

PRE FEASIBILITY REPORT

FOR

**ENHANCEMENT IN LIMESTONE PRODUCTION
FROM 1.25 MTPA TO 2.70 MTPA**

AT

**MAJHGAWAN, SARDA, PATNA, KARIAJHAR, PIPRAV, MALGAON AND
DHORHARA VILLAGES, RAMPUR NAIKIN TEHSIL, SIDHI DISTRICT,
MADHYAPRADESH**

Submitted to:

Ministry of Environment, Forests & Climate Change

Submitted by:

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LIST OF CONTENTS

S. No.	Description	Page No.
1	Executive Summary	3
2	Introduction of the Project Background Information	7
3	Project Description	8
4	Site Analysis	9
5	Planning Brief	11
6	Proposed Infrastructure	12
7	Rehabilitation and Resettlement (R&R) Plan	15
8	Project Schedule & Cost Estimates	16
9	Analysis of Proposal	16

LIST OF TABLES

Table No.	Title	Page No.
1	Location Details of Majhgawan LS Mine	4
2	Stratigraphic Succession	4
3	Total Area under G1, Non-Mineralized Land	5
4	UNFC Level-wise Resources	6
5	Total Mineral Reserves & Resources in the ML	6
6	Year-wise Tentative Excavation	7
7	Details of Personnel Deployed and Proposed	8
8	Requirement of Water in the Mine	9
9	Existing Land use pattern	10
10	Environmental Setting	10
11	The Land use Pattern at the end of Plan Period	11
12	Requirement of Saplings for Plantation	14
13	Progressive Soil Management during Proposal Period	15
14	Year-wise Proposal for Land to be Affected	15
15	Progressive Afforestation during Proposal Period	16

1.0 EXECUTIVE SUMMARY

1.1 The Company

Jaypee Group is one of the leading infrastructure conglomerates of India with impressive combined turnover. It actually participates in nation building through core activities of Engineering & Construction, Cement, Power, Hospitality, Expressways, Dams, Real Estate, Fertilizers, Medicare and University & Management Education etc. The company has nationwide business presence with strength of 40,000 efficient & committed work forces.

The cement division of the group operates modern computerized process controlled integrated cement plants & grinding units located in the states of MP, UP, HP, Uttarakhand, Chhattisgarh, AP, Karnataka etc. The company has achieved its peak aggregate production capacity of 27.9 million tonnes per annum.

Under the ambit of national rejuvenation recently taken up by Govt. of India, it is proposed to construct 100 smart cities, a network of new cement topped highways, flyovers, affordable houses for all Indians upto 2022 and a huge number of infrastructure projects. Therefore, heavy and long lasting demand for cement is visualized for rejuvenation of future India.

1.2 Preamble

Jaiprakash Associates Limited (JAL), is the flagship company of Jaypee Group. Its cement division has computerized process control cement plant at 15 locations with an installed capacity of 27.90 MTPA in operation.

1.3 Project Proposal

Jaiprakash Associates Limited (JAL) proposes enhancement of production capacity of Majhgawan Limestone Mine from 1.25 MTPA to 2.70 MTPA within existing mine lease area of 362.680 ha located at Villages Majhgawan, Sardha, Patna, Kariajhar, Piprav, Malgaon and Dhorhara, Rampur Naikin Tehsil, Sidhi District, Madhya Pradesh.

Limestone from this lease is for captive consumption of Jaypee Sidhi Cement Plant (Unit 1 & 2) of 3.0 MTPA Clinker and 3.5 MTPA Cement. The total requirement of limestone is about 5.00 MTPA, which will be partly met from this ML and remaining from other MLs. The total reserve in the Majhgawan Limestone Mine is 75.136 Million Tons of which 49.230 Million Tons of Mineral reserves and 25.906 Million Tons of Remaining Resource.

