

PRE-FEASIBILITY REPORT
FOR
CAPACITY EXPANSION OF BAILADILA IRON ORE PROJECT,
DEPOSIT NO: 14/11C FROM 12 TO 20 MTPA OF M/S. NMDC
LIMITED AT KIRANDUL, SOUTH BASTAR DANTEWADA
DISTRICT, CHHATTISGARH.

Project Proponent :




NMDC Limited
Resource Planning Department
Regd office: 10-3-311/A, Khanij Bhawan, Castle Hills,
Masab Tank, Hyderabad. 500028.
Phone no: 040-23538776. Fax No: 040-23536760

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1.0 Executive Summary


S. No.	Particulars	Details
A.	Name of the Project	Bailadila Iron Ore Project, Deposit no: 14 & 11C, Kirandul of NMDC Limited.
1.	Production Capacity	Present production capacity: 12.00 Million tons per annum (MTPA) Run off Mine iron ore. Proposed capacity: Expansion of BIOP: Deposit-14/11C from 12.0 to 20.0 MTPA.
B.	Location Details	
2.	Village	Kirandul
3.	Tehsil	Kuakonda
4.	District	South Bastar Dantewada
5.	State	Chhattisgarh
6.	Coordinates	Geographical coordinates of the project area are given below: Deposit-14 M.L. area: 18°36'11.2022" to 18°37'34.6006" N 81°13'15.9460" to 81°14'44.6788" E Deposit-14 NMZ area: 18°36'44.0492" to 18°38'31.8650" N 81°13'54.6335" to 81°15'24.1185" E Deposit-11C Part area: 18°38'21.2316" N & 81°13'52.4290" E 18°38'36.6175" N & 81°14'23.5780" E
7.	Topo sheet No.	65F/2 & F/6 (old), E44J2 & J6 (New)
C.	Lease Area Details	
8.	Mining Lease area	935.522 Ha 1. Dep.14ML:322.368 Ha 2. Dep.11C 2.1 Dep.-14NMZ:506.742 Ha 2.2 Dep.-11C/11ML part:106.412 Ha
D	Extent of mechanization	
9	Proposed mechanization for capacity expansion	It is an existing fully mechanised iron ore mining project. The following additional works are envisaged in capacity expansion of Bailadila Deposit-14/11C from 12.0 to 20.0 MTPA.



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		<ul style="list-style-type: none">➤ Increasing number of HEM machinery.➤ New Crushing Plant and Downhill Conveyor System of 10 MTPA capacity each for Bailadila Deposit-14 and 11C Mines.➤ Refurbishment of Screening Plant-1 and associated works for handling up to 7 MTPA.➤ Construction of 5th line in Screening Plant-2 & drive up-gradation of Conv. 310 for handling up to 10 MTPA.➤ New railway yard enabling Merry-Go-Round (MGR) system for improvement in handling more rail traffic.➤ Up-gradation of existing downhill conveyor braking & control system of Dep. 11C for handling up to 9 MTPA.➤ Enhancement of capacity of Screening Plant-3 and other facilities / systems. The details are covered in subsequent chapters.
E	Cost Details	
10	Project Cost	Rs.1521.82 Cr
11	Cost of EMP (Capital)	Rs.32.69 Cr
F	Others	
12	Addl. water Requirement	6,000 KLD.
13	Addl. Man power Requirement	50 over and above present strength of 1640

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2.0 Introduction of the Project / Background Information

2.1 Identification of Project & Project Proponent. In case of mining project, a copy of mining lease / letter of intent should be given.

Name of the Project: Capacity Expansion of Bailadila Iron Ore Project, Deposit no: 14/11C from 12 MTPA to 20 MTPA.

Location: Kirandul, Dist: South Bastar Dantewada, Chhattisgarh- 494556
Production: 20 Million Tons per Annum (ROM)

ML Area: 935.522 ha. of forest land falling in Bailadila Reserved Forest. Deposit-14/11C consists of 2 Pits and 3 mining leases. Pit-1 comprises of Deposit 14 Mining Lease in which production has commenced from November 1968. Pit-2 consists of 14 NMZ mining lease area and part of 11 Mining Lease Area in which the production started from 1987.

Deposit 14 Mining Lease is of 322.368 ha. Deposit 14 NMZ area is of 506.742 ha. Area of Deposit 11 ML falling in this project is 106.412 ha.

Mining Lease Details:

1. Deposit 14 Mining Lease was valid upto 11.09.2015 and further extended upto 31.03.2020 as per the "THE MINES AND MINERALS (DEVELOPMENT AND REGULATION) AMENDMENT ACT, 2015" dated 26.03.2015. The lease deed was executed for the period up to 31/3/2020.
2. Deposit 14 Non Mineralized Zone Mining Lease is valid upto 06.12.2015 and further extended upto 31.03.2020 as per the "THE MINES AND MINERALS (DEVELOPMENT AND REGULATION) AMENDMENT ACT, 2015" dated 26.03.2015. The lease deed is under execution for the period up to 31/3/2020.
3. Deposit 11 Mining Lease is valid upto 12.09.2017 and further extended upto 31.03.2020 as per the "THE MINES AND MINERALS (DEVELOPMENT AND REGULATION) (MMDR) AMENDMENT ACT, 2015" dated 26.03.2015. The lease deed is under execution for the period up to 31/3/2020.

Name of ML	Area in Ha	Status	Valid upto
Deposit 14	322.368	Granted	31-03-2020
Deposit 14NMZ	506.742		
Deposit 11C part(11ML)	106.412		

Letter of Intent for extending the validity of above mining leases up to 31/3/2020 is enclosed as **Annexure-1**.



Environment Clearance:

MoEF, New Delhi accorded Environmental Clearance (EC) vide letter no. **J-11015/483/2007-IA.II (M)** dated **11.09.2007** for Deposit 14/11C for a production capacity of 12.0 MTPA ROM. Copy of environmental clearance is enclosed as **Annexure-2**.

Forest Clearance:

Ministry of Environment and Forests (MoEF), New Delhi accorded forest clearance to the leases of Kirandul Complex of NMDC Limited in 1999. Details are given in the following table:

Lease	Forest Clearance Details
Deposit 14 ML	F. No. 8-41/97 – FC dated 18.06.1999.
Deposit 14 NMZ	F. No. 8-40/97 – FC dated 18.06.1999.
Deposit 11 ML	F.No. 8-98/97-FC dated 22.12.1999

Note: Copies of Forest clearance letters received from MoEF, New Delhi for above 3 mining leases is enclosed as **Annexure-3 to Annexure-5** respectively.


In terms of MoEFCC circular no: 11-51/2015-FC dated 1/4/2015, the validity of approvals under F.C. Act 1980 shall be extended and shall be deemed to have been extended up to a period co-terminus with the period of Mining Leases in accordance with MMDR Amendment Act 2015 subject to condition "NPV" of forest land shall be paid to Forest Department, if not paid. Based on demand note received from DFO, Dantewada, NPV charges of Rs.47.59 Cr for Deposit-14 NMZ M.L. area and Rs.82.16 Cr for Deposit-11 M.L. area have been paid to CAMPA A/C on 21/8/15 and 18/8/15 respectively. NPV charges of Rs.30.27 Cr for Deposit-14 M.L. have already been paid to CAMPA A/C in 2014.

Project Proponent:

NMDC is incorporated in 1958 as a Government of India fully owned public enterprise. It is under the administrative control of the Ministry of Steel, Government of India.

NMDC has made valuable and substantial contribution to the National efforts in the mineral sector during the last five decades and has been accorded the status of schedule-A Public Sector Company. In recognition to the Company's growing status and consistent excellent performance, the Company has been categorized by the Department of Public Enterprises as "NAVRATNA" Public Sector Enterprise in 2008.

NMDC is India's single largest iron ore producer, presently producing about 30 million tonnes of iron ore from 3 fully mechanized mines viz., Bailadila Deposit-14/11C, Bailadila Deposit-5, 10/11A in South Bastar Dantewada District, Chhattisgarh State and Donimalai Iron Ore Mines & Kumaraswamy Iron Ore Mines in Bellary District. Karnataka State. For Value addition NMDC is in the process of developing a 3 million ton per annum integrated steel plant at Nagarnar near

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Jagdapur, C.G and 2 pellet plants at Donimalai (1.2 MTPA) and at Bacheli (4 MTPA). Besides, NMDC has acquired Sponge Iron India Limited with plan for expansion to produce billets.

The company is in the process for the implementation of integrated management system covering ISO 9001, ISO 14001, OHSAS 18001 & SA 8000 at all iron ore mining project locations.

Besides iron ore, NMDC also plans to go for other minerals like Coal, Diamond, gold etc for which NMDC is looking forward for leases / buy properties from foreign countries directly / under Special Purpose Vehicle / Joint Ventures. For continuing the exploration activities NMDC has set a Global Exploration Centre at Raipur, Chhattisgarh.

NMDC is taking up diversification activities through its intensive R&D efforts for production of High-Tech and High Value added products. The study is also being conducted for setting up a demonstration plant to beneficiate BHJ/BHQ material for up gradation to +64% Fe iron ore concentrate.


NMDC is also investing in development of renewable energy resources as an environment friendly investment. A Wind mill project (10.5MW capacity) has been completed & commissioned at Karnataka.

Name and Address of the Project Proponent:

<p>Registered Address: NMDC Limited, 10-3-311/A Khanij Bhavan, Castle hills, Masab Tank, Hyderabad - 500028, Telangana. Telephone: 040-23538713-21 Fax: 040-23538711 / 23536760</p>	<p>Address for Correspondence: Bailadila Iron Ore Mine, Kirandul Complex, P.O. Kirandul, Dist: South Bastar Dantewada, Chhattisgarh - 494556 Telephone: 07857-255222 Fax: 07857-255227</p>
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2.2 Brief Description of the Nature of Project

Bailadila Iron Ore Project Deposit 14/11C is an existing iron ore project including mining, crushing, screening and loading activities. Open cast mining method is being used for the excavation of iron ore. The mine is fully mechanized. The total mining lease area of the project is 935.522 ha comprises of Deposit-14, Deposit-14NMZ and Deposit-11 part mining lease areas. The present production capacity is 12 million tonnes per annum (ROM). It is proposed to enhance iron ore production capacity from 12.0 to 20.0 MTPA to meet the demand of iron ore. The project falls in Schedule 1(a) under Category 'A' as per EIA notification 2006 which requires prior Environmental clearance for capacity expansion. Hence, Pre-Feasibility Report (PFR) is prepared for capacity expansion of BIOP: Deposit-14/11C from 12.0 to 20.0 MTPA production capacity.

