ENVIRONMENTAL IMPACT ASSESSMENT

FOR

THE MALIPARBAT BAUXITE MINE FOR A PRODUCTION CAPACITY OF 0.6 MTPA OVER A MINING LEASE AREA OF 268.110 HA AT ALIGAON, KANKARAMBA, SORISHPADAR VILLAGE, POTTANGI TEHSIL, KORAPUT DISTRICT, ODISHA

EXECUTIVE SUMMARY

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Sr.No.135 as on March, 2021
NABL Accredited & ISO 17025 Certified
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NABET Accreditation No :NABET/EIA/ACO/21/1630

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

Maliparbat Bauxite Mines Lease of M/s HINDALCO INDUSTRIES LTD (HIL) was executed on 08.11.2007 by Department of Steel and Mines (Government of Odisha). This mine is brown field bauxite mine which was operated earlier as a fully mechanized open cast mine. The mine lease area admeasures 268.11 ha land is spread across three revenue villages namely Aligaon, Kankaramba and Sorishpadar within the Pottangi Tehsil of Koraput district in Odisha.

The Bauxite ore will be produced at a maximum rate of 0.6 MTPA during the plan period of the project. Maliparbat is a part of East Coast Bauxite deposits. It has been established during the reconnaissance survey that the estimation of total geological reserves in the mine lease area is amounts to 15.05 MT while minable reserves are estimated about 14.74 MT. The life of the mine 24 years which is the sum of 5 years of plan period and the next 19years beyond the plan period.

1.1.1 Environmental Setting

The entire lease area of Maliparbat bauxite Mine falls in hilly area under the revenue class of "Pahad and Parbat". There is no forest land in the M.L area. The project area is mostly barren land, bearing small portions of quarry and OB dump and also subgrade dump exists.

The project area is well connected through road and rail networks. The project is accessible through SH-43. The Dumriput rail siding at a distance of 25 km from the ML area will be used for transport bauxite ore from the mine.

An area within 10 km radial distance from the mine lease boundary is considered as the project study area (Figure-1).There are two RF/PFs within the study area, viz., Pitagurha PF (8.9 km, WSW) and Dushura RF (9.7 km, WSW) although the project area/ML area is free from forest areas. There are several surface water bodies within the study area although no perennial water resources are observed within the ML area. There are no national parks/wildlife sanctuaries or archaeologically notified places within the study area.

1.2 Project Description

Based on the nature of occurrence of the ore, geological setting of the deposits, topography, scale of operation, ore to waste ratio etc., opencast mechanized mining method is selected for extraction of the ore by slicing method in multiple benches. The sequence of mining activities as per scheme of mining broadly includes the following steps in sequence:

(i) Removal of top-soil/overburden;
(ii) Excavation and sizing of minerals;
(iii) Loading on dumpers for final dispatch; and
(iv) Back-filling of top-soil/overburden.

