

**JUSTIFICATION  
FOR USE OF FOREST LAND  
AT KHONDBOND IRON AND MANGANESE MINES  
IN THE DISTRICT OF KEONJHAR**

**INTRODUCTION**

Originally the lease was granted for a period of 30 years w.e.f 17.01.1933 to 16.01.1963 over an area of 12.17 Sq. miles by the Ruling Chief of Keonjhar Estate. The lease deed was executed on 20.11.1933. The lease was consisting of three blocks i.e. Block-A (Katamati), Block-B (Joda West) & Block- D (Khondbond).

First Renewal was granted for a period of 20 years w.e.f 17.01.1963 to 16.01.1983 over the same area (i.e. 12.17 Sq. miles) consisting of above three blocks by Mining & Geology Deptt., Govt. of Orissa vide letter No. III(A)MG-87/73-11510 dated 21.11.1973. The lease deed was executed between Tata Steel & the State Govt. on 10.01.1978.

The Second Renewal was granted for a period of 20 years w.e.f 17.01.1983 to 16.01.2003 by the Mining & Geology Deptt., Govt. of Orissa vide letter No. III(A)MG-58/83-14879 MG dated 24.12.1983. During second renewal the lease blocks were separated forming three separate leases.

Renewal of the Khondbond Iron & Manganese lease has been applied on 29.10.2001 (one year prior to expiry of validity of lease) over an area of 978 ha. constituting of 681.718 ha. of RF, 44.653 ha. of KF, 110.386 ha. of non-forest land treated as forest land as per DLC report and 141.243 ha. of non-forest land. An area of 136.15 ha. of forest area within the proposed mining lease area of 978 ha., has broken prior to 25.10.1980.

Earlier Company has applied diversion of Forest land over 653.150 ha out of which only 453.150 ha of forest land was approved by MoEF, Govt. of India vide letter no. F. No. 8-96/2004-FC dated 9<sup>th</sup> August'2006.

Further to above, we had applied for Forest Diversion Proposal over balance 369.245 ha. and DFO, Keonjhar had advised us vide memo no. 6506/Mining dated 03.08.2011 to obtain FRA Certificate and as matter stands now, since the diversion for Safety Zone area over 14.362 ha has also be mandated, hence Certificate under ST & OTFD (Recognition of Forest Right) Act' 2006 would be required to be obtained over 383.607 ha. (369.245 ha. + 14.362 ha.) Including the Safety Zone area. We accordingly have also submitted our proposal in the portal for "Online Submission & Monitoring of Forest and Wildlife Clearance Proposals" over 383.607 ha. (FP/OR/MIN/9739/2015 dated 18.02.2015) and the same is presently under compliance.

Now MoEF&CC, Govt. of India, New Delhi has directed to submit diversion proposal over the Sabik Land falling within the lease hold as on 25.10.1980 vide F. No. 8-78/1996-FC (pt.) dated 10.03.2015 & F. No. 8-78/1996-FC (pt.) dated 09.03.2016 and accordingly this proposal is submitted and accordingly we are applying for diversion over 38.441 ha. Of forest land as per Sabik records (as on 25.10.1980) falling within the lease hold of Khondbond Iron & Manganese Mine.

As can be seen from the Geological Plan (Plate No. -V), the iron and manganese ore bodies occur in the major portion of the forest areas. All the iron ore zones have varying degrees of lateritisation, which constitutes the overburden material. The iron ore occurring in this mine is mainly of two types, the hard and massive variety (also known as sponge grade iron ore) and the friable / flaky variety. The hard and massive variety of iron ore is supplied to Steel Plant of the company at Jamshedpur, Kalinganagar, TATA Sponge Iron Ltd., a group company for making sponge iron, Tata Metaliks, Tayo. The iron ore not conforming to the sponge grade is utilized in our Steel Plants. The proved iron ore reserves in the lease constitute 64.69 million tonnes, probable iron ore reserves 96.99 million tonnes

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TATA STEEL LIMITED  
BY THEIR CONSTITUTED ATTORNEY

*MCT Thomas*

and remaining iron ore resources 48.18 million tonnes ( as on 01.04.2016) in the forest land. The iron ore is processed and finished iron ore products in form of lumps and fines is primarily used for steel making in company's steel plants.