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2.3 Need for the Project & Its Importance to the Country/ Region

India has large and rich potential of iron ore both in terms of quality and quantity. Hematite and Magnetite are the most important forms of iron ores in India. Indian Steel sector was liberalized in 1990s and thereafter, several pig iron plants, sponge iron plants and integrated steel plants have been setup in private sector. For the purpose of meeting domestic and export requirements of iron ore, NMDC developed iron ore mines in the Bailadila range of hills in the southern part of the South Bastar Dantewada district of Chhattisgarh state.

The existing mining projects of NMDC have given social benefits to surrounding population in the form of educational facilities, roads, communication facilities, transportation, marketing, banking, postal services and health facilities directly or indirectly. The civic amenities have already been developed due to existing mines in Bailadila complex.

The location of the mines in Bailadila Iron Ore Complex has helped to improve vastly the financial resources of the surrounding population by way of petty trade and employment opportunities. The projects had encouraged the setting up of various utility services and petty trade benefiting around 5,000 people around the mining areas mainly in Kirandul and Bacheli.

2.4 Demand-Supply Gap


Steel Ministry proposes to increase iron ore availability in the country in order to reduce the imports of Steel. In this context, NMDC has to enhance production incrementally and aim for annual production of 75 million tonnes iron ore by 2018-19 and 100 million ton by 2021-22 to increase iron ore availability in the country.

Annual production of steel in the country is planned to be increased to a level of 300 million tonnes by 2025. That will necessitate production of 400-450 million tonnes of iron ore annually. To meet country's requirement of iron ore, it is essential that NMDC shall enhance its iron ore production substantially, through all possible means.

Rashtriya Ispat Nigam Limited (RINL), Kudremukh Iron Ore Company Limited (KIOCL), Essar Steel meet their Iron Ore requirement from Bailadila deposits. Numerous steel plants in Chhattisgarh depend upon Bailadila Iron Ore Mines for the iron ore requirement. In order to meet the continuous iron ore demand of steel plants the production capacity is to be enhanced.

2.5 Imports Vs Indigenous Production

India imported 15.50 Million Tonnes of Iron ore in 2014-15 due to the closure of mines in Karnataka/Goa and Odisha. Iron ore production in India during 2014-15 was 138 million tonnes. Domestic production needs to be increased to reduce the imports.

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2.6 Export Possibility

India exported 4.5 million tonnes of iron ore during 2014-15.

2.7 Domestic/Export Markets

India need iron ore production of around 400 - 450 million tons per annum to meet the steel production of 300 million tons.

2.8 Employment Generation (Direct & Indirect) Due to the Project

Bailadila Iron Ore Mine- Kirandul Complex employs 1641 people (as on 1st September 2015) directly and about 1000 people are employed through different contractors.

The existing mining activities are providing indirect employment to nearly 5000 persons in Kirandul and nearby villages.

3.0 Project Description

3.1 Type of Project Including Interlinked and Interdependent Projects, If any

Bailadila Iron Ore Project Deposit 14/11 is an existing iron ore mine with crushing, screening and loading plant facilities. The total M.L. area is 935.522 ha. The present annual production is 12.00 Million Tonnes per Annum (ROM), which is proposed to be enhanced to 20.00 MTPA.


The activities / facilities are:

1. Excavation,
2. Drilling,
3. Blasting,
4. Haulage
5. Dumping
6. Crushing
7. Screening
8. Stacking and dispatch
9. Maintenance & Repair
10. Environmental protection measures
11. Infrastructure

The loading plant along with fine ore dump, stores, tailing dam, oxidation pond are located in revenue land outside the mining lease area.

3.2 Location (Map Showing General Location, Specific Location, and Project Boundary & Project Site Layout) with coordinates

Village : Kirandul
Mandal: Dantewada
District: South Bastar Dantewada
State : Chhattisgarh

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The project area and the 10 km radius study area surrounding the project area falls within Survey of India Topo sheet no. 65F/2, 65F/6 (old) [E44J2 and E44J6 (new)]. Location map and SOI Topo sheet are enclosed as **Plate no: 1 & 2** respectively.

3.3 Details of Alternate Sites Considered and basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

Mining project is site specific and this project is an existing project commissioned in the year 1968 hence no alternate site is considered.

3.4 Size or Magnitude of Operation

The maximum rated capacity of the project will be 20 Million Tonnes per Annum (ROM) of Iron ore production.

3.5 Project Description with Process Details (a schematic diagram / flow chart showing the project layout, components of the project should be given)

3.5.1 Geology

a) Topography

The area lies within Survey of India Toposheet No. 65F/2 and 65F/6 (E44J2 and E44J6). It is easily accessible by all-weather roads to Raipur (425 km), Vizag (450 km) and Hyderabad (605 km) and by Railway Lines to Vizag (470 km).

Water for the mine and associated installations are supplied from dams over Bacheli Nalah, Sankini Nalah and Galli Nallah for Deposit 11A. Water for the mine and associated installations are supplied from dams over Kirandul Nallah and Malinger Nallah for Deposits 14 & 11C.

The area had been initially explored by IBM in 1962-64. NMDC Ltd is carrying out detailed exploration of the area since 1965. NMDC Limited commenced its operations in Bailadila sector in 1968 at Dep.-14 ML area. Mining Lease completely falls in Bailadila Reserved Forest. This mining lease is worked as a part of Bailadila Iron Ore Mine Kirandul Complex. The present top RL of the Dep-14 is 1167 M while the top most RL of the Bailadila ridge is 1276 M in Dep-11B.

b) Regional Geology

The concern area is a part of Bailadila Range which is trending roughly N-S directions with steep easterly dip (45° - 75°). These are two sub-parallel mountainous ridges of length 38 Km's & width 4 Km's approximately. These ridges merge and coalesce into one ridge in the north of Dep.-1 and from where the intervening valley (Galli nallah) gradually widens southwards and is at its widest roughly between Deposit-11C and Deposit-5.



On the basis of detailed geological mapping the local stratigraphic sequence has been established for Bailadila Iron Ore Series.

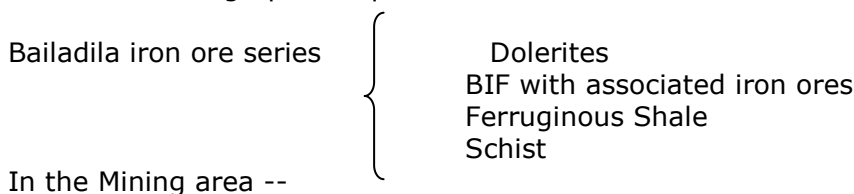
Bailadila Hills represents the type area of southernmost part of Kotri-Dongargarh orogen of Bastar craton known as Bailadila group (Age : 2400 Ma). Quartzites & Chlorite phyllites (olive green), Loa Conglomerates and superior – type Banded Iron Formation in association with Fine clastics, tuffs and basic volcanics are the main characteristics of this group. The basal Felspathic Quartzite is cross-bedded with thin intercalations of phyllites & meta siltstone and locally underlain by phyllitic conglomerate. At places the phyllites are carbonaceous and resemble Black Shale. Sills of (ultra) Mafic rocks are found in thick phyllites and Dykes are common in contact shale with thick Iron formations. Iron formations are rich in Hematite and Martite. Litho formations of Bailadila group are N-S trending. Sukma group and Bengpal group are swept in parallelism with the Bailadila Hills to the west of Geedam. Bengpal group remained the base during major Bailadila deformation.

The regional sequence of Bailadila Iron Ore Series is presented below:

...PRECAMBRIAN.....	Intrusive igneous rocks	Dolerite, Pegmatite, Charnokites, Granite, Green stone & Amphibolites
	unconformity.....
	Bailadila Iron Ore Series	Banded Hematite Quartzite and Shale, with associated iron-ore deposits Grunerite, Quartzite, Ferruginous phyllite, etc., White Quartzite
	unconformity.....
	Bengpal Series	Brecciated Ferruginous Schist, Schistose conglomerates etc. Slate & Shale With andalusite crystals, sericite Schist and Quartzite
	unconformity.....
	Archaean	Granite Basement

c) Lithology

The local stratigraphic sequence of Bailadila Iron ore Series is as follows:



Iron ore, formed due to enrichment of iron by leaching of silica from BHQ by supergene enrichment is occurring as the main ore type "Hematite". Iron ore is mainly available as soft (as Blue Dust); homogeneous, massive/ hard and compact steel grey and hard to medium hard blue hematite form.

Waste is shale appearing as independent litho-unit as well as intermittent localized thin bands within hematite. BHQ is occurring as mother rock, usually



parallel bands along the strike direction. Shale is soft to medium hard and BHQ is usually inhomogeneous, uneven, compact and hard.

d) Local Geology

Deposit-14ML

The Mining Lease area of Deposit 14 covers 322.368 hectare of land in Bailadila reserve forest. Deposit-14 is the last deposit at the southern end of the eastern ridge of Bailadila range. The ore body is tabular in shape, striking N-S with dips varying from 40° to 65° easterly. Length of the deposit is about 1.9 km's between CS-3 to CS15 and width 200M as minimum at CS-3 and 1250 M as maximum at CS5. The ore-body extends from 1157 MRL down to 801 MRL. Maximum ore body thickness of 295 M is encountered in section line CS 10.

DEPOSIT-14 NMZ

The Mining Lease area of Deposit 14-NMZ covers 506.742 hectare of land in Bailadila reserve forest. The Deposit-11C covers around 82% of Dep-14 NMZ M.L. area & balance 18% (106.412 Ha) covers in part of Deposit-11ML area. The deposit occurs over a strike length of 2300 m and its width varies from 180 to 880m with an average width of 440m; and maximum depth of ore body based on borehole data is 207m.

Deposit 11C is located at the extreme southern end to the eastern ridge of Bailadila range. The deposit extends over a strike length of 2300 m between CS-1 to CS22, trending N-S direction with swirling movement up to 150 in the east and west. The ore body is dipping flat/ subhorizontal to sub vertical easterly dips. The width is varying from 180m to 880m, with an average width of 440m. Maximum ore body thickness of 221m is encountered in section line CS 5. The ore body extends from 1150m RL down to 814m RL.

