

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

FOR

**MOHRENGA ORDINARY SAND QUARRY,
LEASE AREA: 15.00 Ha**

PROPOSED PRODUCTION CAPACITY -4,50,000 Cum/Annum

AT

**KHASRA No- Part of 1332, Village Mohrenga, Tehsil- Magarlod, District- Dhamtari,
Chhattisgarh**

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

ToR Letter No. 1270/S.E.A.C. CG. /Ret/ 1995 Nawa Raipur Atal Nagar dated 03/11/2022

MONITORING PERIOD- 15th OCTOBER 2021 to 14th JANUARY 2022

PROJECT PROPONENT

**Mr. BASANT SINHA (Proprietor)
ADDRESS- WARD 04, SHIV CHOUK,
VILLAGE – GADADIH, POST- PARKHANDA, TEHSIL- KURUD,
DIST.- DHAMTARI(C.G.)**

ENVIRONMENT CONSULTANT

P and M Solution

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A NABET ACCREDITED CONSULTANT**

**Executive Summary for “Mohrenga Ordinary Sand Quarry” at Village Mohrenga, Tehsil- Maraglod,
District- Dhamtari, Chhattisgarh of Shri Basant Sinha**

EXECUTIVE SUMMARY

Project Proposal			
<p>“Mohrenga Ordinary Sand Quarry” Mine comes under located at Khasra no. Part of 1332 Village Mohrenga, Tehsil- Maraglod, District- Dhamtari, Chhattisgarh</p> <p>Proponent Mr. Shri Basant Sinha(Proprietor) Address- Ward 04, Shiv Chouk, Village – Gadadih, Post- Parkhanda, Tehsil- Kurud, Dist.- Dhamtari(C.G.) Pin Code- 493773</p>			
Location of the applied area			
Village &Tehsil	Village-Mohrenga, Tehsil- Maraglod		
District &State	District- Dhamtari, Chhattisgarh		
Extent of the ML area	15.00 Hectares Govt land		
Survey of India Map No.	64 H/13		
Latitudes	Pillar No	Latitude	Longitude
Longitudes	1.	20°52'37.20"N	81°53'4.32"E
	2.	20°52'41.65"N	81°53'15.20"E
	3.	20°52'26.21"N	81°53'21.13"E
	4.	20°52'23.36"N	81°53'12.55"E
Transport Network			
Nearest City/ Town	Kurud, Approx.16 km in SW direction		
Nearest Railway station	Kurud railway station which is approx. 18 km in SW direction		
Nearest Airport	Swami Vivekanand International Airport, Raipur- Approx. 40 km in NW		
Archeological 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		
Reserve Forest and Protected Forest within 10 Km radius	No any Reserved / Protected Forest within 15 km radius.		
Water bodies within 10km radius	Pari River (The area of sand removal is in the bed of Pari River) Mahanadi- Approx. 7.8 Km in West Direction		
Mining Details			
Geological Reserves	750000 Cu.M.		
Production Capacity, cum/annum	4,50,000 Cu.M./annum		
Method of Mining	open cast Manual as well as semi-mechanized method.		
Total Project Cost	Rs.35,00,000		

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Cost for Environmental Protection Measures	Capital Cost-Rs. 4,35,000/- Recurring Cost-Rs. 3,20,000/-
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1.0 Introduction

The proposed “**Mohrenga Ordinary Sand Quarry**” Mine comes under located at Khasra no. Part of 1332, Village Mohrenga, Tehsil- Kurud, District- Dhamtari, Chhattisgarh, Area- 15.00 Ha, The proposed Sand Mine production capacity from the mine lease is 4,50,000 Cu.M./Annum belongs to Mr. Shri Basant Sinha (Proprietor). The lease for mining of Sand Mine over an area of 15.00 Ha was granted by the Government of Chhatisgarh. The LOI was granted vide Order No. 770/khanij/nivida/2020 Dhamtari dated 12/04/2022, valid for a period of 02 years in favour of Mr. Shri Basant Sinha R/o Ward 04, Shiv Chouk, Village – Gadadih, Post- Parkhanda, Tehsil- Kurud district Dhamtari, Chhattisgarh.

