G. Set	MW	10	-	10
6.	AFR Feeding System (Co-Processing of Non-Hazardous & Hazardous waste)	TPD	650	850	1500

Source: Pre-Feasibility Report

b) Existing Clearances & Consents

S. No.	Particulars	Units	Existing Granted Capacity	Environmental Clearance for Existing Capacity dated 03 rd Nov., 2006	Consents for Existing Capacity
1.	Clinker	Million TPA	2.85	Vide MoEFCC letter no. J-11011/292/2006-IA.II(I) dated 03 rd November, 2006 {Copy enclosed as Annexure 1 (a) }.	Vide MPCB letter no. Format 1.0/CAC/UAN No. MPCB-CONSENT-0000119677/CR-2202000274 dated 3 rd February, 2022 and is
2.	Cement (OPC, PPC, PSC, Composite, Masonry Cement)	Million TPA	4.75		
3.	CPP	MW	60		

S. No.	Particulars	Units	Existing Granted Capacity	Environmental Clearance for Existing Capacity dated 03 rd Nov., 2006	Consents for Existing Capacity
4.	D.G Set	MW	10		valid up to 31 st October, 2022. {Copy enclosed as Annexure 1 (c) }. Renewal of CTO is under process.
5.	AFR Feeding System (Co-Processing of Non-Hazardous & Hazardous waste)	TPD	650	-	

o Compliance of the conditions stipulated in EC & CTO is being submitted to the concerned authorities on regular basis.

o Status of the compliance of the conditions stipulated in the EC for the existing capacity of the plant has been submitted to RO, Integrated Regional Office, MoEFCC, Nagpur. The submission receipt is enclosed as **Annexure - 1 (b)** along with this EIA/EMP Report.

iii) **Requirement of land, raw material, water, power, fuel with source of supply (Quantitative)**

- a. **Land requirement - Total** Plant area is 194.65 ha (main plant area is 121.41 ha and 73.65 ha for all the associated facilities of the plant i.e., residential colony, truck parking area and railway siding); proposed expansion will be done within the existing plant premises. Out of the total existing plant area of 121.41 ha; 45.89 ha has already been developed under greenbelt/ plantation. In addition to this, 24.17 ha area i.e., 33% of the additional area of 73.34 ha will be further developed under greenbelt / plantation. Thus, total area under greenbelt / plantation will be 70.06 ha i.e., 36% of total plant area of 194.65 ha.
- b. **Raw material Requirement & Fuel requirement**

Raw Material

S. No.	Raw Material	Requirement (Million TPA)			Source	Approx. Distance & Mode of Transportation
		Existing (Line - I)	Additional (Line - II)	Total After Expansion (Line I & II)		
1.	Limestone & Shale	4.2	4.8	9.0	Captive Limestone Mines	By Belt Conveyor from mine
2.	(Mineral) Gypsum	0.219	0.438	0.657	Thailand, Oman, SRF Limited, Navin Fluorine International Ltd, Hindalco	600 to 660 km from Port / Rail, 700-800 km by Road
3.	Chemical Gypsum (Cat. 23.1, 26.1, 26.2, 34.2, 34.3, 35.3 & 38.10)	0.148	0.394	0.542	SRF Ltd, Gujarat Fluorochemicals Ltd, Navin Fluorine International Ltd, Colourtex Industries Pvt Ltd.	700-800 km by Road
4.	Fly ash	1.825	3.65	5.475	Chandrapur Super Thermal, Dhariwal Infrastructure, EMCO Energy Ltd, coal based thermal power plants.	50-250 km by Road

S. No.	Raw Material	Requirement (Million TPA)			Source	Approx. Distance & Mode of Transportation
		Existing (Line - I)	Additional (Line - II)	Total After Expansion (Line I & II)		
5.	Bauxite	0.0912	0.0985	0.1897	M/s. Vishwakarma Mining Co., M/s. Radhey Krishna, M/s. Bagmar Bauxite Industries, M/s. Shankar Trading	500-600 km by Road/Rail
6.	Iron Ore	0.109	0.116	0.225	Local supplier from Nagpur	160 km by Road
7.	Slag	1.825	3.65	5.475	Local supplier from Nagpur	160 km by Road
8.	Lime Sludge (Alternative Raw materials from paper mills)	0.091	0.273	0.364	Local supplier from Nagpur	160 km by Road

Source: Pre-feasibility Report

Fuel Requirement

Details regarding quantity of fuel required, their source along with distance and mode of transportation are given below -

