EXECUTIVE SUMMARY

1.1 INTRODUCTION

Lessee Late Shri. Naraina Sinai Quirtonim (Represented by Smt. Pradnya Zoivant Poi Cano alias Pradnya Zoivant Pai Cano, For self and on behalf of all other heirs of Late Shri. Naraina Sinai Quirtonim as their duly constituted attorney) has applied for TOR in order to prepare EIA report for grant of Environmental Clearance for Zamblidadga Dongor Iron and Manganese Ore Mine (M.L. No. 3/FeMn/79) having an area of 70.20 Ha.

The Lessee proposes to mine 0.5 MTPA of Iron Ore from the Mining Lease area. The proposed project, ‘Zamblidadga Dongor Iron and Manganese Ore Mine’ is a new project for which Environmental Clearance is being sought. This project falls under Category ‘B’ [S. No. 1(a)(i): Mining of Minerals] in the Schedule - ‘List of projects or activities requiring prior Environmental Clearance’ of the EIA Notification dated 14th September, 2006 and amended from time to time.

The EIA report has been prepared based on the Terms of Reference (TOR) conditions prescribed by SEIAA, Goa vide letter No. F GA/ToR/0044/2022/204 dated 31/03/2022 and baseline environmental studies were conducted during 1st March 2022 to 31st May 2022, representing pre-monsoon season.

1.2 ENVIRONMENTAL SETTING

The Environmental setting of the project is given in Table-1. The location map of project site is shown in Fig.1. and Map showing study area on Toposheet is shown below in Fig.2.

### TABLE 1: ENVIRONMENTAL SETTING DETAILS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name of the Mine</td>
<td>Zamblidadga Dongor Iron and Manganese Ore Mine (M.L. No. 3/FeMn/79)</td>
</tr>
<tr>
<td>2</td>
<td>DGPS Co-ordinates of the Mining Lease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mining Lease Boundary Pillar No.</td>
<td>Co-ordinates</td>
</tr>
<tr>
<td></td>
<td>Latitude (Northing)</td>
<td>Longitude (Easting)</td>
</tr>
<tr>
<td>BP-1</td>
<td>15° 08' 9.378&quot;</td>
<td>74° 04' 30.733&quot;</td>
</tr>
<tr>
<td>BP-2</td>
<td>15° 08' 12.495&quot;</td>
<td>74° 04' 22.778&quot;</td>
</tr>
<tr>
<td>BP-3</td>
<td>15° 08' 14.725&quot;</td>
<td>74° 04' 15.586&quot;</td>
</tr>
<tr>
<td>BP-4</td>
<td>15° 08' 09.792&quot;</td>
<td>74° 03' 53.092&quot;</td>
</tr>
<tr>
<td>BP-5</td>
<td>15° 07' 45.289&quot;</td>
<td>74° 03' 56.971&quot;</td>
</tr>
<tr>
<td>BP-6</td>
<td>15° 07' 51.409&quot;</td>
<td>74° 04' 14.197&quot;</td>
</tr>
<tr>
<td>BP-7</td>
<td>15° 07' 53.039&quot;</td>
<td>74° 04' 28.142&quot;</td>
</tr>
</tbody>
</table>
**Lessee: Late Shri. Naraina Sinai Quirtonim**
Represented by Smt. Pradnya Zoivant Poi Cano alias Pradnya Zoivant Pai Cano For self and on behalf of all other heirs of Late. Shri Naraina Sinai Quirtonim as their duly constituted attorney.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BP-8</td>
<td>15° 08’ 04.228” 74° 04’ 37.508”</td>
</tr>
<tr>
<td></td>
<td>BP-9</td>
<td>15° 08’ 01.482” 74° 04’ 21.392”</td>
</tr>
<tr>
<td></td>
<td>BP-10</td>
<td>15° 08’ 06.856” 74° 04’ 22.182”</td>
</tr>
<tr>
<td>3.</td>
<td>Toposheet no.</td>
<td>48E/16 &amp; 48 I/4</td>
</tr>
<tr>
<td>4.</td>
<td>Elevation</td>
<td>310m MSL and 150m MSL</td>
</tr>
<tr>
<td>5.</td>
<td>Nearest town &amp; district</td>
<td>Quepem Town: 12 Km (by road), N</td>
</tr>
<tr>
<td>6.</td>
<td>Nearest highway</td>
<td>MDR 47 Ambaulim-Caurem-Pirla road-0.52 Km from mine lease boundary towards East</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NH-66 Kochi – Panaji-Kanyakumari Road -3.4 km W</td>
</tr>
<tr>
<td>7.</td>
<td>Nearest railway Station</td>
<td>Balli Railway station -4.98 km – Northwest</td>
</tr>
<tr>
<td>8.</td>
<td>Nearest airport</td>
<td>Dabolim Airport – 37 km – Northwest</td>
</tr>
<tr>
<td>9.</td>
<td>Nearest seaport</td>
<td>40 km</td>
</tr>
<tr>
<td>10.</td>
<td>Interstate boundary</td>
<td>Goa- Karnataka Border- 22.56 Km, East</td>
</tr>
<tr>
<td>11.</td>
<td>Sensitive areas</td>
<td>There are no National Parks and Sanctuaries, (existing as well as proposed) within 10 km of the Mining Lease area.</td>
</tr>
<tr>
<td>12.</td>
<td>Reserve forest</td>
<td>Entire Mining Lease falls under Forest area. An application vide Proposal No. FP/GA/MIN/153183/2022 dated 05/03/2022 has been filed for the diversion of Forest land under Section 2(ii) of the Forest Conservation Act, 1980.</td>
</tr>
<tr>
<td>13.</td>
<td>Water bodies</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Water bodies</strong></td>
<td><strong>Distance (Km)</strong></td>
</tr>
<tr>
<td></td>
<td>Kushavati River</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>Selaulim Reservoir</td>
<td>11.68</td>
</tr>
<tr>
<td></td>
<td>Sazora Lake</td>
<td>12.01</td>
</tr>
<tr>
<td></td>
<td>Chapoli Dam</td>
<td>12.04</td>
</tr>
<tr>
<td></td>
<td>Gavanem Dam</td>
<td>13.70</td>
</tr>
<tr>
<td></td>
<td>Arabian Sea</td>
<td>13.32</td>
</tr>
<tr>
<td>14.</td>
<td>List of other industries</td>
<td>Global Ispaat Pvt Ltd 6.33 km NW, John Distilleries 6.65 km NW,</td>
</tr>
<tr>
<td>15.</td>
<td>Seismicity</td>
<td>Seismic Zone III</td>
</tr>
</tbody>
</table>

