

PRE-FEASIBILITY REPORT

For

SIJIMALI BAUXITE MINE

Mining Capacity: 6.0 MTPA

(Mining Lease Area: 1560.40 Ha)

29 FEBRUARY 2020



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1.0 Executive Summary

Introduction

M/s Larsen & Toubro Limited is proposing the bauxite mining project located in the districts of Kalahandi and Rayagada, Odisha State. The proposed capacity of the project is 6.0 MTPA.

The proposed bauxite mining project in ML area of 1560.40 ha, which includes forest land of 723.55 ha (Village forest – 26.50 ha, Sabik Forest – 76.91, & DLC forest – 620.14 ha). Opencast mechanized mining with controlled blasting method is proposed for this project.

Salient Features of the Project

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

TABLE-1

SALIENT FEATURES OF THE PROJECT

Sr. No.	Parameters	Description															
1	Name of the project	Proposed Mining project of M/s Larsen & Toubro Limited at Sijimali Bauxite Mine															
2	Location of the project	Villages- Tijamali, Talambapadar, Nakurandi, Upar Ambapadar, Chulabari, Taramundi, Ambajhola, Mahajal, Tadadai and Salabali under Thuamul–Rampur Tehsil of Kalahandi district Villages-Malipadara, Dumerpadar Kutamal, Pelanakona, Katibhata, Bundel, Sagabari and Aliguna under Kashipur Tehsil of Rayagada district Districts- Kalahandi and Rayagada, State-Odisha Index map enclosed as Annexure-I															
3	Nature of the project	Bauxite Mining															
4	Project Proponent	M/s Larsen & Toubro Limited, Mumbai															
5	Lease period validity	50 years															
6	Total Lease area	1560.40 ha															
7	Life of Mine	39 years															
8	Details of the Lease Area	DGPS Map and Detailed land schedule is enclosed as Annexure-II (A) & II (B)															
9	Lease area Coordinate	<table border="1"> <thead> <tr> <th>Corner</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>19° 30' 27.23" N</td> <td>83° 06' 04.66" E</td> </tr> <tr> <td>B</td> <td>19° 32' 02.35" N</td> <td>83° 08' 36.64" E</td> </tr> <tr> <td>C</td> <td>19° 28' 50.53" N</td> <td>83° 09' 49.80" E</td> </tr> <tr> <td>D</td> <td>19° 28' 42.42" N</td> <td>83° 08' 03.58" E</td> </tr> </tbody> </table>	Corner	Latitude	Longitude	A	19° 30' 27.23" N	83° 06' 04.66" E	B	19° 32' 02.35" N	83° 08' 36.64" E	C	19° 28' 50.53" N	83° 09' 49.80" E	D	19° 28' 42.42" N	83° 08' 03.58" E
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10	Capacity of the project (peak)	6.0 MTPA															
11	Category of the project	"A"															
12	Land Type	Principally stony waste land															
13	Method of Mining	Opencast Mechanized Mining															



Sr. No.	Parameters	Description																																																						
14	Operational days/year	330 days																																																						
15	Bench Height	8 m																																																						
16	Ore to OB ratio	Average – 0.51:1																																																						
17	Overall pit slope	45°																																																						
18	Total water requirement	725 m ³ /day																																																						
19	Source of water	Naragul nala, 4 km, SE																																																						
20	Man power requirement	240 nos																																																						
21	Nearest Railway Station/ Airport along with distance in kms	Sikarpai RS – 20.2 km, SSE Visakhapatnam Airport : 195 km, S																																																						
22	Nearest Town, city, District Headquarters along with distance in km	Kashipur- 13.8 km, S Bhawanipatna- 41.5 km, N Rayagada- 42 km, SSE																																																						
23	Nearest Highway	SH-44 (Rupkona-Kashipur-Gunupur- Bawanipatna), 2.6 km, W SH-45 (Jaykaypur-Kalyansinpur), 14.8 km, E																																																						
24	Ecological Sensitive Areas (Wild life Sanctuaries, National Parks, Biosphere Reserves, Reserve/Protected Forest etc.)	<p>Karlapat wildlife sanctuary – 12.9 km, N</p> <p><u>Reserved Forests</u></p> <table border="1"> <tbody> <tr><td>1. RF near Aliguna Village</td><td>0.7 km, N</td></tr> <tr><td>2. Kalibhata RF</td><td>1.4 km, SW</td></tr> <tr><td>3. Ladakhman RF</td><td>4.0 km, WSW</td></tr> <tr><td>4. Khakes RF</td><td>4.4 km, NNW</td></tr> <tr><td>5. Kalagan RF</td><td>4.5 km, S</td></tr> <tr><td>6. Bijay nagar RF</td><td>4.5 km, SE</td></tr> <tr><td>7. Mohanagiri RF</td><td>5.3 km, ESE</td></tr> <tr><td>8. Kasapari RF</td><td>6.1 km, NNW</td></tr> <tr><td>9. Kasapar Extn RF</td><td>6.6 km, NNW</td></tr> <tr><td>10. Karhakhman RF</td><td>7.0 km, N</td></tr> <tr><td>11. Mandibishi RF</td><td>7.3 km, SSE</td></tr> <tr><td>12. Indravati RF</td><td>8.5 km, NW</td></tr> <tr><td>13. Paharhapadas RF</td><td>8.9 km, NE</td></tr> <tr><td>14. RF near Gunupar Village</td><td>9.1 km, N</td></tr> <tr><td>15. Mandagurha RF</td><td>11.6 km, NNW</td></tr> <tr><td>16. Kandabindha RF</td><td>11.9 km, SSW</td></tr> <tr><td>17. RF near Ranidumeri village</td><td>11.9 km, NW</td></tr> <tr><td>18. Singari RF</td><td>12.5 km, NE</td></tr> <tr><td>19. Karlapata RF</td><td>12.9 km, N</td></tr> <tr><td>20. RF near Dalimgurha village</td><td>14.2 km, NW</td></tr> <tr><td>21. Bijaghati RF</td><td>14.4 km, NW</td></tr> </tbody> </table> <p><u>Proposed Reserved Forest</u></p> <table border="1"> <tbody> <tr><td>1. Melaghara RF</td><td>1.7 km, E</td></tr> <tr><td>2. Sunger RF</td><td>2.1 km, SW</td></tr> <tr><td>3. Mohanagiri RF</td><td>2.4 km, NE</td></tr> <tr><td>4. Dhanda RF</td><td>4.7 km, S</td></tr> <tr><td>5. Ajaygarh RF</td><td>9.3 km, ESE</td></tr> <tr><td>6. Bijepur RF</td><td>9.4 km, ENE</td></tr> </tbody> </table>	1. RF near Aliguna Village	0.7 km, N	2. Kalibhata RF	1.4 km, SW	3. Ladakhman RF	4.0 km, WSW	4. Khakes RF	4.4 km, NNW	5. Kalagan RF	4.5 km, S	6. Bijay nagar RF	4.5 km, SE	7. Mohanagiri RF	5.3 km, ESE	8. Kasapari RF	6.1 km, NNW	9. Kasapar Extn RF	6.6 km, NNW	10. Karhakhman RF	7.0 km, N	11. Mandibishi RF	7.3 km, SSE	12. Indravati RF	8.5 km, NW	13. Paharhapadas RF	8.9 km, NE	14. RF near Gunupar Village	9.1 km, N	15. Mandagurha RF	11.6 km, NNW	16. Kandabindha RF	11.9 km, SSW	17. RF near Ranidumeri village	11.9 km, NW	18. Singari RF	12.5 km, NE	19. Karlapata RF	12.9 km, N	20. RF near Dalimgurha village	14.2 km, NW	21. Bijaghati RF	14.4 km, NW	1. Melaghara RF	1.7 km, E	2. Sunger RF	2.1 km, SW	3. Mohanagiri RF	2.4 km, NE	4. Dhanda RF	4.7 km, S	5. Ajaygarh RF	9.3 km, ESE	6. Bijepur RF	9.4 km, ENE
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		7. Rastugurha RF 9.4 km, S 8. Durpai RF 9.7 km, SE 9. Ranikota RF 10.7 km, SSE 10. Bartibali RF 10.8 km, SE 11. Bhasangamali RF 12.0 km, SSE 12. Alande RF 13.5 km, ENE 13. Chhatapadar RF 14.0 km, ENE 14. Utang RF 14.6 km, SE
25	Historical Places	Nil
26	Seismicity	Seismic zone-II as per IS 1893 (Part-I):2002

*Distances are measured as aerial distances

2.0 Introduction of the Project/Background Information

2.1 Identification of Project Proponent

Larsen & Toubro Limited (L&T) is a diversified Indian multinational conglomerate with very sound financial resources. During 2018-19, the consolidated revenue was in excess of Rs. 1,40,000 Crores. It operates in over 30 countries worldwide. A strong, customer-focused approach and the constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business for over seven decades.

L&T has proposed to set up an alumina refinery project in Odisha. Investment decision is dependent on the captive source of sizeable reserves of bauxite. The state government granted the prospecting licenses to L&T for Kutrumali and Sijimali bauxite deposits. Both the deposits are nearby and are located in Kalahandi and Rayagada districts. After successfully completing the prospecting operations, L&T applied for mining leases. State government has recommended the applications to central government for their approval for grant of mining leases in accordance with law. It is in the advance stage of approval at Central Government.

Out of total estimated mineable reserves of 298.39 million tonnes in these two deposits, Sijimali deposit has got 220.39 million tonnes and the balance 78.50 million tonnes are from Kutrumali deposit.

The ultimate capacity of 3 MTPA of the proposed alumina refinery will require bauxite of 9 MTPA, considering 3 tonnes of bauxite for 1 tonne of alumina. This requirement will be met partly from Sijimali (6 MTPA) and partly from Kutrumali (3 MTPA). This report is for mining of bauxite from Sijimali deposits at a rate of 6 MTPA (peak). A separate report for mining of bauxite from Kutrumali deposits has been prepared.

L&T is a reputed engineering conglomerate having highly qualified engineers. L&T is a leading manufacturer of state of the art mining equipment and a global engineering player in the field of metals and mining and therefore they are in a pre-eminent position to conduct scientific and environment friendly mining. The mining methods, amongst others, shall aim at minimising or eliminating blasting operations. Extensive use of Surface Miners and/or IPCC (In Pit Crushing and Conveying) shall be resorted to. Only in the places where hard strata is encountered, controlled blasting would be resorted to.



2.2 Brief Description of Nature of Project

The lease area of 1560.40 hectares falls under Thuamul–Rampur Tehsil of Kalahandi district and Kashipur Tehsil of Rayagada district in the state of Odisha. The lease area falls under the Survey of India Toposheet nos. E44F2 and E44F3 and bounded by **latitude of 19° 28' 42.42" to 19° 32' 02.35" N & longitude of 83° 06' 04.66" to 83° 09' 49.80" E**. The proposed lease area is having about 220.39 million tonnes of mineable reserves.

The extracted bauxite will be used in the proposed 3 MTPA production capacity alumina refinery in Rayagada district, Odisha. The mining lease shall be granted for Bauxite mining for a period of 50 years. The proposed Bauxite mine shall be developed by opencast mechanized mining method. The main operation shall include removal and stacking of top soil by excavator cum loaders, exposing the aluminous bauxite/bauxite zone and proper levelling by dozer and use of surface miners. Bauxite will be then sorted out and reduced its size. The remaining rejects will be used for backfilling.

Extent of Mechanization

The entire mining activity involves fragmentation/loosening of in-situ rock mass, excavation, loading and hauling, sizing and subsequent handling/transportation etc. These are envisaged to be carried out by employing equipment like rippers, drills, excavators and loaders, rear dump trucks, crusher, feeders and belt conveyors etc. the details of proposed extent of Mechanization are given in below Table-2.

TABLE-2
PROPOSED EXTENT OF MECHANISATION

Sr. No.	Description	Capacity	Quantity (Nos.)
1	Surface Miner	950 tph	2
2	Crushers	720 tph	6
3	Ripper Dozer	850 HP	3
4	Drill	150 mm	4
5	Excavator	11.7 cu m	2
6	Loader	10.1	2
7	Rear Dump trucks	100 ton	13
8	Crawler Dozer	410 HP	1
9	Wheel Dozer	350 HP	1
10	Grader	175 HP	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 is presented in the below table:

Sr. No.	Description	Capacity	Quantity (Nos.)
1	Back-hoe hydraulic Excavator	3.4 cu m	1
2	Crawler-mounted bulldozer powered by diesel engine	410 HP	4
3	Tyre-mounted bulldozer powered by diesel engine	350 HP	1
4	Road grader powered by diesel engine	175 HP	1



Sr. No.	Description	Capacity	Quantity (Nos.)
5	Water Tanker	28 kl	3
6	Tyre-mounted hydraulic rock breaker		1
7	Diesel Tanker		2
8	Explosive Van	9/10 tonnes	1
9	ANFO mixing and loading truck	5 tonnes	1
10	Mobile Crane		1
11	Material Truck	10 tonnes	1
12	Fire Tender		1
13	Tower mounted DG sets		8
14	Repair and Maintenance Van		2

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, $Al_2O_3 \cdot H_2O$ (Al_2O_3 - 85%; Al- 45%); gibbsite or hydrargillite, $Al_2O_3 \cdot 3H_2O$ (Al_2O_3 - 65.4%; Al-34.6%), and bauxite (containing colloidal alumina hydrogel), $Al_2O_3 \cdot 2H_2O$ (Al_2O_3 -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. It is also an essential ore for refractory and chemical industries. 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 and will also bring in large employment opportunities to the local populace thereby usher in 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. There are 152 operating mines. Besides, production of bauxite was reported as associate mineral by 6 mines during the year. 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% Al_2O_3 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 tonnes 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)

2.5 Imports V/s indigenous production

The country has large resources of Bauxite, occupying the sixth place in the **world's total resources**. The resources of metallurgical grade Bauxite are quite adequate while those of the chemical and refractory grade Bauxite are relatively limited considering the future requirements. **That's why it is necessary** to import Bauxite of this grade. The quantity and value of import of Bauxite is given in the following Table-3:

TABLE-3
QUANTITY AND VALUE OF IMPORT OF BAUXITE

Year	Quantity (Thousand Kg.)	Value (Rs. Lakhs)
2018-19	20,68,104.49	1,22,214.49
2019-20 (April-August)	6,28,394.81	33,532.84

(Source: Ministry of Commerce and Industry).

2.6 Export Possibility

The quantity and value of export of Bauxite 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 bauxite of the lease area is of metallurgical grade (+40% Al₂O₃ on an average), therefore is suitable for Alumina plants, like NALCO, Hindalco and BALCO.

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-5
EMPLOYMENT POTENTIAL

Sr. No.	Category	Manpower
1	Managerial	20
2	Supervisory	20
3	Clerical	15



Sr. No.	Category	Manpower
4	Skilled	145
5	Semi- Skilled	30
6	Un-Skilled	10
	Total	240

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 under category "A". As the lease area is 1560.40 hectare, this project falls under category "A". The extracted bauxite will be used in proposed aluminium refinery (3.0 MTPA) in Rayagada district, Odisha.

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

The Sijimali bauxite mine is located at Villages- Tijamali, Talambapadar, Nakurandi, Upar Ambapadar, Chulabari, Taramundi, Ambajhola, Mahajal, Tadadai and Salabali under Thuamul-Rampur Tehsil of Kalahandi district and Villages- Malipadara, Dumerpadar, Kutamal, Pelanakona, Katibhata, Bundel, Sagabari and Aliguna under Kashipur Tehsil of Rayagada district, State- Odisha over an area of 1560.40 ha. The geographical coordinates of ML area is given in Table-6. Study area map enclosed as Annexure-III.

TABLE-6
LOCATION COORDINATES

Corner	Latitude	Longitude
A	19° 30' 27.23" N	83° 06' 04.66" E
B	19° 32' 02.35" N	83° 08' 36.64" E
C	19° 28' 50.53" N	83° 09' 49.80" E
D	19° 28' 42.42" N	83° 08' 03.58" 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

Bauxite is a naturally occurring mineral which is site specific due to its geological origin. No alternative sites are proposed.

3.4 Size and Magnitude of Operation

The total geological reserves of Sijimali bauxite deposit is about 383.95 million tonnes, out of which 220.39 million tonnes is mineable reserves. For operational management, the mineralised areas have been sub-divided in to 4 blocks and they contain 76.97 million tonnes, 68.57 million tonnes, 58.77 million tonnes and 16.08 million tonnes respectively. It is proposed to undertake mining operation initially in the Block-I.

Mining operations will commence initially with a production capacity of 1 million tonnes per annum and will be ramped up to full capacity of 6 million tonnes per annum within a period of 4 years.



Mine General Layout

General layout of the mine showing the proposed mining blocks, overburden, mineral reject and topsoil dumps, crushers locations, belt conveyors, site service facility, electric sub-station, on-ground water reservoir, explosive magazine house, haulage and access roads, plantation area etc. are shown in Annexure- IV.

3.5 Project Description with Process Details

The mineralised areas have been divided into four blocks and have been identified as Block-I, Block-II, Block-III and Block-IV. Among all these, Block-I and Block-II are having major quantum of mineable reserves. In terms of stripping ratio, Block-I and Block-II are the most promising ones. Among these, Block-I is having the largest share of mineable reserves and is also nearest to the take off point of the long-distance conveyor. Hence, it is planned to start the mining activity in the Block-I and mining in this block shall continue for approximately fifteen (15) years. It is also planned to open up two active working faces in Block-I to facilitate production of required quantity of bauxite, providing adequate space for unhindered movement of heavy earthmoving machineries, maintaining a balanced lead distance for haulage of overburden/mineral reject and bauxite as well as for the purpose of blending, if required. After completion of mining in Block-I, Block-II will be developed. Block-III and Block-IV can be developed simultaneously to keep the year-wise stripping ratio on the lower side as well as for maintaining a uniform grade of r.o.m bauxite to the extent possible.

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 opencast method in multiple benches. The details of the mining scheme are discussed below:

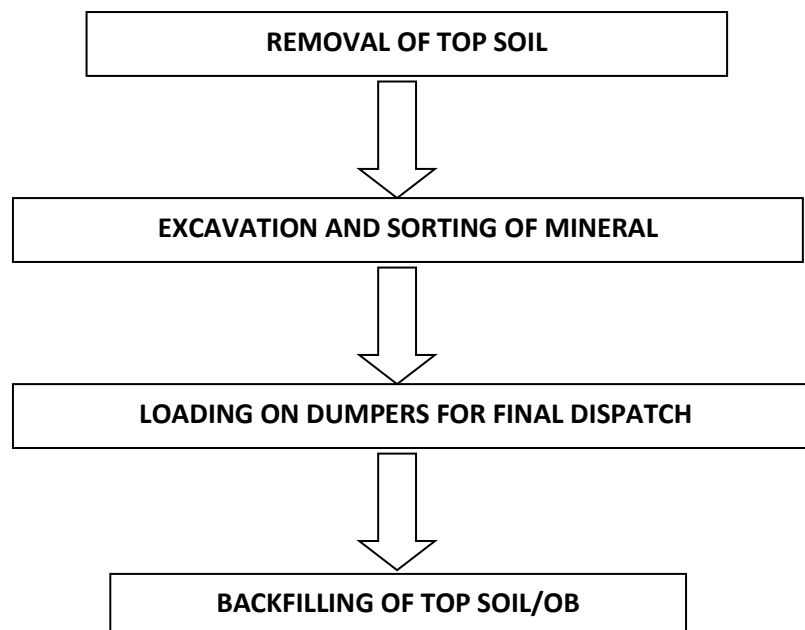


FIGURE-1
FLOW CHART OF THE PROJECT



Access Road

Before commencement of activities in the mines, it is proposed to develop a suitable access road to the Sijimali plateau top. The mine is at present connected by a fair-weather village road of 6 km and kutchra road of 3 km from foothill to plateau. These will be upgraded after obtaining necessary permissions from relevant authorities. The road gradient and curvature will be as per IRC norms. Besides transportation of machineries for development and construction, the road will also be used for regular transportation of employees, transportation of consumables and O&M spares.