S. No.	Name	Quantity (TPD)			Calorific value (Kcal. /kg)	% Ash	Source	Approx. Distance & Mode of Transportation
		Existing	Additional	Total After Expansion				
For Cement Plant								
1.	Coal	1400	1700	3100	3000 to 8200	1- 70 %	WCL & imported	55 to 800 km Rail & Road
	Coal + Petcoke	1100 + 300	0	2400 + 700			Local & imported	
2.	Carbon Black (Alternate Fuel)	250	300	550	5000-8000	1- 5 %	Local supplier from Nagpur	160 km by Road
3.	LDO (is used during start-up firing after shut down of boiler)	4 KLD	3 KLD	7 KLD	9500-10000	-	Local supplier from Nagpur	160 km by Road
4.	Furnace Oil	50 KLD	0	50 KLD	9500-10000	-	Local supplier from Nagpur	160 km by Road
5.	Alternative Fuels	650	850	1500	2250-2700	25- 35%	Within & Outside Maharashtra	50-550 Km
For CPP								
6.	Coal	1300	0	1300	3000 to 8200	1- 70 %	WCL & imported	55 to 800 km Rail & Road

Source: Pre-Feasibility Report

c. Basic requirement for the project

S. No.	Particular	Total requirement			Source
		Existing	Additional	Total Capacity	
1.	Water (KLD)	7140	2330	9470	Bore well, Pagadigudam Dam and Mine pits
2.	Power (MW)	60	40	100	CPP, WHRS & DG set (for back up)
3.	Manpower Requirement	1400	Regular - 50	1600	Regular - Nearby Villages/Area/Outside and Contractual - Nearby Villages/Area.
			Contractual - 150		
			Total - 200		

Source: Pre-feasibility Report

iv) Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes. Material balances shall be presented.

The Cement Plant is based on Dry Process Technology for Cement manufacturing with Pre-Heating and Pre-Calcliner Technology. M/s. Ambuja Cements Limited (Unit: Maratha Cement Works) is proposing Expansion in Cement project Production Capacity (Clinker - 2.85 to 6.15 MTPA, Cement - 4.75 to 10 MTPA and WHR – 45MW) by Installation of new Line - II at Villages Upparwahi & Kukkudsat (Taluka - Korpana) and Villages Bhendvi & Hardona (Taluka - Rajura), District Chandrapur, Maharashtra. The type of cement manufactured will be OPC, PPC PSC, Composite and Masonry Cement. Major steps involved in the process of Cement manufacturing in the Cement Plant are given as below:

- ❖ Transport of excavated limestone from Captive mines
- ❖ Limestone Handling & Storage
- ❖ Raw Mix Preparation & Homogenization
- ❖ Preheating, Calcination & Clinkerization
- ❖ Clinker Cooling
- ❖ Clinker Storage & Transport
- ❖ Cement Grinding, Storage, Packing & Dispatch

Waste Heat Recovery System

M/s. Ambuja Cements Ltd. (Unit: Maratha Cement Works) is also proposing installation of WHR of 45 MW capacity for re-utilization of exhaust gases from Pre-heater / Cooler to generate electric power and consequently reduce consumption of grid power through fossil fuel. Waste Heat Recovery System will consist of two types of boilers i.e., PH Boiler & AQC boilers to recover the heat from pre-heater and Kiln.

d. Gaseous emission, liquid effluent and solid and hazardous wastes

Particulars	Type	Source	Management
Emissions	PM, SO ₂ , NO _x	Cement Plant	<ul style="list-style-type: none"> ○ Installation of effective Air Pollution Control Equipment ○ Pyro-process itself acts as a long SO₂ scrubber ○ NO_x will be controlled through process optimization.

Particulars	Type	Source	Management
			<ul style="list-style-type: none"> ○ Incline Calciner for low NO_x formation. ○ Installation of analyzer at the inlet of Kiln to monitor O₂ & NO_x.
Fugitive Emission	SPM	Plant activities	<ul style="list-style-type: none"> ○ Covered Conveyor belts are being/will be used for transfer of raw materials / finished products inside the plant. ○ Fly ash is being/will be received through closed bulkers & fed into silo through pneumatic system. ○ Clinker, fly ash and Cement are being/ will be stored in the silos. ○ Gypsum, Coal and Pet-coke is being/will be stored in the covered sheds. ○ All the movement area is being/ will be concreted. ○ Vacuum sweeping is being/ will be used for better housekeeping. ○ Greenbelt / plantation is being/ will be done along the plant boundary to attenuate air pollution
Process Waste Water	Waste water	RO Plant & WHRS	RO reject water & recycled blow down from WHRS & CPP is being/ will be used for water spraying on raw materials.
Domestic Waste water	Waste Water	Plant & Colony	<ul style="list-style-type: none"> ○ Domestic waste water generated from ACL-MCW plant is being/will be treated in STP proposed within premises & is being/will be re-used for greenbelt development ○ Sludge generated from STP is being/will be used as manure in greenbelt development/ plantation
Solid & Hazardous waste	Cement Dust	Cement Plant	Dust collected from various APCE is being/ will be totally recycled into the process.
	MSW	Plant & Colony	Bio-degradable waste is being/will be composted and non-degradable wastes will be disposed-off suitably
	STP Sludge	STP	STP Sludge is being/ will be used as manure for greenbelt development / plantation
	Used or Spent Oil	Plant Maintenance	Will be sold to CPCB authorized recycler / Co- processing in kiln
	Contaminated cotton rags		
Empty barrels			

