

NIRMA LIMITED

REGD. OFFICE . NIRMA HOUSE, ASHRAM ROAD, AHMEDABAD-380 009. PHONES : 27546565 - 74 FAX : (079) 27546603 - 27546605 Email : nirma@ad1.vsnl.net.in

NNL/CP/VND/2009/175/07-08
September 5, 2007

The Secretary,
Ministry of Environment & Forest
Govt. of India, Paryavaran Bhawan
CGO Complex,
Lodhi Road,
New Delhi-110 003

Sub: Submission of Form-I alongwith Techno-Economic Pre-feasibility Report for obtaining Terms of Reference (TOR) for our proposed Cement Project (1.5 MTPA Clinker or 1.91 MTPA Cement) and Captive Power Plant (50 MW) near village Padhiarka, Taluka Mahuva, District Bhavnagar, Gujarat

Dear Sir,

Nirma Limited proposes to set-up in Ist phase Grass Root Cement Project (1.5 MTPA Clinker or 1.91 MTPA Cement) alongwith captive power plant (50 MW) using lignite as a fuel near village Padhiarka, Taluka Mahuva, District Bhavnagar, Gujarat. Late date i.e. within next 5 years, we shall be enhancing the capacity to 6.0 million tones of Cement & 100 MW of Captive Power Plant.

Since our project falls under screening category "A" as per New EIA Notification 2006, we are submitting herewith duly filled-in Form-I with suggested Terms of Reference (TOR) and Techno-Economic Pre-feasibility Report of the said project. Techno-Economic Pre-feasibility Report of the proposed Cement Project has been prepared by M/s. Holtec Consulting Pvt. Ltd., Gurgaon, renowned consultant in the field of Cement Sector.

In view of above, you are kindly requested to approve the suggested Terms of Reference (TOR) for conducting the EIA study for the said project at the earliest.

Thanking you,

Yours, faithfully,
For **NIRMA LIMITED**

V.N. Desai
V.N. Desai
Vice President

Encl: 1. Duly filled-in Form-I
2. Techno-Economic Pre-feasibility Report

Better Products. Better Value. Better Living.

APPENDIX I
(See paragraph – 6)
FORM 1

(I) Basic Information

Name of the Project : Nirma Cement Plant and Captive Power Plant

Location / site alternatives under consideration: Village: Padhiarka, Doliya
Taluka: Mahuva
District: Bhavnagar,
State: Gujarat

Size of the Project: * Cement Plant : 1.5 MTPA (Clinker)
Captive Power Plant : 50 MW Capacity
Area : 280 Ha
Refer annexure I for location plan

Expected cost of the project: Rs. 77950 Lakhs

Contact Information: Mr.V N Desai (Vice President)
Nirma Limited, Nirma House, Ashram Road,
Ahmedabad-380009
Phone No.: 079-27546565-74
Fax No. : 079-27546999
E-mail address : vndesai@nirma.co.in
cement_project@nirma.co.in

Screening Category: A

- Capacity corresponding to sectoral activity (such as production capacity for manufacturing, mining lease area and production capacity for mineral production, area for mineral exploration, length for linear transport infrastructure, generation capacity for power generation etc.)

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	280 Hectares land is being acquired at Padhiarka. Of this, 170 hectares is proposed to be used for the cement plant, Captive Power Plant and including provisions for future expansion. Existing landuse type of Non-vegetation area, which will be changed to industrial,

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source information data.
			rainwater harvesting ponds and green belt/plantation. Refer Annexure II for proposed Layout plan.
1.2	Clearance of existing land, vegetation and buildings?	Yes	Small shrubs and bushes will have to be removed. No habitation and buildings exists on the proposed land.
1.3	Creation of new land uses?	Yes	An industry will be set up at the present barren land.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	No	Planned immediately after rainy season
1.5	Construction works?	Yes	Plant, office building and Raw material handling facilities etc along with the necessary infrastructure will be constructed.
1.6	Demolition works?	No	There are no pacca constructed buildings on the proposed site.
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	As far as practicable, Local people will be employed as construction workers. Temporary sites/ housing of construction workers will be provided on-site if required.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Complete plant set up with necessary infrastructure will be constructed.
1.9	Underground works including mining or tunneling?	No	Presently no underground structural jobs envisaged excepting Soak pits/ sewerage/ fire hydrant line
1.10	Reclamation works?	No	-
1.11	Dredging?	No	-
1.12	Offshore structures?	No	We envisaged Seawater intake for which separate land and permission will be obtained.
1.13	Production and manufacturing processes?	Yes	The annual plant capacity is 1.5 MTPA of clinker production. Total cement grinding capacity shall be 1.91 MTPA Product mix considered for the project is: > Ordinary Portland Cement (OPC): 2,350 TPD > Pozzolana Portland Cement (PPC): 3,450 TPD Captive Power Plant: 50 MW Capacity. Refer Annexure III for cement