The manganese ore bodies occur almost entirely in the forest areas as scattered, patchy and in detached lenses with concentration in the north-western part of the lease. The proved manganese ore reserves in the lease constitute about 5.17 lakh tonnes and remaining resources of manganese ore 3.76 lakh tonnes as on 01.04.2016.

Company in order to have scientific and environment friendly mining the land use is judiciously planned where the requirement of land is optimized by progressive land usage. Accordingly, the mined out pits are backfilled with OB/ slimes and dumps are used for infrastructure like building/ workshop and related other usage.

#### **Status of Statutory Clearances:**

The Company submits that it has all other statutory clearances in respect of its Khondbond Iron & Manganese Mine which are set out hereunder:

- a) Environment Clearance granted vide Ref. No. J-11015/888/2007-IA.II (M), Dt. 21.12.2011 for 1.00 MTPA (ROM) of Manganese Ore and 8.00 MTPA (ROM) of Iron Ore.
- b) Consent to Operate granted vide Ref No. 4814/IND-I-CON-1127, Dt.18.03.2016 & valid up to 31.03.2017.
- c) Mining Plan/Scheme approved vide No. 314(3)/2012-MCCM (CZ)/MS-51, Nagpur dt.19.06.2013.
- d) Forest Clearance (Stage-II) over 543.150 ha already obtained from MoEF, Govt. of India vide letter No. 8-98/2004-F.C, dated 09.08.2006.

#### **GEOLOGY:**

##### **a) Regional Geology with Reference to Location of Lease Area.**

Khondbond iron and manganese deposit lies in the western portion of Singhbhum-Odisha craton. The Iron Ore Group (IOG) surrounds the batholithic complex and consists of low-grade meta-sediments, acid-intermediate and mafic volcanics and sills. The IOG rocks are exposed in three major basins around the Singhbhum granite batholith (Saha et. al., 1988).

The eastern basin extends from south of Jamshedpur through Gorumahisani-Badampahar and extends southward up to near Nausahi. The southern basin lies between Daitari - Tomka, while the northern-western basin is represented by the western Singhbhum- Bonai-Keonjhar Iron Ore basin which extends for about 100km in length and 20 to 30km width in NNE-SSW direction from Chakradharpur to south of Koira. The iron ore deposits of Noamundi, Katamati, Joda, Khondbond are located in this basin along with many other good quality iron ore deposits of varying dimensions.

The generalised chronostratigraphic succession of Singhbhum-Orissa iron ore craton after Saha et. al., 1988.