*Note: All distances mentioned are aerial distance from the mine lease boundary*
Lessee: Late Shri. Naraina Sinai Quirtonim
Represented by Smt. Pradnya Zoivant Pai Cano For self and on behalf of all other heirs of Late. Shri Naraina Sinai Quirtonim as their duly constituted attorney

Fig.1: LOCATION MAP
Lessee: Late Shri. Naraina Sinai Quirtonim
Represented by Smt. Pradnya Zoivant Poi Cano alias Pradnya Zoivant Pai Cano For self and on behalf of all other heirs of Late Shri Naraina Sinai Quirtonim as their duly constituted attorney
1.3 PROJECT DETAILS

The salient features and raw materials required for the project are given below in Table 2.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Salient Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name of the Mine</td>
<td>Zamblidadga Dongor Iron and Manganese Ore Mine (ML No.3/FeMn/79)</td>
</tr>
<tr>
<td>2</td>
<td>Mining Lease Area</td>
<td>70.20 Ha</td>
</tr>
<tr>
<td>3</td>
<td>Forest</td>
<td>Entire Mining Lease falls under forest area</td>
</tr>
<tr>
<td>4</td>
<td>Latitude/Longitude</td>
<td>Latitudes: 15° 07’ 45.289” to 15° 08’ 14.725”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Longitudes: 74° 03’ 53.092” to 74° 04’ 37.508”</td>
</tr>
<tr>
<td>5</td>
<td>Toposheet No.</td>
<td>48 I/4</td>
</tr>
<tr>
<td>6</td>
<td>Location</td>
<td>Survey No. 19/0 (part), Caurem Village, Quepem Taluka, South Goa District, Goa State</td>
</tr>
<tr>
<td>7</td>
<td>Date of grant of Mining Lease</td>
<td>13/12/1979</td>
</tr>
<tr>
<td>8</td>
<td>Date of grant extension of Mining Lease</td>
<td>04/01/2022</td>
</tr>
<tr>
<td>9</td>
<td>Mining Lease Period</td>
<td>50 years as per MMDR (Amendment) Act, 2015</td>
</tr>
<tr>
<td>10</td>
<td>Mining Lease Validity Date</td>
<td>12/12/2029</td>
</tr>
<tr>
<td>11</td>
<td>Production Capacity</td>
<td>0.5 MTPA of Iron Ore (As per Approved Review &amp; Updation of Mining Plan)</td>
</tr>
<tr>
<td>12</td>
<td>Type of mine</td>
<td>Open Cast Mine</td>
</tr>
<tr>
<td>13</td>
<td>Method of mining</td>
<td>Fully mechanized open cast mining method</td>
</tr>
<tr>
<td>14</td>
<td>Total reserves &amp; resources</td>
<td>4.336 Million Tonnes of Iron Ore</td>
</tr>
<tr>
<td>15</td>
<td>Average no. of working days</td>
<td>240</td>
</tr>
<tr>
<td>16</td>
<td>Number of shifts</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Working hours</td>
<td>10</td>
</tr>
<tr>
<td>18</td>
<td>Project Cost</td>
<td>Rs 51.90 Crore</td>
</tr>
</tbody>
</table>

