

# **PRE - FEASIBILITY REPORT**

**FOR**

**Enhancement in Production Capacity of  
Integrated Cement Project - Clinker (2.0 to 4.5  
MTPA), Cement (2.5 to 5.2 MTPA), CPP (40 MW),  
WHRS (10 to 12 MW) and D.G. Set (2 x 6 MW)**

**At**

**Villages - Tonki, Temarni, Sondul & Golpura,  
Tehsil - Manawar, District - Dhar (Madhya Pradesh)**

**APPLICANT**



**M/s. UltraTech Cement Limited**

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## PRE - FEASIBILITY REPORT

### 1.0 EXECUTIVE SUMMARY

M/s. UltraTech Cement Limited has obtained Environmental Clearance for Integrated Cement Project - Clinker (2.0 MTPA), Cement (2.5 MTPA), CPP (40 MW), WHRS (10 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul and Golpura, along with 8 km Covered Belt Conveyor Corridor passing through Villages Muhali, Morad, Devra and Sitapuri, Tehsil - Manawar, District - Dhar (Madhya Pradesh) from MoEFCC, New Delhi vide letter no. J-11011/86/2012-IA.II (I) dated 10<sup>th</sup> Feb., 2016.

The company now intends to commission the plant of proposed enhancement capacity - Clinker (2.0 to 4.5 MTPA), Cement (2.5 to 5.2 MTPA), CPP (40 MW), WHRS (10 to 12 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul and Golpura, Tehsil - Manawar, District - Dhar (Madhya Pradesh).

**Table - 1**  
**Salient Features of the Project**

S. NO.	PARTICULARS	DETAILS			
A.	Nature & Size of the Project	Units	Existing Granted Capacity	Additional Capacity	Total Capacity After Enhancement
		Clinker (MTPA)	2.0	2.5	4.5
		Cement (MTPA)	2.5	2.7	5.2
		CPP (MW)	40	Nil	40
		WHRS (MW)	10	2.0	12
		D.G. Set (MW)	2 x 6	Nil	2 x 6
B.	Category of the Project	As per EIA Notification dated 14 <sup>th</sup> Sept., 2006 & as amended from time to time; this project falls under S. No. 3 (Material Production), Project Activity '3(b)' Cement Production.			
C.	Location Details				
	Villages	Tonki, Temarni, Sondul and Golpura (Plant) Muhali, Morad, Devra and Sitapuri (Covered Belt Conveyor Corridor)			
	Tehsil	Manawar			
	District	Dhar			
	State	Madhya Pradesh			
	Latitude	22°15' 41.50" to 22° 16' 39.12"N			
	Longitude	75° 07' 3.13" to 75° 08' 54.59"E			
	Toposheet No.	46N/3 and 46N/4			



S. NO.	PARTICULARS	DETAILS
D.	Area Details	
	Total Project Area	231.28 ha {which includes Plant and Colony Area 211.96 ha and Conveyor corridor (b/n Plant and Proposed Captive Sitapuri Mine) - 19.32 ha}
	Greenbelt / Plantation Area (ha)	76.32 ha i.e. 33% of the total project area will be developed under greenbelt / plantation.
E.	Environmental Setting Details (with approximate aerial distance and direction from the project site)	
1.	Nearest Town / City	Manawar (4.0 km towards SW direction)
2.	Nearest District Headquarter	Dhar (40 km towards NE direction)
3.	Nearest National Highway / State Highway	<ul style="list-style-type: none"> <li>○ NH - 3 (36 km towards East direction)</li> <li>○ SH - 38 (3.0 km towards West direction)</li> </ul>
4.	Nearest Railway station	Mhow Railway Station (80 Km towards NE direction)
5.	Nearest Airport	Indore Airport (82 Km towards NE direction)
6.	Archaeological important site	None within 10 km radius
7.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Wildlife Corridors etc. falls within 10 km radius of the project site.
8.	Reserved Forests (RF) / Protected Forests (PF) etc. within 10 Km. radius	Lawani RF (9.6 km towards NE direction)
9.	River / Water Body (within 10 km radius)	<ul style="list-style-type: none"> <li>○ Maan River (1.5 km towards West direction)</li> <li>○ Mandawadi River (8.0 km towards SE direction)</li> </ul>
10.	Seismic Zone	Zone - II [as per IS 1893 (Part-I): 2002]
F.	Cost Details (Existing Granted Project + Proposed Enhancement Project)	
1.	Total Cost of the Project	Rs. 3200 Crores
2.	Cost for Environment Management Plan	<ul style="list-style-type: none"> <li>○ Capital Cost - Rs. 120 Crores</li> <li>○ Recurring Cost - Rs. 5 Crores / annum</li> </ul>
G.	Basic Requirements for the project	
1.	Water Requirement (KLD)	Total water requirement for the proposed enhancement capacity will be 3200 KLD. Source: Narmada River and Ground Water.
2.	Power Requirement (MW)	Total power required for proposed enhancement capacity will be 54 MW. Source: CPP, WHRB and 132 KV Grid Power from Manawar Substation.
3.	Man Power Requirement	Total manpower required for the proposed enhancement capacity will be 2600 persons.
H.	Type of cement	35 % OPC and 65% PPC at IU

## 2.0 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

### (i) Identification of Project and Project Proponent

The **Aditya Birla Group** is India's first truly multinational corporation. It is the eighth-largest cement producer in the world. Global in vision, rooted in Indian values, the Group is driven by a performance ethic pegged on value creation for its multiple stakeholders. A US \$41 billion (Rs. 2, 50,000 Crore) corporation, the Aditya Birla Group is in the League of Fortune 500. Anchored by an extraordinary force of over 120,000 employees, belonging to 42 nationalities. Over 50 per cent of its revenues flow from its overseas operations spanning 36 countries.

The company has an installed capacity of 67.7 Million Tonnes Per Annum (MTPA) of grey cement. UltraTech Cement has 12 Integrated Plants, 1 Clinkerisation Plant, 18 Grinding Units and 7 Bulk Terminals. Its operations span across India, UAE, Bahrain, Bangladesh and Sri Lanka. UltraTech Cement is also India's largest exporter of cement reaching out to meet the demand in countries around the Indian Ocean and the Middle East.

In the white cement segment, UltraTech goes to market under the brand name of Birla White. It has a White Cement Plant with a capacity of 0.56 MTPA and 2 Wall Care putty plants with a combined capacity of 0.8 MTPA.

With 101 Ready Mix Concrete (RMC) plants in 35 cities, UltraTech is the largest manufacturer of concrete in India. It also has a slew of specialty concretes that meet specific needs of discerning customers.

### (ii) Brief description of nature of the project

M/s. UltraTech Cement Limited has obtained Environmental Clearance for Integrated Cement Project - Clinker (2.0 MTPA), Cement (2.5 MTPA), CPP (40 MW), WHRS (10 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul and Golpura, along with 8 km Covered Belt Conveyor Corridor passing through Villages Muhali, Morad, Devra and Sitapuri, Tehsil - Manawar, District - Dhar (Madhya Pradesh) from MoEFCC, New Delhi vide letter no. J-11011/86/2012-IA.II (I) dated 10<sup>th</sup> Feb., 2016.

The company now intends to commission the plant of proposed enhancement capacity - Clinker (2.0 to 4.5 MTPA), Cement (2.5 to 5.2 MTPA), CPP (40 MW), WHRS (10 to 12 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul and Golpura, Tehsil - Manawar, District - Dhar (Madhya Pradesh).

As per EIA Notification dated 14<sup>th</sup> September, 2006, as amended from time to time; the project falls under Category "A", Project or Activity '3(b)'.

### (iii) Need for the project and its importance to the country and or region

Industrialization is the better way for growth & employment & also it is a strategic location connecting Indian markets. The industrialization and infrastructure growth have to go hand in hand. Cement is major component in infrastructure growth.

Total Cement production in the area and nearby state does not match the demand growth and hence new capacities have to come up concurrently. The proposed plant will ensure that the supply situation in Madhya Pradesh is comfortable in the coming times, as growth is expected to propel demand.

M/s. UltraTech Cement Ltd is an environmental friendly production facility across the Madhya Pradesh & India absorbing a major quantity of fly ash from Govt. Captive Power Plant & own Captive Power Plant. Disposal of fly ash is an environmental concern which is faced by state owned and captive power plants. Cement grinding can consume up to thirty percent of fly ash produced in the nearby power plants and thus reduce environmental concern.

The enhancement programme of the Group will also generate immense employment opportunities revenue generation for State and centre in terms of taxes etc., improvement of socio economics of the area by way of education, vocational training, animal husbandry, improving infrastructure facilities such as roads, transport, improvement in Drinking water supply, Medical facility etc. The Aditya Birla Group is committed to the development of the country and will put all efforts for comprehensive development of this area also as being practiced by us at other establishments.

**(iv) Demand-Supply Gap**

The total cement consumption in India during FY14 was 270.3 million tonnes which grew at a CAGR of 6.7% in last five years. Cement demand in India is expected to increase due to government's push for large infrastructure projects, leading to 45 million tonnes of cement needed in the next three to four years.

India's cement demand is expected to reach 550-600 million tonnes per annum (MTPA) by 2025. The housing sector is the biggest demand driver of cement, accounting for about 67 per cent of the total consumption in India. The other major consumers of cement include infrastructure at 13 per cent, commercial construction at 11 per cent and industrial construction at nine per cent.

To meet the rise in demand, cement companies are expected to add 56 million tonnes (MT) capacity over the next three years. The cement capacity in India may register a growth of eight per cent by next year end to 395 MT from the current level of 366 MT. It may increase further to 421 MT by the end of 2017. The country's per capita consumption stands at around 190 kg.

**(v) Imports vs. Indigenous production**

Imports are not feasible given no proximity to ports.

**(vi) Export Possibility**

Currently, there are no export plans from the project. Major production will be consumed in the state of Madhya Pradesh itself.

**(vii) Domestic/ Export Markets**

The proposed cement production will cater to the cement demands in the state of Madhya Pradesh.

