EXECUTIVE SUMMARY OF DRAFT EIA REPORT

FOR

Environmental Clearance for Proposed Chikhali(C) Riverbed Sand Mining Project

Address of Applied land	Land Khasra	Area of applied lease (Ha)
Village – Chikhali Tehsil – Arang, District- Raipur, Chhattisgarh	**1127 (part)**	**10.00**

Applicant Name & Address

Name of Applicant	Address
Rajendra Kumar Khediya	**S/o. Shri Purshottam Das Khediya Niwasi – Nand Kishore Vihar, 27 Kholi, Tehsil & District – Bilaspur (Chhatisgarh) Pin Code 495001**

Terms of Reference

Name of Applicant	Number and date of Terms of reference
Rajendra Kumar Khediya	**TOR Identification No. TO24B0107CG5206389N, Date 30.07.2024 File No. – OL/TOR/MIN/RAIPUR/3002**

ENVIRONMENTAL CONSULTANT

ULTRA-TECH
Environmental Consultancy & Laboratory
(Lab. Gazetted by MoEF-Govt. of India)

M/s. ULTRA-TECH
ENVIRONMENTAL LABORATORY AND CONSULTANCY

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NABET Accreditation Number: NABET/EIA/2023/RA 0194
Valid Upto – 03 Jan, 2025

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1.0 Introduction

The proposed project is a project of Mining of Riverbed Sand (lease area – 10.00 Hect. of Riverbed Sand) at village Chikhali, tehsil Arang, district Raipur, state Chattisgarh. Details of the entire lease are discussed in the further chapters. The lease holders of the area will be Rajendra Kumar Khediya having area of 10.00 Ha. TOR issued in favour of project proponent whose details is as follow –

Chikhali (C) Sand Mine **–** TOR identification no.-TO24B0107CG5206389N dated 30.07.2024, File No. OL/TOR/MIN/RAIPUR/3002 enclosed as ***Annexure – 1*** of this report.

As per MoEF Notification dated 15.01.2016 Appendix – XI (6) 'A cluster shall be formed when the distance between the peripheries of one lease is less than 500 m from the pheriphery of other lease in a homogeneous mineral area'. The proposed Riverbed Sand mining is an individual mine.

According to above, information about the mines coming under B1 category whose ownership and lease details is as follows.

- **Project Location –**

The proposed project of Chikhali Riverbed Sand mine having an area of 10.00 hect and situated at village Chikhali, tehsil Arang, district Raipur, state - Chhattisgarh under khasra no. 1127(Part). Applied production is 1,80,000 cum/yr. The proposed method of mining is open cast semi mechanized mining.