Structure

Strike of the hard ore body in the western margin is roughly North westerly dipping eastward sub vertically. All along the eastern part of the deposit comprising prominently of laminated ore with strike North to NNW, dipping roughly 45° to sub vertical easterly. The extreme southern end of hard ore body strikes North 42° west with dip 70° east (at CS9, 10) while the extreme northern part of the deposit evidencing strike N75°W with dip 80° southward at contact of phyllitic laminated ore with shale. (near CS0 CAL) There are three prominent transverse Faults located at CS0, CS8 and CS14 CAL across the deposit. Another prominent Fault is parallel to the Strike with eastward throw located at CS5E12 and further this separated block of ore body evidences westerly dipping. The central part of the deposit consists blue dust between RL 1101 MB to 930 MB in CS-2 to CS 10. Steel grey Hematite is occurring all along the western margin with average width 100 meters and depth up to 800 M RL (and/or more, need further deep exploration). Eastern margin of the deposit is usually consists of laminated ore and blue hematite of average thickness 90 meters. There are two parallel




shale bands in the central part of the deposit, one is thin about 7 meters and another is about 60 meters width which separates steel gray ore body to blue dust / blue hematite & laminated ore. Float ore deposit covers southeastern to southern part of the deposit. The western most segment as appearing with sub vertical slop is constituted entirely by massive ore with the compaction increasing towards south east and decreasing towards northwest evidencing Southeast-Northwesterly fold in contact with shale in extreme north and west margins. There are numerous basic volcanic dykes had been emerged through shale formation mostly in western part of the deposit at various places. Massive compact and hard BHQ is occurring within the blue dust zone as pockets between CS1 to CS3 along CAL and the associated Blue dust is siliceous in nature.

3.5.2 Reserves

The bench wise mineable reserves of Deposit-14 and 11C as on 1/4/2015 are given below:

Deposit-14		Deposit-11C	
Bench	Total quantity (LT)	Bench	Total quantity (LT)
1157	0.00	1174	2.60
1147	1.08	1162	18.70
1137	6.89	1150	28.29
1125	37.74	1138	27.74
1113	94.05	1126	31.61
1101	128.44	1114	45.13
1089	180.70	1102	76.47
1077	236.45	1090	104.57
1065	260.43	1078	111.37
1053	298.74	1066	123.39
1041	318.92	1054	144.31
1029	333.84	1042	189.11
1017	320.36	1030	200.96
1005	290.37	1018	195.57
993	254.74	1006	180.60
981	215.32	994	175.65
969	165.75	982	164.27
957	127.36	970	137.07
945	104.16	958	31.21
933	82.27	946	18.41
921	74.17	934	13.59
909	65.44	922	4.86
897	51.13	TOTAL	2025.48
885	36.49	Waste	588.20
873	26.79	Fe%	65.52
861	16.79		
TOTAL	3728.43		
Waste	1038.19		
Fe%	64.18		

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3.5.3 Mining Method

The mining methodology will comprise of open cast.

ROM Ore Evacuation system – by rail, road & slurry pipeline

3.5.4 Mining

Design Parameters

Bench Height : 12 m (Blue Dust)
: 12 m (Hard Formation)
Berm Width : 50 m (Operation phase)
: 15 m (Inactive Phase- Shale & Blue Dust)
: 12 m (Inactive Phase- Hard Formation)

Overall Average Pit Slope : 45 degree

Road Width, Road Gradient, Safety Bund, Turn-outs :

(Note: Design parameters may be modified subject to D.G.M.S. guidelines)

Deposit 14- Ore: Waste= 1:0.28, Ore: Sub-grade=1:0.05

Deposit 11C- Ore: Waste= 1:0.29, Ore: Sub-grade=1:0.03

Average one way Lead distance

Heading	Deposit 14	Deposit 11C
From Mine Benches to Crushing Plant	3 KM	3 KM
From Benches to Waste Dump	3 KM	3 KM

3.5.5 Mining Method

The Bailadila Deposit-14 and Deposit-11C mines are fully mechanized mine. The mining operation is carried out using electric rope/hydraulic shovels, blast hole drills, crawler drills, dozers, water sprinklers motor graders etc.,

- **Drilling**

Drilling for blast hole is done by using 250 mm rotary drills and 150 mm rotary percussive drills, all working on electricity. These drills are capable of drilling up to 16m in hard iron ore formations as the bench heights are 12m, the total meterage drilled per hole is 13.8 m including 15% of sub grade-drilling. The Tricon Roller bits are used for drilling. To suppress dust during drilling water is used. Secondary drilling done by using crawler drills working on compressed air powered by diesel engines.

- **Blasting Parameters**

Blast holes for primary blasting are of 250 mm dia. Holes are drilled to a depth of 13.8 m including sub-grade drilling for the bench height of 12 m. Blast holes are



drilled in multiple rows (generally 2) in rectangular pattern. Blast hole drilling is being carried out by using 3 blast hole drills 250mm dia.

- **Loading**

Blasted ore is loaded from the face by electric rope shovels / hydraulic shovel. The bucket capacity of these electric rope shovels is 4.6 m³ and 8.0 m³ and that of the hydraulic shovel is 5.5 m³. Electric power is supplied to these shovels through moveable PSG (portable switch gear) located at convenient locations in the mine. Shovels load the ore into 50 / 60 / 85/ 100 ton dumpers. The waste excavation is also done by these shovels depending upon the excavation plan.

- **Haulage**

The ore loaded into the rear dumpers is carried to the crushing plant, through the haul roads. The Dumper Platform at Deposit-14 mines is at a RL of 1137 m. The dumper platform at Deposit-11C mine is at a RL of 1050 m. The load is hauled up the gradient for a distance of 2-3 km from the mine to the dumper platform / Crushing Plant on a haul road laid with 1 in 16 gradient. Water sprinkling by 28 m³ capacity water tanker is done on the haul road for ensuring effective dust suppression. From ore crushing plant to screening plant to loading plant, ore is transported by belt conveyor system. Processed ore from stockpile (at loading plant) to main destination Visakhapatnam (475 km) is done by rail route.

Machinery Details

Additional HEMM required for Deposit-14/11C for capacity augmentation from 12 to 20 MTPA is given below.

Sr. No.	Equipment Type	Capacity	Number
1	Crawler drill	250mm	3
2	Crawler drill	100mm	2
3	Hydraulic excavator	10 m ³	3
4	Dumper	100 T	15
5	Dozer	410 HP	3
6	Dozer	850 HP	2
7	Motor Grader	280 HP	2
8	Water sprinkler	30 m ³	3
9	Crane	30 T	1

3.5.6 Production Capacity and Distribution

Deposit	Proposed capacity
Dep.14	10.0 MTPA
Dep.-11C	10.0 MTPA

CLO and Lump will be salable product. Approximately, the lump and fines production will be in the ration of 30: 70. Slime loss will be approximately 5 to 6%.



Annual Production Schedule up to life of mine

S. no	Year	Deposit 14		Deposit 11C	
		Plant Feed (MT)	Waste (MT)	Plant Feed (MT)	Waste (MT)
1	2018-19	9	2.52	9	2.61
2	2019-20	10	2.80	10	2.90
3	2020-21 to 2024-25	50	14	50	14.5
4	2025-26 to 2029-30	50	14	50	15.0
5	2030-31 to 2034-35	50	14	50	14.5
6	2035-36 to 2039-40	50	14	33	9.57
7	2040-41 to 2044-45	50	14		
8	2045-46 to 2049-50	50	14		
9	2050-51 to 2054-55	50	14		
10	2055-56 to 2056-57	4	0.5		


3.5.7 Existing Ore Processing at Deposit-14/11C Mine

There is no specific beneficiation process adopted except wet screening of ore for achieving appreciation in lump ore compared to ROM feed. However, during dry screening the appreciation in the quality of lump ore is marginal while fine ore does not show any appreciation in quality.

In the screening plants, the ROM ore is fed to double deck primary screens with 50mm top deck and 20 mm bottom deck. The undersize ore passes to the secondary screens with 10 mm top decks and 3mm bottom deck. Water jets are used for wet screening. The -150+10mm fraction of the total ROM ore is classified as Lump Ore. The 3mm portion passes to screw classifiers where fines upto 100 mesh size are separated. The classifier sand of size 3 mm +100 mesh passes through dewatering screens and joins with the -10+3mm product. There is provision for treating the classifier over flow in hydro-cyclones where material upto +200 mesh size could be separated. The -200 mesh material along with water passes to the thickeners for separation of slime from which water is reclaimed.

Two 50 TPH slow speed classifiers have also been installed to separate the cyclone underflow from associated water and then reduce the moisture content. During the dry months of the year, however, dry screening is resorted to keeping in view of the mineral conservation and as such there is no slime disposal during dry months. Part of the lump ore, falling between the size range 30mm and 10mm is separated as calibrated lump ore. The -150+10mm lump ore fraction is fed to tertiary crushing plant. It is a 7' cone crusher reducing the feed to -30 mm (Calibrated Lump Ore). Tertiary crushing plant has been commissioned during March 2001 in the screening plant premises at Kirandul.

The CLO, Lumps and fine ore is transported by a set of conveyors to loading plant at Kirandul. Screening plant no.1 and Screening plant no.2 including tertiary crushing plant are located in Deposit-14 NMZ mining lease. The capacity of screening plant-I is 5 MTPA and Screening Plant-II is 7 MTPA. The existing equipment flow sheet is enclosed as **Plate no: 3.**

	Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.
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3.5.8 Various schemes involved in capacity augmentation of plant facilities of Bailadila Deposit-14 & 11C iron ore.

(i) New Crushing Plant and Downhill Conveyor System of 10 MTPA capacity, Bailadila Deposit-14.

New Crushing Plant:

Sizable quantity of mineable iron ore reserves are identified below the existing crushing plant and for further mine's development and smooth mines output by balancing in the overall lead, lift of the material and proportion of up-haul & down-haul and for economic mining, it becomes necessity to shift the present crushing plant to a suitable place. New equipment are considered in the proposed plant as existing equipment like Primary Crusher, Secondary Crusher, EOT Cranes etc., lived their life as they are working since beginning.

Therefore, considering the above, it is necessary to dismantle the existing crushing plant and construct a new crushing plant of 10 MTPA capacity at a suitable location (*preferably at P-Plot*) for optimum exploitation of mineral reserves.

New Downhill Conveyor System:

Further, existing downhill conveyor system of Deposit-14 is very old and is served its life. Presently, it is handling average feed rate of 1200 TPH against 2000 TPH due to limitations on braking system. Tunnel conveyors require elaborate safety features as per prevailing statutory regulations.


