PRE - FEASIBLITY REPORT

FOR

Proposed Integrated Cement Project - Clinker - 8.0 MTPA (2 x 4.0 MTPA), Cement - 5.0 MPTA (2 x 2.5 MTPA), CPP - 40 MW (2 x 20 MW), WHRS - 40 MW (2 x 20 MW) in phased Manner along with Railway Siding

At

Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan)

APPLICANT

M/s.Wonder Cement Limited

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INDEX

ABBREVIATIONS

APCE's	Air Pollution Control Equipments
CAGR	Compound Annual Growth Rate
CFBC	Circulating Fluidized Bed Combustion
CPCB	Central Pollution Control Board
CPP	Captive power Plant
CRZ	Central Regulation Zone
CSR	Corporate Social Responsibilities
DG	Diesel Generator
ECL	Eastern Coalfields Limited
ESP	Electrostatic Precipitator
ESE	East of South East
EIA	Environmental Impact Assessment
FY	Financial Year
Ha	Hectare
KLD	Kilo Littre Per Day
KM	Kilo Meter
Kg	Kilogram
M	Meter
MW	Mega Watt
NH	National Highway
ML	Mining Lease
MT	Million Tonnes
MTPA	Million Tonnes Per Annam
MoEF & CC	Ministry of Environment, Forest & Climate Change
NNW	North of North West
NE	North East
NH	National Highway
NNE	North of North East
OPC	Ordinary Portland Cement
PF	Protected Forest
PPC	Portland Pozzolana Cement
PH	Pre-Heater
RF	Reserved Forest
R & D	Research & Development
R&R	Rehabilitation and Resettlement
SECL	South Eastern Coalfields Limited
SW	South West
SSW	South of South West
STP	Sewage Treatment Plant
SH	State Highway
TPD	Tonnes Per Day
TPA	Tonnes Per Annum

VRM	Vertical Roller Mill
WHRS	West Heat Recovery Boiler
WNW	West of north West

PRE-FEASIBILITY REPORT

1.0 EXECUTIVE SUMMARY

Wonder Cement Ltd. is proposing Integrated Cement Project: Clinker - 8.0 MTPA (2 x 4.0 MTPA), Cement - 5.0 MTPA (2 x 2.5 MTPA), CPP - 40 MW (2 x 20 MW), WHRS - 40 MW (2 x 20 MW) in phased manner along with Railway Siding at Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan).

Salient features of the project are given in **Table 1.**

Table - 1

Salient Features of the Project

S. No.	PARTICULARS	DETAILS
1.	*Nature of the Project*	Greenfield project
2.	*Size of the Project*	✓ Clinker - 8.0 MTPA (2 x 4.0 MTPA) ✓ Cement - 5.0 MTPA (2 x 2.5 MTPA) ✓ CPP - 40 MW (2 x 20 MW) ✓ WHRS - 40 MW (2 x 20 MW) ✓ Railway Siding Project will be developed in phased manner.
3.	*Category of the Project*	As per EIA Notification dated 14th Sept., 2006 & as amended thereof; this project falls under Category "A", Project or Activity '3(b)'
4.	*Location Details*	
	Khasra Nos	Khasra Map is attached as ***Annexure - 1*** along with PFR.
	Village	Parewar
	Tehsil & District	Jaisalmer
	State	Rajasthan
	Latitude	27°16'29.86" N to 27°17'31.09" N
	Longitude	70°44'38.67" E to 70°45'52.42" E
	Toposheet No.	G42E11 & G42E15
5.	*Area Details*	
	Total Project Area	377.54 ha
	Greenbelt area / Plantation Area (ha)	124.59 ha (~33 % of the total project area)
6.	Environmental Setting Details *(with approximate aerial distance & direction from the nearest boundary of project site)*	
1.	Nearest Village	Parewar (800 m in SSW direction)
2.	Nearest Town & City	Jaisalmer (42 km in SSE direction)
3.	Nearest National Highway / State Highway / MDR	▪ NH - 11 (43 km in SSE direction) ▪ MDR - 19 (3.0 km in East direction)
4.	Nearest Railway station	Sanu Railway Station (9.5 km in WSW direction)
5.	Nearest Airport	Jaisalmer Airport (44 km in SSE direction)
6.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, (PF) etc. within 10 km radius.	No National Park, Wildlife Sanctuary, Biosphere Reserve falls within the 10 km radius study area.
7.	Reserve Forest (RF) / Protected	Protected Forest (4.0 km in South direction)

S. No.	PARTICULARS	DETAILS
	Forest (PF) etc. within 10 km radius.	
8.	Nearest Water Body	Indira Gandhi Canal (12.0 km in NE Direction)
9.	Seismic Zone	Zone - III [as per IS 1893 (Part-I): 2002]
F.	*Cost Details*	
1.	Total Cost of the Project	Rs. 4200 Crores (Rs. 2100 Crores for each Phase)
2.	Cost for Environment Management Plan	▪ Capital Cost: Rs. 302 Crores (Rs. 177 Crores for first phase and 125 crores for second phase) ▪ Recurring Cost: Rs. 15 Crores / annum (Rs. 8.5 Crores for first phase and 6.5 crore for second phase)
G.	*Basic Requirements for the project*	
1.	Water Requirement (KLD)	2300 KLD Source: Indira Gandhi Canal / Nehar project (Sagarmal Gopa Branch) & Ground Water.
2.	Power Requirement (MW)	90 MVA Source: Captive Power Plant, WHRS, State Grid of JVVNL (Jodhpur Vidyut Vitran Nigam Ltd.) and D.G Set for emergency
3.	Manpower Requirement (No. of persons)	▪ During Construction Phase: 2000 ▪ During Operation Phase: 1498 (448 regular and 1050 contractual)

2.0 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

(i) Identification of project and project proponent

Wonder Cement Ltd. is proposing Integrated Cement Project: Clinker - 8.0 MTPA (2 x 4.0 MTPA), Cement - 5.0 MTPA (2 x 2.5 MTPA), CPP - 40 MW (2 x 20 MW), WHRS - 40 MW (2 x 20 MW) in phased manner along with Railway Siding and residential colony at Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan).

Wonder Cement Limited (WCL) is a flag ship company of RK Group and sister concern of R K Marble Pvt. Ltd. R K Marble is world's largest marble producer with Guinness Book of world record in year from 1999 to 2001. Wonder Cement Limited (WCL) is registered under Companies Act, 1956 (No. 1 of 1956) with registration No 17-021205 of 2005-2006 on dated 26-08-2005.

The Company is having an Integrated Cement Plant, located in Nimbahera, District Chittorgarh, in Rajasthan, with Clinker production capacity 9.5 MTPA, Cement 8.0 MTPA, Captive Power Plant 70 MW & WHRS 30 MW and Solar Power Plant 2.0 MW and Wind Power Plant 15 MW and Construction of Plant Line IV is in construction phase to enhance plant capacity of Clinker (9.5 to 13.0 MTPA) & WHRB (30 to 45 MW).

Wonder Cement Limited has three grinding units; Dhule in Maharashtra, Badnawar in Madhya Pradesh with the production capacity of 2 MTPA each and in Jhajjar, Haryana with a production capacity of 2.5 MTPA. The Company is ISO 9001, ISO 14001 & ISO 45001 certified unit.

(ii) Brief description of nature of the project

Wonder Cement Ltd. is proposing Integrated Cement Project: Clinker - 8.0 MTPA (2 x 4.0 MTPA), Cement - 5.0 MTPA (2 x 2.5 MTPA), CPP - 40 MW (2 x 20 MW), WHRS - 40 MW (2 x 20 MW) in phased manner along with Railway Siding at Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan).

As per EIA Notification dated 14th Sept., 2006 & as amended thereof; this project falls under Category "A", Project or Activity '3(b)'.

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

Cement is an essential ingredient for the modern building construction. The new generation cement plant in India now employs the latest technology for better efficiency, energy conservation and economics of large capacity production. The improved market conditions witnessed recently, after a grip of recession over a long period, are expected to continue due to high priority being given by the Government to housing and infrastructure and also in view of the massive investment proposed in industry and rural sectors. Therefore, there is an urgent need to increase the cement production capacity in the country in spite of severe resource constraints.

India is the second largest producer of cement in the world. The primacy of Cement Industry would continue as cement remains paramount for the development of infrastructure all over the world and no other material would possibly substitute it in the near future. Over 65% demand for cement arises from Construction Sector. The Government of India laying a massive emphasis on infrastructure development, with 100 smart cities, modernization of 500 cities, affordable housing for all by 2022, cement concreting of national highways, provision of sanitation facilities, etc. These development projects are in the pipeline would be the main drivers of growth of Indian Cement Industry. The Working Group on Cement Industry for the 12th Five-Year Plan period has projected a demand growth at the rate of 10.75% per annum during the plan period at an expected 9% GDP growth rate. The Working Group expects that the installed capacity requirement would be 1,035.3 million tonnes by 2027.

(iv) Demand- Supply Gap & Imports vs. Indigenous production

The cement demand and supply are estimated based on the following assumptions:

- The cement market has growth due to Central government liberization policies and development of housing, road and infrastructure projects.
- A cement deficit situation is envisaged in the coming years, but the situation may change depending upon the infrastructure growth in the coming years.

(v) Imports vs. Indigenous production

The proposed project will utilize locally available raw material and cement produced in the state & nearby states for domestic and commercial consumption. However, some raw materials such as Gypsum, Petcoke and Coal will be imported.

(vi) Export Possibility

The primary markets of interest for WCL are domestic covering mainly Rajasthan, Gujarat, M.P, Delhi, Haryana, and U.P. No cement export is envisaged. Cement produced in the state will be consumed domestically.

(vii) Domestic / Export Markets

WCL is planning to expand its cement production capacity. To increase the lead in the region and logistic gain. The proposed cement production will cater to the cement demands in the states of Rajasthan, Punjab, Gujarat, M.P, Delhi, Haryana and U.P.

Apart from cement sale, Wonder Cement Limited will transfer clinker to its captive clinker grinding units, sale the clinker in domestic market. Export of Cement produced is not envisaged.

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

WCL will give preference to the local people for the employment opportunities on the basis of their qualification, eligibility and requirement. Staff will be hired from outside only in case of unavailability of Skilled labours/workers in the local / nearby area.

Particulars	Phase - I	Phase - II	Total	Source
A. Regular				From Local Area based on Qualification / Skilled / Unskilled / Outside
i. Skilled	156	60	216	
ii. Semi-Skilled	116	116	232	
Sub-Total (i + ii)	**272**	**176**	**448**	
B. Contractual	550	500	1050	
Total (A + B)	**822**	**676**	**1498**	

Apart from above, 2000 persons will be employed during construction phase of the project. Project will also generate indirect employment.

3.0 PROJECT DESCRIPTION

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

Type of Project:

Greenfield / Proposed Integrated Cement Plant at Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan) by Wonder Cement Limited.