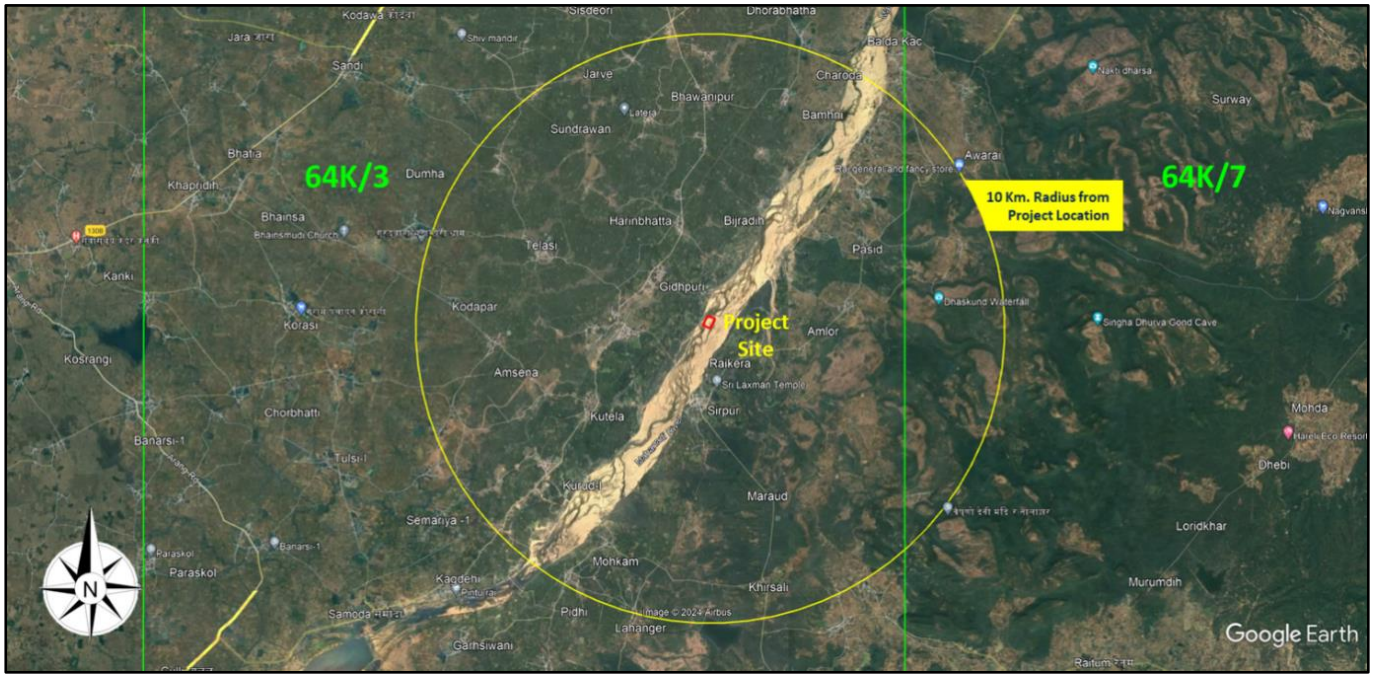

Figure 1: Location map of the Proposed Project Site

Table E.1: Environmental Setting of Proposed Riverbed Sand Mining Projects

<table>
<tr><th>Particulars</th><th>Details</th></tr>
<tr><td>Name of the Project</td><td>Chikhali (C) Riverbed Sand Mining Project, Area: 10.00 Ha.
(Govt. land)</td></tr>
<tr><td>Location of the Project</td><td>village Chikhali, tehsil Arang, district Raipur, state Chhattisgarh</td></tr>
<tr><td>Geographical Coordinates:</td><td>
<table>
<tr><th>Pillars</th><th>Latitude(N)</th><th>Longitude(E)</th></tr>
<tr><td>BP 1</td><td>21°22'13.90"N</td><td>82°11'1.40"E</td></tr>
<tr><td>BP 2</td><td>21°22'24.20"N</td><td>82°11'7.38"E</td></tr>
<tr><td>BP 3</td><td>21°22'20.70"N</td><td>82°11'16.00"E</td></tr>
<tr><td>BP 4</td><td>21°22'10.10"N</td><td>82°11'10.15"E</td></tr>
</table>
</td></tr>
<tr><td>Size of the Project</td><td>10.00 Ha</td></tr>
<tr><td>Nearest Highway</td><td>NH - 53 at 17.00 km towards south (Raipur - Saraipali Road)
SH – 09 at 14.90 km towards north-west (Raipur-Balodabazar Road)
(As per Mining Plan)</td></tr>
<tr><td>Nearest railway station</td><td>Belsonda at 28.45 km towards south.</td></tr>
<tr><td>Nearest Airport</td><td>Raipur at 51.50 km towards south-west.</td></tr>
<tr><td>Nearest town/City</td><td>Palari – 17.50 km,</td></tr>
<tr><td>Densely populated or built-up area</td><td>Palari – 17.50 km North-West
District Headquarter Raipur – 55.50 km South-west</td></tr>
<tr><td>Archaeologically important places</td><td>None within 10 km radius</td></tr>
<tr><td>Water Body</td><td>
<table>
<tr><td>Reservoir/ Dam</td><td>-</td><td>At 9.90 km towards south-east</td></tr>
<tr><td>Irrigation Canal</td><td>-</td><td>1.30 km towards west.</td></tr>
<tr><td>Water Supply / Irrigation Scheme / Anicut</td><td>-</td><td>Anicut at 10.85 km towards south-west</td></tr>
<tr><td>Nalla</td><td>-</td><td>Nalla at 660 m towards north-west</td></tr>
<tr><td>Tank /Pond</td><td>-</td><td>Village pond at 1.90 km towards north-west.</td></tr>
</table>
</td></tr>
<tr><td>Protected areas as per Wildlife Protection Act (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)</td><td>None within 10 km radius</td></tr>
<tr><td>Reserved / Protected Forests</td><td>1. Near Khamtarai : 0.60 Km.
2. Near Sirpur: 1.50 Km.
3. Near Pidhi: 9.00 Km.
4. Near Mohkam: 6.15 km.</td></tr>
</table>