1.4 Location and Accessibility

The mining lease is spread over the parts of villages Majhgawan, Sardha, Patna, Kariajhar, Piprav, Malgaon and Dhrohara in Rampur Naikin Tehsil of Sidhi District, Madhya Pradesh. The mine is connected through a concrete road from Toll Plaza at about 33 km south of the Rewa City (District HQ of Rewa District) and 55 km from Sidhi (District HQ of Sidhi District) by SH-9. The location details of Majhgawan Limestone Mine are furnished in the **Table-1**.

TABLE-1
LOCATION DETAILS OF MAJHGAWAN LIMESTONE MINE

Area (ha)	Location		Survey of India Toposheet No.
	Latitude	Longitude	
362.680	24 ⁰ 18' 20.4" to 24 ⁰ 20' 3.8"	81 ⁰ 18' 27.3" to 81 ⁰ 21' 2.9" E	63H/7

1.5 Geology of the Deposit

Topography

The area is situated immediately south of the Kaimur Hills which forms a steep scarp rising upto 600 m RL. The southern part of the hilly area is limestone bearing under a cover of soil and scree. This area is uneven terrain with the general elevation level varying from 314 m to 347 m RL. Elevation of the area shows very gentle dipping towards south as well as towards east. Outcrop of limestone and high magnesian limestone are seen across the spurs of the hill slope north side of ML area.

Drainage

The major drainage features in the area is a perennial nala called Marhwal flowing from west to east at a distance of about 1100 m due south. The nala confluences with Son river near Bhawarsen village which is situated at a distance of about 20 km towards east from the ML area. The area covered under mining lease is free from habitats and the villages are situated outside the mining lease area. Bansagar Canal, a concrete irrigation canal, is passing through the southern part of the ML area from west to east. The canal has negligible impact on local drainage pattern.

Regional Geology

The limestone of Majhgawan lease area belongs to Rohtas Stage of Semri Series of Lower Vindhyan System of Indian Stratigraphy. Ghaghar quartzite overlies the Rohtas Stage that forms a part of the Kaimur Hills. Semri Series overlies Glauconite Beds of Son Valley area.

The regional strike of limestone deposit is ENE–WSW with a northerly dip varying from 10⁰ to 15⁰ into the hills.

The stratigraphic sequence as proposed by Mathur, 1976 for the Son Valley area in which Majhgawan lease area forms a part of it is given in **Table-2**.

TABLE-2
STRATIGRAPHIC SUCCESSION

Group	Formation	Sub-stage
Kaimur	Dhandraul Quartzite	Dhandraul Quartzite
	Bijaigarh Shale	Bijaigarh Shale
	Markundi Quartzite	Upper Quartzite
	Gurma Shale	Silicified
Semri	Ghaghar Quartzite	Lower Quartzite
	Rohtas Limestone	Rohtas Limestone
	Bamburi Sandstonee	Glauconite Bed
	Bargawana Limestone	Faun Limestone

Khenjua	Khenjua Shale Chopan Porcellanite Kajarhat Limestone Arangi Formation	Olive Shale Kajarhat Limestone Basal Shale Sandstone Conglomerate
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Geology of Lease Area

The rocks of major attraction limestone, belongs to the Rohtas Stage of Semri Series. The limestone is not exposed in the area of interest rather occurs below a cover of soil with scree materials of variable thicknesses. The Rohtas Limestone belt is extending over a distance of about 150 km in the adjoining Sidhi District along the southern escarpment of Kaimur Plateau from Majhgawan, Sarda, Gorhatola to Sihawal in Sidhi District and further east of it upto the border of UP State in the District of Mirzapur. The western part of the belt extends into Satna District from Hinauti to Jigna village and beyond it.

The Kaimur comprising of sandstone, quartzite are exposed in the north of the limestone belt and form a prominent plateau, rising to about 600 m RL. To the south at a considerable distance limestone and sandstone is exposed followed by procellanite and basal beds, all classified alongwith Khenjua Stage. Further south of it, i.e., Beyond Khenjuans it is metasediments of Bijawars. The limestone is interbedded with shale and high magnesian limestone. The presence of shale bands becomes far more conspicuous in the lower part of the deposit, thus deteriorating its quality from the view point of its suitability for cement making.