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Newer Dolerite dykes & Sills	C1600 - 950 Ma
Mayurbhanj Granite	C.2000-21000 Ma
Gabbro - anorthosite -ultrabasics	

~~~~~Un-conformity~~~~~

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Once forest clearance is obtained over balance forest land, necessary exploration would be conducted in the forest land to augment the reserve and resource figures.

### MINING:

The Khondbond Lease has been obtained for exploitation of both iron and manganese ores. The salient features of both iron and manganese mining have been given below:

#### **A) Iron ore mining :**

The iron ore bodies in this mine occur as patches in majority of the area within the lease. Almost all the major iron ore bodies within the proposed area falls within the R.F., K.F. and non-forest government land treated as forest land as per DLC report. The present rate of Iron ore production from this mine is about 3 MTPA per annum. In coming years the rate of production of iron ore from Khondbond will be about 8.0 MTPA of RoM.

In coming years, mine is poised for an expansion to meet the increased requirement of Company's Steel Plants at Jamshedpur & Kalinganagar, M/s Tata Sponge Iron Limited, M/s Tata Metalliks Limited, M/s Tayo Limited and Ferro Alloy Plants. The capacity of mine will increase upto 6.0 MTPA for iron ore finished products and 0.85 MTPA of Managese ore finished product (or 8.0 MTPA of Iron Ore ROM & 1.00 MTPA of Manganese Ore (ROM)). The major expansion activities will involve expansion of mining operations in new ore zones, commissioning of a new beneficiation plant & logistics facilities, development of access route, construction of slime dam and long distance overland conveyor system (OLCS) for transportation of finished products from Khondbond to Joda.

The iron ore deposits of the lease have been explored extensively by core drilling within permitted area. Based on the exploratory drilling data, the extent of the ore body has been interpreted in lateral as well as vertical direction and it has been found that iron ore bodies of Khondbond are patchy in nature. Different ore zones are separated by waste patches, as well as ore bodies itself comprises intercalated rejects and wastes. It has been also envisaged that to obtain consistent quality of Run-of-Mine to process plant, iron ore to beneficiation plant will be supplied from the different mining pits having different quality of iron ore. Therefore, multi pit mining is essential, which will require expansion of mining operation into fresh areas. The proposed expansion of 8.0 MTPA of Iron ore ROM can sustain for few years only within approved forest area. Therefore simultaneous development of new area is essential to maintain level of production. As, iron ore zones at Khondbond are mostly located within forest land only, the proposed expansion of mining operation into new area will require forest clearances.

The area for mining essentially includes the ancillary activities required to carry out safe and scientific mining operation i.e illumination through electric line including high mast towers, water pipe line for stationary water sprinkling system, in-pit crushing and screening plants, temporary rest shelters/ blasting shelters, garland drains, mine haulage road etc. The above structures/ facilities are mostly of temporary nature and keep on changing its location as the mining faces advances.

#### **B) Manganese Ore Mining:**

At present, the manganese mining operation is concentrated only within broken up forest area. These manganese pits are being operated since decades and these pits have come to depletion. Therefore to sustain manganese mining operation it is essential that exploration as well as mining is carried out in new areas. As, the entire manganese ore reserves falls in the forest area there is no other way to sustain manganese ore mining without obtaining forest clearance.

At present manganese ore mining from Khondbond is carried out at a small scale ( 50,000 TPA) but in coming years it has been proposed to excavate about 1.0 LTPA manganese ore ROM form Khondbond.

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This expansion is required to meet increased demand of manganese at our Ferro Alloy plants and Steel Plants.

Company in order to have scientific and environment friendly mining the land use is judiciously planned where the requirement of land is optimized by progressive land usage. Accordingly, the mined out pits are backfilled with OB/ slimes and dumps are used for infrastructure like building/ workshop and related other usage.

Due to space constraints, it has been planned in such a way that once mineable reserves are exhausted from the pits, the pit shall be reclaimed through backfilling of overburden ore by storage of tailings generated from the beneficiation plant to optimize the land use.

#### **DUMPING OVERBURDEN/ TAILING:**

##### **A) Iron Section:**

As iron ore bodies at Khondbond are located in discontinuous form, mining operation will be complex and huge quantity of waste and rejects will be generated. In general, for iron ore mining stripping ratio will be about 1(ore):0.82(OB), which will require large area for OB dumping. Therefore, it can be well appreciated that large quantity of overburden will have to be handled. Since, the iron ore bodies are scattered, it is proposed to have dumping area, which are close to a group of iron ore bodies. Furthermore, all the dumping areas are planned in non-mineralized zones. The dumping area shall primarily cater to the storage of overburden during the developmental and production stages of the iron ore bodies. However, area for overburden dumping is required only for initial period thereafter method of mining and concurrent back filling will be adopted. Therefore, as soon as the reserves of any mineralized zone are exhausted, the OB excavation from the other ore zones shall be dumped in the mined out area. Also, some at some places the mining out pits shall also be utilized for storage of Slime. The above areas shall be further reclaimed through plantation on exhaust of its capacity.

