# EXECUTIVE SUMMARY OF DRAFT EIA REPORT

FOR

***Environmental Clearance for Proposed Charoda & Baldakachhar Riverbed Sand Mining Project***

| S.N. | Address of Applied land | Land Khasra | Area of applied lease | Production Capacity (Cum/year) | Total Cluster Area |
|---|---|---|---|---|---|
| 1 | Village – Charoda, Tehsil – Palari District – Balodabazar-Bhatapara | 1290 (Part) | 20.00 Hect. | 3,60,000 | 24.99 Hect. |
| 2 | Village – Baldakachhar, Tehsil – Kasdol, District - Balodabazar-Bhatapara | 230 (Part) | 4.99 Hect. | 89,820 | |

## *Applicant Name & Address*

| Name of Applicant | Address |
|---|---|
| Pankaj Kumar Chandrakar | Village – Ward No. 1, Kalai Chowk, New Mandi, Arang, Tehsil – Arang, Dist.- Raipur(C.G.), Pin – 493441. |
| Tarun Kumar Gilhare | Village- Satnami Para, Birkoni ward No. 3, Birkoni, Tehsil – Mahasamund, Dist. – Mahasamund, Pin Code – 493445. |

## *Terms of Reference*

| Name of Applicant | Number and date of Terms of reference |
|---|---|
| Pankaj Kumar Chandrakar | Vide letter no. 180/S.E.A.C.C.G./Sand Mine/2723 Nawa Raipur Atal Nagar, Dated 09/04/2024. |
| Tarun Kumar Gilhare | ToR identification no. TO23B0107CG5298548N, Dated 25/10/2024.<br>File no. - OL/TOR/MIN/BALODA_BAZAR/2899. |

## ENVIRONMENTAL CONSULTANT

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

**M/s. ULTRA-TECH**
**ENVIRONMENTAL LABORATORY AND CONSULTANCY**

**NABET Accredited EIA Consulting Organization**
**NABET Accreditation Number: NABET/EIA/2023/RA0194 Valid Upto - Jan 03, 2025**

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# EXECUTIVE SUMMARY

## 1.0 Introduction

The proposed project involves the mining of Riverbed Sand (Total lease area in the cluster, including the 2 applied mines is 24.99 hect. of Riverbed sand) village Charoda, tehsil Palari, district Balodabazar-Bhatapara and village Baldakachhar, tehsil Kasdol, district Balodabazar-Bhatapara, state Chhattishgarh. Details of the entire lease are discussed in the further chapters. The lease holders of the cluster are Charoda Sand Mine owner Pankaj Kumar Chandrakar with a lease area of 20.00 ha. and Baldakachhar Sand Mine owner Tarun Kumar Gilhare with a lease area of 4.99 Ha. TOR issued in favour of project proponent, whose details is as follow —

1. ***Charoda Sand Mine*** – Vide letter no. 180/S.E.A.C.C.G./Sand Mine/2723 Nawa Raipur Atal Nagar, Dated 09/4/2024
2. ***Baldakachhar Sand Mine*** – ToR identification no. TO23B0107CG5298548N, Dated 25/10/2024. File no. - OL/TOR/MIN/BALODA_BAZAR/2899.

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.

**Project Location –**

Khasra No. 1290 (Part) of village Charoda, tehsil Palari and district Balodabazar-Bhatapara state Chattishgarh of Lessee Pankaj Kumar Chandrakar featured in the Survey of India Toposheet No. 64 K/3.

Khasra No. 230 (Part) of village Baldakachhar, tehsil Kasdol and district Balodabazar-Bhatapara, state Chattishgarh of Lessee Tarun Kumar Gilhare featured in the Survey of India Toposheet No. 64 K/3.

