

# **EXECUTIVE SUMMARY OF DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

FOR

## **RIVER BED SAND MINOR MINING PROJECT (Cat – B1, Area - 12 Ha)**

**Capacity- 42,608 Cu.m per year**

**Longai River Bed, under Duhalia Range of Karimganj Forest Division, Karimganj, Assam**



### **APPLICANT**

**SRI BIRAJ DAS**

**Vill: Patharkandi, P.O: Patharkandi  
P.S: Patharkandi, Karimganj(Assam)**

### **ENVIRONMENTAL CONSULTANT**



**M/s. ULTRA-TECH**

**ENVIRONMENTAL LABORATORY AND CONSULTANCY**

**NABET Accredited EIA Consulting Organization  
NABET Accreditation Number: NABET/EIA/2023/RA0194**

**February, 2023**

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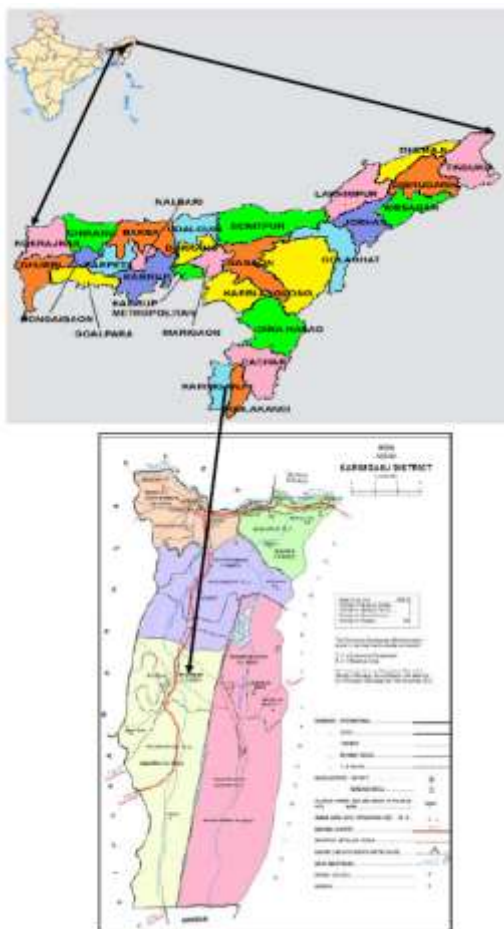
# EXECUTIVE SUMMARY

## 1.0 Introduction

Department of Environment & Forest, Govt. of Assam has leased out river bed area of 12 hectare at Tinokhal-Saigoj area, Karimganj district of Assam under Duhalia Range of Karimganj Forest Division, Karimganj, Assam in favor of Sri Biraj Das the lease has been granted for a period of 7 years. The mining plan has been prepared for 5 years initially with production capacity of 42,608 CuM m/year.

The Mining contract holder will extract sand from the river bed of Longai River, which is a perennial river. The sand available in the river bed for extraction is basically river gravels of different sizes i.e. small to medium mixed with medium to fine grained sand. The river gravel is hard and suitable for use as civil construction material and road metal.