In order to connect the existing downhill conveyor system, an additional conveyor system and associated junction houses are required from the new crushing plant (*at P-Plot*). The additional facilities (*conveyor system and associated junction houses*) shall pass through the nearby magazine area or through the mineralized zone/within the safe limits of ultimate pit boundary, which is not desirable.

Therefore, it is recommended to opt for new overland downhill conveyor system to handle 10 MTPA ore, which connects to the proposed Screening Plant - III (*SP-III*) & existing Screening Plant - I (*SP-I*).

Incoming power supply for the new plant & conveying system from the existing set-up, however, a new electric sub-station is planned near plant site.

For construction of plant facilities, conveyor corridor, approach roads, pipelines, electrical lines etc., the required area works out to be 43.23 Ha.

Approximate Project Cost (*Plant facilities*): **Rs. 379 Crores**

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(ii) New Crushing Plant and Downhill Conveyor System of 10 MTPA capacity, Bailadila Deposit-11C.

New Crushing Plant:

In order to exploit the blocked reserves under the existing crushing plant of Deposit-11C, it becomes necessary to shift the present crushing plant to a suitable place away from the extended ore boundary / ultimate pit limit.

New equipment are considered in the proposed plant as existing equipment like Primary Crusher, EOT Cranes etc., lived their life as they are working since beginning.

Therefore, considering the above, it is necessary to dismantle the existing crushing plant and construct a new crushing plant of 10 MTPA capacity at a suitable location for optimum exploitation of mineral reserves.

A conveyor system is planned which connects the proposed tunnel conveyor of primary stockpile with the existing downhill conveyor no. 126. That is, the existing downhill conveyor system from conveyor no. 126 onwards will continue to be in operation.

New Downhill Conveyor System:

The existing downhill conveyor system up to and including conveyor no. 125 is planned to be discarded once new crushing plant commences operation.

That is, the existing downhill conveyor system from conveyor no. 126 onwards will continue to be in operation. However, drive modification of Conv. 126 shall be taken up as required or if it is desired to curtail the tail end of the conveyor, where new drive house will be constructed at suitable location towards tail end.

Incoming power supply for the new plant & conveying system from the existing set-up, however, a new electric sub-station is planned near plant site.

For construction of plant facilities, conveyor corridor, approach roads, pipelines, electrical lines etc., the required area works out to be 40 Ha (*on preliminary basis*).

Approximate Project Cost (*Plant facilities*): **Rs. 275 Crores**

(iii) Refurbishment of Screening Plant - 1 and associated works for handling up to 7 MTPA

Capacity sufficiency verification of conveyor system has been carried out and it is found that with replacement of old screens and other equipment including conveyor drives as required, under regular maintenance & replacement programme, the existing system is considered to be having sufficient capacity to handle up to 7 MTPA.



SP-1 structures may require strengthening due to corrosion activity. In this regard, already initiated corrective action like strengthening of plant main columns, conveyor & junction house structures, primary & secondary screen columns etc. In the meantime, CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai has been appointed for condition assessment of structural building of SP-1. As per preliminary findings, overall plant structural stability is satisfactory except few beams need replacement, which can be taken up in phased manner without disturbing plant operations and its surroundings.

Existing electrical system may not require any up-gradation. However, SP-1 needs to be operated for another 20 years, it is planned to be installed PLC & new MCC Panels at suitable location keeping in view that switch over to new PLC shall be within min. shut down period.

The required modifications are planned to be carried within the existing plant facilities/system area.

Since, SP-1 is considered to be functional along with other Screening Plants, water required for carryout plant operation @7MTPA production level is worked out to be 300 m³/hr (5400 m³/day). A suitable water pumping scheme is envisaged.

Approximate Project Cost: **Rs. 35 Crores**

(iv) Construction of 5th line in Screening Plant - 2 & drive up-gradation of Conv. 310 for handling up to 10 MTPA

Construction of 5th line in Screening Plant – 2:

In the existing SP-2 (*which is having 4 screening lines at present*), one more line (*i.e., fifth line*) shall be added to achieve the production level up to 10 MTPA.


It is envisaged to construct one screening line without wet circuit equipment as the existing wet circuit system is considered to be capable for handling the level of production during wet operation (*monsoon season*).

Drive up-gradation of Conv. 310:

It is proposed to install on Conv. 310 (*1050 mm belt width*) a new drive system in new drive house along with MCC room in the existing loading plant to handle 2400 TPH (*design capacity: 3000 TPH*) in first phase & 2700 TPH in second phase (*new conv. 310 with 1200 mm belt width*) from existing 1800 TPH to stack lump ore (*-150 + 10 mm*) & CLO (*-40 + 10 mm*) produced from SP-1, SP-2, SP-3 and TCP.

The required modifications are planned to be carried within the existing plant facilities/system area.

Approximate Project Cost: **Rs. 24.83 Crores**

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(v) New railway yard enabling Merry-Go-Round (MGR) system for improvement in handling more rail traffic

Existing loading lines in Kirandul Complex are dead end and incoming rakes require waiting until the loaded rakes is cleared off from the siding, which result in time loss.

In view of improving loading & siding facilities, a circuit type of rail line called Merry-Go-Round (*MGR*) rail system with a new siding are required, so that both incoming & outgoing rakes can follow a separate route.

The tentative alignment of the MGR rail system shall be in double line taking off from KK line near loco shed (*North side*) and shall merge with dead end of existing 2nd line in MV siding Rapid Wagon Loading System (*RWLS-1*) and another new 3rd line (*to be installed for RWLS-2*) shall merge with existing line in Kirandul Railway station (*on South Side*).

A siding consisting of minimum 3 lines shall be provided towards Dep. 13 loading plant side and same shall be connected to MV siding lines by a chord line. Additional siding helps in parking empty rakes going to Kirandul siding when it is not free for placement of rake or loaded rakes coming from Dep. 13 & going to Jagdalpur/Vizag when main line is not cleared for traffic.

Approximate Project Cost: **Rs. 250 Crores**

(vi) Up-gradation of existing downhill conveyor braking & control system of Dep. 11C for handling up to 9 MTPA


The existing Downhill Conveyor System of Deposit-11C of Kirandul Complex is required to handle up to 9 MTPA of ROM from FY 2017-18 onwards until new crushing plant and associated downhill conveyor system commences operation from 2019-20 for a capacity of 10 MTPA.

The existing downhill conveyor system is being handled up to 1700 TPH. Further increase in load leads to over-speeding of conveyors, which leads to damage of conveyor. Therefore, it is opined to up-grade the existing braking system (*electrical & mechanical*) with state-of-the-art technologies for better control and operational efficiency of downhill conveyors.

Accordingly, the existing braking system is planned to be up-graded by installing fail-safe hydraulic disc brake with soft braking controls on low speed side along with necessary facilities for design capacity of 2500 TPH and it is expected to handle up to 2000 TPH for achieving 9 MTPA.

The required modifications are planned to be carried within the existing plant facilities/system area.

Approximate Project Cost: **Rs. 4 Crores.**

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(vii) Enhancement of capacity of Screening Plant – 3

Environment Clearance (EC) is obtained for processing 12 MTPA (7 MTPA from 11B + 5 MTPA from Bld. 14) of ore in Screening Plant-3. However, since SP-1 capacity is limited to 6-7 MTPA (after refurbishing) & Bld. 11B is envisaged to be enhanced to 10 MTPA, the balance 4 MTPA of ore from Bld. 14 out of 10 MTPA is considered to be treated in SP-3. Therefore, capacity of SP-3 shall be enhanced from 12 to 14 MTPA. It is observed from the study of the plant design, SP-3 is having handling capacity up to 14 MTPA without any major modification.

(viii) Other facilities / systems

Further to above, the following facilities / systems are also envisaged to take up progressively for achieving the targeted production & dispatch levels.


- Construction of third rail line from existing loading plant to MV siding
- Construction of RWLS – 2
- Modification & replacement of Conv. 310 with higher belt width to handle 3000 TPH
- Construction of RWLS – 3 replacing existing mechanised loading system as per requirement
- Installation of small capacity mobile / semi mobile crushing & screening units in meeting customers' product size & quality requirements
- Interplant & intra-plant conveyors modifications and new interconnecting conveyors for operational flexibility
- Construction of water supply system including laying pipeline for additional fresh water requirement
- Laying new/re-routing of existing electrical lines, water pipelines, roads etc as required
- Relocation of infrastructural facilities like water tanks, electrical sub-stations, plant & non plant buildings etc., as required
- Additional or modification of township buildings as required.

3.6 Raw Material Required along with estimated quantity, likely source, marketing area of final product/s, mode of transport of raw material and finished product.

Since this is a mining project and produces iron ore which is the primary raw material to the steel industry, raw material requirement does not arise. The finished products of iron ore are classified as lump ore and fine ore which are being transported to customers mostly by rail and minor quantity by road.

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

In the project, due care shall be taken for optimum use of natural resources and for their conservation. Earlier, the cur-ff grade was 55% Fe and as per IBM circular no: 3/2010, cut off grade has been taken as 45% Fe. Mineral occurrence

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below 45% Fe is classified as waste. Accordingly, reserves and resources have been estimated on the above guidelines and classified as per UNFC.

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

3.8.1 Water:

MoEFCC accorded approval 13750 KLD for fresh water requirement for Screening Plant-2 & 3 for processing 19 MTPA of iron ore vide letter dated 5.11.2013. The same will be sufficient to cater processing of 10 MTPA in SP-2 and 14 MTPA in SP-3.

Further, at present water requirement for dust suppression at Deposit-14 and 11C mines is 1200 KLD & will be increased to 1500 KLD after capacity expansion due to increase in number of dumper trips on haul roads and mining faces. Also, presently the water requirement of township is 2800 KLD, which will be increased to 3000 KLD.

As Screening Plant-1 will be in operation to process 7 MTPA and also considering marginal increase in requirement at loading plant & drinking water at plants, the additional make-up water requirement will be around 5400 KLD.

Considering the above, additional make up water requirement is envisaged around 5,900 KLD (= 300 KLD + 200 KLD + 5400 KLD) or say 6,000 KLD.

The sources of water are Malinger nallah, Kirandul Nallah & Nallah no.25 at Bacheli. The additional quantity of water shall be sourced from the available sources.

3.8.2 Power:

The power supply to Kirandul (Bailadila Deposit 14/11C project) is being fed through Chhattisgarh State Electricity Board substation at Kirandul where 132/33 KV line is available from Korba Thermal Power Station. Any further demand of power shall be met from CSEB.