e. Material Balance:-

Material / Mass Balance Diagram for manufacturing of OPC, PPC, PSC and Composite Cement is shown below –

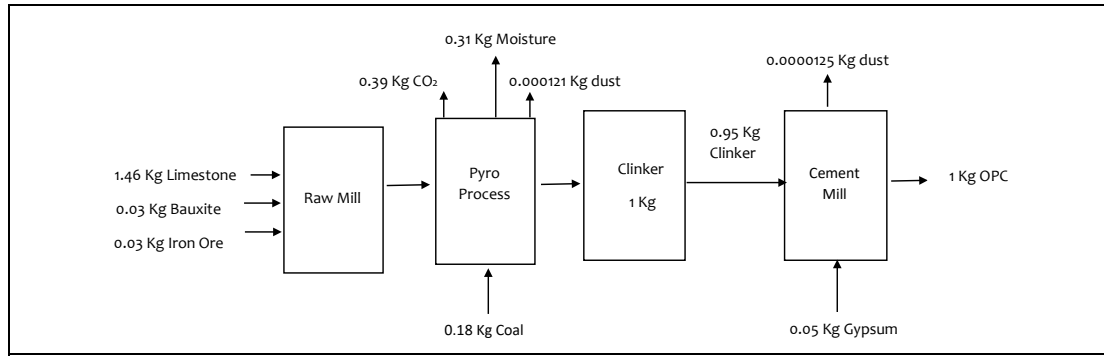


Figure 1 (a): Mass Balance Diagram for OPC

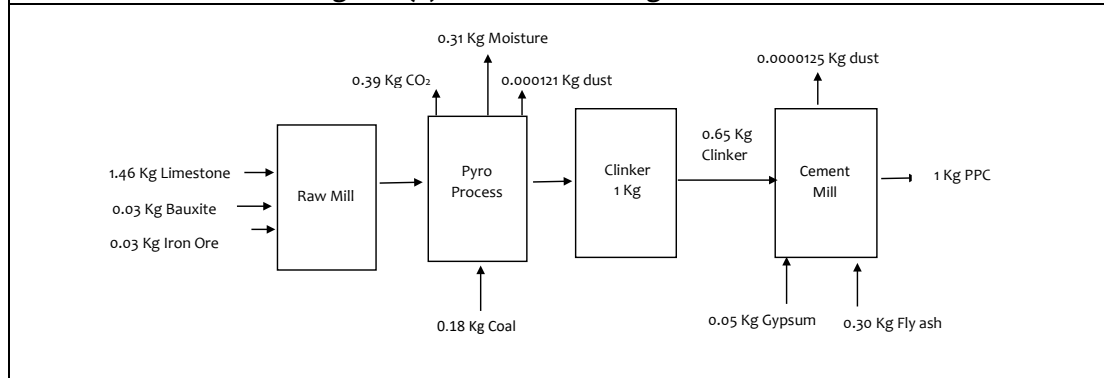


Figure 1 (b): Mass Balance Diagram for PPC

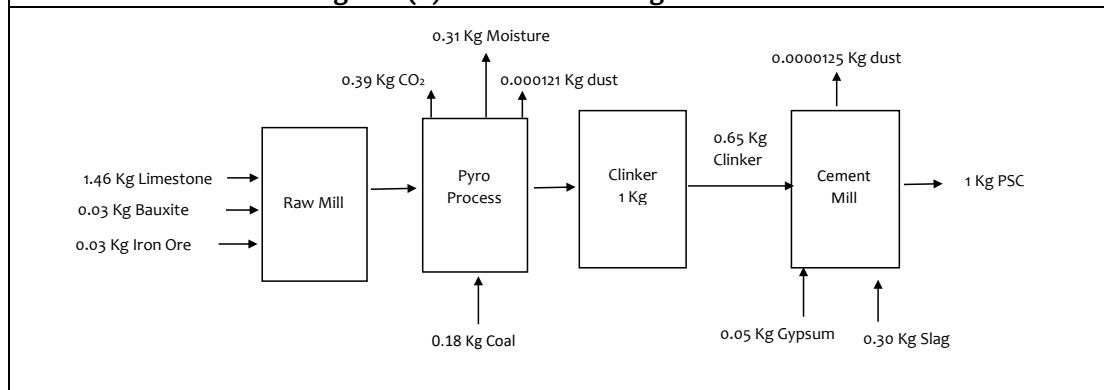


