PRE-FEASIBILITY REPORT

1.0 EXECUTIVE SUMMARY

1.1 Introduction

Chhotekadma Limestone Quarry is situated on Khasra No. 169, 170, 175, 176, 177 and 179 in village- Chhotekadma, Taluka- Darbha Jagdalpur, District- Bastar, Chhattisgarh over an area of 3.420 ha. The LOI has been issued in favour of Shri Kursum Sambaiya, vide Govt. Letter No. 1698/Kanij/Kh.Li.4/13/2020-21/Khanij/U.P./2021, Jagdalpur dated 19.07.2021. The copy of LOI is attached as ***Annexure-1***. The Mining plan was approved by Office Collector, (Khanij Branch), Dakshin Bastar Dantewada. The proposed rate of production is 62,500 TPA of Limestone. The estimated project cost is Rs 50 lakh.

This project attracts general condition as the Kanger valley National Park is 3.73 km in South direction and ESZ is 1.60 km from the project site. So, this mining project falls under **Category "A"** project or activity 1(a) as per EIA Notifications 2006 & its subsequent amendments.

1.2 Salient Features of the Project

<table>
<tr><td>Project Name</td><td colspan="3">Chhotekadma Limestone Quarry</td></tr>
<tr><td>Location of mine</td><td colspan="3">Village: Chhotekadma, Taluka- Darbha Jagdalpur, District- Bastar, State - Chhattisgarh</td></tr>
<tr><td>Site co-ordinate</td><td colspan="3"><table>
<tr><th>Boundary point</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>1</td><td>18°58'22.83"N</td><td>81°51'23.01"E</td></tr>
<tr><td>2</td><td>18°58'21.78"N</td><td>81°51'26.13"E</td></tr>
<tr><td>3</td><td>18°58'21.35"N</td><td>81°51'26.19"E</td></tr>
<tr><td>4</td><td>18°58'20.46"N</td><td>81°51'28.05"E</td></tr>
<tr><td>5</td><td>18°58'19.36"N</td><td>81°51'27.66"E</td></tr>
<tr><td>6</td><td>18°58'18.94"N</td><td>81°51'29.81"E</td></tr>
<tr><td>7</td><td>18°58'17.11"N</td><td>81°51'29.49"E</td></tr>
<tr><td>8</td><td>18°58'17.61"N</td><td>81°51'27.02"E</td></tr>
<tr><td>9</td><td>18°58'16.39"N</td><td>81°51'26.78"E</td></tr>
<tr><td>10</td><td>18°58'15.35"N</td><td>81°51'26.71"E</td></tr>
<tr><td>11</td><td>18°58'16.58"N</td><td>81°51'24.15"E</td></tr>
<tr><td>12</td><td>18°58'17.08"N</td><td>81°51'22.59"E</td></tr>
<tr><td>13</td><td>18°58'17.64"N</td><td>81°51'21.65"E</td></tr>
</table></td></tr>
</table>

	14	18°58'19.06"N	81°51'21.83"E
	15	18°58'19.42"N	81°51'18.27"E
	16	18°58'20.26"N	81°51'18.29"E
	17	18°58'20.17"N	81°51'21.96"E
Toposheet number	65E/16, F/13		
Proposed area	3.420 ha		
Minerals of mine	Limestone		
Total geological reserves	1.71 Million Tonnes.		
Total mineable reserves	1.032 Million Tonnes.		
Life of mine	28 years		
Proposed production of mine	62,500 TPA		
Method of mining	Open cast semi mechanized with manual mining method		
Water demand	10.20 KLD		
Sources of water	Private water tanker		
Man power	44 nos.		
Nearest Railway Station	Jagdalpur railway station, approx 19.5 km in towards NE direction.		
Nearest State Highway/National Highway	NH-30, Approx.4 km towards East direction NH-60, Approx.4 km towards North direction		
Nearest Airport	Maa Danteshwari Airport, approx 22 km towards NE direction.		
Seismic Zone	Zone II		

2. INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

2.1 Identification of project and project proponent

Chhotekadma Limestone Mine is situated near village- Chhote Kadma, Taluka- Darbha Jagdalpur, District- Bastar, Chhattisgarh over an area of 3.420 Ha. The quarry lease holder is Shri Kursum Sambaiya.