1.4 PROCESS DESCRIPTION

Open cast mechanized method of mining is proposed to be undertaken in the area using Heavy Earth Moving Machinery. Drilling and blasting is replaced with environmentally friendly Ripping and Dozing. The development and production will be carried out systematically by maintaining benches of 6m height and width is more than height. The produced ROM (Iron ore) will be loaded by excavators/ wheel loaders and transported by tippers/dumpers from mine face to the designated ore stacks. Stacked ROM will be subjected to screening and crushing process for size separation. Finished products such as lumps
and fines as well as the ROM (Iron Ore) also will be sold to prospective buyers, wherein, the buyers will transport the ore by road engaging tippers to the nearest Jetty.

1.5 BASELINE ENVIRONMENTAL STATUS

EIA was carried out during Summer Season March 2022 to May 2022 in the study area. Environmental studies with respect to flora, fauna, giving specific emphasis to plants and herbs was carried out during summer season, monsoon season and post monsoon till November 2022.

1.5.1 LAND USE

As per satellite imagery for the study area of 10km radius, the Built-up land is 3.98%, Forest land occupies 50.95%, Agricultural land is about 10.24 %, water body is 0.26% and remaining land is either area available for plantation or cultivable waste land.

1.5.2 SOIL CHARACTERISTICS

The pH of the soil in the study area ranged from 5.3 to 6.2. The electrical conductivity was observed to be in the range of 0.015 ms/cm to 0.17 μmhos/cm. The nitrogen values range between 259 to 445 kg/ha. The phosphorus values range between 22 to 60 kg/ha. The potassium values range between 47.36 to 468 kg/ha.

1.5.3 METEOROLOGY

Summer Season

Temperature ranging from 21.8°C to 35.1°C and the average relative humidity recorded in the range of 74% to 75%. Predominant winds are mostly from NEE direction.

1.5.4 AMBIENT AIR QUALITY

Ambient air quality within the study area was monitored at 9 locations including the project site. The minimum and maximum concentrations of PM10 were recorded as 28 μg/m3 and 72 μg/m3, PM2.5 were recorded as 6 μg/m3 and 35 μg/m3 respectively. Similarly minimum and maximum concentrations of SO2 were recorded as 3.0 μg/m3 and 12.6 μg/m3, NO2 were recorded as 9.02 μg/m3 and 15.28 μg/m3 and CO concentrations were recorded as 0.02 μg/m3 and 0.1 μg/m3 respectively.

It is observed that the ambient air quality with respect to PM10, PM2.5, SO2, NO2 and CO at all the monitoring locations was within the permissible limits, other parameters viz., Ozone(O3), Ammonia (NH3), Lead (Pb), Arsenic (As), Nickel (Ni), Benzene, Benzo(a)pyrene were found to be below the detection limit (BDL) with respect to NAAQS prescribed by CPCB.
1.5.5 WATER QUALITY

The baseline water quality status in the region is established by analysing samples collected from 16 locations consisting of eight ground water samples and eight surface water samples. The ground and surface water samples were analysed and found that ground water quality is well within the acceptable limits of drinking water standard IS-10500:2012 and surface water quality found to be suitable Class C norms (Designated best use for drinking after the conventional treatment followed by disinfection) of standard IS 2296:1992.

