

EXECUTIVE SUMMARY OF DRAFT EIA REPORT

FOR

Proposed Bijradih Riverbed Sand Mining Project

| Address of Applied land | Land Khasra | Area of applied lease (Ha) |
|---|-------------|----------------------------|
| Village –Bijradih Tehsil – Palari District – Balodabazar-Bhatapara | 496 (Part) | 10 Ha. |

Applicant Name & Address

| Name of Applicant | Address |
|--------------------------------------|---|
| M/s MSK Yadu Prop. Mithilesh Yadu | Village– Gandhi gram Nakata, Tehsil – Mandir Hasod, Dist- Raipur(CH), Pin - 492101 |

Terms of Reference

| Name of Applicant | Number and date of Terms of reference |
|--------------------------------------|---|
| M/s MSK Yadu Prop. Mithilesh Yadu | Vide letter no. 499/S.E.A.C.C.G./Ret Khadan/2719 Nawa Raipur Atal Nagar, Dated 13/05/2024 |

ENVIRONMENTAL CONSULTANT



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/RA019-Rev 01

Valid Upto - Oct 18,2024

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EXECUTIVE SUMMARY

1.0 Introduction

The proposed project involves the mining of riverbed sand (lease area: 10 Ha) in village Bijradih, tehsil Palari, district Balodabazar-Bhatapara, state Chhattisgarh. Details of the entire lease are discussed in further chapters. The lease holder, Mithlesh Yadu, has a lease area of 10 Ha. Terms of Reference (TOR) have been issued in favor of the project proponent, whose details are as follows:

Bijradih Sand Mine –Vide letter no. 499/S.E.A.C.C.G/ Ret Khadan /2719 Nawa Raipur Atal Nagar, Dated 13/05/2024.

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 periphery 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 Bijradih Riverbed Sand mine having an area of 10.00 hect.and situated at Village- Bijradih, Tahsil- Palari, District: Balodabazar-Bhatapara, State: Chattishgarh under Khasra No. 496(Part). Applied production is 1,80,000 cum/yr. The proposed method of mining is open cast semi mechanized mining.

