PRE-FEASIBILITY REPORT

FOR

Proposed Enhancement in Cement Production Capacity of Cement (1.37 to 2.0 MTPA), Clinker (1.0 to 3.0 MTPA), CPP (18 to 25 MW) & WHRB (15 MW)

AT

Village: Ghorawat,
Tehsil: Bhopalgarh, District: Jodhpur,
Rajasthan

APPLICANT

M/s. Marwar Cement Limited.
Ground Floor, Jodhpur Tower,
Dharam Narain ji Ka Hatha, Paota, Jodhpur-342010
Email ID: pujaminerals@yahoo.co.in
Phone: 0291-2540550
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>S. No.</th>
<th>TITLE</th>
<th>PAGE. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Executive Summary</td>
<td>1</td>
</tr>
<tr>
<td>2.0</td>
<td>Introduction of The Project/ Background Information</td>
<td>2</td>
</tr>
<tr>
<td>3.0</td>
<td>Project Description</td>
<td>5</td>
</tr>
<tr>
<td>4.0</td>
<td>Site Analysis</td>
<td>14</td>
</tr>
<tr>
<td>5.0</td>
<td>Planning Brief</td>
<td>16</td>
</tr>
<tr>
<td>6.0</td>
<td>Proposed Infrastructure</td>
<td>17</td>
</tr>
<tr>
<td>7.0</td>
<td>Rehabilitation and Resettlement (R&amp;R) Plan</td>
<td>18</td>
</tr>
<tr>
<td>8.0</td>
<td>Project Schedule And Cost Estimates</td>
<td>18</td>
</tr>
<tr>
<td>9.0</td>
<td>Environment Management Plan</td>
<td>18</td>
</tr>
<tr>
<td>10.0</td>
<td>Conclusion</td>
<td>20</td>
</tr>
</tbody>
</table>

ANNEXURES

| 1.    | Annexure I – Location Map                  | 21        |
| 2.    | Annexure II - Environment Settings Map     | 22        |
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

### ABBREVIATION

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>ABBREVIATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>CFBC</td>
<td>Circulating Fluidized Bed Combustion</td>
</tr>
<tr>
<td>2.</td>
<td>CPCB</td>
<td>Central Pollution Control Board</td>
</tr>
<tr>
<td>3.</td>
<td>CPP</td>
<td>Captive Power Plant</td>
</tr>
<tr>
<td>4.</td>
<td>CRZ</td>
<td>Coastal Regulation Zone</td>
</tr>
<tr>
<td>5.</td>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>6.</td>
<td>EC</td>
<td>Environmental Clearance</td>
</tr>
<tr>
<td>7.</td>
<td>EIA</td>
<td>Environment Impact Assessment</td>
</tr>
<tr>
<td>8.</td>
<td>ESPs</td>
<td>Electrostatic Precipitators</td>
</tr>
<tr>
<td>9.</td>
<td>OPC</td>
<td>Ordinary Portland Cement</td>
</tr>
<tr>
<td>10.</td>
<td>PCEs</td>
<td>Pollution Control Equipments</td>
</tr>
<tr>
<td>11.</td>
<td>PPC</td>
<td>Portland Pozzolana Cement</td>
</tr>
<tr>
<td>12.</td>
<td>SH</td>
<td>State Highway</td>
</tr>
<tr>
<td>13.</td>
<td>WHRB</td>
<td>Waste Heat Recovery Boiler</td>
</tr>
</tbody>
</table>

### UNITS

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>ABBREVIATION</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>14.</td>
<td>Ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>15.</td>
<td>KLD</td>
<td>Kilo Liter Per Day</td>
</tr>
</tbody>
</table>
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>Km</td>
<td>Kilometer</td>
</tr>
<tr>
<td>17.</td>
<td>MTPA</td>
<td>Million Ton Per Annum</td>
</tr>
<tr>
<td>18.</td>
<td>MW</td>
<td>Mega Watt</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>N</td>
</tr>
<tr>
<td>20.</td>
<td>NW</td>
</tr>
<tr>
<td>21.</td>
<td>SE</td>
</tr>
<tr>
<td>22.</td>
<td>NE</td>
</tr>
<tr>
<td>23.</td>
<td>E</td>
</tr>
</tbody>
</table>
1.0 EXECUTIVE SUMMARY

Marwar Cement Ltd. is proposing an enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan.

