



ANNEXURE-I (A)

**JUSTIFICATION  
FOR USE OF FOREST LAND AT TIRINGPAHAR IRON & MANGANESE LEASE  
IN THE DISTRICT OF KEONJHAR**

**INTRODUCTION**

The Mining lease for exploitation Iron & Manganese ore over an area of 643.710 ha comprising of three Blocks namely Guruda, Joruri & Tiringpahar under Barbil Tahasil of Keonjhar District was granted in favour of the Company by the Maharaja of Keonjhar for 30 years with effect from 1.3.1930 to 29.2.1960. The 1<sup>st</sup> renewal was for a period of 20 years i.e. from 1.03.1960 to 29.02.1980. The lease was renewed for the 2<sup>nd</sup> time by Govt. in Department of Mining & Geology's letter No. 2976/MG dt. 18.2.1982 for a further period of 20 years from 1.3.1980 to 29.2.2000. Tata Steel Limited had applied 3<sup>rd</sup> renewal vide RML No.699 dated 05.01.1999 for Tiringpahar Iron & Manganese lease ( Guruda Block) covering an area of 169.000 hectares confining to villages Guruda, Khandbondh, Palasa (Kha) and Jadibahal as per rule 24(A)(1) of Mineral Concession Rules-1960.

As per Orders of the Hon'ble Supreme Court dated 02.05.2014 in I.A. No. 3763 of 2014 and 16.05.2014 in Common Cause (supra), the Company was asked by Deputy Director of Mines, Joda to stop mining operations in the Tiringpahar Iron & Manganese mine and accordingly Company stopped mining operations & communicated the same to the Deputy Director of Mines vide letter No GM/OMQ/42/16-A, dated 17.05.2014. The Company thereafter kept following up with the State Government to issue its Express Orders under Section 8(3) of the MMDR Act, 1957.

Subsequently, the State Government vide letter No III(MN) SM-45/2006/ 3278/SM dated 18.04.2015 extended the validity period of Tiringpahar lease up to 31.03.2030 under section of 8A of the MMDR Amendment Act,2015.

Accordingly, Supplementary Lease Deed was executed on 08.05.2015 and registered on 08.05.2015 in respect of Tiringpahar Iron & Manganese lease. The Block wise details of original lease and applied reduced area is as follows:-

BLOCK	ORIGINAL LEASE AREA	APPLIED R.M.L. AREA
Tiringpahar	195.540 ha.	NIL
Guruda	374.050 ha	169.000 ha
Joruri	74. 120 ha.	NIL
Total Area	643.710 ha.	169.000 ha.



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

- a) Environment Clearance granted vide Ref. No. J-11015/87/2004-IA.II (M), Dt.19.11.2005 for 0.85 LTPA of Manganese Ore.
- b) Consent to Operate granted vide Ref No. 1482/IND-I-CON-190, Dt.19.01.2016 valid up to 31.03.2021.
- c) Mining Plan approved vide Ref. No. MS/OTFM/34-ORI/BHU/2014-15, Dt. 29.04.2015.
- d) Stage-II Forest Clearance granted vide Ref. No. 8-80/2004-FC dt 28.03.2007 over an area of 52.348 ha of forest land.

The location of Tiringpahar lease falls in Survey of India's Topo-sheet No. 73 G/5 (New Topo Sheet No. F45N5) with latitude 21° -54'-00" N to 21° -57'-00" N and longitude 85° -23'-00" E to 85° -25'-00" E.

The Company with its on-going expansion of its Steel making capacities envisages enhancing the Ferro manganese production capacity at its exiting Ferro Alloys Plant at Joda from 0.0504 MTPA to 0.060 MTPA, installing new silico manganese plant of 0.060 MTPA and one sinter plant of 0.050 MTPA within the existing plant at Joda. The Public hearing for the purpose has already been successfully completed on 12.11.2014 and presentation was made before EAC on 26.03.2015 and on 02.07.2015.