1.5.6 NOISE LEVELS

The noise level was monitored for determining noise levels at nine locations in the study area. Noise level monitoring results reveal that the ambient noise levels in all the locations are well within the limits as per CPCB ambient noise standards.

1.5.7 FLORA AND FAUNA

Of the total 62 & 35 flora species noted during summer and monsoon & post monsoon seasons respectively, 1 species is assessed as Data Deficient, 36 species were assessed as Least Concern, whereas, there is no IUCN assessment information of 59 species. This is indicative of the observed plant species being of extreme common in nature except for 1 species viz. Curcuma pseudomontana which is assessed as Vulnerable.

Of the primary observed fauna viz. 24 bird species, 3 reptile species & 2 mammal species, the IUCN assessment except for that of 2 bird species is Least Concern and 1 bird species viz. Indian peafowl is listed in Schedule I of WPA 1972. Though Indian peafowl being listed Schedule I species, observed species are common in nature and had very wide range of presence & abundance across the South Goa district. Conservation Plan for Indian Peafowl is prepared & has been submitted to Chief Wildlife Warden, Goa for due authentication & consultation.

1.5.8 SOCIAL ENVIRONMENT

The study area (10 km radius) area has a total population of 1,50,347 persons according to 2011 census. The configuration of male and female indicates that the males constitute to about 49.56% and females to 50.43% of the total population. The total literacy rate is 76.05 % in the region.

1.6 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Considering the present environmental baseline information and activities involved during the mining operation, the anticipated environmental impacts are envisaged and to minimise these impacts, mitigation
measures are proposed.

1.6.1 LAND ENVIRONMENT

1.6.2 Topography & Surface Drainage

IMPACT

The area on which the Mining Lease is located, is a hilly region with undulating topography. The mining activity will disturb the natural drainage pattern within the lease area. There are no perennial water courses or surface water reservoirs within Mining Lease. However, there are a few first order seasonal drains within the Mining Lease.

MITIGATION

• Levelling and grading of dump surface will be taken up followed by subsequent plantation.
• Protective measures like construction of rock walls, trenches, garland drains, series of settling ponds will be constructed.
• During monsoon, these protect measures will help to divert the surface runoff from the mining activity area to the mine pit.
• Water harvested and collected in the mine pit will help ground water recharge.
• Slope study of the project site has been carried out through a reputed institute viz. “National Institute of Technology Karnataka” Suratkal (NITK). Recommendations suggested by the Institute in the study report will be followed. If needed, such slope stability study will be carried out further.
• Surface water quality will be periodically monitored in the core zone during monsoon period.

1.6.3 WASTE GENERATION & TOP SOIL

IMPACT

During mining operations, overburden will be generated. Due to localised collapse of dump slope may cause siltation of 1st order drainage. A very negligible amount of top soil generation is anticipated during mining. Loss of top soil is anticipated if no proper segregation of top soil from the waste is done.

MITIGATION

• Disposal of waste will be done at earmarked place only.
• The waste dumps will be terraced and also will be provided with garland drains at the toe of the dumps, retention walls and series of settling ponds at strategic locations to arrest the silt/sediment from the runoff during monsoon.
• The matured portion of the waste dumps will be stabilized by geo-textile and terracing at suitable intervals and will be progressively planted and rehabilitated with suitable native species.
• Entire waste dump area covered during the present plan period shall be concurrently reclaimed by plantation and thus impact is minimized.
• Top soil generated during mining operations will be about 592m$^3$ and the same will be concurrently utilized for plantation immediately during the year. There would not be any permanent Top soil stacks.

1.6.4 LAND COVER

IMPACT

Mining operation will denude the land of vegetation/forest. Land Degradation will take place. There will be deforestation in and around the pit and waste dump areas.

MITIGATION

Vegetation within the Safety zone of 7.5m width all along the inner periphery of the Mining Lease, having an area of 3.1593 Ha, will be maintained. Greenbelt development will be initiated by carrying out plantation on the inactive portion of the waste dumps from the third year of commencement of the mining operation until the conceptual period. At the conceptual period, 16.2415 Ha of the Mining Lease area is proposed to be rehabilitated.