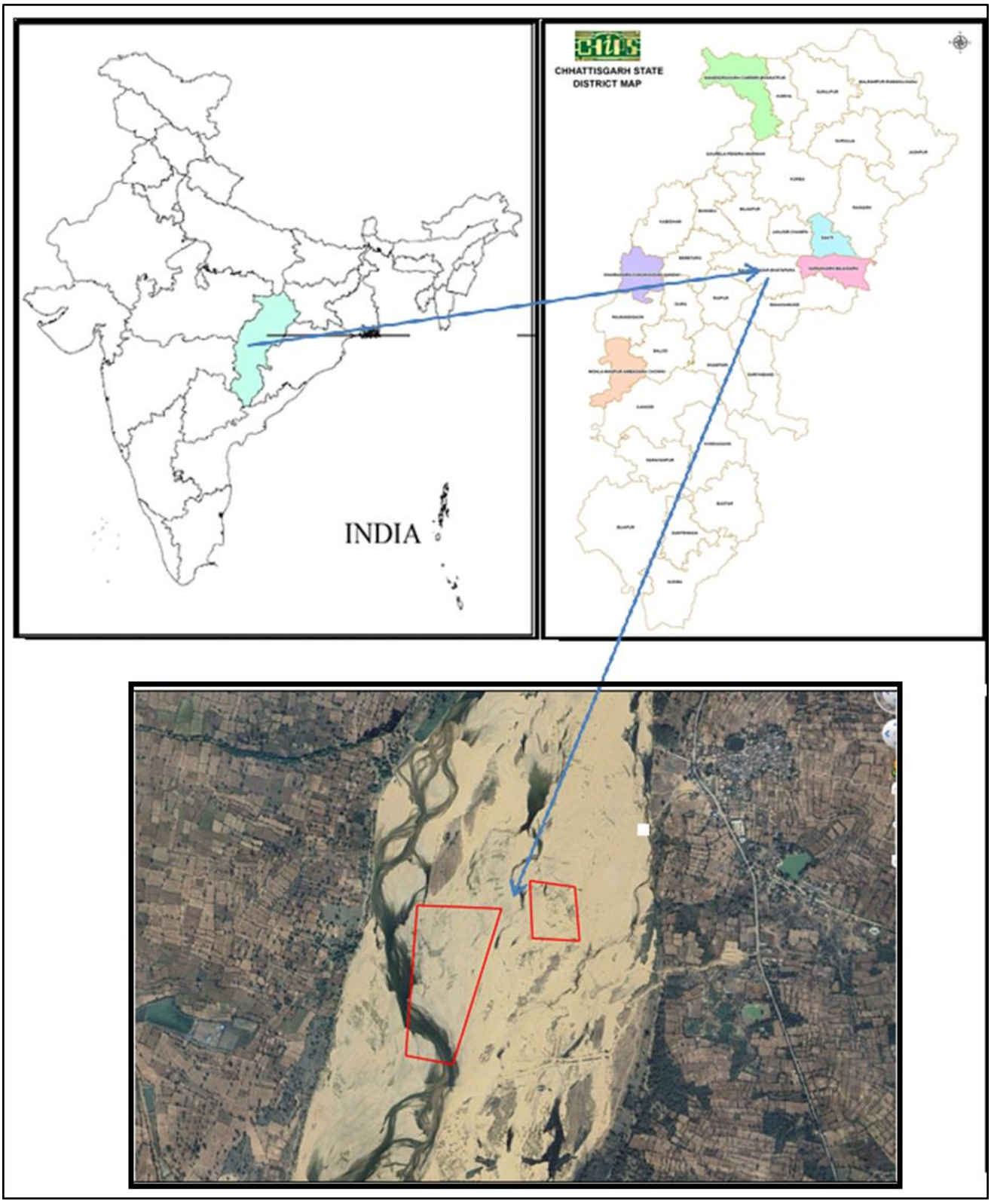


**Figure 1: Location map of the Project Site**

***Executive Summary of Draft EIA Report for Charoda & Baldakachhar Sand Mine on Mahanadi River at Village – Charoda & Baldakachhar, Tehsil – Palari & Kasdol, District – Balodabazar - Bhatapara, State- Chhattishgarh of Pankaj Kumar Chandrakar and Tarun Kumar Gilhare.***

