

PRE-FEASIBILITY REPORT

FOR

**0.9 MTPA PRODUCTION OF BAUXITE FOR MALIPARBAT BAUXITE MINE,
(ML AREA: 268.110 HA) AT VILLAGE ALIGAON-KANKARAMBA &
SORISHPADAR, POTTANGI TEHSIL, KORAPUT DISTRICT OF ODISHA**

Submitted to:

**Ministry of Environment, Forest & Climate Change (MoEF&CC)
New Delhi**

by:



**Maliparbat Bauxite Mine
Aligaon, Kankaramba, Sorishpadar Village, Pottangi Tehsil,
Koraput District of Odisha State**

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1.0 Executive Summary

Introduction

HINDALCO INDUSTRIES LIMITED (HINDALCO), a flagship company of the Aditya Birla group, is one of the largest industrial groups in India. Hindalco Industries is one of the leading producers of aluminium in the country. The company business involves bauxite mining to alumina refining. Alumina metal conversion, sheet, extrusion, foil manufacturing and is spread all over the country. The company is operating number of bauxite mines in Maharashtra, Karnataka, Odisha, Chhattisgarh and Jharkhand to feed the Alumina Plants located in Belgaum, Renukoot, Muri & Rayagada. Hindalco is a Public Limited Company.

Maliparbat Mining lease was executed on 08.11.2007. The present proposal is for production of 0.9 MTPA Bauxite over an area of 268.11 hectares in villages Aligaon, Kankaramba, Sorishpadar (Maliparbat) involving a project cost of about Rs 24 crores. The bauxite mine at Maliparbat hill range is located in Pottangi tehsil of Koraput district of Odisha. 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). HINDALCO 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 above mentioned Alumina Refineries will depend based on demand supply scenario applicable at that point of time.

Salient Features of the Project

The salient features of the mining project are given in **Table-1**.

TABLE-1
SALIENT FEATURES & ENVIRONMENTAL SETTINGS OF THE PROJECT

Sr. No.	Particulars	Details
1	Coordinates	18° 39' 32.810" to 18° 40' 28.384" N & 82° 53' 22.815" to 82° 55' 50.244" E
2	Total Mine Lease Area	268.110 ha
3	Lease period Validity	Maliparbat Bauxite Mine executed on 08.11.2007 and registered on 14.11.2007 in favour of M/s HINDALCO Industries Ltd for the term of twenty (20) years. The tenure of the lease area is scheduled to expire on 14.11.2057 as per MMDR Act 2015.
4	Life of Mine	18-20 Years
5	SOI Topo sheets	65 J/13, 65 J/14 and 65 N/2
6	Elevation above MSL	1079 to 1403 MSL (General elevation-1200-1300 MSL)
7	Present land use	Barren land, bearing small portions small of quarry and OB dump and also subgrade dump exist.
8	Nearest highway	NH-43, 1.0 km, West
9	Nearest railway station	Damanjodi RS- 10.9 km, NNW;
10	Nearest airport	Visakhapatnam Airport -110.0 km, SSE
11	Nearest town/city	<ul style="list-style-type: none"> Semliguda at 5.4 km, NW, Koraput at 25.0 km, NW

Sr. No.	Particulars	Details
12	Nearest villages	Tentuliguda village-0.7 km, WSW and Kakriguda-1.0 km, W.
13	Villages within M L area	There are no Hamlet's within ML area.
14	Archaeologically important places	Nil within 10 km radius.
15	National parks/ wildlife sanctuaries	Nil within 10 km radius.
16	Reserved / protected forest	<ul style="list-style-type: none"> • Pitagurha PF - 8.9 km, WSW • Dushura RF - 9.7 km, WSW • Nandapur RF - 14.3 km, SW
17	State, national boundaries	Inter State boundary of Andhra Pradesh-Odisha is at 8.8 km, SE.
18	Streams/rivers	<ul style="list-style-type: none"> • Kukurhaghat Nala-1.1 km, S • Kunduli Nala - 3.7 km, SE • Kolab River-4.2 km, W • Karandi River-4.8 km, NNW • Sunabeda reservoir lake- 5.8 km, WNW • Katra Nala- 7.6 km, NNW • Pathagarh Nala- 7.9 km, WSW • Pottangi Nala- 7.6 km, S • Kolab reservoir- 11.8 km, W
19	Defence installations	Nil within 10 km radius
20	Seismicity	The mine lease area falls under seismic zone-II as per IS: 1893 (Part1): 2002
21	List of major industries and mines	<ul style="list-style-type: none"> • HAL, Sunabeda- 9.5 km, NW • NALCO Damanjodi- 9.8 km, N
22	Cost of the Project	Rs 24 Crores
23	EMP Cost	Rs 0.5 Crores
24	Water Requirement	61 KLD
25	Source of water	Kundli Nala

All distances mentioned above are aerial distance from the ML area boundary

2.0 Introduction of the Project/Background Information

2.1 Identification of the Project and Project Proponent

M/s HINDALCO Industries Ltd is a registered public limited company involved in mining of minerals followed by manufacturing of metals and downstream products.

Basic details of the Maliparbat Mine are as follows.

- **Date of execution, period & date of expiry of lease:** M.L area over 268.110 hectares was executed on 08.11.2007 and registered on 14.11.2007 for a period of 20 years i.e. from 14.11.2007 to 13.11.2027. In view of section 8A(3) of Mines and Minerals (Development and Regulation) Amendment Act,2015, the period of lease is deemed to have been extended up to 14.11.2057 for 50 years from 14.11.2007.

2.2 Brief Description of Nature of Project

The lease area of 268.110 hectares falls under Aligaon-Kankaramba, Sorishpadar Villages, Pottangi Tehsil, Koraput District, Odisha. The lease area falls under the Survey of India topo sheet no. 65 J/13, 65 J/14 and 65 N/2 and bounded by latitude of 18° 39' 32.810" to 18° 40' 28.384" N & longitude of 82° 53' 22.815" to 82° 55'

50.244" E. The Index map, Study area map on Toposheet, Google map showing the study area are given in **Annexure-I**, **Annexure-II** and **Annexure-III** respectively.

The proposed Bauxite production will be achieved by opencast mechanized mining method. The main operation shall include removal and stacking of top soil and Overburden by excavator cum loaders, exposing the bauxite zone which will be followed by Bauxite excavation through controlled drilling & blasting and sizing through crusher. The remaining rejects will be used for backfilling. Once Mines progresses and sufficient void created, simultaneous back filling will be started mined out areas.

Extent of Mechanization

List of Machinery/Equipment's: Equipment required for over burden removal are

- Rock breakers for loosening the overburden,
- Drilling & blasting to loosen the OB,
- Hydraulic shovel for excavation and loading,
- Tippers for hauling of OB to the waste dump and
- Bull Dozer for leveling the dumped material
- Bauxite excavation through drilling, blasting and sizing through crusher and loading into the trucks for transportation to HIL captive refinery plants.

The details of proposed extent of machinery along with approximate specification are given in below **Table-2**.

TABLE-2
PROPOSED EXTENT OF MECHANISATION FOR PRODUCTION of 0.9 MTPA

Unit operation	Description	Dia/ Capacity	Quantity (0.9 MTPA)
Drilling	Jack hammer	32mm	3
	Compressor	100cfm	1
	DTH drill	100mm	1
	Compressor	450cfm	1
Excavation & loading	Excavator	0.9 m ³	1
		1.2 m ³	3
	Bull dozer	275 hp	1
	Wheel loader	1.6 m ³	1
		1.7 m ³	1
Breaking	Rock Breaker	125 TPH	2
Transporting	Tippers	10 t/20t	21
Environmental protection & Industrial use	Water tanker	8 KL	2
Crushing	Crusher/ Mobile crusher	300 TPH	1
Weighting	Weigh bridge	50 t	1

Other than the major mining equipment listed in above table, different equipment will be provided for maintenance of roads, cleaning of mining benches, management of stockpile etc. The list of miscellaneous equipment are given in **Table-3**.

TABLE-3
MISCELLANEOUS EQUIPMENTS

Sr. No.	Description	Capacity	Quantity (Nos.)
1	Back-hole hydraulic Excavator	1m ³	3
2	Crawler-mounted bulldozer powered by diesel engine	275hp	1
3	Tyre-mounted bulldozer powered by diesel engine	200hp	1
4	Road grader powered by diesel engine	200hp	1
5	Water Tanker	8 KL	2
6	Tyre-mounted hydraulic rock breaker	1m ³	2
7	Diesel Tanker	8 KL	1
8	Explosive Van	8 t	1
9	ANFO mixing and loading truck	10 t	1
10	Mobile Crane	-	1
11	Material Truck	10 t	1
12	Fire Tender	-	1
13	Tower mounted DG sets	100	2
14	Repair and Maintenance Van	3 t	1

Source: IBM Approved Mine Plan

2.3 Need for the project and its importance to the country and region

Bauxite is basically an aluminous rock containing hydrated aluminium oxide as the main constituent and iron oxide, silica and titania in varying proportions. Hydrated aluminium oxides present in the bauxite ore are diasporite and boehmite, Al₂O₃. H₂O (Al₂O₃- 85%; Al- 45%); gibbsite or hydrargillite, Al₂O₃. 3H₂O (Al₂O₃-65.4%; Al- 34.6%), and bauxite (containing colloidal alumina hydrogel), Al₂O₃. 2H₂O (Al₂O₃- 73.9%; Al-39.1%). Bauxite is an essential ore of aluminium and is one of the most important nonferrous metals used in the modern industry. The country has abundant resources of bauxite which can meet both domestic and export demands.

The production of mineral and its subsequent use in the Alumina Refinery will benefit by way of royalty and taxes to State Government and will also bring in large employment opportunities to the local populace thereby providing socio-economic benefit to the backward region.

2.4 Demand and Supply Gap

The production of bauxite during 2017-18 was at 22.313 million tonnes. In all, 64 producers reported production of bauxite in 2017-18. Out of these, ten principal producers having 44 mines contributed 86% of the total production.

The contribution of the Panchpatmali bauxite mine of NALCO was 32% of the total production. The share of public sector mines was about 37% of the total production in 2017-18.

About 71% of the total production of bauxite was of 40-45% Al₂O₃ grade, 16% was of Cement grade and the remaining 13% of production was of other grades during the year under review.

Odisha emerged as the leading producing state and accounted for about 51% of the total production during 2017-18.

Mine-head closing stocks in 2017-18 were 17,836 thousand tonnes as compared to 16,301 thousand tones in the previous year. About 90% of the total stock was held in Gujarat at the end of the year. The average daily employment of labour in bauxite mines was 6,031 in 2017-18 as against 6,491 in the previous year.

It has always been seen that in the cases i.e. for Bauxite there remains a demand and supply gap as demand is always high in respect of supply.

(Source: Indian Mineral Year Book 2018, Part-III: Mineral Reviews)

It may also be noted that in the absence of availability of captive bauxite supply, domestic industries are forced to import the bauxite in recent years, inspite of having abundant bauxite resource in country.

2.5 Imports V/s indigenous production

The country has large resources of Bauxite, occupying the sixth place in the world's total resources. Alumina Refineries in country are importing bauxite for use in the absence of captive supply of the bauxite ore.

2.6 Export Possibility

The quantity and value of export potential of Bauxite as per the Ministry of Commerce and Industry is given in the following **Table-4**.

TABLE-4
QUANTITY AND VALUE OF EXPORT OF BAUXITE

Year	Quantity (Thousand Kg.)	Value (Rs. Lakhs)
2018-19	15,02,924.92	30,305.47
2019-20 (April -August)	3,32,593.41	7,970.24

(Source: Ministry of Commerce and Industry)

2.7 Domestic Markets

The average grade of bauxite in Maliparbat mine is 46.01% Al_2O_3 and less than 5% SiO_2 , therefore it is suitable for use in Captive Alumina industries of Hindalco Industries Limited and its subsidiary.

2.8 Employment Generation (Direct & Indirect) due to the project

Actual requirement of manpower is generally worked out after Industrial Engineering Study during project implementation stage. However, a preliminary estimate has been made to indicate the order of manpower requirement. The detail of manpower requirement is given in **Table-5 & Table-6**.

A total of 180 persons will be employed for average production of 3600 t bauxite / day which is calculated as follows:

TABLE-5
PROPOSED EMPLOYMENT POTENTIAL

Description	Proposed
Yearly production (maximum)	9,00,000 T
Number of working days in the year excluding rainy days, holiday's etc.	300

Description	Proposed
No of effective working days	250
Daily production of bauxite	9,00,000/250 =3600 T
OMS expected after mechanization	20 T
Number of labourers required in work	3600/20=180 Nos

T- Tonnes

Keeping in view the level of mechanization and proposed production target, man power is calculated for working on 8 hourly shift basis for one shift / day of 300 days in a year. Statutory employment as per MCDR, 2017 and Mines act, 1952 will be as follows:

TABLE-6
EMPLOYMENT POTENTIAL

Sr. No.	Category	Qualification	Manpower
1	Managerial	First Class Mines Manager's Certificate of Competency	1
2	Asst. Manager	Second Class Mines Manager's Certificate of Competency	2
3	Mining engineer	Degree in Mining Engineering	1
4	Mining geologist	M.Sc in Geology/Applied Geology	1
5	Exploration geologist	M.Sc. in Geology/Applied Geology	1
6	Mechanical Engineer	Degree in Mechanical Engineering	1
7	Mining Foreman	Foreman's Certificate of Competency	2
8	Mining mate	Mate cum-blasters Certificate of Competency	4
9	Surveyor	Surveyor's Certificate of Competency	2
10	clerks	Degree in Arts, Science or Commerce	1
11	Personnel-cum labour welfare officer	-do-	4
	Total	--	20

Source: IBM Approved Mine plan

The Consent to Establish, Consent to Operate, Land Schedule, Land Deed , Approval of Scheme of Mining and Water Agreement are given in **Annexure-V, Annexure-VI Annexure-VII Annexure-VIII Annexure-IX and Annexure-X** respectively.

3.0 Project Description

3.1 Type of Project

As per Gazette notification of Ministry of Environment, Forest and Climate Change (MoEF & CC), New Delhi all projects greater than 100 hectare falls in category "A". As in this case, the lease area is 268.110 hectare, so this project falls in "A" category.

3.2 Location (map showing general location, specific location, and project boundary & project site layout) with coordinates

The Maliparbat bauxite mine is located at Aligaon-Kankaramba Village, Pottangi Tehsil, Koraput District, Odisha over an area of 268.110 ha. The geographical coordinates of ML area is given in **Table-7**. Study area map enclosed as Annexure-II. The

TABLE-7
LOCATION COORDINATES

Corner	Latitude	Longitude
A	18° 39' 46.426" N	82° 55' 17.224" E
B	18° 39' 32.810" N	82° 55' 24.492" E
C	18° 39' 40.031" N	82° 55' 41.570" E
D	18° 39' 45.166" N	82° 55' 50.224" E
E	18° 40' 09.125" N	82° 55' 38.584" E
F	18° 39' 58.785" N	82° 55' 29.111" E
G	18° 40' 20.089" N	82° 55' 04.389" E
H	18° 40' 19.580" N	82° 54' 29.803" E
I	18° 40' 28.384" N	82° 54' 29.254" E
J	18° 40' 27.318" N	82° 53' 43.144" E
K	18° 40' 14.620" N	82° 53' 55.781" E
L	18° 40' 03.674" N	82° 53' 22.815" E
M	18° 39' 54.180" N	82° 53' 27.283" E
N	18° 40' 12.350" N	82° 54' 08.371" E
O	18° 40' 04.083" N	82° 54' 25.213" E
P	18° 40' 05.813" N	82° 54' 59.611" E
Q	18° 39' 38.524" N	82° 55' 02.518" E
Tri-Junction point	18° 39' 48.838" N	82° 55' 01.801" E

3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted

This is a brown field project and bauxite is a naturally occurring mineral which is site specific due to its geological origin, hence. No alternative sites are proposed.

