

**EXECUTIVE SUMAMRY OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT AND
ENVIRONMENTAL MANAGEMENT PLAN**

**FOR
AKOLDIH KHAPRI/NARDAHA LIMESTONE QUARRY,
TOTAL MINE LEASE AREA- 7.337 Ha.
TOTAL CLUSTER AREA: 181.71 Ha.**

Sr. No.	Project Proponent	Khasra No.	Area	Production Capacity
1	Smt. Ranjeet Kaur	Part of 598	1.050 Ha.	20025 Tons/Year
2	Shri Mandip Singh	Part of 539	2.79 Acre (1.129 Ha.)	11025 Tons/Year
3	Smt. Harpreet Kaur	279, 536 & Part of 537	8.30 Acre (3.358 Ha.)	30000 Tons/Year
4	M/s. Premier Metals Prop. Shri Ajay Jhajhri	1971/1, 1971/2	1.80 Ha.	32000 Tons/Year

AT

Village Akoldih Khapri and Nardaha, Tehsil- Arang, District Raipur, Chhattisgarh

**Project Activity - Mining of Minerals 1(a) (i)
Project Category – B1**

MONITORING PERIOD- 15thOCTOBER 2022 to 14thJANUARY 2023

1. Smt. Ranjeet kaur ToR Letter No. 2264/S.E.A.C.C.G./Mine/2110 Nawa Raipur Atal Nagar dated 13/02/2023
2. Shri Mandip Singh ToR Letter No. 412/S.E.A.C.C.G./Mine/2234 Nawa Raipur Atal Nagar dated 18/05/2023
3. Smt. Harpreet Kaur ToR Letter No. 414/S.E.A.C.C.G./Mine/2215 Nawa Raipur Atal Nagar dated 18/05/2023
4. M/s. Premier Metals Prop. Shri Ajay Jhanjhri ToR Letter No. 2009/S.E.A.C.C.G./Mine/2213 Nawa Raipur Atal Nagar dated 30/11/2023

PROJECT PROPONENT

ENVIRONMENT CONSULTANT

P and M Solution

Address: C-88, Sector 65, Noida -201301 – U.P,

A NABET ACCREDITED CONSULTANT

**“Limestone Quarry” at Akoldih Khapri and Nardaha, Tehsil- Arang, District Raipur, Chhattisgarh by
Smt. Ranjeet Kaur, Shri Mandeep Singh, Smt. Harpreet Kaur, M/s Premier Metals (Prop. Shri Ajay
Jhanjhri)**

EXECUTIVE SUMMARY

Project Proposal	
“Limestone Quarry” Mine comes under located at Khasra no. 598, 279, 536, 537 & 539 in Village-Akoldih Khapri and Khasra no. 1971/1, 1971/2 in Village Nardaha, Tehsil- Arang, District-Raipur, State-Chhattisgarh	
Project Proponent	
Smt. Ranjeet Kaur, Shri Mandeep Singh, Shri Harpreet Kaur, M/s Premier Metals (Prop. Shri Ajay Jhanjhri)	
Environmental Sensitivity	
Nearest Village	Village-Akoldih Khapri, Approx 1.0 km
Nearest Town	Arang, approx. 21.2 km in SSE
Nearest Railway station	Mandhar railway station which is approx. 9.94 km in NW direction
Nearest Airport	Swami Vivekanand International Airport, Raipur- Approx. 21.2 km in SSE.
Ecological Sensitive Areas (National Park, Wild Life Sanctuaries, Biosphere Reserve etc.) within 15 km radius.	None
Reserve Forest and Protected Forest within 10 Km radius	No any Reserved/Protected Forest within 15 km radius.
Water bodies within 10km radius	Kurud Dam- Approx. 3.1km in South Direction
Archaeological Place	No Archeological place in the study area.
National Park, Wild Life Sanctuary, Wild Life Corridors, Biosphere Reserves, Protected Forest , Migratory routes for Birds etc. within 10 Km radius study area	None
Seismic Zone	III