### *Project Location*



**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**

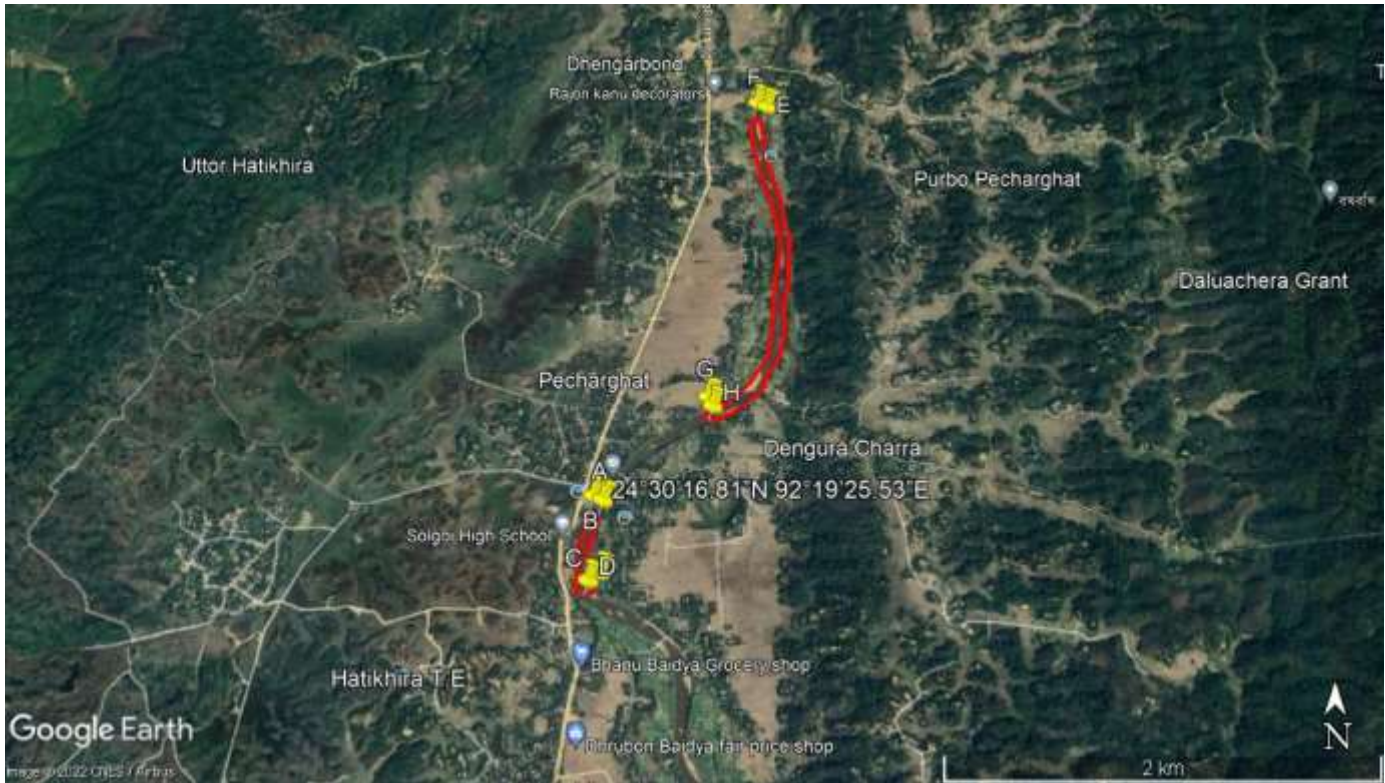
| SN | Component                      | Description  |                 |                  |
|----|--------------------------------|--|-----------------|------------------|
| 1  | Plant Location                 | Longai Sand Minor Mineral Unit No 1A & B, under Duhalia Range of Karimganj Forest Division, Tinokhal-Saigoi area<br><b>P.O &amp; P.S</b> :Patharkandi,<br><b>District:</b> Karimganj , Assam<br><b>Left bank:</b> purbo pechargethat, purbo hailamchar, Achairghat, Hailam charra<br><b>Right bank:</b> Pechargethat, Hatikhira T.E, Uttor hatikhira |                 |                  |
| 2  | Approx Site Coordinates        | <b>Block A</b>   |                 |                  |
|    |                                | <b>Latitude</b>  |                 |                  |
|    |                                | <b>Longitude</b>   |                 |                  |
|    |                                | 1  | 24°30'16.81"N   | 92°19'25.53"E    |
|    |                                | 2  | 24°30'17.46"N   | 92°19'23.90"E    |
|    |                                | 3  | 24°30'05.35"N   | 92°19'25.28"E    |
|    |                                | 4  | 24°30'04.08"N   | 92°19'23.31"E    |
|    |                                | <b>Block B</b>   | <b>Latitude</b> | <b>Longitude</b> |
|    |                                | 1  | 24°31'26.70"N   | 92°19'55.37"E    |
|    |                                | 2  | 24°31'27.40"N   | 92°19'53.57"E    |
| 3  | 24°30'33.78"N                  | 92°19'43.95"E  |                 |                  |
| 4  | 24°30'32.31"N                  | 92°19'44.79"E  |                 |                  |
| 3  | Village/District/State         | <b>Village:</b> Tinokhal-Saigoi area ,<br><b>District:</b> Karimganj<br><b>State:</b> Assam  |                 |                  |
| 4  | Maximum temperature            | 35°C   |                 |                  |
| 5  | Minimum temperature            | 10°C   |                 |                  |
| 6  | Annual rainfall (total)        | 4067 mm  |                 |                  |
| 7  | Plant site elevation above MSL | -  |                 |                  |
| 8  | Present land use at the site   | River Bed  |                 |                  |
| 9  | Nearest highway                | <b>NH -8</b> ,Just beside the project location , W   |                 |                  |
| 10 | Nearest Railway Station        | <b>Tilbhum Railway Station</b> - Road Distance-19.4 Km , Aerial Distance-5.38 Km SW<br><b>Kathaltali Railway Station</b> - Road Distance-15.9 Km , Aerial Distance-8.5 Km SW   |                 |                  |
| 11 | Nearest Airport                | <b>Airport- Kumbhirgram, Silchar Airport</b><br>Road Distance- 118 Km<br>Aerial Distance- 78.55 Km NE  |                 |                  |
| 12 | Nearest major water bodies     | Longai River –Project Site itself  |                 |                  |
| 13 | Nearest town/City              | <b>Nearest Town : Patharkandi Town</b><br>Road Distance - 7.0 Km<br>Aerial Distance - 9.30 Km, SE<br><br><b>District Headquarters: Karimganj</b><br>Road Distance – 44.1 Km<br>Aerial Distance – 38.56 Km, N   |                 |                  |