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

| Particulars | Details | |
|---|---|---|
| Name of the Project | Charoda Riverbed Sand Mining Project, Area - 20 Ha. (Govt. land) | Baldakachhar Riverbed Sand Mining Project, Area - 4.99Ha. (Govt. land) |
| Location of the Project | Village - Charoda, Tehsil- Palari,<br>District - Balodabazar-Bhatapara,<br>State - Chhattisgarh | Village - Baldakachhar,<br>Tehsil- Kasdol,<br>District - Balodabazar-Bhatapara,<br>State - Chhattisgarh |
| Geographical Coordinates: | **Pillars / Latitude(N) / Longitude(E)**<br>N 1 / 21°26'28.65"N / 82°14'1.37"E<br>N 2 / 21°26'50.26"N / 82°14'3.11"E<br>N 3 / 21°26'49.78"N / 82°14'16.00"E<br>N 4 / 21°26'27.36"N / 82°14'8.55"E | **Pillars / Latitude(N) / Longitude(E)**<br>B 1 / 21°26'45.52"N / 82°14'20.72"E<br>B 2 / 21°26'45.15"N / 82°14'27.94"E<br>B 3 / 21°26'52.90"N / 82°14'27.24"E<br>B 4 / 21°26'53.79"N / 82°14'20.33"E |
| Size of the Project | 20.00 Ha. | 4.99 Ha. |
| Nearest Highway | NH 130 B at 11.30 km towards north -west (Raipur-Balodabazar Road) | NH 130 B at 11.60 km towards north-west (Raipur-Balodabazar Road) |
| Nearest railway station | Belsonda at 37.90 km towards south | Bhatapara at 38.55 km towards south |
| Nearest Airport | Swami Vivekanand Airport, Raipur - 58.25 Km toward south - west | Swami Vivekanand Airport, Raipur - 58.95 Km toward south - west |
| Nearest town/City | Palari at 12 km towards north-west | Palari at 12 km towards north-west |
| Densely populated or built-up area | Palari at 12 km towards north-west | Palari at 12 km towards north-west |
| Archaeologically important places | None within 10 km radius | None within 10 km radius |
| Water Body | Dam/ Reservoir: 5.35 Km Pasid Reservoir towards south-east | 5.75 Km Pasid Reservoir towards south |
| | Irrigation Canal: 2.35 Km towards west | 2.70 Km towards north - west |
| | Water Supply / Irrigation Scheme / Anicut –: Anicut at 6.00 Km. towards north over Mahanadi River | Anicut at 5.75 Km towards north over Mahanadi River |
| | Nalla: 2.40 Km towards south-east. | 2.30 Km towards north-east. |
| | Tank /Pond: Village pond at 940m toward west | Village pond at 780 m toward east |
| Protected areas as per Wildlife Protection Act (Tiger reserve, Elephant reserve, Biospheres, | None within 10 km radius | |

| Particulars | Details |
|---|---|
| National parks, Wildlife sanctuaries, community reserves and conservation reserves) | |
| Reserved / Protected Forests | • Near Khamtarai: 7.00 km.<br>• Near Sirpur: 10.00 km.<br>• Near Rohsai : 7.50 Km.<br>• Near Ghirghol: 8.00 Km. |
| 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 |

| Particulars | Details |
|---|---|
| Critically Environmental polluted Area | None within 10 km radius |
| Pollution Sources | None within 10 km radius |

**2.0 Project Description**

The proposed project of Charoda and Baldakachar Riverbed Sand mine having an cluster area of 24.99 Ha is situated at village Charoda & Baldakachhar, tehsil Palari & Kasdol, district Balodabazar-Bhatapara, state Chattishgarh and village- Baldakachhar, tehsil- Kasdol, district Balodabazar-Bhatapara, state Chattishgarh. 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 | Charoda Riverbed Sand Mine | Baldakachhar Riverbed Sand Mine |
| Village | Charoda | Baldakachhar |
| Tahsil | Palari | Kasdol |
| District | Balodabazar-Bhatapara | Balodabazar-Bhatapara |
| State | Chhattisgarh | Chhattisgarh |
| Toposheet No | 64 K/3 | 64 K/3 |
| Name of Leaseholders | Pankaj Kumar Chandrakar | Tarun Kumar Gilhare |
| Address and Contact details of Lease Holders | S/o.Shri Bharat Lal Chandrakar Village– Ward no. 01, Kalai Chowk, New Mandi, Arang District – Raipur, Pin code – 493441. | S/o. Shri Rewaram Gilhare Niwasi- Satnami Para, Birkoni word no. – 03, Birkoni, tehsil & District – Mahasamund, Pin code- 493445. |
| Name of the Mineral to be mined | Riverbed Sand | Riverbed Sand |
| Type of land | Government river land | Government river land |
| Status of Operation (New Project or Existing Project operating since) | New Project | New Project |
| Mine Area | 20.00 Ha | 4.99 Ha |
| Ultimate depth of mining | 3 m | 3 m |
| Minable Reserve | 3,60,000 cum | 89,820 cum |