A major portion of the iron bodies lies in the forest area. The non-forest land available within the proposed lease area constitutes only 14% and is mostly utilized for mining and infrastructure facilities in non-mineralized area.

##### **(B) Manganese Section:**

The development of pits consists of working 6 meter high benches in overburden. The present ore to overburden ratio is on an average of 1(ton Mn): 2.81 (Cum OB). However, the ore to overburden ratio will further increase on account of increased depth of excavation. The overburden and other rejects will be removed and stacked separately. As explained earlier for manganese ore, we require fresh dumping area for initial period only and thereafter method of mining and concurrent backfilling will be adopted. At some placed due to space constraints, earlier dumps would be rehandled and mining would be done.

As can be in the Table below for the proposed land use as on 31.03.2020, 31.03.2025 & 31.03.2030, the area after getting utilized by mining would be utilized for dumping of overburden or storage of slime/ storage of mineral, subgrade etc. in subsequent period.

#### **STORING MINERAL / ORE, SUB-GRADE AND TOP SOIL ETC.:**

The excavated iron ore (ROM) is required to be processed by crushing and screening in stages. Storing of mineral / ore is essential to ensure continuous supply of finished iron ore products and manganese ore to Ferro Alloys Plant and Steel Plants. The area for storing of mineral needs to be located in close proximity of the mining face and the Ore processing Plant. Further, for the mineral conservation and to adhere to IBM guidelines, separate designated places have been identified for

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storage of ore and sub-grade ore. Similarly, top soil to be stored at designated places for its future use in the reclamation activities.

#### **STORING TOOLS, MACHINERIES & PLANT ETC.:**

Already 3.900 ha. of broken Forest land utilised for storing Tools, Machineries & Plant. In future with installation of Crushing, Washing and beneficiation plant the total requirement is going to increase to 21.440 ha. We are proposing to use Sabik forest of 2.15 ha. In future for this purpose.

#### **CONSTRUCTION OF BUILDING ,POWER STATION WORKSHOP, STORE ETC:**

The requirement of Mine Offices, Canteen, Repair Sheds, workshop, Power Station, Stores etc. is associated with any mechanized mining activity and the beneficiation process. The land required for this purpose comprises of 2.920 ha. of forest land and 26.105 ha. of non-forest land. Also it may be noted that the Mine Offices, Canteen & Repair Sheds needs to be centrally located for effective Mine management. Hence, an additional area of 2.92 ha. of forest land has been proposed for diversion earlier in a separate proposal. In addition to that we will be requiring 3.856 ha. Sabik Forest also up in future.

#### **TOWNSHIP/ HOUSING COLONY**

The residential colony of Khondbond is in Joda West & Joda town area. In this proposal there is a provision of 1.00 ha has been kept as requirement for Temporary labour shed etc. under the heading of Township /Housing Colony.

#### **CONSTRUCTION OF ROAD, ROPEWAY, CONVEYOR, PIPE LINE, POWER LINE AND RLY LINE ETC.:**

The road network excluding the mine haulage road (which is exclusively part of mining activity) need to be laid in the mining lease for safe transportation of men and material. Further, it is proposed to install Overland Conveyor System (OLCS) from the Beneficiation Plant at Khondbond to Joda East mines of the company. Part of the Conveyor system would pass through the Khondbond mining lease. There would also be provision of pipe line to covey water and slurry along the side of the road. Taking all above requirements into consideration, and with the facts that major portion the ore bodies are located in the forestland, an additional forest area of 7.171 ha. has been requested in a separate proposal on account of haul roads up to FY30. In addition to that an area of 1.837 ha. over Sabik forest would be required for this purpose upto FY'30.

#### **MAGAZINE**

Previously no area was earmarked for Magazine in Broken-up forest area. However, considering the increase in production of iron and manganese ore and for safe handling of explosives as per Government Directives, we have kept a provision of 0.380 ha. of non-forest land for Magazine.

#### **SAFETY ZONE**

We have an area of 14.362 ha. as Safety Zone over the Forest area over 836. 757 ha but now as the Sabik forest area of 37.441 ha has been included for Forest Diversion, an additional area of 1.837 has been earmarked for Safety Zone. So, in total 15.374 ha shall be maintained as Safety Zone.

#### **QUALITY CONTROL:**

On the basis of information obtained from the exploratory drill holes it has been established that quality of Manganese ore varies widely in respect of Manganese, Iron, Silica, Allumina and Phos content. In order to supply required quality and quantity of ore to Steel Plants & ferro alloys plant of