**(viii) Employment Generation (Direct and Indirect) due to the project**

Direct and indirect employment will be generated due to the project. The total manpower requirement for the project will be 2600 persons including skilled, semi-skilled and unskilled category.

S. No.	Category	No. of Employees
1.	Skilled	350
2.	Semi-Skilled	2250
3.	Unskilled	
<b>Total</b>		<b>2600</b>

Unskilled / semi-skilled manpower will be sourced from the local area and skilled manpower will be sourced from outside / local.

**3.0 PROJECT DESCRIPTION**

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

M/s. UltraTech Cement Limited has obtained Environmental Clearance for Integrated Cement Project - Clinker (2.0 MTPA), Cement (2.5 MTPA), CPP (40 MW), WHRS (10 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul and Golpura, along with 8 km Covered Belt Conveyor Corridor passing through Villages Muhali, Morad, Devra and Sitapuri, Tehsil - Manawar, District - Dhar (Madhya Pradesh) from MoEFCC, New Delhi vide letter no. J-11011/86/2012-IA.II (I) dated 10<sup>th</sup> Feb., 2016.

The company now intends to commission the plant of proposed enhancement capacity - Clinker (2.0 to 4.5 MTPA), Cement (2.5 to 5.2 MTPA), CPP (40 MW), WHRS (10 to 12 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul and Golpura, Tehsil - Manawar, District - Dhar (Madhya Pradesh).

**Interlinked Projects:**

- ✓ Mohanpura Limestone Mine (ML Area: 1026 ha) with production capacity of 0.80 MTPA at villages Mohanpura, Soyla, Attarsuma, Karondiya, Badiya, Ghursal, Borghata, Chakrud, Sali, Chikli Tehsil Gandhwani, Distt. Dhar (Madhya Pradesh). Environment Clearance for the same has been obtained from MoEFCC, New Delhi vide letter no. J-11015/275/2011-IA.II (M) dated 20<sup>th</sup> Feb., 2015
- ✓ Sitapuri Limestone Mine (ML Area: 965 ha) with production capacity of 3.66 MTPA at villages Sitapuri, Udiapura, Borlai, Awral, Andiyav, Chirakhan, Tehsil Manawar, Distt. Dhar (Madhya Pradesh). Environment Clearance for the same has been obtained from MoEFCC, New Delhi vide letter no. J-11015/442/2013-IA.II (M) dated 30<sup>th</sup> Dec., 2015.
- ✓ To cater the additional requirement for limestone, UTCL is proposing expansion in Captive Mine.

**Independent Projects:** There is no independent project.

- (ii) Location (map showing general location, specific location, and project boundary & project site layout) with coordinates

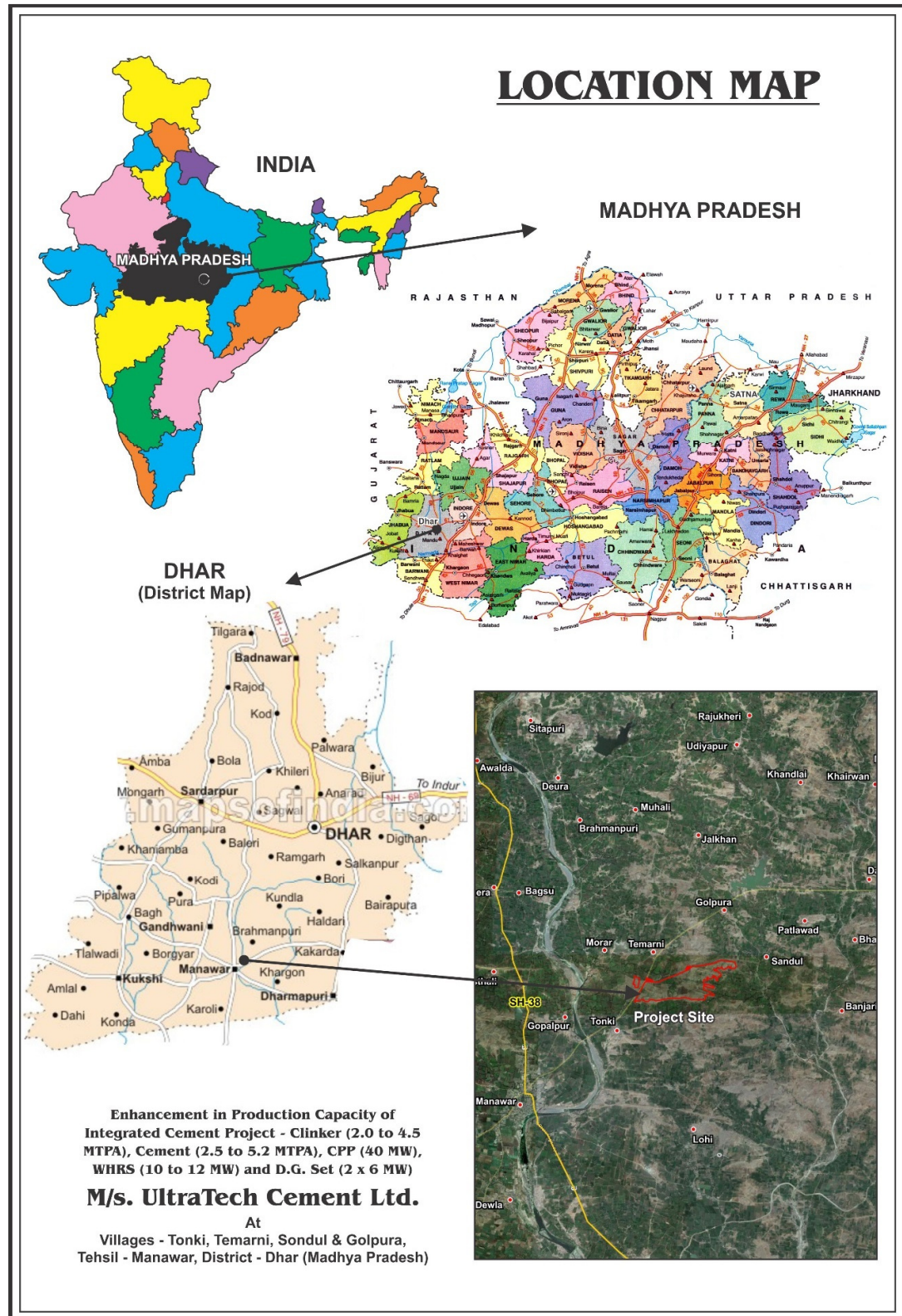


Figure - 1: Location Map



(iii) Key Plan

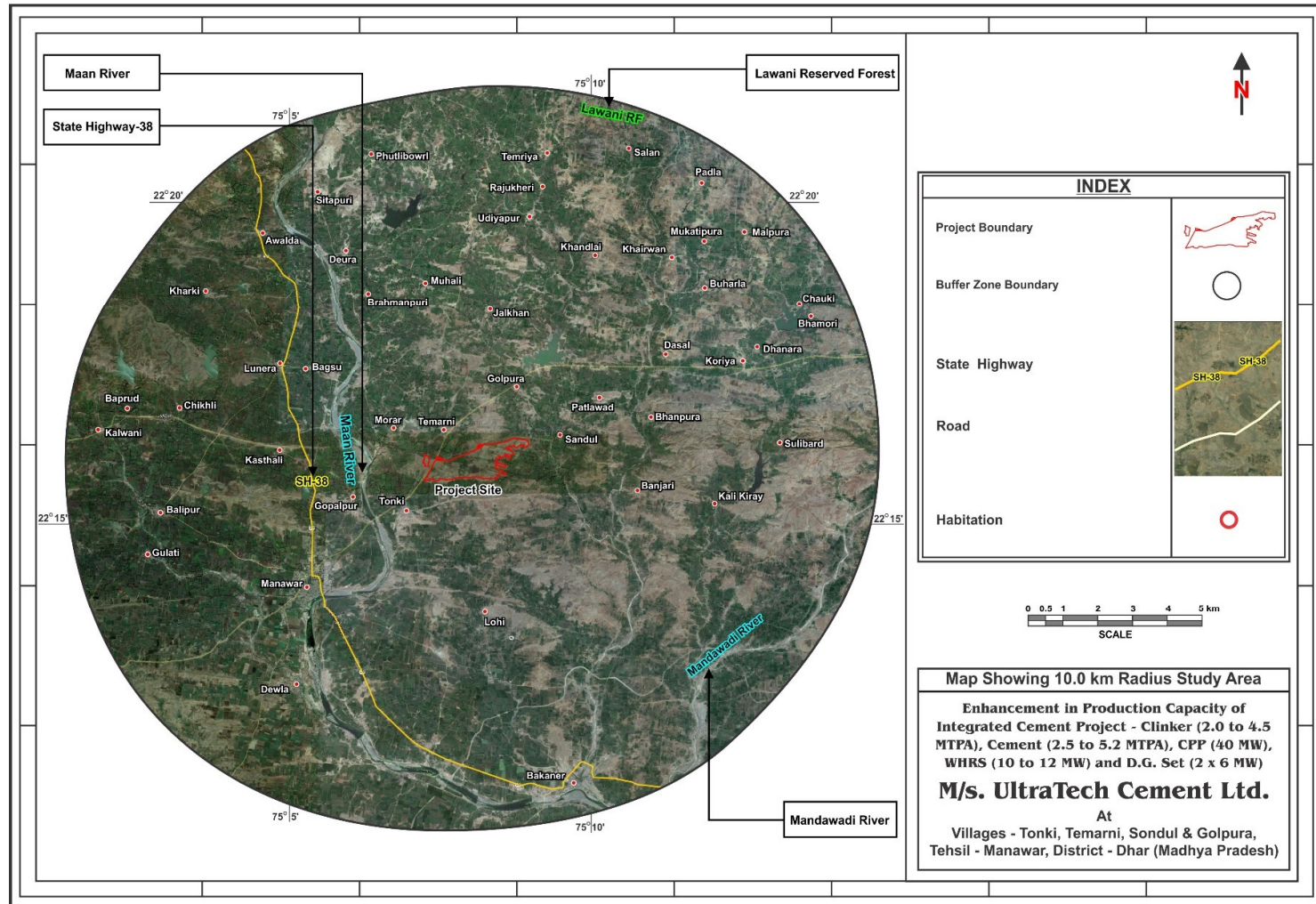


Figure - 2: Key Plan

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

M/s. UltraTech Cement Limited has obtained Environmental Clearance from MoEFCC, New Delhi for Integrated Cement Project along with 8 km Covered Belt Conveyor Corridor at Tehsil - Manawar, District - Dhar (Madhya Pradesh) having total project area of 231.28 ha.