1.0 Introduction

The proposed “Limestone Quarry” Mine comes under located at Village Akoldih Khapri And Nardaha, Tehsil- Arang, District- Raipur, Chhattisgarh. The proposed Stone production capacity from the mine lease belongs to Smt.Ranjeet Kaur, Shri Mandeep Singh, Shri Harpreet Kaur, M/s Premier Metals (Prop. Shri Ajay Jhanjhri. The lease area is non-forest Govt. land. The mining operation will be manually opencast method. The sequences of operations are removal of over burden, sizing, loading and transportation of Minerals. As per Environment Impact Assessment (EIA) notification dated 14th September 2006 and the amendment thereof, the proposed mining project falls under category B1 with project activity type “1(a)” (Mining of Minerals) as the project is mining of major mineral which require prior Environmental Clearance (EC) from the State Environment Impact Assessment Authority (SEIAA).

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This EIA has been prepared as per the Terms of Reference granted and the EIA Notification. Further to assess the impact on environment, it is necessary to ascertain present status of environment prevailing at the project site and proposed operation including identification and Assessment of impact on the environment.

Keeping these points and statutory requirement in view, this Environment Impact Assessment Report and Environmental Management Plan (EMP) (here in after described as the EIA/EMP Report) has been prepared. Environmental Study has been carried out within 10 km radius of the mine area over a period of **15thOctober, 2022 to 14thJanuary, 2023.**

Name	Smt. Ranjeet Kaur	Shri Mandeep Singh	Smt. Harpreet Kaur	M/s Premier Metals Prop.Shri Ajay Jhanjhri
Reference of TOR	2264/SEAC,C.G/Mine /2110 Nawa Raipur Atal Nagar dated 13/02/2023	412/SEAC,C.G./Mine /2234 Nawa Raipur Atal Nagar dated 18/09/2023	414/SEAC,C.G/Min e/2215 Nawa Raipur Atal Nagar dated 18/05/2023	2009/SEAC,C.G./Min e/2213 Nawa Raipur Atal Nagar dated 30/11/2023
Area	1.05 Ha	1.129 Ha	3.36 Ha	1.80 Ha
Khasra No.	158	Part of 539	279,536,537	Part of 1971/1 & 1971/2
Material	Limestone	Limestone	Limestone	Limestone
Applied Capacity	20,025 Tons/year	11,025 Tons/year	30,000 Tons/year	32,000 Tons/year
Village	Akoldih Khapri	Akoldih Khapri	Akoldih Khapri	Nardaha
Tehsil	Arang	Arang	Arang	Arang
District	Raipur	Raipur	Raipur	Raipur
Geological Reserve	4,72,500 Tons	6,77,400 Tons	20,16,000 Tons	10,14,660 Tons
Recoverable Reserve	1,49,772 Tons	2,72,087 Tons	9,01,089 Tons	3,56,504 Ha
Total Cluster Area	176.847 Ha	183.62 Ha	183.62 Ha	183.51 Ha
Cost of Project	95 Lakhs	40 Lakhs	80 Lakhs	76 Lakhs

1.1 Need for the Project

Minerals are the chief source of present phase of industrialization and play an important role in the present phase of the national economy and overall development of the nation. Limestone is an essential mineral commodity of national importance. The area around the project area is economically backward and mostly dependent on seasonal agriculture. The per capita income of the villages is much lower than the national average. The proposed project will have a positive impact on the socio-economic condition of the people, generate employment opportunities and generate revenue for the state government in the form of royalty, sales tax and district mineral fund. Limestone in India is used in the manufacture of cement which meets the requirement of industrial, infrastructure and residential construction activities. It is also used in the manufacture of poly fiber.