Ore Reserves

Area explored under different level of exploration has been marked on the Geological Plan and UNFC code for area considered for different categories of reserves/resources estimation has also been marked on Geological Cross Section. A table incorporating total area under G1, non-mineralized land etc. has been given in **Table-3** and the UNFC level wise resources are given in **Table-4**. Different levels of Geological exploration following reserves/resources have been estimated for the lease area details are given in **Table-5**.

TABLE-3
TOTAL AREA UNDER G1, NON-MINERALIZED LAND

UNFC level of exploration	Area (Hectares)
G1-Detailed exploration	157.18
Mineralized area found in exploration	118.80
Non-mineralized area found in exploration	38.38
Unexplored area	Nil
Present infrastructure	120.69
Future infrastructure	23.50
Area blocked by road & barriers in & around colony	15.70
Constraints south side of canal	45.61
Total	362.680

TABLE-4
UNFC LEVEL WISE RESOURCES

Level of exploration	Resources in million tonnes	Grade
G1-Detailed exploration	83.82	Usable Grade

Usable Grade Limestone: Grade acceptable at Cement Plant: Limestone with weighted average MgO below 5% (Cut off 7%) and weighted average CaO around 42.50% (Cut off 38%).

TABLE-5
TOTAL MINERAL RESERVES & RESOURCES IN THE MINING LEASE

	UNFC Code	Quantity in million tonnes	Grade
A. Total Mineral Reserve			
Proved Mineral Reserve	111	49.230	Usable grade
Probable Mineral Reserve	122	Nil	
B. Total Remaining Resources			
Feasibility Mineral Resource	211	Nil	
Pre- Feasibility Mineral Resource	221	25.906	Usable grade
	222	Nil	
Measured Mineral Resource	331	Nil	
Indicated Mineral Resource	332	Nil	
Inferred Mineral Resource	333	Nil	
Reconnaissance Mineral Resource	334	Nil	
Total Reserves + Resources		75.136	

1.6 MINING

Open cast mining is adopted for raising limestone at Majhgawan Mine by conventional methods of deep drilling and blasting. A maximum bench height of 9 m is maintained which is controlled by the irregular heights with in the broken up area. Two bench operations are carried out within the area. As per the present practice in the Majhgawan Mine, mining would continue by adopting combination of hydraulic excavator and tippers with a carrying capacity of 35 tonnes for excavation and transporting the material respectively.

The mechanized mining consists of the following operations.

- Cleaning the top surface
- Drilling and blasting
- Excavation and loading by excavator
- Haulage by dumpers up to crusher at plant site at a distance of 10 km

Bench Geometry: A bench height of 9 m is developed the mine. A working bench slope of 65° and an ultimate slope of 45° is maintained. A bench width of 3 times the width of the largest HEMM is maintained for easy maneuverability of operations. Ramps and haul roads are modified as the mine progresses. A gradient 1:16 is maintained.

Year-wise tentative excavation: The year-wise tentative excavation is given in **Table-6**.

**TABLE-6
YEAR WISE TENTATIVE EXCAVATION**

Year	Pit No.	Total tentative excavation (m ³)	Top soil (m ³)	OB/SB /IB (m ³)	ROM (m ³)		Mineral tonnage	ROM /Waste ratio
					*Ore (m ³)	Mineral reject (m ³)		
2015-16	Majhgawan Pit	2013456	3375	1006651	975218	28212	2438045	1:0.43
2016-17	Majhgawan Pit	1719184	1000	613193	1079998	24993	2700000	1:0.24
2017-18	Majhgawan Pit	1858674	1500	763846	1080000	13328	2700000	1:0.29
2018-19	Majhgawan Pit	1548360	0	456688	1079998	11674	2700000	1:0.17

*Tentative tonnage of the mineral is carried out by computing approximate bulk density and recovery factor as these data are variable and may be established on time series.