The company now intends to commission the plant of proposed enhancement capacity - Clinker (2.0 to 4.5 MTPA), Cement (2.5 to 5.2 MTPA), CPP (40 MW), WHRS (10 to 12 MW) and D.G. Set (2 x 6 MW) at the existing project area; thus, no alternative site has been considered for proposed enhancement project.

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

M/s UltraTech Cement Ltd is proposing enhancement in production capacity of Integrated Cement Project - Clinker (2.0 to 4.5 MTPA), Cement (2.5 to 5.2 MTPA), CPP (40 MW), WHRS (10 to 12 MW) and D.G. Set (2 x 6 MW) at Villages - Tonki, Temarni, Sondul & Golpura, Tehsil - Manawar, District - Dhar (Madhya Pradesh).

As per EIA Notification dated 14<sup>th</sup> September, 2006, as amended from time to time; the project falls under Category "A", Project or Activity '3(b)'.

The process includes basic raw material requirement, sizing of equipment, utilities and services, infrastructure facilities and sources of waste generation, their quantity, treatment and safe disposal of the waste.

**PRODUCT MIX FOR PPC**

S. No.	Component	Proportion, % by weight
1.	Clinker	65
2.	Fly ash	30
3.	Gypsum (12% Moisture)	5

**PRODUCT MIX FOR OPC**

S. No.	Component	Proportion, % by weight
1.	Clinker	95
2.	Gypsum (12% Moisture)	5

(vi) **Project description with process details (a schematic diagram/ flow chart showing the project layout, components of the project etc. should be given)**

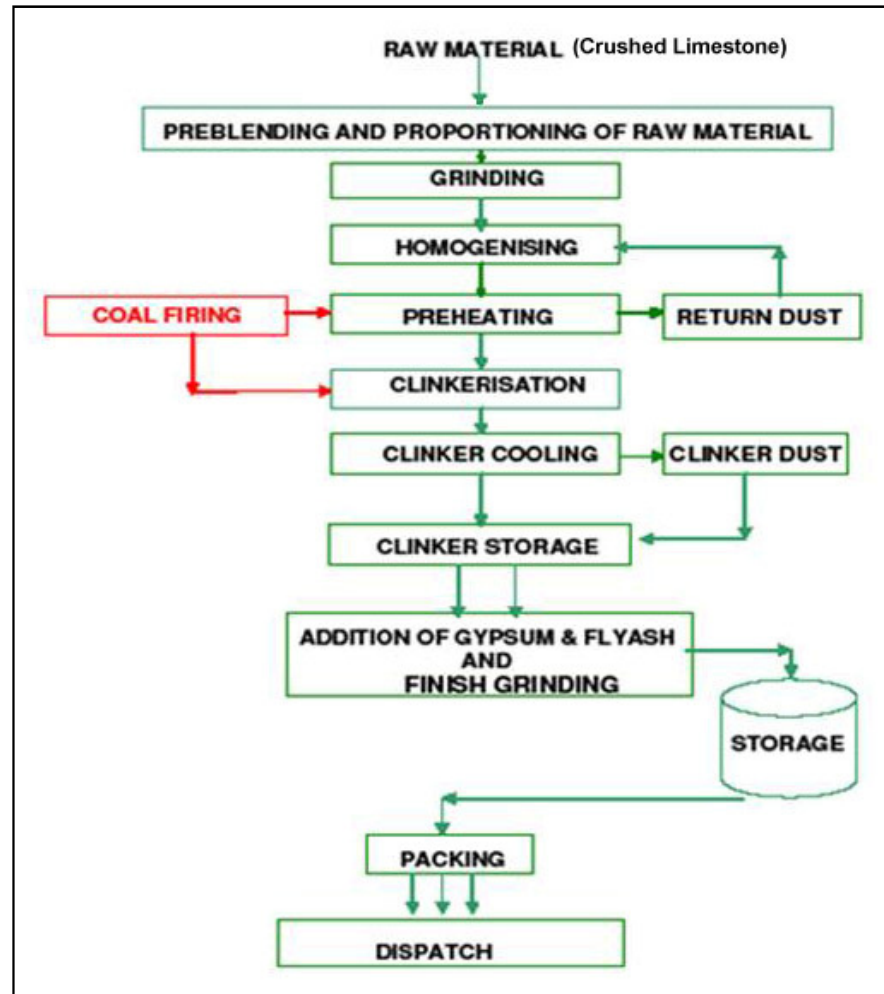
**Project Description**

S. No.	Units	Existing Granted Capacity	Additional Capacity	Total Capacity after Enhancement
1.	Clinker (MTPA)	2.0	2.5	4.5
2.	Cement (MTPA)	2.5	2.7	5.2
3.	CPP (MW)	40	Nil	40
4.	WHRs (MW)	10	2.0	12
5.	D.G. Set (MW)	2 x 6	Nil	2 x 6

## Process Description

### A. Cement Manufacturing

The Cement Plant is based on Dry Process Technology for Cement manufacturing with Pre-Heating and Pre-Calcliner Technology. The type of cement being manufactured is Portland Pozzolona Cement (PPC) and Ordinary Portland Cement (OPC).



**Cement Manufacturing Process - Flow Chart**

The cement manufacturing process largely comprises of the following steps:

- Transportation of Limestone from Limestone Mine to Cement Plant
- Raw Mix preparation
- Raw Mix homogenization
- Coal preparation/ Coal Drying and Grinding
- Calcination & Clinkerisation
- Clinker Grinding
- Cement Packing & Dispatch



**a) Limestone Handling & Storage**

The crushed limestone (50 mm size) from mines crusher will be transported through belt conveyor and material will be stacked in limestone pre-blending stockpiles. An overland belt conveyor shall be provided to transport the material from crusher to the stockpile. Limestone will be reclaimed transversely from the stockpiles by the reclaimers and conveyed to the Raw Mill hoppers for grinding of raw meal. Other additives and corrective materials will also be mixed during grinding of limestone in raw mill in appropriate proportion for desired quality of clinker.

**b) Raw Mix Preparation & Homogenization**

- ✓ **Raw Material Reclaiming and Transport** - The crushed limestone is 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 is used to reclaim the stockpile material. Additives/correctives will be added in the stockpile. By using stacker and reclaimer machines, pre-blending takes place to minimize fluctuation in crushed limestone quality. The pile of limestone is continuously reclaimed, when raw mill is in operation and stored in hopper at raw mill section. Magnetic separators are installed over the belt conveyers to remove any foreign materials. Reclaimed material shall be transported to raw mill feed bin hoppers by a system of conveyor belts installed on structural steel gantries.
- ✓ **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. For the raw mill feeding 3 numbers feed hoppers have been considered viz. limestone, Iron sludge/ ore and Top clay. The feed bins shall be designed as mass-flow steel bins resting on load cells.
- ✓ **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 meal grinding section comprises of a 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. Finished product from the raw mill shall meet fineness of 12% residue on 90-micron sieve and 1.5% residue on 200-micron sieve.
- ✓ **Raw Meal Transport and Storage** - Raw mill product shall be collected at the bottom of the cyclones and at the baghouse material from the filter hoppers shall be collected by a system of airslides, chain conveyors and screw conveyors and transported to a bucket elevator feeding the product to the top of 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.

**c) Coal Handling & Storage**

The process of making clinker & power requires heat, therefore coal/ pet coke will be used as fuel in cement plant whereas in power plant, coal/pet coke/lignite as a fuel will be used. Raw coal received (Indian/Imported) will be stored in coal yard and conveyed to coal mill for grinding and

finally stored in fine coal bins before used in pyro-processing. Coal unloading and stacking/reclaiming will be fully automated mechanical process.

Provision for use of alternate fuels like agro-waste and industrial wastes (hazardous & non-hazardous waste materials) will also be considered.

#### d) Clinkerization & 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** - To make best use of the energy supplied to the kiln system for clinker manufacture, a kiln system with 6-stage preheater, inline precalcination and separate tertiary air duct has been considered. 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 NO<sub>2</sub> 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. The precalciner shall be inline calciner of the riser duct or vessel type calciner. Tertiary air required for the precalciner shall be provided from hot air taken from the kiln hood. A sufficient number of precalciner burners with air and fuel supply shall be included.

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.

- ✓ **Pyro- Processing** - Suitable sensors for temperature, pressure, drafts, 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.

- ✓ **Clinker Cooler** - A new generation, high heat recuperation efficiency (minimum 75%) grate clinker cooler shall be provided. The cooler shall be capable to cope with fluctuations and disturbances in the kiln, which may occur during kiln operation. The grate system of the cooler (closed aeration) allows for optimum clinker distribution at the cooler inlet and for controlled and uniform aeration and cooling of individual grate sections. The clinker cooler shall be equipped with an integrated clinker crusher. The clinker cooler shall be designed for clinker outlet temperature of max 65 Deg C above ambient.

The cooler discharge has been considered above the ground level to avoid any pit or tunnel. The tertiary air extraction shall be located at kiln hood. The clinker cooler waste gas shall be dedusted in cooler ESP. The ESP dedusting system shall be designed for maximum dust content in cleaned exit gas of 30 mg /Nm<sup>3</sup>. Cleaned gas from clinker cooler shall be vented through stack. On-line dust monitoring equipment shall be provided at the cooler stack. Dust from cooler ESP shall be transported to the clinker pan conveyor to clinker silo.