3.4 Size and Magnitude of Operation

i. Details of existing operations carried out:

Mining operation commenced in the area by the lessee, HIL in 2008-09. Approximate 67,614 tonnes bauxite has been produced from the mine in 2008-09, 2010-11, 2011-12 and 2013-14 by opencast method of mining with deployment of rock breaker, drilling, blasting, crushing with 100 mm dia drill, machines like 0.9m³ capacity shovel, 10 tonnes tipper etc. Since 2014-15, no mining is conducted in the lease area due to local issues and statutory hurdles attributed to no mining scenario.

Details of the existing quarry: There exist only one quarry in the M.L area between the grids from 197S to 53N and 774E to 905E which is detailed particularly with respect to length, breadth etc are given in **Table-8**.

TABLE-8
DETAILS OF EXISTING QUARRY

Name of the quarry	Length (m)	Breadth (m)	Area occupied (m ²)	Status
Q-1	250	68	17,000	Active

Details of the existing dump: So far, there exists one very small dump on the mineralized area within lease area spread over an area of 1.42 hectares, which is compact & stable. The details are provided as follows in **Table-9**.

TABLE-9
DETAILS OF EXISTING DUMP

Name of the Dump	Length (m)	Breadth (m)	Area occupied (m ²)	Volume of waste dump (m ³)
D-1	355	40	14,200	16,145

Details of the existing stacks: There exist two sub-grade stacks in the lease area spread over an area of 8,400 m² or in 0.840 hectare which are given in **Table-10**.

TABLE-10
DETAILS OF EXISTING STACKS

Name of the Stack	Area occupied (m ²)	Maximum height (m)	Volume stacked (m ³)	Quantity of stacked (t)
Sub-grade ROM	5140	2.0	2100	4200
Sub-grade fines	3230	1.5	971	1941
Total	8370	--	3071	6141

In addition to these, one water harvesting pond exists over an area of 1,380 m² or 0.138 hectare at 2m depth.

Mine general layout

General layout of the mine showing the proposed mining blocks, overburden, mineral reject and topsoil dumps, crushers locations, belt conveyor, site service facility, water harvesting, haulage and access roads, plantation area etc. is enclosed as **Annexure-XI**. The surface plan, reclamation plan, geological section, conceptual plan are given in **Annexure-XII**, **Annexure-XIII**, **Annexure-XIV**, and **Annexure-XV**. Also the EC compliance is given in **Annexure-XVI**.

3.5 Project Description with Process Details

The major factors like topography, estimated reserve & grade, thickness and nature of overburden as well as bauxite, capital available and production target was the basis to adopt opencast mining method on single shift basis with the deployment of earth moving machineries like blast hole drill, excavator, tipper etc.

A 7.5m wide peripheral barrier is proposed to be left on the edge of the plateau for the purpose of equipment safety, avoiding discharge of the silts into the valleys directly and hiding the mining activities from the surrounding adjacent areas.

There is also a proposal to start production and exhaust bauxite from one end of the deposit in the M.L area between the grids from 207S to 205 N and 645 E to 1060 E for commencement of reclamation of mined area from 6th year onwards.

Laterite / OB will be removed separately in a bench up to 4m height. Height and width of the benches in bauxite will be kept up to 6m (or boom height) and 9m respectively. The individual bench faces will be kept nearly vertical (75°). Overall slope angle will maintained as per statutory norms.

Proposed Method of Mining

Opencast Working:

Taking into consideration factors such as nature of occurrence, geological setting of the deposits, topography, scale of operation, ore to waste ratio etc., it is proposed to adopt mechanised mining by top slicing method in multiple benches. The details of the mining scheme are discussed below:

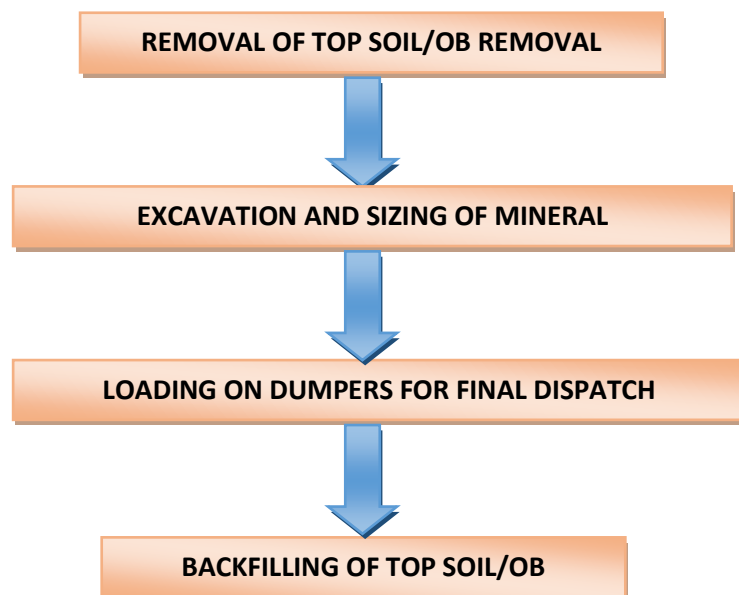


FIGURE-1
FLOW CHART OF THE PROJECT

Access Road

Maliparbat M.L area is accessible from Koraput, district Head Quarter covering a distance of 34 km consisting of 2 km all weathered road between village Doliamba and M.L area, 5 km metalled road between Semiliguda on NH-43 and 27 km between Koraput and Semiliguda.

The existing road will be developed by keeping in view the expected weather conditions (rainfall), largest vehicle on site, speed of the vehicles and construction practices in the mine. Haul road will be maintained (a) in the M.L area to suit the load capacity of the dumpers. Width of the haul road will be kept more than 3 times of the width of largest vehicles plying on the road. Gradient will be maintained up to maximum of 1:16 for haul road and 1:10 for ramp up to 10m length at one stretch.

Haul road to be developed above the level of surrounding area and will be provided with parapet wall/ embankment as required. Warning notices and road signs will be posted along the haul roads at appropriate places like crossing, curves etc. for guidance of truck or tipper drivers. Haul road will be properly maintained by way of adequate compaction and levelling. Emission and distribution of dust particles will be suppressed by 8 KL capacity water sprinkling for road safety as well as clean environment.

Pre-mining Development

As of now there exist quarry-1 which will be extended for development and production. The further quarry development will be done during the life of the mine as per approved mining plan/scheme. Height and width of the benches will be kept up to 6m (or boom height) and 9m respectively. The individual bench faces will be kept nearly vertical (75°) whereas the overall quarry slope angle will be maintained as per statutory norms.

Layout of Mining Benches

The layout/orientation of the mining benches depends mainly on:

- i. Method of working;
- ii. Topography of the area;
- iii. Degree of variations in grade within the deposit;
- iv. Degree of intercalations in the deposit;
- v. Required output of R.O.M material per day; and
- vi. Degree of pit blending required for quality control.

It has been planned to leave a safety barrier of about 7.5 m width all around the periphery of the plateau as well as along the mining lease area to prevent boulders rolling down or surface run-off spilling into the hill slope. It is proposed to create a greenbelt on the safety barrier.

Bench Height

Determination of bench height for exploitation of mineral deposit depends largely on geological characteristics of the deposit, maximum reach of the excavation equipment and the scale of operation. It is regulated by the provisions of Mines Act, 1952 and the Metalliferous Mines Regulations, 1961.

At Maliparbat, the bench height is 6 m or may reach the height up to the maximum boom length of the machine as per the applicable norms. Slice may vary from place to place depending upon topography, as well as varying thickness of overburden/mineral reject and ore. The benches are proposed to be planned generally to follow the contour and topography without much loss on dilution.

Overall Pit Slope

A steep overall pit slope is expected to be stable with 6 m bench height. However, to assess this aspect more precisely, certain additional information, such as angle of friction and coefficient of cohesiveness of the rock are required which are not presently available. It is, therefore planned to maintain the overall pit slope at 45 degree, in line with the practice adopted in other bauxite deposits in the area and as stipulated in the Metalliferous Mines Regulations. This slope is considered to be well within the safe limit.

Mine Drainage

There are no perennial water source in the M.L area. Radial drainage pattern is observed in & around the M.L 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. Kundli nala is located in the south eastern side of the lease area.

3.6 Raw materials required along with estimated quantity, likely source, marketing area of final products/s, Mode of transport of raw Material and Finished Product.

No raw material will be required for production of Bauxite. There is no proposal for storage of explosives in the lease area. Charging and blasting of drill holes will be executed by the authorised licensed vendors. The drilling and blasting will be done by controlled blasting technique (NONEL technology).

Use of Mineral

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

Bauxite Transportation

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). HINDALCO 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 above mentioned Alumina Refineries will depend based on demand supply scenario applicable at that point of time.

3.7 Resource optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined.

Water will be accumulated in the excavated mined out pit area during rains and the pits shall serve as natural ground water recharging structure. As a result of extraction of mineral, the rate of charging of ground water is likely to be increased considerably.

3.8 Availability of water its source, Energy/power requirement and source should be given

Water Source and Requirement

Water will be required in the mining area for sprinkling on the roads to suppress the dust, watering of greenbelt/green cover and trees planted to comply with requisite EMP measures, miscellaneous industrial use, and drinking and sanitation. The kundli nala is the source of water after treatment. The water permission to extract the water from kundli nala was granted by Irrigation dept. vide letter No. Irr-II. WRC-45/06-13366/WR dated 21.04.2006 (**Annexure-X**). Effort will be made to avoid use of water from natural sources by creating rain water harvesting ponds with in mining lease area. The water requirement for the mine is given in **Table-11**.

TABLE-11
WATER REQUIREMENT

Sr.No	Consumer	Requirement of Water (m ³ /day)
1	Drinking, bathing etc	3
2	Wet drilling	4
3	Washing of machines	10
4	Dust suppression during mining and processing	40
5	Plantation	4
6	Total	61
7	Recycled water retrieved from washing of machines for reuse.	6
8	Net Requirement	55

Mining operations will be carried out up to maximum depth of 17.55 m from surface level in plan period and maximum depth of workings will be 24.8 m (say 25 m) from surface level beyond the plan period as per the present level of exploration. Hence, there is no possibility of ground water puncture during entire mining tenure which is much below the proposed mining level. Likely make-off of water in the quarry floor will be the sum of direct precipitated water and surface run-off water which will be seeped into the porous strata.

Power requirement

The estimated overall power requirement including utilities and auxiliary facilities for the expansion of mine production are indicated below:

Source of Power

Power is been made available from two DG set of 45 kva and 100 kva. The power is required only for Weigh Bridge, office & establishments and lighting of roads etc. DG set will be provided by the vendor.

3.9 Quantity of Wastes to be Generated and Scheme for their Management/Disposal

Opencast working: taking into consideration factors, such as nature of occurrence, geological setting of the deposit, topography, scale of operation, ore to waste ratio etc., the opencast mechanised mining by top slicing method in multiple benches was adopted. Proposed five year production details are shown in the **Table-12**.

TABLE-12
IN-SITU EXCAVATION OF FIRST FIVE YEARS

Year	Total Excavation (in m ³)	Top soil (in m ³)	OB/SB/IB (in m ³)	ROM (in m ³)		ROM/OB ratio
				Ore (in m ³)	Mineral Rejects (in m ³)	
First year	257617	4017	28,600	204,750	20,250	1:0.13
Second year	273269	3769	19,500	227,500	22,500	1:0.08
Third Year	339178	6278	57,900	250,250	24,750	1:0.21
Fourth Year	320061	3561	16,500	273,000	27,000	1:0.06
Fifth Year	473774	6574	17,200	409,500	40,500	1:0.04
Total	1,663,899	24,199	139,700	1,365,000	135,000	1:0.1

It is planned to stack top soil and overburden/mineral reject separately on ground till some of the bauxite benches have been worked out. After some portions of the mine are exhausted of bauxite, fresh generation of overburden/mineral reject from other areas will be dumped in the mined out areas and worked out benches. Top soil, stacked separately, would be spread over the reclaimed areas, to enable planting and growing of trees. The overburden/mineral reject stacked on ground during the initial years of operation will be utilised to fill the worked out areas at the end of the working life of the mine as well as during the interim period, as and when practicable.

Topsoil is not fully fertile in nature. Water holding capacity, pH and calcium content in the topsoil is in lower side. pH will be neutralized and low calcium content will be corrected. Cow dung and farm manures will be added. Soil enrichment will be experimented. Types of OB are laterite, clay, lateralised khondalite and free khondalite. Threshold value of bauxite is +30% Al_2O_3 & -5% R. SiO_2 and plant feed grade is + 40% Al_2O_3 & -5% R. SiO_2 . Hence, bauxite having +30-40% Al_2O_3 and - 5% R. SiO_2 is regarded as mineral rejects / sub-grade bauxite.

The sub-grade materials as available will be blended with high grade bauxite to obtain plant feed grade as per mining plan/scheme.

As on date, there exist two sub-grade stacks in the lease area spread over an area of 8,400 m² or 0.840 hectare. In addition to these, one water harvesting pond exists over an area of 1,380 m² or 0.138 hectare at 2m depth.

3.10 Schematic representations of the feasibility drawing which give information of EIA purpose

As per the Environment Impact Assessment (EIA) notification dated 14th Sept. 2006 and subsequent amendments, the proposal falls under category A. EIA/EMP report shall be prepared to get the Environmental Clearance for this project from the MoEF & CC. The baseline studies will be undertaken as per schematic diagram given as **Figure-2**.