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S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source information data																		
			manufacturing process flow sheet and writeup.																		
1.14	Facilities for storage of goods or materials?	Yes	Storage capacity in the plant: <table border="1"> <thead> <tr> <th>Department</th> <th>Storage quantity in MT</th> </tr> </thead> <tbody> <tr> <td>Limestone Pre-blending Stockpile</td> <td>2 x 50000</td> </tr> <tr> <td>Corrective (Clay & sand)</td> <td>3500(clay) & 2000(sand)</td> </tr> <tr> <td>Raw Meal Storage (Active)</td> <td>15000</td> </tr> <tr> <td>Clinker Storage</td> <td>45000</td> </tr> <tr> <td>Coal/ Lignite Storage</td> <td>2x20000(coal) & 7500 (lignite)</td> </tr> <tr> <td>Cement Storage</td> <td>4x 10000</td> </tr> <tr> <td>Fly Ash Storage</td> <td>5000</td> </tr> <tr> <td>Gypsum Storage</td> <td>4500</td> </tr> </tbody> </table>	Department	Storage quantity in MT	Limestone Pre-blending Stockpile	2 x 50000	Corrective (Clay & sand)	3500(clay) & 2000(sand)	Raw Meal Storage (Active)	15000	Clinker Storage	45000	Coal/ Lignite Storage	2x20000(coal) & 7500 (lignite)	Cement Storage	4x 10000	Fly Ash Storage	5000	Gypsum Storage	4500
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1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Facilities for solid waste management are given in Annexure IV .																		
1.16	Facilities for long term housing of operational workers?	Yes	A colony is proposed for the employees of the plant.																		
1.17	New road, rail or sea traffic during construction or operation?	Yes	The plant will increase traffic due to transportation of raw material and produced cement. Rail and Sea linkage facilities will be explored.																		
1.18	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	Existing road network is sufficient to handle the traffic.																		
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No																			
1.20	New or diverted transmission lines or pipelines?	No	There is not a single H.T. transmission line/ underground/ above ground pipelines in this area.																		
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	Yes	Existing Rainwater drain will be constructed and then diverted to the sea.																		
1.22	Stream crossings?	No																			
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	The total water consumption of the project is about 5500 m ³ /day including its																		

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
			cement plant, residential colony, mines, captive power plant, which can be met from the sea water through desalination plant or through Narmada pipeline. Refer Annexure-V for water supply diagram for the proposed plant
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	Yes	The land use of the plant site will be changed which shall not affect the drainage or run-off of the area.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	By proper vehicles
1.26	Long-term dismantling or decommissioning or restoration works?	No	
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	
1.28	Influx of people to an area in either temporarily or permanently?	Yes	<u>Implementation Phase:</u> Total no. of persons will be 133. Of this, 49 persons may be taken on contract. <u>Operation Phase:</u> Total no. of persons will be 418. Of these, 146 persons may be taken on contract. Most of the employees will be from neighbouring villages.
1.29	Introduction of alien species?	No	
1.30	Loss of native species or genetic diversity?	No	The clearance of site will include only removal of shrubs/bushes present on the plot which will eventually be re-developed after plantation programme i.e. Green Belt development.
1.31	Any other actions?	No	

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S.No.	Information/checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	Yes	170 Ha of barren land is proposed for the plant.

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S.No.	Information/checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information
2.2	Water (expected source & competing users) unit: KLD		The total water consumption of the project is about 5500 m ³ /day, which can be met from Sea water, through desalination plant of the company or through Narmada water for which pipeline is presently at a distance of 10 Kms across the road.
2.3	Minerals (MT)	Yes	Following minerals with specified quantities will be used in the plant.
	Mineral	Quantities (TPD)	Source
(a)	LIMESTONE	6935	Padhiarka(Captive Mine)
(b)	Clay	110	Ghogha, Gujarat
(c)	Sand	71	Bhavnagar, Gujarat
(d)	GYPSUM	390	Barmer, Rajasthan
(e)	COAL	300	Imported
(f)	Lignite	500	Kutch
(g)	Fly ash	1370	CPP & Gandhinagar, Gujarat
(h)	Lignite (CPP)	1560	Kutch
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	Yes	To be purchased from local markets.
2.5	Forests and timber (source – MT)	Yes	To be procured from authorized vendor.
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	The total power demand for the proposed Plant has been estimated at about 44 MW. The power requirement will be met by a proposed 50 MW Lignite/ Coal based Captive Power Plant, generating power at 11 KV. Arrangement shall also be made for sourcing power through 66 kV grid substation of Gujarat State Electricity Board (GSEB).
2.7	Any other natural resources (use appropriate standard units)	No	

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to	No	

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S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
	human health or the environment (flora, fauna, and water supplies)		
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	People will be benefited directly and indirectly, by creation of employment opportunities, school/colleges, hospital facilities etc.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	
3.5	Any other causes	No	

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	Yes	Waste collected from road sweepings
4.2	Municipal waste (domestic and or commercial wastes)	Yes	From Canteen @ 0.56 TPD
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Spent transformer oil, Waste oil & grease drained out of gear boxes and other equipment, and scrapped automobile batteries.
4.4	Other industrial process wastes	Yes	Ash of CPP, Dust Collected in various pollution control devices.
4.5	Surplus product	No	
4.6	Sewage sludge or other sludge from effluent treatment	Yes	ETP Sludge @ 5 TPD STP Sludge @ 10 TPD
4.7	Construction or demolition wastes	Yes	Only during construction period.
4.8	Redundant machinery or equipment	No	
4.9	Contaminated soils or other materials	No	

4.10	Agricultural wastes	Yes	Horticultural Waste from Land @ 0.5 tons/day (wet waste)
4.11	Other solid wastes	No	

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	The emission due to combustion of coal and other fossil fuel will cause emission of SPM, SO ₂ , NO _x , etc. the detailed estimation will be provided in the EIA report.
5.2	Emissions from production processes	Yes	SPM will be generated during cement production.
5.3	Emissions from materials handling including storage or transport	Yes	Because of large amount of materials to be transported, automobile emissions can be a source of air pollution. Finished products will be initially transported through truck transport on road. Hence, automobile emission from truck movements would be mainly for finished product.
5.4	Emissions from construction activities including plant and equipment	Yes	Some dust generation shall take place during construction which can be countered by regular water spraying. It will be of temporary nature.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Some dust generation shall take place during handling of construction material which can be countered by water spraying.
5.6	Emissions from incineration of waste	No	
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	
5.8	Emissions from any other sources	No	