For a situation when the cooler exit gas temperature exceeds a certain value, around 300°C, provision will be made for gas cooling by water spray in duct between cooler exit and cooler ESP/Heat exchanger with Bag filter.

Hot clinker discharged from the kiln will drop on the grate cooler/Pyro -floor type 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.

- ✓ **Clinker Transport and Storage** - The clinker stored from main clinker silo get transported via deep pan conveyor to the cement mill section and clinker loading hoppers for dispatch purpose will also be considered. The clinker storage has been envisaged in RCC silo of capacity 100,000 Ton. An off spec clinker silo of 1,000 Ton is also considered with provision for extraction to road trucks.

Clinker shall be extracted from the bottom of the clinker silos and fed to the clinker hoppers in the cement grinding section through a belt conveyor.

A provision of load out silo has been kept for clinker dispatches to the grinding unit. Clinker from the clinker silo shall be transported to load out hoppers with discharge points to facilitate loading of trucks simultaneously. Each discharge point will be equipped with a weighbridge.

- e) **Cement Grinding & Storage:** For cement grinding, the following main alternatives are usually available:

- ✓ Closed Circuit Ball Mill (CCBM)
- ✓ Ball Mill and Roller Press (BMRP) combination
- ✓ Close Circuit Roller Press (CCRP)
- ✓ Vertical Roller Mill (VRM)

Clinker, gypsum, fly ash and performance improver 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 and the coarse product. The cement, so provided will be transported to RCC cement silos for packing & dispatch.

- f) **Cement Packaging & Dispatch** - The cement silos shall be capable of complete emptying by an appropriate design of the silo bottom and the aeration system. Silo extraction systems with multiple outlets and collecting hoppers shall be provided Cement storage silos shall be provided with truck bulk loading facilities including weighbridges underneath the silos. Mobile loading spouts to suit a large variety of road trucks and trailers shall be included. Transport of cement from cement silo to packing machines by means airslides and bucket elevators has been considered. To enable simultaneous transport of cement from silos to packing machines independent transport lines consisting of airslides and bucket elevators have been considered and these shall be provided with all necessary diverters, connections and dedusting equipment. The packing capacity for the project is designed considering 100 % cement dispatch in bags. 6 nos rotary packing machines with capacity of 180 tph with 12 spouts have been considered.

#### Technical Concept

##### o Emphasis

- State of The Art Technology
- Energy efficient clinkerisation system
- Environment friendly plant concept.
- Manufacturing Process: Calcination by state of the art 6 stage Pre heater with Pre-calciner, Rotary Kiln Grate Cooler & High Efficiency Bag House.

##### o Main Equipment

- Stacker
- Reclaimer
- Raw Mill (VRM)
- Pyro-processing
- Coal Crusher
- Coal Mill
- Cement Mill
- Packers

##### o Storages

- Pre-blending stockpile
- Corrective storage
- Blending Silo
- Clinker Silo
- Coal stock pile

o **Process Control**

Distributed control system comprising of microprocessor based controls and field instrumentation. Plant operation shall be controlled from central control room.

**B. Captive Power Plant (Coal Based)**

M/s UltraTech Cement Ltd is intending to install a coal based Captive power plant having capacity of 40 MW. The generating unit will consist of Circulating Fluidized Bed Combustion (CFBC) boiler using coal/ pet coke/ lignite as primary fuel, one condensing steam turbine and generator, one air cooled condenser and other necessary auxiliary equipment including balance of plant equipment.

The generating station shall be designed to operate with high efficiency and availability at various modes throughout the lifetime of the project considering the nature of cement plant loading.

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 House), 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 room, central control room and other administrative facilities. The steam from the boiler shall be expanded and condensed in the turbine to generate electricity.

**5) Condenser / De-aerator Tank**

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/ pet coke/ lignite inside the boiler furnace, it liberates heat that is used for steam generation. At the same time, it generates ash that is a by-product of combustion

process. This ash travels along with flue gases through various parts of the system like Economiser, Air Preheater 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 (dry fly ash).

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 cement plant for their respective usages.

The project will include the complete civil construction of the buildings, reservoirs, pump house, MCC room, WTP plant area building, cooling tower including ash silos, covered fuel shed, site infrastructure, supply and installation of all mechanical equipment, piping, instrumentation, power evacuation system and other necessary equipment for the completion and satisfactory operation of the generating unit.

### C. **Waste Heat Recovery System**

M/s. UltraTech Cement Ltd. is also proposing to install Waste Heat Recovery system of 12 MW capacity for power backup purpose.

In the proposed cement plant, Waste heat recovery system will consist of two waste heat recovery boilers viz.

- ✓ Pre-Heater (PH) boiler: PH boiler will be installed after Pre-Heater and recovers heat from Pre-Heater exhaust gases.
- ✓ Clinker Cooler (AQC) boiler: Clinker cooler or Air Quenching cooler AQC) boiler will be installed after Clinker cooler and recovers heat from Clinker cooler exhaust gases.

### **Benefits of Waste Heat Recovery**

Benefits of 'waste heat recovery' can be broadly classified in two categories:

#### **1. Direct Benefits:**

Recovery of waste heat has a direct effect on the efficiency of the process. This is reflected by reduction in the utility consumption & costs, and process cost.

#### **2. Indirect Benefits:**

- Reduction in pollution: A number of toxic combustible wastes such as carbon monoxide gas, sour gas, carbon black off gases, oil sludge, and other plastic chemicals etc, releasing to atmosphere if/when burnt in the incinerators serves dual purpose i.e. recovers heat and reduces the environmental pollution levels.
- Reduction in equipment sizes: Waste heat recovery reduces the fuel consumption, which leads to reduction in the flue gas produced. This results in reduction in equipment sizes of all flue gas handling equipments such as fans, stacks, ducts, burners, etc.

- Reduction in auxiliary energy consumption: Reduction in equipment sizes gives additional benefits in the form of reduction in auxiliary energy consumption like electricity for fans, pumps etc.

**D. D.G. Set**

M/s. UltraTech Cement Ltd. has also proposed to install new D.G. Set of 2 x 6 MW.

**Process of Power Generation**

- The fuel oil is heated for free flow to D.G. Set.
- It is transferred for settling to settling tank to remove unwanted material. Fuel oil is further centrifuged.
- After centrifuging, the fuel oil is transferred to another service tank, heated, filtered and injected into engine for combustion.
- The engine generates power and produces electricity.

**Plant Layout**

The features of the layout are as follows:

- ✓ Sufficient space will be provided for ease of operation and maintenance;
- ✓ Sufficient space will be provided for parking of vehicles used for transportation of raw materials, materials and cement.
- ✓ Inward & outward movements of the vehicles for carrying raw materials from customers/suppliers and dispatch of cement/ clinker from cement plant, will be segregated and routed for internal plant traffic control.
- ✓ Process departments will be consolidated into comprehensive production unit requiring short conveying distances and lengths of gas ducts;
- ✓ The lengths of power cables will be minimized by suitably locating load distribution centres in respect of process departments; and
- ✓ Safety requirements will be kept in mind while locating the workshops and vehicular movement inside the plant.





(vii) 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

S. No.	Name of Raw Material	Total Requirement (MTPA)	Source of Materials	Approx. Distance (km) & Mode of Transportation
1.	Limestone	6.75	Captive Limestone Mines	8 - 10 km; Covered Conveyor Belt
2.	Clay	0.4	Captive Sitapuri Limestone Mine	8 - 10 km; Covered Conveyor Belt / Road
3.	Bauxite	0.5	Katni	~700 km; Rail / Road
4.	Iron Ore	0.14	Bhopal Iron Foundries	~350 km; Road
5.	Gypsum	0.22	Nagaur/ Bikaner, Rajasthan	~820 km; Rail / Road
6.	Fly ash	1.56	CPP and Reliance Industries, Jamnagar, Gujarat	~700 km; Rail / Road

b) Fuel Requirement

S. No.	Name	Total Requirement (MTPA)	Source	Distance & Mode of Transportation	Calorific value (Kcal./kg)	% Ash	% Sulphur
1.	Coal (Imported / Indigenous)	0.75	Purchase	~1000 km; by Sea & Rail/ Road	4000 / 6000	14.2	0.9
2.	Petcoke	0.5	Purchase	~1000 km; by Sea & Rail/ Road	7800	2	4.7
3.	HSD (KLD)	100	Purchase	~50 km, by Road	11000	0.01	0.25

c) Marketing Area and Mode of transportation of Final Product

Cement market for the Proposed Plant would be the state of Madhya Pradesh, Khandesh (Maharashtra), Rajasthan and other neighboring states. Mode of transportation for final product will be by road / railways.

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

- No waste water will be generated from the Cement manufacturing process.
- Effluent generated from CPP will be used for dust suppression after proper neutralization.
- Domestic wastewater generated from plant and colony will be treated in STP and treated water will be utilized in greenbelt development / plantation.
- Dust collected from various air pollution control equipments will be recycled back to the process.

- Sludge generated from STP will be used as manure in greenbelt development/ plantation.
- Solid Waste generated from the CPP i.e. fly ash / bottom ash will be used in cement manufacturing.

(ix) **Availability of water its source, energy / power requirement and source should be given.**

a) **Water Requirement and Source**

Total water requirement for the proposed enhancement capacity will be 3200 KLD which will be sourced from Narmada River and Ground Water.

**Water Break-Up**

Purpose	Total Requirement (KLD)	Source
Cement Plant	1300	Narmada River and Ground Water
Captive Power Plant	800	
Colony/ Drinking	500	
Green Belt Development / Plantation	300	
Others (if any)	300	
<b>TOTAL</b>	<b>3200</b>	

b) **Power Requirement and Source**

The total power required for proposed enhancement capacity will be 54 MW.

Source: CPP, WHRB and 132 KV Grid Power from Manawar Substation.