Salient features of method of working indicating Category of Mine

The mine is categorised as "A-Category fully mechanised mine" due to deep hole drilling and blasting. The mine is worked out with a bench height upto a maximum of 9 m height, at least 25 m in width and slope is maintained at 15° to the vertical. HEME in conjunction with deep hole wet drilling and blasting is deployed for the purpose. Hydraulically operated bull dozers have been deployed for preparation of roads and other services required in the mines. The haul road and ramps are straight and wide with a gradient of 1:16 and with a regular arrangement of water spray. Diesel operated crawler mounted hydraulic excavators with 3.20 m³ bucket capacity are being utilized to load limestone as well as overburden into 35T capacity off highway rear dumpers. It is proposed expansion of mine from 1.25 to 2.70 MTPA.

2.0 INTRODUCTION OF THE PROJECT/BACKGROUND INFORMATION

2.1 Identification of Project and Project Proponent

Jaiprakash Associates Limited (JAL) proposes enhancement of production capacity of Majhgawan Limestone Mine from 1.25 MTPA to 2.70 MTPA within existing mine lease area of 362.680 ha located at Villages Majhgawan, Sarada, Patna, Kariajhar, Piprav, Malgaon and Dhorhara, Rampur Naikin Tehsil, Sidhi District, Madhya Pradesh.

2.2 Need of the Project and its Importance to the Country and or Region

Limestone from this lease is to cater to the requirement of Jaypee Sidhi Cement Plant (Unit 1 & 2) of 3.0 MTPA Clinker and 3.5 MTPA Cement.

2.3 Employment Generation (Direct and Indirect) Due to the Project

The mining establishment presents vast opportunities of employment to the numerous people under various cadres (Highly skilled, skilled, semiskilled & unskilled) in accordance with the various statutory stipulations applicable to the mines. The details of personnel already deployed and proposed to be deployed due to enhance production capacity of the mine are given in **Table-7**.

TABLE-7
DETAILS OF PERSONNEL DEPLOYED AND PROPOSED

Sr. No.	Status	Existing Manpower (Nos.)	Additional Manpower (Nos.)
1	Highly Skilled Staff	21	4
2	Skilled Staff	39	17
3	Semiskilled Staff	19	5
4	Unskilled Staff	10	0
	Total	89	26

3.0 PROJECT DESCRIPTION

3.1 Project Description with Process Details

As per the present practice, mining would continue by adopting combination of hydraulic excavator and tippers with a carrying capacity of 35 tonnes for excavation and transporting the material respectively. The mechanized method consists of the following operations.

- Cleaning the top surface;
- Drilling and blasting;
- Excavation and loading by excavator; and
- Haulage by dumpers up to crusher at plant site.

3.2 Material-Transport

The limestone loaded by excavators is being transported to crusher or stack yard through well maintained haul roads. 11 Nos. of 35 T off highway rear dumpers are deployed for the purpose. Normally one hydraulic excavator with 3-5 dumpers combination is being deployed. One dumper has been kept standby. However, with the increase in lead, additional dumpers have been included in the fleet.

3.3 Resource Optimization/Recycling and Reuse

No optimization/recycling and reuse envisaged in the project.

3.4 Availability of Water its Source, Power Requirement and Source

- **Water**

The present requirement of water in the mine is about 200 m³/day. Required water for drinking purpose is being provided from the tube wells already installed in the plant area. For dust suppression water is sourced from the accumulated water from the pit during monsoon and post monsoon. During the balance period part requirement of water is fulfilled from Bansagar canal.

In view of the enhanced production, the requirement of water in the mine will be about 300 m³ / day is given in **Table-8**.