The Mine Plan for the 1st three year was approved by Mining Department, Collectrate Office, District North Bastar Kanker of Chhattisgarh vides letter No. 36/khanij/Utakha.Yo.Anu./Rait kanker dated 13th April, 2022.

The proposed production capacity of the mine is 4,50,000 Cu.M./Annum of Sand. The mining operation will be open cast manual as well as Semi Mechanized method with used of Machinery (Dumper etc.) River bed mining is for extracting sand from river bed of Pairi River. The sequences of operations are excavation of sand, loading and transportation of sand to market.

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 **15th October, 2022 to 14th January, 2023**.

1.1 Need for the Project

River channels and their flood plains are important sources of construction grade aggregate materials like sand. The durability of river-borne coarser clastics and their sorting by fluvial action make them best suitable raw materials/ingredients for building constructions. The market demand of river sand is high throughout the country for construction of infrastructure projects. The project lies on bed of Pairi River. The sediment in the form of river bed material i.e. sand has deposited in the last many years as a process of sedimentation in the palaeochannels. Sand bars have been formed at various places hindering the flow of water and excess deposition had changed the shape of the river bed. Because of this, during monsoon season, the water may rise above the high flood level causing heavy and devastating floods. Such disasters may damage large tracts of land laying on both the banks of the river especially the agricultural lands. Hence, it is necessary to remove the materials so that the river gets channelized.

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Apart from this the project will also serve the following:

- Generate various employment opportunities especially to the local people hosting the mining project.
- Economic development of the state by contributing to state exchequer.

2.0 Topography and Drainage Pattern

Topography: The area for sand removal is falls in the bed of Pairi River. Pairi River is tributary of Mahanadi River. The area is about 0.5 km East of Mohrenga village. The general surface level is around 288 mRL on river bank. The general ground slope is towards north direction. The area is almost flat, devoid of vegetation.

Drainage Pattern: The area forms the river bed of Pairi River which flow from south to north.

2.1 Geology

Mohrenga sand area is situated about 0.3 km east from village Mohrenga in Pairi River. Pairi River is a Tributaries of Mahanadi River. It flows from south to north direction near village Mohrenga. The river has a gentle slope towards north. The gentle slope of the area is the main reason for having sufficient quantity of sand available for removal. The average thickness of sand above the river bed is more than 5.0 meters. The depth has been confirmed by making pits downward from surface to intersect bed rock at the bottom of the river. The pits could not touch the bottom due to thick pile of sand. Hence it is conformed that the sand column in the river is more than 5.0 meter. The sand available in the area is fine to medium-grained, good for use in construction purposes.

Pit Details:

Sr No.	Pit Details	Pit No.1	Pit No.2	Pit No. 3	Pit No.4	Pit No. 5
1	Date of Pitting	11.04.2022	11.04.2022	11.04.2022	11.04.2022	11.04.2022
2	Pit Latitude	20°52'24.73" N	20°52'27.23" N	20°52'29.62" N	20°52'32.23" N	20°52'35.76" N
3	Pit Longitude	81°53'14.33"E	81°53'13.34" E	81°53'12.36" E	81°53'11.22" E	81°53'7.04"E
4	Depth of pit	5.21 meter	5.45 meter	4.95 meter	5.10 meter	5.32 meter
5	Thickness of sand in pit	5.21 meter	5.45 meter	4.95 meter	5.10 meter	5.32 meter

Sr No.	Pit Details	Pit No.6	Pit No.7	Pit No. 8	Pit No. 9	Pit No. 10
6	Date of Pitting	11.04.2022	11.04.2022	11.04.2022	11.04.2022	11.04.2022
7	Pit Latitude	20°52'38.56" N	20°52'34.03" N	20°52'31.02" N	20°52'28.63" N	20°52'26.38" N
8	Pit Longitude	81°53'11.81" E	81°53'14.17" E	81°53'15.82" E	81°53'16.81" E	81°53'17.75" E
9	Depth of pit	6.05 meter	4.90 meter	5.25 meter	5.21 meter	5.20 meter
10	Thickness of sand in pit	6.05 meter	4.90 meter	5.25 meter	5.21 meter	5.20 meter