| | | |
|---|---|---|
| Production Capacity | 3,60,000 cum/Yr | 89,820 cum/Yr |
| Life of Mine | Not applicable as applied area is river bed sand mine where mine pit gets replenished during monsoon season through replenishment potential of Mahanadi. | |
| Quantity of topsoil and Overburden estimated to be removed | Nil.<br>This is ordinary river bed sand. There have no any top soil or overburden. | |
| Method of Mining | Opencast Semi-Mechanized | |
| No.of working days | 240 Days | |
| SeismicZone | 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 1meter 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.

## *2.2 Water Requirement-*

The total water requirement shall be 15.50 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-3.1A: Water Requirement Details (Charoda Sand Mine)**

| Sr. No. | Usage | Water Requirement | |
|---|---|---|---|
| 1. | Greenbelt Development@ 1.5 L/tree | 4000 Trees X 1.5Lit/day = 6000Lit/day | 6.00KLD |
| 2. | Dust Suppression @ 0.5 L/Sqm (twice a day) | Haul road Area = (500 m Length x 4 m width =2000 sqm.) x 0.5 li/sqm = 1,000 lit /day x 2 time = 2000 lit/day | 2.00 KLD |
| 3. | Domestic Purpose @35 lpd/worker | 24 workers x 35 lit per day = 840 Lit/Day | 1.00 KLD |
| | | **Total ::** | **9.00KLD** |

**Table E-3.1B: Water Requirement Details (Baldakachhar Sand Mine)**

| Sr. No. | Usage | Water Requirement |
|---|---|---|

| | | | |
|---|---|---|---|
| 1. | Greenbelt Development@ 1.5 L/tree | 1000 Trees X 1.5 Lit/day = 1500 Lit/day | 1.50 KLD |
| 2. | Dust Suppression @ 0.5 L/Sqm (twice a day) | Haul road Area = (1000 m Length x 4 m width = 4000 sqm.) x 0.5 li/sqm = 2000 lit /day x 2 time = 4000 lit/day | 4.00 KLD |
| 3. | Domestic Purpose @35 lpd/worker | 21 workers x 35 lit per day = 735Lit/Day | 1.0 KLD |
| | | **Total ::** | **6.50 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 45 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 Charoda & Baldakachhar Sand Mine**

| S.No. | Category | No. of Person | |
|---|---|---|---|
| | | **Charoda Sand Mine** | **Baldakachhar Sand Mine** |
| 1 | Assistant Manager | 1 | 1 |
| 2 | Foreman | 1 | 1 |
| 3 | Supervisor staff | 1 | 1 |
| 4 | Supervisor cum First Alder (Skilled) | 2 | 2 |
| 5 | Semi – Skilled/ skilled Labours | 2 | 2 |
| 6 | Unskilled personnel | 2 | 2 |
| 7 | Driver and Machine operators | 15 | 12 |
| **Total** | | **24** | **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 **19th October 2023 and 19th January 2024 (post-monsoon).**

The observations for post-monsoon season-(**19th October 2023 and 19th 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: Meteorological Data of the study area (NASA Power)**

| 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 | 4.28 | 0.08 | 1.95 | 28.48 | 14.24 | 21.26 | 100 | 53.25 | 77.07 | 0.0 | 0 | 0.0 | 856.7 | 0 | 226.38 |
| Nov - 23 | 3.49 | 0.14 | 1.74 | 28.40 | 12.21 | 20.24 | 100 | 51.94 | 82.81 | 0.71 | 0 | 0.01 | 769.85 | 0 | 181.94 |
| Dec - 23 | 4.29 | 0.13 | 1.98 | 26.93 | 10.13 | 17.89 | 100 | 44.62 | 80.96 | 1.92 | 0 | 0.04 | 725.95 | 0 | 169.49 |
| Jan - 24 | 3.91 | 0.41 | 2.23 | 26.35 | 7.83 | 16.82 | 100 | 44.44 | 77.98 | 0.01 | 0 | 4.3 | 762.23 | 0 | 155.38 |

*Source: Weather Summary for 19th October 2023 and 19th January 2024(https://www.nasa.gov.in/)*

## *3.2 Air Environment*

The ambient air quality is carried out at 10 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-(**19th October 2023 and 19th January 2024**) are summarized below:

## *3.3 Noise Environment*

Noise levels were monitored in ten locations including project within the study area. The noise levels ranged between 52.1 to 63.0 dB (A) during day time and noise levels ranged between 43.2 to 54.4 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, 5 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 D (Propagation of wildlife and fisheries). The ground water samples were compared with drinking water specification IS 10500:2012 standards.