Pre-mining Development

Before the commencement of actual mining operation in Block-I, it is proposed to remove the top soil/overburden to gain access to the bauxite benches in respective active working areas. The top soil will be stacked separately in earmarked areas for future use in the backfilled and reclaimed areas. The overburden/mineral reject strips are planned to be loosened by using rippers and drilling and blasting. The loosened material will be piled up by dozer and the same will be loaded into rear-dump trucks by front-end loaders and hydraulic excavators for transportation to overburden/mineral reject dump. Further, during the process of pre-mining development in a span of about one year, about 100,000 tonnes of bauxite would be raised which would be stacked in the area earmarked for r.o.m ore stockpile proposed to be provided near crusher house. The bauxite thus stockpiled would be reclaimed and used for trial run of the crushing plant and the belt conveyor system as well as during subsequent regular operation.

Besides removal of overburden, the work pertaining to subsequent bench formation, laying of some of the roads and preparation of overburden/mineral reject/top soil/ore stockpile areas will be undertaken during this period spanning about twelve (12) months before commissioning of the mine.

Procurement of equipment required for pre-mining development will have to be initiated well in advance so that these equipment are available at site within a short period after the completion of access road. After the completion of pre-mining development and commissioning of the mine, the above equipment will be inducted in the fleet of equipment for regular mining operation.

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 green belt 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 Metalliferrous Mines Regulations, 1961.

At Sijimali, the bench height in an 8 m 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.

Accordingly, the overburden/mineral reject having varying thickness will be removed ahead of bauxite excavation. The bulk of the bauxite will be mined at 8 m bench height while benches of 4 m height will be developed in overburden/mineral reject. However, some of the benches, for both bauxite and overburden/mineral reject, will be less than 4 m in height and will be exploited by ripping. Moreover, the floor of bauxite will be uneven due to undulating nature of khondalite. Care would be taken to excavate bauxite from the floor with back-hoe excavators.

Overall Pit Slope

A steep overall pit slope is expected to be stable with 8 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 Metalliferrous Mines Regulations. This slope is considered to be well within the safe limit.

Mine Drainage

The Sijimali plateau has a generally undulating topography. There are 2/3 small hillocks in the central and south part which slopes down gently towards the edges of the plateau. The natural drainage, therefore, follows a radial pattern and discharges the surface run-off into the valleys all round which ultimately converges with the main water courses.

Preliminary observations from the hydrogeological study at Sijimali region reveal that the effect of mining on ground water table within the mine lease-hold area is remote. The highest contour in the plateau is about 1220 m MSL, while the lowest contour is about 997.6 m MSL. The drilling of borehole at the lowest contour to a depth of about 23.68 m equivalent to 973.92 m MSL does not encounter any sub-surface water and it was possible to draw samples of laterite and bauxite from a level of about 973 m MSL through suction drilling. Majority of the springs in Sijimali study area are generally found to lie within 800 to 1000 metres above MSL. Taking all these into considerations, the possibility of disturbing the springs and their discharge rate during the mining operation has not been anticipated.

The minimum and maximum depth of mine working is at 982 m and 1094 m above MSL. At the plateau top, no sub-surface water has been encountered up to a level of 973 m above MSL. Since the plateau is characterized by quaquaversal slopes, a substantial quantity of rain water is now lost by quick run-off. During mining operation depression formed by the removal of bauxite will act as recharge reservoir of ground water by retaining the rain water and hence better recharging



of springs. The actual surface area at the plateau top to be covered under mining is less compared to the total exposed surface of the plateau.

Further removal of the old-harden top lateritic duricrust (which are concretionary in texture, less porous and less permeable) will expose fresh laterite and bauxite profile which will accelerate the rate of infiltration of the surface precipitation and hence, better recharging of the springs.

Due to surface topography and sub-surface bauxite disposition, mine working level will generally be above the cliff level where a peripheral barrier of about 7.5 m will be kept. Considering this, the working bench floors shall be maintained at a self-draining slope towards the natural drainage of the plateau. A set of catch drains will be made to channelize the surface run-off which will be merged to the natural water courses at the plateau top. In the course of mining, some localized depressions may be created. In some depressions, where water logging may cause difficulty in mine operation, a portable diesel pump of 100 cu m per hour capacity will be employed to pump out the accumulated water and discharge the same to the natural water courses for ultimate discharge to main water course. The peripheral barrier will be breached at places and culverts will be provided on the roads wherever necessary for evacuation of the water from mining area.

The total area of the lease is 1560.40 Ha. The annual rainfall is 1200 mm. Based on the above, it is envisaged that approximately 18.60 million cu m of rain water will flow through the mining lease area. During initial years of mine operations, top soil and overburden/mineral reject excavated shall be dumped in selected sites. Retaining wall will be provided along the periphery of the dumps to arrest the wash off. Moreover, peripheral drains all around the dumps shall be made to trap rain water washings out of the dumps, which in turn will reduce the load of suspended solids in the discharged water. Sump pits will be provided along the length of the drains for effective trapping of rain water washings. The water from these peripheral garland drains and other surface discharge will be collected in settling tanks. After settling of the suspended solids, clear water will be discharged at places from the lease area to the main water courses. During the operation of mine, substantial quantity of overburden/mineral reject will be generated.

Crushing Plant

Location of the crushing unit in a mine is generally influenced by the disposition of ore body, topography etc. Ideally the crusher house should be located on a barren zone to keep the entire ore bearing area free for excavation, within a reasonable distance from mining areas and at a relatively lower level that enables downhill hauling. Based on the above factors, it is proposed to install the crusher house for exploitation of Block-I on the eastern part near the edge of the plateau. The location is at a level relatively lower than major part of the block. The location would enable to restrict the lead of truck transportation within 2 km which is considered reasonable for the type and scale of operation. The location is outside the demarcated mining area and on a nonmineralized zone and hence would not hinder the operation in any part of the block.

It is proposed to adopt a fixed crusher location for each of the blocks. However, as the mineable reserve in Block-IV is less, the crusher location in Block-III may serve for Block-IV as well. However, this proposal is provisional only and the same will be firmed up during the actual operation stage.



The crushing plant will consist of four sections namely:

- i) R.O.M ore stockyard;
- ii) Crushing section;
- iii) Belt conveyer system; and
- iv) Surge bin.

R.O.M Ore Stockyard

One r.o.m. ore stockpile of around 100,000 tonnes capacity will be maintained near the crusher house. This stockpile would not only enable to absorb the imbalance in mine raisings during dry season and monsoon to some extent, but would also serve as a buffer between the mine and the crushing plant in the event of stoppage of either of these. The stockpile may also be judiciously utilised for maintaining supply of bauxite of stipulated grade. The ore transported from the mine may be dumped directly into the crusher or to the stockpile depending upon the grade of bauxite and the requirement of the crushing plant. Subsequently, bauxite from the stockpile may be reclaimed in appropriate proportions conforming to the stipulated blending requirement and dumped into the crusher hopper. For reclamation of ore from stockpile, 11.8 cu m front-end loader and 100 tonnes rear-dump trucks will be provided which may be supplemented, if required, by diverting additional equipment from mine during lean period of mine working.

Crushing Section

Receiving Hopper

Two r.c.c. hoppers will be provided at the crusher house to receive the ore directly transported from the mine and dumped by rear-dump trucks. Ore reclaimed from the r.o.m. stockpile will also be received in this hopper. The rear-dump trucks will approach the hoppers through a ramp. The hoppers will be of about 200 tonnes capacity each and fitted with MS grid on top to arrest stray plus 800 mm boulders. The oversize boulders will be fragmented with the help of a hydraulic rock breaker provided for the purpose.

Apron Feeder

The hopper will be equipped with heavy duty apron feeders of 2000 mm x 9200 mm size installed at the bottom of hopper, suitable to withstand the load of big boulders dumped by 100 tonnes rear-dump trucks from large tipping height. The apron feeder will be driven by variable speed D.C. motor, and draw out and deliver the material at a regulated rate to a set of stationary grizzly.

Vibrating Grizzly

A set of vibrating grizzly feeder of robust construction and 2000 mm x 4500 mm size, having wedge shaped opening tapering out towards the discharge end, will be installed ahead of the crushers for scalping out as much minus 150 mm fraction as possible from the r.o.m. material to avoid unnecessary volumetric loading of the crusher.

Crusher

Oversize of the grizzly will be fed directly to the crushers to reduce the same to minus 150 mm. Considering the size and other physical characteristics of the feed ore, throughput rate and the stipulated product size, it is proposed to provide toothed double-roll crusher having inlet mouth opening of 2100 mm x 2000 mm.



Each of the rolls will have separate squirrel cage induction motor drive, and will run at different speeds to ensure efficient crushing by the process of compaction and shearing.

Belt Conveyor System

A belt conveyor system will be provided to collect the minus 150 mm crushed material, dribble material of apron feeder and the scalped grizzly product and transfer the same to the surge bins, located near the long distance bauxite transport conveyor system. Each of these conveyors will be 1200 mm wide operating at a speed of about 2 m per second, and will be laid over a fairly level land.

Surge Bin

Two surge bins will be provided to collect the minus 150 mm material and feed the same at a uniform rate to the long distance conveyor transport system.

Bin Compartment

The single-compartment surge bins will be of steel construction having 200 tonnes capacity each. The bins with suitable liners will enable to even out any fluctuation in the feed rate of the incoming material and maintain a uniform rate of loading of the long distance transport conveyor throughout the period of its operation.

Apron Feeder

Apron feeders, 1500 mm x 6000 mm, will be provided below the bin compartment for drawing out and delivery of the material.

Belt Conveyor

A belt conveyor will collect the material discharged by the apron feeder and transfer the same to the long distance bauxite transport system.

Other Facilities

Other facilities envisaged to be provided for smooth functioning of the sizing plant are briefly described below:

Crane and Hoist

The crusher house will be equipped with a 40/5 tonnes capacity E.O.T. crane for maintenance and upkeep of equipment there. The crane will also be used to handle and remove the oversize boulders arrested by the MS grid fitted on top of the receiving hopper. Mechanical traveling hoists of appropriate capacity will be provided in the conveyor junction houses and the surge bins.

Belt Scale

An electronic belt weight will be provided on belt conveyor to record and indicate the rate of transfer of material.

Metal Detector and Magnetic Separator

Metal detectors consisting of a search coil and a solid state control unit will be provided on belt conveyors to facilitate detection and removal of tramp metal



pieces from bauxite being despatched to the alumina plant. The search coil mounted on the conveyor senses the presence of any unwanted metal piece in bauxite, and through the control unit, activates an overhand magnetic separator which in turn ejects the piece from the system. In the event of failure of the ejection device, a second metal detector installed further downstream will actuate the trip circuit of the conveyor drive to facilitate manual removal of the metal piece.

Automatic Sampler

A scoop type automatic primary sampler will be mounted at a suitable location on belt conveyor for collection of representative samples at predetermined intervals as required for monitoring of quality of dispatched bauxite. Facilities for preparation of samples consisting of two-stage crushing, handling and secondary sampling will be provided.

Dust Abatement Facilities

High pressure fogging system shall be provided for dust suppression at the crusher house. For conveyor transfer points and in the storage bins, dry fog dust suppression system will be provided.

Besides the dust extraction system, water will be sprinkled at the receiving hopper through appropriate header, pipeline and sprinklers to control generation of dust.

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

No raw material will be required for production of Bauxite.

Use of Mineral

The bauxite deposit of Sijimali will be used as captive source for production of metallurgical grade alumina. The proposed alumina plant will be located at a distance of around 22 km in South-East direction from this bauxite deposit.

Bauxite Transportation

It has been envisaged that bauxite, after primary sizing at Sijimali mine head, will be transported to the proposed alumina plant by an overland conveyor system. For this purpose, a conveyor system will be provided to deliver the primary crushed bauxite from Sijimali to a surge bin at Kutrumali. Thereafter, it will be transported to the alumina plant using the conveyor system between Kutrumali and Alumina plant. Alignment of the conveyor between Sijimali and Kutrumali, its duty requirement, type of conveyor installation etc. are briefly described below.

The location of take-off point of the overland conveyor system and its alignment have been selected on the basis of inspection of the site and study of the contours/topography of the area adjoining Sijimali plateau in the direction of Kutrumali, as well as taking into account bauxite disposition, the proposed layout of the mine, future integration with Kutrumali conveyor system etc. Based on study of the above factors, it is planned to locate the drive house of the conveyor on eastern part of the plateau.



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

Projected water requirement for Sijimali is 725 m³/day as per the details given in Table-7. It is proposed to tap this quantity of water from Naragul Nala at an approximate distance of 4 km from Sijimali hill top.

Water will be required in the mining area for sprinkling on the roads to suppress the dust, watering of greenbelt/green verge and trees planted to comply with requisite EMP measures, miscellaneous industrial use, and drinking and sanitation.

TABLE-7
WATER REQUIREMENT

Sr.No	Consumer	Requirement of Water (m ³ /day)
1	Haul road dust suppression including maintenance of top soil	460
2	Washing and cleaning of earthmoving equipment (service water system)	100
3	Drinking system	40
4	High pressure fogging system at crushe	30
5	Dry fog dust suppression system at bin and conveyors	20
6	Vegetation and Horticulture	40
7	Afforestation	70
8	Miscellaneous	25
9	Total (1+8)	785
10	Recycled water retrieved from water treatment plant at workshop	(60)
	Net Requirement (9-10)	725

Power Requirement

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

- Annual energy consumption, 14.1 x 10⁶ kwh; and
- 15 min maximum demand, 5.6 MVA.

Source of Power

Power will be made available from the grid substation of Kashipur at 33 kV to main receiving step down substation (MRSS) at Kutrumali (approx. distance 15 km) over double circuit overhead line on tower structure. At Sijimali, one no. load block step down substation (LBSS) will be considered. This LBSS will receive power from



Kutrumali MRSS at 33 kV over double circuit overhead line on tower structure and will feed power to the consumers. Once the Alumina Refinery plant becomes operational, power will be drawn from the the captive power plant and transmitted by cables running along the long distance conveyer. In the future, generation of solar power is being contemplated.

3.9 Stacking of Mineral and Disposal of Waste

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., it is proposed to adopt opencast mechanised mining by top slicing method in multiple benches. Proposed five year production details are shown in the Table-8.

TABLE-8
IN-SITU EXCAVATION OF FIRST FIVE YEARS AT SIJIMALI

Year	Total tentative excavation, Cu m	Top Soil, Cu m	OB/SB/IB, Cu m	Ore, Cu m	Mineral reject, Cu m
PIT-A					
1	534,758	266,151	-	50,000	218,607
2	860,523	105,908	16,504	710,286	28,125
3	1,677,920	104,102	4,395	1,535,684	33,740
4	2,064,005	91,748	138,184	1,735,782	98,291
5	2,453,717	75,635	449,609	1,675,885	252,588
Total A	7,591,223	643,544	608,691	5,707,637	631,351
PIT-B					
1	-	-	-	-	-
2	404,603	75,178	3,906	255,645	69,873
3	927,684	70,376	99,268	712,929	45,112
4	1,573,682	116,803	23,096	1,265,745	168,039
5	1,521,547	40,116	4,395	1,328,285	148,752
Total B	4,427,516	302,473	130,664	3,562,603	431,776
Total A+B	12,018,739	946,016	739,355	9,270,240	1,063,126

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 as well as on the safety barriers, 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.

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

As per the Environment Impact Assessment (EIA) notification dated 14th September, 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 environmental baseline studies will be undertaken as per schematic diagram given as Figure-2.

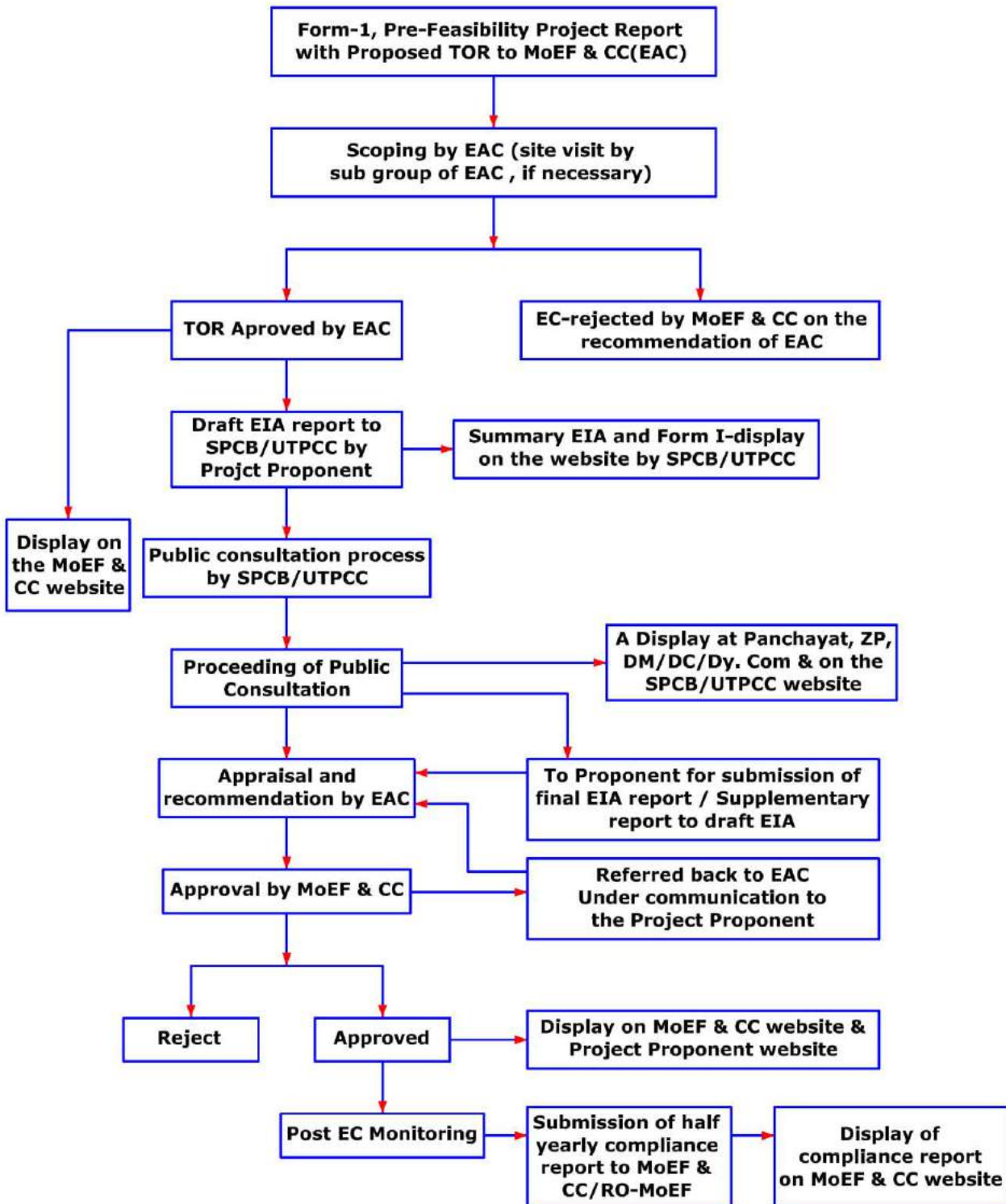


FIGURE-2
CLEARANCE PROCESS FOR CATEGORY-A PROJECT



4.0 SITE ANALYSIS

4.1 Connectivity

Sijimali Bauxite deposit is located in Thuamul-Rampur and Kashipur tehsils in Kalahandi and Rayagada districts. Sijimali bauxite deposit is located at a distance of about 42 km from Rayagada town. Rayagada is the district headquarter and is connected by SE railway.