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data

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S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Various operations in cement production, movement of machineries and other operations will generate noise.
6.2	From industrial or similar processes	Yes	The noise levels near the sources such plant machinery and diesel generator set will be slightly higher during operation than their vicinity. However, they shall be within the stipulated regulatory limits.
6.3	From construction or demolition	Yes	Marginal and temporary
6.4	From blasting or piling	No	
6.5	From construction or operational traffic	Yes	Increase in noise levels due to additional vehicular traffic catering to evacuation of extra cement production
6.6	From lighting or cooling systems	Yes	Some heat will be generated in the vicinity of kiln and power plant.
6.7	From any other sources	No	

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	No	Spent transformer oil and other hazardous wastes will be stored in leak proof drums on impervious floors and will be sold to the authorized vendors.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	Septic tank-soak pit system has been used and there is no discharge into any water body or onto land
7.3	By deposition of pollutants emitted to air into the land or into water	No	Air pollution control equipment such as ESPs will be provided and the emission of pollutant will be restricted and will not cause contamination
7.4	From any other sources	No	
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

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S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	A detailed Risk Assessment will be provided in EIA report.
8.2	From any other causes	No	
8.3	Could the project be affected by natural disasters causing environmental damage (e.g.floods, earthquakes, landslides, cloudburst etc)?	Yes	The project site falls in moderate damage risk zone (MSK VII) and Zone III of Seismicity. Also, site is about 3.5 KM from Arabian sea. Area prone to cyclones/ storms.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S.No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: <ul style="list-style-type: none"> • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other 	Yes Yes Yes No No No	<ul style="list-style-type: none"> • Internal roads in plant and colony and waste water treatment facilities for plant and colony will be developed. • A colony for the employees will be developed at different location but close to main town and plant.
9.2	Lead to after-use of the site, which could have an impact on the environment	No	
9.3	Set a precedent for later developments	No	
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	

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(III) Environmental Sensitivity

(Refer Annexure VI for study area plan)

S.No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None	
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	None	
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	None	
4	Inland, coastal, marine or underground waters	Arabian Sea Malan River	3.5 km S 9.5 km NE
5	State, National boundaries	Arabian Sea	3.0 km S
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	NH 8E	Adjacent to proposed site
7	Defence installations	None	
8	Densely populated or built-up area	Mahuva Town Katpar Town	8.2 km E 9.0 km E
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	1. EDUCATION : Primary school:39, Secondary school :1 2. MEDICAL Ayurvedic dispensary:1, Child welfare centre: 2, Primary health sub-centre: 8, Family welfare centre:3, Regd. Pvt. Medi. practitioner:17, Community health workers: 12 3. DRINKING WATER :	Within the study area of 10 km radius

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S.No.	Areas	Name/ Identity	Aerial distance within 15 km. Proposed project location boundary
		Tap Water : 8, Well water: 35, Tank Water:1, Tube Well Water: 6, Hand Pump : 32, River water: 1, Other water sources : 4 4. POWER SUPPLY : Power for Domestic purpose: 17, Power for Agriculture: 13, Power for all purposes : 20 5. POST & TELEGRAPH : Post Office : 21, Telephone : 204 6. COMMUNICATION : Bus Stop : 34 Railway Station : 7	
10	Areas containing important, high quality or scarce resources <i>(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)</i>	None	
11	Areas already subjected to pollution or environmental damage. <i>(those where existing legal environmental standards are exceeded)</i>	None	
	Areas susceptible to natural hazard which could cause the project to present environmental problems <i>Earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)</i>	Yes	Proposed Project site falls in moderately damage risk zone (MSK VII) and Zone III of Seismicity. It is 3.5 km from Arabian sea thus susceptible to natural hazards like cyclone/storm etc.

IV) Proposed Terms of Reference for EIA studies

Environmental monitoring will be done to obtain present environmental status of the study area for the present project. ~~The EIA will be prepared~~ based on the environmental monitoring data obtained. The terms of reference on the basis of which the EIA will be prepared are given below:

1.0 SCOPE OF WORK FOR EIA/EMP

The client wish to get the Rapid Environmental Impact Assessment studies done for its proposed cement plant, and captive power plant at village Padhiarka, District Bhavnagar, Gujarat for getting the environmental clearance from the Ministry of Environment and Forests (MoEF), New Delhi/ SEIAC. The terms of reference for the proposed EIA/EMP document are given below:

2.0 DATA GENERATION

The data will be generated by Min Mec R&D Laboratory and Min Mec Consultancy Pvt. Ltd., New Delhi in accordance with the requirement of statutory agencies, is given in Table 1. The monitoring and testing will be done as per the guidelines of MoEF and the IS standards. Monitoring will be conducted for the following parameters:

TABLE 1
DATA TO BE GENERATED

Sl. No.	Description	No. of locations	Total No of samples
1.0	AIR Ambient air monitoring (24 hourly samples), twice a week for 3 months for one season Parameters : SPM, SO ₂ , NO _x , RPM	4 (one in core zone and 3 in buffer zone)	96
1.1	Meteorological parameters will be measured at hourly duration simultaneously at one air monitoring station for 3 months. Parameters : a. Wind speed, direction b. Relative humidity c. Temperature d. Cloudiness e. Rainfall	1	90 days
2.0	Water Water /effluents sample to be collected from each of the various locations (surface and ground water) in core and buffer zone (10 km radius) Parameters : water/effluents : tested for physical and chemical and biological parameters as well as according to applicable standards	upto 10	upto 10
3.0	Soil	1	1

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Sl. No.	Description	No. of locations	Total No of samples
4.0	Noise Hourly readings taken for 24 hours (Leq)	1	10 sets
5.0	Traffic density	1	1 sets

3.0 DATA COLLECTED

The REIA study will be done for the Plant area (core zone) and area within 10.0 km radius (buffer zone), both of which comprise the 'study area'. The following data, through field survey and other sources, shall be collected by Min Mec consultancy for preparing the EIA/EMP for the proposed project with related facilities.