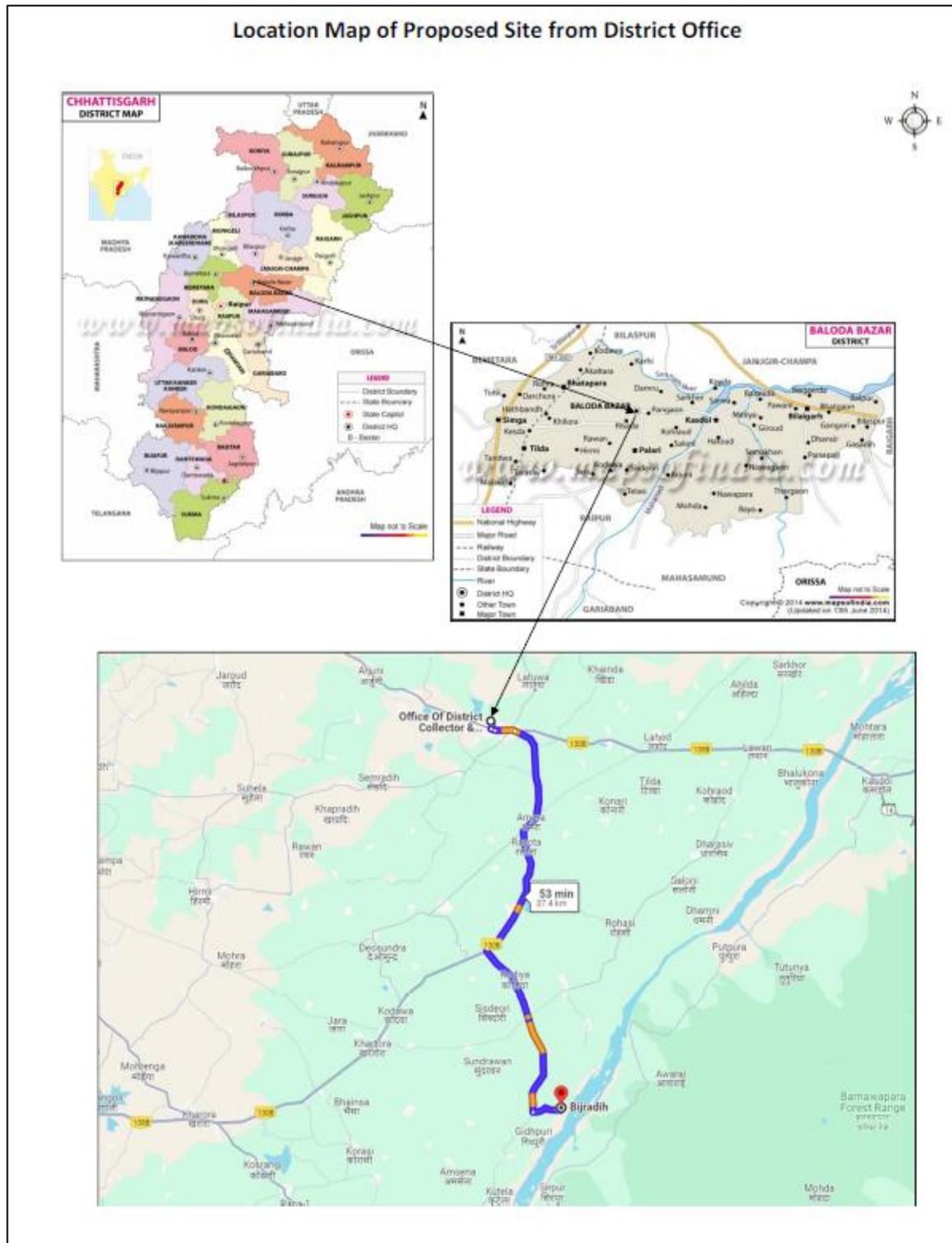


Figure 1: Location map of the Project Site

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

| Particulars | Details | | | | | | | | | | | | | | | |
|--|---|---|-------------|---------------------------------------|--------------------|---------------|----------------------------|---|---------------|---|---------|---------------|--------------------------|--------------|---------------|------------------------------------|
| Name of the Project | Bijradih Riverbed Sand Mine Project, Area: 10 Ha. (Govt. land) | | | | | | | | | | | | | | | |
| Location of the Project | village- Bijradih, tehsil- Palari, district- Balodabazar-Bhatapara, State- Chhattisgarh | | | | | | | | | | | | | | | |
| Geographical Coordinates: | <table border="1"> <thead> <tr> <th>Pillars</th> <th>Latitude(N)</th> <th>Longitude(E)</th> </tr> </thead> <tbody> <tr> <td>B1</td> <td>21°23'31.39"N</td> <td>82°12'8.32"E</td> </tr> <tr> <td>B2</td> <td>21°23'46.27"N</td> <td>82°12'11.87"E</td> </tr> <tr> <td>B3</td> <td>21°23'43.64"N</td> <td>82°12'19.44"E</td> </tr> <tr> <td>B4</td> <td>21°23'28.95"N</td> <td>82°12'14.51"E</td> </tr> </tbody> </table> | Pillars | Latitude(N) | Longitude(E) | B1 | 21°23'31.39"N | 82°12'8.32"E | B2 | 21°23'46.27"N | 82°12'11.87"E | B3 | 21°23'43.64"N | 82°12'19.44"E | B4 | 21°23'28.95"N | 82°12'14.51"E |
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| B4 | 21°23'28.95"N | 82°12'14.51"E | | | | | | | | | | | | | | |
| Size of the Project | 10 Ha | | | | | | | | | | | | | | | |
| Nearest Highway | NH -130B at 13.90 Km towards north-west(Raipur-Shivrinarayan Road) SH-10 at 29.20km towards north-west (Balodabazar-Bhatapara Road) | | | | | | | | | | | | | | | |
| Nearest railway station | Belsonda at – 31.50 km, south-west | | | | | | | | | | | | | | | |
| Nearest Airport | Swami Vivekanand Airport, Raipur –52 km, south-west | | | | | | | | | | | | | | | |
| Nearest town/City | Palari – 15.20 km, north-west | | | | | | | | | | | | | | | |
| Densely populated or built-up area | Palari – 15.20km District Headquarter, Balodabazar –30.18 km North-west | | | | | | | | | | | | | | | |
| Archaeologically important places | None within 10 km radius | | | | | | | | | | | | | | | |
| Water Body | <table border="1"> <tbody> <tr> <td>Dam /Reservoir-</td> <td>-</td> <td>4.55 km towards east, Pasid Reservoir</td> </tr> <tr> <td>Irrigation Canal -</td> <td>-</td> <td>2.30 km towards north-west</td> </tr> <tr> <td>Water Supply / Irrigation Scheme / Anicut -</td> <td>-</td> <td>Anicut at 12.60 km towards north-east over Mahanadi river</td> </tr> <tr> <td>Nalla -</td> <td>-</td> <td>Nalla 240 m towards west</td> </tr> <tr> <td>Tank /Pond -</td> <td>-</td> <td>Village pond at 760 m towards west</td> </tr> </tbody> </table> | Dam /Reservoir- | - | 4.55 km towards east, Pasid Reservoir | Irrigation Canal - | - | 2.30 km towards north-west | Water Supply / Irrigation Scheme / Anicut - | - | Anicut at 12.60 km towards north-east over Mahanadi river | Nalla - | - | Nalla 240 m towards west | Tank /Pond - | - | Village pond at 760 m towards west |
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| Nalla - | - | Nalla 240 m towards west | | | | | | | | | | | | | | |
| Tank /Pond - | - | Village pond at 760 m towards west | | | | | | | | | | | | | | |
| Protected areas as per Wildlife Protection Act (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves) | None within 10 km radius | | | | | | | | | | | | | | | |
| Reserved / Protected Forests | <ol style="list-style-type: none"> 1. Sirpur R.F : 2.50 Km,East 2. Muriyadih Open Mixed Jangal: 5.50km NE 3. Mohkam R.F : 9.50 km South | | | | | | | | | | | | | | | |
| 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). | | | | | | | | | | | | | | | |