Kashipur is the nearest town and tehsil head quarter, at a distance of about 13.8 km from Sijimali bauxite mine. The State Highway connects Kashipur with Rayagada. From Kashipur, the deposit is approachable by a 16 km state highway, 6 km long fair weather village road, followed by a 3 km kutch road from the foothill to the plateau top. The total road distance from Sijimali hill top to Rayagada is about 94 km.

4.2 Land Form, Land Use and Land Ownership

The abstract of the details of land schedule and land use is given in Table-9.

TABLE-9
MINING LEASE AREA BREAKUP AND LAND USE DETAILS

* All values are in ha

District	Village	DLC Forest	Revenue Forest	Sabik Forest	Government (Non-forest)	Private	Total
Kalahandi	Ambajhola	-	-	-	12.0019	-	12.019
	Chulabari	-	-	55.180	85.836	-	141.016
	Mahajal	-	-	-	74.464	-	74.464
	Nakurandi	-	-	-	14.399	-	14.399
	Salabali	-	-	-	2.792	-	2.792
	Tadadai	-	-	12.546	26.438	-	38.984
	Talambapadar	-	-	-	8.843	-	8.843
	Taramundi	-	-	-	210.142	-	210.142
	Tijamali	66.061	7.482	9.182	68.717	28.534	179.976
	Upar Ambapadar	-	-	-	51.194	-	51.194
Rayagada	Aliguna	20.660	-	-	10.38	-	31.040
	Bundel	26.467	-	-	0.405	-	26.872
	Dumerpadar	0.631	-	-	7.73	-	8.361
	Katibhata	5.261	-	-	-	-	5.261
	Kutamal	86.336	-	-	65.073	-	151.409
	Malipadara	402.726	19.019	-	50.041	100.564	572.350
	Pelanakona	10.522	-	-	-	-	10.522
	Sagabari	1.477	-	-	19.284	-	20.761
Total	620.141	26.501	76.908	707.757	129.098	1560.405	

4.3 Topography

The area forms a part of the Eastern Ghat Hill ranges which have a general NE-SW trend. The central and south-eastern part of the ML area shows series of hills ranging in elevation between 1,130 m and 1,230 m whereas western and northern part of the ML area show relatively flat topography.

The main drainage pattern in this area is controlled by a number of streams, which drains their water into Nagavalli river that flows from north to south. The Barha nadi, a tributary of Nagavalli river, flows along east-west direction on the northern



side of the Sijimali plateau. The natural drainage net comprises numerous rills and gullies which drains the collective discharge to a perennial stream, Naragul Nala, flowing along the south-eastern part of Sijimali plateau base which drains into Barha Nadi.

4.4 Existing land use pattern

The prevailing land use pattern in the study area has been divided into two distinct zones, namely (i) the core zone covering an area about 15.6 sq. km over the Sijimali plateau top where the mining activities will be confined and (ii) the buffer zone covering a total land area of 520 sq. km (10 km radial coverage).

Core zone land use /land cover

The proposed mining site at Sijimali plateau is principally a stoney waste land. However, there are patches of tree cover at the edge of plateau. The broad distribution of the prevailing landuse/landcover in the core zone of the study area as observed is presented in below Table-10.

TABLE-10
LANDUSE / LANDCOVER OF CORE ZONE

Sr. No.	Land Use / Land Cover Unit	Area (ha)
1	Revenue Forest	26.50
2	DLC Forest	620.14
3	Sabik Forest	76.908
4	Private land	129.09
5	Government land	707.76
	Total	1560.40

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

Buffer zone land use/land cover

The buffer zone area has got substantial 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 reserved forests are recognised in Rayagada and Kalahandi forest divisions. The details of major forests are given in Table-11.

TABLE-11
LIST OF MAJOR FORESTS IN BUFFER ZONE

Sr. No	Name of Reserve/ Protected Forest	Forest Type	Distance/ Direction
1	Sunger PRF	Moist deciduous with scattered evergreen patches	2.1 km, SW
2	Mohangiri PRF	Dry deciduous forest with extensive podu cultivation open and degraded forest	2.4 km, NE
3	Bijayanagar RF	Dry and moist deciduous forest rampant podu cultivation, severe timber extraction	4.5 km, SE
4	Mandibishi RF	Moist deciduous with frequent evergreen patches around village settlement with rampant podu cultivation	7.3 km, SSE



There is no ecological sensitive areas (wild life sanctuaries, tiger reserves, elephant reserves, national parks and biosphere reserves etc.) present in the study area.

4.5 Existing Infrastructure

Access roads:

The access roads to the nearby villages and to Sijimali plateau from foothill are not metalled roads but jeepable throughout the year except during the period from June to November covering monsoon and part of post-monsoon period.

Rail link:

The nearest Railway Station is Sikarpai at about 20.2 km in SSE direction from the mine lease area.

Water:

Villages tap the water mostly from the natural springs and the nallas and use it in untreated form. Few hand tubewells have been set up in the study area. Dugwells are also available in the valley land.

Electricity:

Electric poles have been laid under Rural Electrification Programme and transformers are installed in some areas. Presently 2 phase power supply is available in few villages.

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 Sunger village.

Fuels:

The fuels used by the villagers are forest wood and kerosene.

Trade and Commerce centre:

Kashipur is the tehsil headquarter located at a distance of 13.8 km from Sijimali ML area in SW direction. Basic infrastructural facilities like all-weather road to the District headquarters Rayagada, electricity, schools, post office, bank and police station are available at Kashipur, 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.

4.6 Soil Classification

Top soil is yellowish brown to dark reddish brown and developed from the tropical/subtropical weathering of khondalite and laterite residuum.



4.7 Climate data from Secondary Sources

The area experiences pleasant weather between November and January, when the temperature drops down to 10°C. The temperature rises steadily from January, reaching 35°C to 40°C in the month of May. The annual rainfall in the area is around 1,200 mm distributed between June and September.

The mean humidity is 40% minimum in January and 90% maximum in August-September. The wind velocity varies between 40 km per hour and 80 km per hour, even higher velocities have been reported from time to time.

In general, the climate in the study area is temperate type and there is a good amount of rain during June to August which sustains the vegetation cover on the hill slopes.

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

Sijimali bauxite mine is located at Villages- Tijamali, Talambapadar, Nakurandi, Upar Ambapadar, Chulabari, Taramundi, Ambajhola, Mahajal, Tadadai and Salabali under Thuamul-Rampur Tehsil of Kalahandi district, Malipadara, Dumerpadar Kutamal, Pelanakona, Katibhata, Bundel, Sagabari and Aliguna under Kashipur Tehsil of Rayagada district, State- Odisha over an area of 1560.40 ha. The proposed capacity of the project is 6.0 MTPA.

The proposed bauxite mine shall be developed by opencast mechanized mining method. The main operation shall include removal and stacking of top soil by ripper/excavator cum loaders, exposing the aluminous bauxite/bauxite zone and proper levelling by dozer and use of surface miners. Only in the places where strata is very hard to rip, controlled blasting would be resorted to. Bauxite will be then sorted out and reduced to size. The remaining rejects will be used for backfilling.

5.2 Population Projections

The project will employ most of the workers from nearby villages. Only supervisory staff will be hired from outside. There will not be any increase in population due to the project. However, few people from other areas may migrate in this area for business opportunities. Village wise population of the core zone is given in Table-12.

TABLE -12
VILLAGE WISE POPULATION

District	Village	Population
Kalahandi	Tijamali	99
	Talambapadar	419
	Nakurundi	362
	Upambapadar	70
	Chulabari	477



District	Village	Population
	Taramundi	74
	Ambajhola	254
	Mohajal	64
	Tadadal	147
	Salabali	20
Rayagada	Malipadar	143
	Dumerpadar	257
	Kutamal	469
	Pelanakona	Nil
	Katibatta	Nil
	Bundel	203
	Sagabari	756
	Aliguna	147

Source: Census Handbook, 2011

The above villages partly/fully fall within the proposed ML area. The actual project displaced families are 97 and other affected families are 35 only.

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 started from the 3rd year in Pit-B as bauxite in some of the areas will be exhausted. 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 from Sijimali, 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.

TABLE-13
LANDUSE OF PROJECT AREA

Sr. No	Particular	Area (in ha)
1	Mining area	918.48
2	Over Burden Dump	24.85
3	Storage for Top Soil	3.66
4	Roads/ Connectivity	70.73
5	Infrastructure, like- crusher house and belt conveyer etc.	114.50
6	General Administrative office /Repair Shop	4.05
7	Greenbelt/Green Cover	284.53
8	Undisturbed land	139.60
	Total area	1560.40



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 for Block-I. At later stages, when the mining activity will progress to the other blocks, afforestation along the safety barriers will be accordingly done.
- Backfilling work will start during the third year 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 during the second five year period of mining operation.
- It is also proposed to create a greenbelt on the periphery of the important installations like administrative building, approach roads to the mine as well as road to the alumina plant.
- Overburden/mineral reject dumping at outside dumps will continue beyond the first five years. These dumps will be re-handled at a later stage when sufficient space will be created in the mined out areas. Hence, temporary stabilisation and protection measures like creation of garland drains etc. will be taken, if needed, for these overburden/mineral reject dumps. If any technological advancement is done in future for extraction of alumina or any other metal from the mineral rejects, then the proponent will approach the relevant Government / statutory authority with new proposal.
- At the end of the lease period, some area will be void with RL 1150 to 1200. Part of this area may be used as water reservoir for supply of water to the local villages and also for pisciculture. The reclaimed area may be used for cultivation/afforestation.
- As far as practicable, original contour is to be restored. The adequate tree plantation will be done on the reclaimed area in a progressive manner.

5.4 Assessment of Infrastructure Demand (Physical & Social)

The access roads to the nearby villages and to Sijimali plateau from foothill are not metalled roads but jeepable throughout the year except during the period from June to November 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 are available by way of jeep and two-wheeler. Medical facility will be available for First Aid and ambulance service at the project site.

5.5 Amenities/Facilities

The service centre has been provided with auxiliary facilities, namely quality control centre, repair and maintenance shop, stores, training centre, canteen, ambulance room, transport, communication facilities etc. 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 separate campus has been provided on the east side of the Sijimali plateau where the administrative building and site service facilities will be located.

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 for Block-I. At later stages, when the mining activity will progress to the other blocks, afforestation along the safety barriers will be accordingly done. Restoration of mined out land in five year period have been shown in Annexure-V.
- Backfilling work will start during the third year 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 during the second five year period of mining operation.
- It is also proposed to create a green belt on the periphery of the important installations like administrative building, approach roads to the mine as well as road to the alumina plant.
- Overburden/mineral reject dumping at outside dumps will continue beyond the first five years. These dumps will be re-handled at a later stage when sufficient space will be created in the mined out areas. Hence, temporary stabilisation and protection measures like creation of garland drains etc. will be taken, if needed, for these overburden/mineral reject dumps. If any technological advancement is done in future for extraction of alumina or any other metal from the mineral rejects, then the proponent will approach the relevant Government / statutory authority with new proposal.
- At the end of the lease period, some area will be void with RL 1150 to 1200. Part of this area may be used as water reservoir for supply of water to the local villages and also for pisciculture. The reclaimed area may be used for cultivation/afforestation.

Pisciculture

At the end of the lease period, some area will be void with RL 1150 to 1200. Part of this area may be used as water reservoir for supply of water to the local villages and also for pisciculture. The reclaimed area may be used for cultivation/afforestation.

6.4 Social Infrastructure and Benefits

The proposed mining project at Sijimali will improve their present economic conditions 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 permission from the regulatory authorities. Besides transportation of machineries for development and construction, the road will also be used for regular transportation of employees and materials.

6.6 Drinking Water Management (Source & Supply of Water)

Total requirement of water amounts to about 725 m³ per day. It is proposed to tap this quantity of water from Naragul Nala at an approximate distance of 4.0 km from Sijimali hill top. To enable drawal of water, a pick-up weir will be constructed on the Naragul Nala. An intake well will be constructed on the Nala bed at upstream side of the pick-up weir. On the basis of sixteen hours working per day, two pumps (one working and one standby), each of 50 cu m/hour capacity at approximately 750 mwc head will be provided in the intake well to pump water from the intake well to a ground water reservoir in the mines area.

Drinking Water System

Water from ground water reservoir will be filtered in pressure filter, chlorinated and will be fed to the various PVC 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

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

- Annual energy consumption, 14.1 x 10⁶ kwh; and
- 15 min maximum demand, 5.6 MVA.

Source of Power

Power will be made available from the grid substation of Kashipur at 33 kV to main receiving step down substation (MRSS) at Kutrumali (approx. distance 15 km) over double circuit overhead line on tower structure. At Sijimali, one Load Block Step down Substation (LBSS) will receive power from MRSS at 33 kV over double circuit overhead line on tower structure and will feed power to the consumers.

Once the Alumina refinery becomes operational, power will be drawn from the CPP over cable along the ground long distance conveyor.



It is also envisaged to install solar panels to produce green energy and fulfil part of the requirement.

6.9 Solid Waste Management

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 as well as on the safety barriers, 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. Three separate sites for top soil and one site each for overburden and mineral reject 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 leveling requirement. A total of approximately 25 hectares of land have been provided for these dump sites. The above dump sites are located over mineralized zone to reduce the lead distance. However, these dumps are temporary in nature and will be re-handled progressively for backfilling in the mined out areas. Generation of subgrade material has not been envisaged and hence, disposal of any subgrade material also has not been considered.

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 interval along its lengths further, a green belt is proposed to be provided around the dumps.

Mode of Waste Disposal, dump formation and configuration

The top soil and overburden/mineral reject would be loaded on rear-dump trucks for transportation to overburden / mineral reject / soil disposal areas. Overburden / mineral reject dumps would be of stepped construction. Maximum height of the dumps would be 30 m, each step being 10 m high. A terrace of 20 m width will be provided on top of each step along the periphery. The next higher step will be formed inside this peripheral terrace. The terrace will be utilised to build an approach ramp to the next terrace.

Formation of the dump would be initiated by dumping of overburden/mineral reject materials on ground all along the outer periphery of the demarcated area. Once this is completed, further quantity of the overburden/mineral reject would be dumped immediately inside the perimeter of the dump already formed. This process would continue and the dump would be gradually built up progressing towards the interior of the demarcated area till the entire space is filled up. A



dozer will be used to dress, level and formation of the dump. It may be mentioned that, while the dump is in formation, the external slope which has already been formed may be subjected to temporary stabilisation measures, if needed.

Thereafter, a ramp will be built on the approach road to enable dumper to climb the dump and unload the material on the top of it in the manner as described above to build the dump up to the first terrace level of 10 m in height. The process would continue till the final height of the dump is reached. Angle of repose of material has been considered at 35° for formation of dumps.

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 is about 35 degrees. Considering this and the dump configuration presented in above figures, the overall slope will be maintained at about 15 to 20 degrees, well inside the stipulated limit. 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)

Odisha Right to Fair Compensation and Transparency in Land Acquisition, Resettlement & Rehabilitation Act, 2013 (RFCT-LARR, 2013) and Odisha State rules, (along with its subsequent amendments) will be followed.

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)

A total time schedule of 30 months have been envisaged from the date of "go ahead". Out of the 30 months, 20 months have been provided for land acquisition & construction of mine access road and 10 months for pre-mining developmental work.

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

The project cost is given below Table-14.

TABLE-14
PROJECT COST BREAKUP

Sr. No.	Description	Rs. Crore
1.	Enabling work	6.4
2.	Civil and structural steel work	78.4
3.	Plant and equipment as erected	421.0
4.	Construction and infrastructure facilities	47.3
5.	Design, Engg. & Project Management	25.2
6.	Contingency	27.7



Sr. No.	Description	Rs. Crore
7.	Plant Cost (Sl. No. 1 to 6)	606
8.	Margin money	11.2
9.	Preliminary and pre-operative expenses	5.3
10.	Interest during construction	53.5
11.	Capital Cost (Sl. No. 7 to 10)	676.0

In addition to the Project Cost mentioned above, it is proposed to spend about Rs. 40 Crore 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:

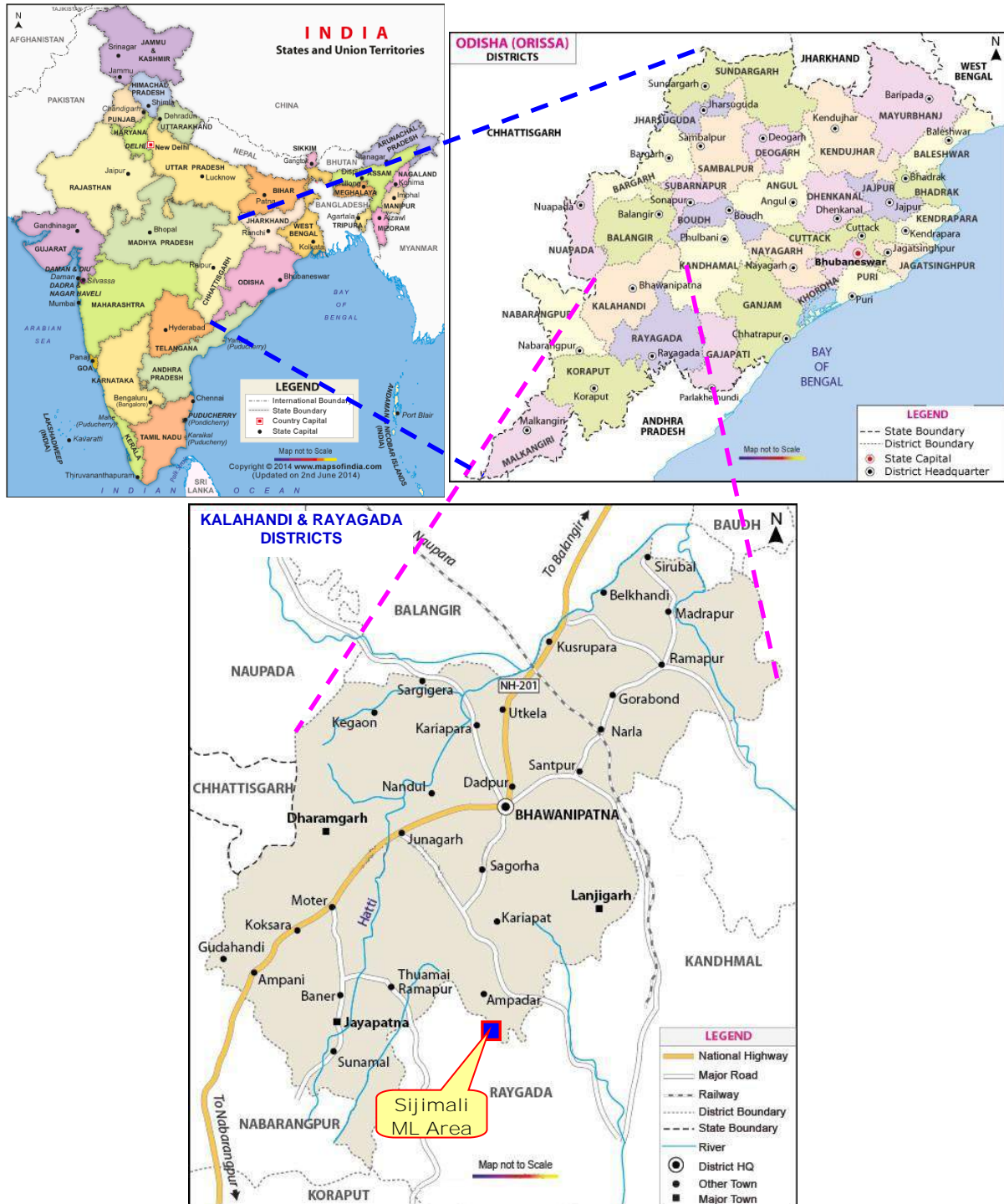
Sr. No.	Description	Rs. Crore
1.	Air quality monitoring and management	20
2.	Water quality monitoring and management	5
3.	Greenbelt development / plantation	5
4.	Occupational health monitoring	10
	Total	40

9.0 ANALYSIS OF PROPOSAL (FINAL RECOMMENDATION)

This mining project, together with Alumina Refinery plant, is 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. The operation of the proposed 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 ways of taxes, royalties, DMF, cesses etc.