3.9 Quantity of Waste to be generated (liquid and solid) and scheme for their management / disposal.

Already covered at item no: **3.5.8 & 6.9.**

3.10 Schematic representations of the feasibility drawing which give information of EIA Purpose.

Process Flow Opencast Mining

Drilling – Blasting – Excavating – Hauling – Crushing – Screening – Loading - Dispatch



Flow Sheet of Beneficiation Process

Crushing – Screening -Loading

4.0 Site Analysis

4.1 Connectivity:

Bailadila Iron Ore Project Deposit 14/11C is located at Kirandul Complex on Bailadila range of hills in South Bastar Dantewada district of Chhattisgarh.

Bailadila is easily accessible and well connected to Raipur, Visakhapatnam and Hyderabad by all-weather roads. It can also be reached by rail from Visakhapatnam. There is regular iron ore movement from this sector to Visakhapatnam port by rail. The railway line, known as Kirandul- Kottavalasa (KK) line runs at the foot hills of Bailadila deposits.

Nearest Road/Highway	Kirandul –Dantewada Road (1.3 km, East)
Nearest Railway Station	Kirandul of East Coast Railway (1.6 km, NE)
Nearest Airport	Raipur (425 km), Visakhapatnam (425 km)

4.2 Land form, Land use and Land ownership

The type of land in mining lease area is Bailadila Reserve Forest Land and NMDC obtained diversion of forest land falling within Mining Lease area under F.C. Act, 1980. The present land use pattern of various mining leases is given below:

Deposit 14 (322.368 hect)

	Purpose	Present
1	Mining	112.346
2	Dump	50.350
3	Infrastructure	29.724
4	Safety Zone	---
5	Area under afforestation	129.948
	TOTAL =	322.368

Deposit-14NMZ:506.742 hect

	Purpose	Present
1	Mining	80.250
2	Infrastructure	159.377
3	Area under afforestation	267.115
	TOTAL =	506.742

Deposit-11C: 106.412 Ha (area utilized for mining and waste dump).



Note: Present land use pattern is as per MoEF Forest clearance and approval obtained for change in land use pattern for Dep-14 ML. However, the present land use pattern will be modified for sustainable mining operations including waste dump management and for additional facilities at hill top.

4.3 Topography (along with map)

Bailadila range is a group of hills of about 40 km in length and 10 km wide. The highest peak of the area is about 1276 m AMSL and the entire range approximately forms 'Y' shape, with the tip pointing to north direction. The lower undulating plains of elevation varying from 300-m to 400-m and has occasionally hills rising up to 600 m.

Geo-morphologically, the terrain is characterized by relic hill ridges with cliffs due to hard resistant ore body or iron formations, duricrusts or terraces formed by laterisation at elevations of around 1000 to 1100 m AMSL and deflected profile due to the above.

4.4 Existing Land use Pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distance from the periphery of the project to periphery of the forests, national park, wildlife sanctuary, eco-sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of Gazette notification should be given.

The entire land of mining lease area belongs to Forest land and forest clearance under section.2 of F.C. Act, 1980 obtained from MoEFCC, GoI. The land adjacent to mining lease areas also falls under reserve forest of Bailadila. No National park, wildlife sanctuary, eco-sensitive areas exist within 10km radius of mining leases of Kirandul complex. The shortest distance from the periphery of the project to water bodies is given below:

S. no	Name of water body	Shortest aerial distance in Kms from periphery of lease area.	Direction
1	Kirandul Nalla	Within lease area	----
2	Malinger Nalla	5.5	SSE
3	Galli Nalla	4.0	NW
4	Koyar Nadi	3.5	NE

4.5 Existing Infrastructure

- Ore screening cum beneficiation Plant
- Quality Assurance laboratory
- Central Workshop
- Explosive magazine
- Effluent Treatment Plants



- Drinking Water supply system.
- Sewage Treatment Plant
- Weigh Bridges
- Central Store
- Administrative Office
- Security Control & Fire Fighting Station and
- Electrical Substations
- Workmen canteen
- Township, Hospital, Shopping complex, Religious places, etc.

As this is an existing project, the necessary infrastructure is already available.

Roads: The area is well connected by all weather road from Raipur, Visakhapatnam and Hyderabad.

Railway: There is regular iron ore movement from this sector to Visakhapatnam port by rail. The railway line, known as Kirandul- Kottavalasa (KK) line runs at the foot hills of Bailadila deposits.

4.6 Soil Classification


The soil texture is of sandy loam with the sand content from 63-70 %.

4.7 Climatic Data from secondary sources.

The climatic condition of this area is semi-arid. The maximum temperature goes up to 40⁰C during summer in the month of May and the minimum temperature goes down to 11⁰C during winter in the month of December and January. The average humidity in the area ranges from 20 to 55%. The average annual rainfall recorded in the area is about 2600mm, about 85% of which is falling between July and September due to the SW monsoon. During the monsoons and pre-monsoon cyclone seasons, the wind velocities touch as high as 60 to 70 kmph on Beaufort's scale. In general, the most predominant wind velocities fall in the range of 19-29 kmph with southwest and northeast forming the predominant directions. One automatic weather monitoring station was established at Hill top, Kirandul.

4.8 Social Infrastructure:

NMDC has given social benefits to the surrounding population in the form of standard educational facilities, roads, communication facilities, transportation, marketing, banking, postal services, health facilities, directly or indirectly. The civic amenities have already been developed due to existing mines in Kirandul complex. A township at Kirandul is very well developed.

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5.0 Planning Brief

5.1 Planning Concept (type of industries, facilities, transportation, etc) Town and Country Planning / Development authority classification

The capacity expansion in Deposit-14 and 11C mines shall be achieved by increasing the number of mining machinery for exploitation of iron ore and creation of additional facilities in existing OCSL plants and construction of 2 no.s of new crushing plants for Dep-14 and 11C separately.

5.2 Population Projection

Kirandul is a Municipality city in district of Dantewada, Chhattisgarh. The Kirandul Municipality has population of 18,887 of which 9,776 are males while 9,111 are females as per report released by Census India 2011. Population of Children with age of 0-6 is 2317 which is 12.27 % of total population of Kirandul (M). In Kirandul Municipality, Female Sex Ratio is of 932 against state average of 991. Moreover Child Sex Ratio in Kirandul is around 1015 compared to Chhattisgarh state average of 969. Literacy rate of Kirandul city is 84.00 % higher than state average of 70.28 %. In Kirandul, Male literacy is around 90.58 % while female literacy rate is 76.86 %. The population has risen primarily after commissioning of the NMDC project here.

5.3 Land use Planning (break up along with green belt)

The land use plan is given in Section-4.2.

5.4 Assessment of Infrastructure Demand:


Many of the infrastructure exists, no such significant change in the physical and social infrastructure are being envisaged. However the same can be enhanced as per future requirement after the expansion of mining operation takes place.

5.5 Amenity/ Facility

The existing amenities/ facilities like canteen, dispensary, VT centre, Drinking water supply, communication etc have been provided to the employees and communities are sufficient in the present context. However, additional requirement if any shall be provided in future as per the needs perceived as the project progresses or otherwise statutorily required.

a) Administrative office / Mines office

This will serve as the administrative office for the mine and supervision of the mining operations. The facilities will include vocational training centre, mine planning & quality control cell, central stores, core library, environment cell etc. Besides the above, some facilities will be provided for this mine. These are given below:

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b) Blasting shelter

Portable blasting shelters have been provided. Additional shall be provided.

c) Lighting arrangements

Adequate portable lighting arrangements will be made at the mine faces in addition to present. The main power source will be drawn from CSEB Raipur.

d) Rest Shelter

Adequate arrangement have been made.

e) Residential facilities

Already provided within and outside the lease area. Suitably planned.

6.0 Proposed Infrastructure

6.1 Industrial Area

The existing mine lease is having all the Infrastructure facilities like mine office including geology office canteen and dispensary, beneficiation plant, workshop garage, power substation, diesel general shed, magazine, vocational training center, ETP, administrative building, etc. The same facilities will cater the requirements of the proposed expansion. Additional infrastructure shall be provided.

6.2 Residential Area


The proposed capacity expansion of the mines has been envisaged by utilizing the existing infrastructure and man power only. Hence, there is no proposal for the requirement of any additional area for residential purpose.

6.3 Green Belt

Plantation has already been carried out in the available blank area of all the leases. Further, plantation has also been carried out outside ml areas and also participating in Chhattisgarh Hari Har (road side tree plantation) programme through Van Vikas Nigam Limited.

6.4 Social Infrastructure

NMDC has been contributing towards development of social infrastructure in the nearby areas for villagers as well as inside Lease area for employees. The same shall be continued.

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6.5 Connectivity (Traffic and Transportation Road / Rail /Metro / Water ways)

The area is connected by all-weather road to district head quarter Dantewada. The area is also very well connected to Jagdalpur AND Raipur in C.G state and Visakhapatnam in A.P and Hyderabad in Telangana. Rail service is available Visakhapatnam from Kirandul. Rail service is also available up to Bhubaneswar in Orissa from Jagdalpur.

6.6 Drinking Water Management (source and supply of water)

Drinking water is sourced from perennial Bacheli Nallah with gravity system. Water treatment plant is existing for treatment of raw water for supply to Township and other places.

6.7 Sewerage System

Adequate sewerage system is already in place. Domestic wastewater is given natural treatment in 2 no.s of Oxidation Pond. A separate proposal for construction of modern STP on SBR technology basis is under process.

6.8 Industrial Waste Management


Industrial waste like steel scarp and used oil drums is being sold to authorized recyclers.

6.9 Solid Waste Management

- The waste /sub-grade generated from opencast mining will be stored in three dump sites in Deposit 14 and in two dump sites in Deposit 11C. Additional area is also required outside present leases to accommodate the waste generated from Deposit 14 & 11C.
- The overall slopes of the dump will be maintained 28°.
- Individual bench height will be restricted to 20m, gullies will be provided in the bench slopes for smooth draining of water.
- Terracing will be made to control surface runoff in the dump slope
- Garland drain have been provided around the dumps
- Barrier has been erected around the dump yard.
- The dump slope has been vegetated with grasses for binding soil and to arrest soil erosion.
- Later on bushes and shrubs has been grown on the dump slopes along with tree species, waste disposal/reclamation is carried with full environmental consideration.
- Geotextile matting will be provided on dump slopes
- The tailings generated from the beneficiation process, if any, shall be stored in the existing tailing pond.