TABLE – 1: Salient Features of the Project

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Particulars</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Location details</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Village</td>
<td>Ghorawat</td>
</tr>
<tr>
<td>2.</td>
<td>Tehsil</td>
<td>Bhopalgarh</td>
</tr>
<tr>
<td>3.</td>
<td>District</td>
<td>Jodhpur</td>
</tr>
<tr>
<td>4.</td>
<td>State</td>
<td>Rajasthan</td>
</tr>
<tr>
<td>5.</td>
<td>Latitude</td>
<td>26°30'29.14&quot;N to 26°30'49.71&quot;N</td>
</tr>
<tr>
<td>6.</td>
<td>Longitude</td>
<td>73°45'42.38&quot;E to 73°46'17.32&quot;E</td>
</tr>
<tr>
<td>B.</td>
<td>Project Area</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Area (in hectares)</td>
<td>The existing land is 48.56 ha for which the EC has already been obtained vide Letter No. J-11011/154/2009 – IA II (I) dated 27.7.2010. For the proposed enhancement, 26.44 ha of land will be required. Therefore, the total land requirement is 75ha.</td>
</tr>
<tr>
<td>8.</td>
<td>Green Belt Development</td>
<td>24.75 ha</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Out of the Total Land area, ~33% will be developed as Green Belt Development.</td>
</tr>
<tr>
<td>C.</td>
<td>Production Capacity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S.N.</td>
<td>Particular</td>
</tr>
<tr>
<td>1.</td>
<td>Cement</td>
<td>2 MTPA</td>
</tr>
<tr>
<td>2.</td>
<td>Clinker</td>
<td>3 MTPA</td>
</tr>
</tbody>
</table>
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Chorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

3. CPP 25 MW
4. WHRB 15 MW

D. Water Requirement

1610 KLD

Source: Ground Water

E. Power Requirement

<table>
<thead>
<tr>
<th>S.N</th>
<th>Purpose</th>
<th>Quantity Required</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cement Plant</td>
<td>5 MW</td>
<td>Grid</td>
</tr>
<tr>
<td>2.</td>
<td>Cement Plant</td>
<td>25 MW</td>
<td>CPP</td>
</tr>
<tr>
<td>3.</td>
<td>Cement Plant</td>
<td>10 MW</td>
<td>WHRB</td>
</tr>
<tr>
<td>4.</td>
<td>Colony/ Plant</td>
<td>2 MW</td>
<td>WHRB</td>
</tr>
</tbody>
</table>

Total 42 MW

F. Man Power Requirement

350 persons

G. Cost details

9. Total Cost of the project ₹1600 Crores
10. Environmental Protection cost Capital Cost: ₹20 Crore Recurring Cost: ₹10 Crore

2.0 Introduction of the project/ Background information

(i) Identification of project and project proponent

Marwar Cement Limited was incorporated on 17th June, 2008 with a view to make their entry into cement Industry with a vision to have footprint gradually on regional level progressing into national level in due course of time. The company has 7 directors/Key management personnel. Its registered office is at office no 31, saraswati bhavan, off ganjawalla lan, chamunda circle, borivali west, Mumbai, Maharashtra.

Directors of Marwar Cement Limited are Moti Lal Chouhan, Badri Lal Chouhan, Siddh Kanwar Chouhan, Lakshmi Kantham Dabbara, Chhotu Ram Chouhan, Raj Kumar Singh
and Shelja Chouhan.

(ii) Brief description of nature of the project

Marwar Cement Ltd. is proposing an enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW).

As per EIA Notification dated 14.09.2006 and amended on 01.12.09, the project falls under Category A projects, S. No. - 3 (b) – (3).

(iii) Need for the Project & its Importance to the Country or Region

It is expected that, the Cement demand will grow at much higher rate than the national average. The bulk distribution of cement in the region is likely to see a high growth due to a number of new Ready Mix concrete plants and projects. Considering this, Marwar Cement Ltd. has proposed to increase the capacity of its integrated cement plant.