TABLE-8
REQUIREMENT OF WATER IN THE MINE

Activities	Present requirement (m ³)	Enhanced requirement (m ³)
Domestic for drinking purpose	10	15
Dust suppression	140	215
Mine operations	15	25
Green Belt development	25	25
Mechanical Workshop	05	10
Land Reclamation	05	10
Total	200	300

- **Power**

Power requirement for the Plant is 100 KVA.

3.5 Quantity of Wastes Generated and Scheme for their Management

The waste generated during last 5 years from the beginning has been disposed to external temporary waste dumps. During 2015-19 it is proposed to dispose entire waste in the existing waste dumps as mining will go at deeper level to excavate usable limestone upto 280 mRL. After that when sufficient mined out area become available, then backfilling will be started in accordance with the conceptual plan.

4.0 SITE ANALYSIS

4.1 CONNECTIVITY

The mining lease is spread over the parts of villages Majhgawan, Sarda, Patna, Kariajhar, Piprav, Malgaon and Dhrohara in Rampur Naikin Tehsil of Sidhi District, Madhya Pradesh. The mine is connected through a concrete road from Toll Plaza at about 33 km south of the Rewa City (District HQ of Rewa District) and 55 km from Sidhi (District HQ of Sidhi District) by SH-9.

4.2 LAND FORM, LAND OWNERSHIP AND LAND USE

Existing land use pattern indicating the area already degraded due to mining, roads, workshop, township etc. is given in **Table-9**.

**TABLE-9
EXISTING LAND USE PATTERN**

Degradation type	Forest land (Ha)	Agricultural land (Ha)	Grass land (Ha)	Waste land (Ha)	Other (Ha)
Quarry	Nil	Nil	Nil	38.59	Nil
Waste Dumps	Nil	Nil	Nil	15.51	Nil
Infrastructure inclusive of plant, office, workshop	Nil	Nil	Nil	102.55	Nil
Area occupied by roads (footpath)	Nil	Nil	Nil	1.82	Nil
Water bodies like tank/river/nala	Nil	Nil	Nil	Nil	Nil
Processing plant	Nil	Nil	Nil	Nil	Nil
Township	Nil	Nil	Nil	18.14	Nil
Others (Drain)	Nil	Nil	Nil	1.60	Nil
Others (non-degraded)	Nil	55.72	Nil	128.75	Nil
Total	Nil	55.72	Nil	306.96	Nil

4.3 Topography

The ML area forms part of an uneven terrain that exhibits a gently sloping topography from east to west. The highest elevation in the area is about 347-MSL above mean sea level (MSL) while the lowest recorded elevation within the area is 314-m above MSL.

4.4 Environmental Sensitivity

The environmental setting of the location is given in **Table-10**.

**TABLE-10
ENVIRONMENTAL SETTING**

Item	Description	Distance
Nearest Highway	NH-7	24 km, NW
	NH-75	0.7 km, E
Nearest Railway station	Rewa	24 km, N
Nearest Air port	Khajuraho	150 km, NW
Nearest village	Majhgawan	1.8 km, S
Nearest town	Rewa	24 km, NW
Nearest city	Rewa	24 km, NW
Nearest Water bodies	Rivers	
	Son	9.5 km, SE
Ecological Sensitive Zones within 15 Km from M.L. Boundary	Son Gharial Sanctuary	9.5 km, SE
National Parks/ Wild life Sanctuaries within 15 Km from M.L. Boundary	Son Ghariyal Sanctuary	9.5 km SE
CRZ		Nil
Historical Places within 15 Km from M.L. Boundary		Nil
Any other Industrial Establishments		Nil
Nearest Forest Blocks	Reserve Forests:	
	Govindgarh R.F	0.2 km, NW

4.5 Existing Infrastructure

All necessary and basic infrastructure required for mining operations viz. mines office, rest shelter, first aid station, drinking water and WC facilities etc. the facilities available in the adjoining lease of the company will be commonly used.