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As per rule 9(q) of CG MMR ordinary sand (Quarrying and Trade) Rules, 2019" **Quarrying shall be done excluding space on both banks of river up to a distance equal to 10% of width of the river."**

As per as per the Point (r) page 24 of Guidelines of Enforcement and Monitoring Guidelines for Sand Mining, Ministry of Environment, Forest and Climate Change January 2020 "**River bed sand mining shall be restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river"**

Reserve of sand and its viable extraction:

Total lease area	15.00 ha
The width of river in mining area	Minimum -832m South Maximum – 1040m North
Distance of mining area from West river bank	Maximum 166 m Minimum 124 m
Distance of mining area from East river bank	Maximum 531 m Minimum 444 m
Area for sand mine which has to be left as no mining zone so as to comply the provisions of maintain minimum distance of mine from river bank. (10% of river width).	Nil
Total Mineable area	15.00 Ha.

As the extractable area of 15.00 ha is almost flat, hence the volumetric method is adopted for reserve estimation. The water level fluctuation in the river bed is from 4.0 to 4.5 m during (Post Monsoon to Pre Monsoon (October to June). In general, the thickness of sand is more than 5.0 meter. Only 3.0 meter column of the sand will be removed above the water level. Hence taking the average 3.0 m thickness of sand the measured reserve comes to about 750000 cubic meters.

The calculation details are as under:-

Total sand available $150000 \text{ m}^2 \times 5\text{m} = 750000 \text{ m}^3$

Total Mineable sand is $150000 \text{ m}^2 \times 3.0\text{m} = 450000 \text{ m}^3$

Thus from measured sand reserve of about **750000** cubic meter only **450000** cubic meter sand per year will be viably extracted without disturbing and effecting the flow course of water level.

(Source- Approved mine plan)

2.3 Method of Mining:

Maximum depth of removal of ordinary sand (Depth restricted to maximum 3.0 m from surface)

Method of mining will be done to provision of the Chhattisgarh Minor Mineral ordinary sand (Quarrying and trade) Rules, 2019. To achieve the desired production, we are planning to adopt both manual as well as Semi Mechanized methods as per demand-supply during the three year mining plan period, the following machinery is proposed to be deployed for sand mining area subjected to environment conditions. **In absence of environmental approval for semi mechanization only manual method shall be used.**

The depth of working will be restricted to 3.0 m. The method of mining will be open cast. No bench can be maintained in river sand hence bench wise mining cannot be proposed.

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Table 1 Year wise productions

Year	Area in m ²	Depth in (meter)	Geological Reserve in cubic meter (m ³)	Removal sand Depth in (meter)	Proposed Production in cubic meter (m ³)
1 st year	1500000	5.0m	750000	3.0 m	450000
2 nd year	1500000	5.0m	750000	3.0 m	450000
3 rd Year	1500000	5.0m	750000	3.0 m	450000

(Note- 3rd year production will be applicable if the quarry lease will extend for a further period of one year as per the provisions of rule 4 of Chhattisgarh Minor Mineral Ordinary Sand (Quarrying and Trade) Rules, 2019)

Table- 3 List of Proposed Machine

S. No.	Machine	No's			Capacity
		Min	Max	Stand by	
1	Light weighted Excavator	10	11	1	2 m ³
2	Dumper / Trucks	18	20	2	18 tons
3	Tractor Trolley	As per requirement			4 tons
4	Belt Conveyor	As per requirement			100 Ton/hr
5	Light Vehicles	As per requirement			--

3.0 Baseline Data, Impact Assessment and Management Plan

The EIA report incorporates one season data generated for a period from **15th October 2022 to 14th January 2023**. A summary of the same is presented below:

3.1 Meteorology

Site Specific meteorological data is given in **Table 4** and wind rose is given in **Figure 1**.

