EXECUTIVE SUMMARY OF DRAFT EIA REPORT

FOR

Environmental Clearance for Proposed Riverbed Sand Mining Project

(Minor mineral)

The total area is 10 ha

At

Village: - Parewadih, Gram Panchayet – Parewadih ,
Tehsil- Magarlod, District-Dhamtari, State- Chhattisgarh
Khasra No. 145

APPLICANT

Mukesh Patel
C/o Tikaram Patel
313, Ward No.16, Madhi
Village/City – Raipur, Tehsil – Raipur
District – Raipur (Chhatisgarh)
Pin Code - 493116

ENVIRONMENTAL CONSULTANT

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

M/s. ULTRA-TECH
ENVIRONMENTAL LABORATORY AND CONSULTANCY
A QCI-NABET Accredited Environmental Consulting Organization
Unit No. 206, 224, 225 Jai Commercial Complex, Eastern Express Highway,
Opposite Cadbury Factory, Khopat, Thane (West) – 400 061
Tel: 7498562574, 9051017983
Email: kolkata@ultratech.in, deonarayan1960@gmail.com
NABET Accreditation Number: NABET/EIA/2023/RA019
Validity Up to 09/03/2023

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

EXECUTIVE SUMMARY

1.0 Introduction

The proposed project of Parewadih Riverbed Sand mine on Pairi River is a mining project near Village- Parewadih, Tehsil- Magarlod, District: Dhamtari, State: Chattishgarh. Mukesh Patel has applied via tender for participating in E-Auction of Parewadih Riverbed Sand mine on Pairi river Village- Parewadih, Tehsil- Magarlod, District: Dhamtari, State: Chattishgarh. The block area comprises of 10 Ha. under Khasra No. 145. The E-Auction process was conducted in accordance with Chhattisgarh Minor Mineral ordinary sand {Quarrying and Trade}Rules, 2019 and letter of intent has been issued under 7(1) vide letter number 744/Khanij/Nivida/2022 Dhamtari dated 05/04/2022 and issued by Assistant Mining Officer, Office of Collector (Mine Branch), District - Dhamtari.

This mining project comes under Category 'B1' (Cluster situation) Project or activity 1(a) as per EIA Notifications 2006, and its subsequent amendments and will be appraised at SEAC, Chattisgarh. The lease is falling in the cluster as per 15th January 2016 EIA Notification of MoEF&CC and NGT order dated13th September 2018.

Project Location

Khasra No: 145 of district Village- Parewadih, Tehsil- Magarlod, District: Dhamtari, State: Chattishgarh. Parewadih Sand Mine Project mine of Lessee Mukesh Patel featured in the Survey of India Toposheet No. 64 H/13.