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the Company, it is required to operate a number of pits in different parts of lease-hold areas to match the required grade through blending and beneficiation.

### **COST BENEFIT**

The manganese ore produced from the mine is used as a feed to FAP along with manganese ores from the other leaseholds. The requirement of ferro manganese grade ore ROM is 1.0 LTPA. Similarly Iron ore produced is used in Company's Steel Plant. In addition, low-grade ore Manganese Ore is utilised in the Steel Plant at Jamshedpur, Kalinganagar, Tata Sponge Limited, Tayo Limited, Tata Metaliks for steel making. The Khondbond Iron & Manganese ore is an important raw material for Ferro Alloys and Steel, thus adding value to the natural resource and earning the much-needed increased revenues.

The direct employment potential at Khondbond is approx. 400 with the proposed expansion. Furthermore, there will be indirect employment of approx. 600 by way of contract labour for transportation of manganese ore to FAP, Joda as well as low grade manganese ore and sponge grade Iron Ore to TATA Sponge Iron plant, and iron ore to siding at Joda.

The project will benefit most of the local Tribal Community by way of direct and indirect employment. The local tribals constituting 80% of the population in the vicinity of the mining area will also be benefited due to infra-structural development of the area, and through the on-going rural development schemes of Tata Steel Rural Development Society. Thus the benefit to the community and economy arising out of this project is quite appreciable.

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**LAND USE PATTERN OF ALREADY APPROVED AREA (453.150 Ha), APPLIED FOR DIVERSION (383.607 Ha) &  
NOW APPLIED FOR SABIK FOREST LAND (38.441 Ha) TILL 31.03.2020 (Ref. Plate-IV-A)**

| Sl. No. | Purpose                                                                          | APPROVED FOREST AREA (453.150 Ha) |        |         |         | APPLIED FOREST AREA (383.607 Ha.) |       |      | SABIK FOREST LAND USE PATTERN (38.453ha.) | TOTAL   | NON-FOREST (102.802 ha.) | GRAND TOTAL |
|---------|----------------------------------------------------------------------------------|-----------------------------------|--------|---------|---------|-----------------------------------|-------|------|-------------------------------------------|---------|--------------------------|-------------|
|         |                                                                                  | RF                                | KF     | DLC     | Total   | RF                                | KF    | DLC  |                                           |         |                          |             |
| A)      | Mining #                                                                         | 138.198                           | 4.050  | 52.348  | 194.596 | 37.185                            | 0.765 | --   | 4.6                                       | 42.55   | 20.433                   | 257.579     |
| B)      | Storing Mineral / Ore, sub-grade and top soil etc. *                             | 38.370                            | 2.486  | 37.760  | 78.616  | 14.516                            | -     | --   | 9.596                                     | 24.112  | 13.009                   | 115.737     |
| C)      | Dumping of Over Burden / slime dam etc.                                          | 72.412                            | 13.528 | 4.535   | 90.475  | 8.411                             | --    | --   | 3.675                                     | 12.086  | 6.666                    | 109.227     |
| D)      | Storing Tools, Machineries & plant etc. %%                                       | 8.830                             | 8.490  | 1.970   | 19.290  | --                                | --    | --   | 2.69                                      | 2.69    | 0                        | 21.98       |
| E)      | Construction of Building, Power Station, Workshop, store etc                     | 5.670                             | 8.394  | 1.330   | 15.394  | 2.920                             | --    | --   | 0.09                                      | 3.01    | 0.207                    | 18.611      |
| F)      | Township, Housing Colony etc.                                                    | --                                | 1.000  | --      | 1.000   | --                                | --    | --   | --                                        | 0       | 0                        | 1           |
| G)      | Construction of Road, Ropeway, conveyor, pipe line, power line and Rly Line etc. | 27.360                            | 3.280  | 3.180   | 33.820  | 7.171                             | --    | --   | 1.837                                     | 9.008   | 3.403                    | 46.231      |
| H)      | Magazine                                                                         | --                                | --     | --      | 0.000   | --                                | --    | --   | --                                        | 0       | 0.380                    | 0.38        |
| I)      | Safety zone                                                                      |                                   |        |         | 0.000   | 11.745                            | 0.257 | 2.36 | 1.012                                     | 15.374  | 0                        | 15.374      |
| J)      | Un-utilised area                                                                 | 11.12                             | 2.052  | 6.787   | 19.959  | 298.277                           | --    | --   | 14.941                                    | 313.218 | 58.704                   | 391.881     |