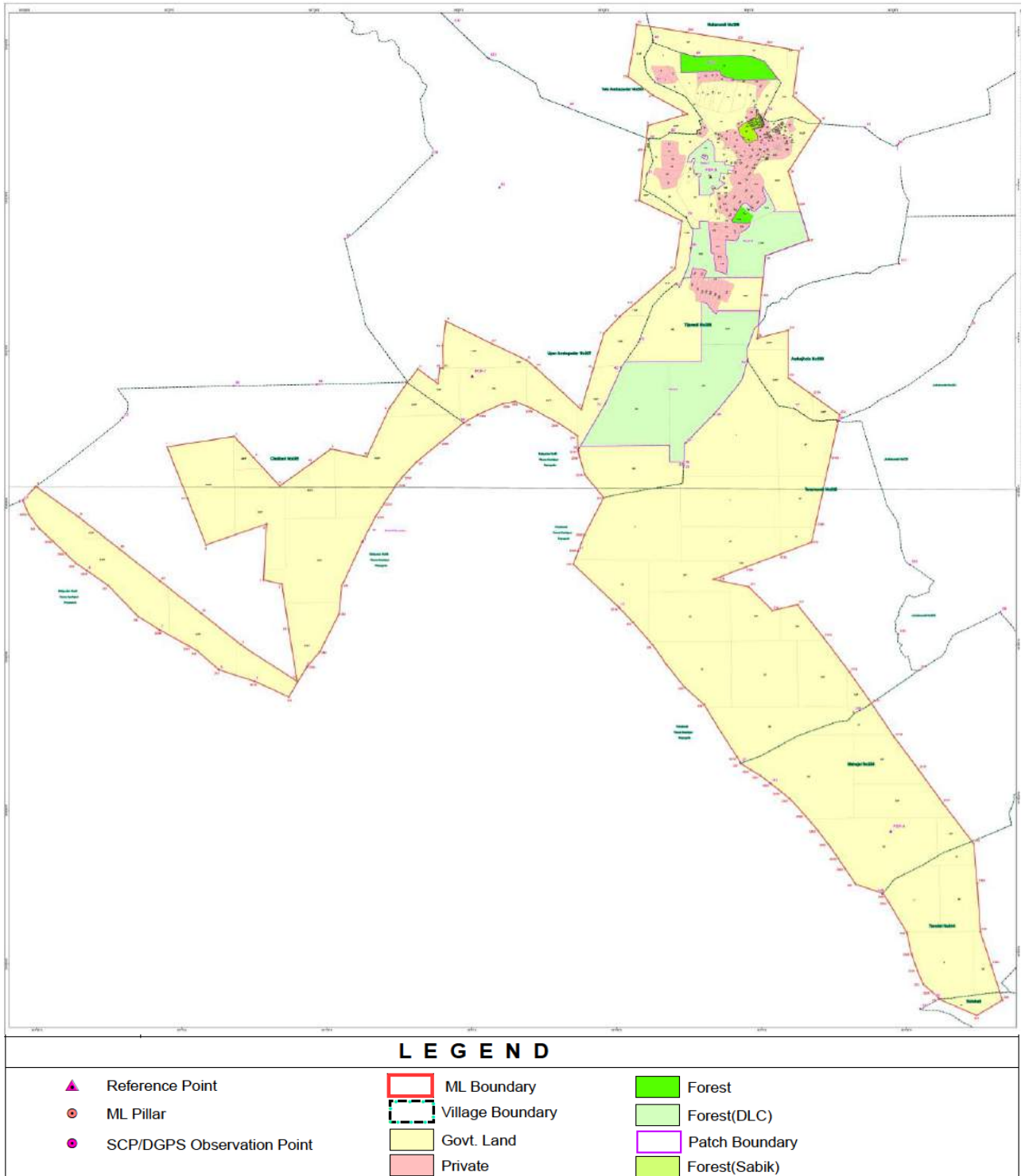
ANNEXURE-I INDEX MAP





ANNEXURE-II (A)

DGPS MAP / KHASRA NO'S AND LAND SCHEDULE - KALAHANDI DISTRICT





Village wise status of Hal R.O.R's and their Sabik status as on 25.10.1980

Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenant	Type of Land (Kisam)	Land Schedule		Sabik Status as on 25.10.1980	Remarks
						Area in Acre			
Ambajhola	31/03/1992	29	234(P)	Abada Ajogya Anabadi	Dangar	5.85		Unsurveyed	
Ambajhola	31/03/1992	29	235(P)	Abada Ajogya Anabadi	Dangar	20		Unsurveyed	
Ambajhola	31/03/1992	29	236(P)	Abada Ajogya Anabadi	Dangar	3.85		Unsurveyed	
Total Area						29.7			
Chulbari	18/12/1992	61/1	405(P)	Forest Department, Kalahandi	Dangar	45.8		Unsurveyed	Transferred to Khata No.61/1 in favour of Forest Department vide alienation case No. 27/97, Dtd. 09/06/98
Chulbari	18/12/1992	61	412(P)	Abada Ajogya Anabadi	Dangar	1		Unsurveyed	
Chulbari	18/12/1992	61/1	416(P)	Forest Department, Kalahandi	Dangar	56.8		Unsurveyed	Transferred to Khata No.61/1 in favour of Forest Department vide alienation case No. 27/97, Dtd. 09/06/98
Chulbari	18/12/1992	61	417(P)	Abada Ajogya Anabadi	Dangar	26.25		Unsurveyed	
Chulbari	18/12/1992	61	428(P)	Abada Ajogya Anabadi	Dangar	32.75		Unsurveyed	
Chulbari	18/12/1992	61/1	439(P)	Forest Department, Kalahandi	Dangar	33.75		Unsurveyed	Transferred to Khata No.61/1 in favour of Forest Department vide alienation case No. 27/97, Dtd. 09/06/98
Chulbari	18/12/1992	61	444(P)	Abada Ajogya Anabadi	Dangar	53		Unsurveyed	
Chulbari	18/12/1992	61	445(P)	Abada Ajogya Anabadi	Dangar	30.4		Unsurveyed	
Chulbari	18/12/1992	61	463(P)	Abada Ajogya Anabadi	Dangar	10		Unsurveyed	
Chulbari	18/12/1992	61	484(P)	Abada Ajogya Anabadi	Dangar	58.7		Unsurveyed	
Total Area						348.45			
Mahajal	28/08/1992	18	1(P)	Abada Ajogya Anabadi	Dangar	9.95		Unsurveyed	
Mahajal	28/08/1992	18	67(P)	Abada Ajogya Anabadi	Dangar	24.7		Unsurveyed	
Mahajal	28/08/1992	18	68	Abada Ajogya Anabadi	Dangar	58.75		Unsurveyed	
Mahajal	28/08/1992	18	69	Abada Ajogya Anabadi	Dangar	57.25		Unsurveyed	
Mahajal	28/08/1992	18	70(P)	Abada Ajogya Anabadi	Dangar	26.3		Unsurveyed	
Mahajal	28/08/1992	18	71(P)	Abada Ajogya Anabadi	Dangar	7.05		Unsurveyed	
Total Area						184			

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Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenant	Type of Land (Kisam)	Land Schedule		Sabik Status as on 25.10.1980	Remarks
						Area in Acre			
Nakarundi	30/12/1992	72	10(P)	Abada Ajogya Anabadi	Dangar	11.7		Unsurveyed	
Nakarundi	30/12/1992	72	11(P)	Abada Ajogya Anabadi	Dangar	9		Unsurveyed	
Nakarundi	30/12/1992	72	12(P)	Abada Ajogya Anabadi	Dangar	14.5		Unsurveyed	
Nakarundi	30/12/1992	72	14(P)	Abada Ajogya Anabadi	Dangar	0.38		Unsurveyed	
Total Area						35.58			
Salabali	29/09/1992	15	1(P)	Abada Ajogya Anabadi	Dangar	6.9		Unsurveyed	
Total Area						6.9			
Tacadei	28/08/1992	26	1(P)	Abada Ajogya Anabadi	Dangar	6		Unsurveyed	
Tacadei	28/08/1992	26	2	Abada Ajogya Anabadi	Dangar	26.08		Unsurveyed	
Tacadei	28/08/1992	26	3(P)	Abada Ajogya Anabadi	Dangar	22.75		Unsurveyed	AC 13 21 GIVEN UNDER FRA
Tacadei	28/08/1992	26	4	Abada Ajogya Anabadi	Dangar	33.26		Unsurveyed	
Tacadei	28/08/1992	26	5(P)	Abada Ajogya Anabadi	Dangar	8.25		Unsurveyed	AC 7 95 GIVEN UNDER FRA
Total Area						96.33			
Tala Ambapadar	31/3/1992	53	414(P)	Abada Ajogya Anabadi	Dangar	7.6		Unsurveyed	
Tala Ambapadar	31/3/1992	53	415(P)	Abada Ajogya Anabadi	Dangar	14.25		Unsurveyed	
Total Area						21.86			
Taramundi	28/08/1992	23	1	Abada Ajogya Anabadi	Dangar	63.25		Unsurveyed	
Taramundi	28/08/1992	23	2(P)	Abada Ajogya Anabadi	Dangar	29.75		Unsurveyed	
Taramundi	28/08/1992	23	3(P)	Abada Ajogya Anabadi	Dangar	20.9		Unsurveyed	
Taramundi	28/08/1992	23	4	Abada Ajogya Anabadi	Dangar	44.83		Unsurveyed	
Taramundi	28/08/1992	23	5	Abada Ajogya Anabadi	Dangar	56.63		Unsurveyed	
Taramundi	28/08/1992	23	6(P)	Abada Ajogya Anabadi	Dangar	29.25		Unsurveyed	
Taramundi	28/08/1992	23	7(P)	Abada Ajogya Anabadi	Dangar	7.25		Unsurveyed	
Taramundi	28/08/1992	23	50(P)	Abada Ajogya Anabadi	Dangar	9.3		Unsurveyed	
Taramundi	28/08/1992	23	51(P)	Abada Ajogya Anabadi	Dangar	22.85		Unsurveyed	
Taramundi	28/08/1992	23	52(P)	Abada Ajogya Anabadi	Dangar	24.1		Unsurveyed	
Taramundi	28/08/1992	23	53	Abada Ajogya Anabadi	Dangar	28.5		Unsurveyed	
Taramundi	28/08/1992	23	54	Abada Ajogya Anabadi	Dangar	37.5		Unsurveyed	
Taramundi	28/08/1992	23	55	Abada Ajogya Anabadi	Dangar	33.5		Unsurveyed	Tejmaili Dangar
Taramundi	28/08/1992	23	56	Abada Ajogya Anabadi	Dangar	40.7		Unsurveyed	Tejmaili Dangar
Taramundi	28/08/1992	23	57	Abada Ajogya Anabadi	Dangar	40		Unsurveyed	Tejmaili Dangar
Taramundi	28/08/1992	23	58(P)	Abada Ajogya Anabadi	Dangar	27		Unsurveyed	Tejmaili Dangar
Taramundi	28/08/1992	23	59(P)	Abada Ajogya Anabadi	Dangar	3.75		Unsurveyed	Tejmaili Dangar
Total Area						519.26			
Tejmaili	28/08/1992	1	7	Khuja Majhi & Others	Atta	0.57		Unsurveyed	

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Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenanat	Type of Land (Kisam)	Land Schedule Area in Acre	Sabik Status as on 25.10.1980	Remarks
Tjamali	28/08/1992	1	57	Khuja Majhi & Others	Atta	1.5	Unsurveyed	
Tjamali	28/08/1992	1	59	Khuja Majhi & Others	Atta	0.11	Atta Unnhari, Bari Mamuli	
Tjamali	28/08/1992	1	125	Khuja Majhi & Others	Gharbari	0.03	Ghara	
Tjamali	28/08/1992	1	130	Khuja Majhi & Others	Atta	0.33	Atta Unnhari	
Tjamali	28/08/1992	1	134	Khuja Majhi & Others	Atta	0.25	Atta Mamuli	
Tjamali	28/08/1992	1	149	Khuja Majhi & Others	Atta	0.42	Atta Unnhari	
Tjamali	28/08/1992	1	162	Khuja Majhi & Others	Atta	0.39	Atta Unnhari	
Tjamali	28/08/1992	1	166	Khuja Majhi & Others	Atta	0.97	Atta Unnhari	
Tjamali	28/08/1992	1	178	Khuja Majhi & Others	Atta	0.76	Unsurveyed	
Tjamali	28/08/1992	1	182	Khuja Majhi & Others	Atta	0.81	Unsurveyed	
Tjamali	28/08/1992	1	183	Khuja Majhi & Others	Atta	0.75	Unsurveyed	
Tjamali	28/08/1992	2	12	Jamu Majhi, S/o Guru	Atta	0.48	Unsurveyed	
Tjamali	28/08/1992	3	23	Danu Majhi, S/o Megha	Atta	0.6	Unsurveyed	
Tjamali	28/08/1992	3	33	Danu Majhi, S/o Megha	Maia	0.85	Mala Mamuli	
Tjamali	28/08/1992	3	40	Danu Majhi, S/o Megha	Maia	0.44	Atta Unnhari, Atta Mamuli	
Tjamali	28/08/1992	3	55	Danu Majhi, S/o Megha	Atta	1.33	Unsurveyed	
Tjamali	28/08/1992	3	76	Danu Majhi, S/o Megha	Atta	0.83	Atta Unnhari	
Tjamali	28/08/1992	3	120	Danu Majhi, S/o Megha	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	3	169	Danu Majhi, S/o Megha	Atta	0.63	Atta Unnhari	
Tjamali	28/08/1992	3	173	Danu Majhi, S/o Megha	Atta	1.1	Unsurveyed	
Tjamali	28/08/1992	3	188	Danu Majhi, S/o Megha	Atta	1.28	Unsurveyed	
Tjamali	28/08/1992	4	20	Diana Majhi & Others	Atta	0.23	Unsurveyed	
Tjamali	28/08/1992	4	26	Diana Majhi & Others	Atta	0.78	Unsurveyed	
Tjamali	28/08/1992	4	34	Diana Majhi & Others	Maia	0.16	Maia Mamuli	
Tjamali	28/08/1992	4	41	Diana Majhi & Others	Maia	0.34	Atta Mamuli	
Tjamali	28/08/1992	4	42	Diana Majhi & Others	Maia	0.05	Atta Mamuli	
Tjamali	28/08/1992	4	54	Diana Majhi & Others	Atta	1.88	Unsurveyed	
Tjamali	28/08/1992	4	72	Diana Majhi & Others	Atta	0.73	Atta Unnhari	
Tjamali	28/08/1992	4	78	Diana Majhi & Others	Atta	0.35	Atta Unnhari	
Tjamali	28/08/1992	4	81	Diana Majhi & Others	Atta	0.3	Bari Mamuli	
Tjamali	28/08/1992	4	118	Diana Majhi & Others	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	4	131	Diana Majhi & Others	Atta	0.46	Atta Unnhari	
Tjamali	28/08/1992	4	167	Diana Majhi & Others	Atta	0.76	Atta Unnhari	
Tjamali	28/08/1992	4	172	Diana Majhi & Others	Atta	0.53	Unsurveyed	
Tjamali	28/08/1992	4	174	Diana Majhi & Others	Atta	0.46	Unsurveyed	
Tjamali	28/08/1992	5	5	Pulu Majhi, S/o Mukuling	Atta	1	Unsurveyed	

