EXECUTIVE SUMMARY

OF

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

PUBLIC HEARING

of

Expansion of Integrated Cement Plant

Clinker (3.2 to 5.5 MTPA), Cement (3.0 to 5.0 MTPA),

CPP (30 to 45 MW) & WHRB (15 to 27 MW) along with

Proposed Standby Boiler (100 TPH) & D.G. Set (2180 KW)

At

Villages: Risda & Dhandhani, Tehsil: Balodabazar,

District: Balodabazar-Bhatapara (Chhattisgarh)

APPLICANT

emami

M/s. Emami Cement Limited

Acropolis Mall, 15th Floor, 1858/1, Rajdanga Main Road,
Sector 1, East Kolkata Township, Kolkata - 700107

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EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 Introduction

Emami group was founded by Mr. R. S. Agarwal and Mr. R. S. Goenka in 1974 and the turnover of Rs. 10,000 Crore. Emami group is a well-diversified, professionally managed group of company in Eastern India, having interest in FMCG, news print, writing instruments, Health care and Hospitals, Retail pharmacies, Departmental stores, Bio diesel, Edible Oil, Real estate, construction and planning for diversifying in manufacturing of Cement. Emami Cement Limited is an incorporated Company under Company's Act 1956, is a unit of Emami Group and has entered MoU with Government of Chhattisgarh for setting up of an integrated Cement Plant along with Limestone Mine and Captive Thermal Power Plant in Risda, Kukurdih and Dhandhani villages of Balodabazar, Tehsil of Balodabazar - Bhatapara district (CG).

M/s. Emami Cement Limited has an existing Integrated Cement Plant- Clinker (3.20 MTPA), Cement (3.0 MTPA), CPP (30 MW) & WHRB (15 MW)at Villages: Risda & Dhandhani, Tehsil: Balodabazar, District: Balodabazar – Bhatapara (Chhattisgarh).

M/s. Emami Cement Limited is now proposing an expansion of Clinker, Cement, Captive Power Plant and WHRB along with Proposed Standby Boiler& D.G. Set.

The proposed expansion will be carried out within the existing plant premises by process optimization & modification in existing Line - I and installation of new Line - II.; Thus, no additional area will be required for an expansion.

M/s. Emami Cement Limited has proposed an Expansion of Integrated Cement Plant - Clinker (3.2 to 5.5 MTPA), Cement (3.0 to 5.0 MTPA), CPP (30 to 45 MW) & WHRB (15 to 27 MW) along with Proposed Standby Boiler (100 TPH) & D.G. Set (2180 KW), at Villages: Risda&Dhandhani, Tehsil: Balodabazar, District: Balodabazar - Bhatapara (Chhattisgarh).

As per EIA Notification dated 14th Sept., 2006, as amended from time to time; the project falls under Category "A", Project or Activity '3(b)' Cement Plants.

1.2 Brief Description of the Project

Brief description about the Project is given in Table - 1.

Table - 1

S. NO.	PARTICULARS	DETAILS
A.	**Nature of the Project**	Expansion project
B.	**Size of the Project**	• Clinker (3.2 to 5.5 Million TPA) • Cement (3.0 to 5.0 Million TPA) • Captive Power Plant (30to 45 MW)