Opportunities for the Industry

Though India ranks second in the world in cement production, its per capita annual consumption is very low. Per capita consumption in India has grown from a low level of 70 Kg to around 110 kg over the last 8 years, which is still way behind the world per capita consumption of 307 Kg (as of 2003). Cement Industry has growth potential not only within the country but also for exports to the neighboring countries. With Indian growth rate rising, the opportunities for the industry seem to be large.

Cement consumption in the coming years is likely to get a fillip from Government initiatives for housing and infrastructure:

- State Highway development projects being undertaken by some states
- 10,000 Kms of additional highways (25% concrete)
- Rural roads construction
- Housing finance growing by over 25-30% annually
- IT parks and SEZ zones development in proximity to metros

(iv) DEMAND- SUPPLY GAP.
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

Market demand and projections

- Cement growth is expected to be above the GDP growth of the country, which is expected to be around 8% for the coming years. The Indian cement industry is poised for a period of significant growth and the demand for cement is expected to match the current availability by the end of the current fiscal. Cement demand has registered a CAGR of about 8.5% over the last decade. In fact, at the current levels of growth, the cement industry may have to add over 90 Million Tons of cement capacity to meet the demand for cement over the next 5 years.

- The industry performance during 2009-10 was characterized by volume growth, stable to better cement prices and favorable demand-supply balance in certain regions.

- Cement companies were operating at levels below capacity in the past but with the demand and supply reaching equilibrium; almost all plants are working at above 90% capacity. The rate of growth in cement demand is growing at a faster pace as compared to the capacity expansion. This will improve the realizations of the industry in the coming year.

(v) Imports vs. Indigenous production

India is self sufficient to meet the demands of the market with the GDP projected at 10% in the coming decades and in view of the infrastructure requirement. Facilities going across the region, the infusing growth demand. Industry is gearing up to meet the increasing demands.

(vi) Export Possibility

Currently there are no export plans from the project. Major production will be consumed in the state of Rajasthan and other neighboring states.

(vii) Domestic / Export Markets

The entire production is envisaged for the domestic market.

(viii) Employment Generation (Direct and Indirect) due to the Project
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Chorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

Direct and indirect employment will be generated to the local population, the total manpower requirement for the project will be 100 including skilled, semi-skilled & unskilled category as mentioned in the table below:

Table 2: Employment Generation

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Category</th>
<th>No. of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Skilled</td>
<td>200</td>
</tr>
<tr>
<td>2.</td>
<td>Semi-skilled</td>
<td>50</td>
</tr>
<tr>
<td>3.</td>
<td>Unskilled</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Total Manpower</td>
<td>350</td>
</tr>
</tbody>
</table>

3.0 PROJECT DESCRIPTION

(i) Type of Project including interlinked and independent projects, if any

This project is an interlinked project for which limestone will be sources from its own captive mines in Rajasthan.

(ii) Location Map

Location map showing general location, specific location, and project boundary & project site layout is attached as Annexure I.

(iii) Details of alternative sites consideration and basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

After detailed survey and on the basis of following main criteria’s, this site has been considered for locating a cement plant of desired capacity:

- Availability of adequate ground water and/or perennial source in a reasonable vicinity of the plant site.
- Adequate power supply.
- Proximity to rail head to optimize transportation costs.
- No Forest land is involved.
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

- There is no National Park, Wild Life Sanctuary, Biosphere Reserve etc. within 10 km radius of study area.
- Proximity to an established township, which would offer reasonable amenities to the plant employees.

(iv) **Size or magnitude of operation**

Marwar Cement Ltd. is proposing an enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil: Bhopalgarh, District: Jodhpur, Rajasthan.