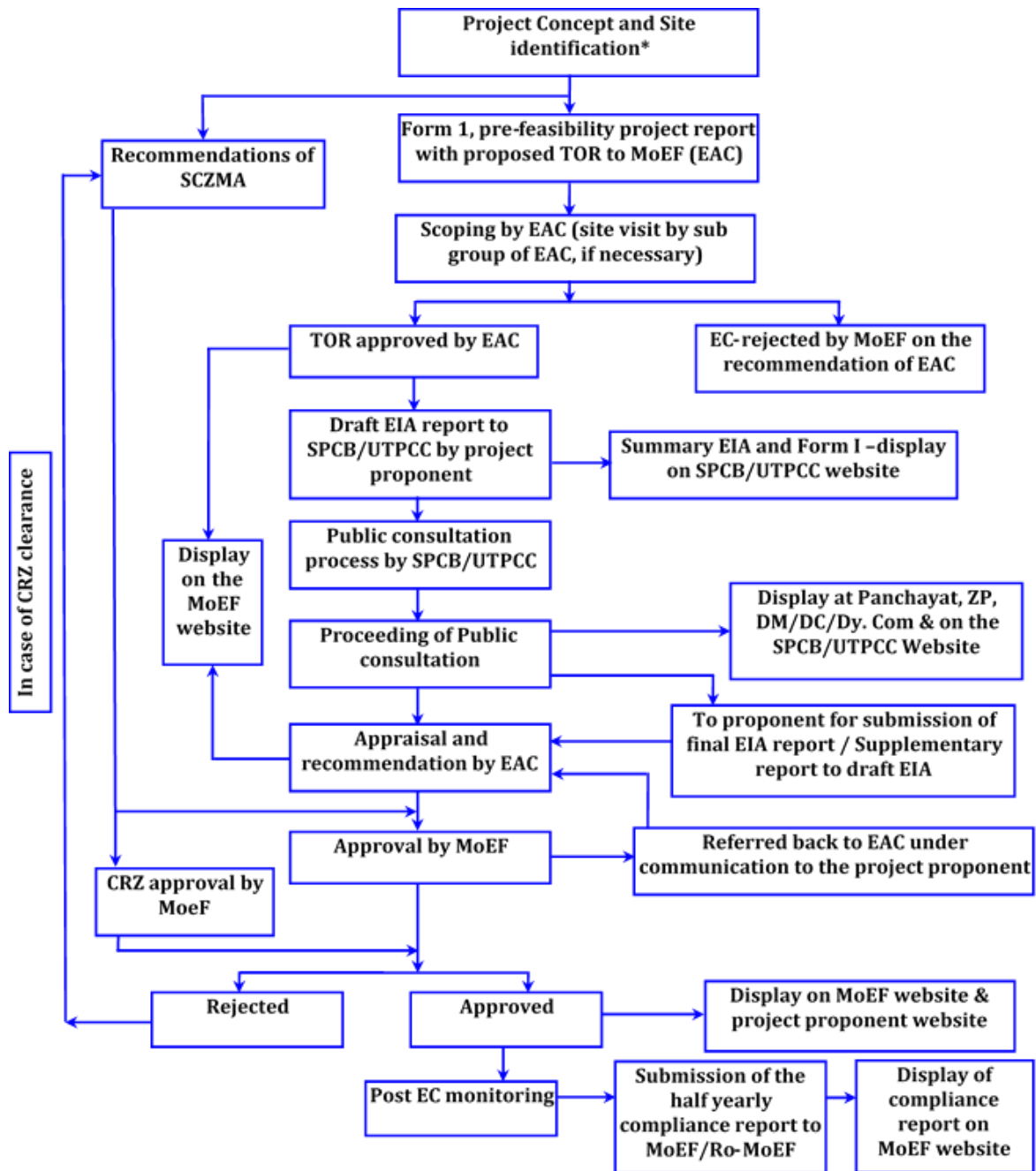


FIGURE-2
CLEARANCE PROCESS FOR CATEGORY-A PROJECT

4.0 SITE ANALYSIS

4.1 Connectivity

Maliparbat M.L area is accessible from Koraput, district Head Quarter covering a distance of 34 km consisting of 2 km all weathered road between village Doliamba and M.L area, 5 km metalled road between Semiliguda on NH-43 and 27 km between Koraput and Semiliguda.

4.2 Land Form, Land Use and Land Ownership

The abstract of the details of land schedule and land use is given in **Table-13**.

TABLE-13
MINING LEASE AREA LAND USE BREAKUP DETAILS

Sr No	Type of land use		As Present (ha)	at As at the end of plan period (ha)	As at the end of life of mine (ha)
1	Area under Mining		1.700	12.699	109.000
2	Storage of topsoil		--	0.807	-
3	Waste dump site		1.420	2.817	-
4	Mineral storage	Usable Bauxite stack	---	2.000	-
		Sub grade stack	0.840	2.640	-
5	Infrastructure (Office , rest shelter etc)		--	2.000	-
6	Roads		1.000	3.000	-
7	Railways		-	-	-
8	Tailing Pond		-	-	-
9	Effluent Treatment Plant		-	-	-
10	Mineral Separation Point		-	-	-
11	Township Area		-	-	-
12	Others (water harvesting pond)		0.138	0.138	-
	Total		5.098	26.101	109.000
13	Undisturbed area	Greenbelt	-	5.000	8.350
		Remaining flat plateau top	112.252	86.249	-
		7.5 m wide safety zone along lease boundary, steep slopes & scarp faces	150.760	150.760	150.760
	Total				
Grand Total	--		268.110	268.110	268.110

4.3 Topography

M.L area forms a part of the Eastern ghat hill ranges. Most part of the plateau tops are covered by lateritic boulders. Two scarps face are found located in the M.L area near boundary Pillar-F. The elevation of bauxite capping varies from 300 m to 400 m from general surface level. Highest and lowest altitudes are noted at 1403 m and 1079 m above mean sea level respectively. The maximum altitude difference is noted to be 324 m.

Bauxite bearing plateau in the M.L area is devoid of vegetation and giving a bald look to the top of the plateau. Grass and bushes are seen at places.

4.4 Existing Land use Pattern

Core Zone Land Use /Land Cover

The entire lease area falls in hilly area under the revenue class of "Pahad and Parbat". There is no forest land in the M.L area. The village wise land use pattern is given as follows in **Table-14**:

TABLE-14
LANDUSE / LANDCOVER OF CORE ZONE

Sr. No.	Name of the villages	Revenue class of land	Non-forest land (ha)
1	Aligaon	Hill	195.403
2	Sorishpadar	-do-	39.891
3	Kankaramba	-do-	32.816
4	Total	---	268.110

From the above table, it may be observed that the core zone of the study area is devoid of any forest cover where the bauxite mining is being planned.

Buffer Zone Land Use/Land Cover

The buffer zone area has got forest coverage of varying canopy density. These however will not be affected by the project activities. This, in a way beneficial to the proposed project. In the buffer zone, four major forest types are recognised in Pitagurha forest divisions. The details of forests are given below

- Pitagurha PF - 8.9 km, WSW
- Dushura RF- 9.7 km, WSW
- Nandapur RF- 14.3 km, SW

There are no Ecological Sensitive Areas (wild life sanctuaries, tiger reserves, elephant reserves, national parks and biosphere reserves etc.) present in the study area.

4.5 Infrastructure Existing

Access roads:

Maliparbat M.L area is accessible from Koraput, district Head Quarter covering a distance of 34 km consisting of 2 km all weathered road between village Doliamba and M.L area, 5 km metalled road between Semiligurha on NH-43 and 27 km between Koraput and Semiligurha.

Rail link:

The nearest railway station is Damanjodi RS at about 10.9 Km in NW direction from the mine lease area.

Water:

Kundli nala is the source of water which will be utilized after water treatment for both domestic and industrial uses. Effort will be made to avoid use of water from natural sources by creating rain water harvesting ponds with in mining lease area.

Electricity:

Electric poles are laid for the existing operations connecting to 2 DG sets of 45 kva and 100 kva. No additional power is required for mining operations.

Education facilities:

Limited number of schools up to primary level are available in the valley area.

Health care:

Primary health care centre is available in Kankadamba village.

Fuels:

The fuels used by the villagers are Gas and kerosene.

Trade and Commerce Centre:

Semiliguda is the nearest town located at a distance of 5.4 km from ML area in NW direction. Basic infrastructural facilities like all-weather road to the District headquarters Koraput, electricity, schools, post office, STD facilities, bank and police station are available at Semiliguda, the main trade commerce centre for almost all the villages in the study area.

Monuments/Buildings of Archaeological Significances:

There is as such no monument or public buildings of interest in the study area as observed during field study.

4.6 Soil Classification

Topsoil is mostly clay loam. It is highly sandy with high nitrogen and low organic matter content. Water holding capacity is low. Plateau has not supported any tree growth except khajur bushes (*phoemix acqualis*) due to less thickness and less organic matter of topsoil.

4.7 Climate data from Secondary Sources

Maliparbat bauxite mine exists in the region of tropical climate with monsoon rains from June to September and occasional winter rains. Monsoon breaks out in early to mid June. Humidity is high during winter season from August to December. Average rainfall in the Koraput district is 1400 mm while the highest annual rainfall is 1800 mm. More than 70% of rainfall is precipitated during monsoon season.

Temperature varies from 15^o C to 40^o C in summer season while lowest temperature varies from 6^o C to 9^o C in winter season. Relative humidity varies from 40% (afternoon) to as high as 95% (night& early morning).

4.8 Social Infrastructure Available

This has already been discussed under sr. no. 4.5 (Existing Infrastructure).

5.0 PLANNING BRIEF

5.1 Planning concept (type of industries, facilities, transportation etc.) Town and country Planning/Development authority Classification

The bauxite mine is being developed by opencast mechanized mining method. The main operation shall include removal and stacking of top soil and over burden by excavator cum loaders, exposing the bauxite zone, proper levelling by dozer, Bauxite excavation through controlled drilling & blasting by NONEL technology and sizing through mobile crusher. The remaining rejects will be used for backfilling. Once Mines progresses and sufficient void created, simultaneous back filling will be started in mined out areas.

5.2 Population Projections

Village wise population are given in **Table-15**.

TABLE -15
VILLAGE WISE POPULATION

Sr. No.	Name of the village	POPULATION			SC	ST
		Male	Female	Total		
1	Aligoan	1328	1417	2745	72	1556
2	Bhitarkota	259	290	549	---	549
3	Doliamba	102	122	224	7	215
4	Kakarmba	428	457	885	146	558
5	Kakiriguda	1168	1359	2527	249	1232
6	Lunguri	1293	1305	2598	296	985
7	Maliguda	66	80	146	---	29
8	Nuaput	152	148	300	---	300
9	Parajakhudubi	337	400	737	93	644
10	Ranikona	357	360	717	169	453
11	Semiliguda	43	55	98	1	51
12	Sorishpadar	893	1033	1926	351	1036
13	Sundhiput	528	668	1196	63	304
Total		6,954	7,694	14,648	1,447	7,912

Source: Census Handbook, 2011

5.3 Land Use planning (breakup along with greenbelt etc.)

It becomes necessary to reclaim the degraded land to its original topography as far as practicable. During the first five years it may not be possible to reclaim the degraded land due to formation of different benches in different levels simultaneously for achieving the targeted production. However, the backfilling will be carried out concurrently. The restoration will cover backfilling and terracing of the mined out area by dumping of overburden/mineral reject and surfacing with top soil. At the end of the proposed total extraction of ore, some portions of the land would remain degraded due to mining and it is proposed to reclaim the degraded land to bring back its original contour as far as possible by backfilling and terracing with overburden/mineral reject materials.

As a part of eco restoration, it is decided to carry out afforestation in the following manner:

The entire mined out area over 109 hectares will be reclaimed by way of concurrent 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. There will be plantation of 117.350 hectares on behalf of the Lessee in the lease area due to this ongoing mining project are given in **Table-16**.

TABLE -16
DETAILS OF AFFORESTATION AND RECLAMATION

Sr. No.	Location	Area (in ha)
1	Mined out area	109.000
2	Green belt / peripheral plantation	8.350
---	Total	117.350

Source: IBM Approved Mine Plan

Post Mining Land Use Plan: Post mining land use pattern of M.L area has been conceptualized in **Table-17**.

TABLE -17
POST MINING LAND USE PATTERN

Type of post mining land use	Non-Forest Area (ha)	Forest Area (ha)	Area (ha)
Reclamation and rehabilitation (back-filling and plantation) of mined out area	109.00	---	109.00
Greenbelt / peripheral plantation	8.350	---	8.350
7.5 m wide safety zone along lease boundary, steep slopes & scarp faces	150.760	---	150.760
Total	268.11	---	268.11

Source: IBM Approved Mine Plan

5.4 Assessment of Infrastructure Demand (Physical & Social)

The access roads to the nearby villages and to Maliparbat plateau from foothill are not metalled roads but jeepable throughout the year except during the period from June to October covering monsoon and part of post-monsoon period. Preference will be given to local labour from nearby villages. Other requisite infrastructures as transport of mine labours will be made available by way of jeep. Medical facility will be available for First-Aid and providing ambulance service at the project site.

5.5 Amenities/Facilities

The service centre will be provided with auxiliary facilities, namely quality control centre, repair and maintenance shop, stores, training centre, canteen, ambulance room, transport, communication facilities, the utility supplies, namely power and water supply systems, and the auxiliary facilities.

6.0 PROPOSED INFRASTRUCTURE

6.1 Industrial Area (Processing Area)

The lease area shall be the processing area for the mining works. No other industrial activity has been proposed in this area.

6.2 Residential Area (Non Processing Area)

A temporary administrative building and site service facilities will be located in the ML area.

6.3 Greenbelt Development / Afforestation

As a part of eco restoration, it is decided to carry out afforestation in the following manner:

- Initially afforestation will be done along the safety barrier against the lease/geological boundary.
- Backfilling work will be done concurrently of mining operation. After backfilling of voids, the area will be sprayed with top soil for enabling plantation. It is envisaged that, plantation on the reclaimed areas will start after mining of the mineral.
- It is also proposed to create a greenbelt on the periphery of the important installations like administrative building, approach roads to the mine.
- Mineral reject dump created during initial period, will be re-handled at a later stage when sufficient space will be created in the mined out areas. Hence, temporary stabilization and protection measures like construction of retaining wall, garland drains etc. will be made, if needed, for these overburden/mineral reject dumps.
- Apart from above plantation activities will be done in all available areas within and around the mine lease areas.

6.4 Social Infrastructure and Benefits

The Maliparbat mining project will improve the present economic conditions of surrounding villagers by having direct and indirect employment opportunity as miners, skilled/semi – skilled workers, contractor's labours etc. Thus the project will have significant beneficial impact on the economic condition and life style of the local people.

Apart from this the following benefits will accrue to the local people:

- Road facility
- Medical camps
- Social awareness camps
- Secondary employment opportunities

6.5 Connectivity

The existing village road and kutchra roads will be upgraded after obtaining necessary permissions from relevant authorities. Besides transportation of machineries for development and construction, the road will also be used for regular transportation of employees and material.

6.6 Drinking Water Management (Source & Supply of Water)

It is proposed to tap this quantity of water from Kundli Nala at an approximate distance of 3.7 km from Maliparbat hill top. To enable drawl of water, a pick-up weir will be constructed on the kundli nala and water will be transported via tankers to the ML area.

Drinking Water System

Water from Kundli nala 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.

6.7 Sewerage System

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

6.8 Power Requirement, Source/Supply of Power

Power is been made available from two DG set of 45 kva and 100 kva. The power is required only for Weigh Bridge, office and establishment and lighting of roads etc.

6.9 Solid Waste Management

Disposal of Waste/ Overburden

It is planned to stack top soil and overburden/mineral reject separately on ground till some of the bauxite benches have been worked out. After some portions of the mine are exhausted of bauxite, fresh generation of overburden/mineral reject from other areas will be dumped in the mined out areas and worked out benches. Top soil, stacked separately, would be spread over the reclaimed areas, to enable planting and growing of trees. The overburden/mineral reject stacked on ground during the initial years of operation will be utilised to fill the worked out areas at the end of the working life of the mine as well as during the interim period, as and when practicable.

Selection of Dumping Site

Considering the extension of mining zone and disposition of the working faces, separate locations have been selected for dumping of top soil and overburden/mineral reject. One site for top soil and separate sites for mineral reject dumps has been selected to restrict the lead from mining areas to a reasonable limit, as well as taking into account the space required for stacking the requisite quantum of material, the topography of the areas available for the purpose, limiting the number of terraces and site levelling requirement.

Site Preparation

No special preparation of site is envisaged except for levelling the area. However, garland drains will be provided around the dumps to trap the fine particles from the dumps washed away by rain. The drains will be 1200 mm wide at the top and 1500 mm deep and shall be provided with sump pits at suitable intervals along its length. Further, retaining wall is proposed to be provided around the dumps to arrest washed off solids.

Mode of Waste Disposal, dump formation and configuration

About, 139,700 m³ waste is likely to be generated in plan period. These waste materials will be disposed off over an area of 13,970 m² or 1.397 hectares in one

10m high terrace in a forwarding method by extending the SW part of existing Dump-1 towards NE part. Details of waste are given in **Table-18**.

