

**EXECUTIVE SUMMARY OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT AND
ENVIRONMENTAL MANAGEMENT PLAN
FOR
LIMESTONE QUARRY
TOTAL MINE LEASE AREA - 16.61 Ha.**

TOTAL AREA OF DHAUR & CHUNKATTA MINE CLUSTER IS - 160.003 Ha.

S. No.	Project Proponent	Khasra No.	Area	Production/Year
1	Shri Saurabh Kumbhakar	Part of 865/1, Part of 865/2, 868, Part of 869, Part of 873, 888/3, 888/4, 888/5, 888/6, 889, 890, 891/1, 891/2, 891/4, 891/5, 891/6, 891/7, Part of 892/2, 892/3.	4.23 Ha.	2,00,025 Ton/Year
2	Shri Harishanker Kumbhakar	149, 260, 257/1, 257/2, 254, 256, 279/2, 279/3, 262/1, 262/2, 265/3, 263/1, 263/2, 279/1, 279/4, 270/2, 270/3, 269/3, 271/3, 271/1, 271/2, 276, 275, 432, 433/2, 433/1, 438, 439, 443/1, 443/2, 445, 441/1, 441/2, 446, 269/2, 270/1, 265/1, 264/1, 282, 265/2.	12.38 Ha.	5,00,010 Ton/Year

AT

Village - Dhaur & Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh

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

1. Shri Saurabh Kumbhakar ToR Letter No. 137/S.E.A.C.C.G./Mine/2725 Nawa Raipur Atal Nagar dated 08/04/2024
2. Shri Harishanker Kumbhakar TOR identification Number TO24B0108CG5741126N dated 30/07/2024

MONITORING PERIOD- 15th December 2023 to 14th JANUARY 2024

ENVIRONMENT CONSULTANT

P and M Solution

**Address: C-88, Sector 65, Noida -201301 – U.P,
A NABET ACCREDITED CONSULTANT**

EXECUTIVE SUMMARY

Project Proposal “Limestone Quarry” Mine comes under located at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh Proponent Shri Saurabh Kumbhkar and Shri Harishanker Kumbhkar (Proprietor) Dhaur and Chunkatta, Tehsil Patan, District Durg, C.G.	
Location of the applied area	
Village & Tehsil	Dhaur Village 1.5 km in NE direction and Chunkatta Village, Approx. 0.25 Km in NW direction
District & State	District-Durg, Chhattisgarh
Extent of the ML area	4.23 Ha and 12.38 Ha Private land
Survey of India Map No.	64 G/8
Transport Network	
Nearest City/ Town	Durg, approx.14Km in NW direction
Nearest Railway station	Durg railway station which is approx. 15 km in NW direction
Nearest Airport	Swami Vivekanand International Airport, Raipur- Approx. 33 km in NE.
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	Kharun River- Approx. 15km in E Direction

1.0 Introduction

The proposed “Limestone Quarry” Mine comes under located at Village Dhaur and Chunkatta, Tehsil- Patan, District- Durg, Chhattisgarh. The proposed production capacity of Limestone Quarry belongs to Shri Saurabh Kumbhkar is 200025 Tons/Annum, Shri Harishanker Kumbhkar is 500010 Tons/Annum. The lease area is private land. As per the EIA notification of Ministry of Environment Forests and Climate Change, Government of India (MoEF&CC), dated 14thSeptember, 2006, as amended from time to time. this project falls under category ‘B’ project, activity 1(a) of EIA Notification (due to cluster of mine lease area is more than 5ha.), an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) is required for obtaining Environmental clearance based on TOR as approved by the statutory authority, the TOR was granted by State Environment Impact Assessment Authority .

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

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, 2023 to 14thJanuary, 2024.**

1.1 Need for the Project

Stone is an essential mineral commodity of national importance. The region surrounds the project area is economically backward mostly dependent on seasonal farming. The per capita income of villages is much below the national average. The proposed project will have positive impact in-term of the socio-economic status of the people, increase opportunities for employment, and earn revenue in term of royalty, sales tax and district mineral fund to the state government. In India stone is used in the manufacturing of cement which fulfills the requirement of Industrial, infrastructure, and residential construction activities. It is also used in the manufacturing of Poly-fibre. The proposed limestone production will be used by cement plant of the region and overburden will be utilized for backfilling.