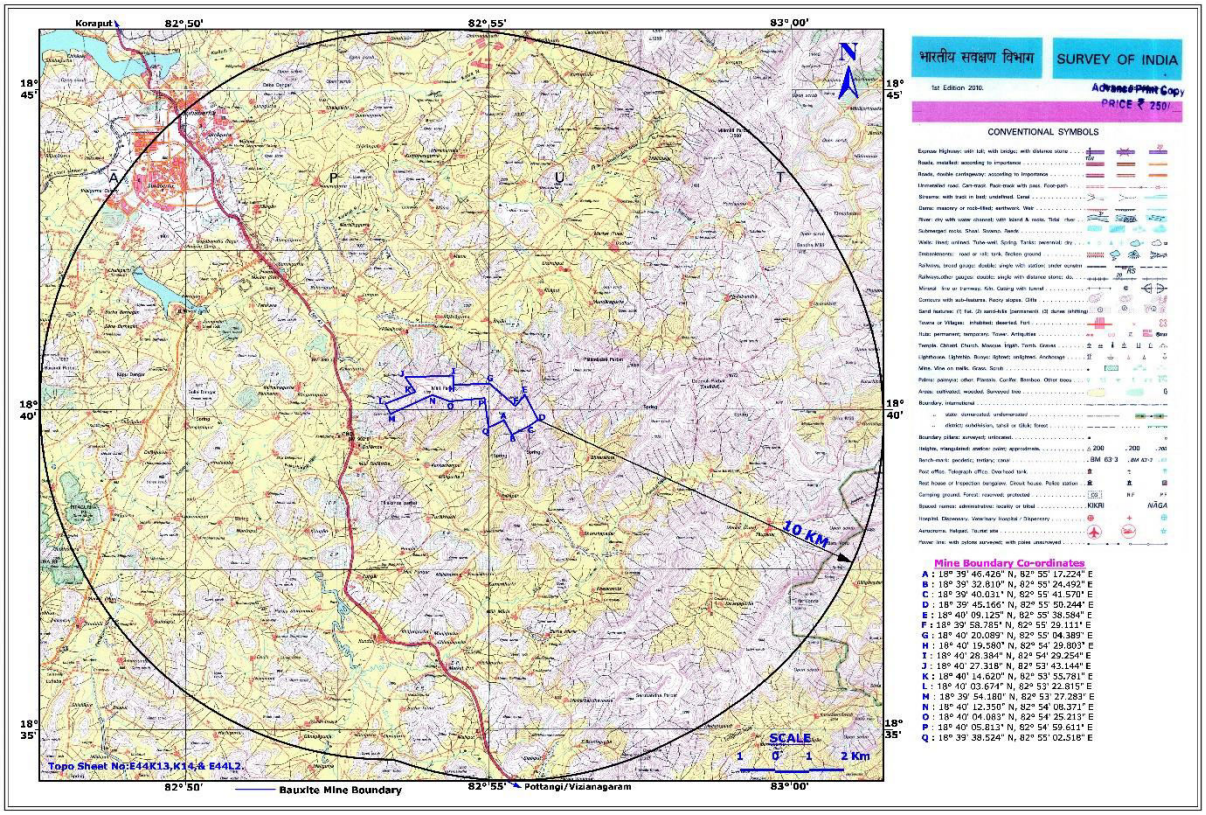

FIGURE-1
STUDY AREA OF MALIPARBAT BAUXITE MINE

1.2.1 Proposed Scheme of Mining

In the current review period (2018-2023), major factors like topography, estimated reserve & grade, thickness and nature of overburden as well as bauxite ore body, capital available and production target were considered as the basis of adopting opencast mining method as economically feasible. The mining operation will be carried out in a single shift basis with the deployment of earth moving machineries like Blast-hole Drill, Excavator, Tipper Trucks, etc.

There is a proposal to start production and exhaust bauxite from one end of the deposit in the M.L area as per current approved mining plan/scheme so as to commence reclamation of mined area from 6th year onwards of scheme period.

Only one quarry existing namely Quarry-1has been proposed for development and production simultaneously. Laterite / OB will be removed separately in benches up to 4 m height and width of the benches in ore body will be kept up to 6m and 9m respectively. The individual bench faces will be kept nearly vertical (75°). Keeping in view the undulated topography of the plateau, variable thickness of OB as well as bauxite and movement of the machines on the benches.

1.2.2 In-situ Tentative Excavation (Year-Wise) in the Plan Period

The proposed quarry is scheduled to produce bauxite at a rate of 0.45 MT to 0.6 MT in an increasing order from 1st year of the plan period to the 5th year of production. Based on the information provided in the Mine Plan, the overall bauxite ore to overburden ratio is calculated as 1 (tonne): 0.05 (m^3).

1.2.3 Extent of Mechanization

Loosening & breaking the In-situ strata of rock by blasting is a normal practice followed in Mining activity. About 60% of the rock mass (overburden and bauxite) will be loosened by the rock breakers and balance 40% will be broken by drilling &blasting) (NONEL technology).