<table>
<thead>
<tr>
<th>Type of Cement</th>
<th>% of Production (Per Year)</th>
<th>% of Raw Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Clinker</td>
</tr>
<tr>
<td>OPC - Cement</td>
<td>30%</td>
<td>96-100%</td>
</tr>
<tr>
<td>PPC - Cement</td>
<td>70%</td>
<td>60-65%</td>
</tr>
</tbody>
</table>

(v) **Process Description**

**Cement Manufacturing Process**

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

The cement manufacturing process largely comprises of the following steps:

- Raw Mix preparation
- Raw Mix homogenization
- Coal preparation
- Calcination & Clinkerisation
- Clinker Grinding
- Cement Packing & Dispatch

A. **Raw mix preparation and homogenization**
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

**Raw material reclaiming and transport** - The crushed limestone will be transported to limestone yard through series of belt conveyors and stored in a pile through automatic stacker machine. Once the pile of required quantity and quality is achieved then reclaimer will be used to reclaim the stockpile material. By using stacker and reclaimer machines, pre-blending takes place to minimize fluctuation in crushed limestone quality. The pile of Limestone will be continuously reclaimed, when raw mill is in operation and stored in hopper at raw mill section. Magnetic separators will be installed over the belt conveyers to remove any foreign materials.

**Raw mill feed** - The Limestone along with additives and correctives will be transported from their respective feed bins via weigh feeders and belt conveyor to the raw mill system. Cross Belt Material Analyzer will be installed on feed belt for material properties analysis.

**Raw meal grinding** - A Raw Mill will be used to grind the raw mix which will be capable to meet the production needs. The raw grinding section comprises of vertical roller mill, mill fan, separator & cyclone as well as all ductwork and control dampers. The product after grinding from raw mill is known as Raw Meal.

**Raw meal transport and storage** - From the separator cyclones the raw meal will be transported via air slides and a bucket elevator to the homogenizing silo.

Homogenizing silo will be prerequisite for raw meal blending to achieve consistent quality of Kiln feed. This will also ensure regulated feed with minimum variation in quality for smooth operation of Kiln. A continuous blending Silo of RCC construction of required capacity will be used for the same. The Silo capacity will be to store minimum 36 hrs stock for clinker production based on the clinker production required.

**B. Clinkerization and cement production**

**Raw meal transport to kiln feed** - From the homogenizing silo the raw meal will be extracted to the Kiln feed bin below the silo.
Kiln feed - From the Kiln feed bin the Kiln feed will be transported via the Pre-heater bucket elevator to the top of the Pre-heater tower metered through Rotoscale / appropriate equipment.

Pre-heating - The pre-heating equipment will comprise of the multi stage cyclone system (6 stage depending on final design) connected with gas ducts and meal chutes, the down comer duct and the ID fan.

In cyclone pre-heater system, an efficient heat transfer takes place to finally disperse the raw material particles, when they come in contact with hot gases from kiln.

The raw meal, which is fed into the top stage gas duct, is carried by hot gas steam into cyclone. The material gets separated from gas in cyclones and then travels downwards and through meal chute is discharged into next lower stage gas duct. In this way, material comes into contact with high temperature gases and gets pre-heated and partially calcined and then enters the pre-calcinator.

Pre-calcining and kiln - These groups consist of an in-line low NO2 pre-calciner along with provision of Hot Disc / equivalent combustion chamber for proper fuel ignition (including SNCR system and tertiary air duct from the kiln hood) and a three support rotary kiln.

In the pre-calcinator, further calcination takes place by firing pulverized coal/pet coke, to provide the necessary heat in the kiln and the Pre-calciner located at the bottom of the pre-heater, and then the material is discharged to the kiln. The feed travels down as the kiln rotates. The chemical reaction completes when the material reaches the burning zone and cement clinker is formed.

Clinker cooler - This group consists of a spillage-free third generation clinker cooler with roller crusher, ESP (electrostatic precipitator) including fan and stack, WHRS (waste heat recovery system) for cooling exit gases.

Hot clinker discharged from the Kiln will drop on the grate cooler and will get cooled. The cooler will discharge the clinker onto the pan / bucket conveyor, from where it will be transported to the clinker silo.
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

**Clinker transport and storage** - The clinker leaving the clinker cooler will be transported with deep pan/bucket conveyor to the main clinker silo of designed capacity. Clinker will be taken from the silo to the Cement mill hoppers for cement grinding.

**Cement grinding & storage** - Clinker and Gypsum with Fly ash and mineral components according to requirement will be extracted from their respective hoppers and fed to the Cement Mill. Cement Mill grind the feed to a fine powder and the mill discharge will be fed to an elevator, which will take the material to a separator, which separates fine product (Cement) and the coarse product. The Cement, so produced will be transported to RCC Cement Silos for dispatch. The coarse fraction will be back for further grinding.