2.0 Topography and Drainage Pattern

Topography:

1. Shri Saurabh Kumbhkar

The area is about 1.5 km from the village Dhaur in the South West direction. The area having old pit up to depth of 30m (about 6100 sqm area) and rest part is almost flat, which is devoid of vegetation. The lease area is flat terrain with devoid of vegetation. The general surface level is 310 m from M.S.L. The lease area has been surveyed on a scale of 1:1,000 with contour interval of one meter. Kharun River is present about 15 km east of the lease area and small seasonal nala is present about 50m west of the lease area.

2. Shri Harishanker Kumbhkar

The area is about 0.25 km from the village Chunkatta in the South West direction. The lease area is flat terrain with devoid of vegetation. The general surface level is 310 m from M.S.L. The lease area has been surveyed on a scale of 1:1,000 with contour interval of one meter. Kharun River is present about 15 km east of the lease area and small seasonal nala is present about 75m west of the lease area.

Source- Approved Mine Plan

Drainage

The drainage pattern is dendritic to ub dendritic.

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

2.1 Geology

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

The area around Chunkatta and Dhaur village comes under Chandi Formation of Raipur Group of Chhattisgarh Supergroup. Chandi Formation comprises of Stromatolitic dolomite, limestone, glauconitic sandstone, shale.

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

The area around Chunkatta and Dhaur which is situated in Tehsil Patan is covered by limestone of Chandi formation of Raipur Group of Chhattisgarh Supergroup. This mineral body is homogeneous in nature. On the basis of detailed geological mapping nearby pits etc of the area and lithology of the area following sequence

Soil

Limestone

2.2 Reserves

Geological Reserve:

The reserves are calculated based on the following parameter:

Geological Reserve:

1. Saurabh Kumbhkar

About 6100 sqm area is excavated up to 30 m depth rest area is flat terrain which is devoid of vegetation. The soil cover is observed about 1.5 m. The Limestone is exposed in old excavated pit and nearby the old quarry area. On the basis of old excavated pit the reserve is taken 30m for the calculation of reserves below soil. The volumetric method of reserve calculation is adopted while the bulk density as 2.5 tones/cum.

2. Harishanker Kumbhkar

The area is flat terrain which is devoid of vegetation. The soil cover is observed about 1.0 m and waste weathered material is about 2.0m. The Limestone is exposed in old excavated pit and nearby the old quarry area. On the basis of old excavated pits nearby the reserve is taken 24m for the calculation of reserves below soil and waste material. The volumetric method of reserve calculation is adopted while the bulk density as 2.5 tones/cum.

A) Geological Reserve of Limestone in Quarry:

Reserves Calculation

Reserves	Shri Saurabh Kumbhkar	Shri Harishanker Kumbhkar
Geological Reserve (in Tons)	27,15,000Tons	74,28,000 Tons
Mineable Reserve	10,46,385Tons	37,07,730 Tons
Recoverable Reserve	10,14,993 Tons	35,96,498 Tons

Mineral Benefication:

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.

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

(Source- Approved mine plan)

2.3 tentative Plan of quarrying, annual program and plan for excavation from year to year for five year.

1. Saurabh Kumabhar

About 6100 sqm area is excavated up to 30 m depth rest area is flat terrain which is devoid of vegetation. The soil cover is observed about 1.5 m. Development work will be started from south of the area during 1st year. The soil so generate will be stacked along lease boundary and reclaimed excavated 7.5 m Barrier Zone. The proposed method of quarry will be open cast.

2. Harishanker Kumbhkar

The lease area is flat terrain with is devoid of vegetation. The soil cover is observed about 1.0 m and waste weathered material also generated below the soil at the depth 2.0. Development work will be started from North of the area during 1st year. The soil so generate will be stacked along lease boundary and also in proposed temporary dump area. The proposed method of quarry will be open cast.

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	
	Shri Saurabh Kumbhkar	Shri Harishanker Kumbhkar
1 st Year	1,00,005	3,00,000
2 nd Year	2,00,025	5,00,010
3 rd Year	1,00,005	3,00,000
4 th Year	1,00,005	3,00,000
5 th Year	1,00,005	3,00,000
Total	6,00,045	17,00,010

Conceptual Quarry Plan

1. Saurabh Kumabhakar

The estimated mineable reserve of this area is of the order of 1046385 tons (418554 m³) to 30 m depth below soil cover. The Conceptual quarry plan is prepared for the lease period of 5 years and anticipated life of mine is more than 7 years.