Plantation will be carried out just after the commencement of monsoons to ensure maximum survival. Native tree species will be selected for plantation with fast growth rate and having the ability to flourish even in poor quality soils. Post-plantation care of the sampling such as watering, etc., will be done.

1.6.5 AIR ENVIRONMENT

IMPACT

Mining operations will lead to increase in generation of dust and increase in the concentration of air pollutants such as SPM, RPM, SO2, and NO2. Air pollution due to transportation

MITIGATION

• Water sprinkling on active working benches, haul roads and overburden dumps.
• Regular maintenance of mining equipment.
• Tippers / Dumpers carrying ore from mine to jetty points will be covered with tarpaulin which help avoid the dust from getting airborne.
• Avoid overloading of trucks thereby preventing the spillage of ore on the transport route.
• Regular maintenance of machineries.
• Stabilization of overburden dumps through Greenbelt development will be carried out to reduce fugitive dust emissions and create clean and healthy environment.
Lessee: Late Shri. Naraina Sinai Quirtonim  
Represented by Smt. Pradnya Zoivant Poi Cano alias Pradnya Zoivant Pai Cano For self and on behalf of all other heirs of Late. Shri Naraina Sinai Quirtonim as their duly constituted attorney

- Vegetation within the 7.5m width safety zone, of the inner periphery of the Mining Lease boundary will be maintained.  
- Personal Protective equipment will be provided for all workers.  
- Periodical health check-ups to the workers will be carried out.  
- Periodic Air Quality Monitoring to be carried out as per Environmental Monitoring Plan.  
- Overloading of truck which might result into spillages on road will be avoided.  
- Trucks shall be covered with tarpaulin during the transport.  
- Wheel washing system will be provided at the exit of the mine.  
- Regular road maintenance will be carried out  
- Regular water spraying will be carried out on the approach road to the project site.  
- PUC certified trucks will be engaged for transportation of ore.  
- Periodic Air Quality Monitoring to be carried out as per Environmental Monitoring Plan.

1.6.6 NOISE ENVIRONMENT

IMPACT

- From Operation of HEMM such as Excavators, Dump trucks, Dozers, etc.  
- Areas involving loading and unloading activities,  
- Plant equipment and machineries like crushers, vibratory screens, conveyors, loaders, etc.  
- Vehicular movement  
- Ore transportation vehicles  
- Workshop

MITIGATION

- State of the art HEMM will be used for mining operations, which will have less noise emission and also provides acoustic insulation for the operators.  
- Regular maintenance of HEMM and haul trucks/ dumpers will be done to reduce the generation of noise.  
- Vehicular traffic within the mine is restricted by reducing the number of trips, using heavy duty articulated dumpers within the ML.  
- PUC certified trucks will be engaged for transportation of ore.  
- Personal Protective Equipment (PPE) like earmuffs/ear plugs will be provided to the operators and workers.  
- All persons engaged at any work within the mine premises through the contractors will receive relevant training and other job-related briefings. The drivers of vehicles belonging to contractors entering the mine premises will be additionally explained the salient provisions of "traffic rules".  
- Training will be imparted to the mine workers deployed in the mine working area or other areas involving high noise levels.  
- Vegetation within the 7.5m width safety zone of the inner periphery of the Mining Lease boundary will be maintained.  
- Periodical monitoring of noise levels will be carried out.
1.6.7 WATER ENVIRONMENT

IMPACT

Ground water intersection and contamination of ground water bodies.

MITIGATION

The Mining Lease is located within the study area where the phreatic water table lies between 60-80m amsl as per hydrogeological study report. At the end of Conceptual period, the proposed ultimate pit depth will be at 174m amsl, where the water table is observed to be at 60-67m amsl. Thus, the mining activities will not intersect ground water.