- i Details of fauna (wild and domestic), flora within a distance of 10 km from the project site (including forest details).
- ii Major habitat within 10 km radius.
- iii Major industries within 10 km radius.
- iv Sensitive places / historical monuments and sanctuaries within 10 km radius.
- v Land use pattern within core zone and buffer zone (10 km radius around the core zone) including the cropping pattern.
- vi Demography and Socio-economic based on last available Census data for entire study area
- vii Relevant meteorological data, for previous decades from Indian Meteorological Department (IMD)
- viii Study of present environmental protection and mitigation measures in nearby operating similar projects, if any.
- ix Geo-hydrological aspects based on available data from various sources.
- x Identification of water bodies, hills, roads etc. within 10.0 km radius and collecting data regarding discharge of streams and flood levels etc. from existing records, if any river lies in study area.

4.0 PREPARATION OF EMP

The EMP will include the following details

- a Study of the reports like feasibility report made available by the client.
- b Present Environmental Setting
The base line data generated and collected as per para 2.0 and 3.0 will be used to establish the present environmental scenario.
- c Identification, prediction and evaluation of Anticipated Environmental

Impacts due to the proposed plant and related facilities

The environmental impacts would be anticipated in core and buffer zone on:

- Topography
- Climate
- Water Quality (Surface/Ground)
- Hydro-geological Regime

- Air quality
- Noise Levels
- Flora and Fauna (terrestrial, aquatic)
- Traffic density
- Land-Use
- Socio-Economic Conditions
- Habitat
- Health, culture, human environment including public health, occupational health and safety
- Sensitive Places/Historical Monuments
- Aesthetics and Visual intrusion

The impacts would be anticipated based on experience of similar projects.

d Proposed Environmental Safeguards and Monitoring Mechanism

Relevant guidelines as per Environmental Impact Assessment (EIA) Notification issued in January 1994 and subsequently in 2006 under the Environment (Protection) Act, 1986 will be kept in mind while spelling out mitigation measures.

The following aspects would be covered

1. Measures to control the surface and ground water pollution due to various effluents to be discharged
2. Measures to control air pollution due to proposed activities/operation.
3. Green belt development plan
4. Identification of flora species which can be planted in and around the project
5. Measures to contain noise pollution and mitigate adverse impact on workers and habitat in core and buffer zone
6. Pronounce the improvement in socio-economic conditions and benefits the people will get on implementation of the project
7. Measures to control health hazard of workers and surrounding population
8. Total and specific cost of implementation of control measures
9. Environmental monitoring, implementation organization and feedback mechanism to effect mid course corrections.

The experience of similar project(s) will be made use of for envisaging the pollution control measures by pronouncing the success in the past.

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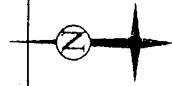
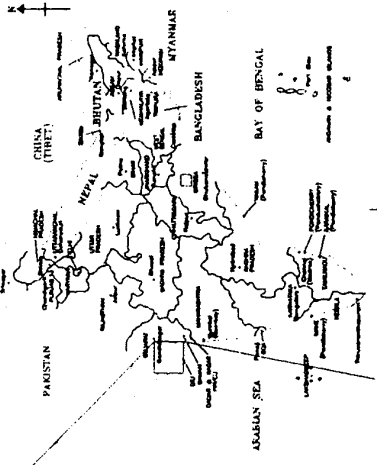
LIST OF ANNEXURES

Sl. No.	Description
I	Location map
II	Layout plan of the plant and site layout
III	Cement manufacturing process flowsheet
IV	Solid waste management
V	Water flow diagram for proposed plant & allocation letter from Gujarat Water Infrastructure Ltd.
VI	Map showing study area of the proposed plant
VII	Stack details

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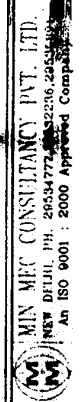
ANNEXURE