Particulars	Details
Defense Installations	None within 10 km radius
Seismicity	Since project site comes under Seismic zone II, which is least active zone for earthquakes as per IS: 1893 (Part 1: 2002).
Wildlife Sanctuary	None within 10 km radius
National Park	None within 10 km radius
Biosphere reserves	None within 10 km radius
Important migration routes of birds	None within 10 km radius
Ramsar sites (Wetlands of International Importance	None within 10 km radius
Unique or threatened ecosystems	None within 10 km radius
Important topographical features, including ridges, river valleys, shorelines, and riparian areas	None within 10 km radius
Mangrooves	None within 10 km radius
Physical Sensitive Receptors	None within 10 km radius
Notified Ground Water Zone by CGWA	None within 10 km radius
Critically Environmental polluted Area	None within 10 km radius
Pollution Sources	None within 10 km radius

2.0 Project Description

The proposed project of Chikhali Riverbed Sand mine having a cluster area of 10.00 Ha. is situated at village - Chikhali, tehsil - Arang , district - Raipur, state Chhattisgarh. The proposed method of mining is open cast semi mechanized mining.

Table E-2: Salient Features of the Proposed Mining Project

INFORMATION	DETAILS
Name of the project	Chikhali (C) Riverbed Sand Mine
Village	Chikhali
Tehsil	Arang
District	Raipur

State	Chhattisgarh
Toposheet No	64 K/3, 64K/7
Name of Lease holders	Rajendra Kumar Khediya
Address and Contact details of Lease Holders	S/o. Shri Purshottam Das Khediya Niwasi- Nand Kishore Vihar, 27 Kholi, Dist. – Bilaspur, Pin code – 495001
Name of the Mineral to be mined	Riverbed Sand
Type of land	Govt. River Land
Status of Operation (New Project or Existing Project operating since)	New Project
Mine Area	10.00 Ha.
Ultimate depth of mining	3 m
Minable Reserve	1,80,000 cum/yr
Production Capacity	1,80,000 cum/yr
Life of Mine	The applied area is a riverbed sand mine, where the mine pit gets replenished during the monsoon season every year through replenishment potential of Mahanadi.
Quantity of topsoil and Overburden estimated to be removed	Nil. This is ordinary river bed sand. There have no any top soil or overburden.
Depth of Ground Water Table	4.15 mtr of depth from top surface layer.
Method of Mining	Opencast Semi-Mechanized
No. of working days	240 Days
Seismic Zone	Seismic Zone II

2.1 Mining Methodology

The method of mining is open cast semi-mechanized i.e. ordinary sand will be excavated in layers of 1 meter depth to avoid ponding effect and after first layer is excavated; the process will be repeated for the next layer so on up to a depth of 3 meter in Riverbed. Sand will be gathered in small hips on suitable areas as instructed for loading purpose. Loading will be done by light capacity loaders.

2.2 Water Requirement-

The total water requirement shall be 9.75 KLD for domestic, green belt and sprinkling purpose, which will be sourced from river channel or from Water Tankers from nearby village. Detail of water requirement is given below:

Table E-3.1: Water Requirement Details for Chikhali (c)

Sr. No.	Usage	Water Requirement	
1.	Greenbelt Development@ 2.0 L/tree	2000 Trees X 2.0 Lit/day = 4,000 Lit/day	4.00 KLD
2.	Dust Suppression @ 0.5 L/Sqm (twice a day)	Haul /Approach road Area = (1300 m Length x 4 m width = 5,200 sqm.) x 0.5 li/sqm = 2,600 lit /day x 2 time = 5,200 lit/day	5.25 KLD
3.	Domestic Purpose @ 20 lpd/worker	24 workers x 20 lit per day = 480 Lit/Day	0.50 KLD
		Total ::	**9.75 KLD**

2.3 Power Requirement

Power is not required in operation phase of the proposed project, as diesel equipments will be used. Open cast semi mechanized method will be used for excavation. There is no power requirement for the project as excavators will run on diesel and the excavation will be done only day time.