| Particulars | Details |
|---|--------------------------|
| 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 Bijradih Sand mine having an cluster area of 10 Ha is situated at Village- Bijradih , Tehsil- Palari, 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 | Bijradih Riverbed Sand Mine |
| Village | Bijradih |
| Tahsil | Palari |
| District | Balodabazar-Bhatapara |
| State | Chhattisgarh |
| Toposheet No | 64 K/3,7 |
| Name of Lease holder | Mithlesh Yadu |
| Address and Contact details of Lease Holders | Gandhi Gram Nakata Village/City – Nakata, Tahsil- Arang District – Raipur Pin code –492101 |
| 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 | 1,80,000 cum |
| Production Capacity | 1,80,000 cum/yr |
| Life of Mine | Not applicable as applied area is river bed sand mine where mine pit gets replenished during moonsoon 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 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 deploying light capacity and light weight loaders.

2.2 Water Requirement-

The total water requirement shall be 9.00 KLD for domestic, green belt and sprinkling purpose, which will be sourced from Water Tankers from nearby village. Detail of water requirement is given below:

Table E-3: Water Requirement Details

| S.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 = (540 m Length x 4 m width = 2,160 sqm.) x 0.5 li/sqm = 1,080 lit /day x 2 time = 2,160 lit/day | 3.00 KLD |
| 3. | Domestic Purpose @ 35 lpd/worker | 21 workers x 35 lit per day = 735 Lit/Day or Say 1.00 | 1.00 KLD |
| Total :: | | | 9.00 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 daytime.

2.4 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 Details

| 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 **18th October 2023 to 18th January 2024** (Post monsoon Season).

The observations for Post monsoon Season-(**18th October 2023 to 18th 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 | 1.93 | 33.31 | 24.26 | 20.98 | 100 | 51.19 | 75.04 | 0 | 0 | 0 | 852.63 | 0 | 224.77 |
| Nov - 23 | 3.49 | 0.14 | 1.74 | 28.28 | 13.83 | 19.14 | 100 | 49 | 75.89 | 0 | 0 | 0 | 761.56 | 0 | 172.14 |
| Dec - 23 | 4.29 | 0.13 | 1.98 | 27.16 | 9.87 | 18.26 | 100 | 37.69 | 74.31 | 0 | 0 | 0 | 727.59 | 0 | 146.89 |
| Jan - 24 | 3.89 | 0.41 | 2.11 | 27.08 | 3.74 | 16.68 | 100 | 31.12 | 69.44 | 0.2 | 0 | 0 | 764.33 | 0 | 139.27 |

Source: Weather Summary for 20th October 2023 - 20th 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.