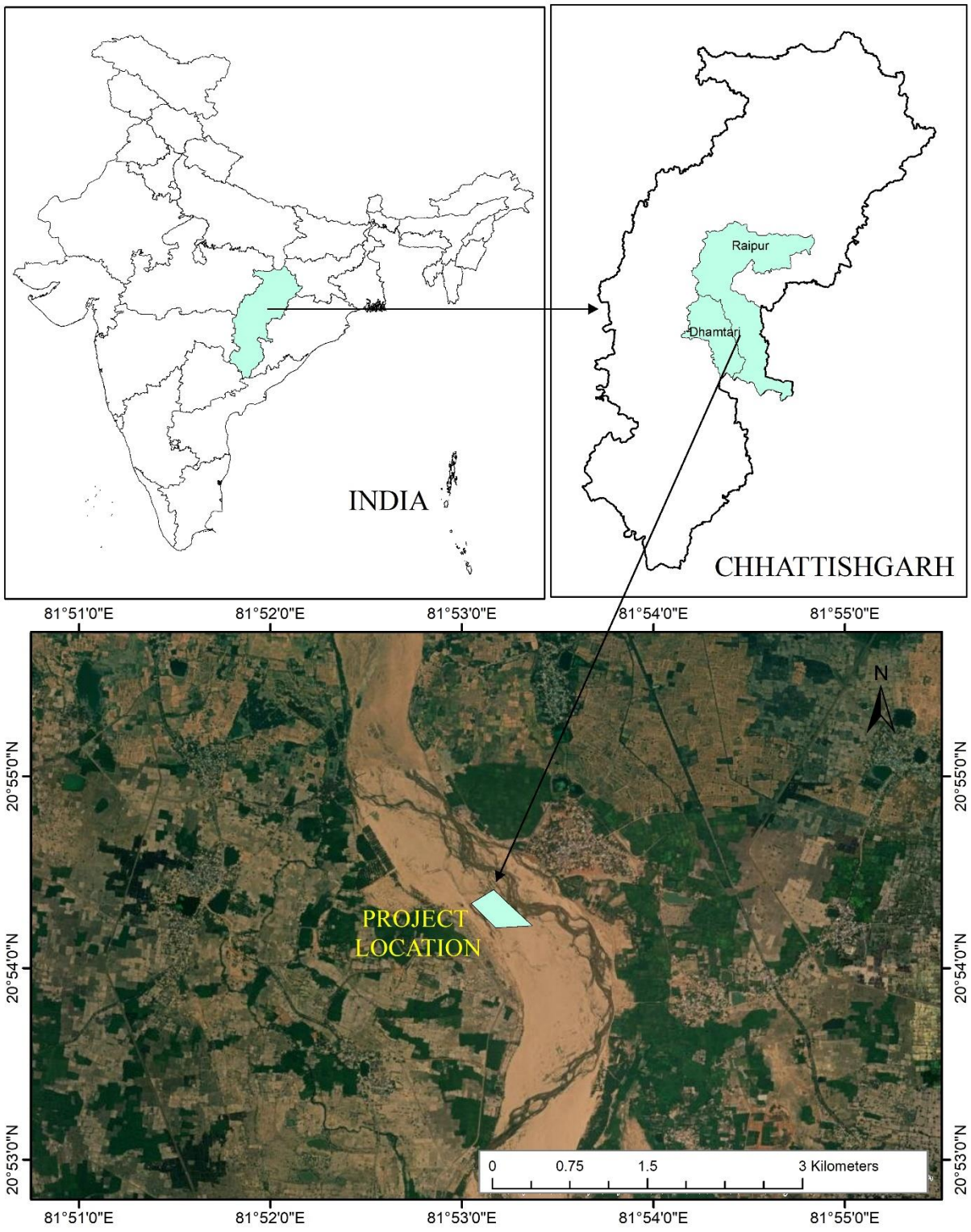

Figure E-1: Location map of the Project Site

The details of environmental setting are given below.