Table 4: Site Specific Meteorological Data

Month	Temperature °C		Relative Humidity (%)		Wind Speed (Km/hr.)
	Min	Max	Min	Max	Avg.
Oct-Nov 2022	20.0	36.0	30	86.1	2.9
Nov- Dec, 2022	11.0	30.0	27.3	88.1	3.6
Dec-Jan, 2022-23	8.0	25.0	42.8	89.5	4.7

Source: Meteorological at station site

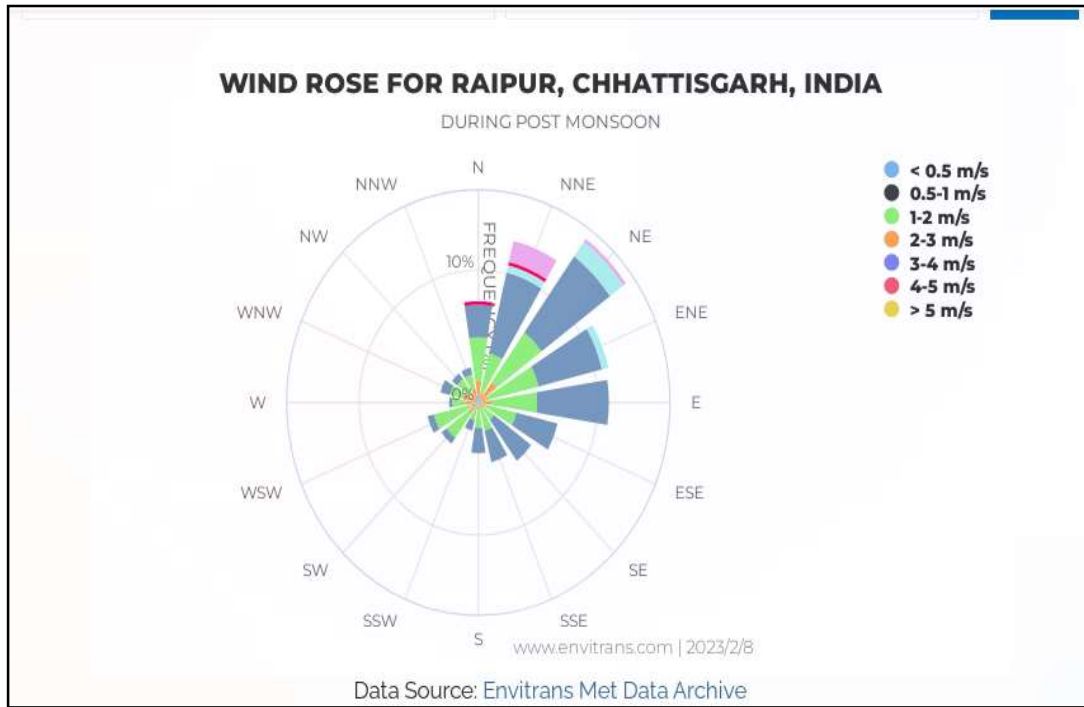


Figure 1: Wind Rose

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 10 locations including the Plant area and in nearby villages. Total 10 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 Mohrenga				
MIN	46.7	21.6	9.3	12.5
MAX	59.2	27.4	12.7	17.2
AVERAGE	52.8	24.5	11.3	14.4
98 %TILE	58.8	27.1	12.5	17.0
AAQ-2 Devri				
MIN	49.2	22.4	8.6	10.8
MAX	63.7	31.2	12.8	17.2
AVERAGE	55.6	27.9	11.0	14.3
98 %TILE	62.1	30.8	12.8	17.0
AAQ-3 Jhenjari				