Planning has been done to develop the benches of 6m height and controlled blasting parameters recommended to achieve optimum results in terms of fragmentation, economy and least possible effect on the surrounding environment. The drilling parameters based on broad blasting parameters and the yearly loosening/fragmentation of OB through ripping and blasting.

DTH Drill, Excavator, Bull-Dozer, Wheel Loader and Rock breakers will be used for extraction of ore and 20 tonner tipper trucks will be used to transport the material within the ML area.

1.2.4 Life of Mine and Mine Closure

It is calculated that based on above assumption that mine resources will be exhausted in next 19 years@ 0.6 MTPA/annum. Hence life of the mine 24 years which is the sum of 5 years of plan period and the next 19 years beyond the plan period.

However, rate of production may likely be changed in future depending upon the outcomes of proposed exploratory drill holes, method of working, mechanization and demand of captive plants. The mine closure will be done as per the Mine Plan

1.2.5 Utilities

- Power Requirement

  The estimated power requirement including utilities and auxiliary facilities for the of mine production is approximately 100 kVA will be sourced from on-site DGs. In future, 20% of the energy requirement will be met from solar energy to be facilitated within the ML area.

- Water Requirement

  Water requirement for project is about 61 KLD which includes 3 KLD of water domestic requirement and about 58 KLD of water for purpose including wet drilling, water sprinkling, dust suppression and plantation purposes.

The permission to extract the water from KundliNala was granted by Irrigation dept. vide letter No. Irr-II. WRC- 45/06-13366/WR dated 21.04.2006 and renewed up to 2023. Effort will be made to avoid use of water from natural sources by creating rain water harvesting ponds with in mining lease area.

- Drinking Water Management (Source & Supply of Water)

  It is proposed to tap this quantity of water from KundliNala at an approximate distance of 3.7 km from Maliparbat hill top. To enable drawl of water, a pick-upweir will be constructed on the Kundlinala and water will be transported by tankers to the ML area.

- Drinking Water System

  Water from KundliNala will be filtered in pressure filter, chlorinated and will be fed to the various storage tanks, located at roof top of the office building, canteen and workshop. From the roof top tanks water will be distributed to consuming points.

- Sewerage System

  A sewerage system of septic tanks followed by soak pits shall be provided for the project area.

- Water Harvesting Pond

  One water harvesting pond exists over an area of 1,380 m^2 or 0.138 hectare.

1.2.6 Use of Mineral

The bauxite from Maliparbat mine will be used as captive source for production of metallurgical grade alumina.

The bauxite mined out from the Maliparbat mine will be used in existing Hindalco's Alumina refineries which is located at Renukoot (Uttar Pradesh), Muri (Jharkhand) & Belgaum (Karnataka) as per their requirement. HIL has also submitted proposal to Govt of Odisha to supply bauxite of Maliparbat to Utkal Alumina refinery (Subsidiary of Hindalco) at Rayagada, Odisha. The supply of Bauxite from Maliparbat mines to its HIL's captive Alumina Refineries will depend based on demand supply scenario applicable at that point of time.

1.3 Baseline Environmental Status

As per the ToR condition, the baseline data has been generated during a non-monsoon study period starting from 1st October, 2019 to 31st December, 2019 representing post-monsoon and partly winter season.

1.3.1 Geology and Hydrogeology

The general elevation of the ML area 1200-1300 above MSL. The maximum altitude difference is noted to be 324 m. The geological formations in Maliparbat ML area include Khondalite, (garnet-feldspar-mica-bearing gneiss) bauxite and clayey soil.

There are no perennial water sources within the ML area. Radial drainage pattern is observed in & around the ML area. The ephemeral first order streams being almost parallel to sub parallel originate on the plateau top and flow down to slope towards north as well as south to unite and give rise to second order streams. KundliNala is located in the south-eastern side of the lease area.

Water table occurs at a depth 8 m to 13 m from surface level beyond the plateau (ML area upon Maliparbat Hill). The depth of water table is beyond 300 m from below the surface of ML area. The maximum achievable mining depth will be 24.8 m from surface level during the life of mine. Hence, there is no possibility of ground water puncture and hence mine seepage due to mining activities.