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The proposed limestone production will be used by the cement plant of the area and the overburden will be used for backfilling. Stone (Gitti) is the basic raw material for construction works like construction of dams, roads etc. construction of walls/foundation. The government is working on various infrastructure development projects like canal, pachari construction, dam, over bridge over river/nallah, road, approach road etc. in all the districts besides various power plants, steel plants and cement plants in private sectors are under implementation. These civil works require stone in various sizes for which there is a huge demand. Stones are of great importance as building materials. Larger sized stone in block form is used to fill the foundation of a building, while smaller pieces are usually mixed with cement and other materials to make mortar for the building.

2.0 Topography and Drainage Pattern

Topography: For Mandeep Singh the area is about 0.6 km from the village Akoldih Khapri in the South West direction. Outcrops is observed in central part of the while rest part is flat terrain with devoid of vegetation. For Harpreet Kaur the area is about 0.45 km from the village Akoldih Khapri in the South West direction. The lease is flat terrain with devoid of vegetation. For Smt. Ranjeet Kaur the area is about 0.95 km from the village Akoldih Khapri in the South East direction. The lease area is flat terrain with devoid of vegetation. For M/s. the area is about 2.0 km from the village Nardaha in the South East direction. Some part of the lease area having working pit and rest is flat terrain with devoid of vegetation. The lease area is covered by soil. The average thickness of soil is about 1m. The maximum elevation is about 286 m from M.S.L and minimum elevation is 282 m. The area is almost flat with scanty vegetation.

Drainage Pattern: The drainage pattern is dendritic to sub dendritic.

2.1 Geology

The area around Akoldih Khapri and Nardaha village comes under Chandi Formation of Raipur Group of Chhattisgarh Supergroup. Chandi Formation Purple and bedded limestone Purple argillaceous stromatolitic dolomite.

The area showing a nature and extent of the mineral body.

The area around Akoldih Khapri and Nardaha which is situated in Tehsil Arang district Raipur is covered by Limestone of Chandi formation of Raipur Group of Chhattisgarh Super Group. The mineral body is homogenous in nature. On the basis of detailed geological mapping nearby pits etc of the area and Lithology of the area following sequence can be established:

Soil

Lime stone

2.2 Reserves

Geological Reserve:

The thickness of soil cover is about 1.0 m below which limestone is encountered. For computing the reserve of limestone in quarry area the depth has been taken 18m. The volumetric method is adopted by taking depth 9m and Bulk Density is considered as 2.5 tones/cum.

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Reserve Calculation

Reserves	Smt. Ranjeet Kaur	Shri Mandeep Singh	Smt. Harpreet Kaur	Premier Metals Prop. Shri Ajay Jhanjhri
1) Geological Reserve				
2) (in Tons)	4,72,500	6,77,400	20,16,000	10,14,660
3) Mineable Reserve	1,57,655	2,80,502	10,87,042	6,47,130
4) Recoverable Reserve	1,49,772	2,72,087	9,28,958	3,67,530

2.3 Method of Mining:

Quarrying will be carried out by semi mechanized open-cast method adopting a system of benches. Benches will be maintained 1.5m. Hydraulic excavators will be deployed for progressing benches and for handling ore/waste material. Manual labors are also deployed for quarrying and handling quarrying waste. Truck/tipper will be used for loading and dumping of limestone. Limestone will be blasted, handled and loaded by excavators into truck/tipper.

Mineable reserves and anticipated life of the quarry:

No mineral beneficiation is needed as the mineral produced from this mine is to be displaced in crude form. No activity for up gradation of mineral at the mine site shall be carried out.

(Source- Approved mine plan)

Resources optimization / Recycling and reuse envisaged in the project

- a. All the machinery & equipment used in the present will be put to use in other similar project once the project is completed.
- b. Waste water generated will be sent to septic tank/soak pit.
- c. Rainwater harvesting will be carried out during the operational phase and harvested water will be stored in ponds in the slope areas. This water will be used for sprinkling plantation and sanitary use.
- d. Safety zone will be created around the mining lease area to avoid any eventualities and barrier will impose through plantation.
- e. Proper restoration of the mine lease area will be carried out at the end of the mining through scientific way. Mine restoration plan will be suggested.