Interlinked and Interdependent Projects:

Interlinked Project: Captive Parewar B Limestone Mine with total excavation of 14,00,000 TPA, Total Limestone production - 10,00,000 TPA (SMS grade -1,00,000 TPA, Cement grade- 9,00,000 TPA), Inter-burden (IB) - 23,860 TPA, Top Alluvium (OB) - 42,804 TPA, Sub Grade/Mineral Reject - 3,33,335 TPA along with 750 TPH Crusher with Vibrating Screen in the Mining lease area of 515.20ha located at Village Parewar, Tehsil & District Jaisalmer, Rajasthan. Separate application for EC has been submitted to MoEFCC, New Delhi on 24th March, 2021 *vide* Proposal no. IA/RJ/MIN/205768/2021.

Interdependent Projects: Surplus clinker will be dispatched to split location Grinding Units.

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

The proposed Integrated Cement Plant is located at Village: Parewar, Tehsil and District: Jaisalmer (Rajasthan). Location map is shown in **Figure - 1.** The map showing the project layout boundary, project components and facilities is shown in **Figure - 2** given below:

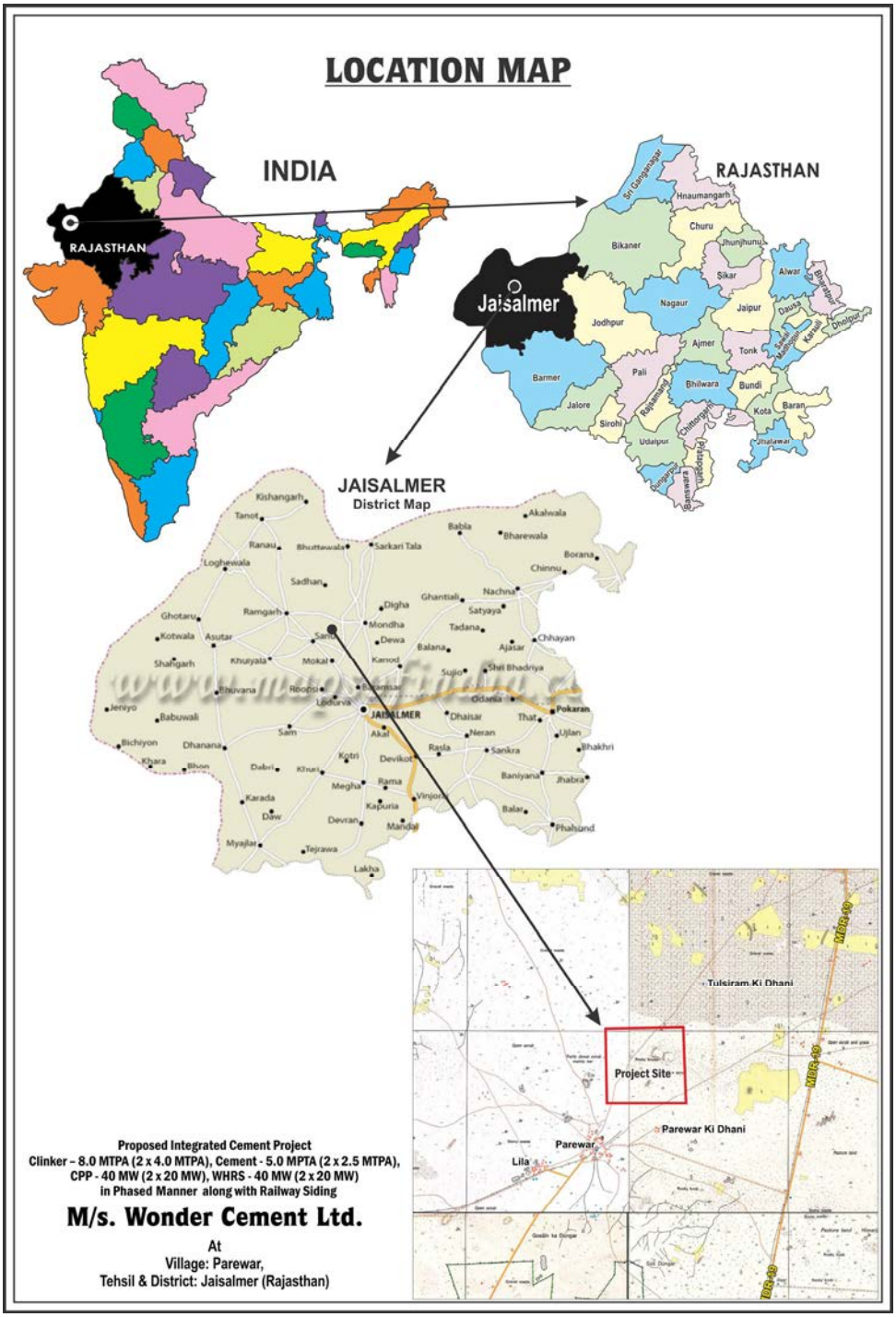


Figure - 1: Location Map

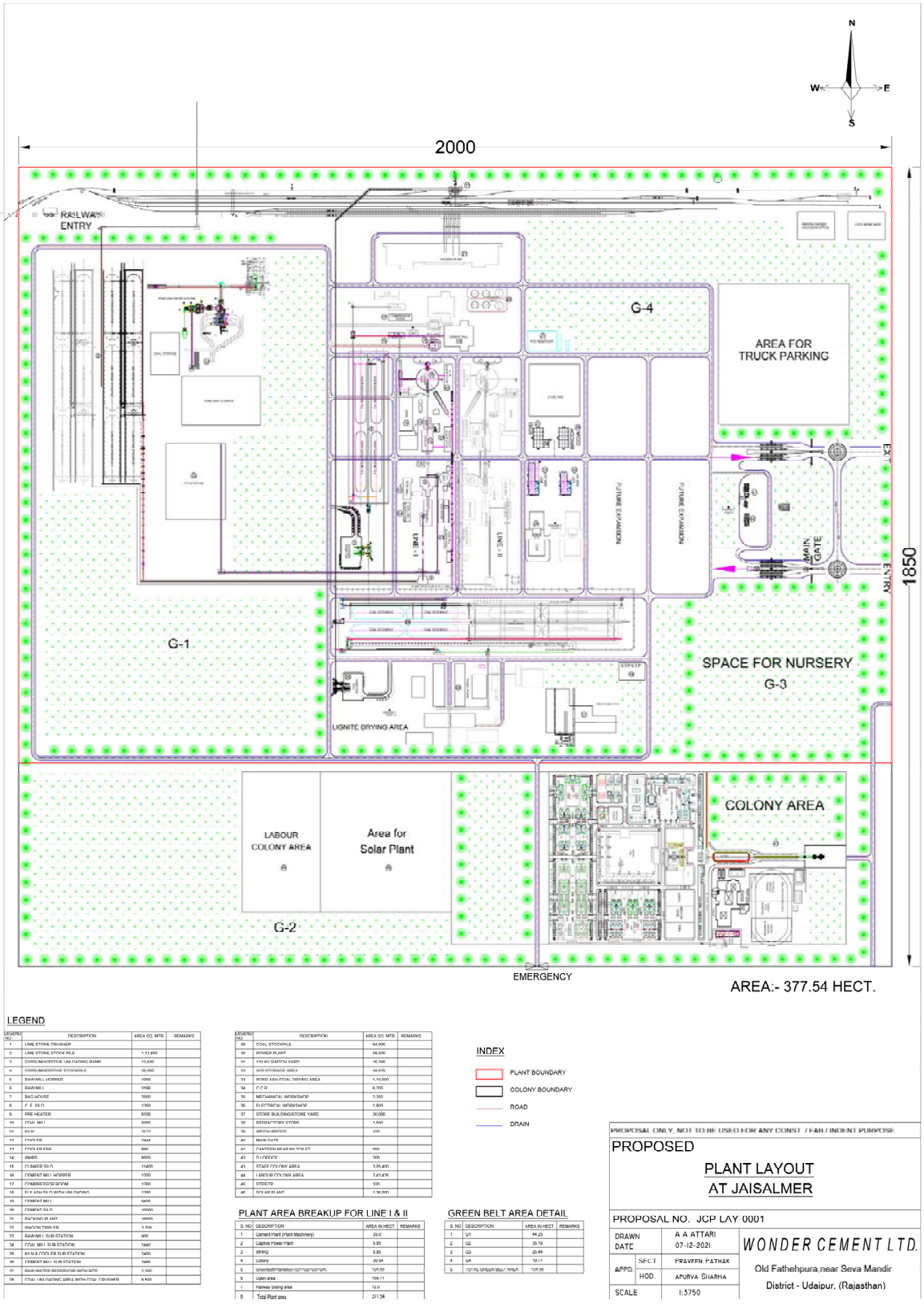


Figure - 2: Plant Layout

(iii) Key Plan

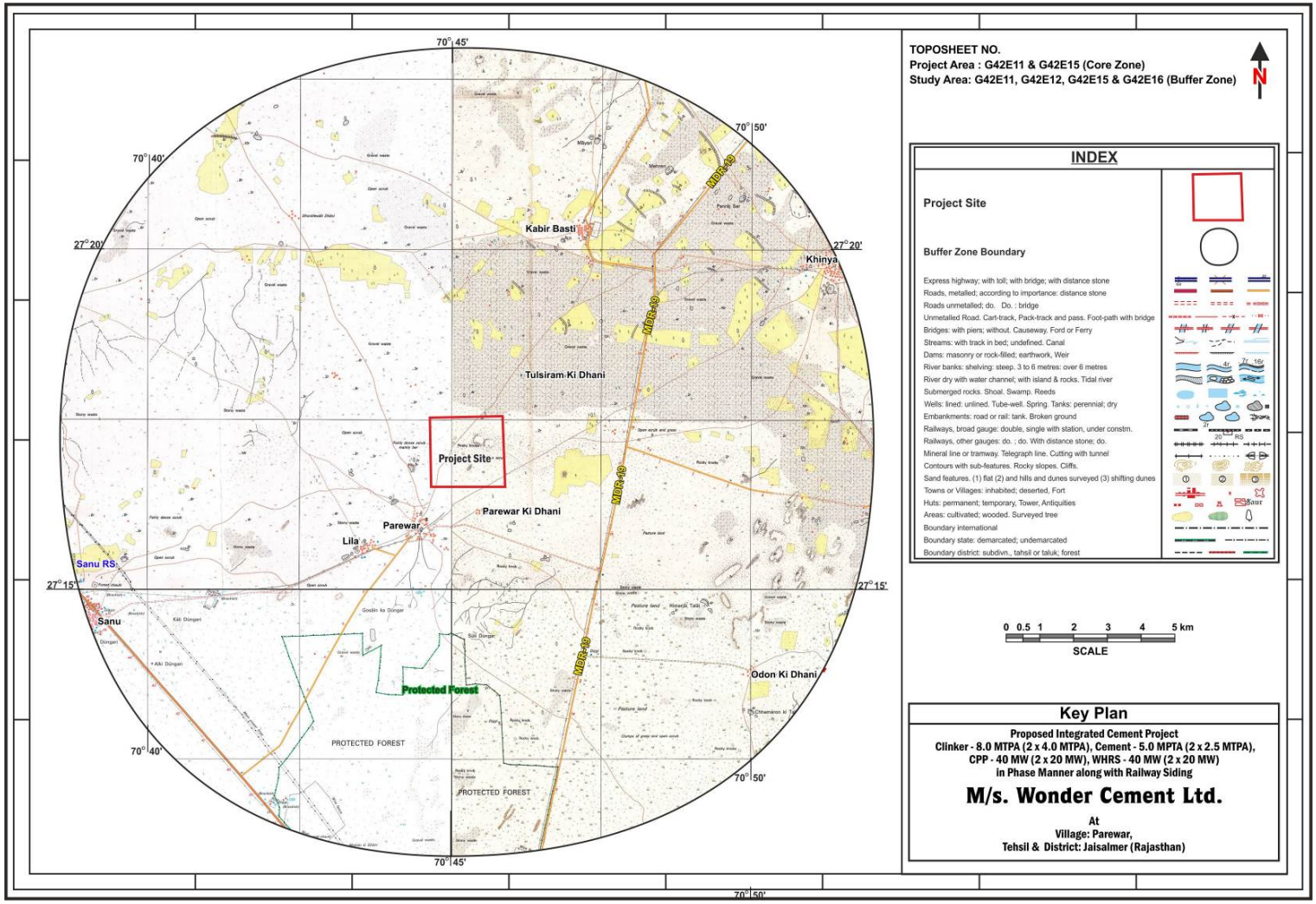


Figure - 3: Key Plan

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

Based on the availability and site-specific conditions, three alternative sites were explored for setting of the Integrated Cement Plant. Site analysis is given as below -