1.3.2 Land Use Pattern

The land use of the study area is characterized by 5.8% of built-up area, 2.1% forest and agricultural lands measuring about 36%. The pre-dominant land-use pattern in study area is waste lands of about 51.5 %. Other than that, surface water bodies are spread in 4.6% of the study area.

The land use of the project area falls in hilly area under the "Pahad and Parbat". The entire mine lease area is barren in nature and is visibly free from any form of flora and fauna. The revenue area of the mine lease area is encompassed partly in three villages, viz., Aligaon, Sorishpadar and Kankaramba.

Only one active quarry namely Quarry-1 exists in an area of 1.7 ha (within ML area) as a result of previous mining activities.

1.3.3 Soil Quality

It has been observed that the pH of the soil in the study area ranged from 5.74 to 7.24, indicating that the pH in the study area falls in moderately acidic to neutral category. The electrical conductivity was observed to be in the range of 38.0 µmhos/cm to 164 µmhos/cm, indicating that the EC in the study area falls in average category. The Nitrogen content of the soil is in less to better category and Potassium and Phosphorus content are in the range of very less, less to medium category.

1.3.4 Meteorology

It was observed that the temperature ranged from 7.0°C to 32.0°C during the study period. The maximum temperature of 32°C was recorded in the month of October with the minimum of 7.0°C temperature recorded during the month of

December. The Relative Humidity recorded was moderate and it ranged from 48 % to 81 %.

The total rainfall recorded at the ML area during the study period was 2.1 mm to 137.7 mm. A review of the wind-rose diagram shows that predominant winds are mostly from SW direction followed by NW and N direction.

1.3.5 Ambient Air Quality

Based on AAQ monitoring carried out based 24 hours/8 hours (As per NAAQS) averaging period in the study period of three months, it was observed that the AAQ of the project area is within permissible limits.

The maximum value of PM_{10} is 87.7 $\mu g/m^3$ was observed at Kakigan and minimum value of 28.8 $\mu g/m^3$ was observed at Dudhari Village. Similarly, the maximum value of $PM_{2.5}$ 30.9 $\mu g/m^3$ was observed at Behragurha and minimum value of 12.8 $\mu g/m^3$ was observed at Mine lease area.

The Maximum concentration of SO_2 is observed to be 28.3 $\mu g/m^3$ at Kakigan and Manjigurha and minimum value of 6.1 $\mu g/m^3$ observed at Mine lease area.

The Maximum concentration of NO_2 is observed to be 46.7 $\mu g/m^3$ at Bileigurha and minimum value of 6.3 $\mu g/m^3$ observed at Mine lease area. CO and O_3 levels are observed to be less than 50% of the permissible limits at all locations.

The values of Lead, Ammonia, Benzene, BAP, Arsenic and Nickel are observed to be below detectable limits.

1.3.6 Water Quality

Based on sampling and analysis of Seven surface water and eight ground water sources, within the study area, it is observed that all of the parameters in ground water fairly meet the desirable standard limits of IS: 10500. The ground water quality and surface water quality in the study area does not indicate any industrial contamination.

The ground water pH is in range of 7.06 -7.62 which are with the specified standard limits of 6.5 to 8.5 and the color and turbidity are within desirable limits. Similarly, the TDs of ground water samples ranged from 172 - 693.3 mg/l. The TDS values are within the stipulated 2000 mg/l. The heavy metal concentration are within desirable limits.

In surface water samples pH value was observed to be in the range of 6.82 to 7.56, which are well within the specified standards of 6.5 to 8.5 and EC was observed to be in the range of 127 µS/cm to 177 µS/cm.

Similarly, the surface water DO levels was observed in the range of 5.6 mg/l to 6.2 mg/l and the total hardness was found to be in the range of 35.5 mg/l to 53.0 mg/l. The total coliform counts are absent inall the samples against the standard limit of 10 MPN/100 ml.

Surface water samples indicate that Cyanides and phenolic compounds found to be below detection limits and the bacteriological studies of the surface water samples revealed that the total coliform count is measured 1020-1360 MPN/100 ml.