Project proponent:-

Shri Kursum Sambaiya

Village: Kotapalli, Tehsil- Bhopalpattanam,

District- Bijapur (C.G) Pin code: 450844

2.2 Brief Information about the project

The propose project is for mining of 62,500 TPA of Limestone by opencast semi mechanized with manual mining method over an area of 3.420 Ha. The total geological reserves of Limestone are 1.71 Million Tonnes. The expected life of the mine is 28 years.

2.3 Need for the project and its importance to the country or region

Limestone (Low Grade) is useful in many industries/construction. Its uses in different industries/construction depend upon its chemical constituent. The low grade limestone is mostly used in local market and road construction.

2.4 Demands-Supply Gap

The market demand will be full filled to some extent.

2.5 Imports vs. Indigenous Production

Limestone mined from the proposed project will neither be exported nor imported. It is an indigenous production and will be supplied within the country.

2.6 Export Possibility

Mineral will be exported to the local market.

2.7 Domestic/ Export Markets

Domestic Market

The extracted mineral will be exported to nearby markets in the state of Chhattisgarh.

2.8 Employment Generation

The total manpower requirement for the operation will be about 36 nos.

Employment potential of the proposed project is given below:

Detail of Manpower

Designation	Nos.
Management and supervisory personnel	
Part time Mining Engineer/geologist	1
Mining Mate	1
Skilled, semi-skilled and unskilled	
Compressor operator	1
General supervisor	1
Skilled labor	15

Unskilled labor	25
Total	**44**

3. PROJECT DESCRIPTION

3.1 Type of project including interlinked and interdependent projects, if Any.

The project is Chhotekadma Limestone Mine over an area of 3.420 Ha. This project attracts general condition so far as Kanger valley National Park within 3.73 km radius (at approx 1.60 km in S direction). So, this mining project falls under **Category "A"** Project or activity 1(a) as per EIA Notifications 2006 & its subsequent amendments.

This project is not interlinked/ interdependent with other projects.

3.1 Location

The mining lease area is located at village- Chhotekadma, Taluka- Darbha Jagdalpur, District- Bastar, Chhattisgarh.