2.4 Manpower Requirement

The mining project will generate direct & indirect employment. About 24 per day people will get direct employment, and some persons will also be affected indirectly and employed with allied and related industries, such as transportation, maintenance, etc. Following staff & workers are proposed to be employed: -

Table E-4: Manpower Details of Chikhali Sand Mine

S.No.	Category	No. of persons
1	Assistant Manager	1
2	Foreman	1
3	Supervisor staff	1
4	Supervisor cum First Alder (Skilled)	2
5	Semi – Skilled/ skilled Labours	2
6	Unskilled personnel	2
7	Driver and Machine operators	15
Total		**24**

If mining is permitted solely through manual methods, the number of mining equipment will decrease, while the required manpower will increase, aligning with the granted annual production capacity.

3.0 Description of Environment

The area around the proposed mining site has been surveyed for physical features and existing environmental scenario. The field survey and baseline monitoring has been done from the period of Post monsoon Season (21st October 2023- 21st January 2024).

The observations for Post monsoon Season (21st October 2023 - 21st January 2024) are summarized below:

3.1 Meteorology

The secondary meteorological data of the study period collected from (https://www.nasa.gov.in/). The month wise meteorological data is given in ***Table E-5.***

Table E-5:0Meteorological Data of the study area (IMD)

Period	Wind Speed (m/s)			Temp (°C)			Relative Humidity (%)			Rainfall (mm)			Solar Radiation		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Oct -23	3.66	0.34	1.93	28.4	14.24	20.87	100	53.25	75.93	0	0	0	852.63	0	224.9
Nov -23	5.11	0.23	2.24	27.36	12.21	20.24	100	51.94	82.81	0.71	0	0.01	761.56	0	172.13
Dec -23	7.43	0.38	2.41	26.35	10.13	16.82	100	44.62	80.95	1.92	0	0.04	727.59	0	146.89
Jan - 24	3.69	0.13	2.28	26.23	7.38	17.93	100	44.44	78.57	0.22	0	0.002	764.33	0	138.5

Source: Weather Summary for 21th October 2023 - 21th January 2024(https://www.nasa.gov.in/)

3.2 Air Environment

The ambient air quality is carried out at 08 locations in and around the project site and studies are carried out as per CPCB standards. It is observed that, all the values are within the prescribed limits as per National Ambient Air Quality Standards (NAAQS), 2009.

The observations for Post monsoon Season (21st October 2023- 21st January 2024) are summarized below:

3.3 Noise Environment

Noise levels were monitored in eight locations including project within the study area. The noise levels ranged between 52.1 to 58.8 dB (A) during day time and noise levels ranged between 42.2 to 49.0 dB (A) during night time. Over all the monitored noise levels are found to be within the stipulated standards set by CPCB.

3.4 Water Environment

In order to establish the baseline water quality, 3 ground water and 5 surface water samples were collected and analyzed in the study area. The quality of surface water samples was compared with surface water specification IS 2296:1982 and the surface water quality comes under Class B for SW1 & SW4 and Class C for rest of the stations. The ground water samples were compared with drinking water specification IS 10500:2012 standards.

3.5 Soil Quality

A total of 8 samples in and around the project site are collected and analysed. It has been observed that the pH of the soil quality ranged from 6.8 (S3) to 7.7 (S8) indicating that the soil is slightly alkaline in nature.