Year-wise Production of Mineral

Year	Production in Year			
	Smt. Ranjeet Kaur	Shri Mandeep Singh	Smt. Harpreet kaur	Shri Ajay Jhunjhri
1 st Year	15000	11025	30000	32000
2 nd Year	15000	11025	30000	32000
3 rd Year	20025	11025	30000	32000
4 th Year	20025	11025	30000	32000
5 th Year	20025	11025	30000	32000
Total	90075	55125	150000	160000

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Exploration:

As the quarry area is less than five hectares, the prospecting / exploration work is not required as the existence of mineral in the area have already been established.

Drilling and Blasting

Drilling

Drilling will not be required for exploration work but jack hammer drilling may be used for blasting purpose to break the hard rock in this mine scheme period. Drilling of the blast holes is proposed by the compressed air operated jack hammer or wagon drill. Height of the bench is proposed to be kept at 1.5m. The jack hammer drill up to 1.5m depth and such as the balance excavation will be in three to four stages. The specifications of the jack hammer and wagon drills are as follows:

Drilling Pattern for Jack Hammer

Type	Make	No.	Diam. Of Hole	Drilling Rods	Capacity	Motive Power	HP
Tractor	Hindustan	1	30-	1500mm	210 CFM	Diesel	50
Compressor	Atlas	1	40mm			Compressed	
or Jack Hammer	COPCO	2+1					

Source: Approved Mining Plan

Blasting: (Broad Parameters)

The quarry operation will be in small scale and the maximum production per year will be 20025 tons (8010 m³) in five year. In view of this small scale quarrying activity the blasting parameters will be simple and use of explosive will also be less. Blasting will be done by Simple Square and triangle pattern. Blasting will be done by licensed contractor. The lessee will be obtain necessary permission from DGMS before blasting & inform DM and DGMS in form 13.

The mineralization in the QL area is mineable to direct excavation by hydraulic excavators only after blasting and based up on the nearby mining activity, about 70% of the total excavation is consider for the blasting.

Broad Parameters:

Parameters	Wagon Drill
Spacing	1.5
Burden	0.5m
Depth of Hole	1.5m
Charger per Hole	350 gms
Powder Factor	8.03 t./kg
Dia of Hole	32mm

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Type of Explosive Used/ to be used

Slurry Explosive frequency of blasting will be once or twice a week. Delay detonators will be used.

Whether Secondary Blasting is needed:

Secondary blasting will not be needed.

3.1 Meteorology

Site Specific meteorological data is given in **Table4** and wind rose is given in **Figure 1**.

Table 4: Site Specific Meteorological Data

Month	Temperature °C		Wind Speed (Km/hr.)
	Min	Max	Avg.
October,2022	20.0	36.0	2.9
November, 2022	11.0	30.0	3.6
December, 2022	8.0	25.0	4.7

