APPENDIX I
PROPOSED TERMS OF REFERENCE

1. Environment Impact Assessment/Environment Management Plan document shall be in accordance with the provisions & generic structure stipulated in the EIA Notification 2006 dt. 14.09.2006 & subsequent amendments and as per MoEFCC, New Delhi (S.O. 1530 (E) notification dtd. 6th April, 2018 for Amendment in validation of the environmental clearance.

2. EIA-EMP document shall include complete profile of the Project Proponent & Project Consultants.

3. EIA-EMP document shall cover land description of project site (plot/survey/khasara number, village, tehsil, district, state & extent of land involved).

4. EIA-EMP document shall include deposit conditions working depth mining scheme, details of machinery, backfilling of mine pit with type of blasting, drilling and explosives.

5. The general features such as surface drainage, mineral transportation and process flow of mining activity, power and water supply shall be indicated.

6. The baseline environmental status within 10 km radius from the boundary of mining lease area (buffer zone) and core zone with respect to air, water, noise, soil, socio-economic and biological environment of Daban Wamoti Bauxite Mining Project will be plan to carried out during the period October – December 2018 (**Post Monsoon Season – 2018**) as per TOR, by environment consultant M/s Anacon Laboratories Pvt. Ltd., Nagpur. The Baseline data will covers the following:

Environmental Attributes and Frequency of Monitoring

S. No.	Environmental attributes & Frequency of sampling	Parameters	Monitoring Locations
1	Meteorology	Hourly Meteorological data (Continuous) through data logger for Temp. (Min. & Max.), RH, Rainfall, Wind Speed and Wind Direction	1. Project Site (Mine office)
2	Air monitoring (Frequency Twice in a week continuously 24 hrs at each location. one season monitoring.) Total Samples: 08 Nos.	(PM2.5,PM10, SO_2, NO2, CO, NH_3, O_3, Benzene, Benzopyrene, and Heavy Metals in PM10 (Pb, As, Ni)	1. Project Site (Mine office) 2. Daban 3. Khanay 4. Balapar 5. Bharapar 6. Vamoti Nani 7. Rasaliya Juna 8. Anandnagar

3.	Noise (once in Base line Period) Total Samples: 08 Nos.	Leq (dB A) Day time and Night time with hourly measurement. • Sensitive Place • Commercial Place • Residential area • Industrial Area	1. Project Site (Mine office) 2. Daban 3. Khanay 4. Balapar 5. Bharapar 6. Vamoti Nani 7. Rasaliya Juna 8. Anandnagar		
		Any National/State Highway and Road (Near project site)			
		Name of Road			
		Frequency: - **No. of vehicles plying per day/night**	H	M	L
4.	Water (Grab Sample once in Base line Period) Surface Water – 6 Nos. Ground Water (Tubewell/Open Dug Well) – 8 Nos. Total: 14 Nos.	**Physical Parameters:** TDS, TSS, Conductivity, Turbidity **Chemical Parameters (Inorganic):** pH, Alkalinity, Total hardness, Calcium hardness, Chloride, Sulphate, Fluoride, Sodium, Potassium **Heavy Metals:** As, Cd, Cr, Cu, Pb, Fe, Mn, Zn, Ni, CO **Nutrient and Demand Parameters:** Total Nitrogen, Nitrate nitrogen, Total Phosphate, DO, BOD, COD **Organic Parameters:** Total hydrocarbon, oil & Grease **Note:** BOD & COD should be excluded for groundwater **Bacteriological Parameters:** Total Coliform & Faecal coliform And **As per IS10500 : 2012 (Drinking Water – Specification)**	<u>Ground Water</u> 1. Project Site (Tanker) 2. Daban 3. Khanay 4. Balapar 5. Bharapar 6. Vamoti Nani 7. Rasaliya Juna 8. Anandnagar <u>Surface Water</u> 1. Pirwali Nadi (Nr. Ukheda) 2. Khjari Nadi (Nr. Vamoti Nani) 3. Khjari Nadi (Nr. Balapar) 4. Pat Nadi (Mine lease Area) 5. Pat Nadi (Nr. Sodha Camp) 6. Pat Nadi (Nr. Pat)		
5.	Soil (once in Base line Period) Total Samples: 8 Nos.	**Physical Parameters:** Bulk Density, Texture, Particle Size distribution, water holding capacity and infiltration rate. **Chemical Characteristics (from water extract 1:5):** pH, conductivity, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate. **Exchangeable Cations:** Calcium, Magnesium, Sodium,	1. Project Site (Mine office) 2. Daban 3. Khanay 4. Balapar 5. Bharapar 6. Vamoti Nani 7. Rasaliya Juna 8. Anandnagar		

		Potassium, CEC. **Fertility Status:** NPK, Organic Matter, Organic Carbon. **Heavy Metals in Acid Extract:** As, B, Cd, Cr, Cu, Pb, Ni, Co, Fe, Mn, Zn, and Se.	

Land Use:

I. Baseline Survey : Describe and Map the Land use of the project area (including eco-sensitive zones) in the radial distance of 10 km from the site using both primary and available secondary data
II. Assessment of Land use Impact in context to other environment parameters like Air, Risk Noise, Scenarios, Hydro-Geology, Socio-economic etc. Pre-Post Mining Land use change analysis.
III. Impact on land and/or mining site through Flood Modelling in case of any major rivers within the proximity of 1 km from the site (Common with Hydro-Geology or Geology)
IV. Geo-tagged Photographs of field visits.
V. Survey through DGPS for verification of Boundary pillars and topography study (Common with Geology)

Note: As per the documents it's understood that (CRZ) Coastal Regulatory Zone Clearance for the site is not applicable for these sites.