Figure 1 (c): Mass Balance Diagram for PSC

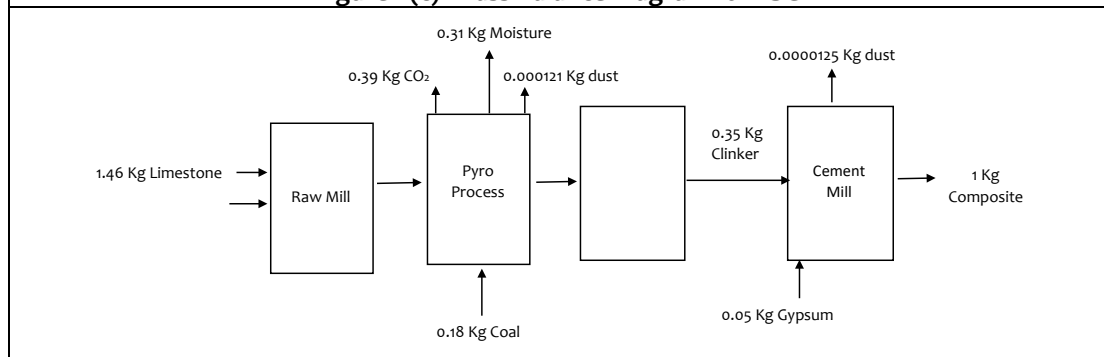


Figure 1 (d): Mass Balance Diagram for Composite Cement

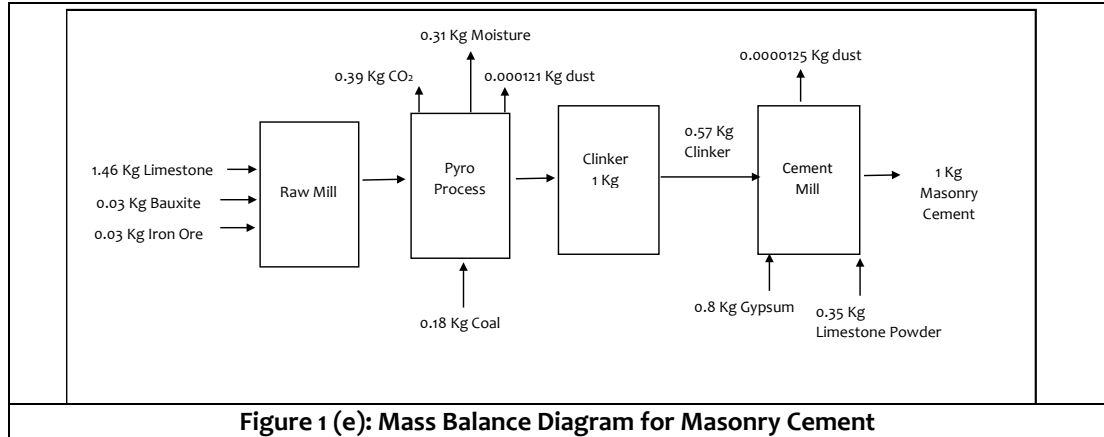


Figure 1 (e): Mass Balance Diagram for Masonry Cement

v) Measures for mitigating the impact on the environment and mode of discharge or disposal.