Table E.1: Environmental Setting around Project Site

<table>
<tr><th>Particulars</th><th>Details</th></tr>
<tr><td>Name of the Project</td><td>Parewadih Riverbed Sand Mining Project, Area: 10 Ha.
(Govt. land)</td></tr>
<tr><td>Location of the Project</td><td>Near Village- Parewadih, Tehsil- Magarlod,
District- Dhamtri, 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>BL1</td><td>20°54'20.21"N</td><td>81°53'2.90"E</td></tr>
<tr><td>BL2</td><td>20°54'24.60"N</td><td>81°53'9.90"E</td></tr>
<tr><td>BL3</td><td>20°54'13.24"N</td><td>81°53'22.10"E</td></tr>
<tr><td>BL4</td><td>20°54'12.60"N</td><td>81°53'10.60"E</td></tr>
</table>
</td></tr>
<tr><td>Maximum Temperature</td><td>42° C</td></tr>
<tr><td>Minimum Temperature</td><td>14 ° C</td></tr>
<tr><td>Annual rainfall</td><td>1302 mm</td></tr>
<tr><td>Size of the Project</td><td>10 Ha</td></tr>
<tr><td>Nearest Highway</td><td>NH -30 at 19.50 Km towards North–West (Kanker-Raipur Road)
State Highway at 1.85 km towards East (Ranjim-Gariyaband Road) (As per Mining Plan)</td></tr>
<tr><td>Nearest railway station</td><td>Mahasamund Railway Station – 32 km, N</td></tr>
<tr><td>Nearest Airport</td><td>Swami Vivekanand International Airport, Raipur – 34.74 km, NW</td></tr>
<tr><td>Nearest town/City</td><td>Rajim – 5.5 km, N</td></tr>
<tr><td>Densely populated or built-up area</td><td>District Headquarter, Dhamtari – 41 km SW</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>Dam -</td><td>- 43.30 km towards South-west, Gangrel dam</td></tr>
<tr><td>Reservoir -</td><td>- 18.50 km towards south-east ((Tawrenga Reservoir)</td></tr>
<tr><td>Irrigation Canal -</td><td>- 1.80 km towards north-east</td></tr>
<tr><td>Water Supply / Irrigation Scheme / Anicut -</td><td>- Anicut at 5.45 km towards north over Pairi river</td></tr>
<tr><td>Nalla -</td><td>- Nalla 480 m towards east</td></tr>
<tr><td>Tank /Pond -</td><td>- Village pond at 900 m towards east</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>
</table>

Particulars	Details
Reserved / Protected Forests	1. Pokhra PF: 14.95 Km, NE 2. Open Mixed Jungle :12.30 Km, 3. Open Mixed Jungle :18.63 Km, NE
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).
WildlifeSanctuary	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 Parewadih Riverbed Sand mine having an cluster area of 10 Ha is situated at Village- Parewadih, Tehsil-Magarlod, District: Dhamtari, State: Chattishgarh. The life span of proposed mine block is 2 years. The proposed method of mining is open cast semi mechanized mining.