Table - 2

Analysis of Options for Proposed Integrated Cement Plant

PARTICULARS	OPTION - 1	OPTION - 2	OPTION - 3	REMARKS
Location	Village: Parewar	Village: Joga	Village: Naga	-
Land type *As per Revenue Department Record.*	Banjar (Govt. Barren Land)	Banjar (Govt. Barren Land)	Barani Land, Colonization/ Fertile land area, (Private land 70% and 30% Government)	-
Centroid/ mid-point (Degrees Minutes Seconds)	27°17'00.22"N 070°45'15.43"E	27°20'50.74"N 070°36'11.23"E	27°22'22.10"N 070°45'13.02"E	-
Proximity to Raw Material				
Proximity to Limestone Source for manufacturing Clinker	Captive Parewar - B Limestone Mine (Crusher) is adjacent to the Proposed Project site.	Captive Parewar - B Limestone Mine (Crusher) is at a distance of approx. 13.9 km from the Proposed Project site.	Captive Parewar - B Limestone Mine (Crusher) is at a distance of approx. 8.12 km from the Proposed Project site.	From proximity to Limestone mine point of view, Option - 1 is recommended.
Proximity to rail network				
Connectivity from Nearest Sanu Railway station for take-off a Railway siding on North Western Railway for the Proposed Cement Plant where facility is proposed to be developed to handle Cement, Clinker, Coal & other Raw materials.	Nearest Railway Station from the Proposed Project site is Sanu railway station (~9.5 km) in WSW Direction.	Nearest Railway Station from the Proposed Project site is Sanu railway station (~10.13 km) in SSE Direction.	Nearest Railway Station from the Proposed Project site is Sanu railway station (~15.41 km) in SW Direction.	option 1 is recommended for railway siding.
Proximity to Road Network				
Connectivity to Nearest MDR (Major District Road)	The project site is located at a distance of approx. 3.0 km in East direction from MDR-19. Construction of an approach road will be done which will further	The Project site is located at a distance of approx. 8.3 km from MDR - 103 and MDR - 19 is at a distance of 19 km from the project site.	The project site is located at a distance of approx. 4.4 Km from MDR 103 and 5.3 km in East direction from MDR-19. Construction of an approach road will be	In view of proximity to the Major District Road option 1 is recommended.

PARTICULARS	OPTION - 1	OPTION - 2	OPTION - 3	REMARKS
	connect to MDR- 19.		done which will further connect to MDR-19.	
Environmental Sensitivity of the Location				
Wetlands, watercourses, or other water bodies	There are no Wetlands, watercourses, or other water bodies	There are no Wetlands, watercourses or other water bodies	There are no Wetlands, watercourses, or other water bodies	All options are equivalent
Archaeological site	No Archaeological Site within 10 km radius	No Archaeological Site within 10 km radius	No Archaeological Site within 10 km radius	All options are equivalent
Forest Land	No forest land involved	No forest land involved	No forest land is involved	All options are equivalent
Other Aspects				
Project Cost	Captive Parewar - B Limestone Mine is adjacent to the Proposed Cement Plant, thus cost will be minimum due to less additional land requirements & acquisition cost.	Captive Parewar - B Limestone Mine is 13.9 km away from Proposed Cement Plant which result in increase of additional project cost and Limestone transportation cost.	Captive Parewar - B Limestone Mine is 8.12 km away from Proposed Cement Plant which result in increase of additional project cost and Limestone transportation cost.	Option - 1 is recommended on cost optimization with minimum land acquisition and transportation cost, as it is located adjoining to the captive limestone mines.
Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None involved, none within 15 km	None involved, none within 15 km	None involved, none within 15 km	All options are equivalent
Transmission Lines/ HT Lines passing through the project site	low Transmission line 11 volt is passing through the proposed project site.	High Tension line of 220 kVA is passing through the proposed project site.	No Transmission line is passing through the proposed project site.	-
Defense / Military Installations in nearby area of project site	No Defense installation is present nearby.	Military Base camp is present at a distance of 5.5 Km in WNW Direction.	No Defense installation is present nearby.	Option 1 and option 3 are recommended.

Keeping in view the proximity to the Captive Limestone Mine, Accessibility to MDR-19, Rail network and based on the environmental considerations and other aspects; the Option - 1 has been recommended for setting up proposed Integrated Cement Project.

Location map showing all alternative sites and captive limestone mine is as follows:

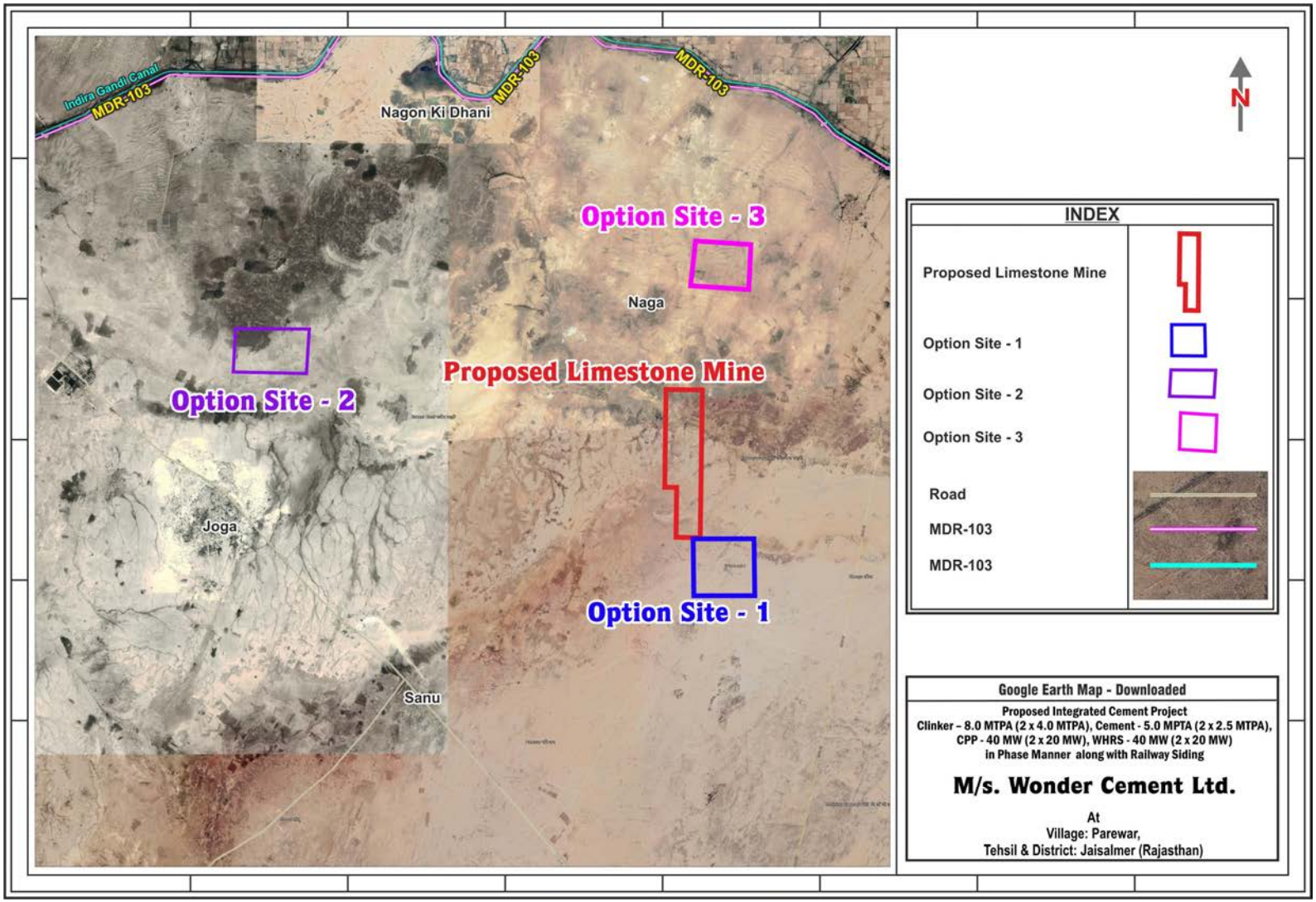


Figure - 4: Alternative Sites Showing on Google Earth

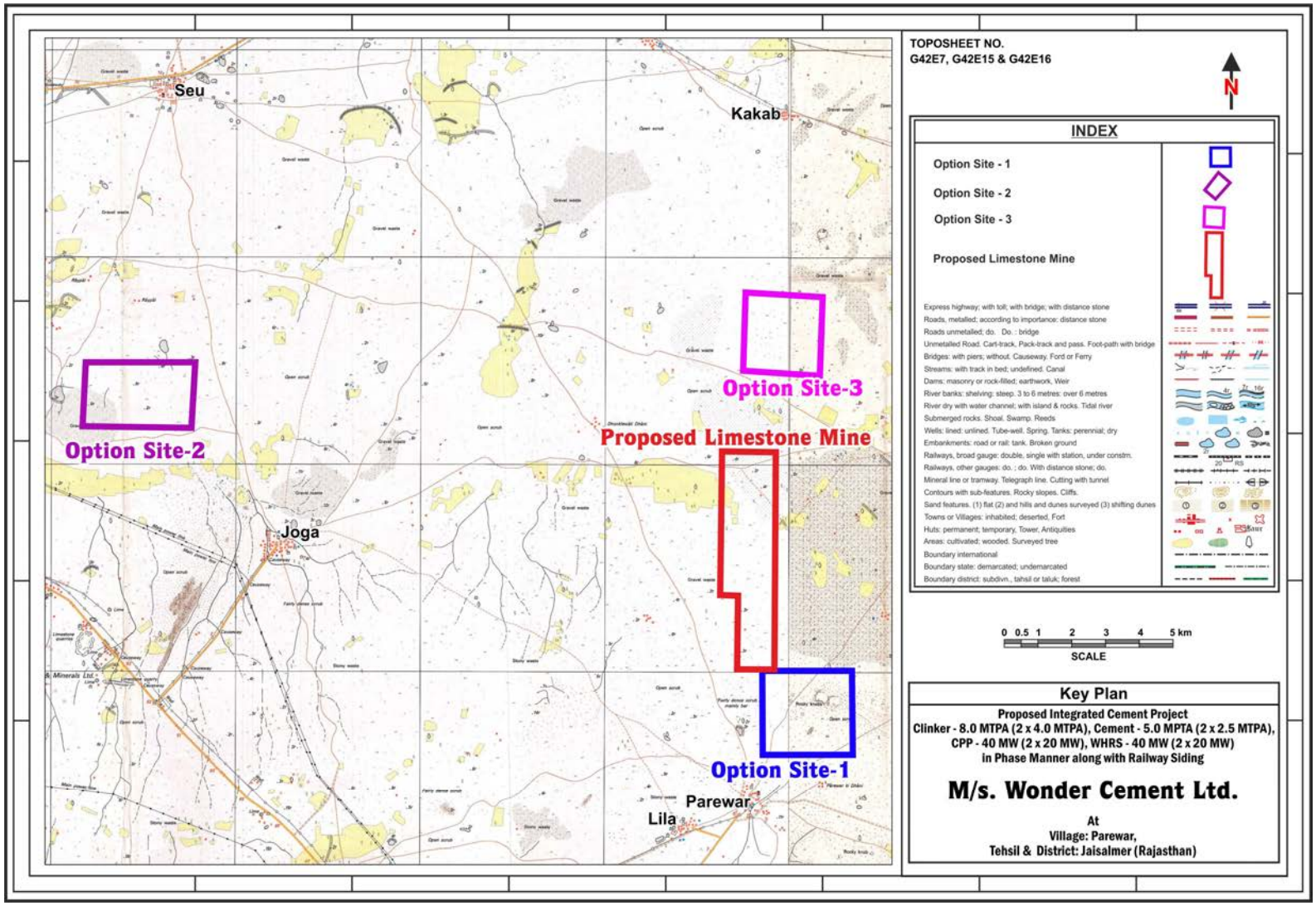


Figure - 5: Alternative Sites Showing on Toposheet

(v) Size or magnitude of operation

Wonder Cement Ltd. is proposing Integrated Cement Project: Clinker - 8.0 MTPA (2 x 4.0 MTPA), Cement - 5.0 MTPA (2 x 2.5 MTPA), CPP - 40 MW (2 x 20 MW), WHRS - 40 MW (2 x 20 MW) in phased manner along with Railway Siding at Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan).

Screening Category: Category "A"

Table - 3

Size of The Project

S. No.	Plant Capacity	Unit	Project		
			Phase-I	Phase-II	Total
1.	Clinker	MTPA	4.0	4.0	8.0 (2 x 4.0)
2.	Cement (OPC+ PPC)	MTPA	2.5	2.5	5.0 (2 x 2.5)
3.	CPP	MW	20	20	40 (2 x 20)
4.	WHRS	MW	20	20	40 (2 x 20)
5.	DG set	KVA	2 x 1500	-	3000
6.	Railway siding	-			
7.	Residential Complex	-			

Table - 4

Magnitude of Operation in Terms of Cost

S. No.	Particular	Details
1.	Total Cost of the Project	Rs. 4200 Crores (Rs. 2100 Crores for each Phase)
2.	Cost for Environmental Protection Measures	▪ Capital Cost: Rs. 302 Crores (Rs. 177 Crores for first phase and 125 crores for second phase) ▪ Recurring Cost: Rs. 15 Crores / annum (Rs. 8.5 Crores for first phase and 6.5 crore for second phase)

Facilities/ Activities for the Proposed Project

The major facilities and associated activities of proposed project are as given below:

Table - 5

Scope of Proposed Project

S. No.	Unit	Major facilities and associated activities proposed
1.	Cement Plant	➢ Limestone stacker and Reclaimer ➢ Raw Mill (VRM / Roller Press) ➢ Coal / Petcoke Mill ➢ Rotary Kiln (Pyro-processing) ➢ Clinker Cooler ➢ Cement Mill (VRM / Roller Press with Ball mill) ➢ Packing Plant
2.	WHRS	➢ Waste Heat Recovery Boilers with Pre-heater and Clinker Cooler ➢ Steam Turbine ➢ Generator

S. No.	Unit	Major facilities and associated activities proposed
3.	CPP	➢ Fluidized Bed Combustion Boiler ➢ Steam Turbine ➢ Generator ➢ Air Cooled Condenser
4.	D.G. Set	Diesel Generator with storage of fuel
5.	Others	➢ Railway Siding ➢ Residential Colony for employees ➢ Sewage Treatment Plant, Effluent Treatment Plant, Water Treatment Plant & RO Plant.

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

❖ **Process Description of clinker unit and cement unit:**

Wonder Cement Ltd. is proposing Integrated Cement Project: Clinker - 8.0 MTPA (2 x 4.0 MTPA), Cement - 5.0 MTPA (2 x 2.5 MTPA), CPP - 40 MW (2 x 20 MW), WHRS - 40 MW (2 x 20 MW) in phased manner along with Railway Siding at Village: Parewar, Tehsil & District: Jaisalmer (Rajasthan).

The manufacturing of cement will be based on dry process and essentially consist of the following unit operation steps:

- ❖ Crushing Stacking & Reclaiming of Limestone.
- ❖ Crushing, Stacking & Reclaiming of Coal and Use of Alternate Fuels.
- ❖ Raw Mill / Kiln Feed Preparation.
- ❖ Clinkerization.
- ❖ Cement Grinding and storage
- ❖ Power generation

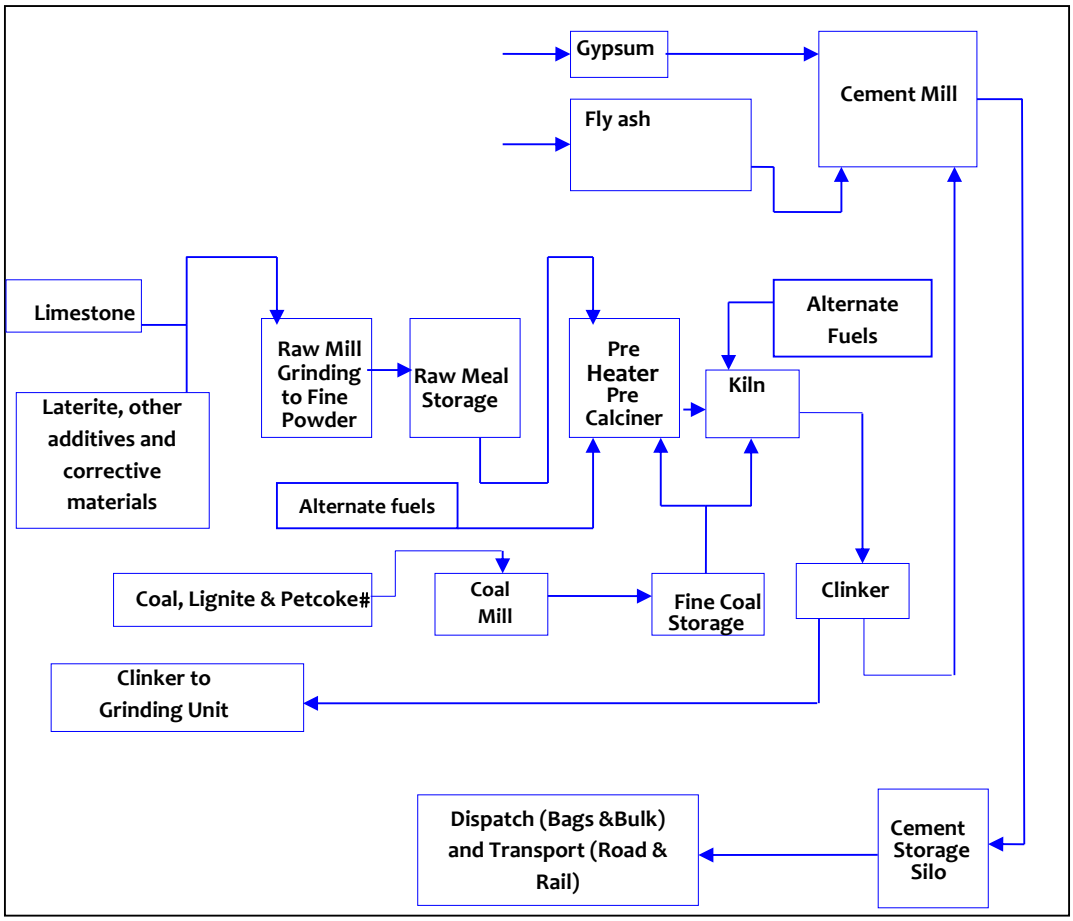


Figure - 6: Process Flow Sheet of Cement Plant

Selection of Process

Dry process of cement manufacturing offers more advantages, particularly in fuel consumption and is the most rational and logical choice. The proposed plant will adopt dry process to manufacture Portland Pozzolana Cement (PPC) & Ordinary Portland Cement (OPC) using Rotary kiln, Preheater and Precalciner.

Dry process Principle

In the dry process, the raw materials are dried in a combined drying-cum-grinding installation to reduce the moisture content to below 1%. The drying in the grinding unit is achieved by using kiln exhaust gases for normal moisture and is supplemented by auxiliary hot air furnace for rainy season etc. for high moisture. The ground raw mix is then homogenized in silos and fed into the rotary kiln. Heat required for evaporation of added moisture is eliminated in this process. The latest technological innovation is to replace the conventional suspension preheater by well-designed suspension preheater having high efficiency, low pressure drop cyclone and pre-calcinator.

Suspension preheater achieves better heat economy and therefore, fuel consumption in this process is low. This process is environmentally friendly and reduces consumption of natural resources

The major steps involved in cement manufacturing are as follows:

A. Crushing Stacking & Reclaiming of Limestone

The Limestone Crushers will crush the limestone and discharge the material onto a belt conveyor which takes it to the stacker. The material will be stacked in stockpiles. Limestone will be extracted 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. Crushing, Stacking & Reclaiming of Coal and Use of Alternate Fuels

The process of making clinker requires heat. Coal/pet coke will be used as the fuel for providing heat. Raw Coal/ pet coke received from the supply industry 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.

C. Raw Mill / Kiln Feed Preparation

Reclaimed limestone along with additives and corrective material will be fed to the raw mill for grinding and product is called raw meal. The hot gases generated from the Clinkerization process will be used in raw mill for drying. Raw meal will be finally stored and homogenized in silo. Extracted raw meal from silo is called kiln feed which will be fed to the top of multistage preheater for pyro processing.