Further, company has proposal to acquire Silico Manganese (SiMn) capacities of 50000 TPA for greater value addition to the low grade and medium grade ore produced during the mining operation which otherwise has no other use.

The Project is situated under Joda Forest Section, Champua Forest Range of Keonjhar Forest Division, in the State of Orissa. The lease area is coming under Khesara Forest, DLC Land, Non-forest land recorded as forest as on 25.10.1980, as well as Government Non-Forest Land and tenanted land.

Manganese and Iron Ore bodies in this Tiringpahar lease occur as scattered, patchy and detached lenses. At present mining operation is carried out for manganese ore only. The quality of Manganese ore varies widely. As can be seen from the Geological Plan (**Plate-V**), Manganese and iron ore bodies occur mostly in forest areas. The high grade Manganese ore will be supplied to the Company's Ferro Alloys Plant at Joda and medium as well as low grade ore will be supplied to our conversion agents and other Ferro Alloys Producers. Iron Ore will be supplied to steel plants of the Company. The lease has been obtained for both manganese and iron ore for primarily supplying to Company's Plants.

This mine is one of the major source of supply of high grade Manganese Ore for use in our Ferro Manganese Plant at Joda and also it caters to the requirements of low grade Manganese Ore for Jamshedpur Works and other Ferro Alloys Plants. There is a proposal for expansion of this Plant for increased production. We are also producing other value added Ferro Alloy products by having conversion arrangements with other plants. Within the lease area of 169.000 ha, the forest land constitutes 133.174 ha (10.392ha KF + 58.522 ha DLC non- forest Govt. land termed as forest land as per DLC report+ 64.260 ha of non-forest land recorded as forest Government records as on 25.10.1980) and 35.826 ha of non-forest land. The MoEF, Govt of India under Stage-II Clearance granted approval for diversion of 52.348 ha forest area (including 11.650 ha. Broken up prior to 1980) & 1.958 ha. of Forest land approved for Safety Zone vide letter no. **F.No.8-80/2004-FC dated 28<sup>th</sup>, March'2007.**



As per Stage-I approval of MoEF vide letter No **8-80/2004-FC dated 26.05.2005** and subsequently, the Company had deposited the following forest dues:

1. Cost of compensatory afforestation	Rs 14,93,000
2. Infrastructural facilities	Rs 7,50,000
3. Protection of Safety Zone	Rs 60,900
4. Afforestation over 1.5 times of Safety Zone	Rs 1,13,700
5. NPV ( Including Sabik Forest)	Rs 96283480
6. Wild life protection	Rs 72,67000
<b>Grand Total:</b>	<b>Rs 10.59 Crores</b>

Company has subsequently, submitted a proposal for diversion of 13.798 ha of forest land and it was returned for online submission for the entire forest land. (**State SI No 431/10 dt 27.10.2010**).

**As such the present diversion proposal is being filed for 80.826 ha i.e 16.566 ha of balance forest land and 64.260 ha of Non-forest land recorded as forest in government records as on 25.10.1980. In this diversion proposal 3.916 ha has been left out for Safety Zone and 1.129 ha for green belt.**

On our application, the Collector Keonjhar's letter No 2173/Rev dated 26.09.2015 allotted of 13.789 ha of Govt. Non-forest land for Compensatory Afforestation i.e. for the area required to be diverted excluding the safety zone and for the area of 64.260 ha of Non-forest land recorded as forest as on 25.10.1980, the Collector, Dhenkanal has allotted the CA land vide letter No.II-53/16/1185 dated 20.07.2016.

The area has been prospected by Geology Department of Steel Company in original and subsequent renewed terms of the lease since the year 1933 through Geological mappings, pitting and trenching, core-drilling and exploratory mining to prove the nature, extent and quality of Manganese ores and indications of iron ore available. The Scheme of Mining for the period 2015-20 has also been duly approved by IBM vide letter no. vide Ref. No. MS/OTFM/34-ORI/BHU/2014-15, Dt. 29.04.2015.