|         | <b>TOTAL</b>                                                                     | 301.960                           | 43.280 | 107.910 | 453.15  | 380.225                           | 1.022 | 2.36 | 38.441                                    | 422.048 | 102.802                  | 978.000     |

Note: #: Part of the area where mining was done would be utilized for storage of slime/ over burden dumping.

Part of OB dumps in Mn would be rehandled for mining

\*: Part of the area where mining was done would be utilized for storage of mineral/ sub grade ore

%%: Part of the area where mining was done would be utilized for Storing Tools, Machineries & plant etc

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*M. C. Thomas*

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**LAND USE PATTERN OF ALREADY APPROVED AREA (453.150 Ha), APPLIED FOR DIVERSION (383.607 Ha) &  
NOW APPLIED FOR SABIK FOREST LAND (38.441 Ha) TILL 31.03.2025 (Ref. Plate - IV-B)**

| Sl. No. | Purpose                                                                          | APPROVED FOREST AREA<br>(453.150 Ha.) |        |         |         | APPLIED FOREST AREA<br>(383.607 Ha.) |       |      | SABIK FOREST<br>LAND USE<br>PATTERN<br>(38.453 ha.) | TOTAL   | NON-FOREST<br>(102.802ha.) | GRAND<br>TOTAL |
|---------|----------------------------------------------------------------------------------|---------------------------------------|--------|---------|---------|--------------------------------------|-------|------|-----------------------------------------------------|---------|----------------------------|----------------|
|         |                                                                                  | RF                                    | KF     | DLC     | Total   | RF                                   | KF    | DLC  |                                                     |         |                            |                |
| A)      | Mining #                                                                         | 132.614                               | 3.050  | 53.500  | 189.164 | 87.962                               | 0.765 | --   | 6.860                                               | 95.587  | 28.213                     | 312.964        |
| B)      | Storing Mineral / Ore, sub grade and top soil etc. *                             | 42.590                                | 5.920  | 24.040  | 72.55   | 14.516                               | -     | --   | 9.596                                               | 24.112  | 13.009                     | 109.671        |
| C)      | Dumping of Over Burden / slime dam etc. **                                       | 80.465                                | 16.580 | 17.103  | 114.148 | 24.804                               | --    | --   | 3.675                                               | 28.479  | 25.529                     | 168.156        |
| D)      | Storing Tools ,<br>Machineries & Plant etc.                                      | 8.830                                 | 8.490  | 1.970   | 19.290  | --                                   | --    | --   | 2.69                                                | 2.69    | 0                          | 21.98          |
| E)      | Construction of Building ,Power Station Workshop, store etc                      | 5.670                                 | 4.960  | 1.330   | 11.960  | 2.920                                | --    | --   | 0.123                                               | 3.043   | 11.221                     | 26.224         |
| F)      | Township Housing Colony                                                          | --                                    | 1.000  | --      | 1.000   | --                                   | --    | --   | --                                                  | 0       | 0                          | 1              |
| G)      | Construction of Road, Ropeway, conveyor ,pipe line, power line and Rly Line etc. | 27.360                                | 3.280  | 3.180   | 33.820  | 7.171                                | --    | --   | 1.837                                               | 9.008   | 3.403                      | 46.231         |
| H)      | Magazine                                                                         | --                                    | --     | --      | 0       | --                                   | --    | --   | --                                                  | 0       | 0.380                      | 0.38           |
| I)      | Safety zone                                                                      |                                       |        |         |         | 11.745                               | 0.257 | 2.36 | 1.012                                               | 15.374  | 0                          | 15.374         |
| J)      | Un-utilised area                                                                 | 4.431                                 | 0      | 6.787   | 11.218  | 231.107                              | --    | --   | 12.648                                              | 243.755 | 21.047                     | 276.02         |
|         | TOTAL                                                                            | 301.960                               | 43.280 | 107.910 | 453.15  | 380.225                              | 1.022 | 2.36 | 38.441                                              | 422.048 | 102.802                    | 978.000        |

