DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

&

ENVIRONMENTAL MANAGEMENT PLAN

FOR

PROPOSED BROWN FIELD INTEGRATED CEMENT PROJECT: CEMENT PLANT, CAPTIVE POWER PLANT & D. G. SET

AT

VILLAGE - RAWAN, TEHSIL - SIMGA, DISTRICT - RAIPUR (CHHATTISGARH)

APPLICANT

M/s. GRASIM CEMENT
(A Unit of Grasim Industries Ltd.)
P.O. Grasim Vihar, Village - Rawan, Distt. Raipur
(Chhattisgarh)

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EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 Introduction

The applicant M/s Grasim Industries Limited is a flagship company of Aditya Birla Group having business interest in Cement manufacturing, Viscose Staple Fibre, Sponge Iron, Textiles, Software Services etc. Cement manufacturing is core business of the Group and contributes to about 50% of the Groups turnover and is well experienced in cement manufacture with large capacity cement plants already running successfully in various parts of the country.

M/s Grasim Cement has an existing Cement Plant Complex comprising of Cement Plant, Captive Thermal Power Plant & Limestone Mine (ML area: 722.834ha) at village Rawan, Tehsil Simga, District Raipur (C.G.)

Grasim management is proposing for a Brown Field Integrated Cement Project in the existing Cement Plant premises by expansion in Cement production capacity from 3.3 MTPA to 6.5 MTPA, Clinker from 2.1 MTPA to 6.5 MTPA, Captive Power Plant from 30 MW to 80 MW & D.G. Set 12 MW (2x6 MW) at village Rawan, Tehsil Simga, District Raipur (C.G.).

The project was considered in front of Expert Appraisal Committee (EAC) (Industry-1) for its First technical presentation on 24th September, 2009. The Terms of References (ToR) letter has been issued by MoEF, New Delhi for preparation of the EIA/ EMP Report vide File No. J-11011/262/2009-IA.II (I) & Letter dated 9th October, 2009.

As per the New EIA Notification dated 14.09.2006, this project falls in category 'A'.

1.2 Details of the Project

Table No. : 1

S.No.	Particulars	Details
1.	**Location**	
	A. Village	Rawan
	B. Tehsil	Simga
	C. District	Raipur

	D. State	Chhattigarh
2.	Latitude	21° 33'39.89" – 21° 34'56.55" N
3.	Longitude	82° 00'42.89" – 82° 01'56.62"E
4.	Toposheet No.	64 G/14 & 64 K/2
5.	General ground level	276 mRL
	Project Detail	
6.	Project Cost	Rs. 950 Crores
7.	Cost of Environmental Protection measures	Rs. 100 Crores
8.	Recurring cost of Environmental Protection measures	Rs. 05 Crores
9.	Area Details (Plant & Colony)	388.37 ha
10.	Green belt Area	~212.54 ha
11.	Total Power Requirement	80 MW [Source: Captive Power Plant (Existing & Proposed)]
12.	Total Water Requirement	3962 KLD [Source: Mine Sump Water & existing Bore Well]
13.	Total Man Power Requirement	565
	Climatology (Winter Season: December 2009 to February 2010)	
14.	A. Temperature	23.6 º C – 42.1º C
	B. Relative Humidity At 8:30 hrs. At 17:30 hrs.	36% to 97% 23% to 80%
15.	Dominant Wind Direction	From NE
	Project Site Vicinity Details	
16.	Nearest National Highway	NH-6 (70 km)
17.	Nearest Railway Station	Bhatapara (17 km)
18.	Nearest Town	Raipur (85 km)
19.	Nearest Airport	Raipur (85 km)
20.	Ecological Sensitive Areas (National Park, Wild Life Sanctuaries, Biosphere Reserves, Reserved /	No National Park, Wild Life Sanctuaries, Biosphere Reserves, Protected Forests falls in the 10 km radius study

	Protected Forest etc.)	area. Dhabhadih Reserve Forest exists at a distance of ~ 7 km from the plant boundary.
21.	Nearest Water Body	Mahanadi Canal (500 m)
22.	Seismic Zone	Zone – II