#### **Regional Geology:**

The rock formation of the area belongs to the Iron Group of Upper Dharwar Age. In south Singhbhum, Keonjhar and Bonai Districts, Manganese Ore deposits are associated with Shale, Laterite, Chert and Quartzite of Iron Ore Group and distributed within the horse- shaped synclinorium plunging towards NNE and over folded towards south-east.

The position of Iron Ore Group and the rocks associated with it in the stratigraphical column is as follows:

SOUTH OF THE COPPER BELT  
SHEAR ZONE

NORTH OF THE COPPER BELT  
SHEAR ZONE

End of the Singhbhum Orogenic cycle (c. 850 Ma)



Newer Dolerite (c.1600-950 Ma)	Soda Granite, Granophyre, Chakradharpur Granite gneiss,
Kuilapal granite	
Mayurbhanj Granite (c.2000-2100 Ma)	Gabbro-Anorthosite, Ultramafic intrusions
Kolhan Group (C.2100 Ma)	
~~~~~Unconformity~~~~~	
Jagannathpur-Dhanjori- Similipal Dhanjori group of lava (c.2200Ma)	
Quartzite conglomerate	
~~~~~Unconformity~~~~~	
Chaibasa formation (c.23000 Ma)	Dalbhum formation Singhbhum Chaibasa formation Group
~~~~~Unconformity~~~~~	
Singhbhum granite (Phase-III.c.3000 Ma)	
Iron ore Orogeny Iron ore group (c. 3300 Ma)	
~~~~~Unconformity~~~~~	
Singhbhum Granite (Phase I&II.c.3300 Ma)	
Older metamorphic gneiss (Metamorphic age.c.3300 Ma)	
Older metamorphic Tonalite Gneiss (OMTG) (c.3800 Ma)	
Older metamorphic Gneiss (Metamorphic age (c 3800 Ma)	

(after Sarkar and Saha, 1977, 1983; Basu, Ray,Sarkar and Saha, 1981; Saha, Ray and Sarkar;1986 )

**Local Geology:**

Manganese in this area occurs as lenses & pockets and are associated principally with shale & occasionally with quartzites of Iron Ore Series of Upper Dharwar age. These rocks usually rich in Iron & Manganese , on being acted upon by meteoric waters , have given rise to large and small segregated masses of manganese ore by process of leaching , replacement and concentration in the zone of oxidation.

Different rock types found are

- Soil with floats of Iron & Manganese ore, Laterites & Quartzites
- Laterite & Lateritic murrum, manganiferous at places
- Iron ore
- Manganese ore
- Cherty & Jaspery Quartzite
- Shale

**Reserves:** The reserve (only proved and probable) of Manganese within lease hold area as on 01.04.2016 is 0.730 million tonnes.

By geological investigations the mineralized and non-mineralized area has been separated out whose details are given below. :



**BREAK UP OF TIRINGPAHAR LEASE HOLD AREA (MINERALISED/NON MINERALISED).**

TYPE OF AREA	DESCRIPTION	FOREST AREA (ha)	NON-FOREST AREA (ha)	TOTAL (ha)
Mineralized Area	Manganese Ore & Iron Ore	49.470	6.460	55.930
Non Mineralized Area	Ancillary activities & community purpose land, Safety Zone & Green belt	83.704	29.366	113.070
<b>TOTAL</b>		<b>133.174</b>	<b>35.826</b>	<b>169.000</b>

**MINING:**

The Tiringpahar Iron & Manganese Lease has been obtained for exploitation of both manganese and iron ores. The entire manganese and iron ore reserves as well as the working pits fall in the forest area.

Since the ore occurrence is near to the surface, opencast method of mining will continue. Although the excavation is mechanized with shovel-dumper combination the further processing of manganese ore is done manually due to its soft nature and high variability of grades in insitu lenses/ pockets. The occurrence of iron ore is adjacent to the manganese pockets; the mining for iron ore shall be incidental to the manganese ore production and hence the method of mining of iron ore shall be same as that of manganese.