6.10 Power Requirement & Supply/Source

Already covered

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7.0 Rehabilitation & Resettlement (R&R) Plan

There will be no rehabilitation and resettlement issues envisaged.

8.0 Project Schedule & Cost Estimate

8.1 Likely date of start of construction and likely date of completion (Time schedule of the project to be given)

The Bailadila Iron Ore Mine, Kirandul complex is an existing project and it comprises of Deposit-14 and Deposit-11C projects and they worked as single project. The total cost of project in BIOM Kirandul Complex is Rs. 798.49 crores (Gross Block of Assets as on 31.03.2015). The construction work shall be commenced after obtaining Environmental clearance from MOEFCC and Consent For Establishment from CECB, Raipur. About 27 months shall be required for construction of new crushing plants and addition and modification facilities in screening plants.

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

The total additional capital expenditure for capacity augmentation from 12 to 20 MTPA for Deposit-14/11C is tentatively **Rs.1,521.82 Cr.** The rated capacity of 20 MTPA will be achieved from 2019-20 onwards.

9.0 Analysis of Proposal (Final recommendation)

9.1 Financial & Social Benefits with special emphasis on the benefit to the local people including tribal population, if any in the area.

Since it is operating mine and is contemplating of capacity expansion by utilizing the existing facilities, financial and social benefits with special emphasis on the benefits to the local people including tribal population of the area have not been envisaged. However, the following benefits have been extended to the local people including tribal population by means of employment, CSR, etc with the existing project. The same would be extended with the capacity expansion of the project.



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**ANNEXURE-1
MINE LEASE DEED – LETTER TO THE INTENT**

कार्यालय जिला पंजीयक, दन्तेवाड़ा जिला-द0ब0दन्तेवाड़ा
(संशोधित पत्र)

क्रमांक / 11 / जि0प0 / 2015
प्रति,

दन्तेवाड़ा, दिनांक / 08 / 08 / 2015
9

कलेक्टर
(खनिज शाखा)
जिला-द0ब0दन्तेवाड़ा

विषय :- पूरक अनुबंध शुल्क गणना बाबत।
संदर्भ :- आपका पत्र क्रमांक / 1286 / खनिज / 2015 दिनांक 14 / 08 / 2015 एवं इस कार्यालय के पत्र क्रमांक 536 / जि0प0 / 2015 दिनांक 19 / 08 / 2015

—00—

उपरोक्त संदर्भित विषयान्तर्गत एनएमडीसी बधेली/किरन्दुल को नीचे दर्शित तालिका अनुसार 20 वर्ष का उत्खनि पट्टा स्वीकृत है। छत्तीसगढ़ शासन खनिज साधन विभाग मंत्रालय महानदी नवन नया रायपुर के पत्र क्रमांक एफ-7-9/2015/12 दिनांक 19 मई 2015 के अनुसार खान एवं खनिज (विकास एवं विनियम) संशोधन अधिनियम 2015 के अधिनियम 8 की कड़िका 2.3 के अंतर्गत स्वीकृत खनिज पट्टा का पूरक अनुबंध में पट्टा की अवधि में 31 मार्च 2020 तक वृद्धि किया जाना है। पंजीयन अधिनियम 1908 की धारा 17 सहपठित संपत्ति अंतरण अधिनियम, 1882 की धारा 107 के अंतर्गत उक्त अनुबंध (पूरक अनुबंध) का पंजीयन अनिवार्य है। पूरक अनुबंध पत्र पर भारतीय स्टाम्प अधिनियम 1899 की धारा 16 व अनुसूची 1-क के अनुच्छेद 35 के तहत स्टाम्प शुल्क प्रभाय्य होना इस कार्यालय के संदर्भित पत्र द्वारा सूचित किया गया था किन्तु मे0एन0एमडीसी0किरन्दुल द्वारा अपने पत्र क्रमांक कैंडीएल/भू-विज्ञान/लीज-अनु/502 दिनांक 08/9/2015 अवगत कराया गया कि राजस्व प्रकरण क्रमांक 271/ब-105/06-07, 272/ब-105/06-07 एवं 273/ब-105/06-07 के द्वारा औसत रायल्टी बढ़ने के कारण देय अंतर की राशि जमा किया गया है। अतः संशोधित औसत रायल्टी के के आधार पर पट्टा नवकरण का निष्पादन एवं पंजीयन दिनांक नीचे दर्शित तालिका में अंकित है के अनुसार पूरक अनुबंध पत्र में छ0ग0 स्टाम्प अनुसूची 1-क के अनुच्छेद 35(क)(पांच) एवं पंजीयन शुल्क सारणी के अनुच्छेद-2 के अंतर्गत निम्नानुसार मुद्रांक एवं पंजीयन शुल्क देय है :-

क्र.	खदान का नाम	सं0क्र0	दिनांक	मूल औसत वार्षिक रायल्टी	मुपतान योग्य		मुपतान किया गया		शेष देय		
					मु0शु0	प0शु0	मु0शु0	प0शु0	मु0शु0	प0शु0	
		2	4	5	6	7	8	9	10	11	12
1	11 एमएल किरन्दुल	अ1/200	19/10/05	40,69,152	15,18,432	11,36,824	9,11,059	6,83,294	6,07,373	4,58,530	
2	14 एनएमडीसी किरन्दुल	अ1/201	19/10/05	5,39,45,421	2,02,28,633	1,51,72,160	1,21,37,720	91,03,290	80,61,813	69,66,860	
4	14 एमएल किरन्दुल	अ1/141	07/08/05	4,10,69,996	1,54,01,248	1,15,50,936	92,40,749	66,30,562	61,60,499	46,20,374	

टीप :- प्रति दस्तावेज 50/- प्रतिलिपि शुल्क देय होगा।


जिला पंजीयक
दन्तेवाड़ा



Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.

Pre-Feasibility Report


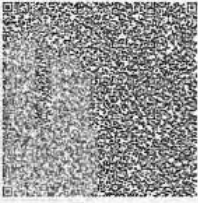
A1/151 60




INDIA NON JUDICIAL
Government of Chhattisgarh
e-Stamp


सत्यमेव जयते

Certificate No.	: IN-CG01554762007602N
Certificate Issued Date	: 11-Sep-2015 02:43 PM
Account Reference	: NONACC (BK)/ cgjsjag09/ DANTEWADA/ CG-DW
Unique Doc. Reference	: SUBIN-CGCGJSJAG0901685874485621N
Purchased by	: VINAYAK TEWARI
Description of Document	: Article 35 Lease (For a period of one year or more)
Property Description	: LEASE AGREEMENT; BAILADILA IRON ORE MINES DEPOSIT NO.14ML (322.368 HA)
Consideration Price (Rs.)	: 0 (Zero)
First Party	: COLLECTOR DANTEWADA
Second Party	: NMDC LTD BAILADILA IRON ORE MINES KIRANDUL COMPLEX
Stamp Duty Paid By	: NMDC LTD BAILADILA IRON ORE MINES KIRANDUL COMPLEX
Stamp Duty Amount(Rs.)	: 61,60,499 (Sixty One Lakh Sixty Thousand Four Hundred And Ninety Nine only)



-----Please write or type below this line-----



सु7
मंथ कर्मांक.....
दस्तावेज क्रमांक..... A1/151
दिनांक..... 18/09/2015
के द्वारा प्रमाणित किया गया।

उप पंजीयक
दन्तेवाड़ा (उ.म.)

X.M 0002913613

Statutory Alert:
1. The authenticity of this Stamp Certificate should be verified at "www.sholestamp.com". Any discrepancy in the details on this Certificate and as available on the website renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.



59

01/151 222

रजिस्ट्रार दस्तावेज क्र. 29067

क्र.सं. श्री.सं.	दस्तावेज की संख्या/विवरण या कॉम्प्लेक्स का प्लान/सर्वे या अन्य नो. मुद्रांकन लिपिकों द्वारा जारी की जाने वाली या अन्य प्रकार से जारी हुई दस्तावेज	ताबत फीस (अगर हो तो) दाखल या	रजिस्ट्री के अधिकारी के हॉटे दस्तावेज
(1)	(2)	(3)	(4)
	ग.हा.प्रॉ.क. एन.एच.डी. लि. 14/141-20 Biom डिसकवरी की कॉन्ट्रैक्ट क्र. 11,10,69,995	46204/11-20	

18 SEP 2015

General Manager
NMDC Limited
Kirandul Complex

AMENDMENT AGREEMENT

TO EXTEND THE PERIOD OF MINING LEASES

DEPOSIT- 14ML : REGISTRATION NUMBER- AJ/141, DATED- 07.09.2005

AVERAGE ANNUAL ROYALTY- Rs. 4,10,69,995/-

DATED- 31/09/2015

This Amendment to the Mining Lease Agreement dated07/09/2005.....
(hereinafter referred to as "Amendment no. 1 to Mining Lease Agreement") is made on the31/09/2015..... at DANTEWADA

BETWEEN

Government of Chhattisgarh, (hereinafter referred to as "Principal Lessor"), having its head office at Mineral Resource Department, Mahanadi Bhawan, Mantralaya, Naya Raipur, Chhattisgarh, India, which expression shall, unless repugnant to the subject, context or meaning thereof, be deemed to mean and include its successors, authorized representatives and permitted assigns to the FIRST PART;

AND

When the lessee is an individual.

..... (Name of person with address and occupation) (hereinafter referred to as "the lessee" which expression shall where the context so admits be deemed to include his heirs, executors, administrators, representatives and permitted assigns).

General Manager
NMDC Limited
Kirandul Complex

R. N. S. S. S.
राजिस्ट्रार
दस्तावेज



58

When the lessees are more than one individual.

..... (Name of person with address and occupation) and
..... (Name of person with address and occupation)
(hereinafter referred to as "the lessees" which expression shall where the context so admits be deemed to include their respective heirs, executors, administrators, representatives and their permitted assigns).

When the lessee is a registered firm.

..... (Name and address of partner), son
of all carrying on business in partnership under the firm name and
style of (name of the firm) registered under the Indian Partnership Act, 1932 (No.
9 of 1932) and having their registered office at in the town of (hereinafter
referred to as "the licensee" which expression where the context so admits be deemed to include all the
said partners their respective heirs, executors, legal representatives and permitted assigns).

When the lessee is a registered company.