D. Clinkerization

Clinker will be made by pyro processing of Kiln feed in the preheater and the rotary kiln. Fine coal / pet coke/lignite fuel will be fired to provide the necessary heat in the kiln and the Precalciner located at the bottom of the preheater. Hot clinker discharged from the Kiln will drop on the grate cooler and will get cooled. The cooler will discharge the clinker onto the pan / bucket conveyor, and it will be transported to the clinker silo. The clinker will be taken from the silo to the Cement mill hoppers for cement grinding.

E. Cement Grinding & Storage

Clinker and Gypsum, fly ash and mineral components according to requirement will be extracted from their respective hoppers and fed to the Cement Mill. Cement Mill grind the feed to a fine powder and the mill discharge will be fed to an elevator, which will take the material to a separator, which separates fine product and the coarse product. The Cement, so provided will be transported to RCC Cement Silos for dispatch.

Railway Siding:

Sanu Railway station have been selected for take-off of a Railway siding on North Western Railway for the Proposed Cement Plant where facility is proposed to be developed to handle Cement, Clinker, Coal & other Raw materials.

A 2 km in length railway siding with installation of wagon tippler for unloading of raw material and automated packer system for loading of cement bags and clinker for rack and locomotive workshops building, weigh bridge will be developed by the company.

Residential colony:

A residential colony for plant and mines employee within the existing cement plant is also proposed.

Captive Power Plant:

In order to meet the power requirement, 40 MW (2 x 20 MW) Captive Power Plant is proposed to will be installed within the plant premises. The generating unit will have circulating fluidised bed combustion (CFBC) boiler firing multi-fuel as primary fuel, condensing steam turbine and generator, air cooled condenser and other necessary auxiliary equipment including balance of plant equipment. The major systems and equipment include the following items:

One No. of circulating fluidized bed combustion (CFBC) steam generator with its auxiliaries and accessories which is as detailed below:

a) Bunkers for fuel, limestone, and bed material along with their feed system complete in all respect.
b) Start-up fuel firing system for start-up of boiler completes with BMS, HSD unloading, transfers pumps and storage tank.
c) HP & LP dosing system and ESP complete with all internals
d) Furnace.
e) Air pre-heater complete and Complete draft system including PA fans, SA fans and ID fans,
f) Sample cooling station, Ash handling system including ash re-circulation system and RCC chimney.

Equipment Details of Captive Power Plant

Steam Turbine, Generator, Air Cooled Condenser & Auxiliaries, Turbine, Common Base frame mounted turbine and gear box, single casing, multistage type, uncontrolled extraction condensing turbines complete.

- **Air Cooled Condenser & Auxiliaries**

The condensing plant will convert the exhaust steam to condensate in the air-cooled condenser and then deliver the condensate to feed water cycle. Exhaust steam from the steam turbine enters the condenser where it is condensed by the air flowing through the finned tubes of the condenser.

- **Turbine Oil System**

Independent and dedicated turbine oil system will be provided for turbine unit.

- **Generator**

  The generator and generator transformer will be rated to deliver complete output of steam turbine over its full range of operating regime under all ambient conditions.

- **Feed water system**

  The major components of the feed water system for each turbine unit will have (1) Low pressure (LP) heater & drain cooler (2) Sliding pressure De-aerator (3) Two Nos. (2 x 100 %) boiler feed pump and (4) High pressure (HP) heater.

- **Boiler Feed Pumps**

  The boiler feed pumps will discharge the feed water to the boiler through feed modulating station.

- **CFBC Boiler**

  The proposed CFBC Steam Generator and auxiliaries will be designed for 100% BMCR steam generation at rated parameters with all type of fuels i.e. Petcoke, Indian Coal, Imported Coal, Lignite and mix in any ratio of these fuels.

- **Ash Handling System**

  The Ash Handling System (AHS) will be generally designed as per the design requirements. Fly ash will be stored in silo and transferred to cement mill through pipeline.

CPP Process Flow Diagram:

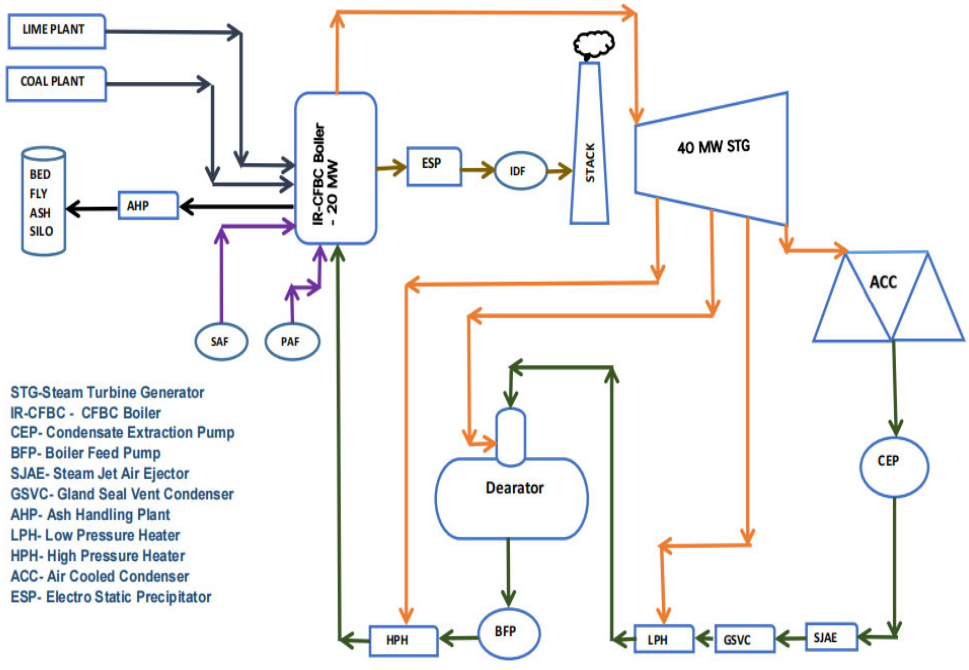


Figure 7: Process Flow Diagram CPP

Waste Heat Recovery Boiler

Waste heat recovery boiler of 40 MW (2 x 20 MW) in capacity will be installed in Phase 1 and Phase 2 of Integrated Cement Plant. WHRS boiler will be based on Steam Rankine Cycle and envisaging recovery of heat from exhaust gases at two points viz. Pre-heater and Clinker cooler (tapping at exhaust or mid-cooler). Steam generated in the boiler will be used in the turbine to generate electricity in the generator.

Equipment Details - Cement Plant

Equipment Selection

A list of equipment and storages capacities are given below. In selecting a particular type of equipment or storage for the project, among others, the following issues have been considered:

- Equipment costs
- Energy consumption
- Raw material characteristics
- Sizes in which the equipment is available
- Lead times for particular types of equipment
- Operating experience with various types of equipment
- Ease of operation of equipment
- Product to be manufactured
- Site conditions
- Local skills available
- Environmental issues

Plant Equipment Sizing

TABLE - 6:

MAJOR EQUIPMENT AND STORAGE CAPACITY

S. No.	*Description*	*Unit*	*Capacity (Phase - I)*	*Capacity (Phase - II)*	*Total*
1.	Kiln	TPD	12000	12000	24000 (2 x 12000)
2.	Raw Mill	TPH	2 x 500	2 x 500	20000 (4 x 5000)
3.	Cement Mill	TPH	1 x 310	1 x 310	620 (2 x 310)
4.	Coal Mill	TPH	2 x 80	2 x 80	320 (4 x 80)
5.	Cooler	TPD	12000	12000	24000 (2 x 12000)
6.	Packers	TPH	2 x 240	2 x 240	960 (4 x 240)
7.	Cement Bulk Loading	TPH	2 x 250	2x 250	1000 (4 x 250)
8.	Truck Loader	Nos.	6	6	12 (2 x 6)
9.	Wagon Loader	Nos.	8	8	16 (2 x 8)
10.	Truck Tippler	TPH	4 x 100	4 x 100	800 (8 x 100)
11.	Belt Conveyor & conveying system	Lot	1	1	2
12.	Steam Turbine Generator (Single STG for CPP and	MW	1 x 40	1 x 40	80 (2 x 40)

S. No.	*Description*	*Unit*	*Capacity (Phase - I)*	*Capacity (Phase - II)*	*Total*
	WHRS)				
13.	Wagon Tippler	Trip/Hr.	1 x 25	-	25
14.	Wagon Loading Platform	-	1	-	1
15.	Railway Siding	Nos.	1	-	1
16.	AFR handling & Feeding system	TPH	1 x 50	1 x 50	100 (2 x 50)
17.	Clinker bulk loading	TPH	4 x 250	- -	1000 (4 x 250)
18.	Chlorine Bypass system	TPH	40	40	80 (2 x 40)

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

Raw material requirement, estimated quantity, source, mode of transport of raw material are as follows:

Table - 7 (a)

Details of Raw Material Requirement along with Source and Mode of Transport

S. No.	Name of Raw Material	Proposed Quantity (MTPA)			Source	Approx. Distance from Project site	Mode of Transportation
		Phase - I	Phase - II	Total Quantity			
1.	Limestone	5.28	5.28	10.56	Captive Limestone Mine/Purchase	Adjacent	Conveyor Belt
2.	Red ochre/Iron Ore	0.0066	0.0066	0.0132	Parewar	5 Km	by Road
3.	Clay	0.396	0.396	0.792	Captive/ Nearby area From Village - Lanela	50 Km	by Road
4.	Silica Sand	0.396	0.396	0.792	Parewar & Devikot	5 Km & 150 Km	by Road
5.	Gypsum (mineral and chemical)	0.125	0.125	0.250	Mohangarh	69 Km	by Road
6.	Fly ash	0.875	0.875	1.75	Own TPP and Nearby Thermal Power Plants, Barmer, Rajasthan	190	by Road

Table - 7 (b):

Fuel Requirement

S. No.	Name of Raw Material	Proposed Quantity (MTPA)			Source	Approx. Distance from Project site	Mode of Transportation
		Phase - I	Phase - II	Total Quantity			
Cement Plant							
1.	Fuel Oil	0.31	0.31	0.62	Nearby area - Kishangarh & Bhilwara	564 Km	By Road
2.	Coal (Indian & Imported Coal)	0.471	0.471	0.942	Indian Coal - from Chhattisgarh and Madhya Pradesh Imported Coal from USA, South Africa, Australia and Indonesia from Kandla Port.	1600 km for Indian coal 800 Km for Imported coal	By Road & Rail
3.	Petcoke	0.4	0.4	0.8	HPCL, Barmer	205 Km	By Road & Rail
4.	Lignite	0.707	0.707	1.414	RSMM Giral mines	105 Km	By Road & Rail
Captive Power Plant							
5.	Coal (Indian & Imported Coal)	0.165	0.165	0.33	Indian Coal - from Chhattisgarh and Madhya Pradesh Imported Coal from USA, South Africa, Australia and Indonesia from Kandla Port.	1600 km for Indian coal 800 Km for Imported coal	By Road & Rail
6.	Lignite	0.264	0.264	0.528	RSMM Giral mines	105 Km	By Road & Rail

Marketing Area and Mode of transportation of Final Product

Marketing area will be Rajasthan, Punjab, Gujarat, M.P, Delhi, Haryana and U.P. and final product will be transported by rail and road. Clinker will also be transported by Rail & Road to other grinding units.