To keep the Plants running profitably and to safeguard direct & indirect employment of 1550 employees 85000 Mt/ annum of manganese ore will be required to be supplied from this mine.

It will be necessary to open up and have more number of new production faces in order to meet the production demand. It shall no longer be possible to meet and sustain the entire production from the present major working pits and it will be necessary to exploit the other ore bearing zones.

The table below indicates requirement of fresh forest and Non-forest land for mining and ancillary activities.

Land Use Pattern	Future Requirement (in Ha)							
	RF	KF	DLC	Broken up NF Land Recorded as Forest as on 25.10.1980	NF Land Recorded as Forest as on 25.10.1980	Total	NF	Grand Total
1 Mining	0.000	7.068	1.946	20.382	9.946	39.342	5.436	44.778
2 Storing Mineral/Ore	0.000	0.000	0.000	1.820	8.061	9.881	0.000	9.881
3 Dumping of OB	0.000	0.000	4.475	4.408	16.719	25.602	5.567	31.169
4 Construction of Building (Incl. Magazine)	0.000	0.000	0.000	0.406	0.000	0.406	4.658	5.064
5 Township/Colony	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6 Road/ Conv. Corridor/Power transmission Line/ water pipe line etc.	0.000	0.000	0.180	0.370	0.000	0.550	0.208	0.758
7 Safety Zone	0.000	0.234	0.576	0.000	1.148	1.958	0.630	2.588
8 Green Belt	0.000	0.000	0.129	0.000	1.000	1.129	0.502	1.631
9 Approved Safety zone	0.000	0.308	1.650	0.000	0.000	1.958	0.000	1.958
Grand Total	0.000	7.610	8.956	27.386	36.874	80.826	17.001	97.827



*Thus the forest area of 39.342 ha has been proposed for mining which is the minimum requirement, the said area includes virgin forest area 7.068 ha of Khesera Forest, 1.946 ha of DLC forest, 9.946 ha of Non-forest land recorded as forest as on 25.10.1980 and 20.382 ha of broken up Non-forest land recorded as forest as on 25.10.1980.*

#### **DUMPING OVERBURDEN**

The manganese ore deposit within the lease area is entirely pockety type for which huge overburden excavation is require. The pit development will carried out with stripping ratio of 1: 13.7 (T: CuM) by which ~100 lakh cum of overburden will be generated. Overburden will be dumped over the non-mineralized area. Concurrent back filling will also be undertaken once the pit is exhausted. Considering these aspects, additional 25.731 ha of forest land is required for disposal of over burden.

*Thus the forest area of 25.602 ha has been proposed for dumping of overdurden which is the minimum requirement, the said area includes virgin forest area 4.475 ha of DLC forest, 16.719 ha of Non-forest land recorded as forest as on 25.10.1980 and 4.408 ha of broken up Non-forest land recorded as forest as on 25.10.1980.*

#### **STORING MINERAL/ORE**

The excavated ore (ROM) will be required to be processed by dressing, sorting and screening. Essentially this area besides storing the ore is also used for dressing and sorting the various grades of the excavated mineral (ROM ore) manually. The processed ore is required to be stacked grade wise in a geometrical shape for correct estimation of the production quantity and quality. These stacks are required to be not more than 1m in height and 250 tonnes in quantity for accurate estimation of the quantity & quality for the purpose of payment of correct royalty to the State Government. The analyzed ore is inspected by the State Govt. authorities before the same is permitted to be dispatched / transported. Thus storing of mineral/ore is very much essential and the same has to be located suitably close to the working quarries so as to avoid chances of theft and pilferage. With new working pits to be taken up for mining in future, more areas adjacent to such pits shall therefore be essential.