S. NO.	PARTICULARS	DETAILS
		• WHRB (15 to 27 MW) • Proposed Standby Boiler (100 TPH) • D.G. Set (2180 KW)
C.	**Location Details**	
1.	Village	Risda and Dhandhani
2.	Tehsil	Balodabazar
3.	District	Balodabazar - Bhatapara
4.	State	Chhattisgarh
D.	**Geographical Extent of the Project Site**	
1.	Latitude	210 37' 37.03" N to 210 38' 19.59" N
2.	Longitude	820 06' 9.94" E to 820 07' 22.89" E
3.	Toposheet No.	64K/2
E.	**Area Details**	
1.	Plant area	188.35 ha (137.532 ha Plant + 50.818 ha Colony); proposed expansion will be done within the existing plant premises by process optimization & modification in existing Line - I and installation of new Line - II.
2.	Greenbelt / Plantation area	Out of the total plant area (137.532 ha), 62.22 ha (i.e. approx. 45% of the total plant area) has already been developed under greenbelt / plantation. Same will be maintained in future.
F.	**Environmental Setting Details *(with approximate aerial distance and direction from the project site)***	
1.	Nearest city	Balodabazar (5.5 km in ENE direction)
2.	Nearest National / State Highway	• SH - 10 (3.0 km in North direction) • SH - 9 (5.5 km in East direction)
3.	Nearest Railway station	Bhatapara Railway Station (20 km in NW direction)
4.	Nearest Airport	Raipur Airport (63km in SW direction)
5.	National Parks, Wildlife Sanctuaries, Biosphere Reserves within 10 Km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve, falls within the 10 km radius of the study area
6.	Reserve Forests (RF) / Protected Forests (PF) within 10 Km radius	• Dhabadih RF (Adjacent in SW direction) • Latwa RF (6.0 km in NNE direction) • Sonbarsa RF (7.5 km in NNE direction) • Mohtara RF (9.0 km in NE direction)
7.	River/Water Body within 10 km radius	• KukurdihTalav (0.5 km in NNW direction) • Mahanadi Canal (3.5 km in NW direction) • Khosri Nala (3.5 km in SE direction) • Kauwa Nala (5.0 km in SE direction) • Tengna Nala (5.0 km in SSE direction) • Banjari Nala (8.0 Km in WNW direction)
8.	Seismic Zone	Zone-II [as per IS 1893 (Part-I): 2002]
F.	**Cost details**	
1.	Total Cost of the Project	Rs. 1500 Crores
2.	Cost for Environmental Protection Measures	○ Capital Cost -Rs.150 Crores ○ Recurring Cost - Rs. 15 Crores / annum