TABLE -18
DETAILS OF WASTE

Year	Waste available (m ³)	Height proposed (m)	Area proposed (m ²)
I (2018-19)	28,600	10	2860
II (2019-20)	19,500	10	1950
III (2020-21)	57,900	10	5790
IV (2021-22)	16,500	10	1650
V (2022-23)	17,200	10	1720
Total	139,700	---	13,970

Source: IBM Approved Mine Plan

Individual terrace slope will be maintained at 37° with the horizontal while overall dump slope angle will be maintained as per statutory norms.

Stacking of Sub-grade Ore: A total of 135,000 m³ sub-grade bauxite is likely to be generated in plan period. These sub-grade bauxite ore will be stacked over an area of 18,000m² or 1.800 hectares in one 7.5m high terrace in a forwarding method. Details of subgrade are given in **Table-19**.

TABLE -19
DETAILS OF SUBGRADE

Year	Sub-grade Bauxite (m ³)	Height proposed (m)	Area proposed (m ²)
I (2018-19)	20,250	7.5	2700
II (2019-20)	22,500	7.5	3000
III (2020-21)	24,750	7.5	3300
IV (2021-22)	27,000	7.5	3600
V (2022-23)	40,500	7.5	5400
Total	135,000	---	18,000

Source: IBM Approved Mine Plan

Protective Measures: Water sprinkling will be done in dry season to consolidate the waste materials and prevent the washing of the waste materials.

Water sprinkling will be done in dry season to consolidate the waste materials and prevent the washing of the waste materials. Retaining wall will be constructed in 1st year of plan period all along the eastern periphery of the dump & stacks to control the wash-offs and maintained after resuming mining operations. Garland drain and settling tanks will be developed to arrest loose materials coming out of the retaining wall and drain clean water. The drain will be de-silted regularly and maintained properly siltation ponds.

Side Slope and Stability

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.

7.0 REHABILITATION AND RESETTLEMENT (R&R PLAN)

There are no rehabilitation and resettlement works to be carried out. The complete area is under possession of HIL.

8.0 PROJECT SCHEDULE AND COST ESTIMATES

8.1 Likely date of start of construction and Completion of Project (Time schedule for the project to be given)

Company is in need of bauxite from this mine and hence the proposed production will be start immediately post receipt of all statutory clearances as required.

8.2 Estimated project cost and along with analysis in terms of economic viability of the project.

The project cost is given below **Table-20**.

**TABLE-20
PROJECT COST BREAKUP**

Sr. No.	Description	Capital Investment (In Rs. Crore)
1	Land development	1.60
2	Consultancy and approval /clearances (mining plan, EIA/EMP, consent to establish, consent to operate etc.)	0.60
3	Exploration (drilling machine, chemical laboratory etc.)	5.40
4	Machinery & vehicles (excavator, tipper etc.)	3.10
5	Plant & Machinery for mining	3.10
6	Road	0.50
7	Infrastructure (Buildings, furniture, water supply, power supply, DG etc.)	2.20
8	Reclamation & rehabilitation cost, closure cost etc. (atleast @Rs.300,000 / ha) for 109 ha	3.27
9	Sub-Total	19.77
10	Contingencies (15% of Sr.No.9)	2.96
11	Working capital (5% of Sr.No.9)	0.99
Total		23.72 say 24

Source: IBM Approved Mine Plan

In addition to the project cost mentioned above, it is proposed to spend about Rs. 0.50 crores towards environmental protection measures. The details of investment for procuring the equipment for efficient control and monitoring of pollution and recurring cost are given below in **Table-21**:

**TABLE -21
EMP COST BREAK UP**

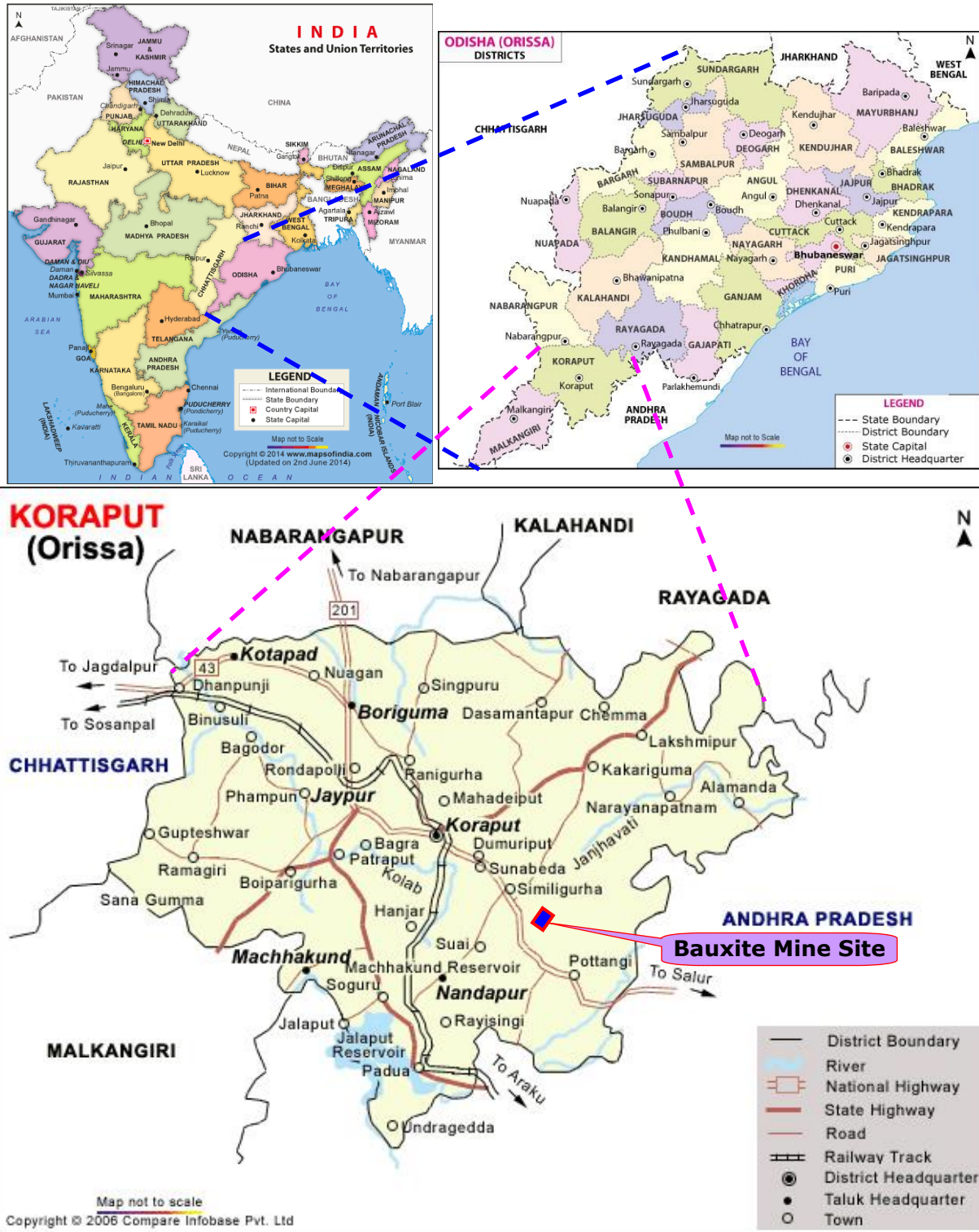
Sr. No.	Description	Rs. in Crores
1.	Air quality monitoring and management	0.10
2.	Water quality monitoring and management	0.05
3.	Greenbelt development / plantation	0.20
4.	Occupational health monitoring	0.05
5.	Environment protection.	0.10
Total		0.50

Source: HIL

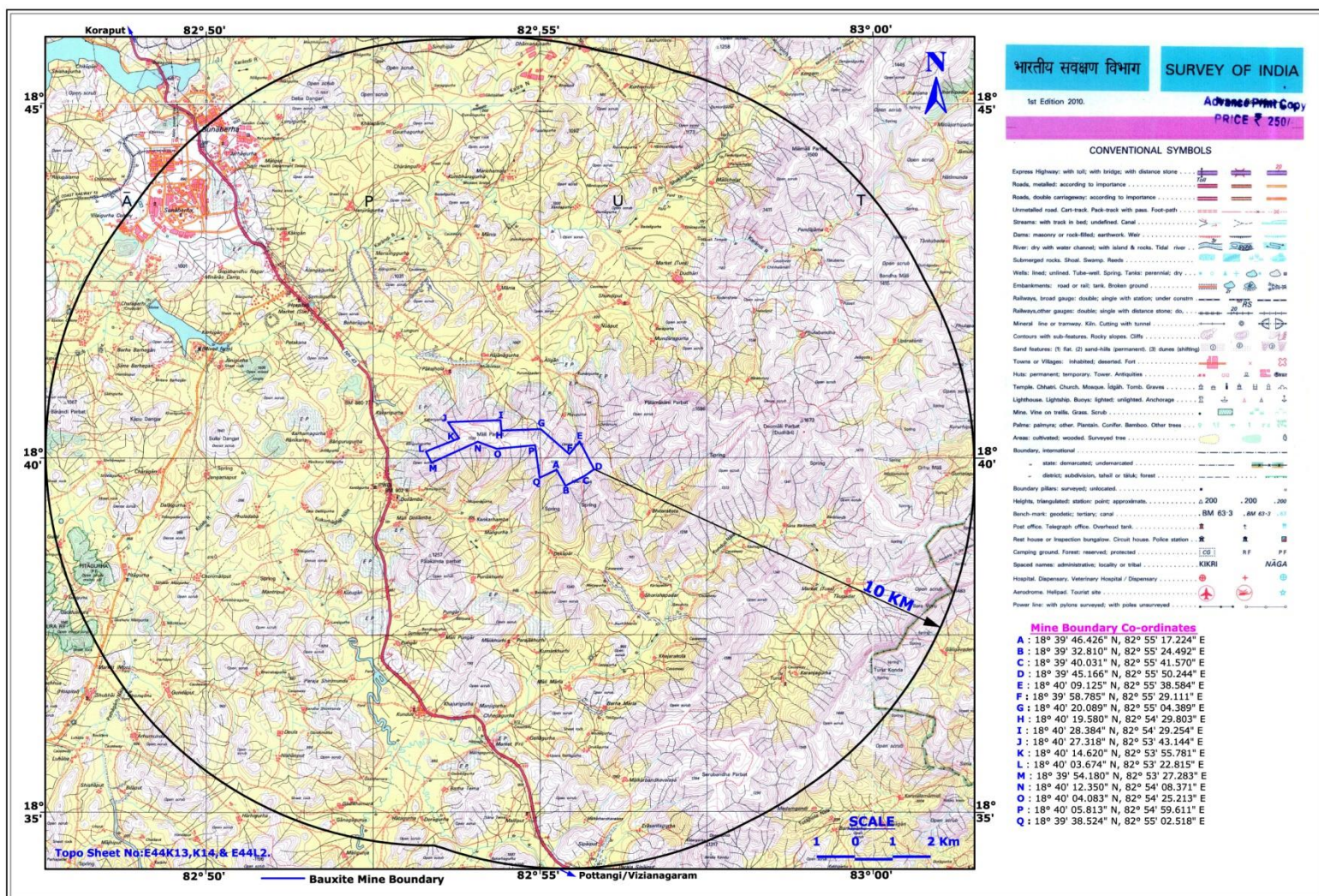
9.0 ANALYSIS OF PROPOSAL (FINAL RECOMMENDATION)

This mining projects of utmost importance to the area/ region 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 of bauxite for HIL Refineries. The operation of the project will bestow various social and economic benefits to the 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.

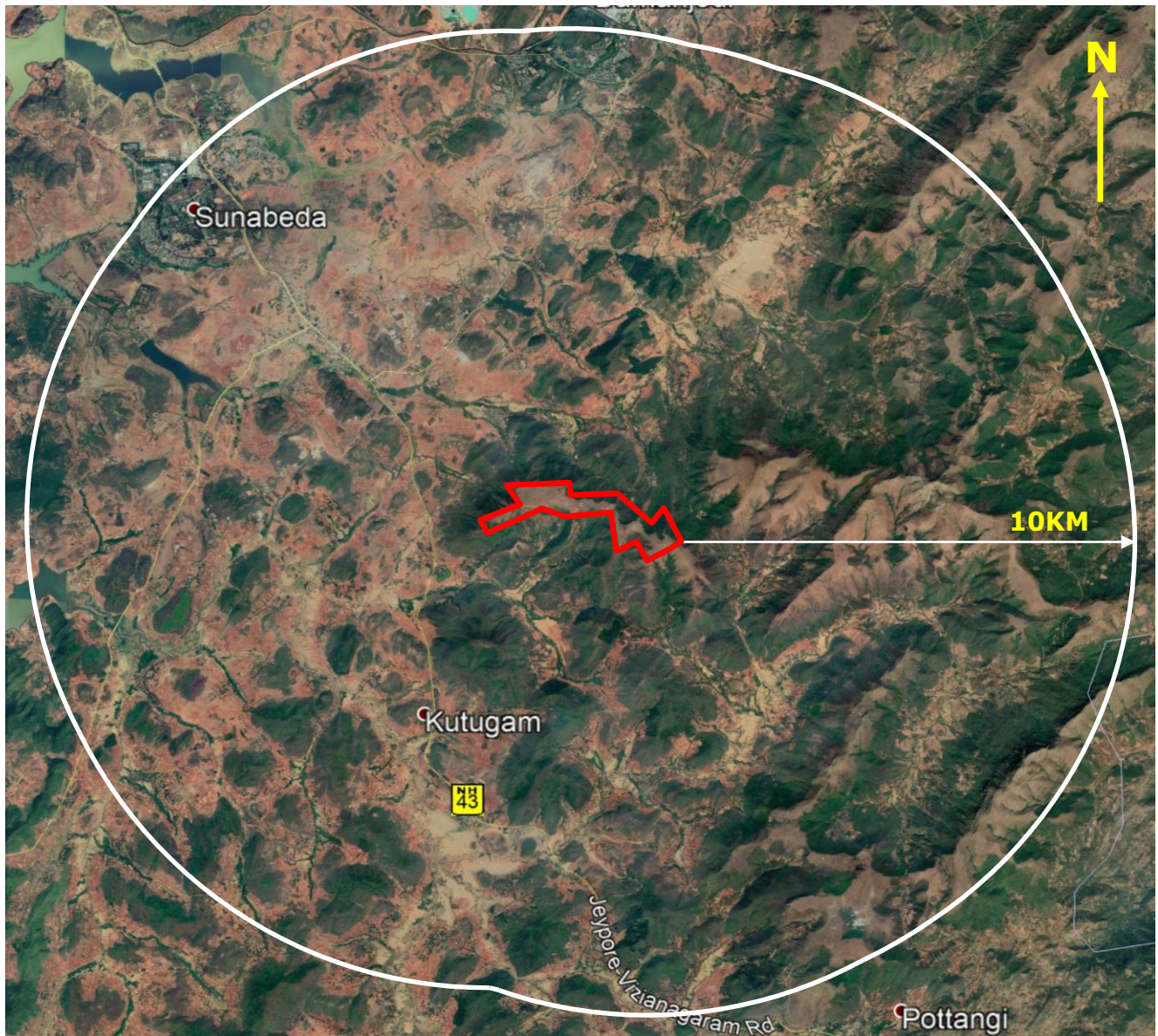
ANNEXURE-I INDEX MAP



ANNEXURE-II STUDY AREA MAP



ANNEXURE-III
STUDY AREA ON GOOGLE MAP



Plant Site Area

ANNEXURE-IV
ENVIRONMENTAL CLEARANCE FOR 0.6 MTPA

20

No.J-11015/411/2005-IA.II (M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
C.G.O. Complex, Lodi Road,
New Delhi - 110 003

Dated the 7th September, 2006

To,
M/s Hindalco Industries Ltd.
Century Bhavan,
Dr. Annie Besant Road,
MUMBAI-400 025

Subject: Maliparbat Bauxite Mining Project of M/s Hindalco Industries Limited located in Village Aligaon-Kankaramba, Tehsil Pottangi, District Koraput, Orissa - environmental clearance reg.