Table E- 6: ENVIRONMENTAL BASELINE STUDY

Particullar	Number of Locations	Description
Background Ambient Air Quality Monitoring	Sampling was done at 8 Locations	PM_{10} :- 43 to 65 μg/m^3 $PM_{2.5}$:-16 to 38 μg/ m^3 SO_2 :- 5 μg/ $m^3$to 10μg/ m^3 NOx:- 7 to 26 μg/ m^3 CO:-0.1 to 1.4 mg/ m^3 SiO_2-0.01 to 0.04 μg/ m^3
Noise Level Monitoring	Monitored at 8 Locations	Noise Level During Day Time :– 52.1 to 58.8 dB (A) Noise Level During Night Time:– 42.2 to 49.0 dB (A)
Water Sampling	Ground water sampling was done at - 3 Locations	pH :- 7.3 to 7.9 ; TDS :- 434 to 512 mg/l ; Total Hardness :- 264 to 332 mg/l SO_4 :-58 mg/l to 63 mg/l; Chloride :- 72 mg/l to 92 mg/l; Zn & Fe: - Below detectable limit.
	Sampling was done at- 5 Surface water	pH :- 7.5 to 7.9 ; TDS :- 238 mg/l to 588 mg/l; Dissolve oxygen: - 5.5 to 5.8 mg/l. Chloride :- 52 mg/l to 136 mg/l; Calcium :- 27 mg/l to 74 mg/l; Magnesium :- 16 mg/l to 42 mg/l; Total Hardness :- 134 to 356 mg/l ;
Soil Sampling	Sampling was done at 8 Locations	pH :- 6.8 to 7.7; Nitrogen:- 181 to 329 kg/ha. Phosphorus:– 48 to 85 kg/ha

		Potassium :– 256 to 404 kg/ha Electric Conductivity:- 327 to 463 ms/cm

Land Use/Land Cover of the Study Area

The project location is situated in Chikhali is a village in the Arang Tehsil of Chattisgarh's Raipur District. It is 37 Km towards East from District headquarters Raipur. Raipur, the state capital, is 38 Km away from the project site. Mahasamund, Gobra nawapara, Raipur, Birgaon are the nearby Cities to project site. This Place is in the border of the Raipur District and Mahasamund district is east towards this place. The village area falls on the Survey of India Toposheet No. 64 K/3 of SOI (Survey of India). The LULC map in ***Figure 11.2*** shows that the analysis consists of 9 areal classes Water body, River, Open Land, Crop Land, Settlement, Forest, Shrub Land, vegetation, and Sand. Chikhali village has a total land area of 10 hectares. According to recent censes (2011) Population of study area is (10 Km radius from project site) 79,915 in 16,984 households. Male population is 39,837 and female population is 40,078. According to census 2011; in the study area the average literacy rate is 59.2%, whereas out of total literate population the male literacy is 58.6% and female literacy is 41.4% in the study area.

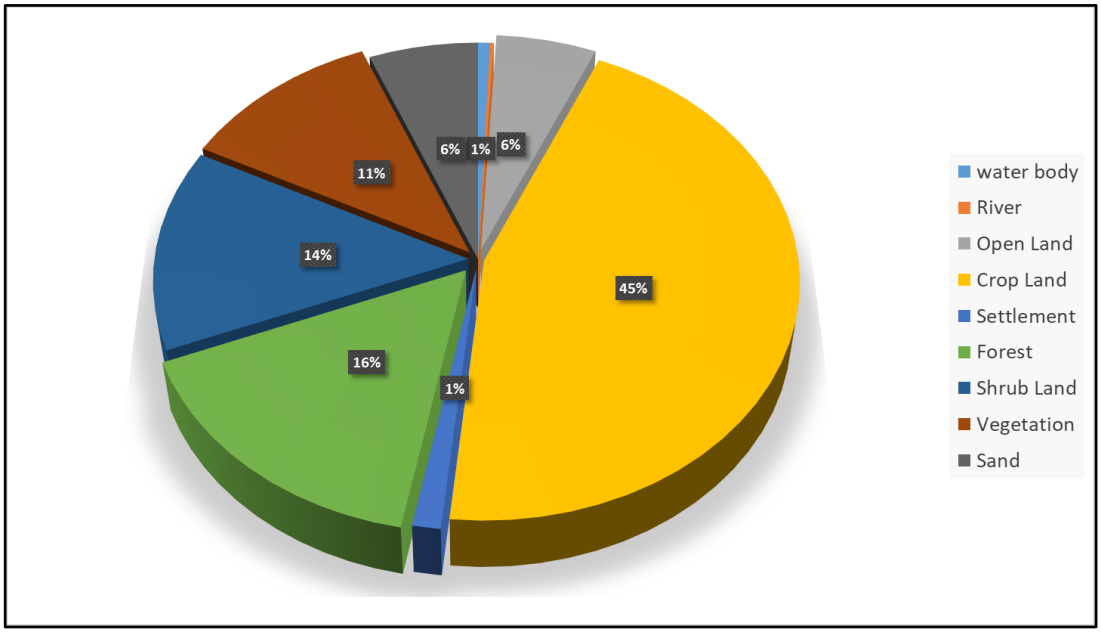

Figure 2: LULC Classification (10 km radius Proposed Project Area) of the project site