INDIA MAP



LEGEND

PLANT SITE

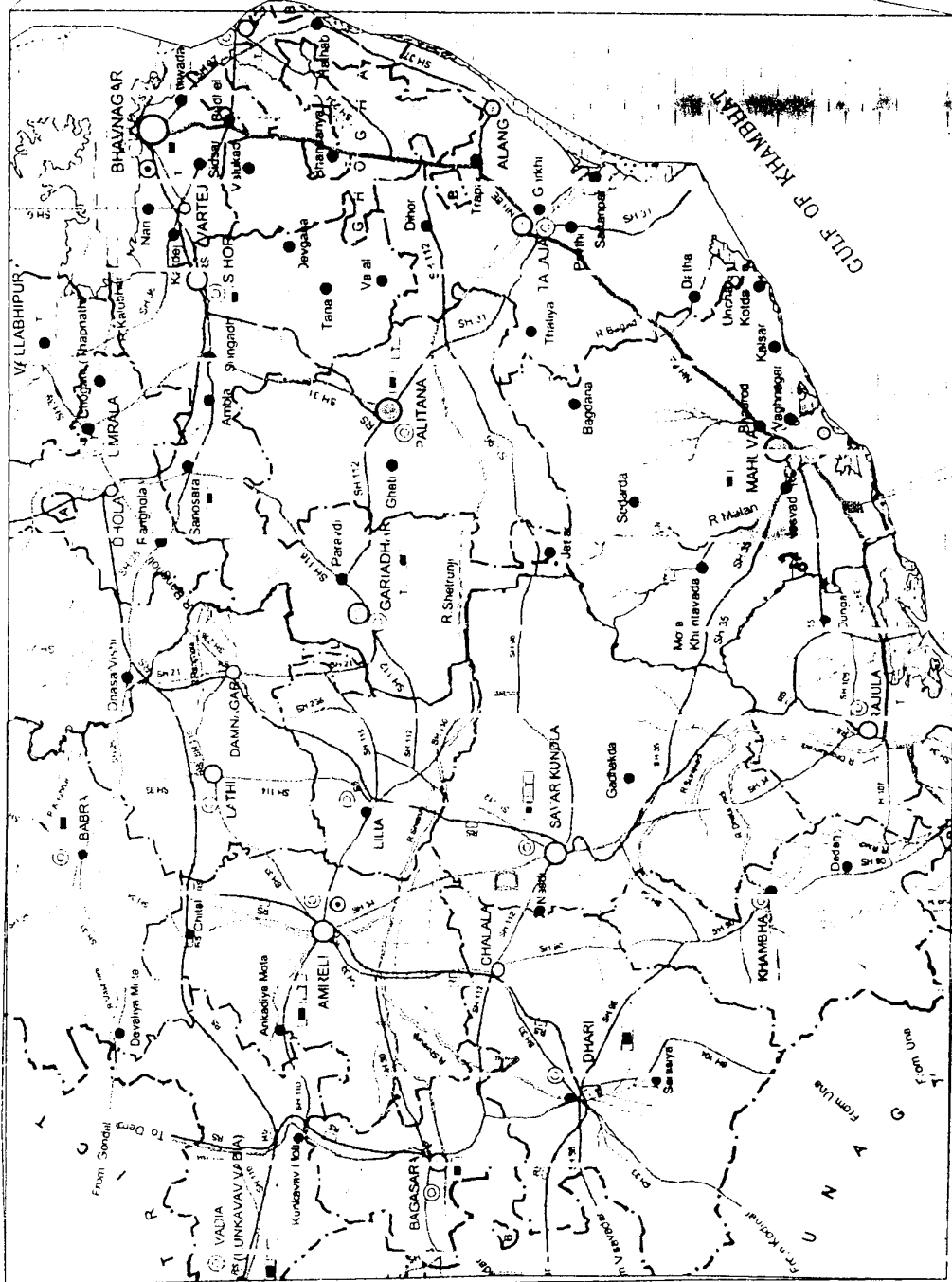


MIN MEC CONSULTANCY PVT. LTD.
 NEW DELHI, PH. 26534772, 262236, 26254545
 An ISO 9001 : 2000 Approved Company

PROJECT: NIRMAL CEMENT PLANT & CAPTIVE POWER PLANT
 TITLE: ELKZEMP

LOCATION MAP
 DRAWN BY: B. S. MALHOTRA
 APPROVED BY: B. S. MALHOTRA
 DATE: 13-09-2007

NIRMAL LTD
 FIG. NO.



ANNEXURE III

CEMENT MANUFACTURING PROCESS

Cement manufacturing consists of raw meal grinding, blending, pre-calcining, clinker burning and cement grinding. In short, limestone and other materials containing calcium, silicon, aluminium and iron oxides are crushed and milled into a raw meal. This raw meal is blended (in for instance blending silos) and is then heated in the pre-heating system to initiate the dissociation of carbonate to calcium oxide and carbon dioxide. A secondary fuel is fed into the preheating system to keep the temperature sufficiently high. The meal then proceeds to the kiln for heating and reaction between calcium oxide and other elements to form calcium silicates and aluminates at a temperature up to 1450°C . Primary fuel is used to keep the temperature high enough in the burning zone for the chemical reactions to take place. The reaction products leave the kiln as a nodular material called clinker. The clinker will be inter-ground with gypsum, &/or fly ash to a fine product called cement. Figure 1 shows a cement manufacturing process from raw material quarrying to the bagging of the cement.