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MIN	48.2	22.8	7.6	9.6
MAX	56.4	28.0	11.0	13.6
AVERAGE	53.2	25.8	9.4	11.9
98 %TILE	56.3	27.8	10.8	13.6
AAQ-4 Dhaurabhata				
MIN	47.2	20.4	8.1	10.6
MAX	56.8	28.4	11.6	16.2
AVERAGE	52.5	25.5	9.7	13.0
98 %TILE	56.4	28.3	11.4	15.5
AAQ-5 Tarra				
MIN	44.2	19.8	7.8	9.8
MAX	50.9	25.1	10.8	16.2
AVERAGE	47.5	22.5	9.3	13.3
98 %TILE	50.6	24.8	10.7	15.7
AAQ-6 Persatti				
MIN	44.2	20.6	9.4	12.7
MAX	52.4	27.3	15.5	18.7
AVERAGE	48.9	23.9	11.7	16.0
98 %TILE	52.4	27.1	14.8	18.6
AAQ-7 Kundel				
MIN	49.6	22.6	9.3	12.6
MAX	57.2	27.3	12.8	19.2
AVERAGE	53.3	24.7	11.0	15.5
98 %TILE	56.8	26.8	12.6	18.8
AAQ-8 Beltukri				
MIN	43.6	18.4	10.1	12.8
MAX	59.3	28.2	14.6	21.0
AVERAGE	51.0	24.7	11.9	17.5
98 %TILE	58.8	28.2	14.6	21.0
AAQ-9 Kareli Kala				
MIN	45.1	17.9	10.3	12.6
MAX	60.4	27.7	14.8	21.9
AVERAGE	51.3	24.2	12.1	17.3
98 %TILE	59.4	27.7	14.7	21.7
AAQ-10 Mohrenga				
MIN	46.3	21.4	9.8	12.8
MAX	58.6	28.2	13.5	20.4
AVERAGE	52.5	25.2	12.0	16.4

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98 %TILE	57.5	28.1	13.4	20.3
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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.

3.3 Ambient Noise Levels

Ambient noise level monitoring was carried out at the 10 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)	N-1	N-2	N-3	N-4	N-5	N-6	N-7	N-8	N-9	N-10	
Day Time	600	47.8	48.2	45.2	41.2	47.6	42.8	44.2	43.6	44.6	46.5
	700	50.6	48.6	47.2	42.6	48.9	44.6	44.6	45.5	48.3	47.3
	800	51.8	50.2	49.6	42.0	53.2	45.8	46.3	47.3	51.6	50.4
	900	53.8	50.9	53.7	44.2	51.8	47.6	51.2	51.2	50.8	52.9
	1000	54.2	52.7	55.2	49.6	52.6	52.4	53.9	50.6	52.9	51.2
	1100	53.4	52.6	53.2	43.7	53.1	46.8	49.5	53.4	51.3	50.6
	1200	49.7	50.8	52.7	48.3	51.2	48.7	46.3	50.8	50.7	49.7
	1300	48.6	51.6	49.6	44.5	49.4	46.8	51.2	50.0	49.4	51.6
	1400	51.2	49.6	51.2	47.8	50.2	49.3	47.8	46.8	52.6	48.8
	1500	47.9	47.6	53.6	48.3	49.2	52.4	49.3	48.7	51.9	51.3
	1600	46.2	49.2	51.2	43.9	52.6	47.3	51.4	49.6	50.6	50.6
	1700	47.2	50.2	49.6	42.6	50.7	45.2	44.6	47.2	51.4	52.4
	1800	51.6	48.6	48.6	43.1	48.9	45.8	49.2	48.2	47.6	47.9
	1900	48.9	47.2	51.2	42.0	50.2	45.0	47.3	46.7	48.6	48.2
2000	50.2	48.0	47.6	45.8	47.6	47.6	48.9	50.3	46.9	46.8	
2100	48.6	47.6	50.2	43.6	48.2	46.3	44.3	45.2	51.7	47.3	
2200	47.6	47.2	48.6	45.8	46.7	47.9	42.3	46.7	49.5	48.6	
Night Time	2300	45.2	46.5	43.2	42.3	45.9	41.2	39.6	44.0	42.3	46.2
	2400	41.6	43.8	42.1	40.6	44.2	39.7	40.0	42.6	43.0	43.1
	100	40.1	42.9	39.6	38.6	43.2	40.2	41.1	41.2	40.2	42.6
	200	38.6	41.8	38.7	37.4	41.6	38.6	39.7	41.6	37.6	40.2
	300	37.2	40.6	37.6	36.9	40.8	36.9	41.0	40.8	37.2	39.8
	400	41.3	42.8	39.2	37.2	41.6	37.4	40.6	39.8	40.2	40.3
	500	43.6	44.2	40.8	39.4	44.2	39.8	42.3	40.9	41.5	42.6
Range	37.2-54.2	40.6-52.7	37.6-55.2	36.9-49.6	40.8-53.2	36.9-52.4	39.6-53.9	39.8-53.4	37.2-52.9	39.8-52.9	
Ld	50.6	49.8	51.2	45.4	50.6	48.0	48.9	49.0	50.5	50.0	
Ln	41.8	43.6	40.6	39.3	43.4	39.3	40.7	41.8	40.7	42.7	
Ldn	51.0	51.3	51.0	47.0	51.6	48.4	49.5	50.0	50.6	50.9	

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

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the results is presented below:

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

- **pH** varies from to 6.75 to 7.51
- **Total Hardness** varies from 82 to 680 mg/L.
- **Total Dissolved Solids** varies from 170 to 1017 mg/L.