2.0 REQUIREMENTS FOR PROJECT ACTIVITY

2.1 Raw Material Requirement

Table No. : 2

S. No.	Minerals	Quantity in MTPA			Source	Mode of Transportation
		Existing	Additional	Total		
1.	Limestone	2.8	6.95	9.75	Captive Mine	Covered Conveyor Belt
2.	Iron Ore	Nil	0.05	0.05	Nearby Area	Road
3.	Coal (Cement Plant)	0.3	0.6	0.9	Captive Coal Washery & Nearby Market	Road
4.	Coal (CPP)	0.2	0.4	0.6		
5.	Clinker	2.1	4.4	6.5	Captive Cement Plant	-
6.	Gypsum	0.1	0.15	0.25	Nearby Area	Road / Rail
7.	Fly Ash	0.5	0.5	1.0	CPP , Balco, NTPC Korba	Rail (250 km)
8.	Slag	0.5	0.5	1.0	Bhilai steel plant/ NICCO	Road / Rail (~100km)

2.2 Water Requirement

Total water requirement after the proposed project will be 3962 KLD.

Table No. : 3

Utility	Present Requirement (in KLD)	Additional Requirement (in KLD)	Total Requirement (in KLD)
Cement Plant	1212	1200	2412
Power Plant	300	600	900
Domestic	450	200	650
Total	**1962**	**2000**	**3962**