2. Harishanker Kumbhkar

The estimated mineable reserve of this area is of the order of 3707730 tons (1483092 m³) to 24 m depth below soil cover & OB. The Conceptual quarry plan is prepared for the lease period of 5 years. Due to the quarrying the generated over burden/mine waste will not be sufficient to reclaim the working pit. No any type of rehabilitation will be required in the proposed area because there is no any important monument, structure or villages come in the core zone. All dump of soil will be used for afforestation.

Exploration:

As the quarry area is less than five hectares, the prospecting I 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 3.0 m. The jack hammer will drill up to 1.5m depth and such as the balance excavation will be in three to four stages.

Blasting: (Broad Parameters)

1. Saurabh kumbhkar

The quarry operation will be in small scale and the maximum production per year will be 200025 tons (80010m³) 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.

2. Harishanker Kumbhkar

The quarry operation will be in small scale and the maximum production per year will be 500010 tons (200004m³) 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.

Storage of Explosives:

As Blasting will be done by licensed contractor, hence magazine is not required in mining area.

Precautions to be observed during Drilling and Blasting:

All the necessary precautions such as hoisting of red flag at a safe distance, alarming the people by whistling and shouting will be taken before blasting. A qualified blaster having blasters certificate will do blasting, Muffle blasting and wet drilling will be done to control flying rock particles to avoid effect on nearby agricultural fields.

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

Dumping of Waste Materials

1. Saurabh Kumbhkar

The area selected for dumping is around 0.8564 ha (along lease boundary) and 0.18 ha excavated safety zone area. Location of the proposed dumping site is shown in five year development and production plan. Dumping of soil bench in soil removed area will be bench height of 1.5 m.

2. Shri Harishanker Kumbhkar

The area selected for dumping is around 2.5508 ha (along lease boundary) and temporary dumped area in southern side. Location of the proposed dumping site is shown in five year development and production plan. Dumping of soil will be stacked along the lease boundary with maximum height 1.5 m and southern side temporary dumped area with 2.0 m height.

In the case of Quarry by machinery than the detail of machinery to be deployed

(The extent of manual quarrying or quarrying by the use of machinery and mechanical devices):

The proposed method of opencast quarrying using JH drilling and blasting. The drilling and blasting work will be done on contractual basis. The sizing of limestone (Minor Mineral) will be done by crushing and screening. The following calculation of the drilling, blasting, transportation and machineries are used on the basis of highest production rate 2,00,025 tons per annum in Saurabh Kumbhkar and 5,00,010 Tons in Shri Harishanker Kumbhkar during the proposed plan period.

Salient features of Quarrying:

1.	Type of ore to be quarrying out	Limestone (Minor Mineral)
2.	Method of Quarrying	Opencast
3.	Machineries used	Excavator, JCB, Jackhammer, Air compressor
4.	Maximum production (ROM in a year)	2,00,025 T and 5,00,010 T
5.	Average working days in a year	300 days
6.	Per day production	666.75 Tons and 1666.7 Tons

Machineries required is as under:

S.No.	Name	Nos.	Capacity	Purpose	Motive Power
1	Jack Hammer	3	32mm	For drilling	-
2	Compressor	3	625 cfm	For running jack hammer	Diesel Engine
3	JCB	1	2 cum	For loading and excavation	Diesel Engine
4	Dozer with ripper	1	-	For soil remover	Diesel Engine
5	Dumper/Hiawa	5	20 tons	For transportation of ROM	Diesel Engine
6	Water Tanker	1	1,000 litres	For sprinkling of on quarry road	Diesel Engine

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

7	Jeep	1		For transport of operators	Diesel Engine
8	First Aid	1		Fir First Aid	

Water Balance

The water required is mainly for dust suppression, green belt development, drinking and other domestic purpose during mining operations. Water requirement will meet from hired Tanker supply. The total water requirement will be approx. **6.5 and 10.0KLD.**

Particulars	Water Requirement	
	Shri Saurabh Kumbhkar	Shri Harishanker Kumbhkar
Domestic	2.5	2.0
Green Development	2.5	6.5
Dust Suppression	1.5	1.5
Total	6.5	10.0

Manpower

The mine will provide direct and indirect employment. Directly employment will be employed for extraction/collection, breaking, sorting, sizing/ powdering and loading of minerals in the mining area. All the workers will be employed as contract laborers.