1.3.7 Noise Levels

Equivalent daytime noise levels varied between 41.6 d(B)A to 66.3 dB(A) near the rural residential areas. Noise levels are observed to have exceeded permissible daytime limits of 55 d(B)A near two locations, viz., N2, Semeliguda (61.9 d(B)A) and N10, Doliamba (66.3 d(B)A). Either locations, N2 and N10 are very near to NH 43. High noise levels may be attributed to noise generated from high frequency of vehicular movement on the road.

Equivalent night time noise levels varied between 32.1 d(B)A to 58.9 dB(A) near the rural residential areas. Noise levels are observed to have exceeded permissible night time limits of 45 d(B)A near two locations, viz., N2, Semeliguda (49.8 d(B)A) and N10, Doliamba (58.9 d(B)A). Either locations, N2 and N10 are very near to NH 43. High noise levels may be attributed to noise generated from high frequency of vehicular movement on the road.

1.3.8 Ecology & Biodiversity

Survey of the flora and fauna of the mine lease area and the buffer zone was carried out during study period. As the areas was mostly open and devoid of any dense vegetation, the entire mine lease area was surveyed by walking across covering the areas where vegetation was found.

Further, based on primary and secondary survey, it is ascertained that, there were no RET fauna or Schedule I species in the study area. Hence, there is no threat to any Schedule I species from the project since no such species was found in the study area.

1.3.9 Socio-Economics and Demography

The village wise demographic data of 57 villages, 02 census towns and Sunabeda Notified Area Council (NAC) are identified within the project influence area, the findings of which are summarized below:

- The work participation rate of the study area is less than the districts (Rayagada district 48.3% and Koraput district 50.3%) work participation rate. The distribution of workers by occupation indicates that the non-workers are the predominant population;
- The data of study area reveals that literacy rate of 67.52% as per 2011 census, which is found to be more than the district rate of literacy (Koraput district 49.2%); and

- As per 2011 census, there is 15.75% Scheduled Castes (SC) population is in the study area. 30.65% of population belongs to Scheduled Tribes (ST). Overall the data of social stratification reveals that the SC and ST % to population is more than 46%.

1.3.10 Traffic Study

The individual traffic units have been converted to Passenger Car Unit (PCU) for comparison with IRC standards. The total figure of PCUs recorded during the study period is about 2011 PCUs per day.

1.4 Anticipated Impacts and Mitigation Measures

Since, Maliparbat Mine is a brown field mine and a quarry has already been developed, no initial mine developmental activities are anticipated. The scheme of mining does not envisage construction of any permanent structures within the ML area; neither any permanent associated facility will be developed as part of project development.

Various impacts on the environment, which have been identified due to the proposed mine operation are caused due to mining related activities like, drilling & excavation, rock-breaking, blasting, material transport to and from the ML area. Predictive modeling has been used to account the impact on air and noise levels and incremental results have been discussed.

Anticipated impacts with respect to air, water, noise, soil, ecology & bio-diversity, traffic and socio-economic changes and Appropriate mitigation measures are addressed with respect to each aspect of the environment are discussed in the following sections.

1.4.1 Impact on Land Use

Since, the mine lease area is identified upon the hills of Maliparbat hillock, all human settlements are found in the valley below the foot hills. Therefore, this project did not envisage displacement of indigenous population in any form. Conclusively, it can be ascertained that there is no significant or direct negative impact due to change in land use on the nearby communities.

1.4.2 Impact on Topography

The mining activities are envisaged within the proposed ML area of 268.11 ha and no external dumps or associated activities outside the ML areas is envisaged. Therefore, no change in topography is envisaged beyond ML area.

Within ML area and as per the scheme of mining, the pit advancement is anticipated in the existing quarry (Quarry-1) laterally towards north, south, east and west directions based on the occurrence of ore body and will remain within the mine lease boundary. Overall, an area of 109 hectares (out of 268.11 ha) will be degraded conceptually within the mine lease boundary at the end of mine life.