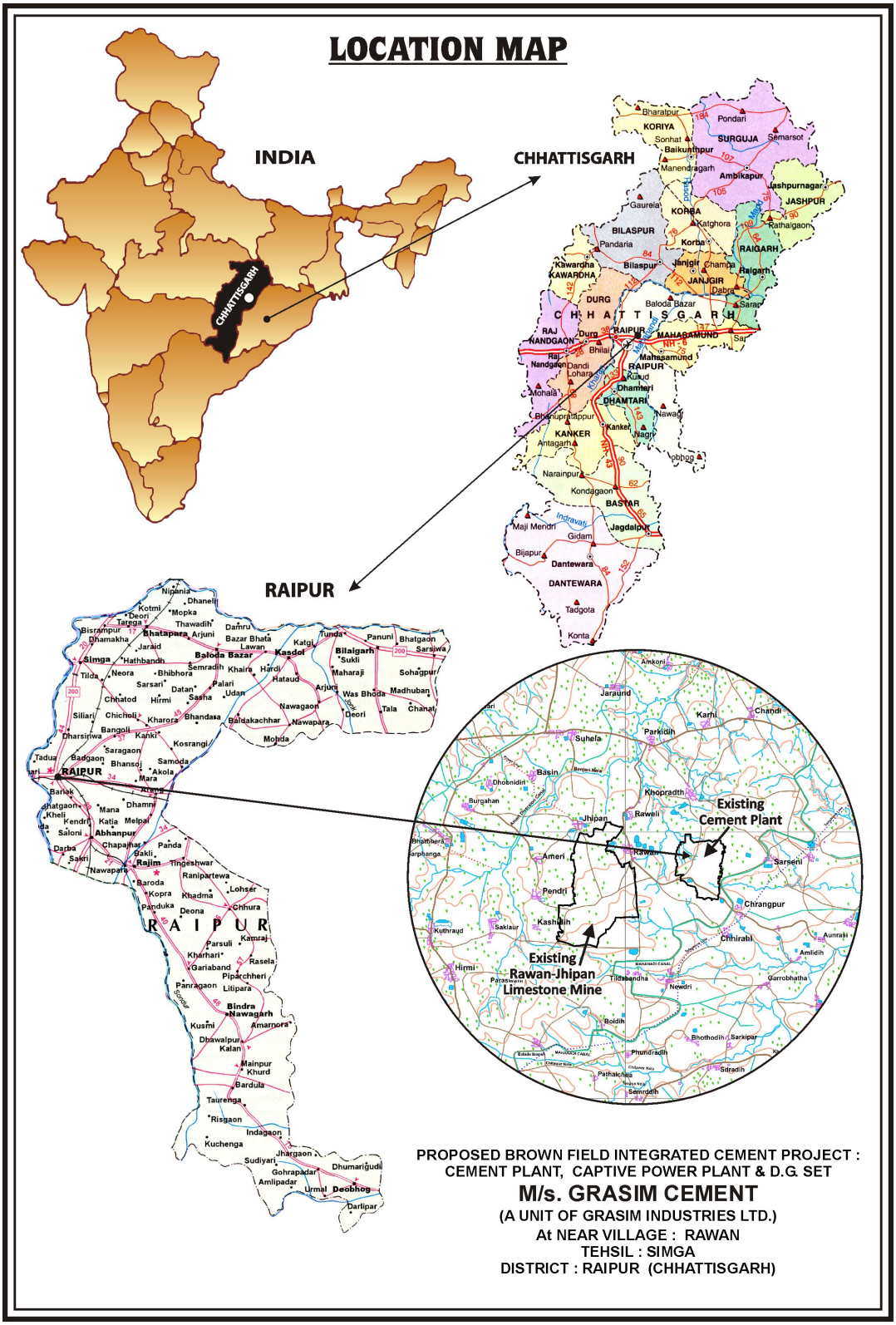


FIGURE 1 : LOCATION MAP OF THE PROJECT SITE

2.3 Power Requirement

Power requirement for the project activity after proposed project activity will be 80 MW, which will be sourced from the captive power plant.

2.4 Manpower

Man power requirement for the proposed expansion is as under:

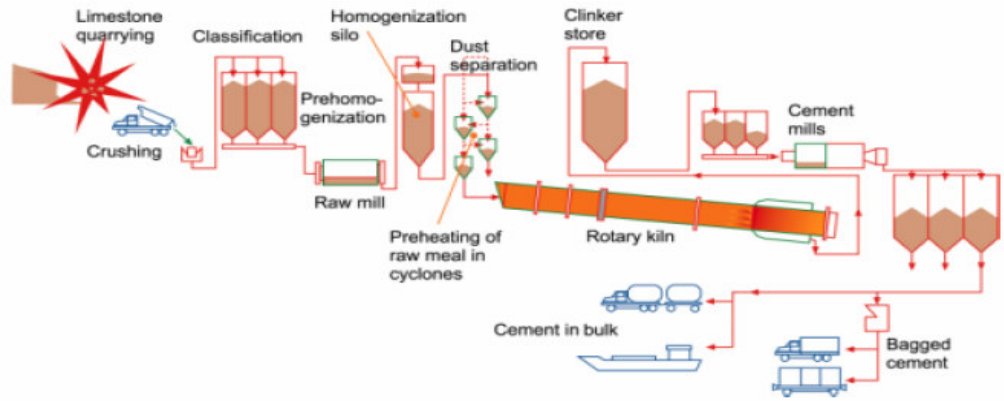
Table No. : 4

Utility	Present Requirement	Additional Requirement for the Proposed Project	Total Requirement
Cement Plant	450	75	525
Power Plant	30	10	40

Local manpower available in the nearby villages will be employed.

3.0 PROCESS DETAILS

3.1 Cement Manufacturing Process



3.2 Captive Power Plant

Power Generation unit of capacity 50 MW i.e. 2X25 MW (30 MW to 50 MW) will be set up within the existing premises. The generating unit will have one circulating fluidized bed combustion (CFBC) boiler with coal as primary fuel, condensing steam turbine generator, air cooled condenser and other necessary auxiliary equipment. 12 MW D. G. Set already exists in the plant premises as standby of CPP.

4.0 DESCRIPTION OF ENVIRONMENT

Baseline study of the study area (i.e. 10 km radius from the project boundary) was conducted during Winter Season (December 2009 to February 2010). Monitoring for ambient air quality (as per CPCB standards), ambient noise levels, water quality, soil quality was conducted at respective sampling locations. The study for land use pattern using satellite imagery, study for demography & flora & fauna has also been conducted.