Particulars	Manpower in Numbers	
	Shri Saurabh Kumbhkar	Shri Harishanker Kumbhkar
Skilled	17	17
Un-skilled	10	15
Total	27	32

3.0 Baseline Data, Impact Assessment and Management Plan

The EIA report incorporates one season data generated for a period from **15thOctober 2023 to 14thJanuary 2024.** A summary of the same is presented below:

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,2023	20.0	36.0	2.9
November, 2023	11.0	30.0	3.6
December, 2023	8.0	25.0	4.7

Source: Meteorological at station site

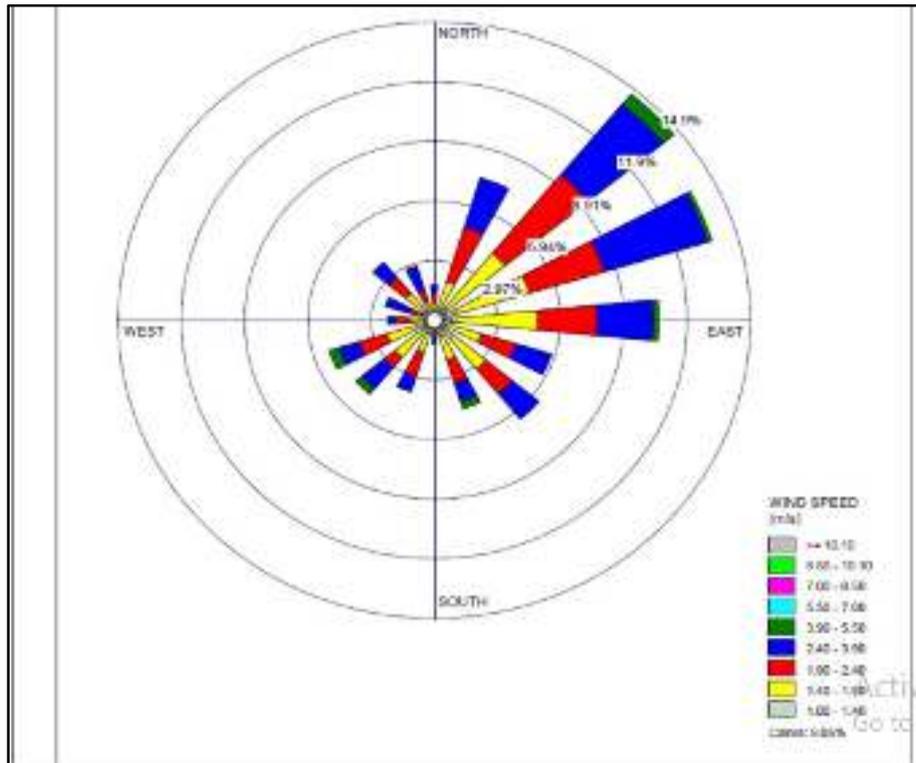


Figure 1: Wind Rose

3.2 Ambient Air Quality Status

The status of ambient air quality within the study area was monitored for the period of during 15thOctober 2023 to 14thJanuary 2024 at 8 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	71.3	28.6	13.2	19.7
MAX	82.6	33.4	15.6	23.3
AVERAGE	76.8	31.1	14.5	21.5
98 %TILE	82.6	33.4	15.6	23.0
AAQ-2				
MIN	67.4	27.5	11.5	18.5
MAX	74.6	31.2	14.6	23.2
AVERAGE	71.4	29.3	13.1	20.5
98 %TILE	74.0	31.2	14.6	22.8