1.6.8 BIOLOGICAL ENVIRONMENT

ANTICIPATED IMPACT

- Habitat Loss or Habitat Alteration
- Release of treated/untreated effluent in surrounding habitats/study area (buffer zone)
- Disposal/Dumping of wastes/overburdens in study area (buffer zone)
- Emissions from project activity in the study area
- Noise from Mining Operations

MITIGATION MEASURES

- Green belt development activity against the felling activities will be carried out.
- No discharge of domestic sewage and run off from mining operations
- The overburden generated will be stored within project site.
- Air pollution control measures will be adopted
- Effective Noise control measures will be adopted

1.6.9 ENVIRONMENT MONITORING PROGRAM

Environmental monitoring of the following parameters will be carried out within the core and buffer zone of the proposed project:

1. Air quality monitoring and collection of meteorological data
2. Surface water quality monitoring
3. Ground water quality monitoring  
4. Noise level monitoring  
5. Soil quality monitoring  
6. Monitoring of plantation and Green belt development

### TABLE 3: PROPOSED ENVIRONMENTAL MONITORING PROGRAM

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Environment Attributes</th>
<th>Location</th>
<th>Monitoring Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Micro meteorology</td>
<td><strong>Within Core zone</strong></td>
<td>Hourly, Continuous, Temperature, Relative Humidity, Wind Speed, Wind Direction, Rainfall</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Air Quality</td>
<td><strong>Core zone:</strong> Project site (AAQ1)</td>
<td>24 hours, Twice a week, PM$<em>{2.5}$, PM$</em>{10}$, SO$_2$ and NO$_x$.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Air Quality</td>
<td><strong>Buffer zone:</strong> Caurem village (AAQ2), Rivona village (AAQ4), Caurem village (AAQ5), Cordem Village (AAQ6)</td>
<td></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Surface Water Quality</td>
<td><strong>Core zone:</strong> Quality of First order drains to be monitored during monsoon.</td>
<td><strong>Grab Sampling</strong>, Once in a month, Parameters specified under IS:2296 &amp; CPCB Norms</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Surface Water Quality</td>
<td><strong>Buffer zone:</strong> Karka Nalla, Glocoldem village (SW1), Kushawati river, Maina village (SW2), Kushawati river, Rivona village (SW4), Kushawati river, Rivona village (SW5)</td>
<td></td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Ground Water Quality</td>
<td><strong>Buffer zone:</strong> Caurem village (GW1), Caurem village (GW2), Rivona village (GW4), Cordem village (GW5)</td>
<td><strong>Grab Sampling</strong>, Once in a season, Parameters specified under IS:10500 &amp; CPCB Norms</td>
</tr>
</tbody>
</table>
Lessee: Late Shri. Naraina Sinai Quitorim  
Represented by Smt. Pradnya Zoivant Poi Cano alias Pradnya Zoivant Pai Cano For self and on behalf of all other heirs of Late. Shri Naraina Sinai Quitorim as their duly constituted attorney

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Environment Attributes</th>
<th>Location</th>
<th>Monitoring Parameters</th>
<th>Duration</th>
<th>Frequency</th>
<th>Parameters</th>
</tr>
</thead>
</table>
| 5      | Noise                  | Core zone: Project site (AAQ1)  
Buffer zone: Caurem village (AAQ2)  
Rivona village (AAQ4)  
Caurem village (AAQ5)  
Cordem Village (AAQ6) | Hourly, for 24 hours | Once in a season | dB(A) Leq Day & dB(A) Leq Night |
| 6      | Soil                   | Core zone: Project site (S1)  
Buffer zone: Caurem village (S2)  
Ambaulim village (S3)  
Cordem Village (S6) | – | Once in a season | Parameters as specified Environmental Impact Assessment Guidance Manual (Mining of Minerals) |

Estimated Budgetary Allocation for Environmental Monitoring will be Rs.16,40,000/- per Annum

1.6 ADDITIONAL STUDIES

As part of additional studies risk assessment was done while disaster management plan was prepared while occupational health and safety measures were also addressed.

1.7 CER ACTIVITIES

An amount of Rs. 1,03,80,000/- will be spend as part of CER activities. The Proposed CER activities are listed in table below.
TABLE 4: PROPOSED CER ACTIVITIES

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Proposed CER Activities</th>
</tr>
</thead>
</table>
| 1       | Promotion towards education  
|         | • Transportation for students  
|         | • Scholarship  
|         | • Distribution of uniforms and books |
| 2       | Health care  
|         | • Medical Camps  
|         | • Conducting awareness programme  
|         | • Providing facilities towards medical emergencies |
| 3       | Skill development |
| 4       | Provision of drinking water & sanitation |
| 5       | Plantation in community |
| 6       | Rainwater harvesting |
| 7       | Installation of solar PV Panels and or provision of solar street lights in nearby villages at public places |

1.8 PROJECT BENEFITS

Zamblidadga Dongor Iron and Manganese Ore Mine is expected to benefit the following stakeholders during the life of the mine, viz.