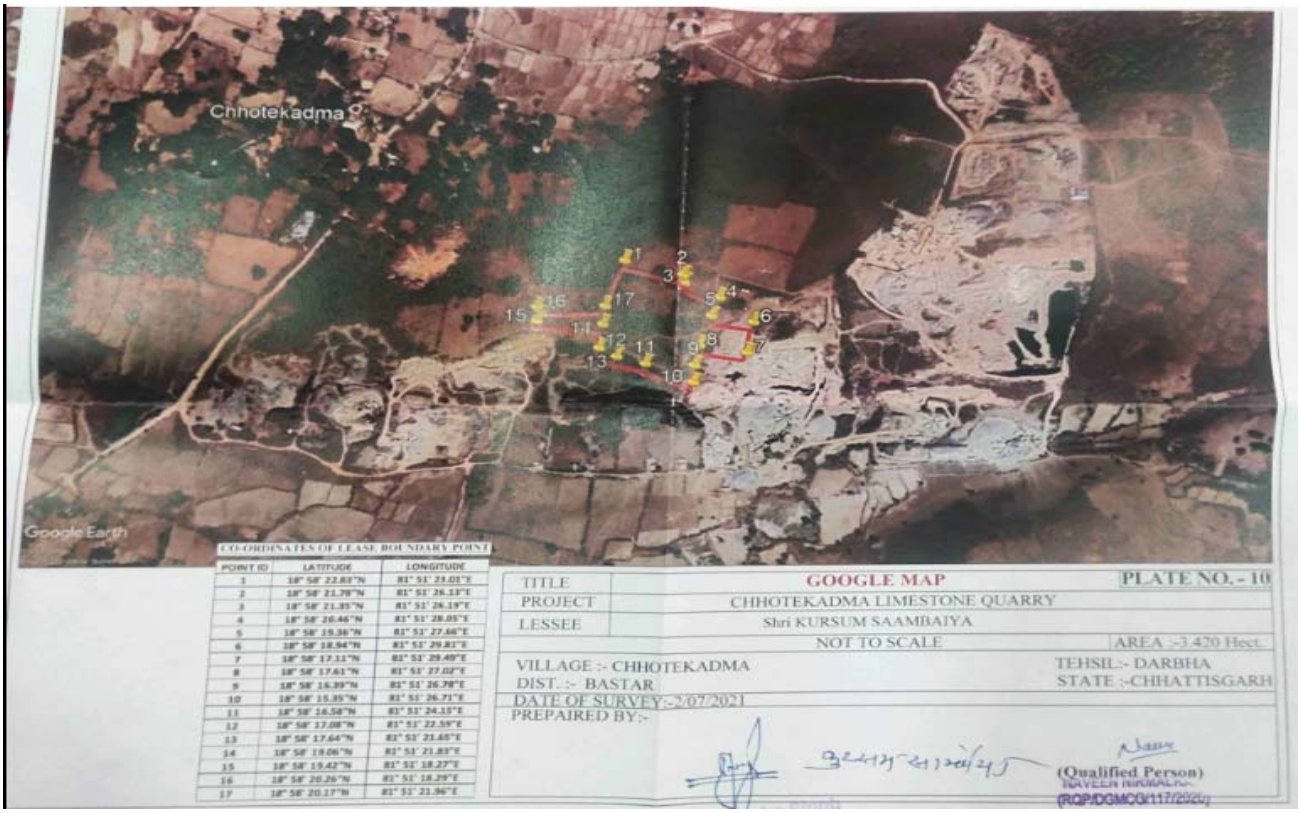

Fig no- 1, Vicinity Map

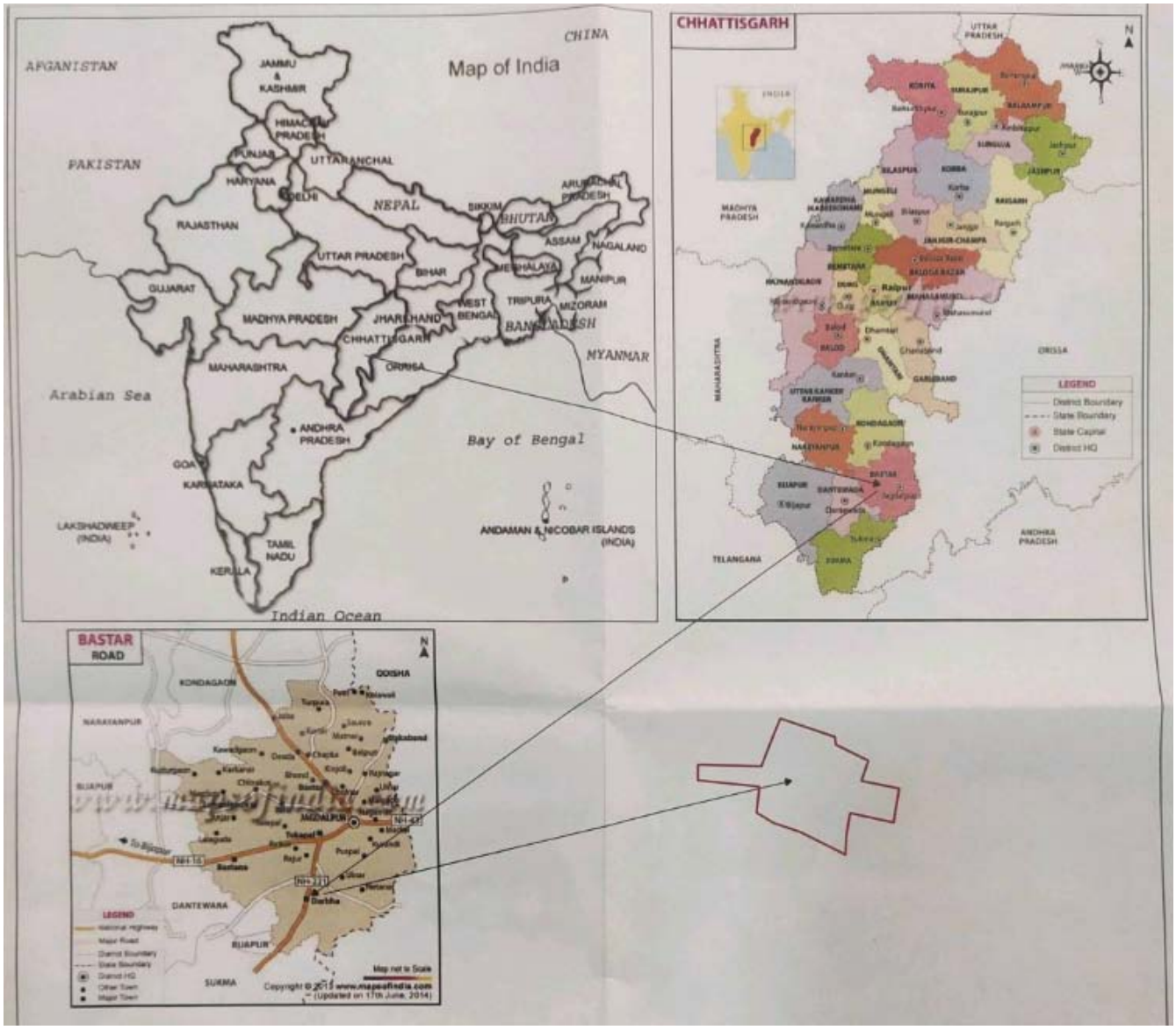

Fig no 2, Location map

3.3 Details of Alternate Sites

Not Applicable.

3.4 Size or Magnitude of operation

3.4.1Topography:

Topographically, the area is part of hillock with scanty vegetation. It is around 0.6 Km SE from village Chhotekadma.

The maximum elevation is about 606 meter from M.S.L and minimum 598 m. The lease area is covered with soil in places is having thickness of 1m thinly. The general ground slope is towards northern side, with gradient about 2-4^{o}. Indrawati river flow near from the lease area. The nearby area is agricultural land, mostly owned by private individuals of surrounding villages, in form of small patches and growing only and depend on good rain.

3.4.2. Geology of the lease area

The 'Indravati Basin', covering an area of 9000 sq Km of Bastar Province, exposes Lat Proterozoic cover sediments in Baster plateu region. It is characterized by sandstone, shale,limestone and stromatolitic dolomite. The Basin is mainly confined in Bastar District of Chhattisgarh and Koraput District of Orissa. The sedimentary sequence rests non-conformably on the archean Granitic complex.

Indiravati group of Meso to Neo Proterozoic age is divided into Tirthgarh and Bastar formations. Tirathgarh formation is expose in the south eastern and northern part of district and comprise shale, sandstone, quartzite sub-arkose and thin beds of conglomerate. Bastar formation is exposed in the south eastern part of the district and comprise shale and limestone.

Local Geology

The three fourth of the leae area is a hillock in SE direction and rest of the area is having gentle slope in NW direction. The maximum elevation is about 611 meter from M.S.L and minimum 603 meter. The lease area is part of hillock. Generally, the limestone is light pink white in colour and massive in nature.