Note: #: Part of the area where mining was done would be utilized for storage of slime and sub-grade mineral stacking  
 \*: Part of the area where storage of mineral/ sub grade ore was done would be utilized for storage of slime & in some part for mining AND ON BEHALF OF  
 \*\*: In Manganesse area, one dump would be rehandled to backfill pit and mining to resume in the rehandled dump location.

**TATA STEEL LIMITED**

BY THEIR CONSTITUTED ATTORNEY

**McThomas**  
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**LAND USE PATTERN OF ALREADY APPROVED AREA (453.150 Ha), APPLIED FOR DIVERSION (383.607 Ha) &  
NOW APPLIED FOR SABIK FOREST LAND (38.441 Ha) TILL 31.03.2030 (Ref. Plate-IV-C)**

| Sl.No. | Purpose                                                                                   | APPROVED FOREST AREA<br>453.(150Ha.) |        |         |         | APPLIED FOREST<br>AREA(383.607 Ha.) |       |      | SABIK FOREST<br>LAND USE<br>PATTERN<br>(38.453 ha) | TOTAL   | NON-FOREST<br>(103.7 ha.) | GRAND<br>TOTAL |
|--------|-------------------------------------------------------------------------------------------|--------------------------------------|--------|---------|---------|-------------------------------------|-------|------|----------------------------------------------------|---------|---------------------------|----------------|
|        |                                                                                           | RF                                   | KF     | DLC     | Total   | RF                                  | KF    | DLC  |                                                    |         |                           |                |
| A)     | Mining #                                                                                  | 85.488                               | 5.768  | 62.452  | 153.708 | 232.804                             | 0     | --   | 18.739                                             | 251.543 | 49.26                     | 454.511        |
| B)     | Storing Mineral / Ore,<br>Subgrade and top soil<br>etc.*                                  | 54.459                               | 4.359  | 10.970  | 69.788  | 14.516                              | 0.765 | --   | 9.596                                              | 24.877  | 13.009                    | 107.674        |
| C)     | Dumping of Over Burden<br>/ slime dam.                                                    | 120.153                              | 15.423 | 28.008  | 163.584 | 111.069                             | --    | --   | 3.675                                              | 114.744 | 25.529                    | 303.857        |
| D)     | Storing Tools<br>,<br>Machineries & Plant etc.                                            | 8.830                                | 8.490  | 1.970   | 19.290  | --                                  | --    | --   | 2.69                                               | 2.69    | 0                         | 21.98          |
| E)     | Construction of Building<br>,Power<br>Station<br>Workshop, store etc                      | 5.670                                | 4.960  | 1.330   | 11.960  | 2.920                               | --    | --   | 0.123                                              | 3.043   | 11.221                    | 26.224         |
| F)     | Township<br>Colony<br>Housing                                                             | --                                   | 1.000  | --      | 1.000   | --                                  | --    | --   | --                                                 | 0       | 0                         | 1              |
| G)     | Construction of Road,<br>Ropeway, Conveyor ,Pipe<br>line, Power line and Rly<br>Line etc. | 27.360                               | 3.280  | 3.180   | 33.820  | 7.171                               | --    | --   | 1.837                                              | 9.008   | 3.403                     | 46.231         |
| H)     | Magazine                                                                                  | --                                   | --     | --      | 0       | --                                  | --    | --   | --                                                 | 0       | 0.380                     | 0.38           |
| I)     | Safety zone                                                                               | --                                   | --     | --      | --      | 11.745                              | 0.257 | 2.36 | 1.012                                              | 15.374  | 0                         | 15.374         |
| J)     | Un-utilised area                                                                          | --                                   | --     | --      | 0       | --                                  | --    | --   | 0.769                                              | 0.769   | 0                         | 0.769          |
| TOTAL  |                                                                                           | 301.960                              | 43.280 | 107.910 | 453.15  | 380.225                             | 1.022 | 2.36 | 38.441                                             | 422.048 | 102.802                   | 978.000        |

Note: #: Part of the area where mining was done would be utilized for storage of slime  
\*: Part of the area where storage of mineral/ sub grade ore was done would be utilized for mining

FOR AND ON BEHALF OF  
**TATA STEEL LIMITED**  
BY THEIR CONSTITUTED ATTORNEY

*MCT Thomas*  
M. C. THOMAS