**Cement packing & dispatch** - Cement extracted from cement silos will be packed in bags by electronic rotary packing machines and dispatched to consumers by road. Mechanized loading system for loading of packed bags on trucks is established.

**Pyro-processing** - Suitable sensors for temperature, pressure, draughts, gas analysis will be located at strategic points for process information. CCTV (Closed Circuit Television) will be provided to give the operator inside view of the Kiln.

The steady state operation data can be utilized by the operators to obtain clinker of consistent quality.

Kiln shell temperature scanning, which could be synchronized with the Kiln Rotary motion is proposed.

**Thermal Power Plant:**

The generating unit will have CFBC boilers, thermal coal as primary fuel, condensing steam turbine and generator, air cooled condenser and other necessary auxiliary equipments including balance of plant equipment.
There are various sections of the power plant described as below.

1) **Fuel Storage and Handling:**

   This section will include all the necessary equipments like coal crusher, conveyor and drives. Coal from the source shall be crushed into required size and taken to the fuel bunkers feed hopper of the boiler. Coal yard will have separate arrangements for incoming coal and crushed coal to be sent to the bunker.

2) **Boiler and other Auxiliary equipments:**

   The boiler house will have the main boiler as mentioned above along with ID and FD fans, ducts, Pollution control equipment (ESP/Bag Filters), and other necessary valves, piping and fittings. Fuel from the conveyor shall be put into the main bunker from where it shall be fed to the boiler furnace.

3) **Water Treatment Plant:**

   In order to have smooth operation and long life of the boiler system, it requires suitable water treatment plant. Depending upon the test results of the water sample, appropriate treatment methods and equipment shall be decided upon.

4) **Turbine and Control Room:**

   Turbine and control room shall be housed in the separate building other than boiler house. This shall also house other turbine auxiliary equipment, cable cellar, switchgear.
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

5) Condenser / D-E Tanks:
At the exit of the turbine, the low-pressure steam shall be condensed in air cool condenser and condensed water will be fed to de-aerator through condensate circuit.

6) Fly ash disposal:
After combustion of coal inside the boiler furnace, it liberates heat that is used for steam generation. At the same time it generates ash that is a byproduct of combustion process. This ash travels along with flue gases through various parts of the system like Economizer, Air Pre-heater and pollution control equipment and finally through ducts. There is also some collection at the bottom of the furnace. In the end, flue gases are fed into the chimney/stack through ID fan and vented out in the atmosphere. Ash shall be collected at different points and moved by using suitable material handling systems and collected into the silos. Fly ash generated from the system shall be utilized fully for making Cement.

All the equipment including valves, pumps, standby pumps & valves etc shall be operated, monitored and controlled from central control room. In this way, generated power and fly ash shall be sent to the grinding unit for their respective usages.

Plant Layout
The features of the layout are as follows:

- Sufficient space has been provided for ease of operation and maintenance.
- Sufficient space has been provided for parking of vehicles used for transportation of raw materials and cement.
- Inward & outward movements of the vehicles for carrying raw materials from customers/suppliers and dispatch of cement/ clinker from cement plant, are segregated and routed for internal plant traffic control.
- Green belt/plantation area has been developed.
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

- Safety requirements were kept in mind while locating the workshops and vehicular movement inside the plant.
- Plant is having modern railway siding with covered sheds and adequate venting arrangements.

(vi) Raw material required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product.

a) Raw Material Requirements

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Raw Material</th>
<th>Total Quantity In TPA</th>
<th>Source</th>
<th>Mode of transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Limestone</td>
<td>12700</td>
<td>Captive</td>
<td>Covered Conveyor Belt</td>
</tr>
<tr>
<td>2.</td>
<td>Clinker</td>
<td>9000</td>
<td>Captive</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Fly ash</td>
<td>1485</td>
<td>Captive Power Plant</td>
<td>By Road/ Rail</td>
</tr>
<tr>
<td>4.</td>
<td>Gypsum</td>
<td>250</td>
<td>RCF, Mumbai</td>
<td>By Road/ Rail</td>
</tr>
<tr>
<td>5.</td>
<td>Silica Sand</td>
<td>1150</td>
<td>Captive</td>
<td>Covered Conveyor Belt</td>
</tr>
<tr>
<td>6.</td>
<td>Red Ore</td>
<td>800</td>
<td>Beawer</td>
<td>By Road</td>
</tr>
<tr>
<td>8.</td>
<td>Petcoke</td>
<td>900</td>
<td>-</td>
<td>By Rake</td>
</tr>
</tbody>
</table>