*Thus the forest area of 9.881 ha has been proposed for storing of mineral/ore, the said area includes virgin area of 8.061ha of Non-forest land recorded as forest as on 25.10.1980 and 1.820 ha of broken up Non-forest land recorded as forest as on 25.10.1980.*

#### **CONSTRUCTION OF BUILDING / WORKSHOP**

As a major portion of Non-forest land has been found to recorded as forest in Government records as on 25.10.1980, an area of 0.406 ha within such land has already been used for the purpose of construction of building and the said broken up area is proposed for diversion for construction of building. Further, as new mining pits are to be developed, the requirement for setting up of Rest shelter, Pit Offices, Canteen and Repair Shed, would be catered from the said broken up area and no fresh forest area is proposed for diversion for construction of building. Thus the broken-up forest land over 0.406 ha has been proposed to be used for construction of building (including Magazine).

**Thus an area of 0.406 ha of Non-forest land recorded as forest as on 25.10.1980, which has been broken-up for the said purpose has been proposed for construction of building (including Magazine).**



**CONSTRUCTION OF ROAD, ROPEWAY, CONVEYOR CORRIDOR AND POWER TRANSMISSION LINE ETC.**

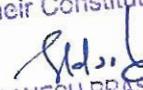
An area of 1.600 ha of DLC forest land and 1.808 ha of non-forest land have already broken up/ utilized for the purpose of construction of road, ropeway etc. Proper haulage roads will have to be laid in the mining area as well as in other infra-structural areas for free and easy movement of heavy earth moving and other mining equipment, hence an area of 0.550 has been propose to be utilized for the aforesaid purpose.

***Thus the forest area of 0.550 ha has been proposed for construction of road etc., which is the minimum requirement, the said area includes virgin forest area 0.180 ha of DLC forest and 0.370 ha of broken up Non-forest land recorded as forest as on 25.10.1980.***

**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 FAP, Joda whose requirement is around 5,00,000 MT of high grade ore per annum with an average Mn.:Fe ratio maintained of 5.3:1 . The Company with its on-going expansion of its Steel making capacities envisages enhancing the Ferro manganese production capacity at its exiting Ferro Alloys Plant at Joda from 0.0504 MTPA to 0.060 MTPA, installing new silico manganese plant of 0.060 MTPA and one sinter plant of 0.050 MTPA within the existing plant at Joda. The low grade and medium grade manganese ore and the fines shall be utilized in SiMn making. The company will be required to operate more number of pits and new mining faces in the lease-holds including this lease. The recovery of Ferro-manganese grades ores in the ROM in this belt is low requiring total excavation at high rate. Iron ore occurring in this lease if found suitable for Sponge Iron making, will be produced and supplied to Tata Sponge Iron Plant. The iron ore not conforming to sponge grades will be supplied to Steel Works, for production of Steel and other industries.

**In this proposal 80.826 ha of forest land including 64.260 ha of Non-Forest land recorded as forest in the Government Records as on 25.10.1980 has been asked for diversion.**

FOR TATA STEEL LTD.  
By their Constituted Attorney  
  
(GANESH PRASAD SAHU)  
Head (Ferro Alloys Production)  
Ferro Alloys & Minerals Division



**Proposal For Diversion Of Forest Land of 80.826 ha in respect of Tiringpahar Iron Manganese Mine Lease Of Tata Steel Limited at Joda in Keonjhar District of Odisha State**  
**Annexure- I(A)**

**LAND USE PATTERN OF ALREADY APPROVED AREA, APPLIED FOR DIVERSION & NOW FUTURE REQUIREMENT OF FOREST LAND (AREA IN HECTS.) TILL END OF LIFE OF MINE (Ref. Plate - IV)**