Source: Pre-feasibility Report

1.3 Location Map

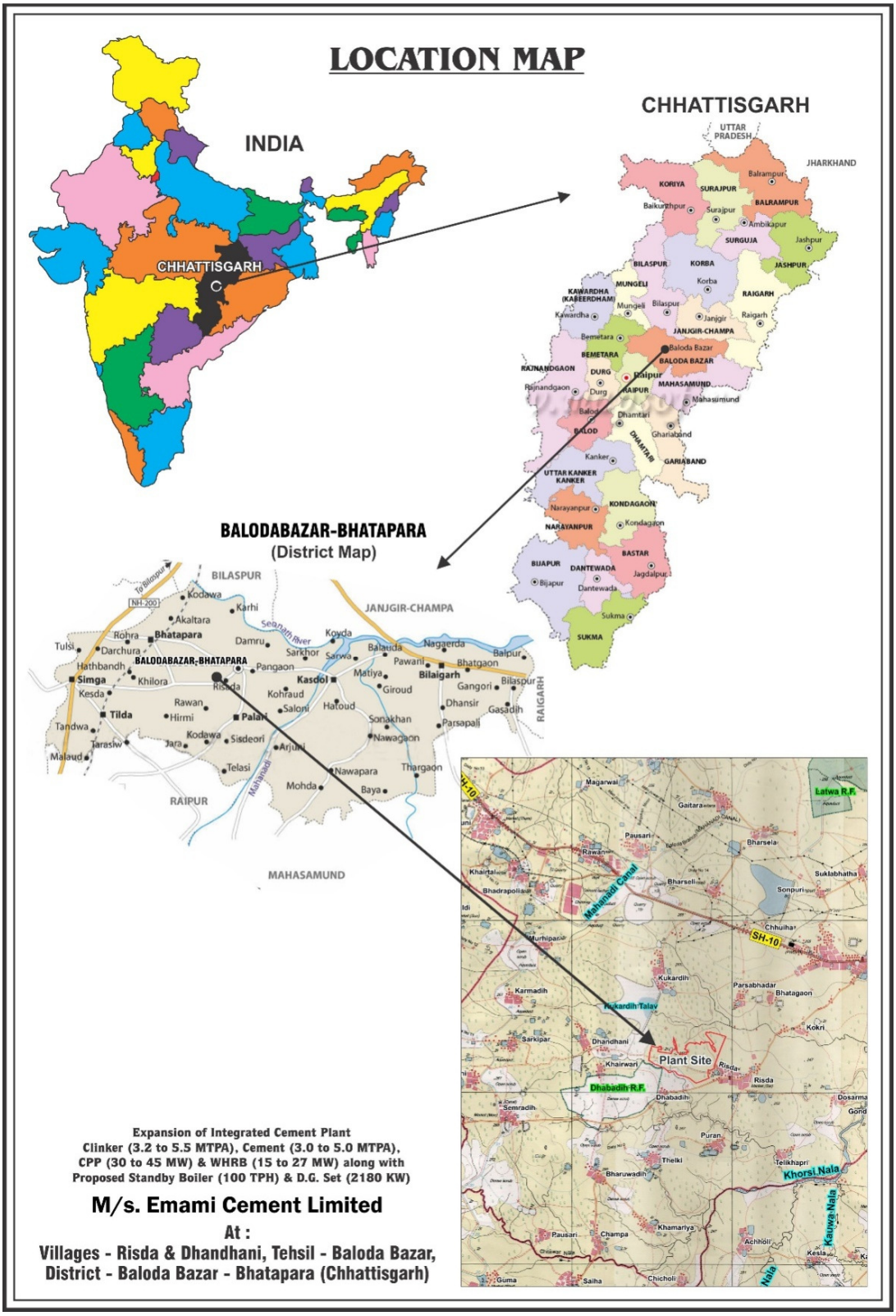

Fig. 1.1: Location Map

1.4 Major Requirements for Proposed Expansion Project

1.4.1 Raw Material Requirement

Major raw material required for Clinker &Cement production is Limestone, Gypsum, Iron ore, Bauxite, Slag, Fly ash, Bed ash & Sand. Details regarding quantity of raw materials required, their source along with distance and mode of transportation are given in Table-2.

Table - 2

Raw Material Requirement, Source and Transportation

S. No.	Name of Raw Material	Quantity (MTPA)			Source	Distance & Mode of Transportation
		Existing	Additional	Total		
1.	Limestone	4.99	3.58	8.57	Captive Mines	Adjacent, Covered Conveyor Belt
2.	Gypsum (Chemical / Phospho / treated / mineral)	0.15	0.1	0.25	Indigenous / Imported from Paradip port	35 km, Rail / Road
3.	Fly ash	0.9	0.6	1.5	Own CPP and Nearby area (GMR / KSK / DB)	100 km, Road
4.	Slag	1.5	1.0	2.5	Nearby area (BSP / Tata)	100 km, Road / Rail
5.	Iron (ore / fines / red mud / tailent / laterite)	0.06	0.04	0.1	CMDC & Nearby area	35 km, Rail / Road
6.	Bauxite	0.07	0.03	0.10	Balco & Nearby area	35 km, Rail / Road
7.	Sand (Stone/River)	0.0	0.12	0.12	Nearby area (Mahanadi / Shivnath)	35 km, Road
8.	Bed ash	0.0	0.12	0.12	Own CPP & Nearby area	35 km, Rail / Road

Source: Pre-feasibility Report

1.4.2 Fuel Requirement

Details regarding quantity of fuel required, their source along with distance and mode of transportation for proposed expansion project are given in Table- 3.

Table - 3

Fuel Requirement

Fuel	Quantity (MTPA)			Source	% Ash	% Sulphur	Calorific value (Kcal./kg)	Distance & Mode of Transportation
	Existing	Additional	Total					
For Cement								
Pet Coke Indigenous/ Imported	0.33	0.19	0.52	Indigenous (Reliance) / Imported (VIZAG Port)	1	5	8000 - 8500	35 km, Rail / Road
Indian / Imported Coal	0.68	0.40	1.08	(Korba SECL)/ Indonesian / African	30 - 34	0.7 - 0.8	4000 - 4500	35 km, Rail / Road
For Captive Power Plant								

Indian / Imported Coal	0.36	0.18	0.54	(Korba SECL)/ Indonesian / African, Dolochar from nearby Sponge Iron Plant	30 - 34	0.7 - 0.8	4000 - 4500	35 km, Rail / Road
For D.G. Set								
HSD Indian / Imported	NA	2000-3000 ltr	2000-3000 ltr	HP/BP/ Reliance	0.05	0.25 - 1.0	8300	Rail / Road

Source: Pre-feasibility Report

1.4.3 Other basic requirements

Other basic requirements for the proposed expansion project are given in Table - 4.