b) Marketing Area and Mode of transportation of Final Product

Cement market for the Proposed Grinding Unit would be the state of Rajasthan and neighboring states. Mode of transportation for final product will be by road / railways.

(vii) Resources optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

- No solid waste will be generated from the proposed project. However, material collected by the dust collectors (bag filters) is recycled back in the process.
- No waste water will be generated from the proposed project. However, the waste water generated from thermal power plant shall be treated (neutralized) and reused in dust suppression or other activities.
• Domestic effluents generated from plant office & colony will be treated in STP and treated water will be reused for developing greenbelt & plantation.

• There will be no industrial effluent discharge outside from the project premises.

(viii) Availability of water it's source, energy/power requirement and source should be given.

a) Water Requirement

The total water requirement after the proposed enhancement is 1610 KLD which will be sourced from ground water.

b) Power Requirement

The total power requirement for proposed project will be 42MW.

<table>
<thead>
<tr>
<th>S.N</th>
<th>Purpose</th>
<th>Quantity Required</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cement Plant</td>
<td>5 MW</td>
<td>Grid</td>
</tr>
<tr>
<td>2.</td>
<td>Cement Plant</td>
<td>25 MW</td>
<td>CPP</td>
</tr>
<tr>
<td>3.</td>
<td>Cement Plant</td>
<td>10 MW</td>
<td>WHRB</td>
</tr>
<tr>
<td>4.</td>
<td>Colony/ Plant Lighting/ Mining</td>
<td>2 MW</td>
<td>WHRB</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>42 MW</td>
<td></td>
</tr>
</tbody>
</table>

(ix) Quantity of waste to be generated (liquid and solid) and scheme for their management/disposal

• No waste water will be generated from the proposed project. However, the waste water generated from thermal power plant shall be treated (neutralized) and reused in dust suppression or other activities.

• Domestic effluents generated from plant office & colony will be treated in STP and treated water will be reused for developing greenbelt & plantation.

• No effluent will be discharged outside the project premises.
• Used oil generated from plant machinery will be disposed off through CPCB authorized recycler.

• No solid waste will be discharged from the plant. However, dust collected by the Bag filters will be totally recycled in the process.

• Wastewater generation i.e. about 250 m$^3$/day will be treated in STP. The sludge from the STP will be used as manure for soil.

• Solid waste in the form of Fly ash will be generated from CPP which will be used for PPC manufacturing.

4.0 SITE ANALYSIS

(i) Connectivity

The site is well connected with communication facilities like telephone, fax, wireless and telex, and as such, no constraints are envisaged in this aspect as Merta City is ~28.11 km km in NE direction from the project site.

The nearest railway station is Kharia Kangar Railway Station is ~ 13km in NW direction and State Highway 21 is ~5km in SE direction from the proposed site.

(ii) Land From, Land Use and Land Ownership

The existing land is 48.56 ha for which the EC has already been obtained vide Letter No. J-11011/154/2009 – IA II (I) dated 27.7.2010. The Consent to Establish has been granted vide Letter no. 2013-2014/CPM/1847 dated 22.11.2013.

For the proposed enhancement 26.44 ha of land will be required. Therefore, the total land requirement is 75ha. The total land required for the project is 75 Ha which is a government land. The acquisition of the proposed land is under process.

(iii) Topography

The topography of the area is slightly undulating.

(iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of
the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given

Table 6: Environmental Settings of the Area

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Environmental Settings</th>
<th>Name, Distance and Direction from the proposed site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Type of Land</td>
<td>Barren land allotted by State Govt. &amp; also private land purchased by Company whose land use was changed for industrial purpose</td>
</tr>
<tr>
<td>2.</td>
<td>Ecological Sensitive Areas (Wild Life Sanctuaries)</td>
<td>There is no ecological sensitive area falls within the 10 km radius area from the project site.</td>
</tr>
<tr>
<td>3.</td>
<td>Reserved / Protected Forest within 10km radius</td>
<td>There are no Reserved / Protected Forests within 10km radius</td>
</tr>
<tr>
<td></td>
<td>(Boundary to boundary distance)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Water bodies</td>
<td>• Gaya Bhala Nadi (~ 2.5 km in N)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Jojri Nadi (~ 1.5 km in NW)</td>
</tr>
</tbody>
</table>

(v) Existing Infrastructure

There is no existing infrastructure at the proposed land.

(vi) Climatic Data from Secondary Sources

The climate of Jodhpur is generally hot and semi-arid, but with a rainy season from late June to September. Although the average rainfall is around 450 millimetres (18 in), it is extraordinarily variable. In the famine year of 1899, Jodhpur received only 24 millimetres (0.94 in), but in the flood year 1917 it received as much as 1,178 millimetres (46.4 in).

Temperatures are extreme throughout the period from March to October, except when monsoonal rain produces thick clouds to lower it slightly. In the months of April, May and June, high temperatures routinely exceed 40 degrees Celsius. During the monsoon season, average temperatures decrease slightly. However, the city's generally low humidity rises and this adds to the normal discomfort from the heat. Phalodi, near
Proposed enhancement in cement production capacity of Cement (1.37 to 2 MTPA), Clinker (1 to 3 MTPA), CPP (18 to 25 MW) & WHRB (15 MW) at Village: Ghorawat, Tehsil Bhopalgarh, District: Jodhpur, Rajasthan

Pre-Feasibility Report

Jodhpur, is the driest place of the district as well as in the state.

(vii) Social Infrastructure Available

The nearest major town is Merta City about 28.11 Km from the project site is commercial hub. Thus providing sufficient infrastructure facilities like schools, dispensaries, small hospitals, places of worship.

Telephone, Medical facilities and Telegraph facilities are available in the nearby towns.

5.0 PLANNING BRIEF

(i) Planning Concept (Type of Industries, Facilities, and Transportation etc.) Town And Country Planning/Development Authority Classification:

Proposed project is a cement plant where cement will be manufactured from raw materials such as Limestone, Clinker, fly ash, Slag & Gypsum.

The site is well connected by Rail, road and air network.

(ii) Population Projection

Direct and indirect employment will be generated to the local population, the total manpower requirement for the project will be 350, out of which 200 workers will be skilled, 50 workers will be semi-skilled and 100 workers unskilled workers mainly for cleaning, maintenance, loading, unloading etc. Direct and indirect employment will be created due to project, which would help in improving the living conditions of the local area.

(iii) Land Use Planning

The total land for the proposed project is 75 ha & about 33 % (24.75 ha) of the total project area will be covered under green belt & plantation in order to reduce dust & noise pollution levels & to increase aesthetic beauty of the area.

(iv) Assessment of Infrastructure Demand (Physical & Social)

Assessment will be carried out and the associated requirements will be included in the CSR plan.

(v) Amenities/Facilities
As per Company’s Act such facilities will be developed to adhere the rules & regulations as per Rajasthan Government.

6.0 PROPOSED INFRASTRUCTURE

(i) Industrial Area (Processing Area)

35 Ha of the land will be required for the cement plant.

(ii) Residential Area (Non Processing Area)

10 ha of the land will be required for colony.

(iii) Green Belt Development

Out of the total plant area (75 ha), 33% of the total area will be developed as Greenbelt/plantation i.e. 24.57 ha.

(iv) Social Infrastructure

Marwar Cement Limited has well-defined CSR policy to carry out social development and welfare measures in the surrounding villages. Proposed project will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region. The project will facilitate to develop ancillary units for further opportunity for locals for self employment generation for permanent source of earnings.

(v) Connectivity

The site is well connected with communication facilities like telephone, fax, wireless and telex, and as such, no constraints are envisaged in this aspect as the tehsil and district headquarter is near to the site.

(vi) Drinking Water

10 KLD water will be required for drinking purpose.

(vii) Sewerage System

The site will be facilitated with an STP.