Source: Meteorological at station site

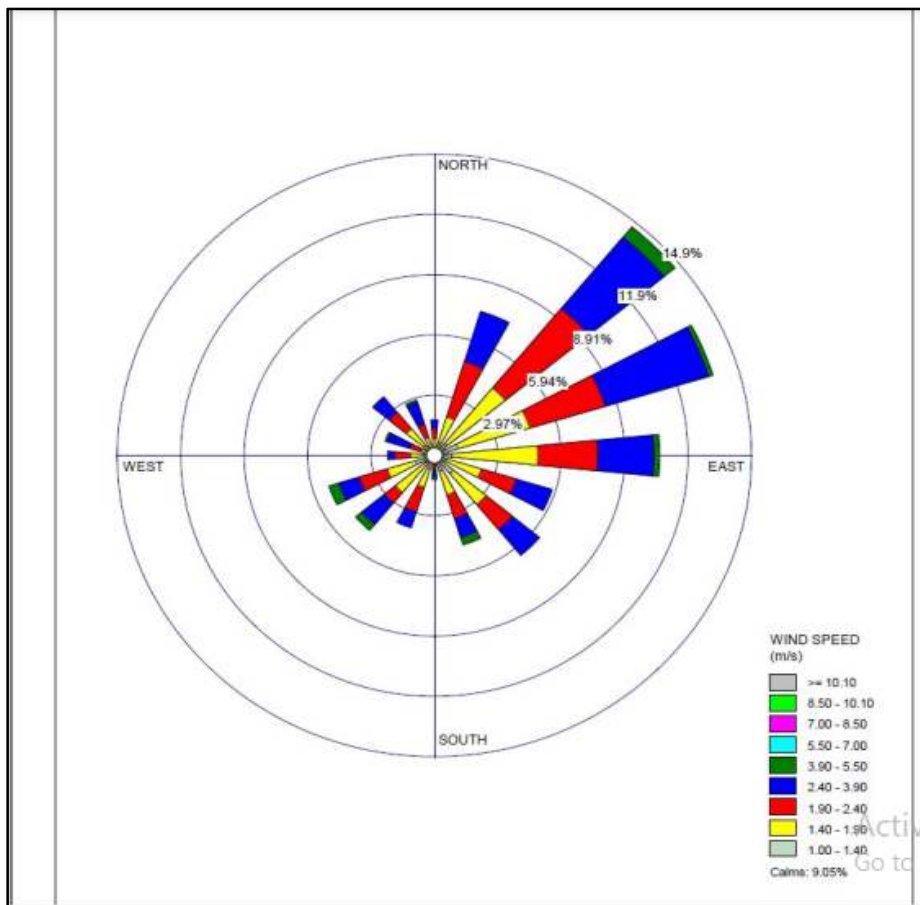


Figure 1: Wind Rose

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3.2 Ambient Air Quality Status

The status of ambient air quality within the study area was monitored for the period of during 15th October 2022 to 14th January 2023 at 12 locations including the Plant area and in nearby villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x) were monitored. The minimum and maximum values of monitoring results are summarized in **Table 5**.

Table5: Summary of Ambient Air Quality Results

Parameters	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
AAQM Norms	100	60	80	80
AAQ-1				
MIN	65.4	29.6	9.6	12.6
MAX	74.5	36.9	12.4	18.2
AVERAGE	69.9	32.1	11.1	14.9
98 %TILE	73.9	35.9	12.3	17.9
AAQ-2				
MIN	69.5	37.5	10.8	12.6
MAX	78.3	42.7	14.2	21.6
AVERAGE	75.0	40.2	12.2	17.9
98 %TILE	78.3	42.6	14.2	21.3
AAQ-3				
MIN	65.4	30.6	9.8	12.8
MAX	73.4	35.6	12.6	18.6
AVERAGE	69.4	33.4	11.1	15.8
98 %TILE	72.9	35.6	12.5	18.4
AAQ-4				
MIN	58.3	30.4	9.8	12.6
MAX	69.8	41.2	12.4	19.2
AVERAGE	62.2	34.2	10.9	15.6
98 %TILE	67.2	40.9	12.4	18.8
AAQ-5				
MIN	63.7	26.4	9.4	12.6
MAX	73.4	36.4	12.4	18.6
AVERAGE	68.5	30.1	10.7	14.7
98 %TILE	72.9	34.5	12.4	18.0
AAQ-6				
MIN	48.5	30.2	9.8	12.4
MAX	61.4	39.3	12.4	19.4