A. Socio-Economic Benefits

The proposed project will operate during general shift and generate both direct and indirect form of employment during its operation. The permanent form of employment will comprise of managerial and supervisory cadre, skilled workers that include the HEMM operators, workshop mechanics, etc. along with semi-skilled and unskilled workers. About 52 people are expected to be directly employment. Some of the contractual work could include greenbelt development and maintenance, nursery maintenance, construction work involved in environmental protective measures, etc.

Indirect form of employment will include transportation, material supply such as machinery parts and drinking water through water tankers, running canteen in the project premises, local
workshops, etc. Approximately 200 people is expected to be engaged under indirect employment. Altogether, about 252 people will be employed due to the project operation.

As the project will offer regular and consistent income through jobs to the local people from nearby villages, the project will have an overall positive impact on the local community. However, based on the requirement of skill level and availability of resources, employment will be provided to people from other surrounding villages.

B. Services towards Improving Socio-economics of the Area

The project will extend need based facilities to the people in the surrounding villages, such as Education, health care, sanitation, skill development, etc. Training facilities will be extended to the villagers and absorbed in the project.

1. Promoting Education & Knowledge Based Initiatives
   - Scholarships for the higher studies will be provided to meritorious students
   - Organizing tuition classes
   - Distribution of school uniforms and note books
   - Providing transport facilities to school children

2. Providing Healthcare to Local Communities
   - Free healthcare camps will be conducted in the village every year.
   - Ambulance / Vehicle will be arranged for the local community whenever required or emergencies.
   - Health awareness programmes.

3. Providing Hygiene & Sanitation to Local Communities
   - Cleaning of drains
   - Supplying of clean drinking water
   - Awareness on sanitation

4. Skill development
   - By providing support to Self- help groups
   - Need based Computer training
   - Promotion of skill development through competitions at school level
   - Promotion of sports
C. Benefits to the State and Central Government

1. Mining operation at the proposed project will have a positive impact at local and regional levels of community of the State, wherein, basic requirement of the community needs will be strengthened by the project by extending the health care, educational facilities developed in the community, providing clean drinking water to the villages, generating employment opportunities in the area, etc. The project will benefit the direct and indirect stakeholders through creation of secondary & tertiary Business Opportunities for the local people in the form of Service Industry resulting in development of ancillary & allied services like Canteen & Mess, Transport, Machinery Repair & Maintenance etc.

2. The Lease area of the project is mineralized having Resources of 4.336 Million Tonnes of Iron Ore. Proposing to produce 0.5 Million Metric Tonnes of Iron Ore per Annum, the expected life of the mine is 9 years, which may enhance based on the future results of exploration planned during the Mining Plan period. However, the Lease is valid till 12/12/2029. Iron ore produced will cater the needs of raw material used in the manufacture of steel at the local steel plant. The project will contribute towards the emphasis of the Indian Bureau of Mines, as mentioned in its report ‘Iron and Steel – Vision 2020’, the necessity to plan the availability of raw material resources at least for a period of 50 years.

3. The project will contribute towards statutory payments such as Royalty, DMF, NMET, GIOPF, etc., to the State & Central Government exchequer in addition to various applicable taxes.

4. Based on demand, the iron ore produced will also be exported which will contribute to the State & Central Government exchequer through export duty.

5. After entire iron ore is mined out up to its economical depth, the mine pit would act as a Rainwater Harvesting Structure, thereby accumulating and harvesting rain water. By means of percolation, the harvested rainwater will ultimately aid in the enhancement of groundwater table in the Project Area. The project will enhance the groundwater condition in a small region of the state.

D. Budget For Socio-Economic Welfare Activities

As per Memorandum No: F.NO. 22-65/2017-IA-III dated 01/05/2018 CER of 2% of project cost is considered. As the project cost is 51.90 Crore, 2% of project cost, amounts to Rs.1,03,80,000/- allotted towards CER. Further CSR activities will be identified as per public comments during public hearing.
1.9 CONCLUSION

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for regular monitoring and immediate rectification at site. Due to the Mining activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Prior Environmental Clearance shall be granted at the earliest.