Land Use Pattern	Approved Diverted Forest Land in (Ha) & Broken-up Non-forest land recorded as forest as on 25.10.1980.						Future Requirement as on 31.03.2030								
	R.F.	K.F.	DLC	Total Forest	Broken NF land recorded as Forest as on 25.10.80.	NF Land	Total	R.F.	K.F.	DLC	Total Forest	NF land recorded as Forest as on 25.10.80.	NF land	Total	Grand Total
Mining (quarry, Float ore)	0.000	2.782	33.770	36.552	20.382	4.865	61.799	0.000	7.068	1.946	9.014	9.946	5.436	24.396	86.195
Storing Mineral/ore	0.000	0.000	4.560	4.560	1.820	4.332	10.712	0.000	0.000	0.000	0.000	8.061	0.000	8.061	18.773
Dumping of Over Burden	0.000	0.000	9.636	9.636	4.408	5.323	19.367	0.000	0.000	4.475	4.475	16.719	5.567	26.761	46.128
Storing Tools & Machinery	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Construction of Building	0.000	0.000	0.000	0.000	0.406	0.140	0.546	0.000	0.000	0.000	0.000	0.000	4.658	4.658	5.204
Township Colony	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mines Road	0.000	0.000	1.600	1.600	0.370	1.808	3.778	0.000	0.000	0.180	0.180	0.000	0.208	0.388	4.166
<b>Sub-Total</b>	<b>0.000</b>	<b>2.782</b>	<b>49.566</b>	<b>52.348</b>	<b>27.386</b>	<b>16.468</b>	<b>96.202</b>	<b>0.000</b>	<b>7.068</b>	<b>6.601</b>	<b>13.669</b>	<b>34.726</b>	<b>15.869</b>	<b>64.264</b>	<b>160.466</b>
Green Belt	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.129	0.129	1.000	0.502	1.631	1.631
Safety Zone	0.000	0.308	1.650	1.958	0.000	2.357	4.315	0.000	0.234	0.576	0.810	1.148	0.630	2.588	6.903
<b>G.Total</b>	<b>0.000</b>	<b>3.090</b>	<b>51.216</b>	<b>54.306</b>	<b>27.386</b>	<b>18.825</b>	<b>100.517</b>	<b>0.000</b>	<b>7.302</b>	<b>7.306</b>	<b>14.608</b>	<b>36.874</b>	<b>17.001</b>	<b>68.483</b>	<b>169.000</b>

**FOR TATA STEEL LTD.**

By their Constituted Attorney

*(Signature)*

(GANESH PRASAD SAHU)

Head (Ferro Alloys Production)



Proposal For Diversion Of Forest Land of 80.826 ha in respect of Tiringpahar Iron Manganese Mine Lease Of Tata Steel Limited at Joda in Keonjhar District of Odisha State  
Annexure- I(A)

ABSTRACT OF LAND USE PATTERN OF TIRINGPAHAR IRON & MANGANESE MINE LEASE (AREA IN HECTS.)

Land Use Pattern	Future Requirement (in Ha)								
	RF	KF	DLC	Broken up NF Land Recorded as Forest as on 25.10.1980	NF Land Recorded as Forest as on 25.10.1980	Total	NF	Grand Total	
1 Mining	0.000	7.068	1.946	20.382	9.946	39.342	5.436	44.778	
2 Storing Mineral/Ore	0.000	0.000		1.820	8.061	9.881	0.000	9.881	
3 Dumping of OB	0.000	0.000	4.475	4.408	16.719	25.602	5.567	31.169	
4 Construction of Building (Incl. Magazine)	0.000	0.000	0.000	0.406	0.000	0.406	4.658	5.064	
5 Township/Colony	0.000	0.000	0.000		0.000	0.000	0.000	0.000	
6 Road/ Conv. Corridor/Power transmission Line/ water pipe line etc.	0.000	0.000	0.180	0.370	0.000	0.550	0.208	0.758	
7 Safety Zone	0.000	0.234	0.576	0.000	1.148	1.958	0.630	2.588	
8 Green Belt	0.000	0.000	0.129	0.000	1.000	1.129	0.502	1.631	
9 Approved Safety zone	0.000	0.308	1.650	0.000	0.000	1.958	0.000	1.958	
Grand Total	0.000	7.610	8.956	27.386	36.874	80.826	17.001	97.827	

TATA STEEL LTD.  
by their Constituted Attorney

Tiringpahar Iron & Manganese Mine, Joda

C1-9

(GANESH PRASAD SAHU)  
Head (Ferro Alloys Production)  
Ferro Alloys & Minerals Division