Particulars	Details
Air Quality Management	<ul style="list-style-type: none"> ⊗ Raw Mill / Kiln, Cement Mill, Coal Mill has been provided with bag house and Clinker Cooler & Boiler CPP has been provided ESP and further will be modified to maintain the emission level within limits of <30 mg/Nm³. ⊗ NOx will be controlled through process optimization. ⊗ Bag filters has been provided at all material transfer points to control dust emitted from various dust generating points in the plant. ⊗ Clinker, Cement is being/will be stored in silos and Gypsum in covered sheds. ⊗ Roads within the plant premises have been /will be concreted and regular cleaning by sweeping machine will be done to control fugitive dust emissions. ⊗ Greenbelt has been / will be developed around/ within the Plant premises and the same will be maintained in the future Proper maintenance of vehicles will be done to reduce gaseous emissions. ⊗ CPCB and CREP guidelines are being/will be followed. ⊗ Installation of CAAQMS and CEMS with the major stacks has been/will be done ⊗ Regular ambient air quality and stack emission monitoring is being/will be carried out as per CPCB / MPCB norms to ensure that ambient air quality standards will be met all the time.
Water Management	<ul style="list-style-type: none"> ⊗ No waste water is being/will be generated from the Cement manufacturing process ⊗ Blow down water from cooling towers and boiler is being/will be treated in neutralization pit and treated water is being/will be utilized in dust suppression. ⊗ Domestic wastewater generated from plant and colony is being/will be treated in STP and treated water is being/will be utilized for greenbelt development / plantation. ⊗ Therefore, no waste water is being/will be discharged outside the plant premises; ZLD will be maintained. ⊗ Waste water monitoring has been/ will be done regularly.
Rain Water Harvesting	<ul style="list-style-type: none"> ⊗ Available Rainwater for Artificial Recharge is 1134226 m³/Annum.
Noise Management	<ul style="list-style-type: none"> ⊗ Properly insulated enclosures with equipment generating excessive noise ⊗ Improved silencers within the equipment generating high noise ⊗ Isolation of continuously vibrating structures/ machines by proper and secured mountings ⊗ Installation of compressors and turbine in closed building

Particulars	Details
	<ul style="list-style-type: none"> ⊗ Proper maintenance, oiling and greasing of machines at regular intervals to reduce generation of noise. ⊗ Personal Protective Equipment (PPEs) like earplugs and earmuffs to the workers exposed to high noise level. ⊗ Development of Greenbelt of appropriate width inside the plant premises and at the plant boundary. ⊗ Regular monitoring of noise level and corrective measures accordingly.
Solid & Hazardous Waste Management	<ul style="list-style-type: none"> ⊗ Dust collected from various air pollution control equipment is being/will be recycled into the process. ⊗ Sewage sludge generated from STP is being/will be used as manure in greenbelt development/ plantation. ⊗ Solid waste generated from colony is being/will be disposed after segregating the waste into bio-degradable and non-degradable. ⊗ Small quantity of used oil and grease is being/will be generated, which is Hazardous waste like used or spent oil (Cat. 5.1), Contaminated cotton rags or other cleaning materials (Cat. 33.2) and Empty barrels/containers/liners contaminated with hazardous chemicals /wastes (Cat. 33.1) is being/will be sold to the CPCB authorized recyclers.
Greenbelt Development / Plantation	<ul style="list-style-type: none"> ⊗ Out of the total existing plant area of 121.41 ha; 45.89 ha has already been developed under greenbelt/ plantation. In addition to this, 24.17 ha area i.e., 33% of the additional area of 73.24 ha will be further developed under greenbelt / plantation. Thus, total area under greenbelt / plantation will be 70.06 ha i.e., 36% of total plant area of 194.65 ha. ⊗ Greenbelt development has already been done all along the road & plant boundary which will attenuate noise level, arrest dust & increase aesthetic beauty of the area. ⊗ Native Plant Species like Neem, Pipal, Ashok, Jamun and Babool etc., will be planted. ⊗ 102608 no. of total trees have already been planted till date.

vi) **Capital cost of the project, estimated time of completion.**

S. No.	Particular	Details
1.	Total Cost for the Project	Rs. 2000 Crores
2.	Cost for Environmental Protection Measures	Capital Cost: Rs. 165 Crores Recurring Cost: Rs. 1.74 Crores / annum

vii) **Site selected for the Project-Nature of land- agricultural (single/double crop), barren, Govt. /private land, status of its acquisition, nearby (in 2-3 km) water body, population, within 10 km other industries, forest, eco-sensitive zones, accessibility (Note- in case of industrial estate this information may not be necessary).**

a) **Nature of land**

Total plant area is 194.65 ha which includes both the cement plant & colony. The expansion will within the existing plant premises; which is Under Industrial Category. No forest land is involved.

b) **Status of its acquisition**

The expansion will be done within the existing plant premises; which is already under possession of M/s. Ambuja Cement Ltd. (Unit: Maratha Cement Works).