| SN  | Component  | Description   |
|-----|--|---|
| 14  | Nearest village  | 1. Achairghat –1.01 Km N<br>2. Purbo Pecharghat – 1.19 Km, E<br>3. Uttor Hatikhira - 2.76 km, W<br>4. Lowaipoa - 3.95 km, S   |
| 15  | Nearest Dispensary and Govt. Hospital, Educational facility  | <b>Hospital</b><br>1. Chapel Of The Makunda Christian Hospital – 7.53 Km, S<br>2. Makunda Christian Leprosy and General Hospital – 7.78 km, S<br><b>Educational Institutions</b><br>1. Solgoi High School – 0.15 Km W<br>2. Sathghori L.P School – 6.24 Km, NW<br>3. Bethubari H S School – 6.81 Km, NE<br>4. Swami Vivekananda College – 5.21Km, NW<br>5. Ratabari Junior College – 8.86Km, NE |
| 16  | Nearest Religious/Worship Places:  | 1. Shiv Temple Chandkhira Bagan – 4.76 km, NW<br>2. Solgoi Jame Masjid – 0.45 km,S<br>3. Catholic Church, Khasia Punji – 2.85 km,NW   |
| 17  | Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves) | 1. Longai Reserved Forest – 5.17 km, SW<br>2. Badshahi forset – 6.18 km, NE   |
| 18  | Reserved / Protected Forests   | 1. Longai Reserved Forest – 5.17 km, SW<br>2. Badshahi forset – 6.18 km, NE   |
| 19. | Defence Installations  | None Within 10 km of Project Site   |
| 20. | National /International Border   | 1. Tripura Interstate Boundary – 8.72 Km, SW<br>2. Bangladesh International Border – 9.68 Km, W   |

## 2.0 Project Description

The Proposed River-bed project on Longai River over an area of 12.0 Hectare is located at Tinokhal-Saigoj area in Karimganj district of Assam under Duhalia Range of Karimganj Forest Division, Karimganj, Assam was granted in favour of Sri Biraj Das for collection of riverbed sand against their developmental work for a period of 7 (seven) years, as recommended by the Divisional Forest Officer, Government of Assam. Mining Plan has been prepared by RQP Mr. Prabal Kumar Goswami, which was approved by Department of mining and Geology, Govt. of Assam for five years with production capacity of 42,608 Cu. M per year over an area of 12.0 Hectare. River bed mining activities do not involve top soil removal. Excavation of riverbed sand will be done manually using hand tools like hand shovel, pan, sieve and other advanced machineries on a temporary basis, if required. There will be no or minimum waste generation as the gravels are exposed in the river bed.