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

- **pH** varies from to 7.21 to 7.39
- **Total Dissolved Solids** varies from 164 to 192 mg/L.
- **BOD** varies from 1.8 to 2.2 mg/L.
- **COD** varies from 14.2 to 18.6 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 **6.24 to 8.37**
- Organic Matter was observed in the range of **0.30 % to 1.43 %**.

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	63.7	0.10	63.80	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.
- The water table will not be intersected during mining

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

- The mining in the riverbed area may cause the ground water contamination due to intersection of the water table.
- The municipal waste water disposed from the mining activity may cause contamination of surface water.
- Sediments which come along with the flow of water in river will be extracted otherwise the level of riverbed will increase and river may change its course and cause flooding of nearby villages and may also damage the life and property of the people.
- Surface run off distribution during rainy season may get affected due to excavated.
- 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.
- Domestic sewage will be generated which can create contamination.

MITIGATION MEASURES

- No natural course of water stream is interrupted or diverted due to mining activity; hence no impact on natural drain is anticipated.
- The water table will not be intersected during mining in the riverbed as ultimate depth restricted to 3m in project area.
- 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.

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- Practically there is no overburden or reject generating from the mining activity, 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 collected water shall 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.
- Proper analysis/Monitoring will be done to check the ground water.
- 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 as well as semi mechanized mining method.

Noise pollution is mainly due to operation of 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 & Excavators etc.

MITIGATION MEASURES

- **Maintenance of Vehicles:** - Good and regular maintenance of transportation vehicles will be ensured to keep the noise generated at minimum. The vehicles operating will be maintained and provided with good silencers.
- **Trained Operators:** - Only trained operators will be allowed to operate vehicles.
- **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. Workers and operators working at site will be provided with earmuffs.

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. It is proposed to total number of plants **1000 numbers sapling during three years.**

Table- 8 Details of Greenbelt sapling during 1st three years

Year	Plantation Description	Cost	Total Cost
1 st Year	1000 (250 Nos., Awala, 250 Nos, Peepal, 250 Nos., Neem & Mango, 250 Nos. Arjun & Bel) with Fencing	1000 No. x 30 Rs.= 30,000/- (Plants) Fencing = 30,000/-	1,40,000/-

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		(Fencing) Fencing Pillars=15000/-	
	Compost	5,000/- Tractor	
	Water (Aprox. 1000 KL)	60,000/-	
2 nd Year	Compost and Tree Guard maintenance and water	70,000/-	70,000/-
3 rd Year	Compost and Tree Guard maintenance and water	70,000/-	70,000/-
Total			2,80,000/-

4.5 Solid and Hazardous Waste Generation and Management

No solid waste will be generated.

4.6 EMP and CER Details

Details of environment management plan are given in **Table 9**.

Table 9: EMP Budget

Particulars	1st Year	2nd Year	3rd Year	4th Year	5th Year	
Pollution control generate due to dust generation during movement of vehicles from mine site to nearest approach road (approx.1.00 km)	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	
both side plantation on access road (1000 No's)	Amount for plantation (90% survival rate)	30,000	30,000	30,000	30,000	30,000
	Amount for Fencing	45,000	-	-	-	-
	Fertilizers, seeds & maintenance of plant	10,000	10,000	10,000	10,000	10,000
Environment Monitoring (Quarterly)	1,50,000	1,50,000	1,50,000	1,50,000	1,50,000	
Plantation of trees at Village Road (upto 2 K.M.)	1,00,000	30,000	30,000	-	-	
Total	4,35,000	3,20,000	3,20,000	2,90,000	2,90,000	

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.