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

- No waste water will be generated from the Cement manufacturing process.
- Effluent generated from CPP will be used for dust suppression after proper neutralization.
- Domestic wastewater generated from plant and colony will be treated in STP and treated water will be utilized in greenbelt development / plantation.
- Dust collected from various air pollution control equipments will be recycled back to the process.
- Sludge generated from STP will be used as manure in greenbelt development/ plantation.
- Solid Waste generated from the CPP i.e. fly ash / bottom ash will be used in cement manufacturing.

**4.0 Site Analysis**

(i) **Connectivity**

The project site is well connected to SH- 38 (~3.0 km in W direction). Nearest city to the project site is Manawar (~4.0 km in SW direction) and Dhar (~40 km in NE direction) from the project site. Nearest Airport is Indore (~82 km in NE direction). The site is connected with communication facilities like telephone, fax, wireless and telex, E mail, internet and as such, no constraints are envisaged in this aspect as the Tehsil and District Headquarters are near to the site.

**(ii) Land from Land use and land ownership**

Total project area is 231.28 ha {which includes Plant and Colony Area 211.96 ha and Conveyor corridor (b/n Plant and Proposed Captive Sitapuri Mine) - 19.32 ha} and the company intends to commission the plant of proposed enhancement capacity.

**(iii) Topography**

The terrain of the proposed area for plant site is largely flat with mild to moderate undulations and is marked by presence of a mild plateau with moderate sloping sides.

**(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.**

S. No.	Particulars	Details (with approximate aerial distance and direction from project site)
1.	Nearest Town / City	Manawar (4.0 km towards SW direction)
2.	Nearest District Headquarter	Dhar (40 km towards NE direction)
3.	Nearest National Highway / State Highway	<ul style="list-style-type: none"> <li>NH - 3 (36 km towards East direction)</li> <li>SH - 38 (3.0 km towards West direction)</li> </ul>
4.	Nearest Railway station	Mhow Railway Station (80 Km towards NE direction)
5.	Nearest Airport	Indore Airport (82 Km towards NE direction)
6.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Wildlife Corridors etc. falls within 10 km radius of the project site.
7.	Reserved Forests (RF) / Protected Forests (PF) etc. within 10 Km. radius	Lawani RF (9.6 km towards NE direction)
8.	River / Water Body (within 10 km radius)	<ul style="list-style-type: none"> <li>Maan River (1.5 km towards West direction)</li> <li>Mandawadi River (8.0 km towards SE direction)</li> </ul>
9.	Seismic Zone	Zone - II [as per IS 1893 (Part-I): 2002]
10.	Elevation Range	200 m to 247 m

**(v) Existing Infrastructure**

- There are primary schools, dispensaries, small hospitals, places of worship in nearby area of the project site.
- Most of the villages are electrified.
- Telephone, Medical facilities and Telegraph facilities are available in the nearby towns.

**(vi) Climatic Data from Secondary Sources**

The climate in Dhar is warm and temperate. The climate of district is normally good and healthy. December, January & February months are usually pleasant. March to May is hottest months of the year.

The period from the middle of June to September is the south west monsoon season. October and November form the post monsoon or transition period. The wind velocity is higher during the pre-monsoon period as compared to post monsoon period. Temperature generally becomes highest in May it reaches up to 42.1°C and the minimum is recorded in January going down to 11°C. The average annual temperature in Dhar is 24.8 °C. When compared with winter, the summers have much more rainfall. In a year, the average rainfall is 923 mm.

**(vii) Social Infrastructure available**

- Nearest town is Manawar in SW direction.
- There are primary schools, dispensaries, small hospitals, places of worship in nearby area of the project site.
- Most of the villages are electrified.
- Telephone, Medical facilities and Telegraph facilities are available in the nearby towns.
- Almost all the villages in the buffer zone are electrified. L.T. power is being supplied for drawing water from a large number of tube wells sunk around the important village of the buffer zone, for irrigation purpose.

**5.0 Planning Brief**

**(i) Planning Concept (type of industries, facilities, transportation etc.) Town and country Planning/ Development authority classification.**

Proposed industry is a cement industry (Red Category). Transportation of raw material and final product will be done via existing road and rail network and cement concrete road will be developed within the plant premises.

**(ii) Population Projection**

Direct and indirect employment will be created due to project, which would help in improving the living conditions of the local area. Temporary influx of people will be there.

**(iii) Land use planning**

Total project area is 231.28 ha of which about 33% area will be developed under greenbelt & plantation in order to reduce dust & noise pollution levels & to increase aesthetic beauty of the area.

**(iv) Assessment of infrastructure demand (Physical & Social)**

M/s. UltraTech Cement Ltd. (UTCL) Dhar will assess the demand of infrastructure (Physical & Social) in nearby area of the proposed site and will develop it under corporate social responsibilities program.

**(v) Amenities/Facilities**

UTCL will develop the Amenities/Facilities in nearby area of the proposed project site as per requirement of local people of the nearby area under corporate social responsibilities program.

## 6.0 Proposed Infrastructure

### (i) Industrial Area (Processing Area)

Following infrastructure will be provided as following:

- **Workshop**

The mechanical and electrical workshop will be provided to take care of the regular maintenance/ repair jobs in the plant.

- **Machinery stores**

A store building needed for storing tools, spare parts, consumables, etc. Open area for storing machinery and construction materials for the proposed plant.

- **Cranes, Monorails and Pulley blocks**

Adequate sized maintenance cranes/ hoists, monorails and pulley blocks at all suitable locations at the plant for ease of maintenance and operation.

- **Time and Security office**

At the entrance of the main plant, a time office and a security office will be constructed.

- **Dispensary**

A small dispensary with first aid facilities will be provided in the plant premises.

- **Weighbridge**

Electronic weighbridges will be provided to take care of the incoming and outgoing materials at the plant.

- **Bags go down**

Space will be provided in the packing plant area for the storage of bags.

- **Parking**

Adequate parking space will be provided in the plant premises for the parking of vehicles.

### (ii) Residential Area (Non-processing area)

A residential complex with all latest recreational & communication facilities will be provided for plant employees.

### (iii) Green Belt

At present total land is 231.28 ha of which about 33% land will be developed as greenbelt area & plantation in order to reduce dust & noise pollution levels & to increase aesthetic beauty of the area.

### (iv) Social Infrastructure

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure.

**(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 headquarters are near to the site.

**(vi) Drinking Water**

500 m<sup>3</sup>/day water will be required for drinking purpose which will be sourced from ground water.

**(vii) Sewerage system**

Domestic wastewater generated from plant and colony will be treated in STP and treated water will be utilized in greenbelt development / plantation.

**(viii) Industrial Waste management**

No industrial wastewater will be generated from the cement manufacturing process. Effluent generated from CPP will be used for dust suppression after proper neutralization.

**(ix) Solid waste management**

- No solid waste will be generated from cement manufacturing process.
- Dust collected from various air pollution control equipments will be recycled back to the process.
- Sludge generated from STP will be used as manure in greenbelt development/ plantation.
- Solid Waste generated from the CPP i.e. fly ash / bottom ash will be used in cement manufacturing.

**(x) Power requirement and source**

The total power required for proposed enhancement capacity will be 54 MW.

Source: CPP, WHRB and 132 KV Grid Power from Manawar Substation.

**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 labourers (a brief outline to be given).**

Total project area is 231.28 ha and the company intends to commission the plant of proposed enhancement capacity.

**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 Environmental Clearance and all other required clearances. An implementation period of 27 months for this plant from the date of signing/ effectiveness of the main equipment supply contract is foreseen for this project.

(ii) **Estimated project cost along with analysis in term of economic viability of the project.**

- Total cost of the Project: Rs. 3200 Crores
- Cost for Environment Protection Measures:
  - ✧ Capital Cost: Rs. 120 Crores
  - ✧ Recurring Cost/annum: Rs. 5 Crores.

**9.0 ANALYSIS OF PROPOSAL (final recommendations)**

(i) **Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.**

Proposed project will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Special emphasis on Financial and Social benefits will be given to the local people including tribal population, if any, in the area.

Development of social amenities will be in the form of medical facilities, education to underprivileged and creation of self-help groups.

MP state will get revenues in terms of taxes and local people will get direct & indirect employment. Business opportunities for local community will be available like transport of cement to market, fly ash transport from power plant, maintenance & house-keeping contract work etc.



**F.N. J-11011/86/2012-IA.II(I)**  
Government of India  
Ministry of Environment, Forest and Climate Change  
(I.A. Division)

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Dated: 10<sup>th</sup> February, 2016

To

The General Manager (Environment),  
M/s UltraTech Cement Ltd.,  
504, Pragti Deep Building,  
Laxmi Nagar District Centre,  
Laxmi Nagar, Delhi-110092.

**Sub: Integrated Cement Plant (Clinker:2.0MTPA, Cement - 2.5MTPA) along with 40MW coal based Captive Power Plant and WHRB 10 MW of M/s UltraTech Cement Limited at villages Tonki, Temberni, Sonudal & Gopalpura Tehsil Manawar, District Dhar in Madhya Pradesh -Environment Clearance - regarding.**

Sir,

This has reference to your letter No. UTCL/ENV/DEL/2013/64 dated 23.07.2013 along with the Final EIA-EMP Report and subsequent letters dated 31.8.2013, 21.11.2013, 06.03.2014 and 08.08.2014 seeking environmental clearance for the project mentioned above. The TORs for the above proposal was awarded vide F.No. J-11011/86/2012-IA.II(I) dated 21.5.2012 for preparation of EIA- EMP report.

2.0 The proposal could not be considered in the 5<sup>th</sup> EAC(I) meeting held on 31<sup>st</sup> January 2013 to 1<sup>st</sup> February, 2013, as the Public Hearing for the project was presided over by the officer of the rank of Sectional Officer (Revenue), Manawar, District Dhar, which is not in accordance with the procedure prescribed in the Environmental Impact Assessment (EiA) Notification, 2006, the proposal was returned with a request for re-conduct of Public Hearing in accordance with the procedure prescribed in the Environmental Impact Assessment (EIA) Notification, 2006. Public Hearing was re-conducted on 30.05.2013 under the chairmanship of Additional District Magistrate, Dhar and the revised final EIA-EMP report was submitted to the Ministry vide letter no. UTCL/ENV/DEL/2013/64 dated 23.07.2013. M/s. J.M. EnviroNet Private Limited, Gurgaon is the Consultant engaged by the PP for the preparation of the EIA-EMP report. All the Cement Plants (> 1.0 MTPA) are listed at S.No. 3(b) under Category 'A' of the schedule of EIA Notification, 2006 and appraised by the Expert Appraisal Committee (Industry) of MoEFCC.