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

- Domestic wastewater generated from plant & colony (374 KLD) will be treated in STP (Capacity: 450 KLD) and the treated water (299 KLD) will be utilized for process of power generation and greenbelt development/ plantation.
- Boiler Blow down (195 KLD) generated from plant will be treated in Effluent Treatment Plant (250 KLD capacity) and treated water will be reused in the Captive Power Plant operation for cooling.
- Dust collected by various pollution control equipment like Bag house and Bag filters will be recycled into the plant.
- Sewage sludge (75 Kg/day) generated from STPs will be used as manure in horticulture/greenbelt development.

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

Water Requirement:

The total freshwater requirement for Cement Plant will be 2300 KLD (including colony) which will be sourced from Indira Gandhi Canal / Nehar project (Sagarmal Gopa Branch) & Ground Water after prior approval from competent authorities.

Application for withdrawal of 2300 KLD surface water from Indira Gandhi Canal has been submitted to Indira Gandhi Nahar Board, Jaipur Rajasthan on dated 12.07.2021 and copy of application is attached as ***Annexure - 2*** *along with this PFR.*

Water Break-up for 2300 KLD water requirement is given as follows

Table - 8

Water Break-Up

S. No.	Major Requirements	Quantity (KLD)			Source
		Phase - I	Phase - II	Total Quantity	
1.	Cement Plant	770	770	1540	Indira Gandhi Canal / Nehar project (Sagarmal Gopa Branch) & Ground Water
2.	CPP	180	180	360	
3.	WHRB	150	150	300	
4.	Colony	291	-	291	
5.	Drinking & Domestic	119	-	119	
6.	Dust Suppression & Greenbelt development	115	-	115	
7.	Other (Fire Service)	20	-	20	
Total		1645	1100	2745	
Recycled water		115	330	445	
Net fresh water		**1530**	**770**	**2300**	

Power Requirement and Source

- ✓ Total Power requirement for Proposed Integrated Cement Project will be 90 MVA; which will be sourced from Captive Power Plant (40 MW), WHRB (40 MW), State grid of JVVNL (Jodhpur Vidyut Vitran Nigam Ltd.) & D.G Set (2 x 1500 KVA) (for emergency).
- ✓ DG Set of 2 x 1500 KVA is proposed to be installed for use of in case of plant shutdown or non-supply of power from state electricity grid and in case of emergency.

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

- Domestic wastewater (374 KLD) will be generated from plant & colony which will be treated in STP (450 KLD capacity) and the treated water (299 KLD) will be utilized for process of power generation and greenbelt development/ plantation.
- Boiler Blow down (195 KLD) generated from plant will be treated in Effluent Treatment Plant (250 KLD capacity) and treated water will be reused in the Captive Power Plant operation for cooling.

- Sewage Sludge (75 Kg/day) will be generated from STPs & will be used as manure in horticulture/greenbelt development.
- Total municipal solid waste generated will be 750 Kg/day. Waste will be collected & segregated, and Bio-degradable waste will be converted into organic manure and manure will be used for greenbelt development/plantation and non–degradable waste scientifically in compliance of Solid Waste Management rules 2016.
- Dust collected from various pollution control equipment like Bag house and Bag filters will be recycled into the plant.
- Construction and demolition waste generated due to proposed project during construction phase will be utilized in levelling of land and construction of roads. Solid waste such as road dust comprises of a mixture of limestone dust, clay and soil will be generated from regular sweeping of roads.
- Used oil Grease & Waste residue (contaminated cotton rags) containing oil (100 KL / Annum) will be generated as per Schedule - I of Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, which will be sold to CPCB/SPCB authorized recycler. Used Oil/ Spent oil will be filled in approx. 750 nos. Empty barrels and further sold to CPCB/ SPCB authorized recycler.
- Used Lead acid batteries (150 Nos./Annum) will be generated, and which will be stored in the designated storage area and will be disposed-off / sold to registered vendors as per Battery waste Management Rules 2020.
- Waste heat generated from Kiln/Cooler will be utilized for power generation through WHRB.
- E-Waste (500 kg/Annum) will be generated in the form of used electrical equipment, Cables, CFL/ LED Lights, which will be sold to registered vendors as per E- Waste Management Rules, 2016.

4.0 SITE ANALYSIS

(i) Connectivity

- The project site is well connected to MDR - 19 at a distance of approx. 3.0 km in East direction.
- The nearest railway station is the Sanu Railway Station (~9.5 km in WSW direction).
- The nearest airport is Jaisalmer Airport (~44 km in SSE direction).
- 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 Taluka and District headquarters are near to the site.

(ii) Land from Land use and Land ownership

The total area for the proposed plant is 377.54 ha. The total project area is Government land. There is no forest land involved. Present land use of the proposed project site is barren land which will be used for industrial purpose after its conversion into Industrial land. The Land breakup is given below:

Table - 9
Land Breakup

S. No.	Description	Area (in hectares)
1.	Cement Plant (Plant Machinery)	35.0
2.	Captive Power Plant	5.85
3.	WHRS	0.85
4.	Colony	30.54
5.	Greenbelt/Plantation	124.59
6.	Open area	168.71
7.	Railway Siding area	12.0
Total Plant area		**377.54**

(iii) Topography (Plant area topography shall be included)

The lowest and highest level are 168 mRL and 192 mRL respectively. The undulating prominent escarpment and mounds, which terminates abruptly against the valley portion for mile together. The slope of the ground is towards north. The topography due to plateau features with gentle slope, develops a step like profile. This area is rain deficient, arid and have acute shortage of water. There are only few Nallahs in the areas which flows in rainy season only.

(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, wildlife sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given

Table: 10

Environmental Settings of the Area

S. No.	Particulars	**Details** *(with approximate aerial distance & direction from the nearest boundary of project site)*
1.	Nearest Village	Parewar (800 m in SSW direction)
2.	Nearest Town & City	Jaisalmer (42 km in SSE direction)
3.	Nearest National Highway / State Highway	NH - 11 (43 km in SSE direction)
	Other Roads	MDR - 19 (3.2 km in East direction)
4.	Nearest Railway station	Sanu Railway Station (9.5 km in WSW direction)
5.	Nearest Airport	Jaisalmer Airport (44 km in SSE direction)
6.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, (PF) etc. within 10 km radius.	No National Park, Wildlife Sanctuary, Biosphere Reserve falls within the 10 km radius study area.
7.	Reserve Forest (RF) / Protected Forest (PF) etc. within 10 km radius.	Protected Forest (4.0 km in South direction)
8.	Nearest Water Body	Indira Gandhi Canal (12.0 km in NE Direction)
9.	Seismic Zone	Zone - III [as per IS 1893 (Part-I): 2002]

(v) Existing Infrastructure

Project site

This is a proposed project, and the proposed site is vacant land and presently no industrial infrastructure exists within the project site.

15 km radius study area

As per Secondary Sources (i.e., Bhuvan), there are 13 Schools, 05 Hospitals & Health Care Centres, 21 Places of Worship and 06 Places of Community Facilities & Health Care Centres available within 15 km radius study area. Detailed List of Vulnerable Groups along with distance and direction is enclosed as **Annexure - 3** along with PFR.

(vi) Soil classification

Sandy soil is mostly found in the area.

(vii) Climatic data from secondary sources

The area has generally moderate climate. The temperature variation is from 2°C to 48°C. The average annual rainfall in the area is about 20-25 cm. The relative Humidity in the area is about 28% to 56%.

(viii) Social Infrastructure available

Nearest habitation is at Parewar village. The nearest city is Jaisalmer, which is approx. 42 km distance from the project site.

Telephone and medical facilities are available in the nearby area. Educational Institutions, Technical Institute for skill up-gradation, Dispensary etc. are present in the study area. Almost all the villages in the buffer zone are electrified. Under the Socio- economic development plan, village's development will be undertaken.

5. PLANNING BRIEF

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

Proposed industry is 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

Temporary influx of people will be there as the managerial and supervisory staff will generally be outsider. A projection may be made by a governmental organization, or by those unaffiliated with a government.

(iii) Land use planning (breakup along with green belt etc.)

Total Plant area is 377.54 Ha (Cement Plant, CPP & Colony). About 33% i.e., 124.59 ha of the total project area will be covered under green belt & plantation in order to reduce dust & noise pollution levels & to increase aesthetic beauty of the area.

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

Wonder Cement Ltd has assessed the demand of infrastructure (Physical & Social) in nearby area of the plant site and development activities are being undertaken under corporate social responsibilities program for rural development initiatives for the upliftment of the nearby communities from time to time.

(v) Amenities/Facilities

Wonder Cement Limited 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 programs.

6. PROPOSED INFRASTRUCTURE

(i) Industrial Area (Processing area)

Following infrastructure will be provided as following:

- **Workshop**

  Adequately equipped workshop has been envisaged for all disciplines i.e. mechanical, electrical, electronic computer maintenance etc. at proposed Clinker Grinding Unit.

- **Warehouse and Spare Parts Store**

  A store building will be constructed as warehouse or spare parts store. Fenced open-air yard with sheds will be built for storing heavy machinery parts.

- **Elevators, Cranes, Hoists and Maintenance Tools**

  Elevators, maintenance cranes/ hoists and all required specially designed maintenance tools for equipment and plant will be provided.

- **Technical & Administrative office**

  A suitable technical office & administrative office will be constructed for the project activities and operation phase.

- **Time and Security office**

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

- **Dispensary/First Aid**

  A dispensary/first aid facility will be provided in the plant premises.

- **Canteen**

  A canteen will be provided in the plant premises.

- **Weighbridge**

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

- **Bags godown**

  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.

- **Storage Facilities**

Type of Material	Type of Storage	Capacity (Tonnes)		Total Capacity (Tonnes)
		Phase – I	Phase – II	
Cement	RCC Silo	2 x 10,000	2 x 10,000	40000 (4 x 10,000)
Clinker	RCC Silo	1 x 75000	1 x 75000	150000 (2 x 75000)
Fly ash	RCC Silo	1 x 5000	1 x 5000	10000 (2 x 5000)
Gypsum (Mineral and Chemical)	Covered Yard / Shed	1 x 10800	1 x 10800	21600 (2 x 10800)
Limestone	Covered Yard / Shed	2 x 40000	2 x 40000	160000 (4 x 40000)
Coal & Pet coke	Covered Yard / Shed	2 x 25000	2 x 25000	100000 (4 x 25000)
Lignite Storage yard	Covered Yard / Shed	1 x 40000	1 x 40000	80000 (2 x 40000)
Additive Yards	Covered Yard / Shed	2 x 16000	2 x 16000	32000 (4 x 16000)
AFR	Covered Yard / Shed	2 x 2500	2 x 2500	10000 (4 x 2500)
Blending Silo	RCC	1X30000	1X30000	60000 (2X30000)
Pond ash Storage Yard	Covered Yard / Shed	1X10000	1X10000	20000 (2X10000)

(ii) Residential area

A common Residential complex proposed for cement plant and Limestone mine will be constructed at joining of the Plant. Total residential complex area will be 30.54 ha with houses for employee, Bachelor Hostel, Guest House, School, Auditorium, Club house, Health management Centre, Gym, Shopping Centre, Security barrack, Office building, green belt, lawn area, central park/ plan ground, Colony substation etc.