c) Nearby (in 2-3 km) water body, forest, eco-sensitive zones, accessibility

S. No.	Particulars	Details
A	Environmental Setting Details (with approximate aerial distance and direction from the nearest plant boundary)	
(i)	Nearest Village	Upparwahi (~0.3 km in North direction)
(ii)	Nearest City/ Town	Gadchandur (~4.8 km in WNW direction from Plant Site)
(iii)	Nearest National Highway / State Highway	NH-353B (Adjacent from Plant site)
(iv)	Nearest Railway station	Ballarshah Railway Station (~17.5 km in NE direction from Plant Site)
(v)	Nearest Airport	Nagpur Airport (~150 km in North direction from Plant Site)
(vi)	National Parks, Wildlife Sanctuaries, Biosphere Reserves within 10 km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve exist within 10 km radius study area.
(vii)	Reserve Forests (RF) / Protected Forests (PF) within 10 Km radius	Manikgarh Reserve Forest ~2.5 km in SSW direction
(ix)	River / Water Bodies (within 10 km radius)	<ul style="list-style-type: none"> ▪ Amal Nala Dam (4.5 km in WSW direction) ▪ Tutra Nala (adjoining the railway line) ▪ Mangi Nala (adjacent in NE direction) ▪ Chandanvayi Nala (2.0 km in NNE direction) ▪ Lokhandi Nala (4.0 km in WNW direction) ▪ Pedda Vagu (4.5 km in ENE direction) ▪ Vagu Nalla (4.5 km in WNW direction) ▪ Chikli Vagu (8.0 km in South direction) ▪ Khadak Nala (9.0 km in South direction)
(x)	Seismic Zone	Zone II [as per IS 1893 (Part-I): 2002]

d) List of industries within 10 km radius study area

The major industries within the 10 km radius area of the plant site are as follow:

S. No.	Name of the Industry	Type of Industry	Approx. Distance and direction from mine site
1.	M/s. Ambuja Cements Ltd.	Limestone Mines	500 m in North direction
3.	M/s. UltraTech Cement Ltd. (Manikgarh Cement Works)	Cement Industry	5.0 km in NW direction
4.	M/s. UltraTech Cement Ltd. (Manikgarh Cement Works)	Limestone Mines	8.82 km in SW direction
5.	M/s. UltraTech Cement Ltd. (Awarpur Cement Works)	Cement Industry	9.0 km in NW direction
6.	M/s. UltraTech Cement Ltd. (Awarpur Cement Works)	Limestone Mine	8.5 km in NW direction

viii) Baseline environmental data- air quality, surface and ground water quality, soil characteristic, flora and fauna, socio economic condition of the nearby population.

a) Baseline Environmental Data (Air, Noise, Water & Soil)

Baseline study of the study area was conducted during Summer Season (March to May, 2021). Ambient Air Quality Monitoring reveals that the concentrations of PM_{2.5} and PM₁₀ for all the 15 AAQM stations were in range of 24.2 to 53.8 µg/m³ and 48.4 to 84.9 µg/m³ respectively and were found to be well within the prescribed limits.

As far as the gaseous pollutants SO₂ and NO₂ are concerned, the prescribed CPCB limit of 80 µg/m³ has never surpassed at any station. The concentrations of SO₂ and NO₂ were found to be in range of 6.2 to 13.6 µg/m³ and 12.6 to 30.8 µg/m³ respectively. The concentration of CO is found to be maximum 0.92 mg/m³ at Village Gadchandur, minimum 0.54 mg/m³ at Village Saleguda and below detection limit at Villages Lakhmapur, Pipalgaon, Ramjiguda, Patan.

Out of the 15 sampling locations, monitoring parameters at all the sampling locations were found well within the prescribed NAAQS standards.

Ambient noise levels were measured at 12 locations around project site. Noise levels vary from 49.6 to 64.9 Leq dB during day time and from 40.9 to 54.2 Leq dB (A) during night time.

The surface water sampling carried out at one sampling locations shows that pH was 7.24. Total hardness was 103.9 mg/l. Total dissolved solids was 142.0 mg/l and level of DO was 6.9 mg/l.

The ground water analysis for all the 12 sampling location shows that pH varies from 7.04 to 7.52 Total hardness varies from 381.1 to 554.4 mg/l. Total dissolved solids varies from 542 to 762 mg/l.

Soil monitoring was carried out at 12 locations and the analysis results show that soil is slightly alkaline in nature; pH value ranging from 7.35 to 7.73 with organic matter from 0.96 % to 1.54 %. Soil texture is Silty Loam, Sandy Clay Loam, Silty Clay Loam, Loam and Sandy loam. Available nitrogen ranges from 180.53 to 465.74 kg/ha. Phosphorous ranges from 29.83 to 179.5 kg/ha whereas the Potassium ranges from 540.2 to 1006.6 kg/ha.

b) Biological Environment (Flora & Fauna)

Flora: A total of 65 species of Trees, 28 species of Shrubs, 24 species of Herbs, 14 types of grasses and 06 species of climbers were recorded based on primary observation as well as based on information collected from the secondary data. Most common species found in the area are *Acacia catechu* (khair), *Acacia arabica* (Babool), *Azadirachta indica* (Neem), *Cassia fistula* (Amaltas), *Ficus religiosa* (Pipal) and *Delonix regia* (Gulmohar), etc. However, during the field survey, no endemic, rare, endangered and threatened species of flora were recorded under threatened status in the study area.