The area around village Chhotekadma is comes under Kanger valley formation. The Kanger valley formation consist of basal purple shale, greenish grey and purple Cryptocrystalline limestone and dolomite and purple shale with thin intercalation of purple limestone and upper shale with quartzite intercalations. This mineral body, is homogenous in nature. On the basisof the detailed geological mapping nearby pits etc of the area and lithology of the area showing sequence :

Soil,

Pink, purple limestone

Pink, purple and ray Shaley Limestone/Shale

Source- Approved Mining scheme

Reserve Estimation

The resource/ reserve of the applied area have been calculated based on the surface influence method.

Geological Resource – 17,10,000 Tons or 1.71 Million Tonnes.

Total Mineable reserve estimated = 6,78,374 Tons or 0.678 Million Tonnes

Anticipated life of the mine:

The anticipated life of mine is 28 years of lease period.

3.4.3. Production Parameters

The proposed production detail for the plan period, along with waste is given below:

Table 3: Production detail

Year	Total Volume in Tonnes	Total OB/Waste (Cum)	Ore to OB ratio (T/Cum)
1st	12500	1653.0135	1:0.13
2nd	25000	3583.303	1:0.14
3rd	37500	816.5595	1:0.02
4th	50000	3428.546	1:0.06
5th	62500	-	-
Total	**1,87,500**	**9481.422**	**1:0.07 (Average)**

3.5 Project Description with Process Details

3.5.1 Method of Mining

The mining will be carried out by opencast semi mechanized with manual mining method, some drilling & blasting will be required for removal of stone. Drilling operation will be done with the help of Jack hammer drill with compressed air. All excavations will be executed manually using simple instruments like jack hammer, crowbars, spades, chisels and hammers. The height of the benches of the quarry will be kept 3 mtr and width will be more than the height.

Maximum and minimum depth of workings

The expected depth of the proposed quarry will be up-to 596 mRL which will not encounter the water table.

Details of Machinery:-

Open cast semi mechanized method has been proposed. During development, some mechanical

excavator might be used for removal and loading of top soil and the limestone. Tipper trucks will be used for transporting stone and waste. This machine will be used on hire basis.