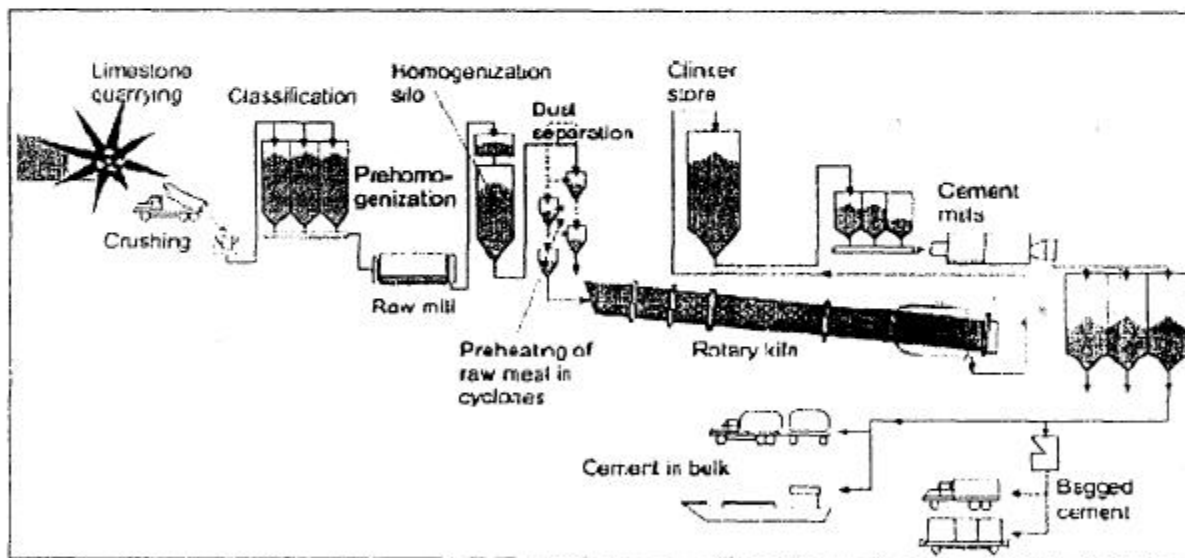


Figure 1: Cement Manufacturing Process

WASTE MANAGEMENT

The various types of wastes to be generated from the proposed plant and proposed management techniques are given below:

Process solid waste:

- Cement Dust collected in various air pollution Control equipments will be recycled back to the process.
- The refractory bricks shall be replaced once in a year. It has high recycling values, hence will be sold to outside agencies.

Municipal Solid Waste:

- The municipal solid waste generated from the plant will be transported through tractor/lorry. It will be landfilled in the low-lying areas, which are devoid of mineable reserves. The area thus filled up/reclaimed shall be used for tree plantation.
- Daily House-to-House collection system will be employed. Collected waste will be segregated into biodegradable and non-biodegradable waste. Biodegradable waste will be composted and used as manure. Non-biodegradable waste will be land filled at identified areas.

ETP Sludge:

- As it is mostly inorganic in nature, it will be compressed, dried and landfilled at identified sites.

STP sludge:

- Will be used as manure for green belt development

CPP Fly ash:

- Fly ash shall be transported pneumatically to the cement plant fly ash silo and shall be used in manufacturing of PPC. Bed ash shall be collected from overflow spouts into ash cooler hoppers. Ash from hoppers, after sufficient cooling will be conveyed pneumatically to a bed ash storage silo for further use as boiler bed material.

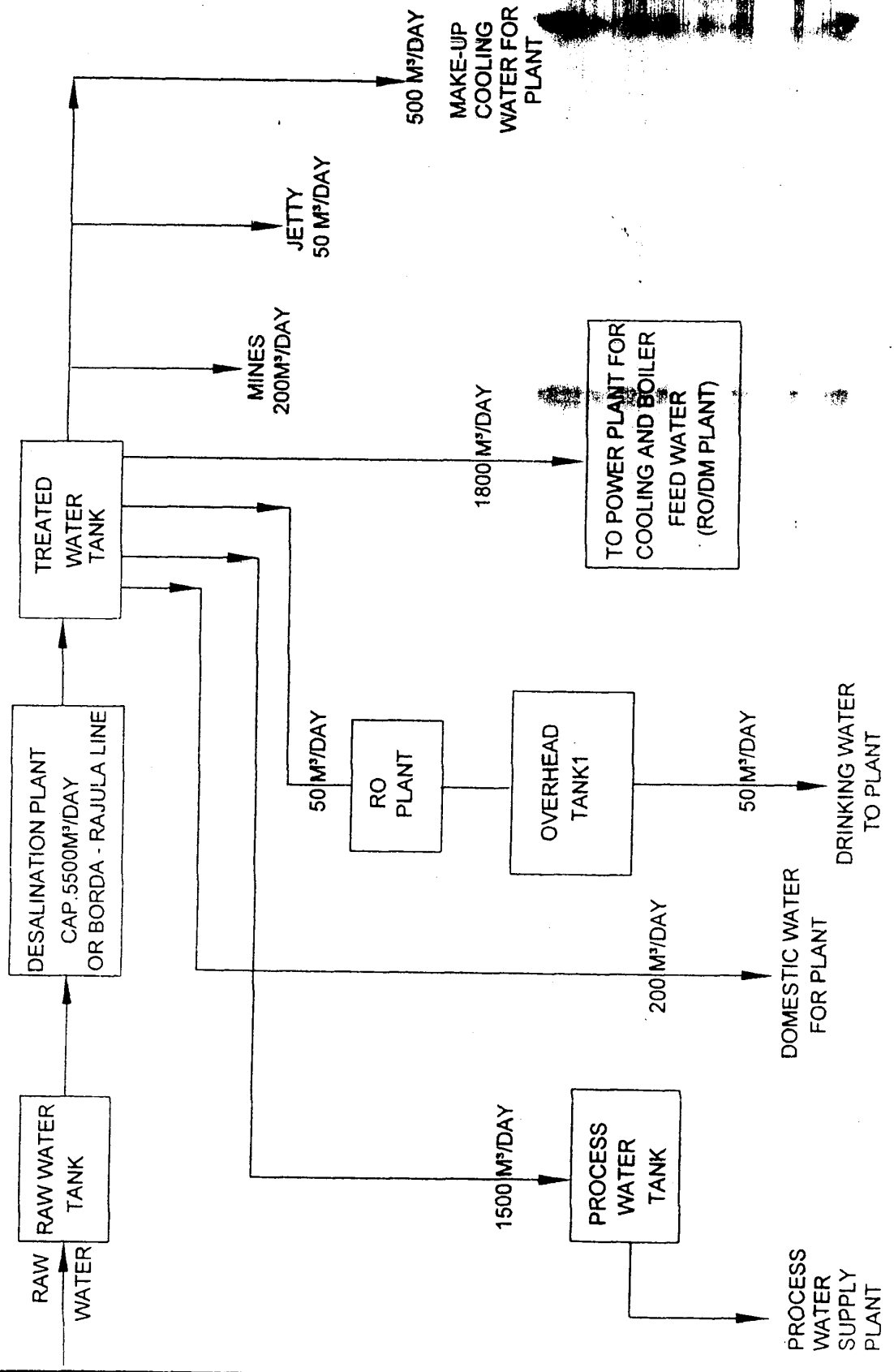
Liquid Effluents:

- Liquid effluents will be treated in ETP and reused in dust suppression, plantation and green belt.
- Sewage will be treated in STP.

TABLE 1: DETAILS OF WASTE GENERATION AND ITS MANAGEMENT

Description of Waste	Quantity	Method of collection	Mode of disposal
1) Cement Dust • From Clinkerisation • Cement Grinding & Packing	536 TPD 420 TPD 116 TPD	Dust collected in various air pollution Control equipment	Recycle back to the process
2) Refractory Bricks	400 TPA	Due to wear and tear, the refractory bricks shall be replaced once in a year.	It has high recycling values, hence will be sold to outside agencies.
3) Solid Waste generated from- Regular Road Sweeping collection comprises of a mixture of limestone dust, clay and soil. Civil and construction debris / rubbish (Occasionally)	1 TPD	The solid waste generated from the plant will be transported through tractor/lorry	Dumped in the low-lying areas, which are devoid of mineable reserves. The area thus filled up/ reclaimed shall be used for tree plantation.
4) Municipal Solid Waste from Colony	0.56 TPD	Daily House-to-House collection system will be employed. Collected waste will be segregated into biodegradable and non-biodegradable waste.	Biodegradable waste will be composted and used as manure. Non-degradable waste will be land filled at identified areas.
5) ETP Sludge	5 MTPA	ETP	Used as manure for green belt development
6) STP Sludge	10 MTPM	STP	Used as manure for green belt development
7) CPP Ash Bed Ash Fly Ash (Considering Max. Ash content for E-Grade coal as 28 %)	150 TPD 25 TPD 125 TPD	ESP	Fly ash shall be transported pneumatically to the cement plant flyash silo and shall be used in manufacturing of PPC. Bed ash shall be collected from overflow spouts into ash cooler hoppers. Ash from hoppers, after sufficient cooling will be conveyed pneumatically to a bed ash storage silo for further use as boiler bed material

WATER FLOW DIAGRAM FOR PROPOSED CEMENT PLANT OF NIRMA LTD.



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Gujarat Water Infrastructure Limited

(A Govt. of Gujarat Undertaking)

Dr. Jivraj Mehta Bhavan, Block No. 1, 1st Floor, Gandhinagar - 382 010.

Phone : (079) 23232282, 23224176 Fax : 23222396

e-mail : sscbdwsp@adl.vsnl.net.in

ANNEXURE V contd..

Date :

3/9/04

No: GWIL/Industries/ Bhav./Nirma/ 2067

To,

Vice President,
Nirma Limited
Nirma House,

Ashram road,

Ahmedabad - 380 009.

Sub.: Allocation of raw water for your Unit at Dist.: Bhavnagar from bulk water transmission main line.

Ref. : Your office letter dtd. 26/8/04

Dear Sir,

As requested by you vide your above letter the requirement of raw water 1.50 MGD (6.8 MLD) for your unit situated in Bhavnagar District is hereby granted. The drawal of water is from the connection of bulk water transmission main line Borda - Rajula (NC - 4 - 5).

The connection will be from the pipeline with the following terms and conditions:

1. You have to enter into an agreement with GWIL.
2. The rate of water will be Rs 15/- (Rs. Fifteen only) per 1000 ltrs which is tentative. The final rate as decided by the Govt. will have to be bound to pay by your Company.
3. You have to make your own arrangement for drawing water to your unit from the connection point.

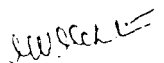
1209
ANNEXURE V contd.. 214

4. You have to make your own arrangement to install flow meter and valves near the connection point with locking arrangements and GWIL will be in charge of the same.
5. All the costs for flow meter valves laying of pipeline etc from the connection point to your Unit shall have to be borne by your company.
6. Rs. 135.0 Lakh (Rupees One Crore Thirty-five Lakh only) shall have to be paid in advance at the time of execution of water purchase agreement as security deposit by you.

The draft agreement copy is enclosed to finalize execution of Water Purchase Agreement

Thanking You,

Yours Faithfully

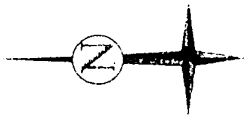

(M.N.Mehta)

Chief General Manager(C)

Copy submitted to MD GWIL for favour of information

Copy to Sr. Manager GWIL, Bhavnagar.