### *3.5 Soil Quality*

A total of 10 samples in and around the project site are collected and analysed. It has been observed that the pH of the soil quality ranged from 7.1 (S5 & S10) to 7.7 (S9) indicating that the soil is slightly alkaline in nature.

**Table E- 6: ENVIRONMENTAL BASELINE STUDY**

| Particular | Number of Locations | Description |
|---|---|---|
| **Background Ambient Air Quality Monitoring** | Sampling was done at 10 Locations | $PM_{10}$ :-44 to 67 μg/$m^3$<br>$PM_{2.5}$ :-16 to 36 μg/ $m^3$<br>$SO_2$ :- 5 μg/ $m^3$ to 14μg/ $m^3$<br>NOx:- 8 to 27 μg/ $m^3$<br>CO:-0.4 to 1.5 mg/ $m^3$<br>$SiO_2$-0.01 to 0.05 μg/ $m^3$ |
| **Noise Level Monitoring** | Monitored at 10 Locations | Noise Level During Day Time :– 52.1 to 63.0 dB (A)<br>Noise Level During Night Time:– 43.2 to 54.4 dB (A) |
| **Water Sampling** | Ground water sampling was done at - 5 Locations | pH :- 7.1 to 7.8 ;<br>TDS :- 388 to 498 mg/l ;<br>Total Hardness :- 232 to 284 mg/l<br>$SO_4$ :- 45 mg/l to 68 mg/l;<br>Chloride :- 55 mg/l to 91 mg/l;<br>Zn & Fe: - Below detectable limit. |
| | Sampling:- 5 at Surface water | pH :- 7.3 to 7.6 ;<br>TDS :- 214 mg/l to 542 mg/l;<br>Dissolve oxygen: - 5.4 to 6.00 mg/l.<br>Chloride :- 40 mg/l to 116 mg/l;<br>Calcium :- 26 mg/l to 63 mg/l;<br>Magnesium :- 14 mg/l to 35 mg/l;<br>Total Hardness :- 124 to 302 mg/l ; |

| | | |
|---|---|---|
| **Soil Sampling** | Sampling was done at 10 Locations | pH :- 7.1 to 7.7<br>Nitrogen:- 175 to 185 kg/ha.<br>Phosphorus:– 52 to 85 kg/ha<br>Potassium :– 299 to 392 kg/ha<br>Electric Conductivity:- 305 to 435 ms/cm |

**Land Use/Land Cover of the Study Area**

The proposed mining lease area is located in Charoda village, Palari Tehsil, & Baldakachhar village, Kasdol tehsil and Balodabazar-Bhatapara district of Chhattisgarh state. Charoda & Baldakachhar Riverbed Sand Quarry Lease of Riverbed Sand, Owner Pankaj Kumar Chandrakar &Tarun Kumar Gilhare can be located in the Survey of India Toposheet No. 64 K/3. The mining area is a Govt. land. Charoda & Baldakachhar Riverbed Sand Quarry is located at a distance approx. 24.50 km & 30 Km from district office Balodabazar and situated at 65Km from State Capital Raipur. Nearest Bus Stand Charoda & Baldakachhar Bus Stop situated about 1.25 Km SE & 1.50 km W & distance where as Nearest Railway Station is located at Belsondha & Bhatapara about 37.90 km & 42.00 Km in North from the lease area. The LULC map shows that the analysis consists of 8 areal classes Agriculture, Fallow land, Build up, water, vegetation, sand, openland. Charoda and Baldakachhar village has a total land area of 33,384 hectares. Charoda and Baldakachhar has a total population of 75,380 people, 37,603 of whom are male and 37,777 of them are female. Highest population in study area is in Rohasi town (5249). Charoda and Baldakachhar village has a literacy rate of 59.8%, with 58.7% of men and 41.3% of females being literate.