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

AAQ-3				
MIN	70.6	27.3	12.2	18.7
MAX	82.4	33.6	14.5	22.5
AVERAGE	76.0	31.0	13.2	20.1
98 %TILE	81.9	33.6	14.5	22.4
AAQ-4				
MIN	70.2	27.6	12.6	19.4
MAX	82.5	33.6	16.3	23.4
AVERAGE	75.3	30.5	14.4	21.5
98 %TILE	81.9	33.2	16.3	23.4
AAQ-5				
MIN	63.4	25.4	11.8	18.7
MAX	77.9	32.6	14.6	23.3
AVERAGE	69.6	28.6	13.3	21.2
98 %TILE	77.4	32.5	14.6	23.2
AAQ-6				
MIN	62.8	25.8	11.9	17.0
MAX	72.4	30.4	15.2	20.3
AVERAGE	67.5	27.9	13.1	18.1
98 %TILE	72.0	30.3	14.9	19.9
AAQ-7				
MIN	69.8	27.8	11.6	19.7
MAX	78.9	33.4	16.4	27.6
AVERAGE	74.9	30.5	14.4	22.6
98 %TILE	78.6	33.0	16.3	26.7
AAQ-8				
MIN	61.2	25.8	10.6	15.8
MAX	73.4	32.8	13.6	19.4
AVERAGE	68.6	28.7	12.5	17.9
98 %TILE	73.0	32.0	13.6	19.4

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 8 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 6**.

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

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

Time (Hrs)		Project Site	N-2	N-3	N-4	N-5	N-6	N-7	N-8
Day Time	600	47.2	46.1	44.7	47.6	41.8	43.7	46.8	44.3
	700	48.6	47.2	46.7	50.0	43.5	45.4	49.2	47.0
	800	49.5	50.0	50.7	53.8	41.2	42.9	53.1	50.3
	900	54.2	53.6	52.1	54.5	45.4	47.3	50.3	52.2
	1000	55.8	56.3	54.9	56.2	50.8	52.7	51.8	53.7
	1100	58.3	57.2	52.1	56.6	43.8	45.7	54.1	51.9
	1200	54.7	55.6	49.7	55.1	48.3	49.3	55.7	50.7
	1300	53.0	52.8	48.1	56.2	46.2	47.0	49.2	49.5
	1400	49.2	48.1	49.7	51.6	47.8	49.7	52.1	51.3
	1500	51.2	50.6	50.9	50.0	50.1	50.6	53.1	52.4
	1600	50.2	49.8	50.3	55.0	45.1	47.0	51.3	49.7
	1700	44.1	43.8	52.9	52.0	42.5	44.4	55.1	50.1
	1800	55.1	54.6	52.2	54.1	44.3	46.2	50.3	47.9
	1900	51.2	49.3	49.1	51.6	43.5	45.4	52.1	48.3
	2000	52.3	51.4	51.1	54.2	47.4	49.3	48.7	47.3
	2100	51.1	50.6	49.3	51.7	44.5	46.4	47.8	49.7
2200	49.2	48.6	47.7	51.1	47.0	48.9	49.7	48.7	
Nigh t Time	2300	45.5	44.3	45.0	47.2	42.9	42.1	46.3	41.7
	2400	44.2	43.7	44.0	45.6	43.3	41.1	43.1	40.6
	100	42.1	41.5	40.0	43.0	40.6	40.3	38.7	39.9
	200	39.6	37.9	38.1	41.2	39.6	39.4	36.9	37.7
	300	38.4	39.0	36.7	40.2	38.6	38.2	37.7	36.9
	400	41.1	40.9	39.7	40.4	41.2	38.7	39.5	40.6
	500	42.6	43.0	41.1	45.0	42.2	40.0	43.1	41.9
Range	39.8-59.4	38.4-58.3	37.9-57.2	36.7-54.9	40.2-56.6	38.6-50.8	38.2-52.7	36.9-55.7	
Ld	53.9	52.8	52.3	50.7	53.7	46.4	48.0	51.9	

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

Ln	43.7	42.5	42.0	41.5	44.0	41.5	40.2	42.0
Ldn	57.0	52.7	52.2	51.0	53.8	48.6	48.7	52.0

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:

- **pH** varies from to 7.21 to 7.89
- **Total Hardness** varies from 146 to 496 mg/L.
- **Total Dissolved Solids** varies from 328 to 726.3 mg/L.

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

- **pH** varies from to 7.16 to 7.23
- **Total Dissolved Solids** varies from 113 to 136 mg/L.
- **BOD** varies from 2 to 2.6 mg/L.
- **COD** varies from 12.6 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 **6.811 to 7.58**
- Organic Matter was observed in the range of **0.34 % to 1.1%**.

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:

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

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	1.60	65.80	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.