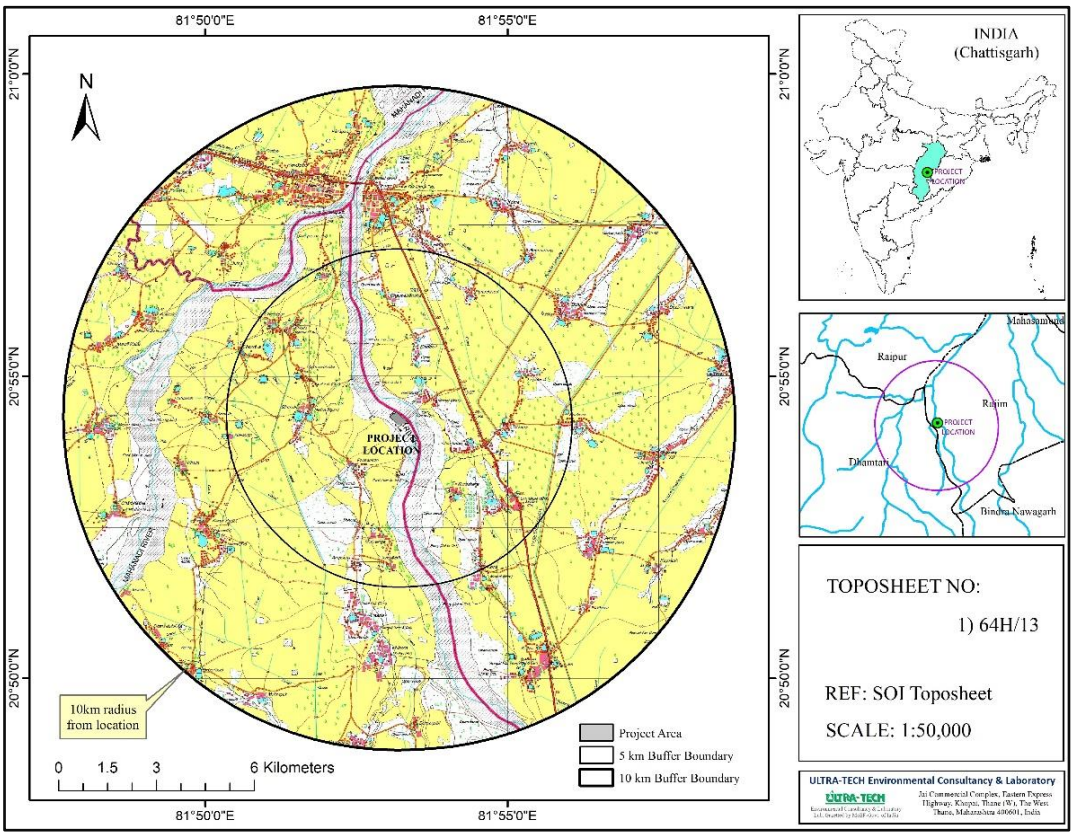

Figure E-2: Area of the proposed Mining site

Table E.2: Salient Features of Proposed Project

INFORMATION	DETAILS
Name of the project	Parewadih Riverbed Sand Mine
Village	Parewadih
Tahsil	Magarlod
District	Dhamtari
State	Chhattisgarh
Toposheet No	64 H/13
Name of Leaseholders	Mukesh Patel
Address and Contact details of Lease Holders	C/o. Tikaram Patel 313, Ward no16, Madhi Village/City – Raipur, Tahsil- Raipur Pin code – 493116
Name of the Mineral to be mined	Riverbed Sand
Type of land	Govt. Land

Status of Operation (New Project or Existing Project operating since)	New Project
Mine Area	10 Ha
Ultimate depth of mining	3 m
Minable Reserve	2,85,000 cum
Production Capacity	2,85,000 cum/yr
Life of Mine	Not applicable as applied area is river bed sand mine where mine pit gets replenished during monsoon season.
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	3 miter of depth from top surface layer.
Method of Mining	Opencast Semi-Mechanized
No. of working days	240 Days
Seismic Zone	Seismic Zone II

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 deploying light capacity and light weight loaders.

Water Requirement

The total water requirement shall be 13.34 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

(Water Demand for Pairi Riverbed Sand Mine)
Dust suppression – 7.6 KLD
Green Belt – 5.00 KLD
Domestic – 0.74 KLD

Table E.3: Water Requirment Details

Sr. No.	Usage	Water Requirement	
1.	Greenbelt Development@ 2.5 L/tree	2000 Trees X 2.5 Lit/day = 5000 Lit/day	5.00 KLD
2.	Dust Suppression @ 0.5 L/Sqm (twice a day)	Haul road Area = (1900 m Length x 4 m width = 7600 sqm.) x 0.5 li/sqm = 3800 lit /day x 2 time = 7600 lit/day	7.60 KLD
3.	Domestic Purpose @35 lpd/worker	21 workers x 35 lit per day = 735 Lit/Day	0.74 KLD
		Total ::	**13.34 KLD**

Power Requirement

Power is not required in operation phase of the proposed project, as diesel equipment's 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.

Manpower Requirement

The mining project will generate direct & indirect employment. About 21 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 Requirement

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	12
Total		**21**

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 **April 2022 to June 2022** (Summer Season).

The observations for Summer season-(April 2022 – June 2022) are summarized below:

3.1 Meteorology

The secondary meteorological data of the study period collected from www. imdpune.gov.in/. The month wise meteorological data is given in Table E-5.