The concentration for all the 9 AAQM stations for PM_{10} ranges between 82.76 to 31.87 $\mu g/m^3$, $PM_{2.5}$ ranges between 31.32 to 11.81 $\mu g/m^3$, SO_2 ranges between 16.30 to 5.9 $\mu g/m^3$ and NO_X ranges between 21.00 to 8.40 $\mu g/m^3$.

The ground water analysis for all the 10 sampling stations shows that pH varies from 7.52 to 7.79, total hardness varies from 222.6 mg/l to 310.7 mg/l & total dissolved solids varies from 446 mg/l to 498 mg/l.

The analysis results for soil shows that soil is neutral in nature as pH value ranges from 7.50 to 7.82 & is sandy loam in texture. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

4.1 Socio-Economic Environment

The population as per 2001 Census records is 49392 (for 10 km radius buffer zone). Scheduled Caste fraction of the population of the study area (10 km) is 19.5% and Scheduled Tribe 11.1%. Percentage of literacy is 54.2 % and that of workers those actually engaged in occupation is 23.2%.

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Impact on Soil

There may be some pollution affecting the soils adjacent to plant area if proper care is not taken. The anticipated pollution to soil environment due to plant activities is as follows.

i) Changes in soil texture due to settling of air borne dust or due to wash off of solid particulates by surface or ground water. This will lead to change in porosity, permeability & other such physical characteristics of soil of the area.

ii) Changes in soil chemistry due to addition of foreign material from polluted air and water due to plant activities in the area.

But proper mitigative measures like use of efficient pollution control systems, proper stack height, use of top soil in plantation will results in no significant impact on soil of the core zone. There will be no impact on soil of the study area located beyond the working area of the proposed integrated project. Soil samples will be collected and tested at regular intervals for the near by areas. This will help in mitigation of any harmful impact on soil due to the project activity, if any.

5.2 Impact on Land Use

- The proposed project activity is within the existing plant premises hence, there will not be any major change in the land use pattern even within the core zone.
- Increase in green cover of the area than the present within the plant premises will take place.
- No change in the land use pattern of the buffer zone will be there.

5.3 Impact on Air Quality

- The emissions during construction phase are expected to have adverse impact on ambient air quality of surroundings of the construction site which will be temporary and reversible in nature and will be localized.
- The key emissions from the cement manufacturing process & CPP are emissions to air of particulate matter, oxides of nitrogen (NOx) and sulphur dioxide (SO_2).
- Automobile emissions from trucks movement have not been considered as continuous source of any significant air pollution.
- But proper mitigative measures like pollution control equipments such as use of ESP, Bag houses and Bag filters will maintain the dust concentration at its outlet well within the prescribed CPCB Norms.

5.4 Impact on Water Quality

- Zero discharge from the project activity.

- In cement plant water will be used in cooling, gas conditioning and raw material addition at various stages. This water will be totally absorbed in the process or will be subjected to evaporation and hence no wastewater will be discharged from cement plant and CPP.
- A sewage treatment plant has been installed for treatment of domestic sewage generated from plant and colony. The treated water and sewage is used for gardening purposes.
- There is no perennial river in the study area, hence no impact on surface water will be there due to the project activity.
- Rainwater harvesting is being practiced in the plant premises.

5.5 Impact on Solid Waste

- During construction phase, solid waste such as excavated soil, debris, some metal waste and very small amount of oil & grease from construction machines will be generated. This waste may contaminate soil at plant site temporarily and would be restricted to a small area.
- On commissioning of proposed project activity, fly ash shall be utilized in manufacturing of Portland Pozzolana Cement (PPC).
- Thus no solid waste is generated from the project activity.

5.6 Impact on Noise Level

The general noise level generated from equipment in the proposed project would usually be below 85 Leq dB (A) in the working area and below 70 Leq dB (A) around periphery. These noise levels are temporary in nature and its transient insignificant due to the large distances.