(iii) Green Belt

The total project area is 377.54 ha, out of which 124.59 ha (approx. 33%) area will be covered under greenbelt development / plantation along the plant boundary and inside the plant.

(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 project site is well connected to MDR - 19 at a distance of approx. 3.0 km in East direction.
- The nearest railway station is the Sanu Railway Station (~ 9.5 km in WSW direction).
- The nearest airport is Jaisalmer Airport (~ 44 km in SSE direction).
- 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 Taluka and District headquarters are near to the site.

(vi) Drinking Water

Drinking water will be sourced from Indira Gandhi Canal / Nehar project (Sagarmal Gopa Branch) & Ground Water which will be treated in RO unit. The RO reject water will be reused in mill spray.

The reverse osmosis process consists of three main steps: (1) Pre-treatment, (2) Membrane Assembly System and (3) Post-treatment.

Pre-treatment

The purpose of the pre-treatment step is to avoid any risk of clogging, fouling or scaling of the membrane. Pre-treatment is an important aspect of RO system. All RO devices require pre-treatment to remove the suspended solids, scalants, foulants and colloidal matter. In the pre-treatment system, some chemicals are usually used before the filtration step.

Chlorine is often injected to disinfect feed water. Sodium Meta bisulphate is used to de-chlorinate the feed water. Ferric chloride, alum or polymers are the typical coagulants used at the pre-filter stage. In the filtration stage, a gravity filter with different sand particle sizes is used. Then a fine cartridge filter is used after the sand filtration. For ground water treatment, Hydrochloric acid and Sodium hexameta phosphate (SHMP) is often used to prevent carbonate scale. The exact dosage of each chemical depends on the chemical analysis of the feed water.

Membrane Assembly System

Several types of RO membranes are commercially available. These are prepared either as flat sheet or as hollow fibers made from cellulose acetate (CA) ester or polyamide (PA). There are different ways of packing RO membranes. Of these, three configurations have been produced commercially: Tubular, Spiral Wound (SW) and Hollow Fine Fiber (HFF). Hollow fine fiber and spiral wound modules have proved to be appropriate for several types of raw water in RO desalination systems. Spiral wound has found many applications in the wastewater reclamation. The success of the spiral-bound device has been related to the capability to package a relatively large amount of membrane surface area into a relatively small element while maintaining a certain degree of "cleavability", which, of course, is particularly important for wastewater processes.

Post-treatment

In the post-treatment step, product water passes through a de-carbonation system, a pH adjustment system and water passing through UV light. Generally, Sodium Carbonate (Food Grade) is added to the product water to adjust its alkalinity. The purpose of passing the water through UV is to eliminate the presence of micro-organisms during storage and distribution.

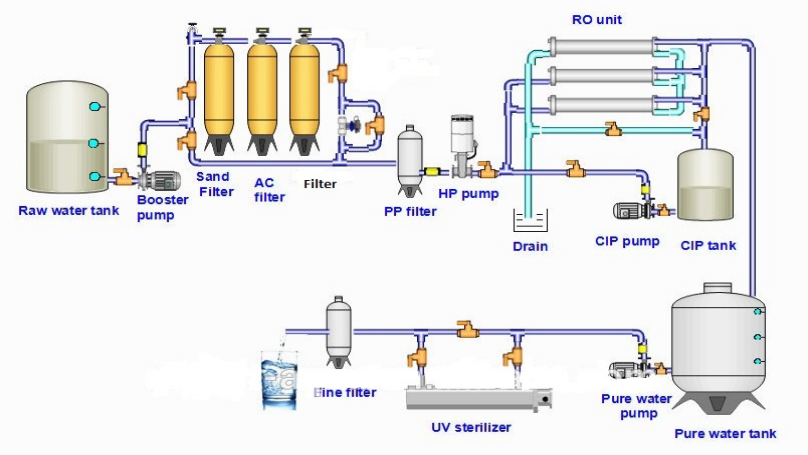


FIGURE - 8: Schematic Diagram for Reverse Osmosis

(vii) Sewerage system

Wastewater generated from the office toilet and domestic effluent generated from staff colony will be treated in Sewage Treatment Plant (STP) of 450 KLD capacity. Treated water will be reused/ recycled in the operation the Captive Power Plant for cooling purpose.

Process description of STP plant

- The Domestic wastewater generated in Colonies and plant, is collected through network of ground sewage collection tank, from where it is pumped to Sewage Treatment Plant.
- STP consists of - Settling zone, Contact zone, Digestion Zone and Stabilization zone.
- Collected sewage transfer to Bar Screen Chamber By pump. In this process big sewage /solid particles like plastic bottles, polythene bags, glasses, stones, etc. screening by mechanically and those particles pass away which is less than 8.0 mm size.
- After Bar Screening Chamber Filtered sewage inter into Oil & Grease Trap for removal of oil and grease. Usually, sewage generated includes maximum quantity from kitchen and canteen; there is a possibility of higher concentrations of oil and grease in the raw sewage.
- The oil & Grease is removed by gravity basis. This process is very important because of consisted oil & grease occur interference in next biological treatment.
- After Oil & Grease separation the raw sewage pass in to Grab Tank (GT). The overflow of this tank goes to Equalization Tank.
- Usually, Sewage generation is more during morning hours and evening hours. The biological treatment system needs constant feed for bacteria to work efficiency. So, in this process to make a homogeneous sewage by diffused aeration.
- This raw sewage transfers from Equalization tank to Fluidised Media reactor (FMR). The FMR process complete in two zones, the first Aeration Zone-I & Aeration Zone -II. Due to this process the Organic matter (BOD& COD) decrease through of Fluidised media. The main advantage of this process to make available more surface area for bacteria to grown, there by maintaining & retaining maximum possible bacterial population in a limited volume.

- After aeration Zone treated sewage move to downward through Lamella Plat. The plates situated at 45 ° angles. Lamella for clarification and chlorine contact tank for disinfection.
- Air is introduced at the bottom of the tank through fine bubble diffuser. Media will be in suspension because of the turbulence created by air. The bacteria for required for the oxidation of the organic matter is attached to the media and some part is suspended in the tank. After oxidation, the bacteria lamella section inside the FMR helps in clarification and separation of the bacteria (sludge) and clear overflows into chlorine contact tank. Sodium Hypo chlorite (NaOCl) is added for disinfecting the clarified sewage.

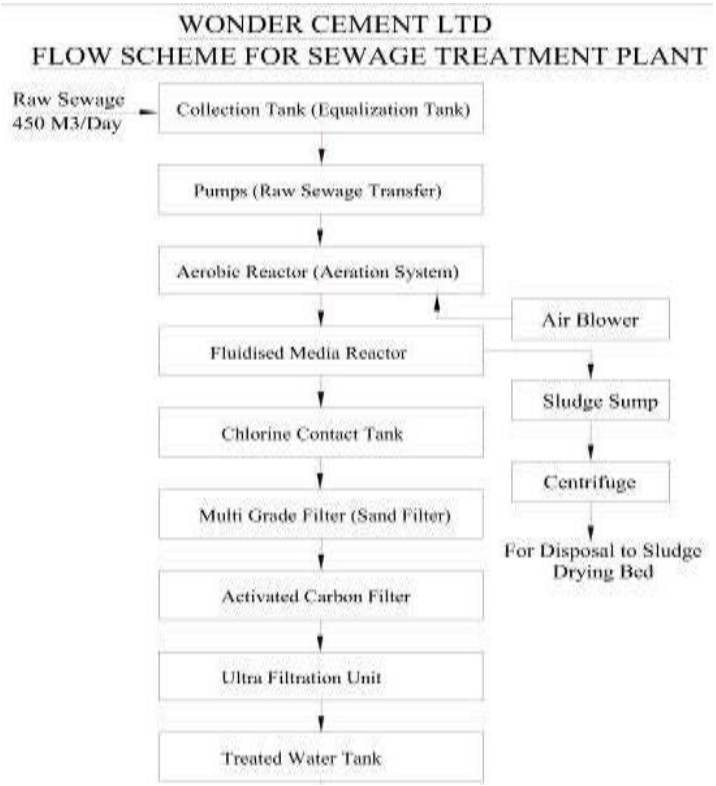


Figure-9: Process Flow Diagram of STP Plant

Table - 11

Expected Wastewater Characteristics of STP

S. No.	Parameters	Quality of Raw Sewage	Quality of Treated Sewage
1	pH	6.0 to 8.0	6.5 to 8.5
2	BOD	300 mg/liter	<10 mg/liter
3	COD	400 mg/liter	<50 mg/liter
4	TSS	300 mg/liter	<10 mg/liter
5	Oil & grease	20 - 30 mg/liter	10 mg/ liter

(viii) Industrial Waste management

- Dust collected from various pollution control equipment like Bag house and Bag filters will be recycled into the plant.

- Construction and demolition waste generated due to proposed project during construction phase will be utilized in levelling of land and construction of roads. Solid waste such as road dust comprises of a mixture of limestone dust, clay and soil will be generated from regular sweeping of roads.
- Used oil Grease & Waste residue (contaminated cotton rags) containing oil will be generated as per Schedule- I of Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, which will be sold to CPCB/SPCB authorized recyclers.
- Used Lead acid batteries will be generated, and which will be stored in the designated storage area and will be disposed-off / sold to registered vendors as per Battery waste Management Rules 2020.
- Waste heat generated from Kiln/Cooler will be utilized for power generation through WHRB.
- E-Waste will be generated in the form of used electrical equipment, Cables, CFL/ LED Lights, which will be sold to registered vendors as per E- Waste Management Rules, 2016.

(ix) Solid waste management

- No solid waste generation from the process of cement manufacturing process unit. However, dust collected by the dust collectors (Bag Filters) automatically recycled in the process.
- Sewage Sludge (75 Kg/day) will be generated from STPs & will be used as manure in horticulture/greenbelt development.
- Total municipal solid waste generated will be 750 Kg/day. Waste will be collected & segregated, and Bio-degradable waste will be converted into organic manure and manure will be used for greenbelt development/plantation and non–degradable waste scientifically in compliance of Solid Waste Management rules 2016.
- Construction and demolition waste generated due to proposed project during construction phase will be utilized in levelling of land and construction of roads. Solid waste such as road dust comprises of a mixture of limestone dust, clay and soil will be generated from regular sweeping of roads.
- Cleaning & collection of spillages prevents fugitive emissions caused by flying of material due to wind. Collected spillages will be recycled in the process.
- Refractory bricks would be one of the solid wastes generated from the kiln section. Due to wear & tear, these bricks would be sold to outside agencies.
- WCL will take following measures for solid waste management in cement plant:
  - Maintenance to prevent spillage and leakages
  - Recycling of the collected spillage
  - Selling of refractory bricks replaced in Kiln
  - Disposal of solid waste generated from colony and sewage treatment plant.