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

Period	Wind Speed (m/s)		Temp (°C)		Relative Humidity (%)		Rainfall (mm)
	Max	Min	Max	Min	Max	Min	
April-22	8.38	0.01	45.62	22.37	53.38	7.31	0
May -22	8.38	0.37	44.97	26.64	69.44	9.44	0.08
June -22	9.7	0.19	45.74	24.26	95.94	10.81	4.95

Source: Weather Summary for April 2022-June 2022(https://www.imdpune.gov.in/

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 summer season-(April 2022 – June 2022) are summarized below:

Particulate Matter (PM_{10}):

A maximum concentrationof PM_{10} is 81 $\mu g/m^3$ was observed at the AAQM-1 & AAQM-7 and minimum value of 56 $\mu g/m^3$ was observed at AAQM-3

Respirable Particulate Matter ($PM_{2.5}$):

A maximum concentration of $PM_{2.5}$ is recorded to be 49$\mu g/m^3$ at AAQM-2 and minimum value of 30 $\mu g/m^3$ was observed at AAQM-3

Sulphur Dioxide (SO_2):

Maximum concentration of SO_2 is observed to be 16$\mu g/m^3$ at AAQM-4 & 6 and minimum value of 7 $\mu g/m^3$ observed at AAQM- 3.

Oxides of Nitrogen (NO_X):

Maximum concentration of NO_x is observed to be 35µg/m^3 at AAQM-7 and minimum value of 16 µg/m^3 observed at AAQM-3 & 8.

Carbon Monoxide (CO):

Maximum concentrations in the region are observed to be 1.3 mg/m^3 at AAQM-7 and minimum value of 0.5 mg/m^3 observed at AAQM- 3 & 5.

Silica

Silica in the ambient air of the 10 Km radius of the study area of the project site has been analysed from the PM_{10} filter paper of the Ambient Air quality monitoring stations mentioned in Table 3.3 (7601, Issue 3 as per NIOSH Methods). The result indicates that silica concentration in the surrounding of project site was found to be in the range of 0.02µg/m^3 to 0.06µg/m^3.

The results are compared with the standards prescribed by Central Pollution Control Board (CPCB). The overall ambient air quality around the proposed mine lease is within the limits of ambient air quality standards prescribed by CPCB.

3.2 Water Environment

In order to establish the baseline water quality, 6 ground water and 5 surface water samples were collected and analysed 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 D (Propagation of wildlife and fisheries). The ground water samples were compared with drinking water specification IS 10500:2012 standards. ***(Details is given in Table- 6)***

3.3 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 7.5 (S7) to 8.4 (S3) indicating that the soil is slightly alkaline in nature***. (Details is given in Table- 6)***

Table E- 6: ENVIRONMENTAL BASELINE STUDY

Particullar	Number of Locations	Description
Background Ambient Air Quality Monitoring	Sampling was done at 8 Locations	PM_{10} :-56 to 81 μg/m^3 $PM_{2.5}$:-30 to 49 μg/ m^3 SO_2 :-7.0 ug/m3 to 16.0 μg/ m^3 NOx:-16.0 to 35.0 μg/ m^3 CO:-0.5 to 1.3 mg/ m^3 SiO_2-0.02 to 0.06 μg/ m^3
Noise Level Monitoring	Monitored at 8 Locations	Noise Level During Day Time :– 51.2 to 54.0 dB(A) Noise Level During Night Time:–42.0 to 44.2 dB(A)
Water Sampling	Ground water sampling was done at 6 Locations	pH :- 7.5 to 8.2 ; TDS :- 492 -580 mg/l ; Total Hardness :- 344 -384 mg/l SO_4 :-62 mg/l to 76 mg/l; Chloride :- 68 mg/l to 82 mg/l; Zn & Fe:- Below detectable limit.
	Sampling:- 5 at Surface water	pH :- 7.2 to 7.6 ; TDS :- 240 mg/l to 298 mg/l; Dissolve oxygen: - 4.8 to 5.8 mg/l. Chloride :- 26 mg/l to 36 mg/l; Calcium :- 33 mg/l to 43 mg/l; Magnesium :- 19 mg/l to 25 mg/l; Total Hardness :- 160 to 212 mg/l ;
Soil Sampling	Sampling was done at 8 Locations	pH :- 7.5 to 8.4; Nitrogen:- 102 to 229 kg/ha Phosphorus:– 38 to 71 kg/ha Potassium :– 120 to 221 kg/ha Electric Conductivity:- 0.256 to 0.405 ms/cm