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

- 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 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. It is proposed to total 6250 number of plants will be developed in 7.5 m Safety zone in both projects in which 5100 numbers of sapling done by Harishankar Kumbhkar and 1150 numbers of sapling done by Saurabh Kumbhkar.

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

PLANTATION EXPENDITURE IN THE 7.5 M SAFETY ZONE (Saurabh Kumbhkar)								
S. No.	ITEM	RATE (in Rs.)	QUANTITY	AMOUNT (in Rs.)				
				1 st Year	2nd year (90% survival)	3rd year (90% survival)	4th Year (90% survival)	5 th Year (90% survival)
1	Plants of local species i.e. Neem, Karanj, Kadam, Shirish, etc.	1150 (Rs 30 per sapling)	1150 Plants	34500	3450	3450	3450	3450
2	Fencing around with chain link wire including cement pillar	Number of Pillar (Rs 100 per Pillar)	288 Piilar	28800	-	-	-	-
3		Rs 200/mtr wire	1440 m	288000	-	-	-	-
4	Labour charge	-	-	50000	-	-	-	-
5	Plantation dig (45cm x 45cm x 45cm) size	Rs 20 per dig	1440 Plants	17400	1740	1740	1740	1740
6	Manure (cow dung / vermi compost) 250gm/plant	Rs 20 /kg	360 kg	7200	720	720	720	720
7	Water Tank for Water sprinkling	Rs 500 /day	240 days	120000	120000	120000	120000	120000
8	Gardner (Maintenance)	Rs 3000/month @ 12 month		36,000	36,000	36,000	36,000	36,000
9	Insecticide & Miscellaneous	-	-	30,000	3,000	3,000	3,000	3,000
	Total			611900	164910	164910	164910	164910

PLANTATION EXPENDITURE IN THE 7.5 M SAFETY ZONE (Harishankar Kumbhkar)								
S. No.	ITEM	RATE (in Rs.)	QUANTITY	AMOUNT (in Rs.)				
				1 st Year	2nd year (90% survival)	3rd year (90% survival)	4th Year (90% survival)	5 th Year (90% survival)
1	Plants of local species ie. Neem, Karanj, Kadam, Shirish, etc.	(Rs 30 per sapling)	5100 Plants	1,53,000	15300	15300	15300	15300
2	Fencing around	Number of	620 Piilar	62000	-	-	-	-

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

	with chain link wire including cement pillar	Pillar (Rs 100 per Pillar) Rs 200/mtr						
3			3400 m	680000	-	-	-	-
4	Labour charge	-	-	50000	-	-	-	-
5	Plantation dig (45cm x 45cm x 45cm) size	Rs 20 per dig	5300 Plants	106000	10600	10600	10600	10600
6	Manure (cow dung / vermi compost) 250gm/plant	Rs 20 /kg	1275 kg	25500	2550	2550	2550	2550
7	Water Tank For Water sprinkling	Rs 500 /day	240 days	120000	120000	120000	120000	120000
8	Gardner (Maintenance)	Rs 3000/month @ 12 month		36,000	36,000	36,000	36,000	36,000
9	Insecticide	-	-	40,000	4,000	4,000	4,000	4,000
10	Miscellaneous & Board			20,000	-	-	-	-
	Total			1292500	188450	188450	188450	188450

4.5 Solid and Hazardous Waste Generation and Management

No solid waste will be generated.

4.6 EMP and CER Details

Budgets for Environmental Management Plan is given here:-

PLANTATION EXPENDITURE ALONG WITH TREE GUARD IN THE BOTH SIDES OF ROAD								
S no.	ITEM	RATE	QUANTIT Y	AMOUNT 1 st Year (Rs.)	2 nd year (in Rs)	3 rd year (in Rs)	4th year (in Rs)	5th year (in Rs)
Total length of road 11.35 km = 11350 m , 2 sides of road = 11350 +11350 = Total 22700 m Number of Plants = 22700/5 m gap = 4540 trees								
1	Plants of local species ie. Neem, Aam, bargad, peepal,	50 rs per sapling	4540	2,27,000	454plant (90% survival)= 22,700			
3	Tree Guard	400/tree guard		18,16,000	-	-	-	-
4	Labour charge			5,00,000	-	-	-	-
5	Plantation dig	20 rs per	4540	90,800	454x 20 =	454x 20 =	454x 20 =	454x 20 =