Fauna: 11 species of mammals, 08 species of Reptiles, 04 species of amphibians, 14 species of Butterfly & Arthropods and 45 avifaunal species were recorded in the 10 km study area. Commonly found species in the study area are *Herpestes edwardsii* (Mongoose), *Funambulus palmarum* (Three striped Palm Squirrel), *Lepus nigricollis* (Indian Hare), *Calotes versicolor* (Common Garden Lizard), and *Ptyas mucosa* (Indian Rat Snake) etc.

There is no species recorded in the study area during field survey; which comes in Schedule- I fauna according to (IWPA) Indian Wildlife Protection Act, 1972.

There is no species recorded in the study area during field survey; which comes in Schedule- I Avifauna according to (IWPA) Indian Wildlife Protection Act, 1972.

c) Socio-Economic Environment

The population as per 2011 Census records is 85002 (for 10 km radius). Scheduled Caste population of the study area is 11828 and Scheduled Tribe is 18558. Literacy rate of the area is 78.93% & sex ratio of the area is 942. Population of the workers engaged in occupation is 5267. Out of the total population, 27814 persons are main workers, 22423 persons are marginal workers and remaining 26076 persons are considered as non-workers.

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

Risk Assessment table along with mitigation measures

S. No.	Activity	Associated hazards	Associated risk/ health impact	Mitigation Measures
1.	Storage & handling of raw material & chemicals	Heat, Fire & dust	Exposure, physical injuries, burning, 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 for loading & unloading operations • Firefighting& first aid facility. • Storage should be away from ignition source • Proper housekeeping facilities
2.	Working in Cement Plant	Heat, Fire, Dust, Smoke & Explosion	Physical injuries, burning, air pollution, CO poisoning	<ul style="list-style-type: none"> • Firefighting& first aid facility • Use of PPEs. • Use of proper APCDs like Bag house ESP/Bag Filters • Inspection & regular monitoring • Training to workers for proper handling of raw materials
3.	APCD failure	Release of PM in ambient air	Air pollution	<ul style="list-style-type: none"> • Regular monitoring & inspection is being/will be done. • The plant shall immediately shut down on APCD failure
4.	Working at height	Slip, trips & falls of operators	Physical injuries	<ul style="list-style-type: none"> • Individual alertness of the workers. • First aid boxes shall be provided
5.	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 • Use of PPEs • Provision of First aid box

S. No.	Activity	Associated hazards	Associated risk/ health impact	Mitigation Measures
6.	Working near D.G. sets during emergency	High noise	Noise induced hearing losses	<ul style="list-style-type: none"> Provision of PPEs to the workers.

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

S. No.	Project Activity	Aspect	Impact	Mitigation Measures
1.	Transportation of Limestone and other raw materials by road	Fugitive Dust Emission & Gaseous Pollutants	<ul style="list-style-type: none"> Increase in the fugitive dust concentration in the ambient air which will affect the biotic environment 	<ul style="list-style-type: none"> Use of PUC Certified vehicles Vehicles to be covered with tarpaulin and not over loaded Speed limit to be maintained Paved road in plant premises
2.	Material storage and handling		<ul style="list-style-type: none"> Increase in the fugitive dust concentration in the ambient air Workers affected by respiratory diseases due to working in the high dust-zone area 	<ul style="list-style-type: none"> Covered sheds for storage of Gypsum, Coal & Petcoke Personal Protective Equipment to the workers
3.	Raw Mix Preparation	Particulate Matter Emission	Increase in the concentration of particulate matter in the ambient air	<ul style="list-style-type: none"> Transportation of the material to the raw mill by covered conveyor belt Installation of Bag Filters at transfer points
4.	Clinkerization (Calcination)	Particulate Matter Emission, Gaseous Emission & Fugitive Dust Emission	Increase in Particulate Matter, SO ₂ & NO ₂ and fugitive dust concentration in air environment	<ul style="list-style-type: none"> Installation of adequate APCEs such as Bag House & ESP. NOx will be controlled through process optimization Development of greenbelt / plantation Personal Protective Equipment (Goggles, Mask etc.) to workers
5.	Clinker Grinding / Cement Mill (including Fly ash handling)	Particulate Matter Emission & Fugitive Dust Emission	Increase in Particulate Matter and fugitive dust concentration in air environment	<ul style="list-style-type: none"> Installation of Bag House Fly ash received through closed bulkers & fed into Silo through pneumatic system. Development of greenbelt / plantation.
		Noise generation due to Exhaust fans and Cement grinding	<ul style="list-style-type: none"> Increase in noise levels near source generation Hearing impairments Other health effects 	<ul style="list-style-type: none"> Earmuffs/ Earplugs to persons working in high noise zone. Proper lubrication & maintenance of machinery Development of greenbelt / plantation within the plant premises Periodic Occupational Health Surveillance of worker