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Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenanat	Type of Land (Kisam)	Land Schedule Area in Acre	Sabik Status as on 25.10.1980	Remarks
Tjamali	28/08/1992	5	16	Pulu Majhi, S/o Mukuling	Atta	0.44	Unsurveyed	
Tjamali	28/08/1992	5	52	Pulu Majhi, S/o Mukuling	Atta	1.02	Unsurveyed	
Tjamali	28/08/1992	5	79	Pulu Majhi, S/o Mukuling	Atta	0.13	Atta Unnhari	
Tjamali	28/08/1992	5	100	Pulu Majhi, S/o Mukuling	Atta	0.4	Atta Unnhari, Bari Mamuli	
Tjamali	28/08/1992	5	112	Pulu Majhi, S/o Mukuling	Gharbari	0.01	Bari Mamuli	
Tjamali	28/08/1992	5	113	Pulu Majhi, S/o Mukuling	Gharbari	0.01	Bari Mamuli	
Tjamali	28/08/1992	5	150	Pulu Majhi, S/o Mukuling	Atta	1.03	Atta Unnhari	
Tjamali	28/08/1992	5	153	Pulu Majhi, S/o Mukuling	Atta	1.29	Atta Unnhari, Atta Mamuli	
Tjamali	28/08/1992	6	48	Peda Majhi & Others	Atta	0.75	Unsurveyed	
Tjamali	28/08/1992	6	91	Peda Majhi & Others	Atta	0.78	Unsurveyed	
Tjamali	28/08/1992	6	95	Peda Majhi & Others	Atta	0.3	Atta Unnhari, Bari Mamuli	
Tjamali	28/08/1992	6	114	Peda Majhi & Others	Gharbari	0.01	Bari Mamuli	
Tjamali	28/08/1992	6	115	Peda Majhi & Others	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	6	127	Peda Majhi & Others	Maia	0.25	Maia Mamuli	
Tjamali	28/08/1992	6	135	Peda Majhi & Others	Atta	1.5	Atta Mamuli, Atta Unnhari	
Tjamali	28/08/1992	6	152	Peda Majhi & Others	Atta	0.59	Atta Unnhari	
Tjamali	28/08/1992	6	179	Peda Majhi & Others	Atta	1.34	Unsurveyed	
Tjamali	28/08/1992	7	2	Mangulu Majhi, S/o Naranga	Atta	1.7	Unsurveyed	
Tjamali	28/08/1992	7	39	Mangulu Majhi, S/o Naranga	Maia	0.48	Atta Mamuli	
Tjamali	28/08/1992	7	77	Mangulu Majhi, S/o Naranga	Atta	0.82	Atta Unnhari	
Tjamali	28/08/1992	7	86	Mangulu Majhi, S/o Naranga	Atta	0.29	Bari Mamuli	
Tjamali	28/08/1992	7	121	Mangulu Majhi, S/o Naranga	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	7	139	Mangulu Majhi, S/o Naranga	Maia	0.2	Maia Mamuli	
Tjamali	28/08/1992	7	189	Mangulu Majhi, S/o Naranga	Atta	1.22	Unsurveyed	
Tjamali	28/08/1992	8	84	Megha Majhi, S/o Mali	Atta	0.51	Bari Mamuli	
Tjamali	28/08/1992	9	10	Mangulu Majhi, S/o Naranga	Atta	0.8	Unsurveyed	
Tjamali	28/08/1992	10	3	Rajinga Majhi, S/o Mali	Atta	0.66	Unsurveyed	
Tjamali	28/08/1992	10	19	Rajinga Majhi, S/o Mali	Atta	0.22	Unsurveyed	
Tjamali	28/08/1992	10	43	Rajinga Majhi, S/o Mali	Maia	0.28	Atta Mamuli	
Tjamali	28/08/1992	10	56	Rajinga Majhi, S/o Mali	Atta	1.87	Unsurveyed	
Tjamali	28/08/1992	10	83	Rajinga Majhi, S/o Mali	Atta	0.28	Bari Mamuli	
Tjamali	28/08/1992	10	87	Rajinga Majhi, S/o Mali	Atta	0.66	Bari Mamuli	
Tjamali	28/08/1992	10	116	Rajinga Majhi, S/o Mali	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	10	140	Rajinga Majhi, S/o Mali	Atta	0.36	Maia Mamuli	
Tjamali	28/08/1992	10	160	Rajinga Majhi, S/o Mali	Atta	0.55	Atta Unnhari	
Tjamali	28/08/1992	10	175	Rajinga Majhi, S/o Mali	Atta	1.3	Unsurveyed	
Tjamali	28/08/1992	10	187	Rajinga Majhi, S/o Mali	Atta	0.82	Unsurveyed	

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Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenanat	Type of Land (Kisam)	Land Schedule Area in Acre	Sabik Status as on 25.10.1980	Remarks
Tjamali	28/08/1992	11	106	Lakhi Majhi & Others	Mala	0.04	Unsurveyed	
Tjamali	28/08/1992	11	107	Lakhi Majhi & Others	Mala	0.04	Atta Unnhari	
Tjamali	28/08/1992	11	106	Lakhi Majhi & Others	Atta	1.2	Ban Mamuli	
Tjamali	28/08/1992	11	124	Lakhi Majhi & Others	Gharbari	0.01	Ghara	
Tjamali	28/08/1992	11	191	Lakhi Majhi & Others	Atta	1.33	Unsurveyed	
Tjamali	28/08/1992	12	73	Sani Majhi, S/o Megha	Atta	1.14	Atta Unnhari	
Tjamali	28/08/1992	12	82	Sani Majhi, S/o Megha	Atta	0.72	Ghara, Mala Mamuli	
Tjamali	28/08/1992	12	119	Sani Majhi, S/o Megha	Gharbari	0.02	Ban Mamuli	
Tjamali	28/08/1992	12	158	Sani Majhi, S/o Megha	Atta	0.12	Atta Unnhari	
Tjamali	28/08/1992	12	177	Sani Majhi, S/o Megha	Atta	1.9	Unsurveyed	
Tjamali	28/08/1992	13	24	Saru Majhi, S/o Naranga	Atta	0.96	Unsurveyed	
Tjamali	28/08/1992	13	27	Saru Majhi, S/o Naranga	Atta	0.66	Atta Unnhari	
Tjamali	28/08/1992	13	70	Saru Majhi, S/o Naranga	Mala	0.25	Atta Unnhari	
Tjamali	28/08/1992	13	80	Saru Majhi, S/o Naranga	Atta	0.46	Bari Mamuli, Mala Mamuli	
Tjamali	28/08/1992	13	138	Saru Majhi, S/o Naranga	Mala	0.16	Mala Mamuli, Atta Unnhari, Atta Mamuli	
Tjamali	28/08/1992	13	161	Saru Majhi, S/o Naranga	Atta	0.19	Atta Unnhari	
Tjamali	28/08/1992	13	125/198	Saru Majhi, S/o Naranga	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	14	129	Hajinga Majhi & Others	Atta	0.37	Atta Unnhari	
Tjamali	28/08/1992	14	142	Hajinga Majhi & Others	Atta	0.9	Atta Unnhari	
Tjamali	28/08/1992	14	151	Hajinga Majhi & Others	Atta	0.84	Atta Unnhari	
Tjamali	28/08/1992	14	176	Hajinga Majhi & Others	Atta	1.11	Unsurveyed	
Tjamali	28/08/1992	14	190	Hajinga Majhi & Others	Atta	1.38	Unsurveyed	
Tjamali	28/08/1992	15	15	Hadana Majhi, S/o Mukuling	Atta	0.36	Unsurveyed	
Tjamali	28/08/1992	15	38	Hadana Majhi, S/o Mukuling	Mala	0.26	Mala Mamuli	
Tjamali	28/08/1992	15	94	Hadana Majhi, S/o Mukuling	Atta	0.14	Atta Unnhari, Bari Mamuli	
Tjamali	28/08/1992	15	110	Hadana Majhi, S/o Mukuling	Gharbari	0.01	Bari Mamuli	
Tjamali	28/08/1992	15	111	Hadana Majhi, S/o Mukuling	Gharbari	0.01	Bari Mamuli	
Tjamali	28/08/1992	15	133	Hadana Majhi, S/o Mukuling	Atta	0.17	Atta Mamuli	
Tjamali	28/08/1992	15	141	Hadana Majhi, S/o Mukuling	Atta	2.55	Atta Unnhari	
Tjamali	28/08/1992	15	185	Hadana Majhi, S/o Mukuling	Atta	0.78	Unsurveyed	
Tjamali	28/08/1992	16	49	Handing Majhi & Others	Atta	0.32	Unsurveyed	
Tjamali	28/08/1992	16	51	Handing Majhi & Others	Atta	1.13	Unsurveyed	
Tjamali	28/08/1992	16	100	Handing Majhi & Others	Atta	0.56	Atta Unnhari, Bari Mamuli	
Tjamali	28/08/1992	16	117	Handing Majhi & Others	Gharbari	0.02	Bari Mamuli	
Tjamali	28/08/1992	16	123	Handing Majhi & Others	Gharbari	0.02	Ghara	
Tjamali	28/08/1992	16	136	Handing Majhi & Others	Atta	1.15	Atta Unnhari, Atta Mamuli	

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Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenanat	Type of Land (Kisam)	Land Schedule Area in Acre	Sabik Status as on 25.10.1980	Remarks
Tjamali	28/08/1992	16	137	Handing Majhi & Others	Mala	0.11	Mala Mamuli, Atta Unnhari	
Tjamali	28/08/1992	16	145	Handing Majhi & Others	Atta	0.84	Unsurveyed	
Tjamali	28/08/1992	16	155	Handing Majhi & Others	Atta	0.87	Atta Unnhari	
Tjamali	28/08/1992	16	181	Handing Majhi & Others	Atta	0.37	Unsurveyed	
Tjamali	28/08/1992	16	184	Handing Majhi & Others	Atta	1.18	Unsurveyed	
Tjamali	28/08/1992	17	11	Rakhita	Gramya Jungle	16.4	Unsurveyed	
Tjamali	28/08/1992	17	46	Rakhita	Gochar	7.23	Ghasapadia	
Tjamali	28/08/1992	17	53	Rakhita	Gochar	3.7	Unsurveyed	
Tjamali	28/08/1992	17	59	Rakhita	Gochar	8.95	Ghasapadia	
Tjamali	28/08/1992	17	61	Rakhita	Sarba Sadharana Jogyā	0.46	Ghasapadia	Reserved for Smtasana
Tjamali	28/08/1992	17	62	Rakhita	Sarba Sadharana Jogyā	0.22	Ghasapadia	Place for throwing away of dead animals
Tjamali	28/08/1992	17	65	Rakhita	Gramya Jungle	3.48	Ghasapadia	Found in DLC report
Tjamali	28/08/1992	17	67	Rakhita	Ummata Jona Jogyā	1.75	Ghasapadia	Reserved for School Paly Ground
Tjamali	28/08/1992	17	85	Rakhita	Basti Jogyā	0.04	Ghasapadia	
Tjamali	28/08/1992	16/4	85/202	Danu Majhi, S/o Megha	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/5	85/203	Rajing Majhi, S/o Sani	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/6	85/204	Poda Majhi, S/o Mukuling	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/7	85/205	Pulu Majhi, S/o Mukuling	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/8	85/206	Balsing Majhi, S/o Pulu	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	17	88	Rakhita	Basti Jogyā	0.14	Ghasapadia	
Tjamali	28/08/1992	16/1	88/199	Sani Majhi, S/o Megha	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/2	88/200	Hadng Majhi, S/o Patadi	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/3	88/201	Dian Majhi, S/o Naranga	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	17	89	Rakhita	Basti Jogyā	0.12	Ghasapadia	
Tjamali	28/08/1992	16/9	89/207	Mugri Majhi, S/o Poda	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/10	89/208	Hadng Majhi, S/o Mukuling	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/11	89/209	Baddanu Majhi, S/o Mukuling	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/12	89/210	Mangudu Majhi, S/o Patadi	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/13	89/211	Saru Majhi, S/o Naranga	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/14	89/212	Arjun Majhi, S/o Khuja	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/15	89/213	Tamta Majhi, S/o Beda	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/16	89/214	Mukil Majhi, S/o Patadi	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/17	89/215	Kuja Majhi, S/o Batu	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	16/18	89/216	Mangudu Majhi, S/o Naranga	Gharbari	0.04	Ghasapadia	
Tjamali	28/08/1992	17	92	Rakhita	Basti Jogyā	0.17	Ghasapadia	

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Tijamali	28/08/1992	17	93	Rakhita	Basti Jogyia	0.36	Ghasapadia	
Tijamali	28/08/1992	17	95	Rakhita	Basti Jogyia	0.09	Ghasapadia	
Tijamali	28/08/1992	17	97	Rakhita	Basti Jogyia	0.11	Ghasapadia	
Tijamali	28/08/1992	17	98	Rakhita	Basti Jogyia	0.04	Ghasapadia	
Tijamali	28/08/1992	17	101	Rakhita	Basti Jogyia	0.03	Ghasapadia	
Tijamali	28/08/1992	17	143	Rakhita	Gramya Jungle Jogyia	2.68	Patra Jungle	Found in DLC report
Tijamali	28/08/1992	17	146	Rakhita	Gramya Jungle Jogyia	1.1	Patra Jungle	
Tijamali	28/08/1992	17	147	Rakhita	Gramya Jungle	1	Patra Jungle	
Tijamali	28/08/1992	17	148	Rakhita	Gramya Jungle	0.69	Patra Jungle	Found in DLC report
Tijamali	28/08/1992	17	180	Rakhita	Gramya Jungle	10.78	Unsurveyed	Found in DLC report, AC 6.82 GIVEN UNDER FRA
Tijamali	28/08/1992	18	122	Sarba Sadharana	Rasta	0.06	Bari Mamuli, Ghara	
Tijamali	28/08/1992	18	126	Sarba Sadharana	Rasta	0.16	Rasta	
Tijamali	28/08/1992	18	128	Sarba Sadharana	Debs sthali	0.1	Bjststhal	
Tijamali	28/08/1992	18	155	Sarba Sadharana	Smasana	0.69	Ghasapadia	
Tijamali	28/08/1992	19	1	Abada Jogyia Anabadi	Patita	7.2	Unsurveyed	
Tijamali	28/08/1992	19	13	Abada Jogyia Anabadi	Atta	1.54	Ghasapadia	
Tijamali	28/08/1992	19	132	Abada Jogyia Anabadi	Atta	0.08	Ghasapadia	
Tijamali	28/08/1992	19	14	Abada Jogyia Anabadi	Atta	0.74	Ghasapadia	
Tijamali	28/08/1992	19	144P	Abada Jogyia Anabadi	Patra Jungle	22	Unsurveyed	Found in DLC report, AC 13.07 GIVEN UNDER FRA
Tijamali	28/08/1992	19	154	Abada Jogyia Anabadi	Atta	0.3	Ghasapadia	
Tijamali	28/08/1992	19	156	Abada Jogyia Anabadi	Atta	0.84	Ghasapadia	
Tijamali	28/08/1992	19	157	Abada Jogyia Anabadi	Atta	0.29	Ghasapadia	
Tijamali	28/08/1992	19	158	Abada Jogyia Anabadi	Atta	1.32	Ghasapadia	
Tijamali	28/08/1992	19	159	Abada Jogyia Anabadi	Atta	0.42	Ghasapadia	
Tijamali	28/08/1992	19	163	Abada Jogyia Anabadi	Atta	0.29	Ghasapadia	
Tijamali	28/08/1992	19	164	Abada Jogyia Anabadi	Atta	0.09	Ghasapadia	
Tijamali	28/08/1992	19	17	Abada Jogyia Anabadi	Atta	2.48	Ghasapadia	
Tijamali	28/08/1992	19	170	Abada Jogyia Anabadi	Atta	0.2	Ghasapadia	
Tijamali	28/08/1992	19	171	Abada Jogyia Anabadi	Atta	0.87	Ghasapadia	
Tijamali	28/08/1992	19	18	Abada Jogyia Anabadi	Atta	3.09	Ghasapadia	
Tijamali	28/08/1992	19	186	Abada Jogyia Anabadi	Patita	0.52	Unsurveyed	
Tijamali	28/08/1992	19	192(P)	Abada Jogyia Anabadi	Patita	12.8	Unsurveyed	Reserved for Jawans of Odisha
Tijamali	28/08/1992	19	193(P)	Abada Jogyia Anabadi	Patra Jungle	16.18	Unsurveyed	Found in DLC report, AC 7.12 GIVEN UNDER FRA

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Tijamali	28/08/1992	19	194	Abada Jogyia Anabadi	Patita	38.23	Unsurveyed	
Tijamali	28/08/1992	19	195	Abada Jogyia Anabadi	Patra Jungle	36.55	Unsurveyed	Found in DLC report
Tijamali	28/08/1992	19	196	Abada Jogyia Anabadi	Patita	35.13	Unsurveyed	Reserved for Jawans of Odisha
Tijamali	28/08/1992	19	197	Abada Jogyia Anabadi	Patra Jungle	49.5	Unsurveyed	Found in DLC report
Tijamali	28/08/1992	19	21	Abada Jogyia Anabadi	Atta	3.02	Ghasapadia	
Tijamali	28/08/1992	19	22	Abada Jogyia Anabadi	Atta	1.73	Ghasapadia	
Tijamali	28/08/1992	19	28	Abada Jogyia Anabadi	Atta	0.21	Patra Jungle	
Tijamali	28/08/1992	16/19	28/217	Indra Majhi, S/o Manglu	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/20	28/218	Purna Majhi, S/o Manglu	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/21	28/219	Bali Majhi, S/o Balu	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/22	28/220	Dansing Majhi, S/o Hadan	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/23	28/221	Dana Majhi, S/o Khuja	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/24	28/222	Nabin Bag, S/o Suderam	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/25	28/223	Naredhra Bag, S/o Motiram	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/26	28/224	Mangulu Naik, S/o Chhendru	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/27	28/225	Ugresan Bag, S/o Guronath	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/28	28/226	Chaupadi Bag, S/o Jaynath	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/29	28/227	Pitambar Naik, S/o Punia	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/30	28/228	Kameswar Bag, S/o Guronath	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/31	28/229	Amang Dei W/o Katri Majhi	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/32	28/230	Haramak Majhi, S/o Rajing	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/33	28/231	Parma Maj, S/o Manglu	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/34	28/232	Malobewa, W/o Kala Majhi	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/35	28/233	Sukhabewa, W/o Naranga Majhi	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/36	28/234	Jaysing Majhi, S/o Peda	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/37	28/235	Raising Majhi, S/o Dahan	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/38	28/236	Suna Majhi, S/o Peda	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/39	28/237	Sana Majhi, S/o Daru	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/40	28/238	Ram Ch Majhi, S/o Dian	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/41	28/239	Sunang Majhi, S/o Hajeng	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/42	28/240	Rupang Majhi, S/o Fagu	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/43	28/241	Amarsing Majhi, S/o San Daru	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	16/44	28/242	Balersing Majhi, S/o Hindi	Gharbari	0.04	Patra Jungle	
Tijamali	28/08/1992	19	29	Abada Jogyia Anabadi	Mala	0.06	Patra Jungle	
Tijamali	28/08/1992	19	30	Abada Jogyia Anabadi	Mala	0.05	Ghasapadia	
Tijamali	28/08/1992	19	32	Abada Jogyia Anabadi	Atta	0.34	Ghasapadia	
Tijamali	28/08/1992	19	35	Abada Jogyia Anabadi	Atta	0.15	Patra Jungle	