Project Proponent Sri Biraj Das has previous experience in mining of minerals residing at District Karimganj in Assam. He has good record of project execution in schedule time. He has track record of Environmental Management Plan (EMP) and compliance of Environmental Conditions. Separate funds for EMP, CSR and Health and Hygiene are allocated from project cost for all statutory requirements. Work is executed as Mining Plan and Environmental Compliance is completed as statutory requirements and environmental policy.



**Figure E-2: Area of the proposed Mining site**

**Table E.2: Salient Features of Proposed Project**

| S. No         | Information                               | Details   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|---------------|---|---|---------------|---------------|-----------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---------|----------|-----------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|
| 1.            | Location                                  | <b>Village:</b> Tinokhal-Saigoï area<br><b>P.O :</b> Patharkandi and Solgoi,<br><b>P.S :</b> Patharkandi<br><b>District:</b> Karimganj , Assam<br><b>Left bank:</b> purbo pecharchat, purbo hailamchar, Achairghat, Hailam charra<br><b>Right bank:</b> Pecharchat, Hatikhira T.E, Uttor hatikhira  |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | <table border="1"> <thead> <tr> <th>Block A</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>24°30'16.81"N</td> <td>92°19'25.53"E</td> </tr> <tr> <td>2</td> <td>24°30'17.46"N</td> <td>92°19'23.90"E</td> </tr> <tr> <td>3</td> <td>24°30'05.35"N</td> <td>92°19'25.28"E</td> </tr> <tr> <td>4</td> <td>24°30'04.08"N</td> <td>92°19'23.31"E</td> </tr> <tr> <th>Block B</th> <th>Latitude</th> <th>Longitude</th> </tr> <tr> <td>1</td> <td>24°31'26.70"N</td> <td>92°19'55.37"E</td> </tr> <tr> <td>2</td> <td>24°31'27.40"N</td> <td>92°19'53.57"E</td> </tr> <tr> <td>3</td> <td>24°30'33.78"N</td> <td>92°19'43.95"E</td> </tr> <tr> <td>4</td> <td>24°30'32.31"N</td> <td>92°19'44.79"E</td> </tr> </tbody> </table> | Block A       | Latitude      | Longitude | 1 | 24°30'16.81"N | 92°19'25.53"E | 2 | 24°30'17.46"N | 92°19'23.90"E | 3 | 24°30'05.35"N | 92°19'25.28"E | 4 | 24°30'04.08"N | 92°19'23.31"E | Block B | Latitude | Longitude | 1 | 24°31'26.70"N | 92°19'55.37"E | 2 | 24°31'27.40"N | 92°19'53.57"E | 3 | 24°30'33.78"N | 92°19'43.95"E | 4 | 24°30'32.31"N | 92°19'44.79"E |
|               |   | Block A   | Latitude      | Longitude     |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 1   | 24°30'16.81"N | 92°19'25.53"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 2   | 24°30'17.46"N | 92°19'23.90"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 3   | 24°30'05.35"N | 92°19'25.28"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 4   | 24°30'04.08"N | 92°19'23.31"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | Block B   | Latitude      | Longitude     |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 1   | 24°31'26.70"N | 92°19'55.37"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 2   | 24°31'27.40"N | 92°19'53.57"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 3   | 24°30'33.78"N | 92°19'43.95"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
|               |   | 4   | 24°30'32.31"N | 92°19'44.79"E |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| Toposheet No. | 83 D/5 of Zone 46                         |   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| Village       | Tinokhal-Saigoï area                      |   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| Tehsil        | Patharkandi                               |   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| District      | Karimganj                                 |   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| State         | Assam                                     |   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 2.            | Name of the Mineral to be mined           | Sand will be collected from River bed   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 3.            | Capacity of Proposed Production per annum | 42,608 Cu. M per year<br>Production in 5 Years – 2,13,040 Cu.m  |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 4.            | Drilling Blasting                         | The mining does not require any drilling and blasting in mining activities.   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 5.            | Method of Mining                          | Open cast manual method of mining will be applied in river bed of Longai River to collect sand from river bed.  |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 6.            | Lease Period                              | 7 Years<br>Approved mine plan for 5 years.  |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 7.            | Lease Area                                | 12.0 Hectares   |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |
| 8.            | Land Use Pattern of the Lease Area        | River bed of area 12.0 Hectare of Longai River. Ownership/Occupancy: Divisional Forest Officer, Karimganj Forest Division, Karimganj, District-Karimganj , Assam  |               |               |           |   |               |               |   |               |               |   |               |               |   |               |               |         |          |           |   |               |               |   |               |               |   |               |               |   |               |               |

