EXECUTIVE SUMMARY

1.0 INTRODUCTION

M/s. Lafarge India Private Ltd. (LIPL) is a subsidiary of French building materials major Lafarge. Lafarge entered in the Indian market in 1999 with acquisition of cement business of Tata Steel followed by the purchase of Raymond Cement facility in 2001.

Arasmeta Cement Plant of M/s. Lafarge India Pvt. Ltd. is one of the new generation cement plants, set up in India, employing the state of the art technology for efficient energy conservation, eco-friendly operation plant and economics of large-scale production. The plant has only one rotary-kiln, which was commissioned in 1982.

Arasmeta Cement Plant has an existing capacity of 2.2 MTPA with clinker production of 1.6 MTPA.

LIPL now proposes expansion of Cement Plant by installation of a new line of Clinkerization (1.6 MTPA) with simultaneous increase in Cement production capacity (2.2 to 4.8 MTPA) within the existing plant premises at Arasmeta, PO.-Gopal Nagar, Distt.: Janjgir-Champa (C.G.).

The project was considered in front of Expert Appraisal Committee (EAC) (Industry-1) for its ToR approval on 18th May, 2010. The Terms of References (ToR letter) has been issued by MoEF, New Delhi for preparation of the EIA/ EMP Report vide letter no. J-11011/840/2008- IA II (I) dated 18th June, 2010.

This Expansion project falls under Category 'A', as per EIA Notification dated 14th September, 2006.

1.1 DETAILS OF THE PROJECT

| S. NO. | PARTICULARS | DETAILS | |
|--------|------------------------------|--|--|
| А. | | Expansion of Cement Plant (Clinker & Cement Plant) | |
| | Nature & Size of the Project | Clinker - 1.6 to 3.2 MTPA | |
| | | Cement - 2.2 to 4.8 MTPA | |
| В. | Location Details | | |
| 1. | Village | Arasmeta | |
| 2. | P.O. | Gopal Nagar | |
| 3. | District | Janjgir Champa | |
| 4. | State | Chhattisgarh | |
| 5. | Latitude | 21° 57' 49.61" N to 21° 58' 22.66" N | |
| 6. | Longitude | 82° 20' 38.82" E to 82° 21' 27.92" E | |

Table - 1

Expansion of Cement Plant (Clinker from 1.6 MTPA to 3.2 MTPA, Cement from 2.2 MTPA to 4.8 MTPA) At Village Arasmeta, P.O. Gopal Nagar, District Janjgir Champa (Chhattisgarh)

| 7. | Toposheet No. | 64 K/5 | | | |
|-----|--|--|---|-------------------------------------|--------------------------|
| В. | Area Details | Tota No prop plan | I Plant Area is 82 F additional land osed expansion wi t premises. | la is requirec Il be within t | I; as the he existing |
| C. | Environmental Setting Details | | | | |
| 1. | Nearest Railway station | Akaltara (about 9.5 km in NE direction from the plant site) | | | |
| 2. | Nearest National Highway | NH – 200 (about 3.5 km in SW direction from the plant site) | | | |
| 3. | Nearest Airport | Mana Airport at Raipur (about 107 km in SW direction from the plant site) | | | |
| 4. | Nearest Village | Bohapara (about 0.8 km North direction from the plant site) | | | |
| 5. | Nearest Town / City | Bilaspur (about 23 km in NW direction from the plant site) | | | |
| 6. | District Headquarter | Janjgir (about 23 km in ENE direction from the plant site) | | | |
| 7. | Nearest River | Lilagarh River (about 1.5 km in West direction) | | | |
| 8. | Ecological Sensitive Areas (National Park, Wild Life Sanctuaries, Biosphere Reserves, Tiger Reserves, Wildlife Corridors, etc.) within 10 Km. radius (boundary to boundary distance) | There is no National Park, Wild Life Sanctuaries, Biosphere Reserves, Tiger Reserves, Wildlife Corridors, etc. within 10 km radius | | | |
| | | There is no Reserve / Protected Forests etc. within 10 km radius | | | |
| 0 | Reserve / Protected Forests (within 10 Km. radius) | S. No. | Forest | Distance | Direction |
| 9. | | 1. | Open Jungle | ~ 8 km | ENE |
| | | 2. | Dense Mixed Jungle | ~ 8 km | ESE |
| 10. | Seismic Zone | Zone – II [as per IS 1893 (Part-I): 2002] | | | |
| D. | Cost details | at details | | | |
| 1. | Capital cost of the Project | Rs. 1000 Crores | | | |
| 2. | Cost for Environmental Protection Measures | CapRec | ital Cost - Rs. 75 C urring Cost - Rs. 1. | rores 5 Crores/an | num |