Sir,

This has reference to your letter No.Hindalco/05 dated 12.11.2005 and subsequent letters dated 28.12.2005, 31.01.2006, 15.05.2006, 17.05.2006 and 13.06.2006 on the subject mentioned above. The Ministry of Environment and Forests has examined the application. It has been noted that the proposal is for opening of a new mine and the project was granted site clearance by the Ministry on 30.01.2006. The total mine lease area of the project is 268.11 ha which is a wasteland. No forestland is involved. Area proposed for mining is 77.30 ha, an area of 2.0 ha is kept for infrastructure, 3.0 ha for roads, 15.0 ha for green belt and 170.81 ha is others (undisturbed area). No ecologically sensitive area such as national park, wildlife sanctuary/biosphere reserve, tiger reserve etc. is located in the core and buffer zone of the mine. There is no population in the core zone, therefore, displacement of population and R&R is not involved. The annual targeted production capacity of the mine is 0.6 million tonnes of bauxite ore. The life of the mine is 15 years. Working will be opencast by mechanized using ripper dozer. Blasting will be used to a limited extent in the hard strata. Approximately 2000 TPD of mineral will be transported by road to a distance of 25 km. The ultimate working depth of mine will be 10m from the plateau top (1190 m above msl). The valley floor is at 910 m above MSL. The water table is much below the valley floor. Mining will not intersect the groundwater table. Peak water requirement of the project is 61 m³/day which will be met from Kundli Nallah. Approximately 7713m³/month of solid waste comprising 1080 m³/month of topsoil and 6633m³/month of over burden (free laterite etc.) will be generated. During life of the mine about 3.992 million m³ of OB and 0.0756 m³ of topsoil will be generated. The over burden will be stacked as external dump, during the initial years, which will be later backfilled concurrently from the 5th year onwards in mined out voids. The entire quantity of the over burden generated will be backfilled and an area of 1.46 ha will be converted into water body at the end of the mine life. There will be no external OB dumps at the end of the mine life. Plantation will be raised in an area of 90.84 ha. Consent to establish from the State Pollution Control Board, Orissa obtained on 24.01.2006 for production capacity of 0.6 million tonnes per annum of bauxite ore over 268.11 ha lease area. Public hearing of the project held on 31.08.2005. Indian Bureau of Mines has approved mining plan including progressive mine closure plan of the project on 18.08.2005 for lease area of 268.11 ha. Capital cost of the project is Rs.2050 lakhs .

...2/-

ANNEXURE-IV **ENVIRONMENTAL CLEARANCE FOR 0.6 MTPA CONTD**

2

2. The Ministry of Environment and Forests hereby accords environmental clearance to the above mentioned Maliparbat Bauxite Mining Project of M/s Hindalco Industries Limited for production capacity of 0.6 million tonnes per annum of bauxite ore by opencast mechanized method involving total lease area of 268.11 ha. under the provisions of the EIA Notification 1994 and subsequent amendments issued under Environment (Protection) Act, 1986 subject to implementation of the following conditions and environmental safeguards.

A. Specific conditions

- (i) All the conditions stipulated by the State Pollution Control Board in their consent to establish should be effectively implemented.
- (ii) Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.
- (iii) The waste generated in the initial period shall be dumped temporarily and backfilled in the mined out area. There shall be no permanent external OB dump in the project area. Concurrent backfilling should start from the fifth year onwards. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on six monthly basis.
- (iv) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from the working pit, soil and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.

Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.
- (v) Plantation shall be raised in an area of 90.84ha including a green belt of adequate width by planting the native species around the ML area, roads, around void etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2000 plants per ha.
- (vi) The mining operations shall not intersect groundwater table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.
- (vii) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.

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ANNEXURE-IV
ENVIRONMENTAL CLEARANCE FOR 0.6 MTPA CONTD

- 3
- (viii) Regular monitoring of ~~ground water level and quality~~ should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out ~~four times~~ in a year - pre-monsoon (~~April-May~~), monsoon (~~August~~), post-monsoon (~~November~~) and winter (~~January~~) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.
 - (ix) Prior permission from the competent authority should be obtained for drawal of water from the surface water bodies i.e. Kundli Nallah.
 - (x) The project proponent shall undertake monitoring of springs (two main perennial springs on the southern side, two springs on the northern side), in addition to six groundwater-monitoring stations as specified by State Pollution Control Board on long term basis both in terms of quantity and quality of water and records maintained. ~~Six monthly report~~ should be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneshwar.
 - (xi) Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.
 - (xii) The voids created at the end of mining shall be converted into water body with shallow depths not exceeding 30 m. The higher benches of the excavated void/mine pit shall be terraced and plantation done to stabilise the slopes. Peripheral fencing shall be done along the excavated area.
 - (xiii) The project proponent shall adopt wet drilling.
 - (xiv) Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
 - (xv) Consent to operate should be obtained from SPCB prior to start of production from the mine.
 - (xvi) Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.
 - (xvii) Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to MOEF and its Regional Office.
 - (xviii) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.
- ...4/-

ANNEXURE-IV
ENVIRONMENTAL CLEARANCE FOR 0.6 MTPA CONTD

B. General conditions

- (i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.
- (ii) No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.
- (iii) Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife departments.
- (iv) Four ~~ambient air quality monitoring~~ stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO₂ and NO_x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.
- (v) Data on ambient air quality (RPM, SPM, SO₂ and NO_x) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board ~~once in six months~~.
- (vi) Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.
- (vii) Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.
- (viii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
- (ix) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

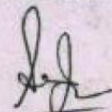
Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- (x) A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.

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ANNEXURE-IV
ENVIRONMENTAL CLEARANCE FOR 0.6 MTPA CONTD

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- (xi) The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
 - (xii) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. ~~Year-wise expenditure~~ should be reported to the Ministry and its Regional Office located at Bhubneshwar.
 - (xiii) The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
 - (xiv) A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation was received while processing the proposal.
 - (xv) State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.
 - (xvi) The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <http://envfor.nic.in> and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.
3. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.
4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
5. The above conditions will be enforced *inter-alia*, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.



(SATISH C. GARKOTI)
Additional Director (S)

Copy to:

1. Secretary, Ministry of Mines, Government of India Shastri Bhawan, New Delhi.

...6/-

ANNEXURE-IV
ENVIRONMENTAL CLEARANCE FOR 0.6 MTPA CONTD

2. Secretary, Department of Environment, Government of Orissa, Secretariat, Bhubneshwar.
3. Secretary, Department of Mines, Government of Government of Orissa, Secretariat, Bhubneshwar.
4. Chief Conservator of Forests, Ministry of Environment & Forests ,Regional Office (EZ), A/3, Chandra Shekar, Bhubneshwar-751 023
5. Chairman, Central Pollution Control Board, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneshwar-751012.
7. Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
8. Controller General, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440 001.
9. District Collector, Koraput District, Orissa.
10. EI Division, Ministry of Environment & Forests, EI Division, New Delhi.
11. Monitoring File.
12. Guard File.
13. Record File.

ANNEXURE-V
CONSENT TO ESTABLISH

REGD.POST



**OFFICE OF THE
STATE POLLUTION CONTROL BOARD, ORISSA**

Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII,
Bhubaneswar - 751 012

No. 1310 /Ind-II-NOC- 3889

Date 24-1-06

OFFICE MEMORANDUM

In consideration of the application for obtaining Consent to Establish for **HindalCo Industries Ltd. (Mines Division). for Maliparbat Bauxite Deposit** State Pollution Control Board has been pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 for production of **Bauxite Ore of 0.6 Million Tons per Annum over Mining Lease Area of 268.11 Hactres of Hindal CO Industries Ltd. At-Maliparbat, Tahasil-Potangi in the district of Koraput of Orissa** the following conditions.

GENERAL CONDITIONS.

1. This Consent to establish is valid for the product, quantity manufacturing process and raw materials as mentioned in the application & for a period of five years from the date of issue of this letter, provided commencement of production of the proposed project has not taken place in the meantime.
2. If the proponent fails to start operation of the project but substantial physical progress has been made then a renewal of this consent shall be sought by the proponent.
3. If the proponent fails to initiate construction of the project and no significant physical progress is made then, the proponent has to apply for consent to establish afresh after expiry of 5 years from the date of issue of this order.
4. Adequate effluent treatment facilities are to be provided such that the quality of sewage and trade effluent satisfies the standards as prescribed under EP Rule or as prescribed by the Central Pollution Control Board and/or State Pollution Control Board or otherwise stipulated in the special conditions.
5. All emission from the industry as well as the ambient air quality and noise are to conform to the standards as laid down under EP Rule/Central Pollution Control Board/State Pollution Control Board or otherwise stipulated in the special conditions.
6. Adequate method of disposal of solid waste is to be adopted to avoid environmental pollution.
7. The industry is to comply to the provisions of EP Act, 1986 and the rules made thereunder with their amendments from time to time such as the Hazardous Chemical/Manufacture, Storage and Import Rule, 1989 etc. The industry is also to comply to the provisions of Public Liability Insurance Act, 1991, if applicable.

ANNEXURE-V
CONSENT TO ESTABLISH CONTD...

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8. The industry is to apply for grant of Consent to operate under section 25/26 of Water(Prevention & Control of Pollution)Act, 1974 & Air (Prevention & Control of Pollution)Act, 1981 (If coming under air pollution control area) at least 3 (three) months before the commercial production and obtain Consent to Operate.
9. **This consent to establish is granted subject to other statutory clearances from Govt. of Orissa and/or Govt. of India, as and when applicable.**

SPECIAL CONDITIONS : -

1. This Consent to Establish is granted subject to Environmental clearance from Ministry of Environment & Forest, Govt. of India, New Delhi.
2. No change in mining technology and scope of working shall be made without prior approval of the Board.
3. Top soil should be stacked properly with proper slope at earmarked site(s) with adequate measures and shall be used for reclamation and rehabilitation of mined out areas.
4. Concurrent back-filling should be started as envisaged under mining plan. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests with a copy to the Board on yearly basis.
5. Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data. The detail specification shall be worked out and submitted to the Board.
6. A green belt of adequate width shall be raised for suppression of dust by planting the native species around to ML area, roads, OB dump sites, etc., in consultation with the local DFO/Agriculture Department.
7. Reclamation programme along with the post closure plan is to be submitted within 06 months from the date of issue of this order.
8. Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The drains should be regularly desilted and maintained properly. The Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.
9. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly.

Contd....Pa/3

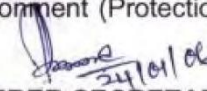
ANNEXURE-V **CONSENT TO ESTABLISH CONTD...**

-: 3 : -

10. Sewage Treatment Plant should be installed for the treatment of domestic effluent generated from the colony and mines so as to meet the prescribed standard of the Board for discharge to inland surface water.
11. Wastewater (workshop and wastewater from the mine) should be properly collected, treated so as to conform the prescribed standard i.e. pH = 5.5-9.0, SS = 100 mg/l & O & G – 10 mg/l or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop.
12. Mine drainage water, if any has to be treated and disposed of after conforming to the standard prescribed by the Board i.e pH = 5.5 – 9.0, Total S.S = 100 mg/l, & O & G = 10 mg/l.
13. Rain water harvesting practice shall be followed by utilizing the rain water collected from the roof of the buildings for recharging of ground water within the premises and other large structures as per the concept and practices prescribed by CPCB, New Delhi and details of which is available in the web-site.
14. Drill should be wet operated or with dust extractors and controlled blasting should be practiced. Production of blast fumes shall be minimized with proper use of blasting material and technique.
15. The conveyors shall be made covered to reduce fugitive dust emission.
16. Advance blasting technology shall be adopted to minimize the damage on subsurface strata and aquifers. Ripping method shall be followed as far as possible and controlled blasting shall be done when it is absolutely essential.
17. Six ambient air quality monitoring stations for 24 hours operation should be established in the core zone as well as in the buffer zone for RPM, SPM, SO₂, NO_x, and CO monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.
(i) Data on ambient air quality (RPM, SPM, SO₂, NO_x and CO) should be regularly submitted to the State Pollution Control Board once in six months.
18. The SPM levels at all the loading, unloading and drilling operations haul roads, quarry pits and overburden dumps should be controlled in such a way that suspended particulate matter (SPM) concentration at 100 m distance from any such operations should not be more than 500 ug/m³. the RPM levels and emission of SO₂, NO_x, CO, HC etc. if any should also be maintained within the prescribed norms. If it exceeds the limit, the system/operations contributing to the emission load should be stopped immediately and should not be restarted until it is rectified to bring down the aforesaid pollutant levels within prescribed limits.
19. The haulage roads and arterial roads shall be made black topped / concrete with avenue plantation. Appropriate plan to this effect shall be submitted to the Board within a month. Initially 50% of haul road shall be black topped / concrete surfaced.
20. Project authority shall undertake sample survey to generate data on pre-project community health status within a radius of 1 km. from proposed mine. The report shall be submitted within 06 months from the date of issue of this order.

ANNEXURE-V
CONSENT TO ESTABLISH CONTD...

21. Consent to operate shall be obtained from this Board before commencing the mining activities of proposed project.
22. Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board. A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the organization.
23. The above conditions will be enforced, inter-alia, under the provisions of the water (Prevention & Control of Pollution) Act, 1974 the Air (Prevention & Control of Pollution) Act, 1981m the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rule.
24. All Efforts shall be taken to protect the existing water bodies in the surrounding. A definite plan in this regard shall be submitted to the Board within 06 months from the date of issue of this order.
25. This Consent to Establish is granted subject to grant of Explosive License and forest clearance from Competent Authority. The valid Explosive License and forest clearance must be submitted to this Board while applying for Consent to operate to this Board.
26. This Consent to Establish is granted subject to implementation of all rercomendation made during public hearing held on 31-8-2005.
27. The Board may impose further conditions or modify the conditions stipulated in this order during installation, and/or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented and/or any information suppressed in the application form.
28. ***The mining operation shall be carried out in such a manner that there shall be absolutely zero impact due to mining operation on the perennial water streams originating from Maliparbat. If any deviation is observed in this regards then the all the mining operation shall be stopped forthwith with any explanation whatsoever.***
29. ***The mine shall ensure protection of religious places of local tribes in that area.***
30. The industry shall abide by all the provisions of Environment (Protection) Act, 1986 and rules framed thereunder.


MEMBER SECRETARY

To,

Mr. Rakesh Paliwal, General Manager (Mines)
M/s Hindal CO Industries Ltd.
M/s Maliparbat Bauxite Mines.
AT/PO- At-42/1041, Satya nagar, College Road, Similiguda, Dist- Koraput

Memo No. _____/Dt.