The mined-out area will be backfilled concurrently and plantation will be carried out in the phase-wise manner as conceptual plan/mine closure plan.

Impact within mine lease area will be mitigated through implementation of recommendations made in the detailed slope study that has been conducted to ascertain appropriate bench geometry and cover the risks related to subsidence. The slope study has been conducted by AKS University, Satna, MP. The working depth, bench geometry and geological sections as per the IBM approved mine plan

1.4.3 Impact on Climate

The relative humidity in the area is not likely to change because of the proposed mining as it will not cause any significant changes in the prevailing temperatures and rain fall of the region.

1.4.4 Impact Due to Solid Waste

The sub-grade produced at the mine will be stacked separately for a temporary period and feasible option for re-use through blending will be explored. OB/SB/IB will be used for backfilling purpose. Top Soil will be used over backfilled area for plantation purpose.

The major impact due to solid waste generated is anticipated due to Wash-off from dumps/stacks (reject dump, sub-grade dump) in the monsoon period. The Kolab river flows at a distance (aerial) of about 4-km from the mine deposit and is not directly connected to the mine deposit. However, the streams originating from the mine deposit travel about 6-km before they reach the Kolab river.

The slope of the individual terraces will be dictated by the angle of repose of mineral reject/overburden which, considering the size of material. In addition to the garland drain, retaining wall around the dumps are proposed to be provided to arrest the finer particles of the overburden/mineral reject dump as well as the top soil which are susceptible to rain water washings. Settling tanks will be provided to collect the rain water washings for settling of suspended solids before the water can be used or discharged to the nearby streams.

1.4.5 Impact on Air Quality

The bauxite mining activities is likely to contribute additional Particulate Matter (PM), from area sources. Air Dispersion Modeling studies were conducted considering proposed mining activities.

The dust levels will be reduced considerably by implementation of appropriate dust control measures. The modeling results indicate that the resultant ground level concentrations at the nearby locations will be within permissible with implementation of appropriate EMP measures.

Similarly, impact due to transport of material to and from the ML area was assessed based on the air dispersion modeling studies conducted at various receptors on the material transportation route. It is observed based on the modeling studies, that the peak GLCs are likely to occur at 0.05 m in NE direction from the center of the road near busy traffic junctions. The resultant ground level concentrations of CO and NOx at major traffic junctions near Semeliguda and Damanjodi junction do not exceed the permissible limits. The incremental concentrations based on air dispersion modeling results are close to or less than 1 $\mu g/m^3$ at nearby habitations. Similarly, resultant PM (PM_{10} and $PM_{2.5}$) GLCs are likely to be within permissible limits at traffic junctions and nearby habitations.

Implementation of appropriate dust control measures will be undertaken to reduce the impact on air quality; as such wet drilling, development of greenbelt along the project boundary, installation of water sprinklers near loading/unloading area, haul roads, etc.,

1.4.6 Impact on Water Resources and Water Quality

The total water requirement for mining operations will be about 61 m^3/day(peak) which permitted by the concerned authorities to be abstracted from the Kolab river.

All efforts will be made to use rain water harvested in rainwater harvesting pond for industrial use. Efforts for recycling of water (used for washing) will also be done by implementing suitable water recycling process.

As far as use of water is for wet drilling and dust-suppression purpose is concerned, there is no possibility of recycling of water and entire water will be utilized / evaporated / evapo-transpired during dust suppression, watering and plantation site etc.

Wastewater discharge from the workshop and machine washing will be routed through oil grease catchers, which will be installed at service ramp near garage. The wastewater after separation will be used for sprinkling purposes.

Impact on Surface Water Bodies

Since bauxite and associated rocks like Khondalite etc. does not content acidic substance, there is no possibility of acid mine drainage. Also, the project does not envisage ore-processing or slimes / tailings are not expected & construction / management of tailing dam are not necessitated.

Garland drains are proposed around the quarry and dump to prevent siltation in surrounding streams. The said drain is to be formed by cutting the material along the contour line on the plateau top and across the contour line at its discharge ends only. During normal seasons, there will not be any discharge from the mine or any ancillary activities.