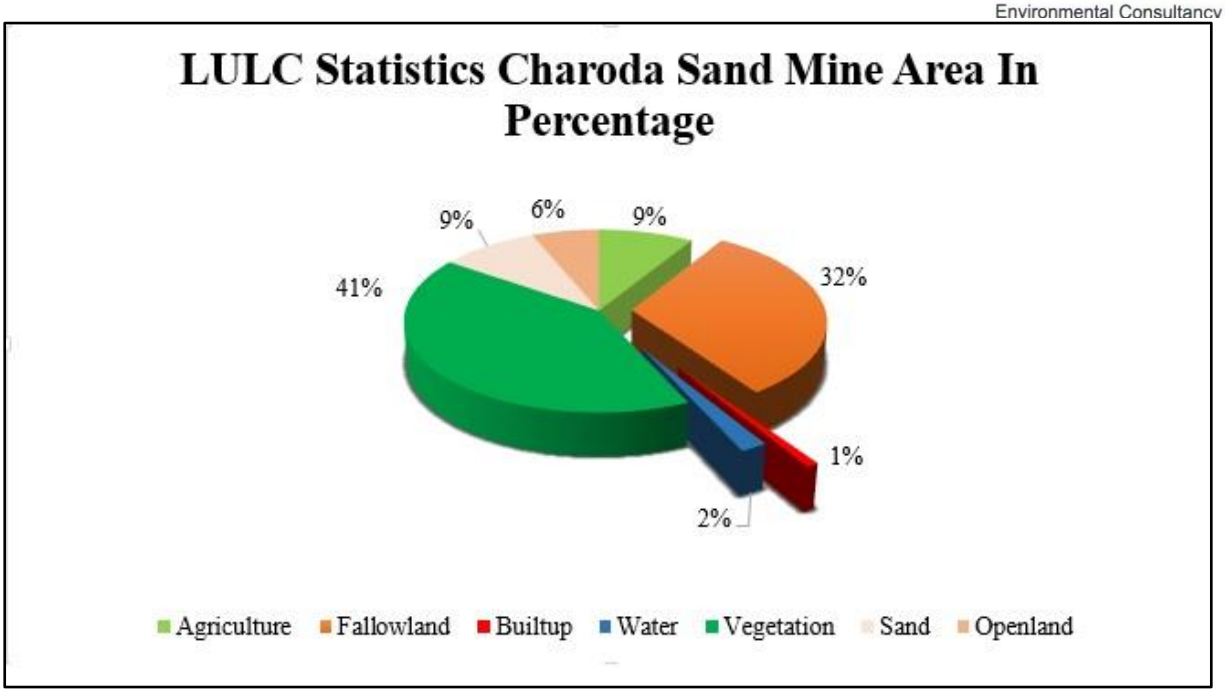


**Figure 2: LULC Classification (10 km radius Proposed Project Area) of the project site**

## *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 are being observed within 10 km surrounding from the project site.

## *3.7 Socio-economic 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 75,380 in 15,256 households.

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 37,777 which is slightly higher than the male population of 37,603.

## 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 sellable resulting no dump with in 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 $NO_x$ and $SO_x$ within the limits established by CPCB.
- Total 15.50 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 accumulaion 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 sides 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 levelsits
- 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 bedone 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 131.86 lacs. Rs 2,72,000/- 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.N | Particulars | Charoda Sand Mine | Baldakachhar Sand Mine |
|---|---|---|---|

| o. | | Capital Cost in Rs | Recurring Cost in Rs | Capital Cost in Rs | Recurring Cost in Rs |
|---|---|---|---|---|---|
| 1 | Air Pollution Control | - | 1,44,000 | - | 72,000 |
| 2 | Nadi Tat Ropni pariyojna (Green Belt Development) | 5,23,700 | 5,84,000 | 1,59,125 | 2,57,000 |
| 3 | Maintenance of Road | - | 40,000 | - | 40,000 |
| 4 | Facilities for Mine workers | 50,000 | 1,08,000 | 50,000 | 94,500 |
| | **Total ::** | **5,73,700** | **8,76,000** | **2,09,125** | **4,63,500** |
| **Total Capital Cost in Rs** | | **7,82,825** | | | |
| **Total Recurring Cost in Rs** | | **13,39,500** | | | |
| **Total Cost of EMP in Rs** | | **21,22,325** | | | |

**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.