3.3 Noise Environment

Noise levels were monitored in eight locations including project within the study area. The noise levels ranged between 53.8 to 58.8 dB (A) during day time and noise levels ranged between 43.2 to 48.5 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, 4 ground water and 4 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 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 7.1 (S5) to 7.7 (S3 & S7) indicating that the soil is neutral to slightly alkaline in nature.

Table E- 6: ENVIRONMENTAL BASELINE STUDY

| Particular | Number of Locations | Description |
|--|---|--|
| Background Ambient Air Quality Monitoring | Sampling was done at 8 Locations | PM ₁₀ :-44 to 69 µg/m ³ PM _{2.5} :-16 to 36 µg/ m ³ SO ₂ :- 5 µg/ m ³ to 12µg/ m ³ NO _x :- 7 to 27 µg/ m ³ CO:-0.4 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 :- 53.8 to 58.8 dB (A) Noise Level During Night Time:- 43.2 to 48.5 dB (A) |
| Water Sampling | Ground water sampling was done at – 4 Locations | pH :- 7.1 to 7.8 ; TDS :- 367 to 498 mg/l ; Total Hardness :- 220 to 304 mg/l SO ₄ :-49 mg/l to 68 mg/l; Chloride :- 57 mg/l to 91 mg/l; Zn & Fe: - Below detectable limit. |
| | Sampling:- 4 at Surface water | pH :- 7.3 to 7.5 ; TDS :- 226 mg/l to 581 mg/l; Dissolve oxygen: - 5.8 to 6 mg/l. Chloride :- 44 mg/l to 124 mg/l; Calcium :- 26 mg/l to 65 mg/l; Magnesium :- 14 mg/l to 38 mg/l; Total Hardness :- 122 to 318 mg/l ; |
| Soil Sampling | Sampling was done at 8 Locations | pH :- 7.1 to 7.7 Nitrogen:- 164 to 231 kg/ha. Phosphorus:- 52 to 81 kg/ha Potassium :- 307 to 430 kg/ha Electric Conductivity:- 311 to 463 ms/cm |

Land Use/Land Cover of the Study Area

The location of the project is situated near Bijradih village is located in Palari tehsil of Balodabazar district in Chhattisgarh, India. As per 2009 stats, Bijradih village is also a gram panchayat. Palari is nearest town to Bijradih for all major economic activities.

Raipur, the state capital, is 52 km kilometres away. The village area falls on the Survey of India topo sheet 64K/3 and 64K/7 of SOI (Survey of India), as shown in figure 11.2. The LULC map in Figure 11.2 shows that the analysis consists of 8 areal classes Water body, Canal, River, Crop Land, Settlement, Sand banks, shrublands and vegetation. Bijradih village has a total land area of 476.77 hectares. Bijradih has a total population of 45830. There are 9557 households on a surface area of 328.35sq.km.