3.6 Biological Enviroment

The ecological study of the area has been conducted within 10 km radius of the project site in order to understand the existing status of flora and fauna to generate baseline information. Following PF & RF is being observed within 10 km surrounding from the project site.

SN	Name of forest block	Type of Forest	Distance (km)
1	Near Khamtarai	Reserved forest	0.60
2	Near Sirpur	Reserved forest	1.50
3	Near Pidhi	Reserved forest	9.00
4	Near Mohkam	Reserved forest	6.15

3.7 Socio-economic Environment

According to recent censes (2011) Population of study area is (10 Km radius from project site) 79,915 in 16,984 households. Population density of the study area is 245 person per Sq. Km.

As far as the population share of males and females is concerned, the male and female population share in the study area is almost equal. The total female population in the study area is 40,078, which is slightly higher than the male population of 39,837.

4.0 Anticipated Environment Impacts and Environment Management Plan

Land/Soil Environment Impact Mitigation

The mitigation measure of the land environment includes:

- The Riverbed Sand excavated from the lease area will be completely selleable resulting no dump within the lease area.
- Due to semi mechanised mining operation emission from the Riverbed Sand mines are negligible, there will be no impact on the surrounding soil quality and cropping pattern of the area.
- The propose project falls under the seismic zone –II (Low Hazard Risk Zone). Since this project will not have physical infrastructure to be constructed, no impact of seismicity is envisaged in this project. Further, this project will not change/alter the seismic behaviour of the area.

Air Impact Mitigation

The mitigation measures undertaken in the mine for control of air pollution are:

- Checking of vehicles and machinery to ensure compliance to Indian Emission Standards Transportation vehicles and machinery to be properly and timely maintained and serviced regularly to control the emission of air pollutants in order to maintain the emissions of NOx and SOx within the limits established by CPCB.
- Total 9.75 KLD water required for riverbed sand mines towards dust suppression purpose for which 1 no. of water tanker with 4000 liter capacity will be hired and used for water sprinkling twice in a day in haul roads, dumping site, loading and unloading site of each lease and this will be regularly monitored by the lease management. Water sprinkling on transport road side, stock yard (if any) etc. will be done by tractor mounted water sprinkler.
- Regular impaction and grading of haul roads will be done to clear the accumulation of loose material
- All the mines workers will be provided with the dust masks.
- Trees can act as efficient biological filters. As this is a small lease, the area available for plantation is very less. However a well-planned plantation programme has been proposed for the mining area to arrest the dust pollution within the lease boundary. There is the proposal for continuous plantation along the river bank and both side of the road connecting the cluster.
- Vehicles with valid PUC shall be used for transporting the minerals to avoid the exhaust emission.
- A greenbelt development plan is prepared with local species. The greenbelt on the periphery will reduce the dust level sits
- Regular monitoring of the air quality as per the monitoring plan detailed in Chapter 6 of this EIA report shall be adopted during the operation phase, to ensure that, the air quality is within the desired limits prescribed by CPCB.

Noise Impact Mitigation

- No noise polluting work shall be carried out in the night hours
- Provision of PPE's for the workers
- Vehicles to be serviced regularly and maintained properly to avoid any unwanted generation of noise or vibration from them
- Green belt plantation and garden trees will help in reducing the noise, traffic related pollution and heat island effects.

- Proper lubrication, muffling and modernization of equipment shall be used to reduce the noise during operation phase.
- Regular monitoring of the noise levels as per the monitoring plan detailed in Chapter 6 of this EIA report, shall be adopted during the operation phase, to ensure that, the noise levels are within the limits prescribed by CPCB.