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AVERAGE	56.5	34.5	10.8	15.6
98 %TILE	60.8	38.9	12.3	19.4
AAQ-7				
MIN	48.6	24.3	9.8	12.6
MAX	61.2	36.8	12.2	21.2
AVERAGE	55.7	30.0	11.0	17.0
98 %TILE	60.7	35.1	12.2	20.9
AAQ-8				
MIN	48.6	23.5	9.8	12.5
MAX	63.4	35.1	12.2	20.2
AVERAGE	55.1	28.5	10.8	15.0
98 %TILE	62.4	34.0	12.2	19.3
AAQ-9				
MIN	68.2	30.6	10.2	13.8
MAX	75.9	40.6	12.6	20.3
AVERAGE	72.1	35.6	11.4	17.2
98 %TILE	75.6	40.4	12.6	19.9
AAQ-10				
MIN	70.5	38.2	10.6	16.5
MAX	78.3	43.6	13.6	22.3
AVERAGE	74.6	40.5	12.2	19.5
98 %TILE	78.3	43.2	13.5	22.2
AAQ-11				
MIN	50.6	26.7	9.8	12.5
MAX	62.4	37.5	12.4	20.2
AVERAGE	57.8	30.8	11.0	15.5
98 %TILE	62.4	36.5	12.4	19.8
AAQ-12				
MIN	69.2	36.4	10.6	14.2
MAX	76.3	42.7	13.6	21.2
AVERAGE	72.3	39.5	11.7	18.3
98 %TILE	76.0	42.6	13.3	20.8

From the above results, it is observed that the ambient air quality with respect to PM₁₀, PM_{2.5}, SO₂ and NO_x at all the monitoring locations was within the permissible limits specified by CPCB.

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3.3 Ambient Noise Levels

Ambient noise level monitoring was carried out at the 12 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 6**.

Table 6: Summary of Ambient Noise Level Monitoring Results [Leq in dB(A)]

Time (Hrs)	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	
Day Time	600	40.5	48.3	46.8	41.4	41.1	42.7	41.4	41.3	48.3	47.8	43.5	47.1
	700	41.8	51.2	49.6	42.7	42.4	44.5	42.8	43.0	51.2	50.6	45.4	50.6
	800	43.2	52.6	51.2	44.5	43.8	45.7	42.2	40.5	52.6	53.4	47.2	51.5
	900	45.8	54.6	52.6	46.1	46.4	47.5	44.4	44.9	54.6	51.6	51.1	54.1
	1000	47.8	57.6	55.4	47.8	48.4	52.3	49.8	50.3	57.6	56.7	50.5	58.5
	1100	46.3	56.8	52.6	47.0	46.9	46.7	43.9	43.3	56.8	55.4	53.3	57.4
	1200	45.9	55.6	50.2	47.7	46.5	48.6	48.5	47.8	55.6	53.7	50.7	55.9
	1300	46.3	55.2	48.6	46.0	46.9	46.7	44.7	44.8	55.2	54.1	49.9	55.1
	1400	42.9	51.6	50.2	44.9	43.5	49.2	48.0	47.3	51.6	49.8	46.7	53.0
	1500	44.8	53.7	51.4	45.3	45.4	52.3	48.5	49.6	53.7	52.7	48.6	55.0
	1600	47.6	53.9	50.8	42.4	48.2	47.2	44.1	44.6	53.9	51.2	49.5	53.1
	1700	44.2	52.6	53.4	46.4	44.8	45.1	42.8	42.0	52.6	53.6	47.1	52.1
	1800	45.8	52.8	52.7	46.1	46.4	45.7	43.3	43.8	52.8	53.2	48.1	54.0
	1900	43.2	51.6	49.6	44.6	43.8	44.9	42.2	43.0	51.6	48.5	46.6	53.0
	2000	42.6	55.6	51.6	45.0	43.2	47.5	46.0	46.9	55.6	49.2	50.2	55.4
	2100	41.0	50.3	49.8	47.5	41.6	46.2	43.8	44.0	50.3	47.3	45.1	50.9
2200	40.1	51.2	48.2	43.3	40.7	47.8	46.0	46.5	51.2	49.2	46.6	52.5	
Night Time	2300	38.7	48.6	46.3	41.6	39.3	41.1	42.5	41.6	48.6	45.3	43.9	47.2
	2400	38.5	45.3	44.5	40.8	39.1	39.6	40.8	44.7	44.5	43.2	42.5	44.6
	100	37.9	44.6	40.5	40.6	38.5	40.1	38.8	42.0	43.2	41.5	41.1	43.2
	200	38.1	43.2	38.6	41.9	38.7	38.5	37.6	41.0	40.5	39.7	41.5	41.6
	300	38.7	40.2	37.2	40.6	39.3	36.8	37.1	39.5	38.4	38.2	40.7	40.7
	400	40.1	43.2	40.2	39.8	40.7	37.3	37.4	39.1	40.2	39.6	39.7	41.8
	500	39.1	44.5	41.6	40.1	39.7	39.7	39.6	39.9	42.7	42.2	40.8	43.6
Range		37.9	40.2	37.2	39.8	38.5	36.8	37.1	39.1	38.4	38.2	39.7	40.7
		-	-	-	-	-	-	-	-	-	-	-	-
Ld		47.8	57.6	55.4	47.8	48.4	52.3	49.8	50.3	57.6	56.7	53.3	58.5
Ln		38.8	44.9	42.3	40.8	39.4	39.3	39.5	41.5	43.8	42.0	41.6	43.8
Ldn		46.4	54.2	51.7	47.8	46.9	48.4	47.2	48.4	53.9	52.3	49.9	54.1