(viii) Industrial Waste Management
No industrial waste water will be generated from Cement Grinding Unit. The waste water generated from thermal power plant shall be treated (neutralized) and reused in dust suppression or other activities.

(ix) Solid Waste Management

No solid waste will be generated from the grinding unit. However, material collected by the PCEs (Bag Filters) will be recycled (100%) in the process.

(x) Power Requirement and Source

Total power requirement after the proposed expansion will be 42 MW; which will be met by CPP of 25 MW, State Grid of 5 MW, WHRB of 15 MW & for Emergency Power DG set of capacity 5 MW will be installed.

7.0 REHABILITATION AND RESETTLEMENT (R & R) PLAN

(i) Policy To Be Adopted (Central/State) In Respect Of The Project Affected Persons Including Home Oustees, Land Oustees And Landless Laborers (Brief Outline To Be Given)

The Rehabilitation & Resettlement Policy of 2007 will be followed.

8.0 PROJECT SCHEDULE AND COST ESTIMATES

(i) Likely Date Of Start Of Construction And Likely Date Of Completion (Time Schedule For The Project To Be Given)

The project will start only after obtaining prior Environmental Clearance and all other required clearances.

(ii) Estimated Project Cost Along With Analysis In Terms Of Economic Viability of The Project:

- Total cost of the Project is : Rs. 1600 Crores
- Environmental Protection Cost: Rs. 20 Crores

9.0 ENVIRONMENTAL MANAGEMENT PLAN

9.1 Air Pollution Control
The major sources of pollution are particulate matter from grinding unit.

- Cement, clinker, petcoke and fly ash will be stored in silos.
- Gypsum and clinker will be stored in covered shed.
- Better maintenance and installation of proper pollution control equipment like Bag House and ESP will be done.
- Green belt has been developed in the existing plant premises.
- All the roads within the plant premises are concreted and regular sweeping will be done.
- Water spraying will be done around raw material handling area and on the haul roads for dust suppression.
- Personal protective equipments like dust mask, ear plugs, helmets etc, will be provided to the employees/workers for their personal protection.

**9.2 Water Pollution Control**

- No industrial waste water will be generated from grinding unit. The waste water generated from thermal power plant will be treated (neutralized) and reused in dust suppression or other activities.
- The domestic waste from administrative building and plant offices will be disposed off through septic tank and soak pit system. There will be no discharge outside the plant premises. Rain water harvesting system will be provided for storm water drains and rooftop.

**9.3 Solid Waste Management**

- There will be no solid waste generation from the grinding unit. However, material collected by the dust collectors (Bag Filters and ESPs) will be recycled in the process.
- Solid waste in the form of fly ash will be generated from Thermal Power Plant.
- Fly ash will be used for manufacturing PPC cement.
9.4 Noise Pollution Control

- To minimize the noise produce from the machineries proper acoustic enclosure, padding etc. will be provided to the necessary machineries.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- Green belt will be developed all along the project boundary.
- Periodical monitoring will be carried out on a regular basis.
- In order to reduce the effect of noise pollution, earmuffs will be provided to all operators and employees working near the machinery.

9.5 Green Belt Development/Plantation

- Out of the total project area i.e. 75 ha, 33% of the total area (about 24.57 ha) will be developed in Greenbelt/plantation.
- Plantation will be done in and around the periphery of plant boundary.
- The trees will be planted at suitable grid spacing to encourage proper growth.
- The dead plants will be replaced by fresh plants.

10.0 CONCLUSION

The project activity and the management will support the local Panchayat and will provide other form of assistance for the development of public amenities in the region. Plantation will be developed in and around the project area. The project will be environment friendly and will help in improving the overall economic status & better life condition for the people of the area and open avenues for direct and indirect employment to the locals.

The project will facilitate to develop ancillary units for further opportunity for locals for self employment generation for permanent source of earnings.
Proposed Enhancement in Cement Production Capacity of Cement (1.37 to 2.0 MTPA), Clinker (1.0 to 3.0 MTPA), CPP (18 to 25 MW) & WHRB (15 MW)

M/s. Marwar Cement Limited
At Village: Ghorawat,
Tehsil Bhopalgarh, District: Jodhpur, Rajasthan