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

	(45cm x 45cm x 45cm) size	dig			9080	9080	9080	9080
6	Manure (cow dung / vermi compost) 250gm/plant	20rs /kg	1135 kg	22,700	113.5 kg = 2270 Rs			
7	Water sprinkling cost (Dust suppression)	500rs /day	4 tanker	6,00,000	6,00,000	6,00,000	6,00,000	6,00,000
8	Gardner	3000/m onth @12 month	3 person =	1,08,000	1,08,000	1,08,000	1,08,000	1,08,000
9	Environment Monitoring (Quarterly)		-	10,00,000	10,00,000	10,00,000	10,00,000	10,00,000
10	Road maintenance 1.0 lac quarterly			4,00,000	4,00,000	4,00,000	4,00,000	4,00,000
11	Other Miscellaneous (Insecticides & Board)			1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
	Total			48,64,500	22,42,050	22,42,050	22,42,050	22,42,050

Total Cost for CEMP by Cluster Mines for Five Years (67 Mines) = Rs 1,38,32,700

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

Saurabh Kumbhkar

Area –4.23 hac

Per hectare CEMP cost is – 86,453 Rs.

Approximate Total CEMP Cost for 5 yr = 4.23 x 86453 = 365696 Rs.

Water tank and gardner cost for per hectare – Rs. 4425/yr

Water tanker and gardner cost for individual mine - 4425 x4.23 = 18718 Rs per year

Calculation of Road

Length of road for work done = 4.23 x 71 m= 300 M

Harishanker kumbhkar

Area – 12.38 hac

Per hectare CEMP cost is – 86,453 Rs.

Approximate Total CEMP Cost for 5 yr = 12.38x 86,453 =1070288 Rs.

Water tank and gardner cost for per hectare – Rs. 4425/yr

Water tanker and gardner cost for individual mine - 4425 x 12.38 = 54782 Rs per year

Calculation of Road

Length of road for work done = 12.38 x 71 m= 879 M

PLANTATION EXPENDITURE ALONG WITH TREE GUARD IN SIDES OF ROAD SAURABH KUMBHKAR

S No.	ITEM	RATE	QUANTITY	AMOUNT 1st Year (Rs.)	2nd year (in Rs)	3rd year (in Rs)	4th year (in Rs)	5th year (in Rs)
	Total length of road 300m , 2 sides of road = 300+300= Total 600m Number of Plants = 600/5 m gap = 120 trees							
1	Plants of local species ie. Neem, Aam, bargad peepal,	50 rs per sapling	120 Plants	6000	12 plant (90% survival) =600			
3	Tree Guard	400		48,000	-	-	-	-
4	Labour charge		120 plants	18000	-	-	-	-
5	Plantation dig (45cm x 45cm x 45cm) size	20rs per dig	120	2400	12 x 20 = 240			
6	Manure (cow dung / vermi compost) 250gm/plant	20rs /kg	30 kg	600	3kg = 60 Rs			
7	Total			77000	600	5100	5100	5100
8	Others (water			58374	58374	58374	58374	58374

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

	sprinkling and Gardner road maintenance, Environment Monitoring miscellaneous Insecticides & Board)							
	Total amount paid			1,33,374	59,874	59,874	59,874	59,874

Total cost in 5 yrs is Rs. 3,72,870

PLANTATION EXPENDITURE ALONG WITH TREE GUARD IN SIDES OF ROAD SHRI HARISHANKER KUMBHKAR								
S No.	ITEM	RATE	QUANTITY	AMOUNT 1st Year (Rs.)	2nd year (in Rs)	3rd year (in Rs)	4th year (in Rs)	5th year (in Rs)
	Total length of road 879m , 2 sides of road = 879+879= Total 1758 m Number of Plants = 1758/5 m gap = 352 trees							
1	Plants of local species ie. Neem, Aam, bargad , peepal,	50 rs per sapling	352 Plants	17600	35 plant (90% survival)=1750			
3	Tree Guard	400		140800	-	-	-	-
4	Labour charge		352 plants	52800	-	-	-	-
5	Plantation dig (45cm x 45cm) size	20rs per dig	352	7040	35 x 20 = 700			
6	Manure (cow dung / vermi compost) 250gm/plant	20rs /kg	88 kg	1760	8.75kg = 175 Rs			
7	Total			220000	5925	5925	5925	5925
8	Others (water sprinkling and Gardner road maintenance, Environment Monitoring miscellaneous Insecticides & Board)			170845	170845	170845	170845	170845
	Total amount paid			3,90,845	1,79,395	1,79,395	1,79,395	1,79,395