Hydro-Geology:

I. Baseline Survey: Describe and Map the Surface and Sub-surface Hydrology of the project area in the radial distance of 10 km from the site using both primary and available secondary data with respect to Quality, Quantity and Groundwater Zones as per CGWB notification.
II. Sample collection of at least 6 sites for surface and Groundwater spread across the study area of 5 kms.
III. Assessment of Hydrological Impact in context to mining depth(below and/or Above Groundwater), impact due to usage of Ground water by GMDC w.r.t CGWB notified zones and other environment parameters like Air pollution, Risk Scenarios, Groundwater levels etc.
IV. Impact on land and/or mining site through Flood Modelling in case of any major rivers within the proximity of 1 km from the site (Common with Geology or Land use)
V. Geo-tagged Photographs for all the sampling locations and related field visits.
VI. Survey through DGPS for verification of Boundary pillars and topography study (Common with Geology)

Note: Calculation and Design of Artificial recharge sites as per CGWB requirements – (if applicable-as a part of mine plan or closure plan)

Geology:

I. Baseline Survey: Describe and Map the Geology of the project area in the radial distance of 10 km from the site using both primary and available secondary data.
II. Assessment of Geological Impact in context to Seismic zones, Blasting and Vibrations due to mining activities and other environment parameters like Risk Scenarios.
III. Impact on land and/or mining site through Flood Modelling in case of any major rivers within the proximity of 1 km from the site (Common with Hydro-Geology or Landuse)
IV. Sample collection of at least 6 sites spread across the Mining site and surrounding areas.
V. Geo-tagged Photographs for Geological Sections and all the sampling locations.
VI. Survey through DGPS for verification of Boundary pillars and topography study.

Socio-Economic studies:

I. Describe the Social, Demographic and Economic parameter of the project area in the radial distance of 10 km from the project site using both primary and secondary data source.

II. Assess the Social-Economic Impact assessment in context to the description of the environmental parameter in context for developing EIA/EMP and suggest the mitigation measures thereof.

III. Assess the Biophysical Environment (climate, soils and land capability, natural vegetation, water resources) in context to the Social Impact Assessment affecting the life of the local resident population in core and buffer zone.

IV. Social and Economic development programs will be in place. A detailed socio-economic development measures including community welfare program most useful in the project area (and also describe earlier CSR interventions) for the overall improvement of the environment should be assessed through NEED ASSESSMENT SURVEY. Based on the Need Assessment Survey, submit a detailed plan for Corporate Environment Responsibilities (CER) Development plan with appropriate budgetary provisions for the next five years for either 1% of CER Budget.

V. Check the Status of the land purchases in terms of land acquisition Act and conduct Social Impact Assessment study. Verify the Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land. Explore the R&R details in respect of land in line with the national and state Government policy.

VI.

Biological Environment

I. Site survey within Core (ML Area) & Buffer Zone (10 km radial distance from periphery of ML area) of study area
II. Preparation of Inventories of floral and faunal attributes within study area
III. Phyto-socio studies for terrestrial vegetation within core and buffer zone
IV. Study of aquatic (Plant) ecology in surrounding area based on available water body, if any.

V. Identification and Categorization of RET species, if any within the study area as per IUCN and WPA – 1972 as amended.

VI. Study of impact of existing bauxite mining activities on vegetation and faunal attributes.

VII. Secondary data collection from Government Department – Forest Dept. , Agriculture dept. , Research institutions, etc.

VIII. Study of impact on biological environment within core and buffer zone from the existing mining activities

IX. Preparation of report along with suggestion of conservation/restoration plan.

Baseline study in respect of following attributes will also be included in the EIA-EMP report

Sr. No.	Attributes	Parameters	Frequency
1.	Ecology	Existing terrestrial and aquatic flora and fauna in (Core Zone – ML area & Buffer area) within 10-Km radius.	Through field studies once during study period. Secondary data will also be collected.
2.	Land use	Trend of land use change for different categories	Based on data collected from secondary sources like census abstracts of census of India 2011 and satellite imagery.
3.	Geology	Geological history	Data will be collected from secondary sources
4.	Hydrogeology	Drainage area and pattern, nature of streams, aquifer characteristics, recharge and discharge areas	Hydro-geological data based on primary and secondary sources
5.	Socio-Economic aspects	Socio-economic characteristics: i.e. demographic structures, population dynamics, infrastructure resources, health status, economic resources.	The data on demographic profile in the study area will be collected from primary and secondary sources like census abstracts of census of India 2011

7. EIA-EMP document shall include land use pattern including agriculture, forest land, water bodies and settlements within 10 km study area.

8. Existence of National Park, Wild Life sanctuary, migratory routes of wild animals, if any within 10 km from the mine lease area shall be incorporated in the EIA-EMP report.

9. Topographical map of study area (core & buffer zone -10 km from the boundary of core zone) showing major topographical features shall be included.

10. EIA-EMP document shall include biological environment (flora and fauna) and socioeconomic environment within the study area.

11. EIA-EMP document shall include anticipated impacts on land, air, noise and water environment and the mitigation measures.

12. Environmental monitoring programme and the environment management plan shall also be covered.

13. This is being a case of amendment in EC for regularization of validity of Environmental Conditions; the status of compliance of environmental clearance conditions of existing project shall be included.