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						Area in Acre		
Tijamali	28/08/1992	19	35	Abada Jogya Anabadi	Patia	1.94	Patra Jungle	
Tijamali	28/08/1992	19	37	Abada Jogya Anabadi	Mala	0.03	Ghasapadia	
Tijamali	28/08/1992	19	4	Abada Jogya Anabadi	Patia	2.05	Unsurveyed	
Tijamali	28/08/1992	19	44	Abada Jogya Anabadi	Mala	0.12	Ghasapadia	
Tijamali	28/08/1992	19	45	Abada Jogya Anabadi	Mala	0.12	Ghasapadia	
Tijamali	28/08/1992	19	50	Abada Jogya Anabadi	Patia	5.15	Unsurveyed	Reserved for Jawans of Odisha
Tijamali	28/08/1992	19	58	Abada Jogya Anabadi	Patia	7.96	Unsurveyed	
Tijamali	28/08/1992	19	6	Abada Jogya Anabadi	Patia	3.74	Unsurveyed	
Tijamali	28/08/1992	19	60	Abada Jogya Anabadi	Mala	0.45	Ghasapadia	
Tijamali	28/08/1992	19	63	Abada Jogya Anabadi	Patra Jungle	7.4	Ghasapadia	Found in DLC report
Tijamali	28/08/1992	19	64	Abada Jogya Anabadi	Atta	0.21	Ghasapadia	
Tijamali	28/08/1992	19	66	Abada Jogya Anabadi	Atta	1.11	Ghasapadia	
Tijamali	28/08/1992	19	68	Abada Jogya Anabadi	Atta	0.4	Ghasapadia	
Tijamali	28/08/1992	19	69	Abada Jogya Anabadi	Atta	0.42	Ghasapadia	
Tijamali	28/08/1992	19	71	Abada Jogya Anabadi	Atta	0.1	Ghasapadia	
Tijamali	28/08/1992	19	74	Abada Jogya Anabadi	Atta	0.05	Patra Jungle	
Tijamali	28/08/1992	19	75	Abada Jogya Anabadi	Atta	0.24	Patra Jungle	
Tijamali	28/08/1992	19	8	Abada Jogya Anabadi	Atta	0.63	Ghasapadia	
Tijamali	28/08/1992	19	9	Abada Jogya Anabadi	Atta	1.32	Ghasapadia	
Tijamali	28/08/1992	19	90	Abada Jogya Anabadi	Patia	0.95	Unsurveyed	Reserved for Jawans of Odisha
Tijamali	28/08/1992	20	25	Abada Ajogya Anabadi	Pathar Bari	3.93	Unsurveyed	
Tijamali	28/08/1992	20	31	Abada Ajogya Anabadi	Pathar Bari	0.11	Ghasapadia	
Tijamali	28/08/1992	20	47	Abada Ajogya Anabadi	Pathar Bari	0.98	Unsurveyed	
Tijamali	28/08/1992	20	102(P)	Abada Ajogya Anabadi	Dangar	4	Unsurveyed	AC 1.84 GIVEN UNDER FRA
Tijamali	28/08/1992	20	105(P)	Abada Ajogya Anabadi	Dangar	15	Unsurveyed	AC 8.43 GIVEN UNDER FRA
Total Area						444.72		
Upar Ambapadar	19/05/1992	13	108(P)	Abada Ajogya Anabadi	Dangar	0.25	Unsurveyed	
Upar Ambapadar	19/05/1992	13	109(P)	Abada Ajogya Anabadi	Dangar	3.9	Unsurveyed	
Upar Ambapadar	19/05/1992	13	110(P)	Abada Ajogya Anabadi	Dangar	5.8	Unsurveyed	
Upar Ambapadar	19/05/1992	13	111(P)	Abada Ajogya Anabadi	Dangar	9	Unsurveyed	
Upar Ambapadar	19/05/1992	13	112(P)	Abada Ajogya Anabadi	Dangar	1.35	Unsurveyed	
Upar Ambapadar	19/05/1992	13	134(P)	Abada Ajogya Anabadi	Dangar	10	Unsurveyed	

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Village Name	Date of Publication of R.O.R's	Khata No	Plot No	Name of the Tenanat	Type of Land (Kisam)	Land Schedule Area in Acre	Sabik Status as on 25.10.1980	Remarks
Upar Ambapadar	19/05/1992	13	135(P)	Abada Ajogya Anabadi	Dangar	13.75	Unsurveyed	
Upar Ambapadar	19/05/1992	13	136	Abada Ajogya Anabadi	Dangar	25.5	Unsurveyed	
Upar Ambapadar	19/05/1992	13	137(P)	Abada Ajogya Anabadi	Dangar	15.8	Unsurveyed	
Upar Ambapadar	19/05/1992	13	138(P)	Abada Ajogya Anabadi	Dangar	2.1	Unsurveyed	
Upar Ambapadar	19/05/1992	13	139(P)	Abada Ajogya Anabadi	Dangar	15.5	Unsurveyed	
Upar Ambapadar	19/05/1992	13	140(P)	Abada Ajogya Anabadi	Dangar	14.55	Unsurveyed	
Total Area						126.5		
Grand Total Area						1813.29		

*Certified that status of land involved in the project (both forest & non-forest) as given in the Table above is as per Government records

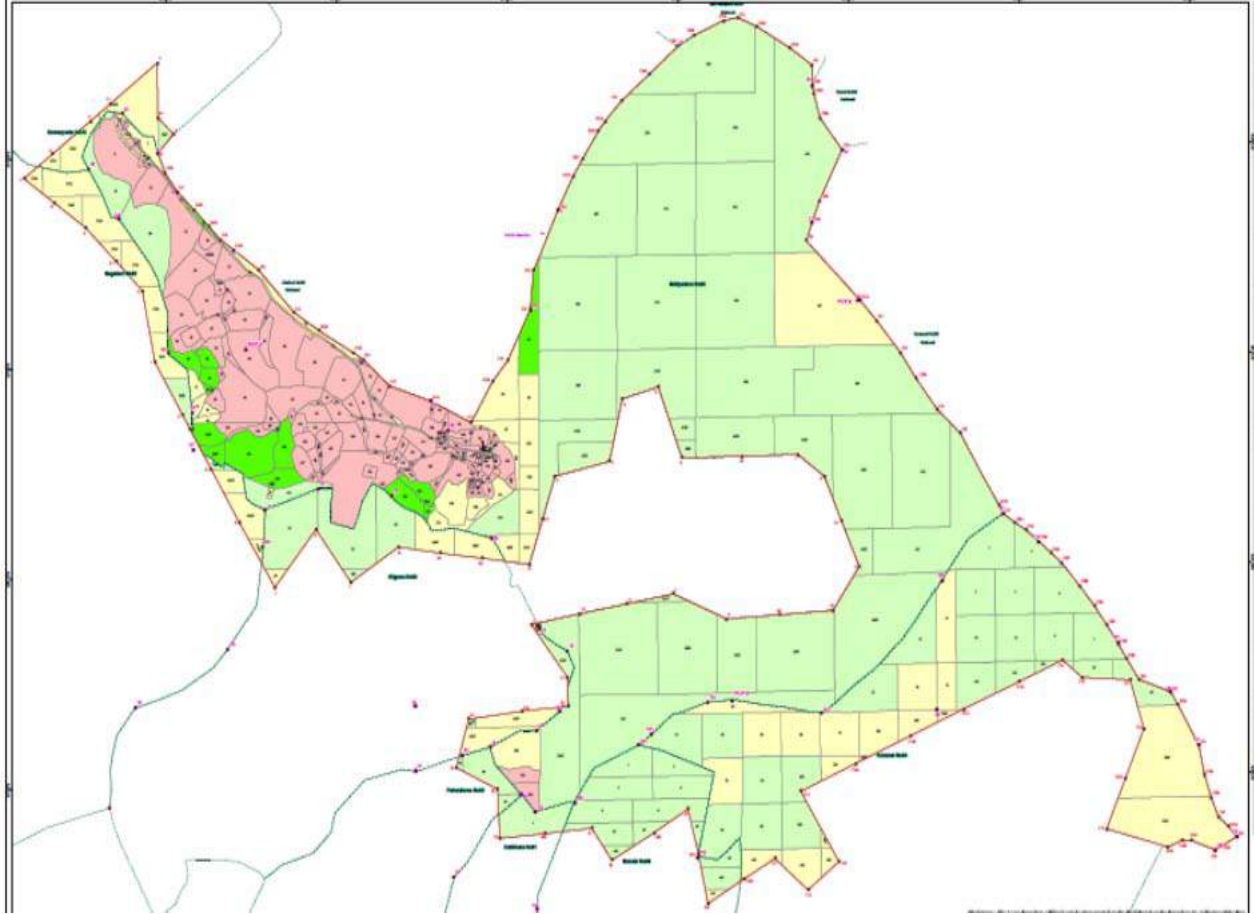
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ANNEXURE-11(B)

DGPS MAP / KHASRA NO'S AND LAND SCHEDULE - RAYAGADA DISTRICT



LEGEND

Reference Point	ML Boundary	Forest
ML Pillar	Village Boundary	Forest(DLC)
SCP/DGPS Observation Point	Govt. Land	Patch Boundary
	Private	Forest(Sabik)



Sijimali - Rayagada (Kashipur Tahasil)

Village Name	Khata No	RoR Plot No	Class of Land	Tenant Name	Type of Land	Land Schedule Proposed		Remarks
						Area in Acre	Area in Hectare	
Sunger R.I Circle								
Aiguna	33	1P	Abada Ajogyo Anabadi	Govt. Land	Pahada	17.75	7.18	Found in DLC report
Aiguna	33	2P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.1	0.45	
Aiguna	33	7P	Abada Ajogyo Anabadi	Govt. Land	Pahada	18	7.28	Found in DLC report
Aiguna	33	8P	Abada Ajogyo Anabadi	Govt. Land	Pahada	11.5	4.65	Found in DLC report
Aiguna	33	10P	Abada Ajogyo Anabadi	Govt. Land	Pahada	0.55	0.22	Found in DLC report
Aiguna	33	249P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.25	2.12	
Aiguna	33	250P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.8	2.35	
Aiguna	33	253P	Abada Ajogyo Anabadi	Govt. Land	Pahada	0.15	0.06	
Aiguna	33	254P	Abada Ajogyo Anabadi	Govt. Land	Pahada	3	1.21	Found in DLC report
Aiguna	33	258P	Abada Ajogyo Anabadi	Govt. Land	Pahada	0.25	0.10	Found in DLC report
Aiguna	33	259P	Abada Ajogyo Anabadi	Govt. Land	Pahada	7	2.83	
Aiguna	33	260P	Abada Ajogyo Anabadi	Govt. Land	Pahada	6.35	2.57	
Total Area						75.7	31.04	
Bundel	22	1	Abada Ajogyo Anabadi	Govt. Land	Pahada	7.5	3.04	Found in DLC report
Bundel	22	2	Abada Ajogyo Anabadi	Govt. Land	Pahada	9.25	3.74	Found in DLC report
Bundel	22	3	Abada Ajogyo Anabadi	Govt. Land	Pahada	6.25	2.53	Found in DLC report
Bundel	22	4	Abada Ajogyo Anabadi	Govt. Land	Pahada	7.25	2.93	Found in DLC report
Bundel	22	5P	Abada Ajogyo Anabadi	Govt. Land	Pahada	8.75	3.54	Found in DLC report
Bundel	22	6	Abada Ajogyo Anabadi	Govt. Land	Pahada	8	3.24	Found in DLC report
Bundel	22	7P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.5	2.23	Found in DLC report
Bundel	22	8P	Abada Ajogyo Anabadi	Govt. Land	Pahada	2.9	1.17	Found in DLC report
Bundel	22	9P	Abada Ajogyo Anabadi	Govt. Land	Pahada	4.1	1.66	Found in DLC report
Bundel	22	10P	Abada Ajogyo Anabadi	Govt. Land	Pahada	4.4	1.78	Found in DLC report
Bundel	22	11P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1	0.40	
Bundel	22	14P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.5	0.61	Found in DLC report
Total Area						66.4	26.87	
Adatakiri R.I Circle								
Dumerpadar	72	377P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.54	0.62	
Dumerpadar	72	378P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.94	2.40	
Dumerpadar	72	403P	Abada Ajogyo Anabadi	Govt. Land	Pahada	11.62	4.70	
Dumerpadar	72	435P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.56	0.63	Found in DLC report
Total Area						20.66	8.36	
Sunger R.I Circle								
Katbhata	21	1	Abada Ajogyo Anabadi	Govt. Land	Pahada	13	5.26	Found in DLC report
Total Area						13	5.26	
Kutamal	165	1	Abada Ajogyo Anabadi	Govt. Land	Parbat	13	5.26	Found in DLC report

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Kutamal	165	2	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	3	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	4	Abada Ajogyo Anabadi	Govt. Land	Parbat	7	2.83	Found in DLC report
Kutamal	165	5	Abada Ajogyo Anabadi	Govt. Land	Parbat	12.7	5.14	Found in DLC report
Kutamal	165	6	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	7	Abada Ajogyo Anabadi	Govt. Land	Parbat	10.15	4.11	Found in DLC report
Kutamal	165	8P	Abada Ajogyo Anabadi	Govt. Land	Parbat	8	3.24	Found in DLC report
Kutamal	165	9P	Abada Ajogyo Anabadi	Govt. Land	Parbat	2.9	1.17	Found in DLC report
Kutamal	165	10P	Abada Ajogyo Anabadi	Govt. Land	Parbat	0.85	0.34	Found in DLC report
Kutamal	165	11P	Abada Ajogyo Anabadi	Govt. Land	Parbat	5.4	2.19	Found in DLC report
Kutamal	165	12	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	13	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	14P	Abada Ajogyo Anabadi	Govt. Land	Parbat	9	3.64	Found in DLC report
Kutamal	165	15	Abada Ajogyo Anabadi	Govt. Land	Parbat	5	2.02	
Kutamal	165	16	Abada Ajogyo Anabadi	Govt. Land	Parbat	9.4	3.80	
Kutamal	165	17	Abada Ajogyo Anabadi	Govt. Land	Parbat	11.13	4.50	Found in DLC report
Kutamal	165	18	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	
Kutamal	165	19	Abada Ajogyo Anabadi	Govt. Land	Parbat	12.25	4.96	Found in DLC report
Kutamal	165	20	Abada Ajogyo Anabadi	Govt. Land	Parbat	5.6	2.27	
Kutamal	165	21	Abada Ajogyo Anabadi	Govt. Land	Parbat	11.5	4.65	Found in DLC report
Kutamal	165	22	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	23	Abada Ajogyo Anabadi	Govt. Land	Parbat	8.4	3.40	
Kutamal	165	24	Abada Ajogyo Anabadi	Govt. Land	Parbat	10.6	4.29	Found in DLC report
Kutamal	165	25	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	26P	Abada Ajogyo Anabadi	Govt. Land	Parbat	9.35	3.78	Found in DLC report
Kutamal	165	27P	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Kutamal	165	28	Abada Ajogyo Anabadi	Govt. Land	Parbat	9.5	3.84	Found in DLC report
Kutamal	165	29	Abada Ajogyo Anabadi	Govt. Land	Parbat	3.25	1.32	
Kutamal	165	30	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	
Kutamal	165	31	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	
Kutamal	165	32P	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	
Kutamal	165	33P	Abada Ajogyo Anabadi	Govt. Land	Parbat	5.5	2.23	
Kutamal	165	37P	Abada Ajogyo Anabadi	Govt. Land	Parbat	9.2	3.72	
Kutamal	165	38P	Abada Ajogyo Anabadi	Govt. Land	Parbat	0.25	0.10	
Kutamal	165	39P	Abada Ajogyo Anabadi	Govt. Land	Parbat	0.9	0.36	
Kutamal	165	40P	Abada Ajogyo Anabadi	Govt. Land	Parbat	2.15	0.87	
Kutamal	165	43P	Abada Ajogyo Anabadi	Govt. Land	Parbat	6.25	2.53	
Kutamal	165	44P	Abada Ajogyo Anabadi	Govt. Land	Parbat	4	1.62	
Kutamal	165	784P	Abada Ajogyo Anabadi	Govt. Land	Parbat	1	0.40	
Kutamal	165	786P	Abada Ajogyo Anabadi	Govt. Land	Parbat	33	13.36	
Kutamal	165	787P	Abada Ajogyo Anabadi	Govt. Land	Parbat	26.9	10.89	

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Total Area			Adatakiri R.I.Circle			374.13	151.41
Malipadara	1	171	Asifula Majhi	Abadi	Atta	0.12	0.05
Malipadara	2	100	Jagu Majhi & Others	Abadi	Atta	1.05	0.42
Malipadara	2	101	Jagu Majhi & Others	Abadi	Atta	0.6	0.24
Malipadara	2	105	Jagu Majhi & Others	Abadi	Atta	0.08	0.03
Malipadara	2	106	Jagu Majhi & Others	Abadi	Atta	0.12	0.05
Malipadara	2	107	Jagu Majhi & Others	Abadi	Atta	0.15	0.06
Malipadara	2	111	Jagu Majhi & Others	Abadi	Atta	3	1.21
Malipadara	2	112	Jagu Majhi & Others	Abadi	Atta	0.1	0.04
Malipadara	2	113	Jagu Majhi & Others	Abadi	Atta	1.25	0.51
Malipadara	2	120	Jagu Majhi & Others	Abadi	Atta	0.7	0.28
Malipadara	2	129	Jagu Majhi & Others	Abadi	Atta	1	0.40
Malipadara	2	130	Jagu Majhi & Others	Abadi	Atta	0.2	0.08
Malipadara	2	133	Jagu Majhi & Others	Abadi	Atta	1.85	0.75
Malipadara	2	156	Jagu Majhi & Others	Abadi	Atta	0.9	0.32
Malipadara	2	161	Jagu Majhi & Others	Abadi	Atta	0.13	0.05
Malipadara	2	162	Jagu Majhi & Others	Abadi	Atta	0.13	0.05
Malipadara	2	163	Jagu Majhi & Others	Abadi	Atta	0.23	0.09
Malipadara	2	165	Jagu Majhi & Others	Abadi	Atta	0.2	0.08
Malipadara	2	176	Jagu Majhi & Others	Abadi	Atta	0.4	0.16
Malipadara	2	177	Jagu Majhi & Others	Abadi	Atta	3.3	1.34
Malipadara	2	182	Jagu Majhi & Others	Abadi	Atta	0.2	0.06
Malipadara	2	183	Jagu Majhi & Others	Abadi	Atta	0.08	0.03
Malipadara	2	25	Jagu Majhi & Others	Abadi	Atta	1.27	0.51
Malipadara	2	27	Jagu Majhi & Others	Abadi	Atta	3.7	1.50
Malipadara	2	31/256	Jagu Majhi & Others	Abadi	Atta	0.1	0.04
Malipadara	2	57	Jagu Majhi & Others	Abadi	Atta	2.2	0.89
Malipadara	2	81	Jagu Majhi & Others	Abadi	Atta	0.22	0.09
Malipadara	2	87/257	Jagu Majhi & Others	Abadi	Atta	0.03	0.01
Malipadara	2	88	Jagu Majhi & Others	Abadi	Atta	0.35	0.14
Malipadara	2	93	Jagu Majhi & Others	Abadi	Atta	0.02	0.01
Malipadara	3	75	Jagu Majhi	Abadi	Atta	1.6	0.65
Malipadara	3	26/255	Jagu Majhi	Abadi	Atta	0.33	0.13
Malipadara	4	115	Jagu Majhi	Abadi	Atta	0.1	0.04
Malipadara	4	116	Jagu Majhi	Abadi	Atta	0.6	0.24
Malipadara	4	121	Jagu Majhi	Abadi	Atta	1.9	0.77
Malipadara	4	124	Jagu Majhi	Abadi	Atta	3.45	1.40
Malipadara	4	137	Jagu Majhi	Abadi	Atta	0.6	0.24
Malipadara	4	138	Jagu Majhi	Abadi	Atta	1.5	0.61
Malipadara	4	139	Jagu Majhi	Abadi	Atta	1.5	0.61