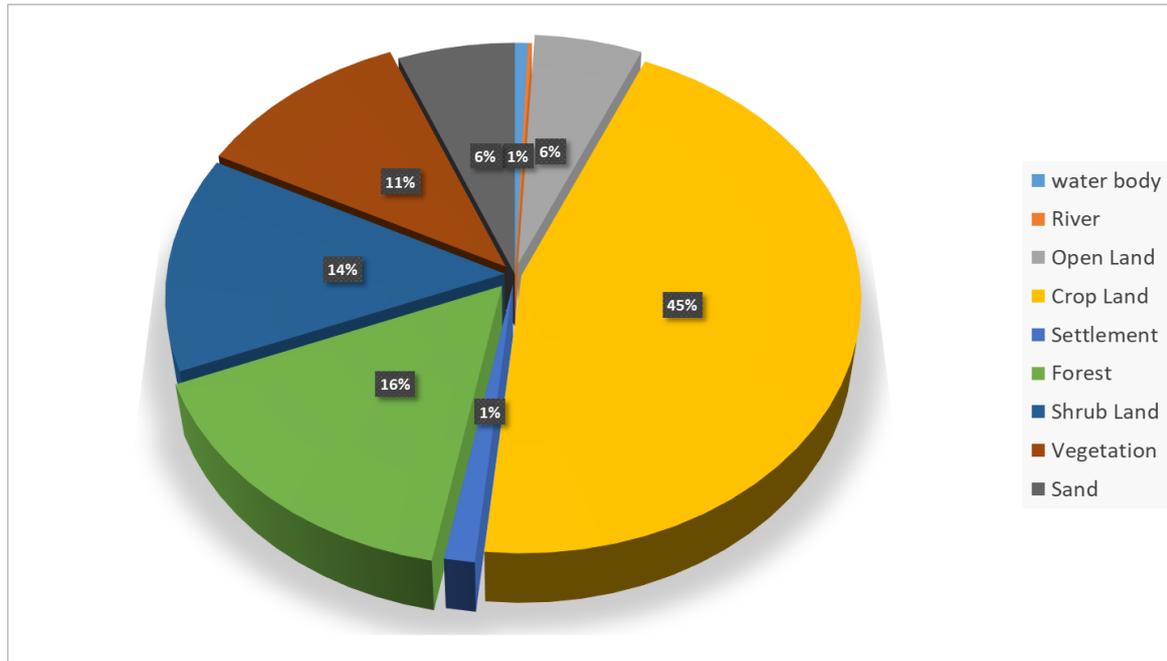


Figure 2: LULC Classification (10 km radius Proposed Project Area) of the project site

3.6 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. An ecological survey of the study area was conducted, as per following steps, with reference to listing of species, assessment of the existing baseline ecological conditions and predicting impacts with suggestive mitigation measures. Studies were undertaken in core zone & buffer zone various types of Flora; viz. trees, shrubs, herbs palms including grasses Fauna like mammals, birds, reptiles, amphibians & butterflies. Were surveyed and enlisted. With reference to avifauna diversity, birds were studied through direct evidence, in the form of visual sightings, and indirect evidence such as calls, nests, burrows, droppings, scats, tracks etc. All available types of habitats at the site were evaluated and marked.

Identified vegetation patches through GIS map and physically surveyed representative sites

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 45830. There are 9557 households on a surface area of 328.35sq.km.

In the study area, the total male population is 22413, which is somewhat lower than the female population of 24317. the village-wise population concentration in the study region defined by a 10-kilometer radius from the project location. A map of the research area has been developed based on the concentration of people within a 10 km radius of the study area—the highest population in the village of Kurud-I (2254), which is located along the southwestern edge of the area around project location at 10 km radius. In Bijradih, where the project location is located possess a total population of 606. The remaining settlements in the study region have a moderate to low population density. Then the villages situated in north of the project location comprise of low 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 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 3.00 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.
- 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 lease hold should be planted.
- Ground water table will not be intersected during the mining activity

Biological Impact Mitigation

Impact on Flora

- As it is sand mining project, activities will be confined to (river bed) core zone only. The project area is surrounded by agricultural land. There is no forest land involved in mine lease area. Thus no direct impact is foreseen on the flora of the forest area because of mining, whereas activities related to mining as transportation of material and passage of workers to and from mining area will have an adverse impact on the road side flora.
- Significant reduction in total chlorophyll content at road side plant species affects the plant species by affecting the plant metabolism. The reduction in chlorophyll concentration corresponds directly to the reduction in plant growth.

Mitigation Measures

- Plantation will be carried out on approach roads and surrounding of project site.
- Native plant species which are stress and pollution tolerant and comparatively well acclimatized should be grown along roadsides, for selection of plant species it is necessary to consider certain factors as agro climatic suitability, height and canopy architecture, growth rate and habit and aesthetic effect (foliage, conspicuous and attractive flower color).
- Annual bio-monitoring of roadside plants exposed to vehicular pollution will be done to check the dust load and Air Pollution Tolerance Index (APTI).

Impact on Fauna

The mining, specifically, will have no adverse impact on fauna whereas the operational activities such as human activity, transportation and noise generation may have an adverse impact on fauna.

- No national park wild life sanctuary is present within 10 km area so radius of study area. No major wildlife observed within mine lease area during the survey period. Considering size of mine and management practice by scientific method of mining

with proper Environmental Management Plan including pollution control measures especially for air and noise, which will not cause any adverse impact on the surrounding animals.