Water Impact Mitigation

- Provision of temporary toilets for laborers
- Domestic waste water will be treated into septic tank followed by soak pit outside of the proposed cluster project with a safe distance and no wastewater will be allowed to be get discharged into the water body
- Any areas with loose debris within the leasehold should be planted.
- Ground water table will not be intersected during the mining activity

Biological Impact Mitigation

- Green Belt will be developed along with river bank, haul roads and plantation will be done on undisturbed area.
- Total area of green belt proposed would be nearly 20 % of the mining lease and surrounding area.
- Local species will be planted in consultation with Forest Department.

Socio-Economic Environment Impact Mitigation

- Employing local people for mining work.
- Providing proper facilities for sanitation for the construction workers such as temporary toilets.
- Barricades, fences and necessary personnel protective equipment shall be provided to the construction workers.
- The health of workers will be checked for general illness; at periodic intervals, as per the local laws and regulations.

5.0 Environmental Monitoring Program

Environmental monitoring shall be carried out at the locations to assess the environmental health in the post period. A post study monitoring programme is important as it provides useful information on the following aspects.

- It helps to verify the predictions on environmental impacts presented in this study.

- It helps to indicate warnings of the development of any alarming environmental situations, and thus, provides opportunities for adopting appropriate control measures in advance.

Detailed EMP plan during the operation phase is given chapter 6 of EIA report.

6.0 Risk Assessment

The hazards and its risk assessed during the operation phase of the proposed Riverbed Sand mining project are low, medium & high. The project proponents are proposed to implement all the mitigation measures to prevent the impact or consequences of the risk expected to be happened in both the project sites. The level of impact after implementing the mitigation measures will be low/medium in all the hazards identified.

7.0 Emergency Response and Disaster Management Plan

Impact of disaster can be significantly reduced through attempts at preparedness, mitigation, and post-event rehabilitation work. Based on hazard identification in the proposed project, an emergency plan has been prepared and the same plan will be implemented by the project implementing agency with the coordination of District Authorities to minimize the damage. The risk assessment and disaster management plan is detailed in ***Chapter 7 of the EIA report.***

8.0 Project Benefits

Mining is back bone of infra-structure development of country. Proposed project has following benefits as given below:

- Employment for local people
- Revenue for the State Government in form of excise duties, GST, taxes, levies etc.
- Generate business opportunity for the people
- Need based funds will be used for welfare of people in villages
- EMP funds will improve environmental quality.
- The operation of the Riverbed Sand mining would help to improve socio-economic condition of people in villages through separate fund allocated for Need Based Activity.

9.0 Budget for Social Development

The total estimated cost of the project is 82.36 lacs. Rs 1,68,000/- lac will be allocated for Need based activity for causes of village for drinking water, sanitation, education, health.

10.0 Environment Management Plan (EMP)

The detailed Environment Management Plan has been prepared based on the mining activities and the impacts imparting on land/soil, air, noise, water by the activities. The EMP and the cost for the environment protection measures are detailed in Chapter 10 of EIA report.

Expenditure Proposed for Environmental Protection Activities:

S.No.	Particulars	Chikhali (C) Riverbed Sand Mine	
		Capital Cost in Rs	Reccuring Cost in Rs.
1	Air Pollution Control	-	72,000
2	Nadi Tat Ropnipariyojna (Green Belt Development)	2,72,600	3,20,000
3	Environment Monitoring	-	30,000
4	Maintenance of Road	-	1,00,000
5	Facilities for Mine workers	50,000	1,08,000
6	Health Check-up Camps for Villagers	-	50,000
	Total::	3,22,600	6,80,000
Total Capital Cost in Rs.		**3,22,600**	
Total Reccuring Cost in Rs.		**6,80,000**	
Total Cost of EMP in Rs.		**10,02,600**	

11.0 Conclusion

As discussed, it is safe to say that the collection of minor minerals from the proposed lease area is not likely to cause any significant impact on the ecology of the area as the mineral is and waste generated is non-toxic and does not harm the surrounding environment.

Adequate measures will be taken to control the fugitive emissions to be generating during mining operation. Socio-economic condition of the surrounding villages will improve in long run due to involvement of local population and improvement of infrastructure facilities. Green belt development in the statutory boundary, approach roads, schools are proposed with the participation of local people. This proposed plantation in the area will improve the aesthetic look along with betterment of ecology and environment of the locality.