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Malipadara	4	158/258	Jagu Majhi	Abadi	Atta	0.3	0.12
Malipadara	4	16	Jagu Majhi	Abadi	Atta	0.3	0.12
Malipadara	4	166	Jagu Majhi	Abadi	Atta	0.02	0.01
Malipadara	4	17	Jagu Majhi	Abadi	Atta	0.1	0.04
Malipadara	4	175	Jagu Majhi	Abadi	Atta	0.85	0.34
Malipadara	4	184	Jagu Majhi	Abadi	Gharabari	0.02	0.01
Malipadara	4	185	Jagu Majhi	Abadi	Gharabari	0.01	0.00
Malipadara	4	187	Jagu Majhi	Abadi	Atta	0.18	0.07
Malipadara	4	188	Jagu Majhi	Abadi	Atta	0.1	0.04
Malipadara	4	36	Jagu Majhi	Abadi	Atta	0.11	0.04
Malipadara	12/35	37	Kasinath Jani	Abadi	Atta	2.8	1.13
Malipadara		38	Kasinath Jani	Abadi	Atta	1.5	0.61
Malipadara		39	Kasinath Jani	Abadi	Atta	2.2	0.89
Malipadara	4	45	Jagu Majhi	Abadi	Atta	11.75	4.76
Malipadara	4	46	Jagu Majhi	Abadi	Atta	1.56	0.63
Malipadara	4	52	Jagu Majhi	Abadi	Atta	2	0.81
Malipadara	4	53	Jagu Majhi	Abadi	Atta	1.2	0.49
Malipadara	4	86	Jagu Majhi	Abadi	Atta	0.9	0.36
Malipadara	4	72	Jagu Majhi	Abadi	Atta	0.1	0.04
Malipadara	4	73	Jagu Majhi	Abadi	Atta	2.4	0.97
Malipadara	4	78	Jagu Majhi	Abadi	Atta	1.5	0.61
Malipadara	4	91	Jagu Majhi	Abadi	Atta	0.02	0.01
Malipadara	4	96	Jagu Majhi	Abadi	Atta	1.6	0.65
Malipadara	4	99	Jagu Majhi	Abadi	Atta	0.1	0.04
Malipadara	5	94	Jagu Majhi	Abadi	Atta	0.05	0.02
Malipadara	7	102	Danu Majhi & Others	Abadi	Atta	0.85	0.34
Malipadara	7	103	Danu Majhi & Others	Abadi	Atta	0.25	0.10
Malipadara	7	104	Danu Majhi & Others	Abadi	Atta	0.1	0.04
Malipadara	7	11	Danu Majhi & Others	Abadi	Atta	0.2	0.08
Malipadara	7	114	Danu Majhi & Others	Abadi	Atta	0.22	0.09
Malipadara	7	117	Danu Majhi & Others	Abadi	Atta	0.22	0.09
Malipadara	7	118	Danu Majhi & Others	Abadi	Atta	0.7	0.28
Malipadara	7	119	Danu Majhi & Others	Abadi	Atta	0.55	0.22
Malipadara	7	12	Danu Majhi & Others	Abadi	Atta	0.1	0.04
Malipadara	7	122	Danu Majhi & Others	Abadi	Atta	0.6	0.24
Malipadara	7	123	Danu Majhi & Others	Abadi	Atta	0.26	0.11
Malipadara	7	125	Danu Majhi & Others	Abadi	Atta	0.8	0.32
Malipadara	7	128	Danu Majhi & Others	Abadi	Atta	3.5	1.42
Malipadara	7	147	Danu Majhi & Others	Abadi	Atta	2.7	1.09
Malipadara	7	148	Danu Majhi & Others	Abadi	Atta	0.4	0.16
Malipadara	7	149	Danu Majhi & Others	Abadi	Atta	0.7	0.28

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Malipadara	7	150	Danu Majhi & Others	Abadi	Atta	16.5	0.68	
Malipadara	7	151	Danu Majhi & Others	Abadi	Atta	0.85	0.34	
Malipadara	7	157	Danu Majhi & Others	Abadi	Atta	4.45	1.80	
Malipadara	7	158	Danu Majhi & Others	Abadi	Atta	0.5	0.20	
Malipadara	7	159	Danu Majhi & Others	Abadi	Atta	0.4	0.16	
Malipadara	7	160	Danu Majhi & Others	Abadi	Atta	0.05	0.02	
Malipadara	7	164	Danu Majhi & Others	Abadi	Atta	0.5	0.20	
Malipadara	7	172	Danu Majhi & Others	Abadi	Atta	2.8	1.13	
Malipadara	7	18	Danu Majhi & Others	Abadi	Atta	5.1	2.06	
Malipadara	7	181	Danu Majhi & Others	Abadi	Atta	0.85	0.34	
Malipadara	7	186	Danu Majhi & Others	Abadi	Gharabari	0.04	0.02	
Malipadara	7	189	Danu Majhi & Others	Abadi	Atta	0.9	0.36	
Malipadara	7	192	Danu Majhi & Others	Abadi	Atta	0.7	0.28	
Malipadara	7	2	Danu Majhi & Others	Abadi	Atta	0.3	0.12	
Malipadara	7	3	Danu Majhi & Others	Abadi	Atta	0.14	0.06	
Malipadara	7	4	Danu Majhi & Others	Abadi	Atta	0.4	0.16	
Malipadara	7	50	Danu Majhi & Others	Abadi	Atta	0.4	0.16	
Malipadara	7	6	Danu Majhi & Others	Abadi	Atta	11.25	4.55	
Malipadara	7	69	Danu Majhi & Others	Abadi	Atta	2.3	0.93	
Malipadara	7	70	Danu Majhi & Others	Abadi	Atta	1.3	0.53	
Malipadara	7	71	Danu Majhi & Others	Abadi	Atta	0.08	0.03	
Malipadara	7	8	Danu Majhi & Others	Abadi	Atta	0.7	0.28	
Malipadara	7	86	Danu Majhi & Others	Abadi	Atta	0.45	0.18	
Malipadara	7	92	Danu Majhi & Others	Abadi	Gharabari	0.02	0.01	
Malipadara	7	95	Danu Majhi & Others	Abadi	Gharabari	0.04	0.02	
Malipadara	8	108	Bali Majhi & Others	Abadi	Atta	0.48	0.19	
Malipadara	8	109	Bali Majhi & Others	Abadi	Atta	1.6	0.65	
Malipadara	8	127	Bali Majhi & Others	Abadi	Atta	3	1.21	
Malipadara	8	128	Bali Majhi & Others	Abadi	Atta	0.4	0.16	
Malipadara	8	131	Bali Majhi & Others	Abadi	Atta	1.5	0.61	
Malipadara	8	132	Bali Majhi & Others	Abadi	Atta	1.1	0.45	
Malipadara	8	134	Bali Majhi & Others	Abadi	Atta	1.55	0.63	
Malipadara	8	173	Bali Majhi & Others	Abadi	Atta	0.65	0.26	
Malipadara	8	174	Bali Majhi & Others	Abadi	Atta	1.06	0.43	
Malipadara	8	190	Bali Majhi & Others	Abadi	Atta	0.56	0.23	
Malipadara	12/35	21	Kashinath Jani S/o Bhag Jani of Kashipur	Abadi	Atta	10.25	4.15	
Malipadara	8	28	Bali Majhi & Others	Abadi	Atta	8	3.24	
Malipadara	12/38	28/293	Sandhya Majhi, S/o Birsing	Abadi	Atta	2	0.81	
Malipadara	8	29	Bali Majhi & Others	Abadi	Atta	5.5	2.23	
Malipadara	8	30	Bali Majhi & Others	Abadi	Atta	4.8	1.94	

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Malipadara	8	31	Bali Majhi & Others	Abadi	Atta	0.9	0.36	
Malipadara	8	32	Bali Majhi & Others	Abadi	Atta	0.07	0.03	
Malipadara	8	33	Bali Majhi & Others	Abadi	Atta	6.5	2.63	
Malipadara	8	34	Bali Majhi & Others	Abadi	Atta	1.2	0.49	
Malipadara	8	35	Bali Majhi & Others	Abadi	Atta	0.3	0.12	
Malipadara	8	54	Bali Majhi & Others	Abadi	Atta	9.5	3.84	
Malipadara	8	55	Bali Majhi & Others	Abadi	Atta	0.4	0.16	
Malipadara	8	56	Bali Majhi & Others	Abadi	Atta	3.6	1.46	
Malipadara	8	58	Bali Majhi & Others	Abadi	Atta	0.22	0.09	
Malipadara	12/37	59	Kashinath Jani S/o Bhag Jani of Kashipur	Abadi	Atta	12.5	5.06	
Malipadara	8	60	Bali Majhi & Others	Abadi	Atta	8.25	3.34	
Malipadara	8	61	Bali Majhi & Others	Abadi	Atta	4.4	1.78	
Malipadara	8	62	Bali Majhi & Others	Abadi	Atta	0.25	0.10	
Malipadara	8	63	Bali Majhi & Others	Abadi	Atta	0.72	0.29	
Malipadara	8	64	Bali Majhi & Others	Abadi	Atta	0.28	0.11	
Malipadara	8	65	Bali Majhi & Others	Abadi	Atta	6.75	2.73	
Malipadara	8	67	Bali Majhi & Others	Abadi	Atta	0.45	0.18	
Malipadara	8	68	Bali Majhi & Others	Abadi	Atta	2.5	1.01	
Malipadara	8	80	Bali Majhi & Others	Abadi	Atta	8.38	3.39	
Malipadara	8	97	Bali Majhi & Others	Abadi	Atta	0.2	0.08	
Malipadara	8	98	Bali Majhi & Others	Abadi	Atta	1.8	0.73	
Malipadara	9	167	Bali Majhi & Others	Abadi	Gharabari	0.02	0.01	
Malipadara	10	168	Birasingh Majhi	Abadi	Gharabari	0.02	0.01	
Malipadara	11	76	Haler Majhi	Abadi	Atta	1.8	0.65	
Malipadara	6	233/252	Saya Majhi	Abadi	Atta	2.54	1.03	
Malipadara	12	231/251	Hindica Majhi	Abadi	Atta	2.7	1.09	
Malipadara	13	23	Rakhit(DLC)	Rakhita	Patra Jungle	0.85	0.34	Found in DLC report
Malipadara	13	26	Rakhit	Govt. Land	Samsan	4.47	1.81	
Malipadara	13	40	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	2.7	1.09	Found in DLC report
Malipadara	13	41	Rakhit	Govt. Land	Unnatimulak jogyo(School)	2	0.81	
Malipadara	13	42	Rakhit	Govt. Land	Unnatimulak jogyo(School)	1.25	0.51	
Malipadara	13	47	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	0.18	0.07	Found in DLC report
Malipadara	13	48	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	0.26	0.11	Found in DLC report
Malipadara	13	49	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	1.8	0.73	Found in DLC report
Malipadara	13	51	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	1.75	0.71	Found in DLC report
Malipadara	13	83	Rakhit(DLC)	Rakhita	Gramya Jungle	7.5	3.04	Found in DLC report
Malipadara	13	84	Rakhit	Govt. Land	Gochara	5	2.02	
Malipadara	13	85	Rakhit	Govt. Land	Gochara	3.9	1.58	
Malipadara	13	135	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	4.4	1.78	Found in DLC report
Malipadara	13	136	Rakhit(DLC)	Rakhita	Patra Jungle	0.1	0.04	Found in DLC report

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Malipadara	13	140P	Rakhit(DLC)	Rakhita	Patra Jungle	3.15	1.27	Found in DLC report
Malipadara	13	141P	Rakhit(DLC)	Rakhita	Patra Jungle	2	0.81	Found in DLC report
Malipadara	13	142	Rakhit(DLC)	Rakhita	Patra Jungle	11.25	4.55	Found in DLC report
Malipadara	13	145	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	0.18	0.07	Found in DLC report
Malipadara	13	146	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	3.4	1.58	Found in DLC report
Malipadara	13	152	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	3.92	1.59	Found in DLC report
Malipadara	13	153	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	0.24	0.10	Found in DLC report
Malipadara	13	154	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	0.22	0.09	Found in DLC report
Malipadara	13	155	Rakhit(DLC)	Rakhita	Gramya Jungle Jogyo	2.6	1.05	Found in DLC report
Malipadara	13	178	Rakhit	Govt. Land	Gochara	6.38	2.56	
Malipadara	13	179	Rakhit	Govt. Land	Gochara	2.6	1.05	
Malipadara	13	180	Rakhit	Govt. Land	Gochara	1.9	0.77	
Malipadara	13	191	Rakhit	Govt. Land	Gochara	2.55	1.03	
Malipadara	14	5	Sarbosadharana	Govt. Land	road	0.3	0.12	
Malipadara	14	7	Sarbosadharana	Govt. Land	road	0.4	0.16	
Malipadara	14	10	Sarbosadharana	Govt. Land	road	0.06	0.02	
Malipadara	14	13	Sarbosadharana	Govt. Land	road	0.12	0.05	
Malipadara	14	15	Sarbosadharana	Govt. Land	road	0.28	0.11	
Malipadara	14	22	Sarbosadharana	Govt. Land	road	0.8	0.32	
Malipadara	14	24	Sarbosadharana	Govt. Land	road	0.2	0.08	
Malipadara	14	74	Sarbosadharana	Govt. Land	road	1.8	0.73	
Malipadara	14	77	Sarbosadharana	Govt. Land	road	0.25	0.10	
Malipadara	14	79	Sarbosadharana	Govt. Land	road	0.45	0.18	
Malipadara	14	87	Sarbosadharana	Govt. Land	road	0.12	0.05	
Malipadara	14	110	Sarbosadharana	Govt. Land	road	0.8	0.32	
Malipadara	14	169	Sarbosadharana	Govt. Land	Bijaestali	0.02	0.01	
Malipadara	14	170	Sarbosadharana	Govt. Land	Bijaestali	0.02	0.01	
Malipadara	15	9	Abada Jogyo Anabadi	Govt. Land	Patita	0.2	0.08	
Malipadara	15	14	Abada Jogyo Anabadi	Govt. Land	Patita	0.14	0.06	
Malipadara	15	43	Abada Jogyo Anabadi	Govt. Land	Patita	0.88	0.36	
Malipadara	15	44	Abada Jogyo Anabadi	Govt. Land	Patita	0.42	0.17	
Malipadara	15	82	Abada Jogyo Anabadi	Govt. Land	Patita	11.25	4.55	
Malipadara	15	89	Abada Jogyo Anabadi	Govt. Land	Patita	0.05	0.02	
Malipadara	15	90	Abada Jogyo Anabadi	Govt. Land	Patita	0.08	0.03	
Malipadara	15	231/250	Abada Jogyo Anabadi	Govt. Land	Patita	8.48	3.43	
Malipadara	16	1	Abada Ajogyo Anabadi	Govt. Land	Patharabani	3.55	1.44	
Malipadara	16	19	Abada Ajogyo Anabadi	Govt. Land	Patharabani	8.75	3.54	Found in DLC report
Malipadara	16	20	Abada Ajogyo Anabadi	Govt. Land	Patharabani	14	5.67	Found in DLC report
Malipadara	16	143	Abada Ajogyo Anabadi	Govt. Land	Pathara chatana	6.5	2.63	Found in DLC report
Malipadara	16	144	Abada Ajogyo Anabadi	Govt. Land	Patita	0.26	0.11	
Malipadara	16	193P	Abada Ajogyo Anabadi	Govt. Land	Pathara chatana	1.58	0.64	

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Malipadara	16	194	Abada Ajogyo Anabadi	Govt. Land	Pahada	8.5	3.44	Found in DLC report
Malipadara	16	195P	Abada Ajogyo Anabadi	Govt. Land	Pahada	2.9	1.17	
Malipadara	16	198P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.25	0.51	
Malipadara	16	201P	Abada Ajogyo Anabadi	Govt. Land	Pahada	2	0.81	
Malipadara	16	202P	Abada Ajogyo Anabadi	Govt. Land	Pahada	4.95	2.00	
Malipadara	16	203	Abada Ajogyo Anabadi	Govt. Land	Pahada	2.5	1.01	
Malipadara	16	204	Abada Ajogyo Anabadi	Govt. Land	Pahada	5	2.02	
Malipadara	16	205	Abada Ajogyo Anabadi	Govt. Land	Pahada	30	12.14	Found in DLC report
Malipadara	16	206	Abada Ajogyo Anabadi	Govt. Land	Pahada	40	16.19	Found in DLC report
Malipadara	16	207	Abada Ajogyo Anabadi	Govt. Land	Pahada	40	16.19	Found in DLC report
Malipadara	16	208	Abada Ajogyo Anabadi	Govt. Land	Pahada	36.75	14.87	Found in DLC report
Malipadara	16	209	Abada Ajogyo Anabadi	Govt. Land	Pahada	35	14.16	Found in DLC report
Malipadara	16	210	Abada Ajogyo Anabadi	Govt. Land	Pahada	37	14.97	Found in DLC report
Malipadara	16	211	Abada Ajogyo Anabadi	Govt. Land	Pahada	40	16.19	Found in DLC report
Malipadara	16	212	Abada Ajogyo Anabadi	Govt. Land	Pahada	30	12.14	Found in DLC report
Malipadara	16	213	Abada Ajogyo Anabadi	Govt. Land	Pahada	40	16.19	Found in DLC report
Malipadara	16	214P	Abada Ajogyo Anabadi	Govt. Land	Pahada	24.25	9.81	Found in DLC report
Malipadara	16	215P	Abada Ajogyo Anabadi	Govt. Land	Pahada	19.25	7.79	Found in DLC report
Malipadara	16	229P	Abada Ajogyo Anabadi	Govt. Land	Pahada	8.5	3.44	Found in DLC report
Malipadara	16	230P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.5	0.61	Found in DLC report
Malipadara	16	231P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.7	0.69	Found in DLC report
Malipadara	16	232P	Abada Ajogyo Anabadi	Govt. Land	Pahada	30.5	12.34	Found in DLC report
Malipadara	16	233	Abada Ajogyo Anabadi	Govt. Land	Pahada	42.5	17.20	Found in DLC report
Malipadara	16	234P	Abada Ajogyo Anabadi	Govt. Land	Pahada	38.5	15.58	Found in DLC report
Malipadara	16	235P	Abada Ajogyo Anabadi	Govt. Land	Pahada	28.75	11.64	Found in DLC report
Malipadara	16	236P	Abada Ajogyo Anabadi	Govt. Land	Pahada	20	8.09	Found in DLC report
Malipadara	16	237P	Abada Ajogyo Anabadi	Govt. Land	Pahada	18	7.28	Found in DLC report
Malipadara	16	238P	Abada Ajogyo Anabadi	Govt. Land	Pahada	18.5	7.49	Found in DLC report
Malipadara	16	239P	Abada Ajogyo Anabadi	Govt. Land	Pahada	37.2	15.05	Found in DLC report
Malipadara	16	240	Abada Ajogyo Anabadi	Govt. Land	Pahada	37	14.97	Found in DLC report
Malipadara	16	241	Abada Ajogyo Anabadi	Govt. Land	Pahada	38.5	15.58	Found in DLC report
Malipadara	16	242P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.5	2.23	Found in DLC report
Malipadara	16	243P	Abada Ajogyo Anabadi	Govt. Land	Pahada	36.5	14.77	Found in DLC report
Malipadara	16	244P	Abada Ajogyo Anabadi	Govt. Land	Pahada	44.34	17.94	Found in DLC report
Malipadara	16	245	Abada Ajogyo Anabadi	Govt. Land	Pahada	53.13	21.50	Found in DLC report
Malipadara	16	246	Abada Ajogyo Anabadi	Govt. Land	Pahada	40	16.19	Found in DLC report
Malipadara	16	247	Abada Ajogyo Anabadi	Govt. Land	Pahada	42.5	17.20	
Malipadara	16	248	Abada Ajogyo Anabadi	Govt. Land	Pahada	40	16.19	Found in DLC report
Malipadara	16	249	Abada Ajogyo Anabadi	Govt. Land	Pahada	44.5	18.01	Found in DLC report
Total Area						1414.28	572.36	