Total cost in 5 yrs is Rs. 11,08,425

CER Activities

It is proposed to undertake the need specific proposed CER activities in the surrounding areas of the mine. Harishankar Kumbhkar has proposed to incur budget of Rs 4,97,500/-for CER activities for 1st year cost and five year cost is Rs. 12,40,500/- and Saurabh Kumbhkar has proposed to incur budget of Rs 2,64,250/-for CER activities for 1st year cost and five year cost is Rs. 8,99,550/-. Plantation of

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

500 No’s and 150 No’s of Trees under Pavitra Van Area Yojna respectively. Details of CER activities proposed by project proponent are given here.

PLANTATION EXPENDITURE ALONG WITH TREE GUARD IN GOVT. LAND AS PER RECOMMENDED BY GRAM PANCHAYAT (Harishankar Kumbhkar)								
S. No.	ITEM	RATE (in Rs.)	QUANTITY	AMOUNT (in Rs.)				
				1 st Year	2nd year (90% survival)	3rd year (90% trees)	4th Year (90% trees)	5 th Year (90% trees)
1	Plants of local species ie. Neem, Bargad, Bel, Kadam, Jamun, Bargad, Peepal, etc.	500 (Rs 30 per sapling)	500 Plants	15000	1500	1500	1500	1500
2	Tree Guard	400/- per Tree Guard	500 Tree Guard	200000	-	-	-	-
3	Labour charge	-	-	50000	-	-	-	-
4	Plantation dig (45cm x 45cm x 45cm) size	Rs 20 per dig	500 Plants	10000	1000	1000	1000	1000
5	Manure (cow dung/ vermi compost) 250gm/plant	Rs 20 /kg	125 kg	2500	250	250	250	250
6	Water Tank for Water sprinkling	Rs 500 /day	240 days	120000	120000	120000	120000	120000
7	Gardner (Maintenance)	Rs 5000/month @ 12 month	-	60,000	60,000	60,000	60,000	60,000
8	Insecticide Powder	-	-	30,000	3000	3000	3000	3000
9	Miscellaneous for Board & others	-	-	10,000	-	-	-	-
	Total			4,97,500	1,85,750	1,85,750	1,85,750	1,85,750

PLANTATION EXPENDITURE ALONG WITH TREE GUARD AROUND THE VILLAGE POND GOVT. LAND 576 (AREA 4.66 Ha Area) – Saurabh Kumbhkar								
S. No.	ITEM	RATE (in Rs.)	QUANTITY	AMOUNT (in Rs.)				
				1 st Year	2nd year (90% survival)	3rd year (90% trees)	4th Year (90% trees)	5 th Year (90% trees)
1	Plants of local	150	150 Plants	4500	450	450	450	450

Executive Summary for “Limestone Quarry” at Village Dhaur and Chunkatta, Tehsil- Patan, District Durg, Chhattisgarh of Shri Shri Saurabh Kumbhkar and Harishanker Kumbhkar

	species ie. Neem, Bargad, Bel, Kadam, Jamun, Bargad, Peepal, etc.	(Rs 30 per sapling)						
2	Tree Guard	400/- per Tree Guard	150 Tree Guard	60000	-	-	-	-
3	Labour charge	-	-	15000	-	-	-	-
4	Plantation dig (45cm x 45cm x 45cm) size	Rs 20 per dig	150 Plants	3000	300	300	300	300
5	Manure (cow dung/ vermi compost) 250gm/plant	Rs 20 /kg	37.5 kg	750	75	75	75	75
6	Water Tank for Water sprinkling	Rs 500 /day	240 days	120000	120000	120000	120000	120000
7	Gardner (Maintenance)	Rs 3000/month @ 12 month	-	36,000	36,000	36,000	36,000	36,000
8	Insecticide Powder	-		20,000	2000	2000	2000	2000
9	Miscellaneous for Board	-		5,000	-	-	-	-
	Total			264250	158825	158825	158825	158825

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 approx. d to contain the various pollutants within permissible limits. Green belt development around the area will Saurabh Kumbhkar also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the project.