3.0 M/s UltraTech Cement Limited have proposed to set up an green field Cement Plant (Clinker: 2.0MTPA, Cement: 2.5MTPA) along with 40MW coal based Captive Power Plant and WHRB 10 MW at villages Tonki, Temberni, Sonudal & Gopalpura, Tehsil Manawar, District Dhar, Madhya Pradesh. The land requirement for the proposed project is 231.28 ha (Private land - 106.35 ha and Govt. land - 124.93 ha). Out of the total 124.93 ha govt land,



121.20 ha have been acquired and the remaining 3.73 ha land is yet to be acquired. Out of the total 106.35 ha private land, 14.91 ha have been acquired through direct negotiation and the remaining 91.43 ha land acquisition is under process through Land Acquisition Act. Of the total land (231.28 ha), the S.T. land is 46.898 ha. The longitude and latitude of the project site is 75° 07' 3.13" E to 75° 08' 54.59" E and 22° 15' 41.50" N to 22° 16' 39.12" N respectively. No Forest land is involved. No Defense Installation, Biosphere Reserve, National Park/Wild Life Sanctuary, Ecologically Sensitive Area is located within 10 km radius of the project site. No court case/litigation is pending against the proposed project. Man river and Mandawadi river is located at a distance of 1.5km and 8.0 km respectively from the project site. Few patches of Lawani RF falls at a distance of 9.6km from the project site. Total cost of the project is Rs. 1600 crores. Rs. 70 crores and Rs. 2 crores earmarked for the capital cost and recurring cost per annum towards the environmental pollution control measures. Rs. 80.94 crores is earmarked towards the Enterprise Social Commitment based on Public Hearing issues over a period of ten years.

4.0 The capacity of proposed project is given below:

S. No.	UNIT	Proposed Capacity
1.	Clinker (MTPA)	2.0
2.	Cement (MTPA)	2.5
3.	CPP (MW)	40
4.	WHRB (MW)	10
5.	D.G. Set (MW)	2x6

The cement plant is based on the dry process technology for cement manufacturing with pre-heater and pre-calcliner technology.

5.0 Limestone (3.20 MTPA), clay (0.17 MTPA), Iron sludge/ore/laterite (0.06 MTPA), Gypsum (0.12 MTPA), fly ash (0.62 MTPA), Coal (0.50), HSD (60 KLD), pet coke (0.2 MTPA) are the raw materials that will be used. The limestone will be sourced from Mohanpura & Sitapuri limestone mines. The limestone mines are located at a distance of 8-10 km from the project site and will be transported to the plant site by closed conveyor. The clay will be sourced from Sitapuri limestone mine. Pet coke will be sourced from M/s. Reliance Industries, Jamnagar. For the coal supply, the PAs have submitted an MoU made between them and M/s. Swiss Singapore Overseas Enterprises PTE Limited. As per the MoU, the coal will be imported from South Africa and Indonesia. The ash and sulphur content in the coal will be 13-17% and 1% respectively. Calorific value in the coal would be 6000 kcal/kg. Total Power requirement for the proposed Integrated Cement Project will be sourced from CPP(40 MW) and WHRB (10 MW). The imported coal from South Africa and Indonesia will be received at the Hazira & Mundra port (Gujarat) and then transported to the plant site by rail/road. The revised water requirement will be 2800 KLD instead of 3000 KLD.

6.0 The coal mill, cement mill and the packer units will be equipped with bag filter arrangement with 99.9% efficiency. To control air emission in the cement plant/ CPP, bag house, bag filters and ESP will be installed. Atomized water sprinkling system will be provided at limestone and coal unloading hopper and handling area. Water spraying arrangements will be made, particularly raw material storage area, wagon tippler and truck tippler areas. Good housekeeping practices will be adopted to control the fugitive emissions.



The water requirement for the project would be 3000 KLPD and it will be met from ground and surface water. Application for permission of ground water abstraction is reported to be under process with CGWA. The final approval of CGWA is yet to be obtained by the PAs. No industrial waste water will be generated in the Cement Plant. Domestic waste water generated from Cement Plant will be treated in the STP. The treated water will be utilized for Greenbelt Development. Rooftop Rainwater harvesting will be practiced within the plant premises.

7.0 No solid wastes will be generated in cement manufacturing process. Dust collected from various pollution control equipments will be recycled back to the process. STP Sludge will be utilized as manure for green belt development within the plant premises. Green belt will be developed in about 33% of the total plant area.

8.0 The issues raised during Public Hearing for this proposed Integrated Cement Plant reconducted on 30.05.2013 include, proper compensation of land, basic amenities in the nearby villages, employment to the locals, impact on flora fauna, livestock and people due to pollution, impact on River Man and measures to save local culture in the area etc which have been addressed in the final EIA-EMP report.

9.0 The proposal was considered in the EAC(I) meetings held on 26-27<sup>th</sup> August 2013 and further considered by the Expert Appraisal Committee (EAC) in its 14<sup>th</sup> meeting held during 19-20<sup>th</sup> December 2013 wherein the Committee recommended the project for the Environmental Clearance subject to environmental safeguards. Thereafter, Ministry received complaint from the gram panchayat on 26.12.2013 and by an NGO dated 30.04.2014 against the aforesaid project. In view of the above, Regional Office of MoEFCC at Bhopal was requested to verify the veracity aforesaid complaint and submit a factual report to the Ministry. The response received from the PP vide letter dated 06.03.2014 and the site inspection carried out by the MOEFCC, RO, Bhopal dated 24.07.2014 were further considered in the EAC(I) meetings held on 18<sup>th</sup> - 19<sup>th</sup> September 2014 wherein the Committee noted that the issues mentioned in the complaint do not have any merits as the proposed cement plant is being established in 4 villages and not in the 27 villages as mentioned in the complaint. After detailed deliberations, the Committee recommended the project for environmental clearance subject to the specific conditions as stipulated in its 14<sup>th</sup> meeting held on 19<sup>th</sup> - 20<sup>th</sup> December 2013.

10.0 The Ministry of Environment, Forest and Climate Change (MoEFCC) on the basis of the aforesaid recommendations of the EAC (I), hereby decided to grant Environmental Clearance to the integrated Cement Plant (Clinker:2.0MTPA, Cement - 2.5MTPA) along with 40MW coal based Captive Power Plant and WHRB 10 MW of M/s UltraTech Cement Limited under the provisions of EIA Notification dated 14<sup>th</sup> September 2006, as amended subject to strict compliance of the following Specific and General conditions:

#### **SPECIFIC CONDITIONS**

- i. The project proponent should install 24x7 air devices to monitor air emission, as provided by CPCB and submit report to Ministry and its Regional Office.
- ii. The expansion project shall comply with the new MOEFCC Standards vide GSR 612 (E) dated 25.08.2014 with respect to particulate matter, SO<sub>2</sub>, NO<sub>x</sub> for Cement sector.
- iii. Continuous stack monitoring facilities to monitor gaseous emissions from the process stacks shall be provided. After expansion, limit of PM shall be controlled to meet



prescribed standards by installing adequate air pollution control system. Electrostatic precipitators to clinker cooler, bag house to raw mill/kiln and bag filters to coal mill and cement mill. Low NO<sub>x</sub> burners shall be provided to control NO<sub>x</sub> emissions. Regular calibration of the instruments must be ensured.

- iv. All the pollution control devices/equipment in raw mill/kiln, kiln feeding system, clinker cooler, coal mill, cement mill, and cement silo, shall be interlocked so that in the event of the pollution control devices/systems not working, the respective unit(s) shut down automatically.
- v. Possibilities shall be explored for the proper and full utilization of gases generated from the kiln in waste heat recovery boiler (WHRB) and a feasibility report shall be prepared and submitted to the Ministry and its Regional Office at Bhopal within 3 months from the date of issue of the letter.
- vi. The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16<sup>th</sup> November, 2009 shall be followed.
- vii. Secondary fugitive emissions shall be controlled and shall be within the prescribed limits and regularly monitored. Guidelines / Code of Practice issued by the CPCB in this regard shall be followed.
- viii. Arsenic and Mercury shall be monitored in emissions, ambient air and water.
- ix. The coal yard shall be lined and covered.
- x. Efforts shall be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land. All the raw materials including fly ash shall be transported in the closed containers only and shall not be overloaded. The company shall have separate truck parking area. Vehicular emissions shall be regularly monitored.
- xi. Total fresh water requirement after the proposed expansion of the cement and captive power plant shall not exceed 2800 m<sup>3</sup>/day which will be sourced from the Ground Water & Surface Water. A five year water management plan shall be made so as to achieve reduction in ground water withdrawal.
- xii. Efforts shall be made to further reduce water consumption by using air cooled condensers. All the treated wastewater shall be recycled and reused in the process and/or for dust suppression and green belt development and other plant related activities etc. No process wastewater shall be discharged outside the factory premises and 'zero' discharge shall be adopted.
- xiii. Efforts shall be made to make use of rain water harvested. If needed, capacity of the reservoir shall be enhanced to meet the maximum water requirement. Only balance water requirement shall be met from other sources.
- xiv. Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the Environment (Protection) Act, 1986 whichever are more stringent. Leachate study for the effluent generated and analysis





shall also be regularly carried out and report submitted to the Ministry's Regional Office at Bhopal, SPCB and CPCB.