Sunger R.I.Circle

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Pelanakona	17	84	Abada Ajogyo Anabadi	Govt. Land	Parbat	7.75	3.14	Found in DLC report
Pelanakona	17	85	Abada Ajogyo Anabadi	Govt. Land	Parbat	10	4.05	Found in DLC report
Pelanakona	17	86	Abada Ajogyo Anabadi	Govt. Land	Parbat	8.25	3.34	Found in DLC report
Total Area						26	10.52	
Adatakiri R.I.Circle								
Sagabari	156	768P	Abada Ajogyo Anabadi	Govt. Land	Pahada	3	1.21	
Sagabari	156	770P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.7	0.69	
Sagabari	156	771P	Abada Ajogyo Anabadi	Govt. Land	Pahada	7.5	3.04	
Sagabari	156	772P	Abada Ajogyo Anabadi	Govt. Land	Pahada	8	3.24	
Sagabari	156	773P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1.5	0.61	
Sagabari	156	774P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.4	2.19	
Sagabari	156	775P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.2	2.10	
Sagabari	156	781P	Abada Ajogyo Anabadi	Govt. Land	Pahada	5.6	2.27	
Sagabari	156	782P	Abada Ajogyo Anabadi	Govt. Land	Pahada	2.65	1.07	Found in DLC report
Sagabari	156	783P	Abada Ajogyo Anabadi	Govt. Land	Pahada	1	0.40	Found in DLC report
Sagabari	156	1195P	Abada Ajogyo Anabadi	Govt. Land	Pahada	0.75	0.30	
Sagabari	156	1196P	Abada Ajogyo Anabadi	Govt. Land	Pahada	6	2.43	
Sagabari	156	1197P	Abada Ajogyo Anabadi	Govt. Land	Pahada	3	1.21	
Total Area						51.3	20.76	
Grand Total Area						2042.47	826.58	

2042.47 826.58

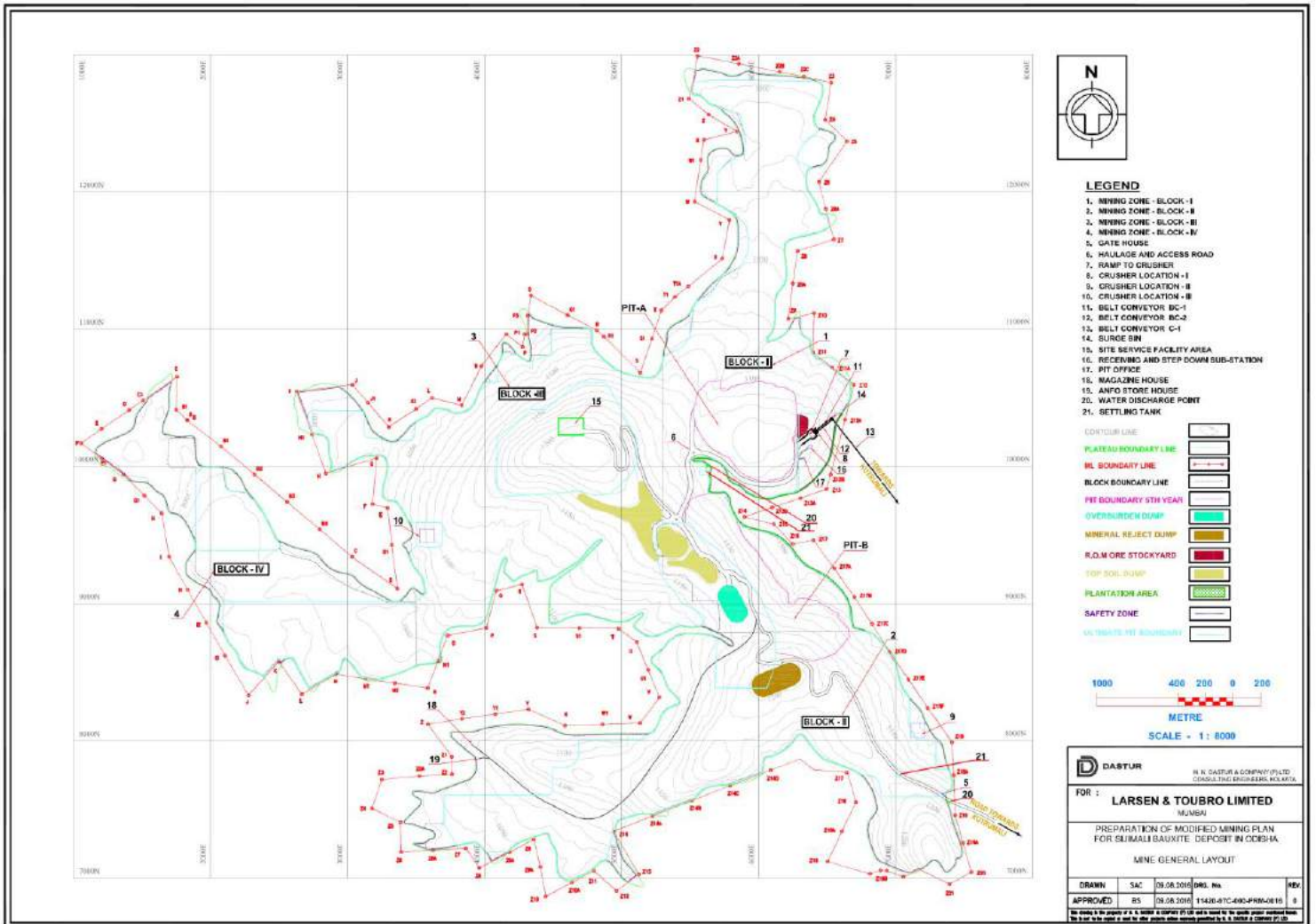
"Certified that status of land involved in the project (both forest & non-forest) as given in the Table above is as per Government records.

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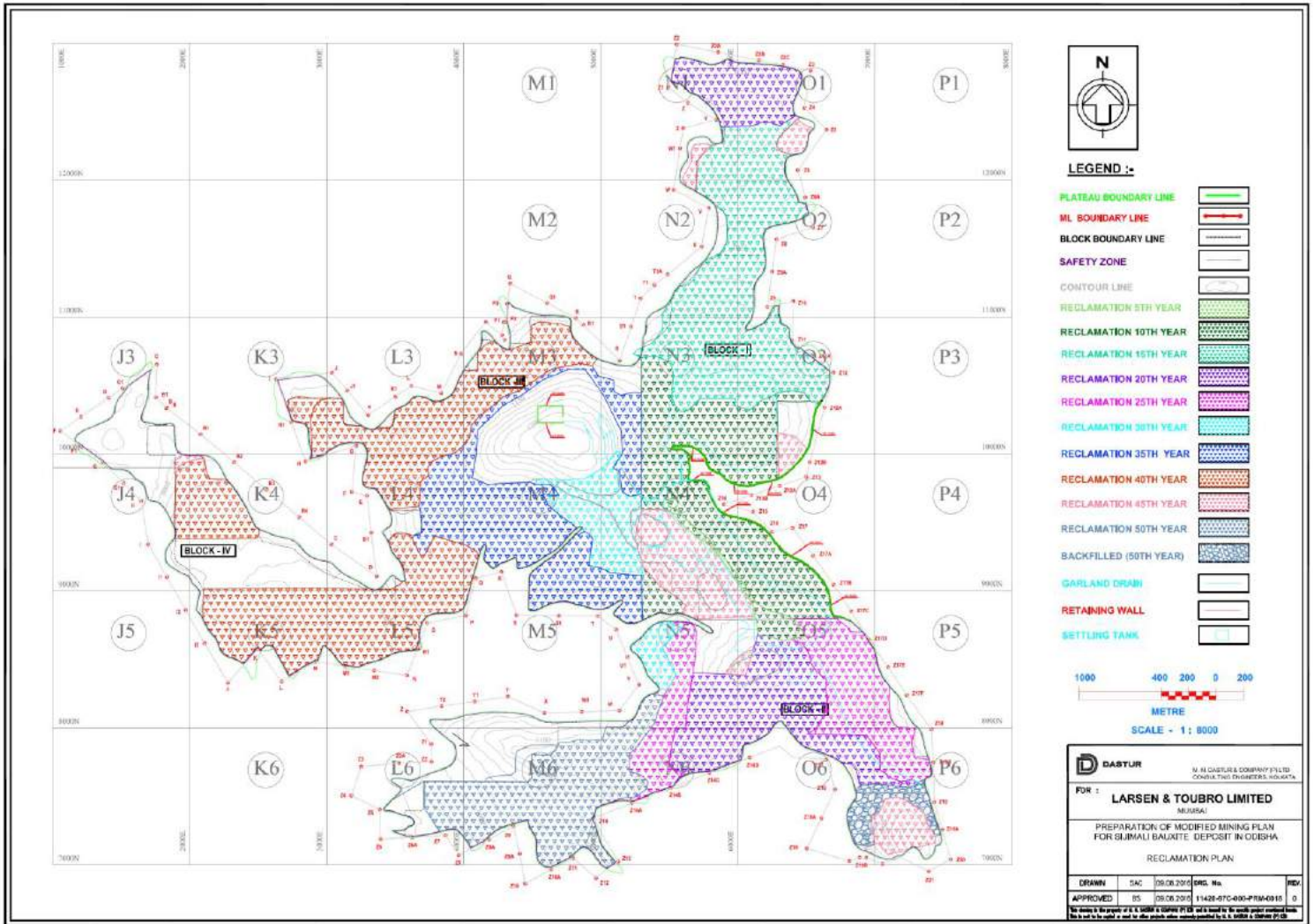


ANNEXURE-IV MINE GENERAL LAYOUT



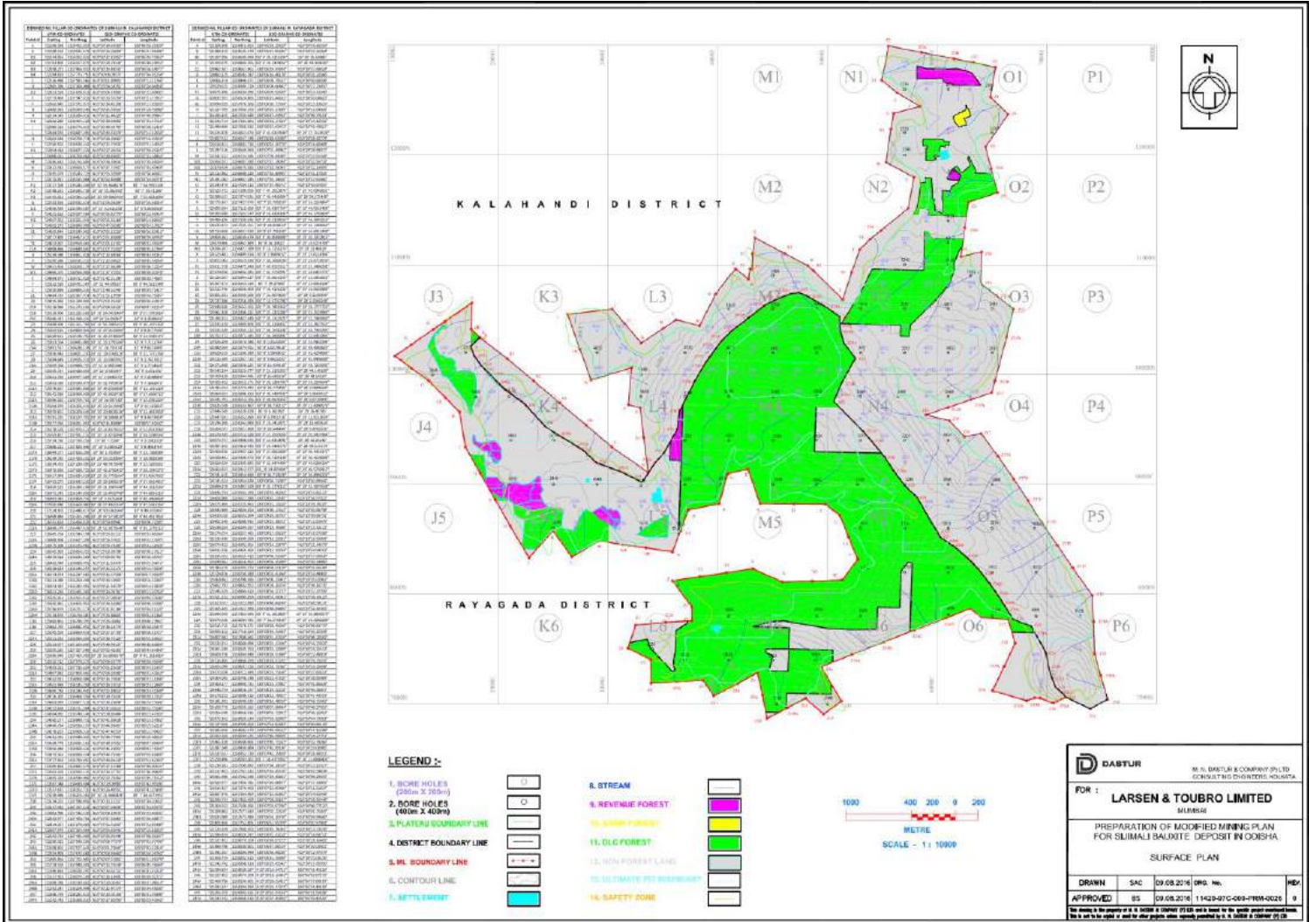


ANNEXURE-V RECLAMATION PLAN



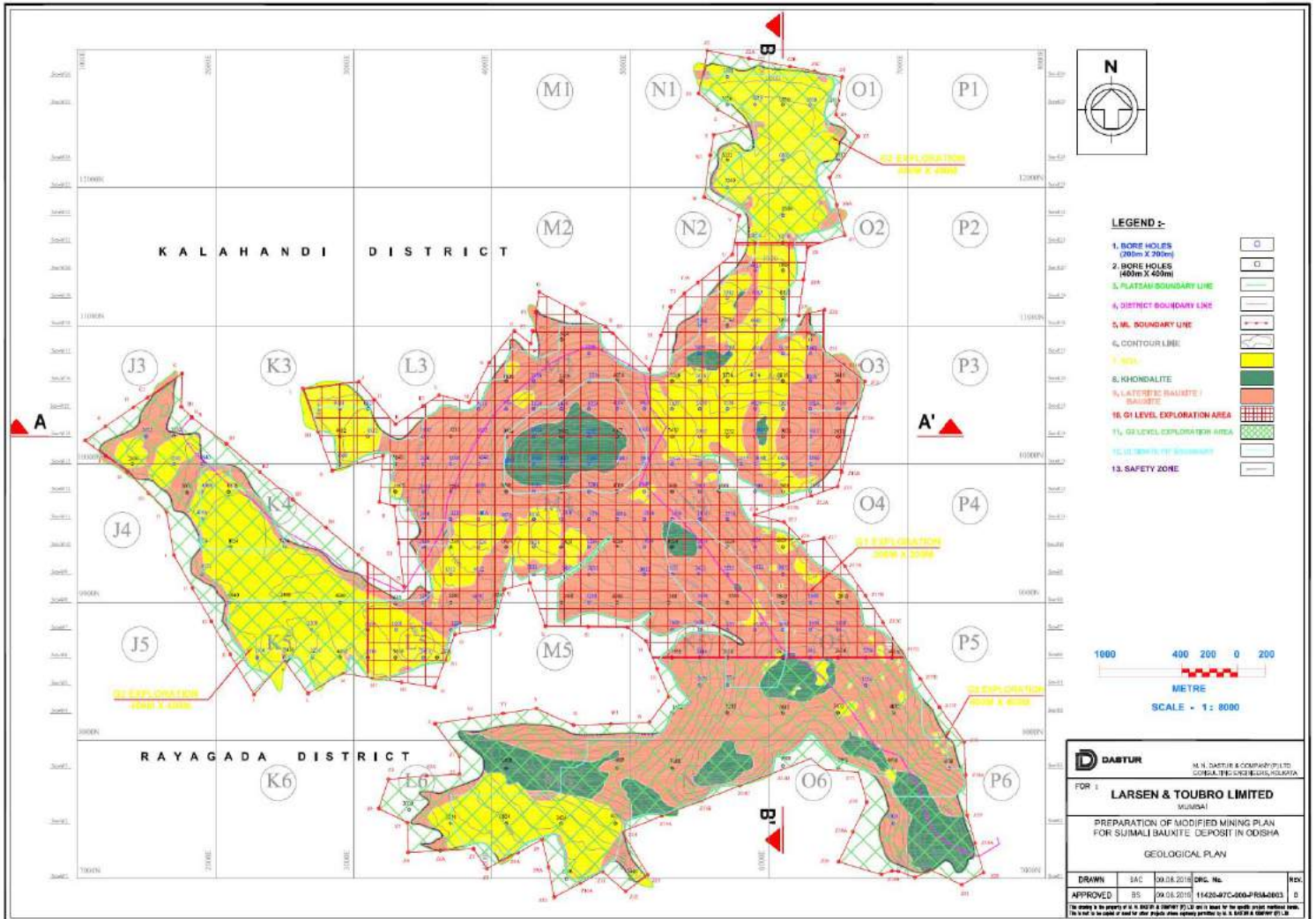


ANNEXURE-VI
SURFACE PLAN



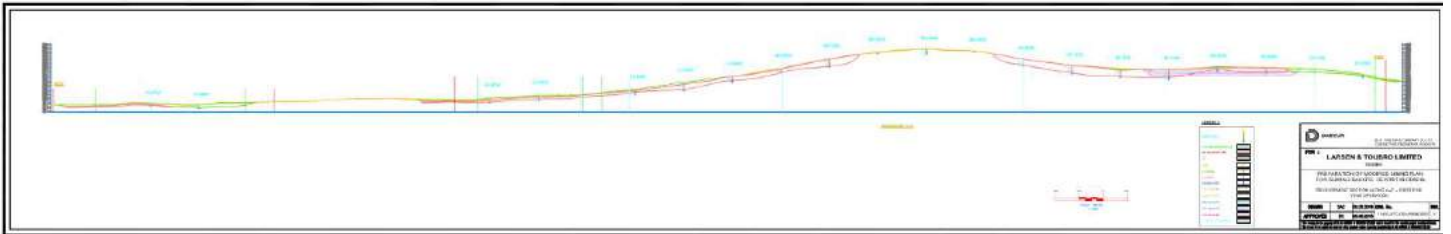


ANNEXURE-VII GEOLOGICAL PLAN





ANNEXURE-VIII
GEOLOGICAL CROSS SECTION





ANNEXURE-IX CONCEPTUAL MINE PLAN