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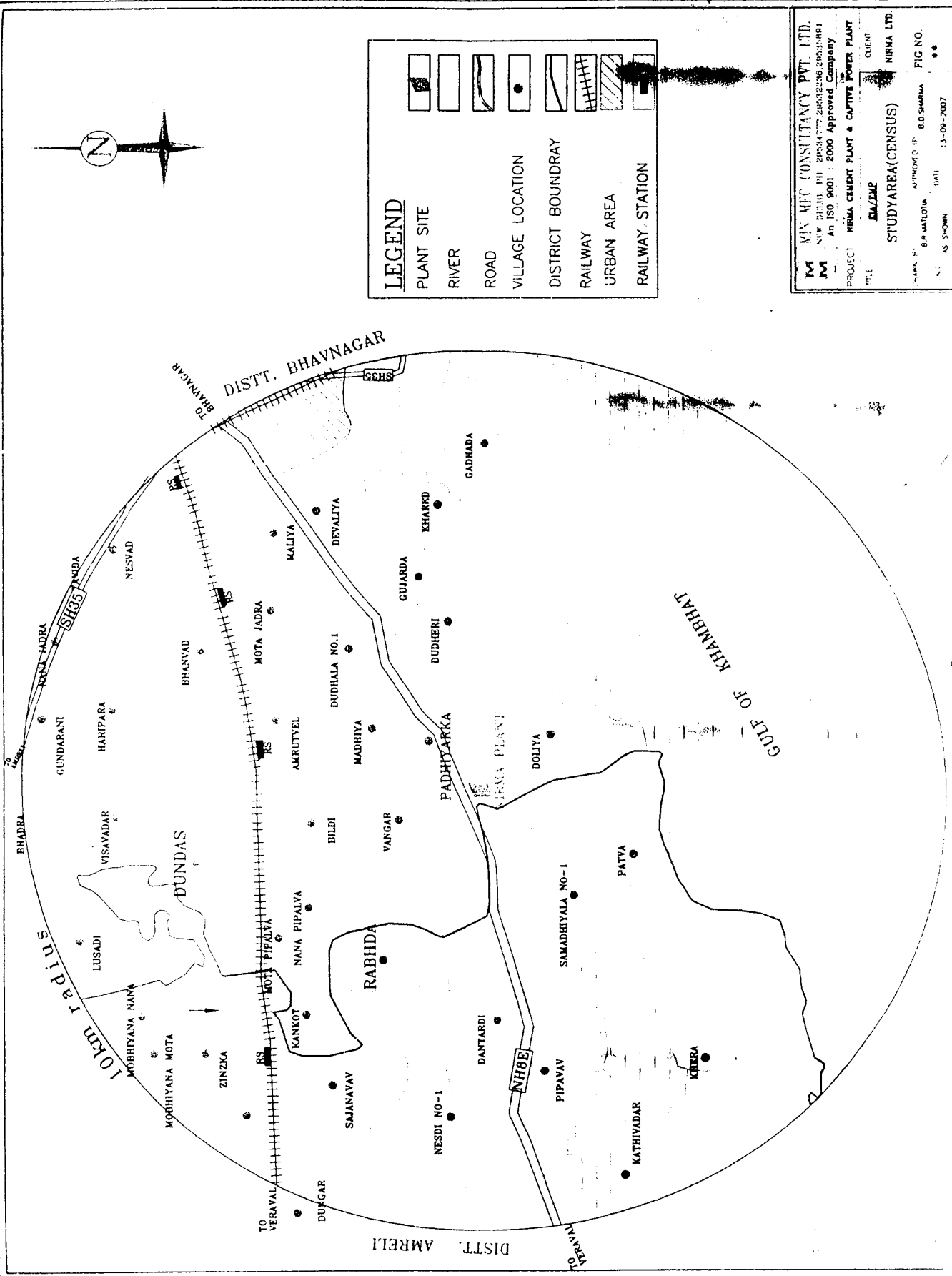


LEGEND

	PLANT SITE
	RIVER
	ROAD
	VILLAGE LOCATION
	DISTRICT BOUNDRAY
	RAILWAY
	URBAN AREA
	RAILWAY STATION

M M M M MFC CONSULTANCY PVT. LTD.
 NEW DELHI, PH: 26034777, 26032226, 26032481
 An ISO 9001 : 2000 Approved Company

PROJECT: NIRMAL CEMENT PLANT & CAPTIVE POWER PLANT
 TITLE: **EA/PAE**
 CLIENT: **NIRMA LTD.**
STUDY AREA (CENSUS)
 DRAWN BY: B. S. MALHOTRA, APPROVED BY: B. D. SHARMA, FIG. NO. 8.8
 AS SHOWN, DATE: 13-09-2007



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ANNEXURE VII.

STACK DETAILS

Sn.	Description	Stack Details									
		Control Equip.	Ht. (m)	Dia. (m)	Vel. (m/s)	Temp (°C)	Emission rate (g/s)			Flow Rate (m ³ /hr)	Design Cap. (mg/Nm ³)
							SPM	SO ₂	NO _x		
1	CPP Boiler	ESP	130	2.91	8.0	150	1.87	29.6	11.52	191446.80	<50
2	Crusher	Bag Filter	15	0.86	10	40	0.28	--	--	20,998.42	<50
3	Kiln / Vertical Roller Mill	Bag House	90	4.48	12	110	7.36	58.1	45.19	680,019.84	<50
4	Cooler	ESP	45	3.65	12	250	2.78	--	--	451,613.18	<50
5	Cement Vertical Roller Mill	Bag House	45	3.99	10	90	5.13	--	--	449,902.03	<50
5	Cement Ball Mill	Bag House	45	2.5	10	90	5.13	--	--	1,50,000	<50
7	Packing Plant	Bag Filter	35	0.79	12	60	0.26	--	--	21,164.48	<50
8	Coal Mill	Bag Filter	40	1.62	12	90	1.01	--	--	88,998.65	<50