Other equipment-

S.No	Equipments	Number
1	Pump (Diesel) 5HP	02
2	Tractor & Water Tank	01
3	Drill, other tools & spares	As per requirement
4	Mining safety equipment as safety shoes, helmets, hand gloves, leg guard etc.	As per requirement
5	Mining safety equipment such as crowbar, pick-axe, spade, chisel etc.	As required

3.6 Raw material required along with estimated quantity, likely source, marketing area of final product/s, mode of transport of raw material and finished product

No raw material will be required for production of Limestone.

3 .7 Resource optimization/ recycling and reuse

Not envisaged.

3.8 Availability of water its source, energy/ power requirement and source

3.8.1 Water Requirement

Water for drinking and operations is required to be **10.20** KLD. Water will be sourced from the bore well and mine sump.

3.8.2 Power

The project operation will be done during day hours only. If required, the nearest electricity facility is available at Chhotekadma Village.

3.9 Quantity of wastes to be generated (Liquid and Solid) and scheme for their management/ disposal

3.9.1 Solid waste generation & its disposal

Waste management:

During the proposed plan period, overall 9481.42 cu.m of top soil during first to five years and 3562.50 cu.m of topsoil during end of conceptual plan will be generated. 9481.42 cu.m of overburden will be generated during the plan period.

Top soil will be stacked along the lease boundary in the mining limit or non mining zone with 1.5m of dump height & use for the plantation purpose in the 7.5m barrier zone.

3.9.2 Liquid effluent

The domestic sewage will be collected by sewerage system and biological treatment will be adopted by means of septic tanks and soak pits.

4.0 SITE ANALYSIS

4.1 Connectivity

The mine site is well connected via approach road of approx. 1.2 km which further connects Chotekadma village (PMGSY) road in West direction. The applied area is 18 kms away from Bastar. Jagdalpur railway station, approx 19.5 km in towards NE direction. National Highway 60 is about 4 km in East direction. Nearest Airport is Maa Danteshwari Airport Jagdalpur, Approx. 22 Km in NE direction.

4.2 Landform, land use and land ownership

4.2.1 Landform

The mining lease area is undulating with mounds/hillocks of limestone. The maximum elevation is abot 606 m AMSL and minimum 598 m AMSL.

4.2.2 Land Use

The area is under mining operation. Land acquired for mining activity and other infrastructures have been given below. The land use at present, at the end of plan period is given below:

Sl. No	Pattern of Utilization	Land use at Present (Ha)	Land use at the end of 5 years in Ha	Land use at the end of Conceptual period in (ha)
A	Lease area	3.420	3.420	3.420
1.	**Mining & allied** Area under pits	Nil	1.893	2.606
2.	Storage of top soil	Nil	Nil	0.084
3.	Area for waste dump	Nil	Nil	Nil
4.	Mineral storage (temp)	Nil	Nil	Nil
5.	Infrastructure (workshop, administrative building etc.)	Nil	0.003	Nil
6.	Roads	Nil	0.009	Nil
7.	Railways	Nil	Nil	Nil
8.	Tailing pond	Nil	Nil	Nil

9.	Effluent treatment plant	Nil	Nil	Nil
10.	Mineral separation plant	Nil	Nil	Nil
11.	Township area	Nil	Nil	Nil
12.	Other to specify	Nil	Nil	Nil
13.	Total area (1 to 12)	Nil	1.905	3.420
14.	Undisturbed area	Nil	1.515	0.73

4.2.3 Land Ownership

The lease owner is on the name of Shri Kursum Sambaiya from Village: Kotapalli, Tehsil-Bhopalpattanam, District- Bijapur (C.G) Pin code: 450844.

4.3 Topography

Topographically, the area is part of hillock with scanty vegetation. It is around 0.6Km SE from village Chhotekadma.

The maximum elevation is about 606 meter from M.S.L and minimum 598 m. The lease area is covered with soil in places is having thickness of 1m thinly. The general ground slope is towards northern side, with gradient about 2-4o. Indrawati river flow near from the lease area. The nearby area is agricultural land, mostly owned by private individuals of surrounding villages, in form of small patches and growing only and depend on good rain.

Source- Approved Mining scheme

4.4 Existing Land Use Pattern

Though the land covered for quarry lease is 3.420 ha. This is waste land.