5.0 PLANNING BRIEF

5.1 Planning Concept Town and Country Planning/Development Authority Classification

There has been an increase in the overall basic facilities such as roads, school, health center etc. A better quality of life for the locals has been created and which is further expected to improve over a period of time. The existing cement plant & mining operations have provided many indirect/direct job opportunities to unskilled and skilled labourers. Owing to implementation of the mining project in the area there is a positive impact in socio cultural aspects.

5.2 Population Projection

The manpower will be very minimal in the proposed expansion project. Therefore the population influx is not envisaged.

5.3 Land Use Planning

Detail land use at present, at the end of this proposal period and at the conceptual stage is given in **Table-11**.

TABLE-11
THE LAND USE PATTERN AT THE END OF PLAN PERIOD

Sr No.	Heads (Ha)	At the beginning of this proposal period	At the end of this proposal period	At the end of conceptual period
1	Total area excavated (broken)	38.59	55.62	114.21
2	Area fully mined out (out of 1)	Nil	10.73	114.21
3	Area fully reclaimed (backfilled) (out of 2)	Nil	Nil	59.21
4	Area rehabilitated out of 3 by afforestation, agriculture use, hutment etc.	Nil	Nil	59.21
5	Area rehabilitated by water harvesting (out of 2)	Nil	Nil	55.00
6	Area fully rehabilitated by bench / slope afforestation (out of 2)	Nil	Nil	Nil
7	Total area under dumps (Waste + MR)	15.51	34.30	Nil
8	Area under active dumps	Nil	Nil	Nil
9	Dump area fully rehabilitated (out of 8)	Nil	Nil	Nil
10	Area under dead dumps	15.51	34.30	Nil
11	Dump area fully rehabilitated (out of 10)	15.51	34.30	Nil
12	# Area under mineral stack	Nil	Nil	Nil

13	Area under road (outside pit)	1.82	1.82	2.00
14	Area under green belt (i.e. plantation on area other than dump and backfilled area)	6.21	12.68	71.96
15	# Area under infrastructure	120.69	120.69	144.19
16	Area under Tailing dumps	Nil	Nil	Nil
17	Area under any other use (Drain)	1.60	2.10	3.00
18	Undisturbed area	178.26	135.47	27.32

5.4 Assessment of Infrastructure Demand

The area is very well developed due to the operating projects of Jaypee Sidhi Cement Plant (Unit 1 & 2). All the required infrastructure is available in the vicinity of the mining block.

5.5 Amenities/Facilities

After commissioning of Plant by JAL there has been an increase in the overall basic facilities such as roads, school, health center etc. A better quality of life for the locals has been created and which is further expected to improve over a period of time. The existing operations (cement plant & mining) have provided many indirect/direct job opportunities to unskilled and skilled labourers. Owing to implementation of the mining project in the area there is a positive impact in socio cultural aspects.

6.0 PROPOSED INFRASTRUCTURE

No additional infrastructure is envisaged due to proposed expansion. Existing facilities will be utilized for maintenance and repair of HEMM.

6.1 Industrial Area

Mine Facilities

For maintenance and repair of equipment deployed in the project, workshop facility is envisaged. Facility planning required for workshop of opencast project of 1.25 to 2.70 MTPA capacity has been done to meet maintenance requirement of equipment and storage of spares, sub-assemblies and consumables. Facility planning is based on following scope of services:

Excavation Workshop

- Preventive Maintenance
 - a) Daily maintenance, routine lubrication and bi-weekly washing of equipment
 - b) Inspection.
 - c) Incidental minor repairs of assemblies and sub-assemblies of mining and mechanical equipment, i.e. dumper, dozer, shovel, RBH drill etc.
- Scheduled Maintenance
 - Medium repair and replacement of assemblies and sub-assemblies.
 - Mobile repair and maintenance facilities with maintenance crew for field equipment at site.