Table - 4

Basic Requirements for the Project

S. No.	Particular	Existing	Additional for proposed expansion	Total after proposed expansion	Source
1.	Water (KLD)	4571	2470	7041	Ground Water & Mine Pit Water
2.	Power (MW)	48.1	25.1	73.2	CPP, WHRB & CSEB Grid and D.G Set (for emergency)
3.	Manpower (No. of Persons)	1050	410	1460	Unskilled/semi-skilled will be sourced from the local area and skilled will be sourced from outside/local

Source: Pre-feasibility Report

1.5 Manufacturing Process

1.5.1 Cement Manufacturing Process

Process Optimization & Modification in Existing Line - I

Following process optimizations and modifications will be carried out to achieve this without impacting the life of plant and machinery.

- Installation of High Momentum Burner (Pyro-Jet Burner from KHD)
- Increase of effective volume of Cooler by applying Gunning Castable in place of Refractory Bricks.
- Installation of additional cooler fan to maintain specific cooling air.

Process Description of Cement Plant (New Line -II)

The process involves in cement production largely comprises of the following steps:

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

1.5.2 Captive Power Plant

M/s. Emami Cement Limited is proposing expansion in Captive Power Plant from 30 to 45 Mw.

The generating unit consists of Circulating Fluidized Bed Combustion (CFBC) boiler using coal/ pet coke as primary fuel, one condensing steam turbine and generator, one air cooled condenser and other necessary auxiliary equipment including balance of plant equipment.

1.5.3 Waste Heat Recovery Boiler

M/s. Emami Cement Limited is proposing expansion in WHRS capacity from 15 to 27 MW for re-utilization of the exhaust gases from the Pre-heater/ Cooler to generate electric power and consequently reduce consumption of grid power through fossil fuel. The project will contribute to the more efficient use of energy and will reduce reliance on exhaustible fossil fuel.

1.5.4 SEWAGE TREATMENT PLANT

There are 2 no.s of existing STP of 50 KLD capacity each. To meet the additional requirement for the proposed expansion project 1 no. of STP of 50 KLD capacity will be installed. So after the proposed expansion there will be 3 no.s of STP with total capacity of 150 KLD for the treatment of domestic waste water in Plant.

2.0 DESCRIPTION OF ENVIRONMENT

2.1 Presentation of Results (Air, Noise, Water & Soil)

Baseline study of the study area was conducted during Summer Season (March to May, 2019). Ambient air quality monitoring has been carried out at 12 stations in the study area on 24 hourly basis. The concentration of $PM_{2.5}$ ranges between 23.7 to 45.2 µg / m^3, PM_{10} ranges between 52.3 to 89.7 µg / m^3, SO_2 ranges between 6.2 to 18.5 µg/m^3 and NO_2 ranges between 10.5 to 30.5 µg/m^3**.**

CO concentration was observed as BDL except at near plant site, BalodabazarTown and Village Rawan. PAH emissions are below detection limit at all the locations.

Ambient noise levels were measured at 9 locations around the plant site. Noise levels vary from 48.5 to 64.5 Leq dB (A) during day time and from 43.2 to 57.4 Leq dB (A) during night time.

Surface water samples were collected from 8 locations to know the surface water quality of the area. The pH of the water bodies ranged from 7.15 to 8.18 indicating slightly alkaline to alkaline and productive water bodies. The colour and turbidity were of permissible range and odour was found agreeable at all locations. Total hardness (78.82 to 322.12 mg/l), Total dissolved solids (133 to 350 mg/l), total alkalinity (102.78 to 172.50 mg/l) and conductivity (223.3 to 556.0 mg/l) were low indicating low mineral enrichment of the water sample.

The ground water analysis for all the 9 sampling stations shows that pH varies from 7.14 to 7.96, Total hardness varies from 212.35 to 432.52mg/l, Total dissolved solids vary from 259.0- 731.32 mg/l.

Soil monitoring was carried out at 9 locations and the analysis results show that soil is slightly alkaline to alkaline, pH value ranging from 7.52 to 7.89, with organic matter from 0. 78% to 1.25%. Soil texture were silty loam, silty clay loam and clay. Total nitrogen ranges from 250.31 to 325.96 kg/ha.