Copy forwarded to :

1. District Collector, Koraput
2. District Industries Centre, Koraput
3. Consent Section , **Env. Engineer – II**
4. Director, Factories & Boiler, Bhubaneswar
5. Copy to Guard file/Consent to establish register
6. Regional Officer, O.S.P.C.Board, **Koraput** 

SR. ENV. ENGINEER

ANNEXURE-VI
CONSENT TO OPERATE



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 1 of 14

BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012

Phone-2561909, Fax: 2562822, 2560955 E-mail: paribesh1@ospboard.org, Website: www.ospboard.org

CONSENT ORDER

No. 3833 / IND-I-CON- 5437 Dt. 27.03.2020

CONSENT ORDER NO. 2299

Sub: **Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.**

Ref: **Your online application No. 2824875 Dated 30-11-2019 & Online reply dated 20.12.2019**

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: **MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LTD.**

Name of the Occupier & Designation: **SRI PRATAP KUMAR PATRA, AGENT,**

Address: **AT: ALIGAON,KAKARAMBA(MALIPARBAT),PO: SEMILIGUDA , DIST: KORAPUT, PIN-764036**

This consent order is valid for the period **from 01.04.2020 up to 31.03.2022 .**

Details of Products Manufactured

Sl. No	Product	Quantity
01.	Bauxite	0.6 MTPA

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

**ANNEXURE-VI
CONSENT TO OPERATE CONTD...**



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 2 of 14

A. Discharge permitted through the following outlet subject to the standard

Out let No.	Description of outlet	Point of discharge	Quantity of discharge KL/hr	Pre-scribed Standard				
				pH	TSS (mg/l)	Oil & Grease (mg/l)	BOD (mg/l)	COD (mg/l)
01	Mine drainage water/ surface runoffs/ other wastewater	On land/inland surface water body	--	5.5-9.0	100	10	--	--

B. Emission permitted through the following stack subject to the prescribed standard

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard			
				PM (mg/Nm ³)	SO ₂	NO _x	

C. Disposal of solid waste permitted in the following manner

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site(TPD)	Quantity to be reused off site(TPD)	Quantity disposed off (TPD)	Description of disposal site.
01	Top soil & over burden	As per approved mining plan	--	--	--	As per approved mining plan

ANNEXURE-VI **CONSENT TO OPERATE CONTD...**



CONSENT ORDER **MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED**

Page 3 of 14

D. GENERAL CONDITIONS FOR ALL UNITS

1. The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground liable for review/variation/revocation of the consent order under section 27 of the Act of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.
2. The industry would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / and products / manufacturing process or quantity / quality of the effluent rate of emission / air pollution control equipment / system etc.
3. The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.
4. The application shall comply with and carry out the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law/Act.
5. The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.
6. The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.
7. This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.
8. The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.
9. An inspection book shall be opened and made available to Board's Officers during the visit to the factory.
10. The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.
11. Meters must be affixed at the entrance of the water supply connection so that such meters are easily accessible for inspection and maintenance and for other purposes of the Act provided that the place where it is affixed shall in no case be at a point before which water has been tapped by the consumer for utilization for any purposes whatsoever.
12. Separate meters with necessary pipe-line for assessing the quantity of water used for each of the purposes mentioned below:
 - a) Industrial cooling, spraying in mine pits or boiler feed,
 - b) Domestic purpose
 - c) Process
13. The applicant shall display suitable caution board at the place where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.
14. Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.
15. The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
16. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.
17. Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed with sides and bottom made impervious.
18. The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.
19. The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.
20. If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the industry must adopt alternate satisfactory treatment and disposal measures.
21. The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.
22. The effluent treatment units and disposal measures shall become operative at the time of commencement of production.
23. The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Act or Rules made therein.
24. The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.
25. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.
26. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.

ANNEXURE-VI

CONSENT TO OPERATE CONTD...



CONSENT ORDER

MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 5 of 14

6. The following information shall be forwarded to the Member Secretary on or before 10th of every month.
 - a. Performance / progress of the treatment plant.
 - b. Monthly statement of daily discharge of domestic and/or trade effluent.
7. **Non-compliance with effluent limitations**
 - a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.
 - i) Causes of non-compliance
 - i) A description of the non-compliance discharge including its impact on the receiving waters.
 - ii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance.
 - iii) Steps taken by the applicant to reduce and eliminate the non-complying discharge and
 - iv) Steps to be taken by the applicant too prevent the condition of non-compliance.
 - b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.
 - c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.
8. The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.
9. The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing poles for stirring etc. should not be resorted to.
10. In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for;
 - Rotation of crops
 - Change of point of application of effluent on land
 - A portion of land kept fallow.
11. The adoption of these would avoid soil becoming sick or slate, the industry may ensure this in consultation with the Agriculture Department.
12. It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.
13. Proper housekeeping shall be maintained by a dedicated team.
14. The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned. Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 6 of 14

E. SPECIAL CONDITIONS:

- 1) Mining operation is subject to availability of all other statutory clearances.
- 2) This mine was not in operation in the previous years. Therefore, before commencement of production, requisite actions shall be taken for compliance of consent to operate conditions to the satisfaction of the Regional Office.
- 3) Drills shall either be operated with dust extractors or equipped with water injection system to minimize dust generation in the work environment.
- 4) Controlled blasting shall be practiced to minimize generation of dust and fly rocks. No blasting shall be carried out after the sunset.
- 5) The mine haulage roads shall always be in wet condition to prevent generation of dust and water sprinkling shall be carried out on haul roads by installation of fixed auto water sprinkling system. All haulage roads shall be devoid of ruts and potholes.
- 6) Fixed type water sprinklers shall be provided at ore stockpile area.
- 7) Mechanized wheel washing facility for the ore transport vehicles shall be provided at the exit point of the mine. The wheel washing facility shall be integrated with complete recirculation system .
- 8) The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin.
- 9) Regular water sprinkling on mineral transportation roads passing through the habitation area as well as other strategic point on the National Highway shall be done by the mining lessee.
- 10) At least six Ambient Air Quality Monitoring Stations shall be established in core zone and buffer zone for monitoring of ambient air quality and location of the stations shall be decided in consultation with the Regional

ANNEXURE-VI **CONSENT TO OPERATE CONTD...**



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 7 of 14

Officer, State Pollution Control Board based on the metrological data, topographical features and environmentally and ecologically sensitive targets.

- 11) Monitoring of Ambient Air Quality and fugitive dust emission of the mine shall be done twice in a week (24 hourly) at a particular site and consolidated data shall be submitted to the State Pollution Control Board, once in a year.
- 12) Ambient air quality of the mine shall meet the standards prescribed for industrial area.
- 13) The Mine drainage water if any, shall be adequately treated before disposal to outside environment. The discharge quality shall meet the prescribed standard as stated in Part-A of the consent order. No untreated wastewater generated from the mine shall be discharged to outside under any circumstances.
- 14) Adequate numbers of check dams, check weirs and settling ponds shall be constructed at appropriate places of the mine lease area to prevent direct flow of runoff to nearby water bodies in consultation with Regional Officers, SPCB. The surface run off water from the runoff management system shall meet the prescribed standards as stated in of Part A of the consent order.
- 15) Retention wall shall be constructed at the toe of topsoil dump and OB dump. Garland drain shall be constructed around topsoil dumps, over burden dumps and mineral stack yards terminating at settling pit to prevent direct disposal of runoff to nearby water bodies. Garland drain and sedimentation pit shall be de-silted after monsoon or as and when required. The runoff discharge quality from runoff management system shall meet the standards prescribed as stated in Part-A of the consent order.

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 8 of 14

- 16) Quantification of surface runoff and other wastewater generated in the mine shall be done and report on runoff management practice as well as wastewater management practices shall be furnished to the Board before the start of monsoon every year. The report of runoff management practices shall be submitted along with a map indicating the flow direction of runoff and management systems.
- 17) Appropriate mitigative measures shall be taken to prevent pollution of the nearby water bodies.
- 18) ETP shall be provided for workshop and wastewater generated during mining operation, if any. The quality of the treated wastewater shall remain within the following standards and shall be re-used for washing of vehicles:

pH	-	6.5 -8.5
TSS	-	50 mg/l
Oil & grease	-	10 mg/l
COD	-	150 mg/l
- 19) Domestic effluents shall be treated in a sewage treatment plant (STP) and or shall be discharged to soak pit via septic tank constructed as BIS specification. The treated wastewater quality of STP shall remain within the following standards and shall be used for plantation:

pH	-	6.5 -9.0
TSS	-	<100 mg/l
BOD	-	30 mg/l
Fecal Coliform	-	<1000 MPN/100 ml.
- 20) Top soil and OB shall be stacked temporarily at earmarked sites.
- 21) OB and Top soil shall be used for concurrent backfilling of mine voids and then stabilized by plantation.
- 22) Regular monitoring of water quality of upstream and downstream of surface water bodies existed if any within 5 Km shall be carried out once in every month and record shall be maintained and submitted to the

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

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- State Pollution Control Board once in every year. Monitoring shall be carried out through MoEF & CC accredited laboratory.
- 23) Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board annually.
- 24) The mine shall take up following actions for further improvement in environmental management suggested by the inspecting team of Board during inspection on 13.03.2020.
- a) Fixed sprinklers shall be installed alongside permanent haulage road.
 - b) Fog canons shall be used in loading and unloading areas.
 - c) As bauxite is to be transported by road, hence the approach road shall be made concrete.
 - d) Mechanized road sweeping machines shall be deployed on the transportation road passing through habitation area and other strategic locations including NH.
 - e) Pipeline shall be laid to fetch water to meet the demands for various purposes as the water conveying by tanker will not be adequate due to long distance.
- 25) The mine shall take necessary action for compliance with the air and water quality standards as stipulated in this order.
- 26) Adequate measures shall be taken for control of noise levels in the work environment of the mine area so that noise levels at the boundary line of ML area shall not exceed 75 dB(A) during day time (6 AM to 10 PM) and 70 dB(A) during night time (10 PM to 6 AM). The consolidated data shall be submitted to the State Pollution Control Board, once in a year.
- 27) Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, along the side of haul road and in other areas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The annual plantation details shall be submitted to the Board by 30th April of every year.

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

Page 10 of 14

- 28) Monitoring data (ambient air quality and wastewater quality) of the mine shall be displayed electronically at the entry point of the mine or at suitable place of the mine lease hold area.
- 29) A copy of the annual return (annual return submitted to IBM, Govt. of India/ Directorate of Mines, Govt. of Odisha) shall be submitted to this Board every year.
- 30) The environmental statement report for the financial year ending 31st March shall be submitted to the Board in form -V on or before 30th September every year.

27/09/2020

MEMBER SECRETARY
STATE POLLUTION CONTROL BOARD, ODISHA

To,

**SRI PRATAP KUMAR PATRA, AGENT,
MALIPARBAT BAUXITE MINE OF
M/S. HINDALCO INDUSTRIES LTD.,
AT: MINES DIVISION-NEW PROJECT. 42/1041, SATYA NAGAR,
COLLEGE ROAD, PO: SEMILIGUDA,
DIST: KORAPUT, PIN-764036.**

Memo No. _____ /Dated _____ /.

Copy forwarded to :

- i) Regional Officer, State Pollution Control Board, Rayagada,
- ii) District Collector, Koraput,
- iii) Director of Mines, Govt. of Odisha, Bhubaneswar,
- iv) Director, Environment -cum-Special Secretary, F & E. Deptt. Govt. of Odisha, Bhubaneswar.
- v) D.F.O, Koraput
- vi) Deputy Director of Mines, Koraput
- vii) Chief Env. Engineer (Hazardous waste management cell)
- viii) Sr. Env. Scientist(L-II), Central Lab. SPCB, Bhubaneswar
- ix) Consent Register

CHIEF ENV. ENGINEER (M)
STATE POLLUTION CONTROL BOARD, ODISHA

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

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**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENTAL POLLUTANTS**

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

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**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENTAL POLLUTANTS PART –A : EFFLUENTS**

Sl.No.	Parameters	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour & odour	Colourless/Odourless as far as practicable	-----	See 6 of Annex-1	See 6 of Annex-1
2.	Suspended Solids (mg/l)	100	600	200	For process wastewater – 100 b. For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of SS	Shall pass 850	-----	-----	
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceed 5°C above the receiving water temperature	-----	-----	Shall not exceed 5°C above the receiving water temperature
7.	Oil & Grease mg/l max.	10	20	10	20
8.	Total residual chlorine	1.0	----	-----	1.0
9.	Ammonical nitrogen (as N) mg/l max.	50	50	-----	50
10.	Total Kjeldahl nitrogen (as NH ₃) mg/1 max.	100	----	-----	100
11.	Free ammonia (as NH ₃) mg/1 max.	5.0	----	-----	5.0
12.	Biochemical Oxygen Demand (5 days at (20°C) mg/1 max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/1 max.	250	----	-----	250
14.	Arsenic (as As) mg/1 max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/1 max.	0.01	0.01	-----	0.001
16.	Lead (as pb) mg/1 max.	01.	1.0	-----	2.0

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

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17.	Cardmium (as Cd) mg/1 max.	2.0	1.0	-----	2.0
18.	Hexavalent Chromium (as Cr + 6) mg/l max.	0.1	2.0	-----	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	-----	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	-----	3.0
21.	Zinc (as Zn) mg/l max.	5.0	15	-----	15
22.	Selenium (as Sc) mg/l max.	0.05	0.05	-----	0.05
23.	Nickel (as Nil) mg/l max.	3.0	3.0	-----	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride (as F) mg/l max.	2.0	15	-----	15
26.	Dissolved Phosphates (as P) mg/l max.	5.0	-----	-----	-----
27.	Sulphide (as S) mg/l max.	2.0	-----	-----	5.0
28.	Phennolic compounds as (C ₆ H ₅ OH) mg/l max.	1.0	5.0	-----	5.0
29.	Radioactive materials a. Alpha emitter micro curle/ml. b. Beta emitter micro curle/ml.	10 ⁷ 10 ⁶	10 ⁷ 10 ⁶	10 ⁸ 10 ⁷	10 ⁷ 10 ⁶
30.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31.	Manganese (as Mn)	2 mg/l	2 mg/l	-----	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	-----	3 mg/l
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-----	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	-----	-----	20 mg/l

ANNEXURE-VI
CONSENT TO OPERATE CONTD...



CONSENT ORDER
MALIPARBAT BAUXITE MINES OF M/S. HINDALCO INDUSTRIES LIMITED

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NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO ₂), µg/m ³	Annual * 24 Hours **	50 80	20 80	-Improved west and Gaeke - Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO ₂), µg/m ³	Annual * 24 Hours **	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3.	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual * 24 Hours **	60 100	60 100	-Gravimetric - TOEM - Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual * 24 Hours **	40 60	40 60	-Gravimetric - TOEM - Beta Attenuation
5.	Ozone (O ₃) µg/m ³	8 Hours ** 1 Hours **	100 180	100 180	- UV Photometric - Chemiluminescence - Chemical Method
6.	Lead (Pb) µg/m ³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter
7.	Carbon Monoxide (CO) mg/m ³	8 Hours ** 1 Hours **	02 04	02 04	- Non Dispersive Infra Red (NDIR) Spectroscopy
8.	Ammonia (NH ₃) µg/m ³	Annual* 24 Hours**	100 400	100 400	-Chemiluminescence - Indophenol Blue Method
9.	Benzene (C ₆ H ₆) µg/m ³	Annul *	05	05	-Gas Chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m ³	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11.	Arsenic (As), ng/m ³	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni),ng/m ³	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

** Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

ANNEXURE-VII
LAND SCHEDULE

ANNEXURE – III

LAND SCHEDULE OF THE M.L. AREA FOR BAUXITE OVER 662.50 ACRES OR 268.110 HECTS IN VILLAGE ALIGAON NO. - 54, KAKARAMBA NO. - 53 AND SORISHPADAR NO. - 7, TAHASIL - POTTANGI & DISTRICT - KORAPUT OF HINDALCO INDUSTRIES LTD.