- xv. All the bag filter dust, raw mill dust, coal dust, clinker dust and cement dust from pollution control devices shall be recycled and reused in the process and used for cement manufacturing. Spent oil and batteries shall be sold to authorized recyclers / reprocessors only.
- xvi. The proponent shall implement a Plan for 100% utilisation the fly ash from the Power Plant in the Cement Plant. All the fly ash shall be utilized as per Fly ash Notification, 1999 subsequently amended in 2003 and 2008. Efforts shall be made to use fly ash maximum in making Pozzolona Portland Cement (PPC).
- xvii. The proposed cement plant kiln shall be provided with a flexible fuel feeding system to enable use of hazardous wastes such as oil sludge, cut tyres, etc.
- xviii. The proponent shall examine and prepare a plan for utilisation of high calorific wastes such as chemical wastes, distillation residues, refuse derived fuels, etc 'as alternate fuels based on availability and composition. For this, the proponent shall identify suitable industries with such wastes and enter into an MOU for long-term utilisation of such wastes as per the E(P) A Rules, 1986 and with necessary approvals.
- xix. Efforts shall be made to use of high calorific hazardous waste in the cement kiln and necessary provision shall be made accordingly. The PP shall enter into an MOU with units with potential for generating HW. And in accordance with HW Regulations and prior approval of the MPPCB.
- xx. As proposed, green belt over 33 % of the total project area shall be developed within plant premises with at least 10 meter wide green belt on all sides along the periphery of the project area, in downward direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the DFO.
- xxi. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Cement plants shall be implemented.
- xxii. All the commitments made to the public during the Public Hearing / Public Consultation meeting held on 30.5,2013 shall be satisfactorily implemented and a separate budget for implementing the same shall be allocated and information submitted to the Ministry's Regional Office at Bhopal.
- xxiii. At least 5 % of the total cost of the project shall be earmarked towards the Enterprise Social Commitment (ESC) based on local needs and action plan with financial and physical breakup/details shall be prepared and submitted to the Ministry's Regional Office at Bhopal. Implementation of such program shall be ensured accordingly in a time bound manner.
- xxiv. The proponent shall prepare a detailed CSR Plan for every next 5 years for the existing-cum-expansion project, which includes village-wise, sector-wise (Health, Education, Sanitation, Health, Skill Development and infrastructure requirements such as strengthening of village roads, avenue plantation, etc) activities in consultation with the local communities and administration. The CSR Plan will include the amount of 2% retain annual profits as provided for in Clause 135 of the



Companies Act, 2013 which provides for 2% of the average net profits of previous 3 years towards CSR activities for life of the project. A separate budget head shall be created and the annual capital and revenue expenditure on various activities of the Plan shall be submitted as part of the Compliance Report to RO, Bhopal. The details of the CSR Plan shall also be uploaded on the company website and shall also be provided in the Annual Report of the company.

- xxv. Risk and Disaster Management Plan along with the mitigation measures shall be prepared and a copy submitted to the Ministry's Regional Office at Bhopal, SPCB and CPCB within 3 months of issue of environment clearance letter.
- xxvi. To educate the workers, all the work places where dust may cause a hazard shall be clearly indicated as a dust exposure area through the use of display signs which identifies the hazard and the associated health effects.
- xxvii. Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, Safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

#### GENERAL CONDITIONS

- i. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.
- ii. At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhopal and the SPCB/CPCB once in six months.
- iii. Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19<sup>th</sup> May, 1993 and 31<sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.
- iv. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dB (nighttime).
- v. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- vi. The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.
- vii. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socioeconomic development activities in the surrounding villages like



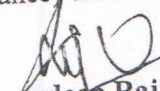
community development programmes, educational programmes, drinking water supply and health care etc.

- viii. Requisite amount shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhopal. The funds so provided shall not be diverted for any other purpose.
- ix. A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.
- x. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEFCC at Bhopal. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.
- xi. The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEFCC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhopal/ CPCB / SPCB shall monitor the stipulated conditions.
- xii. The environmental statement for each financial year ending 31<sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEFCC at Bhopal by e-mail.
- xiii. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at <http://envfor.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bhopal.
- xiv. Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.

11.0 The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.


12.0 The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

13.0 The above conditions shall be enforced, *inter-alia* under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.

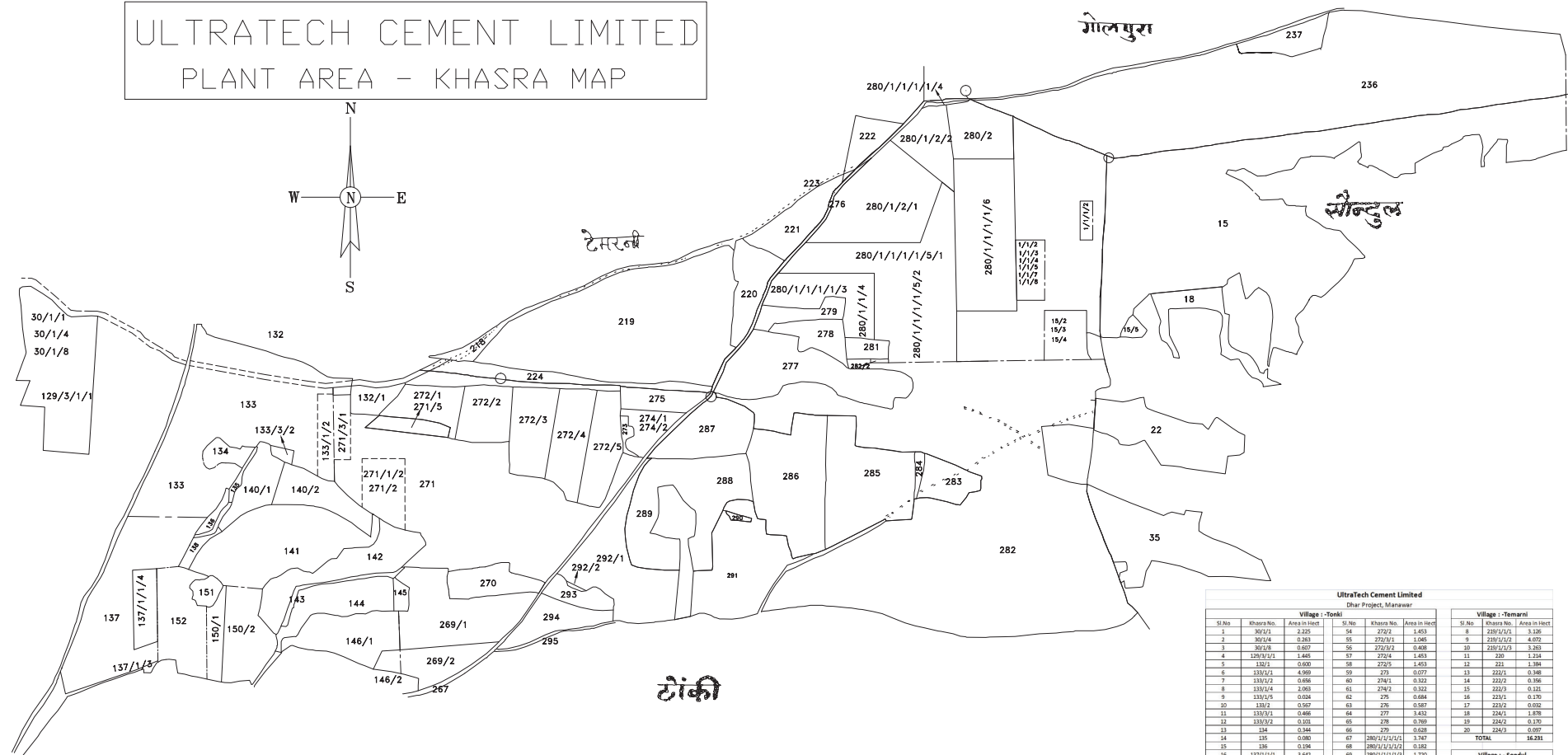
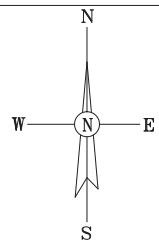
  
(Amardeep Raju)  
Scientist 'D' 10/2/16

Copy to:

- i. The Secretary (Environment), Government of Madhya Pradesh, Mantralaya, Vallabh Bhavan, Bhopal, MP.
- ii. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
- iii. The Chairman, Madhya Pradesh Pollution Control Board, Paryavaran Parishar, E-5, Arera Colony, Bhopal - 462016
- iv. The Chief Conservator of Forests (Central), Ministry of Environment, Forest and Climate Change, Western Regional Office, Kendriya Paryavaran Bhavan, Link Road No. 3, Ravi Shankar Nagar, Bhopal - 462016
- v. Monitoring Cell, Guard file / Record file.