The wastewater coming from the workshop will contain oil & grease. This wastewater will be treated suitably and will be used for dust suppression.

The ore processing involves stockpiling, crushing and dry screening. Even here the only source of water pollution will be wash off during rains. During the non-monsoon season the quantity of mine water generated will be less, all of which will be recirculated for sprinkling purpose on the internal haulage and approach roads.

Impact on Ground Water

Water table occurs at a depth 8m to13m from surface level (i.e.at about 892 to 887 above MSL with respect to general mine elevation of 1200-1300 above MSL) beyond the plateau as compared with the nearby dug wells. This means water table occurs beyond depth of 300 m from mine top). The maximum depth of mining will be 24.8m from surface level. Thus, it can be ascertained from above that there is no possibility of ground water puncture during the plan period of 5 years and beyond.

Therefore, ground water table and also the perennial water sources are not likely to be disturbed during mining operations.

1.4.7 Impact on Noise Levels

The noise levels at the nearest habitation (Pagugurha village) may increase up to maximum 1 d(B)A due to mine operation, however the resultant noise levels in the nearby villages will be in the range of 43.7 d(B)A to 67.8 d(B)A. The implementation of green belt will be effective in attenuating the noise levels emanated from the mining activity.

The blasting operations in the proposed mines will be carried out by deep hole drilling and blasting using delay detonators, which are bound to reduce the ground vibrations. Further, the ground vibrations will be controlled by using modern shock tubes with delay non-electric detonators.

The measures adopted to contain the Peak Particle Velocity (PPV) due to blasting should be within the permissible limits. Further, the ongoing afforestation program will reduce the noise and vibration level to some extent.

1.4.8 Impact on Soil Quality

Impact on soil quality will be reduced through implementation of appropriate mitigation measures like dust suppression through water sprinkling, afforestation in the mined-out area, and through formation catch drains and baffle walls to check soil erosion. Soil contamination due to fugitive emissions from the vehicles or HEMMs will be checked on regular basis and spill containment systems will be implemented.

Soil erosion may be accelerated on areas where the overburden from the ore excavation operation is dumped. Therefore, natural growth of the trees / plants will be protected and plantation will be undertaken in 7.5m wide no working

zone/safety zone along the M.L. boundary inside the lease area as well as on the plateau slopes to maintain the vegetative growth denser.

1.4.9 Impact on Socio-Economy

The Maliparbat Bauxite mine will have no detrimental impact on the socio-economic structure of the nearby villages as project does not envisage displacement of local population or acquisition of agricultural and homestead land. The people of nearby villages will be benefited through implementation of CSR budget finalized by HIL.

1.5 Analysis of Alternative

The economic viability of the mineral resources in Maliparbat bauxite mine is established by comparison of the pit mouth value of the bauxite ore at the pit head of the mine and the cost of operation for extraction of the ore per tonne of production. It is inferred from the above analysis that the project is economically feasible for mining.

The above facts make this is site specific to the project and cannot be developed at other places. Therefore, based on the brown field status of the project and above advantages, no alternative sites are possible and proposed for this project.

1.6 Environment Monitoring Plan

Period environment monitoring of air, water, noise, waste management, health and safety measures are being undertaken and will be continued during the operation phase of the project. Besides this monitoring, the compliances to all environmental clearance conditions and regular permits from SPCB/MoEF&CC shall be monitored and reported periodically. The methodology adopted for sampling/monitoring and analysis for establishment of project environmental baseline status is given in Annexure-VI.

1.7 Additional Studies

Public consultation will be completed after conducting of the Public Hearing and findings of the same are addressed in the EIA Report.

A Scientific study on 'Slope Stability & Deep Hole Blasting' of M/s Hindalco Industries Ltd., was carriedout by the faculty of mining engineering of Department of Mining at AKS University, SATNA, MP.

Occupational health and safety measures and disaster management plan of Maliparbat Bauxite Mine will be implemented by Hindalco's inherent Environment and Occupational Health and Safety Policy and additional studies conducted as above.