Source: Pre-feasibility Report

1.2 LOCATION MAP



1.3 MAJOR REQUIREMENTS FOR DIFFERENT UNITS OF THE PROPOSED EXPANSION PROJECT

1.3.1 Raw Material Requirement

| S. No. | Raw Material | Quantity (TPD) Existing | Quantity (TPD) Proposed | Source | Distance / Mode of Transportation | |
|-----------|-----------------|-------------------------------|-------------------------------|--|--------------------------------------|--|
| 1. | Limestone | 2.6 MTPA | 2.6 MTPA | Captive Mines | 25 Km / Conveyor Belt/Road | |
| 2. | Coal | 850-900 | 850-900 | SECL, Korba | 150 Km / Rail / Road | |
| 3. | Gypsum | 300 | 300 | Mines & Chemical Plants, FCI Rajastan, Coromandal fertilizer vizag | 1500 Km &700 Km / Rail / Road | |
| 4. | Fly ash | 1600 | 1600 | NTPC, Korba | 105 Km / Road | |

Table – 2

Source: Prefeasibility Report

1.3.2 Other requirements

Table - 3

| S. No. | Particulars | Requirement | Source | |
|--------|-------------|--|--|--|
| 1. | Water | 1500 KLD | Lilagarh River, Mine Sump | |
| 2. | Power | 23.5 MW | Existing Captive Power Plant | |
| 3. | Manpower | 1240 persons (total requirement after expansion) | Local people, depending on the availability of skill | |

Source: Prefeasibility Report

2.0 PROCESS DESCRIPTION

The cement plant is based on Dry Process Technology for Cement manufacturing with Pre-Heating and Pre-Calciner Technology.

The type of cement being manufactured is Ordinary Portland Cement (OPC), Portland Pozzolona Cement (PPC).

The process largely comprises of the following steps:

- Transportation of Limestone from Chilhati Limestone Mines to Arasmeta Cement Plant
- Raw Mix Preparation & Grinding
- Raw Mix Homogenization
- Coal preparation
- Calcination & Clinkerisation
- Cement Grinding
- Packing & Dispatch

3.0 DESCRIPTION OF ENVIRONMENT

Baseline study of the study area was conducted during Post-Monsoon Season (October to December, 2010).

The concentration for all the 9 AAQM stations for PM_{10} ranges between 33.11 to 70.16µg/m³, $PM_{2.5}$ ranges between 17.14 to 38.24µg/m³, SO_2 ranges between 5.77 to 9.89µg/m³ and NO_2 ranges between 7.91 to 18.16µg/m³.

The ground water analysis for all the 8 sampling stations shows that pH varies from 7.46 to 7.94, total hardness varies from 222.16 mg/l to 315.8 mg/l & total dissolved solids varies from 385.00 mg/l to 580 mg/l.

The analysis results for soil shows that soil is moderately alkaline in nature as pH value ranges from 7.16 to 8.12 & is clay loam in texture. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

3.1 Biological Environment

Flora: Tree species which are most commonly found in the area are Mango (*Mangifera indica*), Shishum (*Dalbergia sissoo*), Kadamba (*Anthocephalus cadamba*), Neem (*Azadirachta indica*), Babul (*Acacia nilotica*), Khair (*Acacia catechu*), Amla (*Emblica officinalis*), etc.

Fauna: Commonly found animal in the study area are Koel (*Eudyanamus spp.*), Hare (*Lepus nigricollis*), Common garden lizard (*Calotes vesicolor*), Rat (*R.rattus*), Brahminy Starling (*Sturnus pagodarum*), House crow (*Corvus splendens*), Squirrel (*Funambulus palmarum*), etc.