2.2 Biological Environment

Flora: Most common species found in the area are Cassia siamea (Kasood), Dalbergia sissoo (Shisham), Delonix regia (Gulmohar), Polyalthia longifolia (Ashok), Pongamia pinnata (Karanj), Ficus religiosa (Pipal), Mangifera indica (Mango) etc.

Fauna: Commonly found species in the study area are Herpestes edwardsii (Mongoose), Funambulus pennanti (Palm Squirrel), Suncus murinus (Grey Musk Shrew), Lepus nigricollis (Black-napped Hare), Semnopithecus entellus (Common Langur), Boselaphus tragocamelus (Nilgai), etc.

Two schedule - I species as per (IWPA) Indian Wildlife Protection Act, 1972 viz. *Varanus bengalensis* (Indian Monitor Lizard) & *Python molurus* (Python) were recorded in the study area during field survey.

2.3 Socio-Economic Environment

The population as per 2011 Census records is 138764 (for 10 km radius). Scheduled Caste fraction of the population of the study area is 28882 (20.81%) and Scheduled Tribe 19747 (14.23% %). Literacy rate of the area is 72.93%. Population of the workers engaged in occupation is 43.09 %.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Anticipated environmental impacts due to operation of the proposed expansion project along with mitigation measures are given below:

Table - 5

Anticipated Environmental Impacts and Mitigation Measures

Discipline	Anticipated Impact	Mitigation Measures
Construction Phase		
Air	Increase in dust and NO_x concentration due to Leveling activity and Heavy vehicular movement	* Sprinkling of water in the construction area and on unpaved roads * Proper maintenance of vehicles. * Use of vehicles meeting PUC norms
Noise	Increase in noise level due to Construction Equipment	* Equipment will be kept in good condition to keep the noise level within 90 dB(A) * To provide necessary protective equipment e.g. ear plugs, earmuffs
Water	Increase in suspended solids due to soil run-off during heavy precipitation due to Loose soil at construction site	* Adequate drainage system for runoff water during construction phase
Operation Phase		
Air	Increase in concentration of Particulate Matter Emissions	* Installation & maintenance of pollution control equipment like ESP / Bag House / Bag Filters. * Storage of clinker, fly ash and cement in silos. * Storage of limestone, coal, pet coke, gypsum and slag in covered shed. * All the roads inside the plant premises will be

Discipline	Anticipated Impact	Mitigation Measures
		concreted * Vacuum Sweeping for better housekeeping * Water sprinkling to reduce the PM emission level * CPCB and CREP guidelines are being / will be followed
	Increase in NO_2 emissions	* FLS de-NO_x system& Low NO_x burners
Noise	Increase in noise level within the plant area	* Equipment designed to conform to occupational noise levels prescribed by regulatory agencies * Earmuffs/ Earplugs will be provided to persons working in high noise zone * Properly insulated enclosures will be provided to equipment making excessive noise * Installation of Turbine & Compressor in closed building * Greenbelt development/ plantation will help in attenuating noise
Water	Generation of waste water	* Domestic waste water from plant and colony is being / will be treated in STP and treated water is being / will be utilized for greenbelt development/plantation. * RO reject water will be used in manufacturing of Dust suppression and mill spray
Soil	Degradation of soil quality due to settling of air borne dust	* Use of efficient pollution control systems * Maintained proper stack height
Biological Environment		
a. Terrestrial Ecology	Positive as greenbelt of appropriate width has been developed and maintained by M/s. Emami Cement Limited in the area	-
b. Aquatic Ecology	No impact as no effluent is being / will be discharged outside the plant premises	-
Socio-economic Environment	Overall development of the area in respect of the infrastructure development, educational growth, health facilities etc.	-

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Details of the environmental monitoring schedule / frequency, which will be undertaken for various environmental components, as per conditions of EC / CTE / CTO are given in Table - 6.