3.4 Ground and Surface Water Resources & Quality

Ground Water

Sampling was carried out at 8 locations during the study period. Sampling and analysis was carried out, as per standard methods and frequency of the sampling was thrice/stations. the summary of the results is presented below:

Analysis results of **Ground Water** reveal the following:

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- **pH** varies from to 6.84 to 8.2
- **Total Hardness** varies from 146 to 512mg/L.
- **Total Dissolved Solids** varies from 314 to 767 mg/L.

Analysis results of **Surface Water** reveal the following:

- **pH** varies from to 7.14to 7.29
- **Total Dissolved Solids** varies from 188 to 188 mg/L.
- **BOD** varies from 2.0 to 2.4 mg/L.
- **COD** varies from 12.6 to 18.4 mg/L.

The heavy metal contents are found to be negligible. Water quality is excellent but it is not potable due to presence of coliform. It can be used for drinking purpose after installing bacteriological.

3.5 Soil Quality

Sampling was carried out at 8 locations during the study period. The summary of the results are presented below:

- pH in soil sample was observed in the range **6.40 to 7.42**
- Organic Matter was observed in the range of **0.06 % to 1.67 %**.

3.6 Biological Environment

Rare and Endangered Flora in the Study Area

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity. **Among the enumerated flora in the study area, none of them were assigned any threat category, by RED data book of Indian Plants.**

4.0 IMPACT ASSESSMENT AND MITIGATION MEASURES

4.1 AIR Pollution

The air quality modeling has been done and the details are given below:

Sr. No.	Activity in the Quarry	Maximum Baseline Concentration ($\mu\text{g}/\text{m}^3$)	Incremental GLCs ($\mu\text{g}/\text{m}^3$)	Resultant Concentration ($\mu\text{g}/\text{m}^3$)	Limit (Industrial, Residential, Rural and other area) ($\mu\text{g}/\text{m}^3$)
1.	Excavation+Loading+Transportation	64.2	0.60	64.80	100

Prevention and Control of Air Pollution

- The dust generated during the process will be minimized by water spray at the working faces before and after the activity.
- Plantation will be carried out on approach roads and in Lease boundary.
- Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road;
- Personal Protection Equipment’s (PPE) like dust masks, ear plugs etc. will be provided to mine workers.
- Speed limit will be enforced to reduce airborne fugitive dust from vehicular traffic.
- Deploying PUC certified vehicles to reduce their noise emission.
- Spillage from the trucks will be prevented by covering tarpaulin over the trucks.

4.2 Water Quality Management

The impact of mining project on groundwater hydrology and surface water regime are site specific and depends upon the characteristics of the mineral, hydrogeology and requirement of groundwater for other uses.