E&M Workshop

- Minor repair, medium repair and replacement of components, assemblies and sub-assemblies of LHP equipment, pumps and other electrical and mechanical equipment.
- Daily washing of LMVs and washing of equipment assemblies and sub-assemblies as and when required.
- Periodical lubrication.
- Repairs and replacement of components / assemblies for LMV.
- Minor and medium repair of switch gears, motors, self-starters and other electrical equipment.
- Battery charging facilities and re-conditioning of batteries.

A combined complex has been envisaged for HEMM, E&M workshop and stores. The lighting system is envisaged to cover:

- Mine Area
- Mine Haul Road
- Lignite handling facility
- Workshop
- Auxiliary buildings and electrical rooms
- Buildings perimeter
- Yard and roads
- Administration building and offices and colony
- Communication & Management Information System

For effective management of different production & service units and for ensuring safety, the following communication facilities will be provided:

- Surface Mine Communication System
- Mine Management Information System
- Internet
- LAN

6.2 Residential Area

All necessary and basic infrastructure required for mining operations viz. mines office, rest shelter, first aid station, drinking water and WC facilities etc. available in the adjoining lease of the company will be commonly used.

6.3 Green Belt

In order to reclaim the mined out area, it is planned to backfill the mined out area with overburden. The reclamation procedure includes backfilling or disposing the hard waste at the bottom and spreading a thin soil cover over the matured backfilling yard for onward plantation cultivation activity. During 2015-2019, the ultimate floor levels of mine will vary from 280 mRL to 288 mRL, which will be reclaimed upto levels varying from 325 m to 320 mRL after 2019.

The requirement of saplings for plantation will be met from the well-established nursery of JAL and outside sources. During 2015-2019, it is planned to cover constraints area south side of Bansagar Canal under afforestation programme, the details of which are given in **Table-12**.

TABLE-12
REQUIREMENT OF SAPLINGS FOR PLANTATION

Year of plantation	Area (Ha)	No of plants	Location
2015-16	1.54	3080	South side of canal
2016-17	1.59	3180	South side of canal
2017-18	1.66	3320	South side of canal
2018-19	1.68	3360	South side of canal
Total	6.47	12940	

6.4 Social Infrastructure

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments exist in the lease area or in the vicinity. The mining operations do not disturb/relocate any village or need any resettlement.

6.5 Connectivity

The mining lease is spread over the parts of villages Majhgawan, Sarada, Patna, Kariajhar, Piprav, Malgaon and Dhrohara in Rampur Naikin Tehsil of Sidhi District, Madhya Pradesh. The mine is connected through a concrete road from Toll Plaza at about 33 km south of the Rewa City (District HQ of Rewa District) and 55 km from Sidhi (District HQ of Sidhi District) by SH-9.

6.6 Drinking Water Management

Required water for drinking purpose is being provided from the tube wells already installed in the plant area.

6.7 Sewerage System

Mining operation in this lease area will not generate any waste water, as water is not used for processing or crushing of limestone. The waste water will only be generated through domestic usage. Provisions of suitable septic tanks followed by soak pits have already been made.

6.8 Solid Waste Management

At places, about 0.5 m to 1.0 m thick top soil present at the top of overburden zone. This top soil are separately excavated and entirely used up for road maintenance at associated cement plant and plantation site. Provision has been kept for store this top soil in earmarked area but as the generation is very less it cannot be stored. Ultimately the stacked top soil shall be spread over the reclaimed area to make it a land to facilitate growth of vegetation. The earmarked area shall be provided with proper garland drainage to avoid soil erosion. Progressive Soil Management during proposal period is given in **Table-13**.

TABLE-13
PROGRESSIVE SOIL MANAGEMENT DURING PROPOSAL PERIOD

A	B	C	D	E	F	G	H
Year	Quantity in stack available in the beginning of year (m ³)	Generated during the year (m ³)	Total quantity available (B+C) (m ³)	Quantity used during year (m ³)	Balance quantity stored (m ³)	Area of use for plantation on BF area, Dump, green belt etc.	Remarks on protection measures on stored soil stacks
2015-16	Nil	3375	3375	3375	Nil	Green Belt	No stack
2016-17	Nil	1000	1000	1000	Nil	Green Belt	No stack
2017-18	Nil	1500	1500	1500	Nil	Green Belt	No stack
2018-19	Nil	0	0	0	Nil		No stack

6.9 Power requirement and supply/source

Power requirement for mining operations in the lease is about 100 KVA.