1.8 Project Benefits

The activities proposed under CER shall be worked out based on the issues raised during the public hearing as per the MoEF & CC Office memorandum dated 20th September, 2020.

The project will have positive impacts through revenue generation due to mining and implementation of CSR budget for development of educational and other infrastructural benefits. The project will generate 120 employment opportunities.

1.9 Environment Management Plan

The environment management plan of Maliparbat Bauxite Mines will be implemented by a full-fledged environmental cell of HIL to supervise and implement the environmental issues at Maliparbat mine. Documentation of the organizational structure, roles and responsibilities for implementation and for functioning of environmental management shall be ensured for effectiveness of the EMP. The environmental monitoring plan proposed will be implemented by the environmental cell of HIL.

The M.L area over 268.110 hectares is entirely located in hilly non-forestland. Out of these, an area of 5.098 hectares land has already been utilized due to quarry, dump, road etc. An area of 109 hectares will be excavated conceptually up to 24.8m (maximum) depth from surface level. As far as the present status of exploration is concerned, there will be a single quarry of 109 ha at the end of life of the mine out of the total ML area, 268.11 ha. Area of 8.350 ha will be utilized for green belt/ periphery plantation and the remaining will be left undisturbed/planted suitably.

The entire mined out area over 109 hectares will be reclaimed by way of con-current back-filling and plantation. In addition to these, plantation will be undertaken in the 7.5 m wide peripheral barrier all around the plateau top inside the lease area. The greenbelt/peripheral plantation will be undertaken in 8.350 ha.

Approximately Rs.3.7 Cr will be spent towards EMP cost inclusive of mine reclamation, restoration, monitoring and other essential services etc). Approximately Rs.20 lakhs will be spent towards environmental monitoring and maintenance of environmental protection equipment every year.

1.10 Conclusion

- HIL seeks Environmental Clearance from MoEF&CC to produce bauxite ore from Maliparbat Bauxite Mines at 0.6 MTPA capacity as per plan of production by way of this EIA study.

- Opencast mechanized mining method will be implemented for extraction of ore. OB generated from the mine will be stacked in a designated area and concurrently backfilled in the mined-out area. The sub-grade produced at the mine will be stacked temporarily and it will be reutilized for captive purposes

- The bauxite mined out from the Maliparbat mine will be used in existing Hindalco's Alumina refineries located at Renukoot (Uttar Pradesh), Muri(Jharkhand) & Belgaum(Karnataka). Proposal for supply bauxite ore to Utkal Alumina Refinery in Raygada is also under process. Based on availability of good quality bauxite from captive sources, Maliparbat Bauxite Mine project is of utmost important from strategic point of view.

- The recent environment baseline status indicates that the ambient air and noise quality of the surrounding area is well within the NAAQ standards prescribed by CPCB. The impacts have been predicted quantitatively and qualitatively as well, and adequate control measures have been suggested accordingly. Similarly, no major impact on groundwater, surface water and soil quality in the study area is indicated.

- The likely adverse impacts due to the operation of the mine will be mitigated by judicious implementation of the environment management plan through plantation, dust suppression measures, construction of garland drains, catch drains and baffle walls, etc. Therefore, overall surrounding environment will be conserved, protected and improved upon closure of the mine.

- This mining projects is of utmost importance for the interest of mineral development and shall greatly contribute to improve the socio-economic conditions of the local habitants.

- This mining project will help to improve the sourcing and operational sustainability of bauxite for HIL Refineries.

- The operation of the project will bestow various social and economic benefits to local communities of the area in addition to providing better employment opportunities.

- The mining project shall improve social infrastructure of the area, apart from increased financial benefits accruing to State and Central agencies by way of taxes, royalties, DMF, cesses etc.

- Thus, in aspects related to implementation of the project and appropriate mitigation of adverse impacts through implementation of advanced control measures, it is envisaged that the project will have no significant negative impact on the environment and the society and beneficial to its all stake holder including conservation of minerals.