ANTICIPATED IMPACTS

- No natural course of water stream is interrupted or diverted due to mining activity; hence no impact on natural drain is anticipated.
- Surface run off distribution during rainy season may get affected due to excavated pits and overburden stack.
- Runoff from the mining benches or from overburden during the rainy season may get contaminated.
- Ground water pollution can take place only if the mining rejects contain toxic substances, which get leached by the precipitation water and percolate to the ground water table thus polluting it. Any nearby wells or other sources of water can be rendered unfit for drinking and even for industrial use.
- Domestic sewage will be generated which can create contamination.

MITIGATION MEASURES

- Overall drainage planning has been done in such a manner that the existing pre-mining drainage conditions will be maintained to the extent possible so that run off distribution is not affected.
- The waste dump will be protected by retaining walls around the dump., moreover the excavated mineral itself is non-toxic and hence no effect due to water flow during rains following the contours of the area is expected.
- The excavated pit will be converted into the water reservoir at the end of mine life. This will help in recharging ground water table by acting as a water harvesting structure.
- Garland drain will be constructed on all sides of quarry along with settling pond in the lowermost part to remove the suspended solids from storm water. The collected water shall

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be used in plantation and spraying on haul roads. Settling ponds will be designed on the basis of silt loading, slope of the lease, detention time required etc.

- Septic tanks and soak pits will be provided for the disposal of domestic effluent generated from mine site.

4.3 Noise Pollution Control

The area generally represents calm surroundings. There is no heavy traffic, industry or noisy habitation in the area except the existing mine. As the project is proposed for open cast manual method mining.

Noise pollution is mainly due to occasional plying of trucks. These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the lease area.

ANTICIPATED IMPACT

- The source of Noise pollution will be the vehicular movements.
- Noise will be generated by the digging of mine area using shovels, crowbars etc.

MITIGATION MEASURES

- **Maintenance of Machinery:** - The vehicles operating will be maintained and provided with good silencers. All machines will be used at optimum capacity.
- **Vegetation:** Plantation of trees around haul roads will be done to reduce the noise.
- **Hearing Protection:** Equipment like ear-muffs, ear-plugs, etc. are commonly used devices for hearing protection.

4.4 Greenbelt Development and Plantation

A green belt will be developed along the roads, barren area, surrounding office, rest shelter and other social forestry program. Green belt is erected not from biodiversity conservation point of view but is basically developed as a screen to check the spread of dust pollution.

4.5 Greenbelt Development and Plantation

A green belt will be developed 7.5 meter safety zone, along the roads, barren area, surrounding office, rest shelter and other social forestry program. Green belt is erected not from biodiversity conservation point of view but is basically developed as a screen to check the spread of dust pollution. It is proposed to total number of plants **5073 numbers sapling during 1st five years.**

4.6 Solid and Hazardous Waste Generation and Management

No solid waste will be generated.

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4.7 EMP and CER Details

Participation of Project proponent in Common EMP

Particulars		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
Pollution control generate due to dust generation during movement of vehicles from mine site to nearest NH53 (approx.0.5 km)		3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
both side plantation on access road (8000 No's)	Amount for plantation (90% survival rate)	5,50,000	50,000	50,000	50,000	50,000
	Amount for Fencing	19,90,000	-	-	-	-
	Fertilizers, seeds & maintenance of plant	7,50,000	7,00,000	7,00,000	7,00,000	7,00,000
Environment Monitoring (Quarterly)		2,00,000	2,00,000	2,00,000	2,00,000	2,00,000
Maintenance of Road/Approach Road		2,00,000	2,00,000	2,00,000	2,00,000	2,00,000
Plantation of trees at Village Road (upto 2 K.M.)		1,00,000	30,000	30,000	30,000	30,000
Total		40,90,000	14,80,000	14,80,000	14,80,000	14,80,000

It is proposed to undertake the need specific proposed CER activities in the surrounding areas of the mine. The all project proponent has proposed to be incurred budget of **2% of Project cost** for CER activities.

The detailed CER activities will be decided after public Hearing and same will be incorporated in Final EIA.

5.0 CONCLUSION

As discussed, it is safe to say that the project is not likely to cause any significant impact on the ecology of the area, as adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the project.