(x) Power requirement and source

The estimated power requirement for the proposed project will be 90 MVA which will be sourced from Captive Power Plant (40 MW), WHRB (40 MW), State grid of JVVNL (Jodhpur Vidyut Vitran Nigam Ltd.) & DG sets will be installed to meet the emergency power.

7. 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).

Not Applicable.

8. 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 other statutory permissions. Project will be completed in 24 months period after getting all the regulatory approvals.

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

- Total cost of the Project is: Rs. 4050 Crores (Rs. 2025 Crores for each Phase)
- Cost for Environment Protection
  - Capital Cost: Rs. 302 Crores (Rs. 177 Crores for first phase and 125 crores for second phase)
  - Recurring Cost: Rs. 15 Crores / annum (Rs. 8.5 Crores for first phase and 6.5 crore for second phase)

9. ANALYSIS OF PROPOSAL

(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.

Rajasthan 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 & housekeeping contract work etc.

10. CONCLUSION

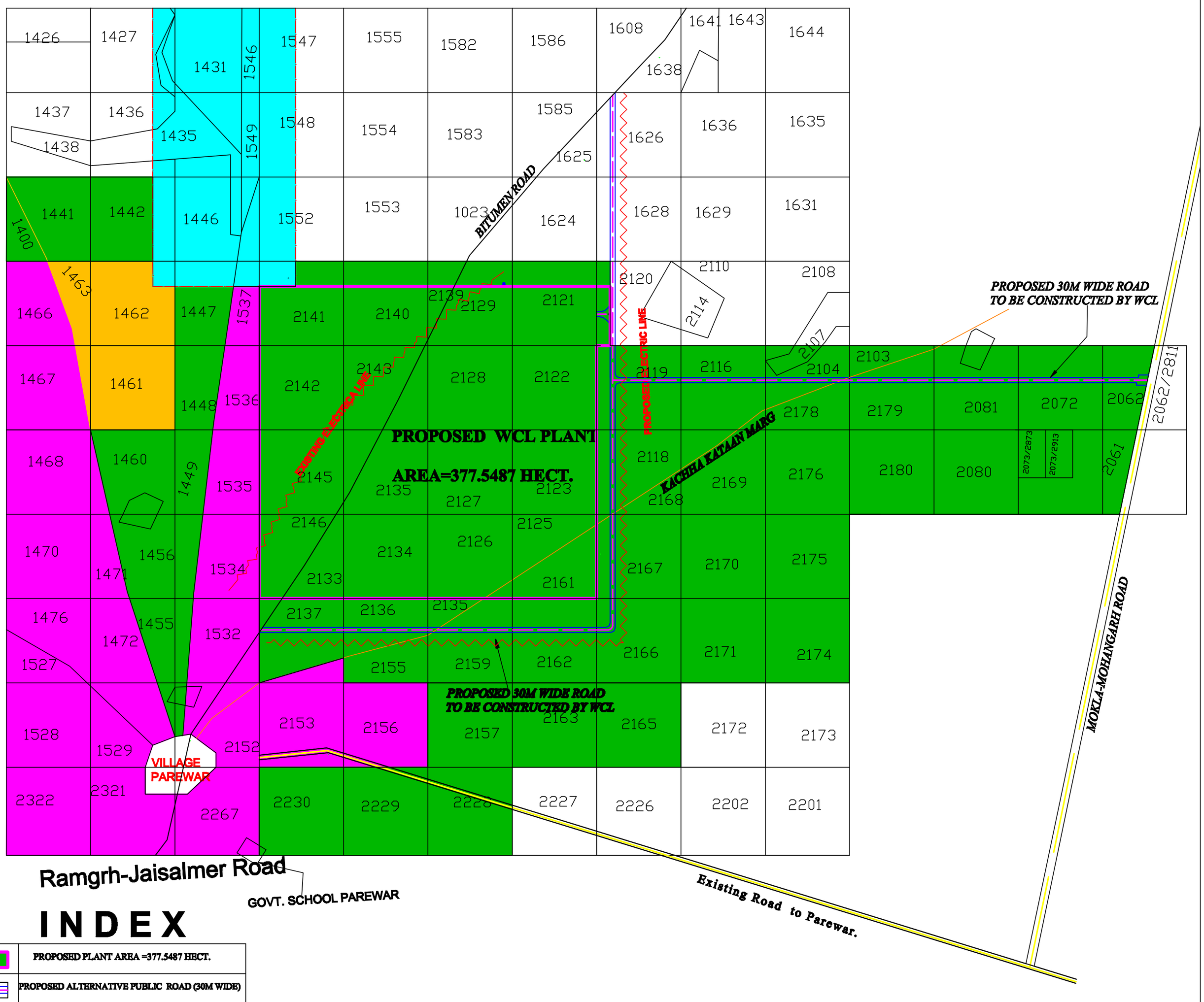
Proposed Project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Special emphasis on financial and social benefits will be given to the local people including tribal population, 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. No adverse effect on environment is envisaged as proper mitigation measure will be taken up for the same.

Annexure - 1

SITE PLAN FOR LAND ALLOTMENT
FOR PROPOSED WONDER CEMENT LTD PLANT & ROAD SHIFTING
NEAR VILLAGE PAREWAR, DISTRICT-JAISALMER (Raj .)

N
W E
S

SCALE:- NOT TO SCALE



INDEX

	PROPOSED PLANT AREA =377.5487 HECT.
	PROPOSED ALTERNATIVE PUBLIC ROAD (30M WIDE)
	VILLAGE BITUMEN ROAD ON FIELD
	KACHHA KATAAN MARG
	VILLAGE PAREWAR
	OHRAN Bhumi
	GOVT. LAND
	PAREWAR - B LIME STONE MINE (WCL)
	AGORE Bhumi
	ELECTRIC LINE (LT)

PREPARED FOR:-
WONDER CEMENT LTD.
NEAR VILLAGE PAREWAR
DISTRICT-JAISALMER (Raj.)

RK GROUP

Annexure - 2

Date: 12.07.2021

To,

Sh. Deshraj Meena Sb.,
Secretary - Indira Gandhi Nahar Board,
Bhawani Singh Road, Jaipur - 302005,
E-mail : secyignb@yahoo.co.in

Sub. : Water Supply requirement of app. 2300 KLD from Indira Gandhi Nahar Project to M/s Wonder Cement Ltd. for Proposed Integrated Cement Plant at Near Village Parewar, District - Jaisalmer.

Respected Sir,

This is to bring under your kind information that State govt. has issued a LOI for lime stone mining block at village Parewar to M/s Wonder Cement Ltd.

The LOI was issued on dated 25.01.2021 via letter क्रमांक प.3(4)खान/ग्रुप–2/2020. **(Copy enclosed).**

M/s Wonder Cement Limited proposes to set-up an Integrated Cement Plant at Village Parewar near mining lease.

For the proposed cement plant we need approx 2300 KLD Water from IGNP.

We will construct a reservoir of optimum capacity for the storage of water.

This project will first in Jaisalmer and the proposed project will develop Jaisalmer and Parewar village.

Economy and Employment in desert region will also boost up.

We will follow all your instructions & we will always abide by your guidelines completely.

Sir, we look forward to your positive anticipation.

With Regards,

Raj - B

(Rajendra Bora)
General Manager (Mines)
Wonder Cement Ltd.
Plot No. B-2, Transport Nagar,
Jaisalmer - 345001
Email: rajendra.bora@wondercement.com

CC: 1. Sh. Haret Lal Meena Sb., Additional Chief Engineer, Indira Gandhi Nahar Project, Jaisalmer - 345001, E-mail : aceignpjsm.wr@rajasthan.gov.in

Annexure - 3

Vulnerable Groups in the 15 km radius area of the Project site

S. No.	Name of the Vulnerable Group	Approx. aerial distance from the Plant boundary	Direction from the Plant boundary
Schools			
1.	Government Girls Upper Primary School, Parevar	0.47 Km	South West
2.	Upper Primary School Bhawani Bal Mandir	1.52 Km	South West
3.	Government Primary School Tulchhsingh ki Dhani	1.78 Km	NNE
4.	Government Upper Primary School, Lila Parewar	2.90 Km	South West
5.	Government School , Bhadki Dhani	3.13 Km	North
6.	Government Upper Primary School, Kabir Basti	6.09 Km	NNE
7.	Government Senior Secondary School, Khinya	10.71 Km	ENE
8.	Government Senior Secondary School, Sanu	9.77 Km	WSW
9.	Primary School Panraj Vidya Mandir, Khiya	10.82 Km	North East
10.	Government Girls Upper Primary School, Khiya	11.24 Km	North East
11.	Government Upper Primary School, Nega	11.95 Km	NNE
12.	Government Primary School, Laxman Singh Ki Dhani	14.90 Km	NNE
13.	Government Upper Primary School, Badeda	14.98 Km	North East
Hospitals and Health Care Centres			
1.	SubCenter, Kheeya	3.53 Km	East
2.	SubCenter, Parewar	3.73 km	South East
3.	SubCenter, Khinwasar	6.37 Km	South East
4.	Animal Hospital	9.38 Km	ENE
5.	SubCenter, Gogade	12.02 Km	South East
Places of Worship			
1.	Maa Durga Mandir, Khinya	6.30 Km	NNE
2.	Karni Mata Mandir	6.39 Km	South East
3.	Karni Mata Mandir	6.41 Km	South East
4.	Ashapura Mata Mandir	6.63 Km	ESE
5.	Panraj Ji Mandir	7.46 Km	NNE
6.	Nakhatsingh ji ka Mandir	7.93 Km	South West
7.	Maa Ashapura ro Darbar	8.44 Km	ESE
8.	Jai Shree Bhomiya ji Temple	9.60 Km	South West
9.	Ashapura Mata Mandir, Khinwasar	9.64 Km	East
10.	Panraj dada Mandir	9.69 Km	ENE
11.	Shree Hanumanji Temple	9.80 Km	ENE
12.	Sati Mata Mandir	10.01 Km	WSW
13.	Shree Shivji Mandir	10.02 Km	ENE
14.	Sawangiya Mata Mandir	10.50 Km	WSW
15.	Panraji je temple Nagga	11.27 Km	NNW
16.	Jagdamba Ka Mandir	11.41 Km	WNW

S. No.	Name of the Vulnerable Group	Approx. aerial distance from the Plant boundary	Direction from the Plant boundary
17.	Panraj Temple, Nagga	11.60 Km	NNE
18.	Chamunda Devi Mandir	12.04 Km	South East
19.	Shari Mayeshree ji ka Mandir	12.59 Km	WNW
20.	Nakhat singhji ka Mandir	12.94 Km	WSW
21.	Fauji Baba Mandir	13.98 Km	West
Community			
1.	Parewar Post Office	0.87 Km	SSW
2.	Khinya Post Office	6.63 Km	North East
3.	Sanu Branch Post Office	10.07 Km	WSW
4.	Kheeya Post Office	10.18 Km	North East
5.	World's largest Geoglyphs	11.83 Km	South East
6.	Tejpala Post Office	13.78 Km	NNE

Source: Bhuvan and Census of India, 2011, Google Earth Pro Version 7.3