| S. No | Information                                | Details   |
|-------|--|---|
| 9.    | Inferred Reserve                           | Area of proposed site = 12.0 Hectares<br>Mineable area=12.0 Hectares (1,20,000 Sq. m)<br>The maximum depth allowed for extraction of the mineral = 3 m<br>Total reserve of the minerals available would be =<br>$1,20,000 \times 3 = 3,60,000$ Cu.m   |
| 10.   | Mineable Reserve                           | As there will be accumulation of sand to a considerable extent during the rainy season. Mine plan is approved for five years.<br>It is assessed that production in 5 years is 1.2 times of estimated quantity of material (in 5 years) i.e. $3,60,000 \times 1.2 = 4,32,000$ Cu.m. The reserve of sand available for extraction per year would be about $(4,32,000 / 5) = 86,400$ Cu m.<br>Mining Loss being assumed approximately 10% during the extraction operation would be = $(86,400 \times 5\%) = 8,640$ Cu.m. The mineable reserve of sand per year = $(86,400 - 8,640) = 77,760$ Cu.m<br>So, mineable reserve of river bed sand during the awarded Mining Contract period of 5 years = $77,760 \times 5 = 3,88,800$ Cu.m |
| 11.   | Manpower to be involved                    | 30  |
| 12.   | Water requirements and source              | 3 KLD<br>Source: Ground/ surface water  |
| 13.   | Solid Waste Generation                     | The generation of Over burden and top soil are envisaged to be nil. No solid waste except small amount of domestic waste by the workers at the site will be generated.  |
| 14.   | Cost of the Project                        | 2 Cr (Approx.)  |
| 15.   | Budgetary Provision for EMP                | 5% of project cost is allocated for Environmental Management Plan   |
| 16.   | Corporate Social Responsibility (CSR) cost | 2% of project cost is allocated for CSR cost  |
| 17.   | Health and Hygiene                         | 2% of project cost is allocated for health and hygiene cost   |

### ***Mining methodology***

In order to ensure the conservation of mineral, Systematic mining and protection of environment, the Assam Minor Mineral concession Rules (AMMCR), 1994 has been replaced by AMMCR, 2013 and it has been mandatory to prepare Mining Plan and Progressive Mine Closure Plan for grant of any mineral concession like “Mining Lease”, “Mining Contract” or “Mining Permit” in respect of



minor minerals for systematic and scientific development of all mines, quarries as well as river bed mining.

Here, the Mining Plan is prepared to extract sand from the river bed deposits from Longai Sand Minor Mineral Unit No.-1A & B on Longai River Bed area.

The proposed Mining area is basically almost loose deposit of minor minerals and to extract the same from this deposit, manual opencast method of mining is suggested. Use of machinery is sternly not advisable. The procedure to be adopted for open cast mining is elaborately described below:

1. The entire boundary of the Mining Contract area will be marked with boundary lines and pillars in all the corner points. The boundary pillars are to be numbered and marked with GPS coordinate there on. Extraction of ordinary earth/silt is to be carried out with a bench height of 0.5 metre to 1.0 metre for the whole area. Use of explosives for mining is not required.
2. The river bed deposits to be extracted and stacked by the Mining Contract Holder will not exceed twice the average monthly production.
3. No mining would be permissible in a river bed up to a distance of five times of the span of a bridge on upstream side and ten times the span of such bridge on downstream side, subject to minimum of 250M on upstream and 500M on the downstream side. (Rule 39(i) of AMMCR, 2013)
4. There shall be maintained an un-mined block of 50M width after every block of 1000M over which mining is undertaken or at such distance as may be directed by the competent authority. (Rule 39(ii) of AMMCR, 2013)
5. Depth of the river bed mining will not in any way exceed 3 metres at any point in the Permit area from the top of the un-mined river bed as per rule 39 (iii) of AMMCR 2013.
6. The extraction of stone will be restricted within the central 3/4<sup>th</sup> width of the river. Here, in Longai Sand MMU No.-1A & B, the average mineable width of the Permit area is to be kept 45 meters out of the average width of the river being 60 meters as per rule 39(iv) of AMMCR, 2013.

### ***Power Requirement***

There is no power demand in the project. Work will be carried out in day time only.

### **Water Requirement**

The total water requirement shall be 3 KLD for domestic and sprinkling purpose, which will be sourced from Ground / surface water. The proposed site has high rainfall due to south-west monsoon and retreating monsoon seasons.

- Dust suppression – 2KLD
- Green Belt – 0.5KLD
- Domestic – 0.5 KLD

### **Manpower**

The mining activity shall generate employment opportunity of 30 nos. from nearby villages and business opportunity for others.

## **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 **01<sup>st</sup> March 2022 to 31<sup>st</sup> May 2022.**

### **3.1 Meteorology**

The meteorological parameters are recorded on hourly basis during the study period near proposed project site and the summary of meteorological data generated at site is presented in following **Table E.3.**

**Table E.3: Summary of the Meteorological Data generated at Site**

| Period      | Wind Speed (Km/Hr) |      | Temp (°C) |       | Relative Humidity (%) |       | Rainfall (mm) |
|-------------|--------------------|------|-----------|-------|-----------------------|-------|---------------|
|             | Max                | Min  | Max       | Min   | Max                   | Min   |               |
| Mar '2022   | 4.02               | 0.07 | 37.88     | 12.7  | 96.69                 | 15.06 | 5.97          |
| April '2022 | 4.45               | 0.19 | 39.67     | 21.9  | 96.19                 | 22.81 | 37.29         |
| May '2022   | 3.98               | 0.03 | 39.69     | 22.02 | 99                    | 24.88 | 164.1         |

### **3.2 Air Environment**

The results of the monitored data indicate that the ambient air quality of the region in general is in conformity with respect to rural/residential norms of the National Ambient Air Quality Standards of CPCB, with present level of activities..

**PM<sub>10</sub>**: The maximum value for PM<sub>10</sub> is observed at A5, as **75 µg/m<sup>3</sup>**, while the minimum value observed at A2, as **46 µg/m<sup>3</sup>** during the study period.

**PM<sub>2.5</sub>**: The maximum value for PM<sub>2.5</sub> is observed at A5, as **40 µg/m<sup>3</sup>** with the minimum value observed at A3, as **18 µg/m<sup>3</sup>** during the study period.

**SO<sub>2</sub>**:The maximum value for SO<sub>2</sub> is observed at A5,6 &8 as **11 µg/m<sup>3</sup>** with the minimum value observed at 4 locations, as **5 µg/m<sup>3</sup>** during the study period.

**NO<sub>2</sub>**: The maximum value for NO<sub>2</sub> is observed at A7 & 8 as **20 µg/m<sup>3</sup>** with the minimum value observed at A3 as **10 µg/m<sup>3</sup>** during the study period.

**CO**:The maximum value for CO is observed at A4,5 & 6 as **1.3 mg/m<sup>3</sup>** with the minimum value observed at A3, as **0.1 mg/m<sup>3</sup>** during the study period.

### **3.3 Noise Environment**

The noise monitoring has been conducted for determination of noise levels at 8 locations in the study area. Noise level of the study area varied from 47.9 to 54.5 dB (A) in day time and from 48.0 to 44.5 dB (A) in the night time which are well within the limits as per ambient noise standards.