Village - Aligaon, No. 54					
Plot No	Khata No.	Name of the Tenant	Kissam	Area	Remarks
367/P	178	A.A.A.	Pahada	31.70	
368/P	178	A.A.A.	Pahada	28.86	
372/P	178	A.A.A.	Pahada	16.00	
375/P	178	A.A.A.	Pahada	0.21	
376/P	178	A.A.A.	Pahada	4.72	
379/P	178	A.A.A.	Pahada	18.86	
380/P	178	A.A.A.	Pahada	5.22	
381/P	178	A.A.A.	Pahada	21.00	
382/P	178	A.A.A.	Pahada	22.80	
383	178	A.A.A.	Pahada	42.90	
384/P	178	A.A.A.	Pahada	1.50	
387/P	178	A.A.A.	Pahada	8.12	
388/P	178	A.A.A.	Pahada	28.43	
389/P	178	A.A.A.	Pahada	16.95	
390/P	178	A.A.A.	Pahada	29.00	
391/P	178	A.A.A.	Pahada	39.62	
392/P	178	A.A.A.	Pahada	16.02	
1626/P	178	A.A.A.	Pahada	0.90	
1628/P	178	A.A.A.	Pahada	33.75	
1629/P	178	A.A.A.	Pahada	31.10	
1630/P	178	A.A.A.	Pahada	33.50	
1631/P	178	A.A.A.	Pahada	2.50	
1633/P	178	A.A.A.	Pahada	0.62	
1634/P	178	A.A.A.	Pahada	42.20	
1635/P	178	A.A.A.	Pahada	6.36	
Total				482.84 Acres	

Rakesh
8/11
Rakesh Palwal
P.A. Holder, Mines

Asst
Deputy Director of Mines
Koraput Circle, Koraput

Collector
Collector, Koraput

S.C. Nayak
S.C. Nayak
Qualified Person

ANNEXURE-VII
LAND SCHEDULE CONTD..

Village - Kakaramba, No. - 53					
Plot No	Khata No.	Name of the Tenant	Kissam	Area	Remarks
1/P	36	A.A.A.	Parbat	24.40	
17/P	36	A.A.A.	Parbat	23.25	
18/P	36	A.A.A.	Parbat	32.95	
19/P	36	A.A.A.	Parbat	0.22	
21/P	36	A.A.A.	Parbat	0.27	
Total				81.09 Acres	

Village - Sorishapadar, No. - 7					
Plot No	Khata No.	Name of the Tenant	Kissam	Area	Remarks
1/P	103	A.A.A.	Parbat	39.92	
2/P	103	A.A.A.	Parbat	35.00	
3/P	103	A.A.A.	Parbat	11.40	
7/P	103	A.A.A.	Parbat	12.25	
Total				98.57 Acres	

ABSTRACT:

1. Aligaon No - 54	- 482.84 Acres
2. Kakaramba No -53	- 81.09 Acres
3. Sorishapadar No - 7	- 98.57 Acres
Total	- 662.50 Acres
Or	
- 268.110 Hectares	

Rakesh
8/11
Rakesh Palawat
P. A. Hunder, Hindalco.

Algaon
Deputy Director of Mines
Koraput Circle, Koraput

Algaon
Collector, Koraput.

S.C. Nayak
S.C. Nayak
Qualified Person

**ANNEXURE-VIII
LEASE DEED (Page -1)**

ANNEXURE - 8

भारतीय गैर न्यायिक

दस रुपये **TEN RUPEES**

रु.10 **Rs.10**

INDIA NON JUDICIAL

02AA 568277

Admissible under Rule 25 duty
excessively stamped under the Indian
stamp (Orissa Amendment) Act 1986
Schedule 1. A. No. 14 is Schedule II of the
Orissa Additional Stamp duty Act 1986.

Registering Officer
Koraput at Jevpore

FORM - K
MINING LEASE
(See Rule 31)

FEES PAID

A (1)	260.00
D	60.00
A.19	210.00
A.21	10.00
A.19(b)	4.00
A.20	8.00
1-3	8.00
Total	560.00

THIS INDENTURE made this 8th day of November 2007
between the Governor of Orissa (hereinafter referred to as the
'State Government' which expression shall where the context
so admits be deemed to include his successors and assigns)
of the one part

And

Rakesh P. A. Holder, Hindalco.

Collector, Koraput.

Deputy Director of Mines
Koraput Circle, Koraput

S.C. Nayak
Qualified Person

ANNEXURE-VIII
LEASE DEED (Page -2)



17316
31/11/07
Stamp Value
At/Pot/Dist-Koraput

PRESENTED FOR REGISTRATION IN THE OFFICE OF THE
DISTRICT REGISTRAR, BETWEEN THE HOURS OF 10.00 AM
to 12.00 PM ON THE 11th DAY OF NOVEMBER 2007
BY Rabinendra Kumar Pothare
S/O Narayan Singh Pothare
OF Office of Deputy Director of mines
DIST. Koraput

4298
Rabinendra Kumar Pothare
4299
Rabinendra Kumar Pothare

PRESENTANT

REGISTERING OFFICER

Execution is Admitted by the Above

Identified by Rabinendra Kumar Pothare
S/o Narayan Singh Pothare
of Office of Deputy Director of mines
by profession Deputy Director of mines

4299
Rakesh
4290
Santim

Execution by Deputy Director of mines, Koraput District, Odisha, who is exempted from personal appearance as per Section 17(1) of the Indian Registration Act, 1908, is proved by his seal and signature.

Registering Officer
Koraput District, Odisha

ANNEXURE-IX
APPROVAL SCHEME OF MINING WITH PMCP



भारत सरकार GOVERNMENT OF INDIA
खान मंत्रालय MINISTRY OF MINES
भारतीय खान ब्यूरो INDIAN BUREAU OF MINES
क्षेत्रीय खान नियंत्रक के कार्यालय
OFFICE OF THE REGIONAL CONTROLLER OF MINES



Phone: 0674-2352463;
TeleFax: 0674-2352490;
eMail:
ro.bhubaneswar@ibm.gov.in
Plot No.149, Pokhariput
BHUBANESWAR-751016

No. MS/OTFM/22-ORI/BHU/2017-18

Date: 14.11.2017

To

Shri Pratap Patra, Mines Agent,
Maliparbat Bauxite Mines, Mines Division,
42/1041, Satya Nagar, College Road,
Semiliguda, Koraput-764036, Odisha.

Sub: Approval of Review of Mining Plan along with Progressive Mine Closure Plan of Maliparbat Bauxite Mines over an area of 268.11 ha in Koraput district of Odisha of M/s Hindalco Industries Limited submitted under Rule-17 of MCR, 2016.

Ref: -

- i) Your letter no. HIL/SEM/IBM/17-18/27 dated 27.09.2017.
- ii) This office letter of even no. dated 03.10.2017.
- iii) This office letter of even no. dated 03.10.2017 addressed to Director of Mines, Government of Odisha copy endorsed to you.
- iv) This office letter of even no. dated 18.10.2017.
- v) Your qualified person letter no. MSC/RMP/059 dated 02.11.2017.

Sir,

In exercise of the power delegated to me vide Gazette Notification No. S.O. 1857(E) dated 18.05.2016, I hereby Approve the Review of Mining Plan including Progressive Mine Closure Plan of Maliparbat Bauxite Mines over an area of 268.11 ha of M/s Hindalco Industries Limited in Koraput district of Odisha State submitted under Rule 17 of Mineral Concession Rules, 2016. This approval is subject to the following conditions:

- i. The Review of Mining Plan is approved without prejudice to any other law applicable to the mine area from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any order or direction from any court of competent jurisdiction.
- ii. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the applicant/ lessee and is applicable from the date of approval.
- iii. It is clarified that the approval of aforesaid Review of Mining Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Mineral Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rule & Regulations made there under.
- iv. Indian Bureau of Mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the leasehold shown on the ground with reference to lease map & other plans furnished by the applicant / lessee.
- v. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.

Contd. Page-2

ANNEXURE-IX
APPROVAL SCHEME OF MINING FROM IBM CONTD...

-2-

- vi. If this approval conflicts with any other law or court order/ Direction under any statute, it shall be revoked immediately.
- vii. Validity of this document shall expire on 31.03.2023.
- viii. Next Financial Assurance shall be due for submission on 31.03.2023.

भवदीय / yours faithfully,

Encl: - One copy of approved
Review of Mining Plan


(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information to:-

1. The Director of Mines, Directorate of Mines, Government of Odisha, Heads of the Department Building, New Capital, Bhubaneswar- 751001, Odisha along with one copy of Review of Mining Plan by **REGISTERED PARCEL**.
2. Shri S. C. Nayak, Qualified Person, M/s Minesketch Consultants (P) Limited, A/185, Saheed Nagar, Bhubaneswar, Odisha -751007.

(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

ANNEXURE-X **WATER AGREEMENT**

Government of Orissa
Department of Water Resources

No.Irr.-II-WRC-45/06. 13366 /WR., Date. 21/4/06

From
Shri M. Pany,
Under Secretary to Govt.,

To
The General Manager,
Mines Division (New Project),
M/s. Hindalco Industries Ltd.,
Satyanagar,
Nandapur Road, Semilliguda,
Dist:- Koraput -764036.

Sub:- Drawal of water by M/s. Hindalco Industries Ltd., Mines Division for their mining area in Koraput.

Sir,

I am directed to invite a reference to the letter No.16131 Dt.03.12.05 of E.I.C., W.R. on the subject noted above and to state that Government in Water Resources Department have been pleased in principle to accord permission in favour of M/s. Hindalco Industries Ltd, for drawal of 61 M³/day i.e. (0.0249 cusec) from Kunduli Nala which is a tributary of Upper Kolab Basin situated on the upstream of Upper Kolab reservoir for their proposed Maliparbat Bauxite Mines at Pattangi, subject to availability of water without assurance during the non-monsoon & lean period with the following terms and conditions and payment of up-to-date water tax. However, during such lean period the company has to make adequate storage facility in their own land for supply of water to their plant.

Procedure for allocation of water to the Industry:

(i) For construction of headworks and control mechanism i.e. intake well, pump house and other related facilities, M/s. Hindalco Industries Ltd. will get the land leased in their favour through IDCO as is done in respect of any other government land required by the industry. In case pump house or any other facilities is to be located on private land, the same would be acquired through IDCO as is done in respect of any other private land required by the industry. IDCO will make available land on long-term lease to M/s. Hindalco Industries Ltd. The continuance of the lease agreement will be subject to the condition that M/s Hindalco shall pay water charges as per prevailing water rate and all other dues of Government and IDCO from time to time.

(ii) Advance payment of applicable water charges, based on the demand for a period of two years on the water required by M/s Hindalco will be

ANNEXURE-X **WATER AGREEMENT CONTD..**

guaranteed by M/s. Hindalco Industries Ltd. through issue of suitable bank guarantee to be renewed before two months of expiry of every such period as a continuing arrangement.

- (iii) M/s. Hindalco Industries Ltd. will be allowed to construct connecting water line from the head works.
- (iv) In case of water supply for the M/s. Hindalco Industries Ltd. is to be met from a common source through a sharing mechanism, such common infrastructure for drawal of water will be constructed, maintained and operated either by IDCO or Special Purpose Vehicle (SPV) after taking due clearance from IDCO. Water will be supplied to the M/s. Hindalco Industries Ltd. by IDCO/SPV as the case may be, through a suitable long-term commercial arrangement. In this case the application for drawal of water would be made by the IDCO/SPV and they would also be liable for payment of water rate to the Government and will in turn have arrangements similar to (i) & (ii) detailed earlier.

Terms & Conditions.

1. The company will be levied to compensate the loss of power generation due to drawal of water.
2. They will not disturb the normal flow of water so that riparian rights in the down stream will be affected and the company shall have no claim on this account.
3. The drawal of water will be in accordance with the provision of Orissa Irrigation Act/Rules.
4. The M/s. Hindalco Industries Ltd. will execute an agreement with local authority of Water Resources Department in accordance with the Orissa Irrigation Rules.
5. M/s Hindalco will pay the water rates in force and to be fixed by the Govt. from time to time.
6. A flow meter shall be installed at the cost of M/s. Hindalco Industries Ltd. and quantity of water drawn will be measured by a competent technical person of Water Resources Department.
7. The M/s. Hindalco Industries Ltd. will have to make their own arrangement for storage of water.
8. Any waste water generated will be treated by M/s Hindalco to acceptable norms before disposal.
9. M/s. Hindalco Industries Ltd. will submit the detailed scheme i.e. details of intake well etc. to the concerned basin Manager and only after approval of the scheme, they will go ahead with the scheme for drawal of water.
10. There shall not be any disturbances with the present ecosystem and other environmental set up with minimum loss during transportation.

ANNEXURE-X
WATER AGREEMENT CONTD..

11. The exact place for lifting will be decided in consultation with the competent authority of Water Resources Department.
12. M/s. Hindalco Industries Ltd. may engage at their own cost consultant(s) experienced in the field to take up field investigations, prepare design and drawing to set up the water supply scheme for drawing water from the river for their proposed plant. The actual work will start after approval of the scheme by the competent authority of Water Resources Department who can inspect the work during the construction.
13. The R&R Action Plan/Welfare Action plan, if encountered will be the responsibility of the company at its own cost.
14. M/s. Hindalco Industries Ltd. should not claim as a matter of right to get the desired quantity of water during the lean period to meet their full industrial use.
15. The safety design of all the structures lies fully on the company.
16. In case of any dispute/interpretation required, the decision of the Govt. in Water Resources Department shall be final.
17. DOWR will not be responsible for non-availability of water due to dry season, disruption, repair and maintenance of canal.
18. The allotment will automatically lapse if the company does not use the water for the purpose applied for within 3 years of allotment.

Yours faithfully,

[Signature]
21.4.06.

Under Secretary to Govt.

Memo No 13367 /WR., Date 21/4/06

Copy forwarded to the CMD, IPICOL/ CMD, IDCO for information and necessary action.

[Signature]
21.4.06.

Under Secretary to Govt.

Memo No 13368 /WR., Date 21/4/06

Copy forwarded to Engineer-in-Chief, Water Resources/ C.E. PP&F/ C.E. W.S. for information and necessary action.

[Signature]
21.4.06.

Under Secretary to Govt.