7.0 REHABILITATION AND RESETTLEMENT (R & R) PLAN

The mine area does not cover any habitation. Hence the mining activities do not involve any displacement of human settlement. No public buildings, places, monuments exist in the lease area or in the vicinity. The mining operations do not disturb / relocate any village or need any resettlement.

The waste generated during last 5 years from the beginning has been disposed to external temporary waste dumps. During 2015-19 it is proposed to dispose entire waste in the existing waste dumps as mining will go depth to exploit usable limestone upto 280 mRL. After that when sufficient mined out area become available, then backfilling will be started.

The year wise proposal for land to be affected by mining and allied activities and reclamation/rehabilitation for the year 2015-2019 is given in **Table-14**.

TABLE-14
THE YEAR WISE PROPOSAL FOR LAND TO BE AFFECTED

Sr. No.	Activities	Area in hectare			
		2015-16	2016-17	2017-18	2018-19
1	Area to be disturbed by excavation	9.28	2.64	5.11	0
2	Area to be covered under dumping (Waste + MR)	10.85	0.33	6.26	1.35
3	Area to be rehabilitated by afforestation	1.54	1.59	1.66	1.68

At the Conceptual Stage about 114.21 hectares shall be degraded out of which 59.21 hectares shall be backfilled followed by afforestation/agriculture. About 55.00 hectares shall be developed as water reservoir. About 144.19 hectares will be developed as infrastructure related to cement plant and colony. About 45.61 hectares will remain undisturbed due to constraints south side Bansagar canal.

Afforestation shall be carried out in the lease area with a view to provide Green Belts and to give an aesthetic look and for reducing the impact of fugitive emissions and controlling impact of noise etc. Plantation shall be decided and executed species wise locally. Progressive afforestation during proposal period is given in **Table-15**.

TABLE-15
PROGRESSIVE AFFORESTATION DURING PROPOSAL PERIOD

A Year	B Plantation during the year (No. of saplings)	C Area covered during the year			D Survival rate%	E Remarks Location /species
		BF area Nos. / Area (Ha)	Dumps Nos. / Area (Ha)	Green belt Nos. / Area (Ha)		
2015-16	3080	Nil	Nil	1.54 / 2000	80%	South side of Canal
2016-17	3180	Nil	Nil	1.59 / 2000		South side of Canal
2017-18	3320	Nil	Nil	1.66 / 2000		South side of Canal
2018-19	3360	Nil	Nil	1.68 / 2000		South side of Canal
Total	12,940	Nil	Nil	6.47 / 2000		South side of Canal
Upto Conceptual period	2,62,340	59.21 / 2000	Nil	71.96 / 2000		Backfilled area, safety barriers etc.

8.0 PROJECT SCHEDULE & COST ESTIMATES

The life of the project is 20 years for the targeted production of 1.25 to 2.70 MTPA. The Mine Closure activities will commence five years before the scheduled closure of Mine operations. The manpower requirement for carrying out the Mine closure activities will be suitably drawn in a phased manner from the existing manpower. The details of financial assurance amount for an area of 214.53 ha @ Rs.25000/- per ha works out to Rs.53,63,250/- (Rupees fifty three lac sixty three thousand two hundred fifty only).

9.0 ANALYSIS OF PROPOSAL

The proposed expansion of Opencast Limestone Mine in Majhgawan mine by Jaiprakash Associates Limited with expansion capacity of 1.25 MTPA to 2.70 MTPA will supply limestone to Jaypee Sidhi Cement Plant (Unit 1 & 2) of 3.0 MTPA of Clinker and 3.5 MTPA of Cement.