### **3.4 Water Environment**

#### **Ground Water Quality**

- The analysis results indicate that the pH ranges in between 7.2 to 7.6. The minimum pH of 7.2 was observed at GW4 and the maximum pH of 7.6 was observed at GW2 and GW7.
- Total hardness was observed to be ranging from 204 to 316 mg/l. The minimum hardness (204 mg/l) was recorded at GW4 and the maximum (316 mg/l) was recorded at GW3.
- Chlorides were found to be in the range of 58 to 75 mg/l, the minimum concentration of chlorides (58 mg/l) was observed at GW4, whereas the maximum value of 75 mg/l was observed at GW7.
- Sulphates were found to be in the range of 52 to 66 mg/l. The minimum value observed at GW5 (52 mg/l) whereas the maximum value observed at GW3 and GW7 (66 mg/l).
- The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 328 to 488 mg/l, the minimum TDS observed at GW4 (328 mg/l) and maximum concentration of TDS observed at GW3 (488 mg/l).
- Iron and Zinc found below detectable limit.

#### **Surface Water Quality**

- The analysis results indicate that the pH values in the range of 7.1 to 7.5, the minimum value of 7.1 was observed at SW6 and maximum value of 7.5 was observed at SW2 and SW4.
- DO was observed to be in the range of 5.4 to 6.2 mg/l. The minimum DO value of 5.4 was observed at SW5 and maximum DO value of 6.2 was observed at SW8.
- The TDS was observed in the range of 178 to 294 mg/l, the minimum TDS value of 178 was observed at SW8 and whereas maximum value of 294 was observed at SW3.
- The chlorides and Sulphates were found to be in the range of 33 to 54 mg/l and 19 to 31 mg/l, respectively.
- Total hardness expressed as CaCO<sub>3</sub> ranges between 110 to 176 mg/l.

- Zinc is found below detectable limit.

### ***3.5 Soil Quality***

- It has been observed that the pH of the soil in the study area varied from 7.4 to 8.1. The maximum pH value of 7.8 was observed at S8 whereas the minimum value of 7.3 was observed at S7.
- The electrical conductivity was observed to range from 0.285 to 0.452 ms/cm, with the maximum observed at S8 with the minimum observed in S7.
- The available Nitrogen value varies from 108 to 142kg/ha.
- The available Phosphorus value varies from 39 to 69 kg/ha.
- The available Potassium value varies from 162 to 251 kg/ha.

### ***3.6 Ecology and Biodiversity***

The project site is situated in Longai riverbed under Karimganj district of Assam under Duhalia Range of Karimganj Forest Division. As per records of the forest Department there are Longai Reserved Forest in 5.17Km in South West direction and Badshahi Forest in 6.18 Km in North East. As per the records of the Botanical Survey of India there are no plants of conservation importance in the study area. It can be concluded that there are no endangered species in the study area as per the Wildlife Protection Act, 1972.

### ***3.7 Socio Economics***

An environmental factor is a socioeconomic concern. The emphasis is mostly on the social and economic consequences of the proposed development's construction and operation. It covers characteristics such as demographic composition, access to basic utilities such as housing, education, health and health services, occupation, water supply, sanitation, connectivity, and power, prevalent local diseases, and characteristics such as tourist sites and ancient monuments. The examination of these criteria aids in defining and assessing the potential implications of project activity on the surrounding area. Every development effort has an immediate and indirect, positive and negative impact. Every development activity has an immediate and indirect, good and bad impact on the region's socioeconomic environment.

## **4.0 Anticipated Environment Impacts and Environment Management Plan**

### ***Land/Soil Environment Impact Mitigation***

Adopting suitable, site-specific mitigation measures can reduce the degree of impact of mining on land & soil. Some of the land & soil related mitigation measures are as follows:

- Present land use pattern of the lease area is riverbed and at the conceptual stage the land use pattern will remain the same, hence will not be changed.
- There will be no mining near the banks. This is to protect the bank erosion and river migration.

- There is no generation of waste material in case of River Bed mining. No back filling is proposed as river Bed will be replenished by sediments during rainy season.
- Minimum number of haul roads to river bed for which cutting of river banks will be avoided.
- Mining is avoided during the monsoon season and at the time of floods.
- Vegetation development is proposed along the road sides of the haul roads, to stop soil erosion. While selecting the plant species, preference will be given for planting native species of the area.