Memo No 13369 /WR., Date 21/4/06

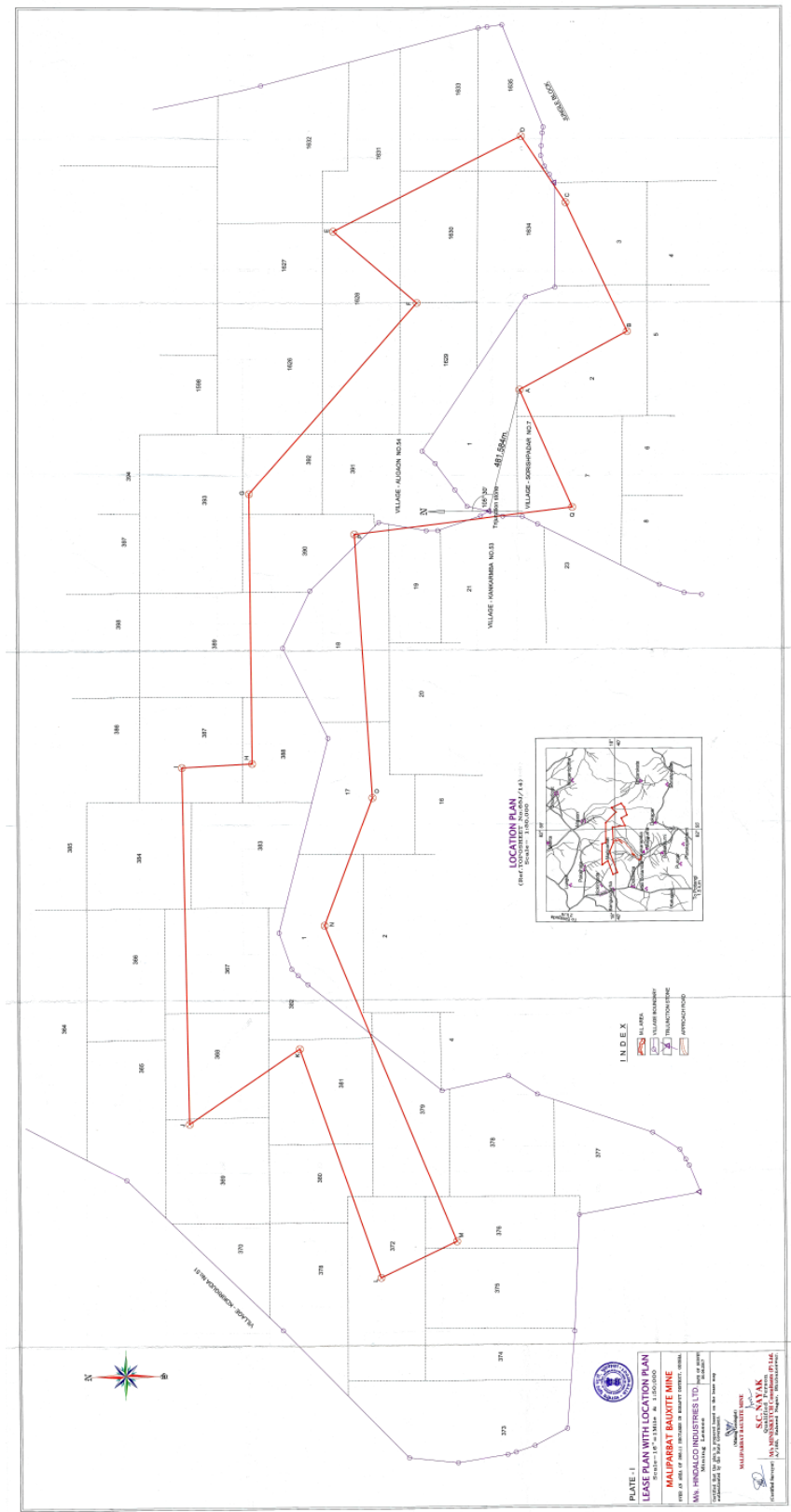
Copy forwarded to the C.E., U.I.P., Khatiguda/ Executive Engineer, Jeypore Irrigation Division, Jeypore for information & necessary action.

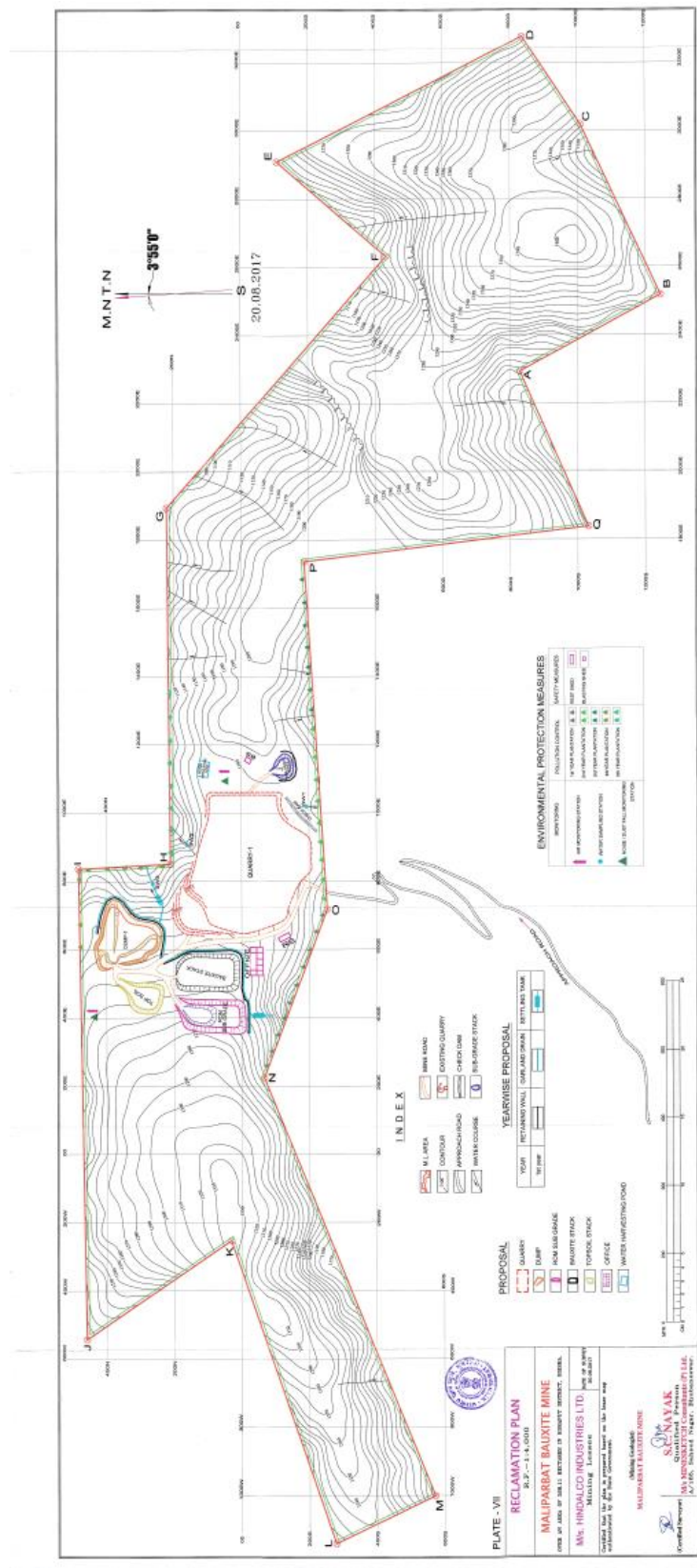
[Signature]
21.4.06.

Under Secretary to Govt.

ANNEXURE-XI

MINE GENERAL LAYOUT (LEASE PLAN)

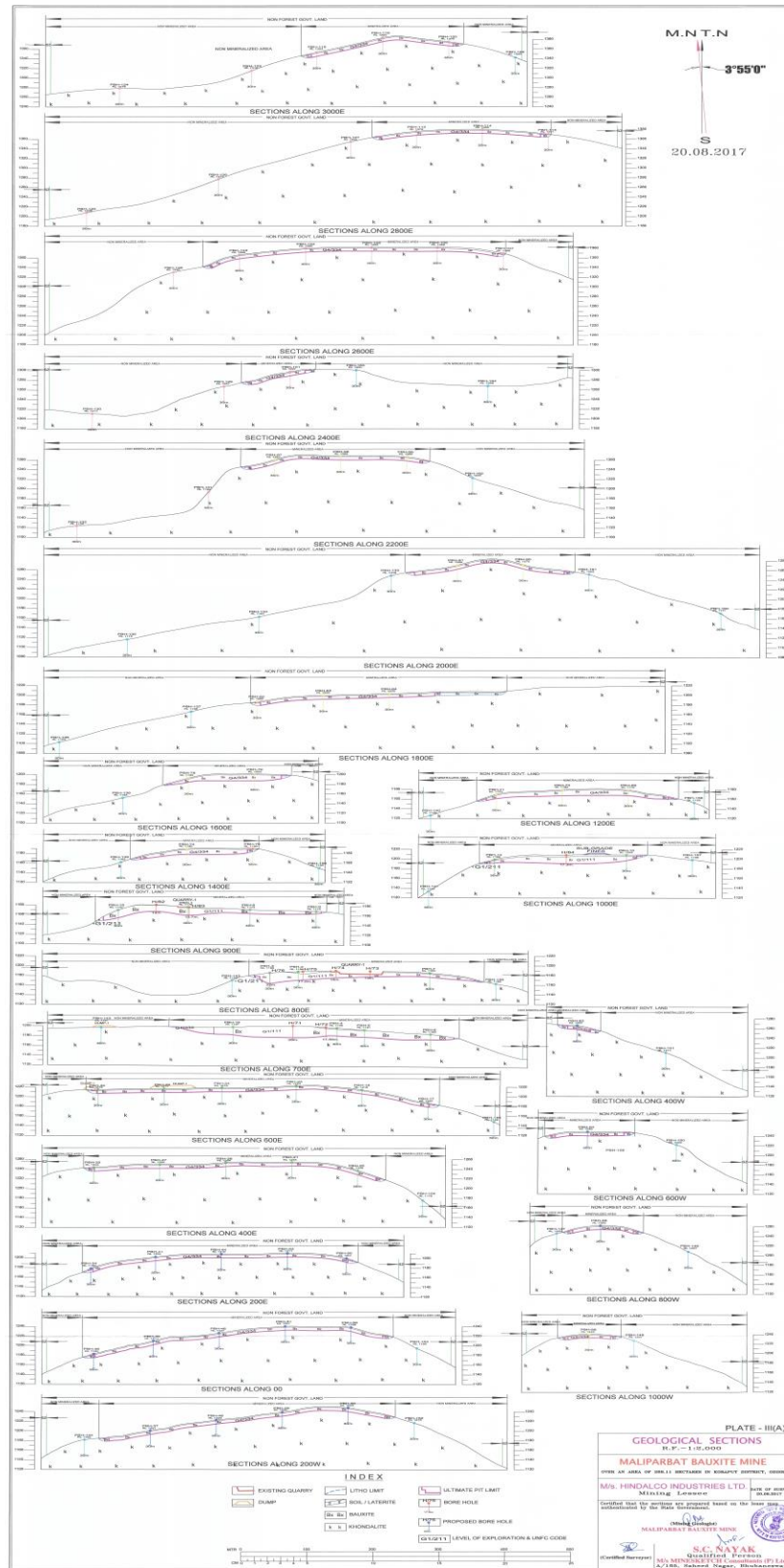




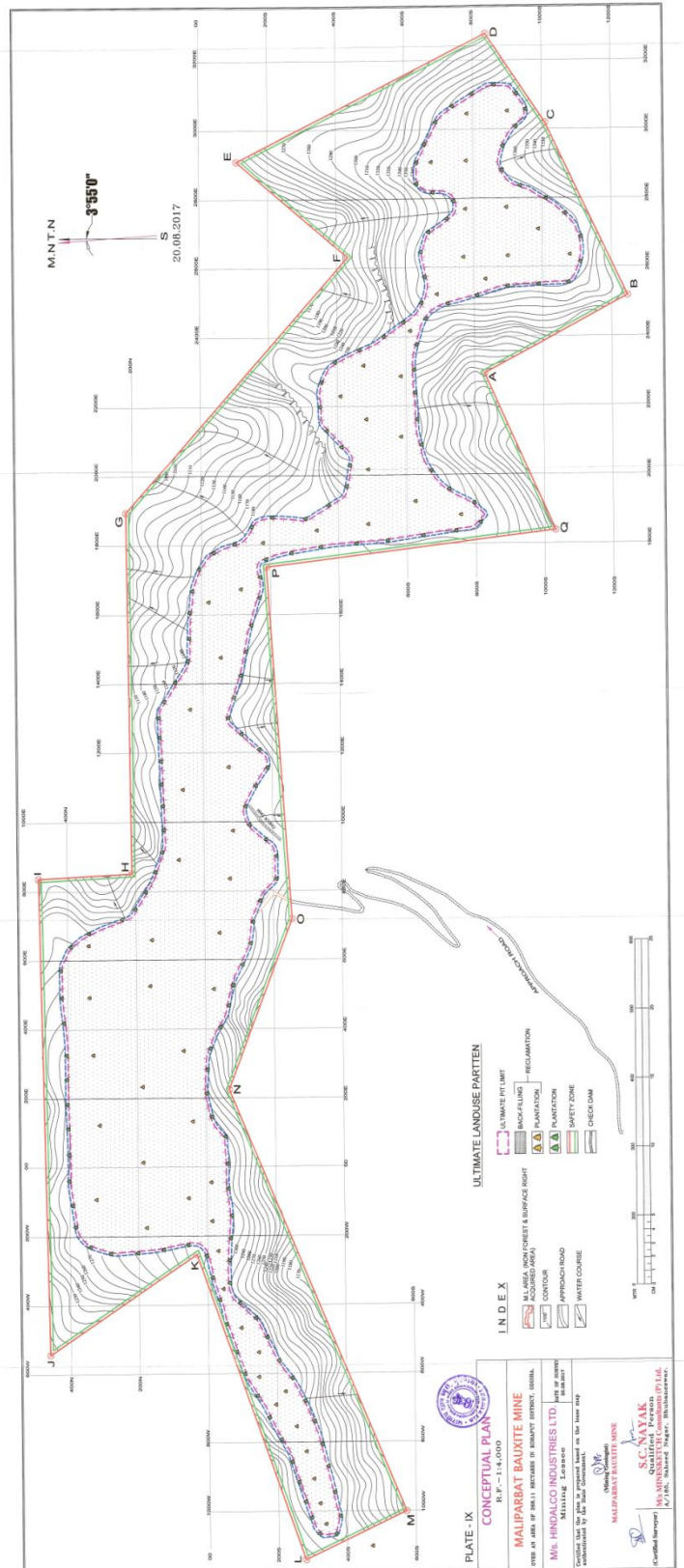
ANNEXURE-XIII SURFACE PLAN



ANNEXURE-XIV **GEOLOGICAL CROSS SECTION**



ANNEXURE-XV CONCEPTUAL MINE PLAN



ANNEXURE-XVI
EC COMPLIANCE



HIL/SEM/MoEF/83

Date- 30/11/2020

The Director,
Ministry of Environment and Forests & CC
Bhubaneswar,

Subject: Regarding Compliance to conditions under Environment Clearance (EC vide letter No. J-11015/411/2005-IA. II(M) dated 07/09/2006) of Maliparbat Bauxite Mining project located in village Aligaon, Kankaramba & Sorishpadar, Tehsil Semeliguda, District Koraput, Odisha.

Respected Sir,

With reference to above subject, we would like to bring your kind notice that due to discontinues of mining activities in past at our Maliparbat Bauxite Mining Project, we were unable to conduct Environmental Monitoring and field compliances. This mainly due to the fact that in past we have received direction and advise not to carried out any activity from the statutory authorities due to prevailing law & order situation at that point of time. We have also informed about the same to your good office vide our letter dated HIL/SEM/MoEF/16-17/147 on dated 1st December 2016. Thereafter as per the order received from Govt. of Odisha our lease was in lapse condition till 7th March 2019.

Now, we are pleased to inform you that, Director of Mines Govt. of Orissa has revived our mining lease in March 2019 and given direction to start mines at earliest without causing breach of peace and with the consent of district administration so that law and order problems are avoided. We are in process of resumption of mining activities at earliest. We are also doing plantation job in and around mining lease area with proper intimation to forest department Koraput. We are carrying out CSR activities in near by Mines area continuously since inception of lease period to cater CSR needs of area to extent possible.

We herewith attach status of compliance of EC conditions as required. (enclosed).
Sir, we hope that you will find our submission in order.

Thanking you.
Yours faithfully,


Pratap Kumar Patra
Agent- Maliparbat Mines

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Mines Division – New Project
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Identity No. L27020MH1958PLC011238