S. No.	Project Activity	Aspect	Impact	Mitigation Measures
6.	Cement Packing & Dispatch	Fugitive Dust Emission	<ul style="list-style-type: none"> ▪ Area source - Increase in fugitive dust concentration in air environment ▪ Respiratory Diseases 	<ul style="list-style-type: none"> • Dust extraction arrangement • Spilled cement collected and recycled • Installation of Bag Filters at transfer points • Development of greenbelt • Personal Protective Equipment (Goggles, Mask etc.) to worker. • Periodic Occupational Health Surveillance
7.	Coal handling	Fugitive Dust Emission	Increase in fugitive dust concentration in air environment	<ul style="list-style-type: none"> • Dust extraction arrangement • Installation of Bag Filters at transfer points • Development of greenbelt
8.	CPP Boiler	Particulate Matter Emission, Gaseous Emission & Fugitive Dust Emission	Particulate Matter, SO ₂ & NO ₂ and fugitive dust concentration in air environment	<ul style="list-style-type: none"> • ESP for CFBC boiler for PM • Lime dozing in CFBC boiler for SO₂ • NO_x will be controlled through process optimization. • Development of greenbelt/ plantation.

xi) Emergency preparedness plan in case of natural or in plant emergencies.

M/s. Ambuja Cements Ltd. (Unit: Maratha Cement Works) has an Emergency Plan (Onsite & offsite) at the plant site. Suitable Risk Control Measures with respect to Risk Assessment is being/will be implemented to minimize the risk to an acceptable level. Regular Training, Implementation of SOPs and compliance of relevant Personal Protective Equipment's (PPEs) will help to minimize the health hazards and incidental casualties.

xii) Issues raised during public hearing (if applicable) and response given.

Public Hearing Notice for the proposed project is yet to be conducted.

xiii) Socio-economic Development Plan with proposed expenditure

As per MoEFCC OM dated 30th Sept., 2020 & OM dated 20th Oct., 2020; Socio-Economic Developmental activities will be formulated on the basis of the issues raised during public hearing which will be addressed in EMP & will be implemented in a time bound manner with the start of the plant implementation.

xiv) Occupational Health 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.
------	--

	<ul style="list-style-type: none"> ▪ 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
Heat stress	<ul style="list-style-type: none"> ▪ Scheduling hot jobs in cooler part of the day ▪ Monitor those workers who are at risk of heat stress ▪ Provide rest periods with water breaks ▪ Use of personal protective equipment
Electrical Hazards	<ul style="list-style-type: none"> ▪ Proper Earthing as per IS 3043 will be done ▪ Low Voltage Supply will be ensured ▪ Isolating Transformers ▪ Double Insulated Tools ▪ Over Load Protection ▪ Protection Against Leakages (G.F.C.I.) ▪ Flame- Proof Equipment ▪ 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 is being/will be kept near transformer, cable, general store and office area. Hydrant line at all location in plant area along with coal, clinker storage area. Fire tender is to be kept ready at plant main gate. ▪ Oil and Flammable Gases storage area is being/will be fenced and declared as Fire Hazardous Area- No Smoking Area” ▪ Permit and safety instruction is being/will be given to use welding / gas cutting in the area of oil, gas, coal 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 is being/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 housekeeping & Speed limit of vehicles will be 20 km/hr. inside the proposed plant area. ▪ 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)

xv) Post project monitoring plan

Frequency and location for post-project monitoring

S. No.	Description	Frequency of Monitoring
1.	Meteorological Data	Hourly
2.	Ambient Air Quality	Twice a week / Yearly/ online Monitoring
3.	Fugitive Emission Monitoring	Quarterly
4.	Stack Emission Monitoring	Monthly/ Yearly & Continuous Online Monitoring
5.	Groundwater Quality	As per CGWA NOC
6.	Waste Water Monitoring	Monthly & as per CTO
7.	Groundwater Level	As per CGWA NOC
8.	Noise Level Monitoring	Monthly & as per EC / CTO
9.	Medical Checkup of Employee	Yearly or as per Factories Act
10.	Performance evaluation of APCEs / Adequacy Study	Six Monthly