3.4 Land Use/Land Cover of the Study Area

The project location is situated in Parewadih is a village in the Magarlod Tehsil of Chattisgarh's Dhamtari District. It is 41 kilometres east of the district headquarters at Dhamtari. Raipur, the state capital, is 35 kilometres away. Kurud Tehsil to the north, Fingeshwar Tehsil to the north, Dhamtari Tehsil to the west, and Gariyaband Tehsil to the east surround Parewadih. Nearby cities nearby Parewadih include Gobranawapara, Dhamtari, Mahasamund, and Raipur. This

location lies on the boundary of the Dhamtari and Raipur districts. Fingeshwar District of Raipur located to the north of this location. The village area falls on the Survey of India topo sheet 64A/13 of SOI (Survey of India), as shown in figure 4. Figure 5 shows the land use map and the land cover map of the study area covering a distance of 10 Km. The LULC map in Figure 4 shows that the analysis consists of 8 areal classes Water body, Canal, River, Crop Land, Settlement, Sand banks, shrublands and vegetation. Parewadih village has a total land area of 476.77 hectares. Parewadih has a total population of 1,889 people, 953 of whom are male and 936 of them are female. Parewadih village has a literacy rate of 71.68%, with 81.01% of men and 62.18% of females being literate. Parewadih village has roughly 373 homes.

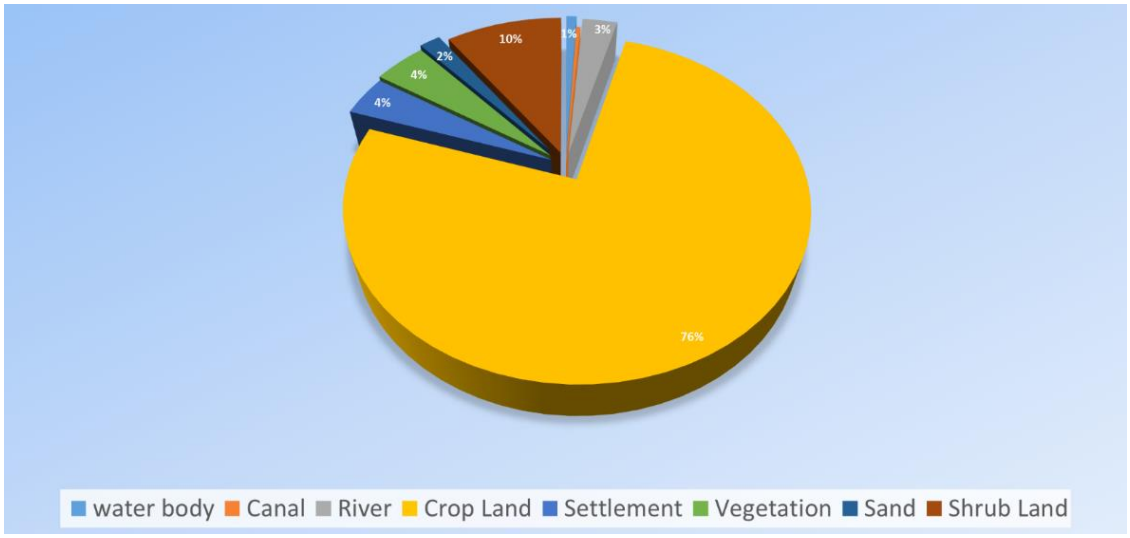

Figure E-3: LULC Classification (10 km radius of the Proposed Project Area)

3.5 Biological Environment

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 is being observed within 10 km surrounding from the project site.