4.5 Existing Infrastructure

The National Highway 30 is about 4.0 km in East direction. Nearest Airport is Maa Danteshwari Airport Jagdalpur, Approx. 22 Km in NE direction. Manpower is easily available. There is no infrastructure existing within the QL area. Post office is at Chhote Kadma, Police station is at Darbha. Hospital and education facility is available at Chitapur.

4.6 Soil Classification

The soils in the district are having wide variations. Most of the area is covered by red gravelly, red sandy and loamy Alfisols. As most of the area is covered by crystallines and metamorphic rocks the

soils derived by weathering are red soils.. At some places Ultisols in the form of laterites are also present.

Source- *http://cgwb.gov.in/District_Profile/Chhatisgarh/Bastar.pdf*

4.7 Climatic and rainfall data

The normal annual rainfall for the district is 1386.77 mm. The annual temperature varies from 10.6^{o}C in winter to 46 ^{o}C in summer. The relative humidity varies from 90% in rainy season to 30-40% during winter

Source- *http://cgwb.gov.in/District_Profile/Orissa/BASTAR.pdf*

5. PLANNING BRIEF

5.1 Planning Concept

It is open cast semi mechanized mine. The loading of Limestone shall be carried out by excavator. Mining shall be carried out from top to down ward through the formation of the benches.

5.2 Land use Planning

The land use of the excavated pit will be converted into water reservoir. The plantation will be carried out on the worked out benches.

5.3 Assessment of Infrastructure Demand (Physical & Social)

Office, Rest shelter along with first-aid station will be provided as per Mines Act 1952. Medical facilities, Primary Health Centre are there in the study area,

Communication services like post office and telephones are available in the nearby village

5.4 Amenities/Facilities

Mines office, workshop etc.

Proper site services such as First Aid, Canteen / Rest Shelter, Drinking Water, Maintenance Workshop, etc. will be provided to the mine workers.

6. PROPOSED INFRASTRUCTURE

6.1 Industrial Area (Processing Area)

No infrastructure is proposed.

6.2 Residential Area (Non Processing Area)

As the local person will be given employment, no residential area/ housing is proposed.

6.3 Green Belt:

About 1700 Plants are proposed to be planted during plan period. Plantation will be done in barrier zone of the lease area and mined out benches.

6.4 Social Infrastructure

Additional necessary infrastructure facilities will be provided as per the requirement. Arrangements for safe and healthy working conditions

6.5 Connectivity

The mine site is well connected via approach road of approx. 1.2 km which further connects Chotekadma village (PMGSY) road in West direction. The applied area is 18 kms away from Bastar. Jagdalpur railway station, approx 19.5 km in towards NE direction. National Highway 60 is about 4 km in East direction. Nearest Airport is Maa Danteshwari Airport Jagdalpur, Approx. 22 Km in NE direction.

6.6 Drinking Water Management

Water for drinking and operations will be **10.20 KLD**.

S. No.	**Purpose**	**Water Requirement(KLD)**
1.	Drinking & Domestic Use	1.32
2.	Dust Suppression	7.2
3.	Green belt development	1.7
	Total	**10.22 ~ 10.20**

6.7 Sewerage System

Domestic waste water will be treated into septic tank followed by soak pit.

6.8 Industrial Waste Management

Not applicable.

6.9 Solid Waste management

During the proposed plan period, overall 9481.42 cu.m of top soil during first to five years and 3562.50 cu.m of topsoil during end of conceptual plan will be generated. 9481.42 cu.m of overburden will be generated during the plan period.

Top soil will be stacked along the lease boundary in the mining limit or non mining zone with 1.5m of dump height & use for the plantation in the 7.5m barrier zone.

6.10 Power Requirement & Supply/ Source

All the activities will be done in day time and if required will be taken from CG Electricity control Board

7. REHABILITATION AND RESETTLEMENT (R&R) PLAN

Not applicable. As, there are neither village nor major hutments within the lease area.

8. PROJECT SCHEDULE & COST ESTIMATES

8.1 Likely date of start of construction and likely date of completion

The project will commence after grant of environmental clearance.

8.2 Estimated project cost along with analysis in terms of economic viability of the project

The estimated project cost will be Rs. 50 lakh

9.0 ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

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

The project will prove beneficial to the people as the company has already made the infrastructural facilities for the local people like Educational facilities, Medical facilities, Transportation facilities etc. as well the local people especially tribal population will be taken as employers which will improve the socioeconomic environment of the area.

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