- Greenbelt development will be carried out which will help in arresting dust and minimizing sound level arising from the mining operation.
- Some fauna will move from the area of the road side as a result of habitat loss and physical disturbance

Mitigation Measures

- All equipment should have sound-control devices no less effective than those provided on the original equipment. Motorized equipment used should be adequately muffled and maintained.
- Use exhaust silencers and optimized acoustical pipe lagging (acoustical wrapping) to minimize compressor noise.
- As the mining site is river so there is no vegetation, thus clearance of vegetation is not required.
- Thus there will be no loss for wildlife.
- Large woody debris in the riparian zone will be left undisturbed or replaced when moved and not be burnt.
- The drilling and transportation will be carried out during the day time only minimizing the impact on the wild fauna movement.
- Fencing around the entire mine lease area is recommended in order to restrict the entry of stray animals into the mining area.

Socio-Economic Environment Impact Mitigation

No doubt setting up a project of some sort will have a significant impact on the socioeconomic and cultural life of the people in the project area. Here an attempt is made to envision and evaluate the tentative results that the project is likely to yield. The possible impacts are described below due to the operation of the project:

▪ Positive outcomes

Mining is the foundation of building the country's economy. As given below the proposed project has the following benefits:

- Mining is the basis of the economy of the country. The following benefits are given as set out below for the proposed project.
- Jobs for local persons.

- Punish the tax on the state government. GST, cessation of wages, levies, etc. in the form of excise duty.
- The generation of the market is coming back.
- Appropriate EMF funds will boost the productivity of the environment.
- CSR funds may be used for the welfare of people in villages.
- The new project would contribute to the enhancement of the facilities that will attract the company's houses.
- Mining operations will help to establish a local socioeconomic scenario.

▪ **Negative outcomes**

Due to the planned activity of the project, the population inflow would increase during the construction period. This could lead to a strain on infrastructure resources in the area, as well as an increase in the local population. However, this consequence is of a limited time and a temporary nature only.

- During the construction process, increased levels of dust and other air pollutants can lead to health problems.
- Noise pollution can be caused by vehicle traffic and construction activities
- Appropriate mining may have detrimental effects on local soil and groundwater.
- Unnaturally high concentrations of chemicals such as arsenic, sulphuric acid, and mercury over a wide area of surface or subsurface water are not taken until sufficient action is taken.
- Runoff containing these chemicals can lead to the destruction of the surrounding vegetation.

▪ **Mitigating intervention**

To mitigate the adverse impacts likely to occur in the local area due to the proposed and current project activities, an effective mitigation plan must be established. The following recommendations are as follows:

○ **Before and after the initial phase:**

- The contact with the local community should be institutionalized and carried out daily. The forum will provide opportunities to address local critical issues and to train programmers for shared benefits.

- Relevant Information on the planned and current development plan, community services, etc should be conveyed to the local community in the form of booklets and audio-visuals.
- According to the expectations of the local citizens, staff, project officials, should carry out CER activities in the local region

❖ **Step of Operation:**

- Plan supporters should take appropriate precautions to ensure that the environment is secure and healthy during the construction process.
- Appropriate drinking water, toilet and bathing facilities should be made available on the project site.
- In order to regulate air pollution and thus avoid adverse health effects, water is sprinkled/spread to suppress dust during the construction process.
- Proper living arrangements with sufficient facilities for residential labor should be provided.
- Appropriate preparation and awareness-raising events should be carried out in such a way that workers understand the importance of wearing personal protective equipment.
- The first aid and medical services will be given to all the persons concerned working on the site. 4
- Collectively, colony management would include transporters, drivers, builders, watchmen, fitters, machine operators. Preference should be given to local citizens for all of this.

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 60.08 lacs. Rs 1,31,000/- 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 | Bijradih Sand Mine | |
|-----------------------------------|-----------------------------|--------------------|----------------------|
| | | Capital Cost in Rs | Recurring Cost in Rs |
| 1 | Air Pollution Control | - | 72,000 |
| 2 | Green Belt Development | 2,90,000 | 2,70,000 |
| 3 | Maintenance of Road | - | 1,00,000 |
| 4 | Facilities for Mine workers | 50,000 | 94,500 |
| | Total :: | 3,40,000 | 5,36,500 |
| Total Capital Cost in Rs | | 3,40,000 | |
| Total Recurring Cost in Rs | | 5,36,500 | |
| Total Cost of EMP in Rs | | 8,76,500 | |

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.