Table - 6

Post Project Monitoring

S. No.	Description	Frequency of Monitoring
1.	Meteorological Data	Hourly

2.	Ambient Air Quality	Twice a Week & Continuous Online Monitoring
3.	Stack Monitoring	Monthly & Continuous Online Monitoring
4.	Water Quality	As per CGWA NOC
5.	Water Level	Monthly as per CGWA NOC
6.	Noise Level Monitoring	Monthly & as per EC / CTO
7.	Medical Checkup of Employee	Yearly

5.0 ADDITIONAL STUDIES

Additional Studies conducted as per ToR Letter no. J-11011/309/2013-IA.II (I) dated 28th June, 2019 issued by MoEFCC, New Delhi are Hydro-geological Study & Rain water Harvesting Plan and Risk Assessment & Disaster Management Plan.

6.0 PROJECT BENEFITS

The proposed expansion project will help in combating the growing demand of cement in the market & hence will help in the economic growth of the country. M/s. Emami Cement Limited is being/will be actively involved in the CER activities in the nearby villages of the project site., Creating educational facilities, health & sanitation, infrastructure development, sports & cultural development & skill development in the area, are some of the activities further to be undertaken under CER plan for the development and upliftment of the society. Company has proposed Rs. 9.00 Crores to be spent in CER activities (As per MoEFCC, New Delhi Office Memorandum dated 1st May, 2018).

7.0 ENVIRONMENT MANAGEMENT PLAN

The major sources of pollution in Cement Plant are Particulate Matter. Air pollution is the major concern to be looked upon for the project activity. No major water, noise and soil pollution is envisaged from the project activity. Various mitigation measures have been proposed to take care of the environment in respect of air, water, noise, soil and the green cover of the plant site and nearby villages.

Table-7

Environmental Management Plan

Particulars	Details
Air Quality Management	☙ Bag filters is being/ will be provided to control dust emitted from various dust generating points in the plant and at all material transfer points ☙ Dry fly ash is being/will be transported in closed tankers ☙ Clinker and Fly Ash is being/will be stored in silos and Gypsum in covered sheds ☙ Greenbelt has been/will be developed around/ within the premises of the plant site to arrest the fugitive emissions ☙ Unloading of trucks is being/will be carried out with proper care avoiding dropping of the materials from height ☙ Sprinkling of water is being/will be done along the internal roads in the plant in order to control the dust arising due to the movement of vehicles

Particulars	Details
	☙ Proper maintenance of vehicles is being/will be done to reduce gaseous emissions ☙ Low NO_2 burners ☙ Regular ambient air quality and stack emission monitoring is being/will be carried out as per CPCB / CECB norms to ensure that ambient air quality standards will be met all the time.
Water Management	☙ No waste water is being/will be generated from the Cement manufacturing process. ☙ Domestic wastewater generated from plant and colony is being/will be treated in STP and treated water will be utilized for greenbelt development / plantation ☙ Rain water harvesting is being/will be practised inside the plant premises.
Noise Management	☙ Personal Protective Equipments (PPEs) like earplugs and earmuffs is being/will be provided to the employees exposed to high noise level. ☙ Proper maintenance, oiling and greasing of machines at regular intervals is being/ will be done to reduce generation of noise. ☙ Silencer has been provided to all safety valves of the plant and Turbine vent valves to control the Noise level. ☙ Greenbelt has been/will be developed all along the plant boundary. ☙ Regular monitoring of noise levels is being/will be carried out and corrective measures in concerned machinery will be adopted accordingly to the possible extent.
Solid & Hazardous Waste Management	☙ Dust collected from various Air Pollution Control Equipments like ESP, Bag House / Bag Filters is being/will be totally recycled into the process. ☙ Sludge generated from STP is being/will be used as manure in greenbelt development/ plantation. ☙ Used oil will be generated as hazardous waste is being/will be sold to CPCB authorized recycler.
Green Belt Development / Plantation	☙ Out of the total plant area (137.532 ha), 62.22 ha (i.e. approx. 45% of the total plant area) has already been developed under greenbelt / plantation. Same will be maintained in future. ☙ Greenbelt development is being/will be done all along the road & plant boundary which will attenuate noise level, arrest dust & to increase aesthetic beauty of the area.

8.0 CONCLUSION

As discussed, it is safe to say that the proposed expansion project is an environmental friendly project, as adequate preventive measures will be adopted to maintain the various pollutants within permissible limits. Green belt development around the area would also be taken up as an effective pollution mitigation technique.