Sr. No.	Name of forest block	Type of Forest	Distance (km)
1	Pokhra	Protected forest	14.95
2	Open Mixed Jungle	Jungle	18.63
3	Sargi Nadi	River	11.47
4.	Open Mixed Jungle	Jungle	12.3

5.	Fhuljhar	Reserve Forest	13.9
6.	Mahanadi River	River	5

3.6 Socio Economics Environment

Although the study area (10 km radius from the project location) is divided based on secondary data (Population Census 2011), the total population of the study area is 245916. There are 52829 households on a surface area of 327.98 square kilometres.

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 485, which is slightly lower than the male population of 475. Based on the concentration of population within the 10 km radius of the study area, a map of the study area has been prepared—the largest number of inhabitants in the village of Rajim(Phingeshwar) in the northern regions. In the village of Parewadih, where the project location is situated there, the population is 676, which is low. The moderate population is concentrated in the northern regions Kumhi, Pitaiband, Patewa, and Bhaistara as well as the villages Budeni, Singahuri, Baronda are adjacent to the project location (Parewadih). The lower population is concentrated in the regions Bhendri, Kareli, Hasda, Tarra and surrounding regions etc. The other sub-urban regions in the study area have a moderate to lower the number of population.

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 mechinised 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 NO_x and SO_x within the limits established by CPCB.
- Total 7.6 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 will reduce the dust levels its.
- 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 labourers.
- 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.

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 proponent are proposed to implement all the mitigation measures to prevent the impact or consequences of the risk expected to be happened in 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 Capital Investment and Project Schedule

The proposed Parewadih Riverbed Sand mine on Pairi River is estimated cost Rs. 91.94 Lacs.

9.0 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 formofexcise 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.

10.0 Budget for Social Development

The total estimated cost of the project is 91.94 Lacs. Rs 189,250/- lac will be allocated for Need based activity for causes of village for drinking water, sanitation, education, health.

11.0 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:

BUDGETARY ARRANGEMENT FOR ENVIRONMENT MANAGEMENT PLAN FOR TWO YEAR

Sno.	Environment Management	Details of Expenses	Year 1	Year 2
			Expense in Rs.	Expense in Rs.
1	Dust suppression	Dust suppression on 1.90 km long road	1,44,000	1,44,000
2	Plantation along Approach Road & River Bank-	1)1266 saplings will be planted on both side of 1900 meter long approach road at 3 m gap.	4,27,000	2,07,000
		2)734 sapling will be planted along the western river bank in Khasra no.160 in 3 meter gap.		
		Total Saplings (1+2) = 1266+ 734 = **2000 saplings**		
		Name & numbers of Saplings to be planted :		
		i) Arjun – 1000 saplings, Neem- 200 saplings, Karanj- 250 saplings, Pipal - 50 saplings, Mango - 250 saplings		
		Number and species of Saplings -		
		1) Cost Saplings = Rs. 20,000/-		
		2) Cost of Fencing = Rs. 2,00,000/-		
		3) Additional Plantation till 2 year - Assuming 90% survival rate = Rs 10,000/-		
		4) Cost of annual maintenance of plantation and fencing by labour =75,000/-		
		5) Fertilizer cost = 50,000/-		
		6) Annual Watering cost = Rs. 72,000/-		
3	Environment Monitoring	Monitoring cost twice in a year	1,05,000	1,05,000
		Air Monitoring- 8 x2x1500 = 24,000 /-		
		Surface water- 5x2x1500 = 15,000/-		
		Ground Water- 6 x2x1500 =18,000/-		
		Noise Monitoring- 8x2x1500 = 24,000/-		
		Soil Monitoring- 8x2x1500 = 24,000		
4	Road Maintenance	Maintenance, filling of damage road & Cleaning levelling of road @ Rs. 25,000/quarterly (25,000 X 4)	1,00,000	1,00,000
5	Health Check-up Camps for Villagers	The camp will be conducted twice during the year for general health check-up of villagers & mine workers (Rs. 50,000/- X 1)	50,000	50,000

Year wise total cost of Cluster EMP ::	**8,26,000**	**6,06,000**

12.0 Conclusions

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.