  
(Amardeep Raju)  
Scientist 'D'

# ULTRATECH CEMENT LIMITED PLANT AREA - KHASRA MAP



UltraTech Cement Limited											
Dhar Project, Madhya Pradesh											
Village - Tonki						Village - Temarni					
Sl No	Khasra No.	Area in Hect	Area in Hect	Sl No	Khasra No.	Area in Hect	Area in Hect	Sl No	Khasra No.	Area in Hect	Area in Hect
1	30/1/1	0.205	0.205	54	272/2	0.453	0.453	1	272/1	0.453	0.453
2	30/1/2	0.205	0.205	55	272/3	0.453	0.453	2	272/2	0.453	0.453
3	30/1/3	0.205	0.205	56	272/4	0.453	0.453	3	272/3	0.453	0.453
4	30/1/4	0.205	0.205	57	272/5	0.453	0.453	4	272/4	0.453	0.453
5	30/1/5	0.205	0.205	58	272/6	0.453	0.453	5	272/5	0.453	0.453
6	30/1/6	0.205	0.205	59	272/7	0.453	0.453	6	272/6	0.453	0.453
7	30/1/7	0.205	0.205	60	274/1	0.932	0.932	7	272/7	0.453	0.453
8	30/1/8	0.205	0.205	61	274/2	0.932	0.932	8	272/8	0.453	0.453
9	30/1/9	0.205	0.205	62	276	0.684	0.684	9	272/9	0.453	0.453
10	30/1/10	0.205	0.205	63	276	0.684	0.684	10	272/10	0.453	0.453
11	30/1/11	0.205	0.205	64	277	0.432	0.432	11	272/11	0.453	0.453
12	30/1/12	0.205	0.205	65	278	0.708	0.708	12	272/12	0.453	0.453
13	30/1/13	0.205	0.205	66	279	0.658	0.658	13	272/13	0.453	0.453
14	30/1/14	0.205	0.205	67	280/1/1/1	3.747	3.747	TOTAL			16.231
15	30/1/15	0.205	0.205	68	280/1/1/2	0.632	0.632				
16	30/1/16	0.205	0.205	69	280/1/1/3	1.720	1.720	Sl No <th>Khasra No.</th> <th>Area in Hect</th> <th>Area in Hect</th>	Khasra No.	Area in Hect	Area in Hect
17	30/1/17	0.205	0.205	70	280/1/1/4	0.947	0.947	1	1/1/1/1	2.412	2.412
18	30/1/18	0.205	0.205	71	280/1/1/5	0.278	0.278	2	1/1/1/2	0.208	0.208
19	30/1/19	0.205	0.205	72	280/1/1/6	0.207	0.207	3	1/1/1/3	1.410	1.410
20	30/1/20	0.205	0.205	73	280/1/1/7	0.330	0.330	4	1/1/1/4	0.089	0.089
21	30/1/21	0.205	0.205	74	280/1/1/8	1.078	1.078	5	1/1/1/5	0.089	0.089
22	30/1/22	0.205	0.205	75	280/1/2/1	3.302	3.302	6	1/1/1/6	0.040	0.040
23	30/1/23	0.205	0.205	76	280/1/2/2	1.200	1.200	7	1/1/1/7	0.040	0.040
24	30/1/24	0.205	0.205	77	280/1/2/3	0.154	0.154	8	1/1/1/8	0.041	0.041
25	30/1/25	0.205	0.205	78	280/1/2/4	0.154	0.154	9	1/1/1/9	0.041	0.041
26	30/1/26	0.205	0.205	79	280/1/2/5	0.201	0.201	10	35	4.441	4.441
27	30/1/27	0.205	0.205	80	280/2	0.804	0.804	TOTAL			31.681
28	30/1/28	0.205	0.205	81	280/3	0.304	0.304				
29	30/1/29	0.205	0.205	82	280/4/1/1	0.609	0.609	11	35/1	13.570	13.570
30	30/1/30	0.205	0.205	83	280/4/1/2	0.609	0.609	12	35/2	0.500	0.500
31	30/1/31	0.205	0.205	84	280/4/1/3	0.609	0.609	13	35/3	0.283	0.283
32	30/1/32	0.205	0.205	85	280/4/1/4	0.609	0.609	14	35/4	0.040	0.040
33	30/1/33	0.205	0.205	86	280/4/1/5	0.789	0.789	15	35/5	0.040	0.040
34	30/1/34	0.205	0.205	87	280/5	0.003	0.003	16	35/6	0.947	0.947
35	30/1/35	0.205	0.205	88	280/6	0.802	0.802	17	35/7	0.040	0.040
36	30/1/36	0.205	0.205	89	280/7	0.802	0.802	18	35/8	0.040	0.040
37	30/1/37	0.205	0.205	90	280/8	0.121	0.121	19	35	4.441	4.441
38	30/1/38	0.205	0.205	91	280/9	0.121	0.121	TOTAL			31.681
39	30/1/39	0.205	0.205	92	280/10	0.121	0.121				
40	30/1/40	0.205	0.205	93	280/11	0.121	0.121	Sl No <th>Khasra No.</th> <th>Area in Hect</th> <th>Area in Hect</th>	Khasra No.	Area in Hect	Area in Hect
41	30/1/41	0.205	0.205	94	280/12	0.121	0.121	1	280/1	14.569	14.569
42	30/1/42	0.205	0.205	95	280/13	0.558	0.558	2	280/2	0.209	0.209
43	30/1/43	0.205	0.205	96	280/14	0.003	0.003	3	280/3	0.209	0.209
44	30/1/44	0.205	0.205	97	280/15	0.003	0.003	4	280/4	0.209	0.209
45	30/1/45	0.205	0.205	98	280/16	0.564	0.564	TOTAL			15.087
46	30/1/46	0.205	0.205	99	280/17	0.564	0.564				
47	30/1/47	0.205	0.205	100	280/18	2.640	2.640	SUMMARY			
48	30/1/48	0.205	0.205	101	280/19	0.003	0.003	Sl.No <th>Village</th> <th>Area (Hect.)</th> <th>Area (Hect.)</th>	Village	Area (Hect.)	Area (Hect.)
49	30/1/49	0.205	0.205	102	280/20	0.003	0.003	1	280/1	14.569	14.569
50	30/1/50	0.205	0.205	103	280/21	0.003	0.003	2	280/2	0.209	0.209
51	30/1/51	0.205	0.205	104	280/22	0.003	0.003	3	280/3	0.209	0.209
52	30/1/52	0.205	0.205	105	280/23	0.003	0.003	4	280/4	0.209	0.209
53	30/1/53	0.205	0.205	106	280/24	0.003	0.003	5	280/5	0.209	0.209
54	30/1/54	0.205	0.205	107	280/25	0.003	0.003	TOTAL			231.967
55	30/1/55	0.205	0.205	108	280/26	0.003	0.003				
56	30/1/56	0.205	0.205	109	280/27	0.003	0.003				
57	30/1/57	0.205	0.205	110	280/28	0.003	0.003				
58	30/1/58	0.205	0.205	111	280/29	0.003	0.003				
59	30/1/59	0.205	0.205	112	280/30	0.003	0.003				
60	30/1/60	0.205	0.205	113	280/31	0.003	0.003				
61	30/1/61	0.205	0.205	114	280/32	0.003	0.003				
62	30/1/62	0.205	0.205	115	280/33	0.003	0.003				
63	30/1/63	0.205	0.205	116	280/34	0.003	0.003				
64	30/1/64	0.205	0.205	117	280/35	0.003	0.003				
65	30/1/65	0.205	0.205	118	280/36	0.003	0.003				
66	30/1/66	0.205	0.205	119	280/37	0.003	0.003				
67	30/1/67	0.205	0.205	120	280/38	0.003	0.003				
68	30/1/68	0.205	0.205	121	280/39	0.003	0.003				
69	30/1/69	0.205	0.205	122	280/40	0.003	0.003				
70	30/1/70	0.205	0.205	123	280/41	0.003	0.003				
71	30/1/71	0.205	0.205	124	280/42	0.003	0.003				
72	30/1/72	0.205	0.205	125	280/43	0.003	0.003				
73	30/1/73	0.205	0.205	126	280/44	0.003	0.003				
74	30/1/74	0.205	0.205	127	280/45	0.003	0.003				
75	30/1/75	0.205	0.205	128	280/46	0.003	0.003				
76	30/1/76	0.205	0.205	129	280/47	0.003	0.003				
77	30/1/77	0.205	0.205	130	280/48	0.003	0.003				
78	30/1/78	0.205	0.205	131	280/49	0.003	0.003				
79	30/1/79	0.205	0.205	132	280/50	0.003	0.003				
80	30/1/80	0.205	0.205	133	280/51	0.003	0.003				
81	30/1/81	0.205	0.205	134	280/52	0.003	0.003				
82	30/1/82	0.205	0.205	135	280/53	0.003	0.003				
83	30/1/83	0.205	0.205	136	280/54	0.003	0.003				
84	30/1/84	0.205	0.205	137	280/55	0.003	0.003				
85	30/1/85	0.205	0.205	138	280/56	0.003	0.003				
86	30/1/86	0.205	0.205	139	280/57	0.003	0.003				
87	30/1/87	0.205	0.205	140	280/58	0.003	0.003				
88	30/1/88	0.205	0.205	141	280/59	0.003	0.003				
89	30/1/89	0.205	0.205	142	280/60	0.003	0.003				
90	30/1/90	0.205	0.205	143	280/61	0.003	0.003				
91	30/1/91	0.205	0.205	144	280/62	0.003	0.003				
92	30/1/92	0.205	0.205	145	280/63	0.003	0.003				
93	30/1/93	0.205	0.205	146	280/64	0.003	0.003				
94	30/1/94	0.205	0.205	147	280/65	0.003	0.003				
95	30/1/95	0.205	0.205	148	280/66	0.003	0.003				
96	30/1/96	0.205	0.205	149	280/67	0.003	0.003				
97	30/1/97	0.205	0.205	150	280/68	0.003	0.003				
98	30/1/98	0.205	0.205	151	280/69	0.003	0.003				
99	30/1/99	0.205	0.205	152	280/70	0.003	0.003				
100	30/1/100	0.205	0.205	153	280/71	0.003	0.003				
101	30/1/101	0.205	0.205	154	280/72	0.003	0.003				
102	30/1/102	0.205	0.205	155	280/73	0.003	0.003				
103	30/1/103	0.205	0.205	156	280/74	0.003	0.003				
104	30/1/104	0.205	0.205	157	280/75	0.003	0.003				
105	30/1/105	0.205	0.205	158	280/76	0.003	0.003				
106	30/1/106	0.205	0.205	159	280/77	0.003	0.003				
107	30/1/107	0.205	0.205	160	280/78	0.003	0.003				
108	30/1/108	0.205	0.205	161	280/79	0.003	0.003				
109	30/1/109	0.205	0.205	162	280/80	0.003	0.003				
110	30/1/110	0.205	0.205	163	280/81	0.003	0.003				
111	30/1/111	0.205	0.205	164	280/82	0.003	0.003				
112	30/1/112	0.205	0.205	165	280/83	0.003	0.003				
113	30/1/113	0.205	0.205	166	280/84	0.003	0.003				
114	30/1/114	0.205	0.205	167	280/85	0.003	0.003				
115	30/1/115	0.205	0.205	168	280/86	0.003	0.003				