6.0 ENVIRONMENTAL MONITORING PROGRAMME

Table No. : 5

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Meteorological Data	Daily
2.	Ambient Air Quality at project site	Twice a week
3.	Stack Emissions	Weekly
4.	Water Quality	Quarterly

5.	Noise Level Monitoring	Quarterly
6.	Soil Quality	Quarterly
7.	Health Check-up	As per the Factory Act.

7.0 ADDITIONAL STUDIES - Risk Assessment & Disaster Management Plan

Disaster management facilities are already available in the plant premises including fire fighting plan, emergency plan etc. Risk Assessment for the proposed project activity has been done by identifying the risks involved & then preparation of action plan for handling internal emergencies in coordination with the existing facilities.

8.0 PROJECT BENEFITS

The proposed project activity will help in combating the growing demand of cement in the market & hence will help in the economic growth of the country. GIL has been already been actively involved in the CSR activities in the nearby villages of the project site. Infrastructure development in the nearby villages, creating educational facilities, empowering women through self help groups, gainful employment for rural, health awareness programmes & surgical camps, supplementing resettlement efforts in areas affected by natural calamities, assisting social forestry programmes in the area, are some of the highlights of the CSR activities which are operating presently & will continue for the life of the plant.

9.0 ENVIRONMENT MANAGEMENT PLAN

The major sources of pollution in a cement plant are stack (Particulate Matter). Air pollution will be the major concern to be looked upon for the project activity. No major water, noise & soil pollution is envisaged form the project activity. Various mitigation measures have been proposed to take care

of the environment in respect of air, water, noise, soil & the green cover of the project site & nearby villages.

9.1 Air Environment

- To control air emission in Cement Plant & CPP highly efficient ESPs / bag filters will be installed at various stages of the process.
- To control the dust emission from transfer points of the belt and bucket conveyors, bag filters will be provided at various locations of the transfer points.
- Greenbelt development will be further enhanced around the plant premises.
- CPCB guidelines will be followed to control fugitive emissions.
- Limestone will be transported via covered conveyor belts to the plant site.
- Dust suppression/ dust extraction systems with bag filters along with water sprinklers will be provided to prevent the fugitive dust emissions.
- All the above measures are being followed in the existing plant process also.

9.2 Water Environment

- No industrial waste water is generated during plant operation.
- In Cement Plant process, water is absorbed in the process or it is subjected to evaporation, hence no wastewater generation.
- The wastewater generated from the CPP is recycled back to the process and used for cooling and dust suppression.
- Domestic waste water generated from the colony will be treated in STP and used for green belt development / Horticulture purpose.
- Air cooled condenser is used in Thermal Power Plant to reduce water requirement.
- During monsoon, rain water harvesting is being practiced at plant and colony area.

9.3 Noise Environment

- Walls and ceilings of the concerned buildings are lined with sound absorbing materials.
- Properly insulated enclosures are provided to staff working close to the high noise sources.
- Personal Protective Equipments like earplugs and earmuffs are provided to the workers exposed to high noise level.
- Sufficient green belt within the plant and colony area has already been developed and maintained.
- Regular monitoring of noise level has been carried out and corrective measures in concerned machinery will be adopted accordingly to the possible extent, as also done in the existing plant operation.
- Silencers have also been provided in the D.G. Sets.
- Well developed greenbelt has already been developed which attenuates the noise produced from the plant operation.

9.4 Solid Waste Management

- No solid waste is generated in cement manufacturing process.
- Fly ash generated from Captive Power Plant (Existing + Proposed) is utilized in the manufacturing of Cement.
- Dust collected from air pollution control equipment is 100% recycled in process.
- Sludge from Sewage Treatment Plant (STP) is used as manure for green belt development.

9.5 Greenbelt Development

- Since the inception of the plant Grasim Cement has taken up massive green belt development plan. Saplings have been planted in the plant, colony and mining area.

- Out of the 388.37 ha (plant + colony area), 212.54 ha is already covered under plantation.
- Avenue plantation along the roads, and green belt development in the colony, mines and plant has been developed under afforestation program.
- In order to develop the green belt and afforestation in scientific way, Grasim Cement has setup a horticulture department, which is headed by an experienced horticulturist.
- Local species has been planted as per guidelines.

8.0 CONCLUSION

As discussed, it is safe to say that the project is not likely to cause any significant impact on the ecology of the area, as adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Green belt development around the area would also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of GIL.