3.2 Socio-Economic Environment

The population as per 2001 Census records is 86462 (for 10 km radius buffer zone). Scheduled Caste fraction of the population of the study area (10 km) is 25.71% and Scheduled Tribe 10.46%. Literacy rate is 52.45%. Total no. of households is 16817.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

- The key emissions generated from Plant process are particulate matter, Oxides of Nitrogen (NO₂) and Sulphur dioxide (SO₂). High efficiency ESP/bag house will be installed with Kiln, cooler, raw mill, coal mill and cement mill to meet the PM (Particulate Matter) emission level of less than the prescribed limit.
- Fugitive emission shall be controlled by proper covered storage facilities for raw material & product.
- Installation of bag filters and proper water sprinkling shall be carried out at the material transfer points.
- > No industrial waste water will be generated from cement manufacturing process.

- Domestic waste water generated from the office toilets and township will be treated in the STP and treated water will be used for green belt development.
- Solid waste generated from Cement Plant in the form of sludge (from Sewage Treatment Plant) will be used as manure for green belt development.
- During operational phase noise will be generated from Process fans, compressors, motors, grinding mills in the cement plant. Ear plugs will be provided to persons working in high noise zone.
- The study area (10 km radius from the project site) is not having any National Park, Wild Life Sanctuary or Biosphere Reserve etc.

5.0 ENVIRONMENTAL MONITORING PROGRAMME

| 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 |

Table - 4

6.0 ADDITIONAL STUDIES

The Additional Studies conducted as per the additional Terms of References vide MoEF letter no. J-11011/840/2008- IA II (I), dated 18th June, 2010 are Biological Study, Hydro-geological Study & Rain water Harvesting Plan, Disaster Management Plan.

7.0 **PROJECT BENEFITS**

The proposed expansion will help in combating the growing demand of cement in the market & hence will help in the economic growth of the country. LIPL is 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, assistance in social forestry programmes in the area, are some of the activities further to be undertaken under CSR plan for the development of the society.

8.0 ENVIRONMENT MANAGEMENT PLAN

The major sources of pollution in a cement plant are Particulate Matter. Air pollution is the major concern to be looked upon for the project activity. No major water, noise & 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 & the green cover of the project site & nearby villages.

8.1 Air Environment

- > All material transfer points are being/will be provided with bag filters to entrap the emissions at the source itself.
- > Clinker is/will be stored in silos /covered stock piles and gypsum in covered shed.
- > Fly ash is/ will be stored in silos and closed shed.
- Better maintenance and installation of proper pollution control equipment like Bag Houses, Bag filters and ESP help in reducing such emissions.
- > CPCB guidelines for fugitive emissions are being/will be followed.
- Green belt has been developed along the roads and around the plant premises as dust preventive barrier. The same practice will be continued in the future also.
- > Automized water sprinkling system is/will be provided at limestone and coal unloading hopper and handling area.

8.2 Water Management

- No industrial waste water is being/will be generated during cement manufacturing process.
- Domestic waste water generated from the office toilets and township is being/will be treated in the STP and treated water is being/will be used for green belt development.
- > Rain water harvesting is being/will be practiced at plant and colony area.

8.3 NOISE ENVIRONMENT

- Properly insulated enclosures are being/will be equipped for noise producing equipments to minimize high noise.
- PPE like earplugs and earmuffs is being/will be provided to the workers exposed to high noise level.
- Sufficient green belt is being/will be maintained around the cement plant.
- Regular monitoring of noise level is being/will be carried out and corrective measures in concerned machinery are being/will be adopted.

8.4 Solid Waste Management

- No solid waste is being/will be generated from the cement manufacturing process.
- Dust collected from air pollution control equipment is being/will be totally recycled in process.
- Sludge from Sewage Treatment Plant (STP) is being/will be used as manure for green belt development.

8.5 Green Belt Development

- LIPL has already developed greenbelt in a scientific manner around the plant boundary, roadside, office buildings and stretches of open land in an area of 31.9 hectare.
- > LIPL will further develop 7.3 hectare under greenbelt in future.
- > A thick green belt all along the roads, colony and plant has been developed under afforestation program. Local species have been planted as per guidelines.

9.0 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 Arasmeta Cement Plant.