### ***Air Impact Mitigation***

- The long life WBM (Water Bound Macadam) haul roads will be constructed and maintained for traffic movement.
- The speed of dumpers/ trucks on haul road will be controlled as increased speed increases dust emissions. Overloading of transport vehicles will be avoided. The trucks/ tippers will have sufficient free board. Spillage of ore on public roads will be cleared immediately and vehicles will play in safe speed.
- Planting of trees all along main mine haul road and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks.

### ***Noise Impact Mitigation***

- Proper maintenance of all transportation vehicles will be carried out which help in reducing noise during operations.
- Regular maintenance and proper management of deployed machinery will be ascertained and entire mining operation will be carried out in day time only.
- Awareness will be imparted to the workers about the permissible noise levels & maximum exposure to those levels.

### ***Water Impact Mitigation***

- Ground water table will not be intersected during the mining activity. During the entire lease period, the deposit will be worked from the top surface up to 3 m bgl or above ground water table, whichever comes first.
- No diversion of surface water is proposed. There will not be any adverse impact on flow pattern, surface hydrology and ground water regime.

### ***Ecology and Biodiversity Impact Mitigation***

#### **Flora**

- Plantation proposed along the haul roads and other areas in the vicinity will improve the vegetation cover of the study area over a period of time.
- Native plant species which are stress and pollution tolerant and comparatively well acclimatized

should be grown along roadsides.

- The trucks carrying stone shall be covered with tarpaulin to avoid dust generation during transportation.

### **Fauna**

- All workers and drivers involved in the project will be trained to avoid harming any animal spotted. No mining activity shall be carried out at night.
- No night time mining will be allowed which will disturb wildlife.
- Workers will be made aware of the importance of the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.
- Access roads will not encroach into the riparian zones and if any riparian vegetation cleared off for the mining activity will be restored at the end of closure of mine.

### ***Socio-Economic Environment Impact Mitigation***

- The implementation of the Sand mining project will generate both direct and indirect employment.
- Mining in this lease will give job opportunities to the local people. Thus, mining will create beneficial effect on local people.
- The various indirect employment opportunities will also be generated. Several persons of the Neighbouring villages will be benefited with contract works, employment through contractors, running of jeeps, trucks, tractors water tankers and bullock carts on hire, and transport related business avenues.
- There will be some people who are engaged in trading of stones. Therefore due to mining of sand, there is possibility of the per capita income improving.

### **5.0 Environmental Monitoring Programme**

It is imperative that the project proponent shall continue to monitor environmental health, post clearance.

- 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 construction and operation phase is given chapter 6 of EIA/EMP report.

### **6.0 Capital Investment and Project Schedule**

The proposed mining project is estimated to cost Rs 2 Crores. Once the statutory clearance being obtained, the mine will start operating. Mine activity will be carried out for five years as per approved mining plan.

## **7.0 Project Benefits**

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

1. Employment for local people
2. Revenue for the State Govt. in form of excise duties, GST, tax cess, levies etc.
3. Stone will be used in construction of road, bridges, buildings etc.
4. Generate business opportunity
5. CSR funds will be used for welfare of people in villages
6. EMP funds will improve environmental quality.
7. Proposed project adds to improve infrastructure that will attract business houses.

The operation of the Mining would help in up-liftment of socio-economic scenario of the locality.

## **8.0 Need Based Activity**

The proposed mining project is aware of the obligations towards the society and to fulfill the social obligations unit will employ semi-skilled and unskilled labor from the nearby villages for the proposed project as far as possible. Unit will also try to generate maximum indirect employment in the nearby villages by appointing local contractors during construction phase as well as during operation phase. The Project Proponents will contribute reasonably as part of their various need based activities in near by villages.

The total estimated cost of the project is 2 Crores. The project Proponent will allot 2% of the project cost i.e. around 4 Lacs towards the Need Based activity.

## **9.0 Conclusions**

The proposed project will have certain level of marginal impacts on the local environment. However, it would also generate indirect employment generation, improve the social and economic environment in the vicinity and meets the need of the state.