M/s. NMDCL LIMITED, a company incorporated under the Companies Act 2013, having its registered
office located at KHANIJ BHAVAN, 10-3-311/A, CASTLE HILLS, MASAB TANK,
HYDERABAD- 500028 (hereinafter referred to as "the lessee", which expression shall, unless repugnant
to the context or meaning thereof, include its successor, administrators, liquidators and assigns or legal
representatives) represented by its authorized signatory, on the OTHER PART.

The "Principal Lessor" and "Lessee" shall, in for the purpose of this Supplementary Lease Agreement,
be individually referred to as "PARTY" and collectively as "PARTIES".

WHEREAS:

- A. The original mining lease deed before commencement of the Mines and Minerals (Development and Regulation) (Amendment) Ordinance, 2015, was signed between the parties and period of lease is from 12.09.1995 to 11.09.2015 (Date).
- B. The Government of India (hereinafter referred to as "GoI") has amended the Mines and Mineral (Development and Regulation) Act, 1957 and has promulgated an Ordinance on Monday, the 12th January, 2015 (MMDR Amendment Ordinance, 2015), according to which the period of grant of mining lease shall be extended as per section 8A.



NOW THEREFORE, IT IS HEREBY AGREED BETWEEN THE PARTIES HERETO AS UNDER:

- 1. The period of grant of the mining lease executed between the parties shall be governed by section 8A of the Mines and Minerals (Development and Regulation) (Amendment) Ordinance, 2015, and the period of mining lease shall be extended accordingly up to 12.09.2015 to 31.03.2020 (date).
- 2. The renewal clause mentioned is Serial Number 3 of Part VIII. "The Covenants of the State Government" shall be omitted.
- 3. The Transfer of the mining lease shall take place as per the provisions contained under section 12A of the Mines and Minerals (Development and Regulation) Amendment Ordinance, 2015.
- 4. All the terms and expressions which are used and not specifically defined in this Amendment, unless the context otherwise requires, shall bear the same meaning as ascribed to them in the said Agreement and subsequent Amendments thereof.

Louis Omer
General Manager
NMDCL Limited
Kirandul Complex

R. Chakrabarty
अभि अधिकारी
मिनिंग डेवलपमेन्ट एन्ड रेगुलेशन (म.म.)



Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.

Pre-Feasibility Report

ANNEXURE-2
EC Letter

J-11015/483/2007- IA. II (M)
Government of India
Ministry of Environment & Forests

✓ 33
Telefax: 011-24367257
e-mail: w.bharat@nic.in
Paryavaran Bhavan, C.G.O. Complex,
Lodi Road, New Delhi-110003.
Dated: the 11th September, 2007

To

M/s. National Mineral Development Corporation Ltd.
Khanij Bhavan 10-3-311/A,
Castle Hills, Masab Tank,
Hyderabad – 500 028

Sub: Expansion project of Bailadila Iron Ore mine (ML area 935.522 ha) Deposit No. 14/11C at Bailadila Range Hills at village Kirandul, South Bastar, Dantewada Distt., Chhattisgarh – reg. environmental clearance.

Sir,

The undersigned is directed to refer to the office memorandum received from the Ministry of Steel vide letter no. F.No.6 (5)2007-RMi, dated 29.05.2007, on the above mentioned subject. The Ministry of Environment and Forests has examined the application.

2. It is noted that the proposal is for expansion of open cast mechanized iron ore mining at Deposit-14: from 3.2 MTPA to 5.0 MTPA and Deposit-11C from 5.0 MTPA to 7.0 MTPA. The following has been noted from the information provided by you. The mines are located at Bailadila range hills at village Kirandul, South Bastar, Dantewada District, in Chhattisgarh. The mineral reserve of Deposit-14 is 150.94 MT and life of the Deposit 14 will be 30 years at the proposed rate of production. The mineral reserve of Deposit-11C is 72.56 MT and the life of this deposit at proposed production will be 15 years. Mining is proposed to be carried out from hill top in both the deposits. There will be no ground water intersection due to mining activity. Water requirement for the expansion will be about 8540 Kld which will be met from existing Nallahs in Mallinger, Bachel and Kirandul. The mines spread over an area of 935.522 ha which falls in Bailadila reserved forests. Forestry clearance has been obtained on 18.06.1999 and 22.12.1999 respectively. No displacement of household is involved due to proposed expansion. No national park/wildlife sanctuary/biosphere reserve etc. is located within 10 km radius of the ML area. No ground water extraction is involved. The total quantity of solid waste to be generated is 54334m³/m. Green belt development is being undertaken through Chhattisgarh Raj Van Vikas Nigam Ltd. since 2003. It is proposed to plant 50,000 trees every year out side the ML area also. It is also noted that Public hearing of the project was held on 13.06.2006. IBM has approved Mining scheme and progressive mine closure plan on 01.04.2006 & 12.03 2007 respectively. Cost of the project is Rs.350.0 crores.

3. The project has been considered in accordance with the provisions of the EIA notification issued by the Ministry of Environment & Forests vide S.O. 1533 (E), dated September 14, 2006 and its interim operational guidelines issued on October 13, 2006.

4. Based on the information submitted by you, the Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated September 14, 2006, subject to the compliance of the following Specific and General conditions:

Cont'd.....



-2-

A. Specific conditions

- (i) Appropriate management of slime shall be undertaken to prevent pollution of surface water bodies. As per action plan submitted to the Ministry of Environment & Forests for utilisation of slime including additional slime to be generated due to proposed expansion, the slime shall be utilised for pellets manufacturing after beneficiation.
- (ii) Detailed report on de-silting of tailing dams and management of silt shall be submitted to the Ministry of Environment & Forests at regular interval.
- (iii) Assessment of erosion potential and sedimentation control plan shall be carried out and submitted to the Ministry.
- (iv) Conceptual mining plan for every five year for the life of the mine shall be submitted to the Ministry for record. Water bodies shall be developed and utilized to develop pisci-culture by organizing fishermen-cooperative society with the land losers and the poorer section (specially tribals) of area opted as members of such society. Financial assistance in the form of share money and managerial assistance shall be made available so that the members themselves can run the affairs of the society in due course. The project proponent shall arrange marketing tie up so that the society gets fair price of their produce and the profits are equitably shared by the members of the society as regular source of income.
- (v) Top soil/ solid waste shall be stacked properly with proper slope with adequate safeguards and shall be backfilled (wherever applicable) for reclamation and rehabilitation of mined out area.
- (iv) Over burden (OB) shall be stacked at earmarked dump site(s) only and shall not be kept active for long period. The maximum height of the dump shall not exceed 30 m, each stage shall preferably be of 10 m and overall slope of the dump shall not exceed 28°. The OB dump shall be backfilled. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests on six monthly basis.
- (v) Garland drains shall be constructed to arrest silt and sediment flows from soil, and mineral dumps. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de-silted particularly after monsoon and maintained properly.
- Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and for waste dump and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and de-silted at regular intervals.
- (vi) Slope of the mining bench and ultimate pit limit shall be as per the mining scheme approved by Indian Bureau of Mines.
- (vii) Drilling and blasting (if any) shall be conducted by using dust extractors/wet drilling.

Contd...



-3-

- (viii) Green belt development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO / Agriculture Department. Herbs and shrubs shall also form a part of afforestation programme besides tree plantation. Plantation shall be raised in 308.73 ha in the ML area, haul roads, OB dump sites etc. The density of the trees shall be around 2500 plants per ha. The company shall involve local people with the help of self help group for plantation programme.
- (ix) The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- (x) Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected shall be regularly sent to MoEF, Central Ground Water Authority and Regional Director, Central Ground Water Board.
- (xi) The waste water from the mine shall be treated to conform to the prescribe standards before discharging in to the natural stream. The discharged water from the tailing dam shall be regularly monitored and report submitted to the Ministry of Environment & Forests, Central Pollution Control Board and the Andhra Pradesh Pollution Control Board.
- (xii) Prior permission from the competent authority shall be obtained for extraction of ground water, if any.
- (xiii) Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of ores and others shall have valid permissions as prescribed under Central Motor Vehicle Rules, 1989 and its amendments. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles transporting ores shall be covered with a tarpaulin or other suitable enclosures so that no dust particles / fine matters escape during the course of transportation. No overloading of ores for transportation shall be committed.
- (xiv) A final mine closure plan, along with details of Corpus Fund, shall be submitted to the Ministry of Environment & Forests, 5 years in advance of final mine closure for approval.
- B. General conditions**
- (i) No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests.
- (ii) No change in the calendar plan including excavation, quantum of mineral and waste shall be made.
- (iii) Conservation measures for protection of flora and fauna in the core & buffer zone shall be drawn up in consultation with the local forest and wildlife department.
- (iv) Four ambient air quality-monitoring stations shall be established in the core zone as well as in the buffer zone for RPM, SPM, SO₂, NO_x monitoring. Location of the stations should be decided based on the meteorological data, topographical features

Cont'd.....



-4-

and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.

- (v) Data on ambient air quality (RPM, SPM, SO₂, Nox) should be regularly submitted to the Ministry including its Regional office located at Bangalore and the State Pollution Control Board / Central Pollution Control Board once in six months.
- (vi) Fugitive dust emissions from all the sources shall be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points shall be provided and properly maintained.
- (vii) Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. shall be provided with ear plugs / muffs.
- (viii) Industrial waste water (workshop and waste water from the mine) shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time.
- (ix) Personnel working in dusty areas shall be provided with protective respiratory devices and they shall also be imparted adequate training and information on safety and health aspects.
- (x) Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. Records of health of the workers shall be maintained.
- (xi) A separate Environmental Management Cell with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.
- (xii) The project authorities shall inform to the Regional Office of the Ministry located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
- (xiii) The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year wise expenditure shall be reported to the Ministry and its Regional Office located at Bhopal.
- (xiv) The project authorities shall inform to the Regional Office located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
- (xv) The Regional Office of the Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The project authorities shall extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
- (xvi) A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.
- (xvii) State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office / Tehsildar's Office for 30 days.

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Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.

Pre-Feasibility Report

-5-

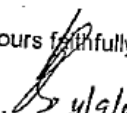
(xviii) The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <http://envfor.nic.in> and a copy of the same shall be forwarded to the Regional Office of the Ministry located Bangalore.

5. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

6. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.


7. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

Yours faithfully,


(W. Bharat Singh)
Deputy Director

Copy to:

1. Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. Secretary, Department of Environment, Government of Chhattisgarh, Raipur.
3. Secretary, Department of Mines and Geology, Government of Chhattisgarh, Raipur.
4. Secretary, Department of Forests, Government of Chhattisgarh, Raipur.
5. Chief Wildlife Warden, Government of Chhattisgarh, Raipur.
6. Chief Conservator of Forests, Regional Office, Ministry of Environment & Forests, Arera Colony, Bhopal - 462016.
7. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
8. Chairman, Chhattisgarh Environment Conservation Board, Nanak Niwas, Civil Lines, Raipur - 421 001, Chhattisgarh.
9. Member Secretary, Central Ground Water Authority, A2, W- 3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
10. Controller General, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur- 440 001.
11. District Collector, Dantewada, Govt. Chhattisgarh.
12. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
13. Monitoring File.
14. Guard File.
15. Record File.


(W. Bharat Singh)
Deputy Director



Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.

Pre-Feasibility Report

**ANNEXURE-3
FC Letter – Deposit 14**

F.No. 841/97 - FC
Government of India
Ministry of Environment & Forests
F.C. Division

14 ML
Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003.

Dated 18th June, 1999

14 MC
To
The Secretary (Forests),
Government of Madhya Pradesh,
BHOPAL.

Sub: Renewal of mining lease over 322.368 ha. of forest land for Bailadila Iron Ore Project in Bastar district of Madhya Pradesh in favour of M/sNMDC Ltd.

Sir,

I am directed to refer to your letter No. F-5/95/95/10/3 dt. 31.5.99 on the above mentioned subject seeking prior approval of the Central Government in accordance with Section 2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Advisory Committee constituted by the Central Government under Section 3 of the aforesaid Act.

2. After careful consideration of the proposal of the State Government and on the basis of the recommendation of the above mentioned Advisory Committee, the Central Government hereby conveys its approval under Section-2 of the Forest (Conservation) Act, 1980 for renewal of mining lease over 322.368 ha. of forest land (86.55 ha. already broken up forest land + 44.22 ha. forest land for dumps + 43.84 ha. forest land for infrastructural facilities + 68.71 ha. already afforested area but to be retained on account of fragmentation + 79.048 ha. blank area to be afforested) for Bailadila Iron Ore Project in Bastar district in favour of M/s.NMDC Ltd. subject to following conditions:-

- (i) Legal status of forest land shall remain unchanged.
- (ii) Compensatory afforestation will be carried out over 295.516 ha. of degraded forest land at project cost → Funds deposited in M.P. (Rs 40 crores) → 12 crores released. CA details not available.
- (iii) Penal Compensatory afforestation will be carried out over 644.736 ha. of degraded forest land at project cost.
- (iv) Entire land covered by mining lease should be kept free from encroachments and existing encroachments should be removed immediately. - complete



(v) Mining activity will be restricted to broken up forest land only. The area under afforestation and the area to be afforested will not be used for any other purpose such as mining or infrastructure facilities, etc. in future.

(vi) No felling of trees shall be done - *Cannot be ascertained*

(vii) Afforestation will be carried out over 79,048 ha. of blank area at the project cost. A detailed afforestation scheme of native tree species in this regard including phasing will be prepared in consultation with the State Forest Department and submitted to this Ministry within six months positively. A committee consisting of CF(Central), Regional Office, Bhopal, CF in the Nodal Office of the State Govt. and CF(Territorial) shall monitor the progress of this condition.

The entire 147,758 ha area (68,710 ha. already afforested and 79,048 ha. to be afforested) will be fenced at the cost of user agency and maintained as green area. *Report to be sent*

(viii) Fencing, protection and regeneration of the safety zone area will be done at the project cost. Besides this, afforestation over one and a half times of safety zone area in degraded forest elsewhere will be done at the project cost. *Details to be given by F.D.*

(ix) Demarcation of mining lease area will be done on the ground at project cost using four feet high reinforced cement concrete pillars with serial numbers, forward & back bearings and distance from pillar to pillar.

(x) The user agency will make arrangement for free supply of fuelwood preferably alternate energy source to labourers and staff working on the project site so as to avoid any pressure on the adjacent forest areas. *Free supply*

(xi) Reclamation of lease areas will be done concurrently in consultation with the State Forest Department at the cost of user agency. *no reclamation done yet*

(xii) The period of permission under the Forest (Conservation) Act, 1980 will be for 20 years co-terminus with lease under MMRD Act, 1957 and w.e.f. date of expiry of previous lease. *Till 2015*

(xiii) The enclosed environmental safeguards will be strictly adhered to by the lessee. *W.K.*

(xiv) The approval under the Forest (Conservation) Act, 1980 is subject to the clearance under the Environmental Protection Act, 1986. *EC no - date*



2) Any other condition that the State Govt. or the Chief Conservator of Forests (Central), Regional Office, Bhopal may impose from time to time in the interest of afforestation and protection of forests.

Yours faithfully,

(J.P. MISRA)
Assistant Inspector General of Forests

Cop

1. Principal Chief Conservator of Forests, Government of Madhya Pradesh, Bhopal.
2. Joint Officer, Office of the Principal Chief Conservator of Forests, Government of Madhya Pradesh, Bhopal.
3. Chief Conservator of Forests (Central), Regional Office, Bhopal.
4. Chief Conservator of Forests (HQ), New Delhi
5. General Manager, M/s.NMDC, Bailadila Iron Ore Project, Dep. No.14, Kirandul- 194556, Distt. Bastar, M.P.
6. [Redacted]

(J.P. MISRA) 18/6/93
Assistant Inspector General of Forests



**ANNEXURE-4
FC Letter – Deposit 14 NMZ**

F.No 8-40/97-FC
Government of India
Ministry of Environment & Forests
F.C. Division

14 NMZ

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003.

Dated 18th June, 1999

Secretary (Forests),
Government of Madhya Pradesh,
Bhopal.

Resewal of mining lease over 506.742 ha. of forest land for Bailadila Iron Ore Project in Bastar district of Madhya Pradesh in favour of M/sNMDC Ltd.

DEPOSIT
No. 14 NMZ

I am directed to refer to your letter No. F-5/13/97/10/3 dt. 31.5.99 on the above subject seeking prior approval of the Central Government in accordance with Section 2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been considered by the Advisory Committee constituted by the Central Government under Section 3 of the aforesaid Act.

After careful consideration of the proposal of the State Government and on the recommendation of the above mentioned Advisory Committee, the Central Government hereby conveys its approval under Section-2 of the Forest (Conservation) Act, 1980 for renewal of mining lease over 506.742 ha. of forest land (80.250 ha. already brought up forest land + 153.057 ha. forest land for infrastructural facilities + 105.00 ha. afforested area but to be retained on account of fragmentation + 168.435 ha. afforested area to be afforested) for Bailadila Iron Ore Project in Bastar district in favour of M/s NMDC Ltd subject to following conditions:-

- 1) Legal status of forest land shall remain unchanged.
- 2) Compensatory afforestation will be carried out over 546.870 ha. of degraded forest land at project cost. - Same as before
- 3) Penal Compensatory afforestation will be carried out over 1013.484 ha. of degraded forest land at project cost.
- 4) Entire land covered by mining lease should be kept free from encroachments and existing encroachments should be removed immediately. - Cannot be ascertained

1/2



- (v) Mining activity will be restricted to broken up forest land only. The area under afforestation and the area to be afforested will not be used for any other purpose such as mining or infrastructure facilities, etc in future. *by F.D. War this is completed*
- (vi) No felling of trees shall be done. *---*
- (vii) Afforestation will be carried out over 168.435 ha. of blank area at the project cost. A detailed afforestation scheme of native tree species in this regard including phasing will be prepared in consultation with the State Forest Department and submitted to this Ministry within six months positively. A committee consisting of CF(Central), Regional Office, Bhopal, CF in the nodal office of the State Govt. and CF(Terri.) shall monitor the progress of this condition. *Report to be given*
- The entire 273.435 ha. area (105.00 ha. already afforested and 168.435 ha. to be afforested) will be fenced at the cost of user agency and maintained as green area
- (viii) Fencing, protection and regeneration of the safety zone area will be done at the project cost. Besides this, afforestation over one and a half times of safety zone area in degraded forest elsewhere will be done at the project cost. *Funds deposited*
- (ix) Demarcation of mining lease area will be done on the ground at project cost using four feet high reinforced cement concrete pillars with serial numbers, forward and back bearings and distance from pillar to pillar.
- (x) The user agency will make arrangement for free supply of fuelwood preferably alternate energy source to labourers and staff working on the project site so as to avoid any pressure on the adjacent forest areas. *---*
- (xi) Reclamation of lease areas will be done concurrently in consultation with the State Forest Department at the cost of user agency. *no reclamation*
- (xii) The period of permission under the Forest (Conservation) Act, 1980 will be for 20 years co-terminus with lease under MMRD Act, 1957 and w.e.f. date of expiry of previous lease. *2015*
- (xiii) The enclosed environmental safeguards will be strictly adhered to by the lessee.
- (xiv) The approval under the Forest (Conservation) Act, 1980 is subject to the clearance under the Environmental Protection Act, 1986.



Any other condition that the State Govt. or Chief Conservator of Forests (Central), Regional Office, Bhopal may impose from time to time in the interest of afforestation and protection of forests.

Yours faithfully,

(J.P. MISRA)

Assistant Inspector General of Forests

1. The Principal Chief Conservator of Forests, Government of Madhya Pradesh, Bhopal.
2. Nodal Officer, Office of the Principal Chief Conservator of Forests, Government of Madhya Pradesh, Bhopal.
3. The Chief Conservator of Forest, Regional Office, Bhopal
4. MO(IQ), New Delhi
5. The General Manager, M/s.NMDC, Bailadila Iron Ore Project, Dep. No.14, Kirandul-494556, Distt. Bastar, M.P.
5. Guard file.

(J.P. MISRA)

Assistant Inspector General of Forests



Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.

Pre-Feasibility Report

**ANNEXURE-5
FC Letter – Deposit 11**

11ML
Annexure

*Copies of PFI reports
Deposit 14 & 11C
at Bailadilla*

F.No. 3-98/97-FC
Government of India
Ministry of Environment & Forests
F.C. Division

Paryavaran Bhavan
CGO Complex, Lodhi Estate
New Delhi - 110 003
Dated: 22.12.97

The Secretary (Forests),
Government of Madhya Pradesh,
BHOPAL.

Sub: Renewal of mining lease over 1767.140 hectare of forest land in favour of M/s NMDC Ltd., Bailadila Iron Ore project in Distt. Bastar.

Sir,

I am directed to refer to your letters No. F-5/34/97/10/3 dt. 29.4.1997 and even No. F-5/34/97/10/3 dt. 1.5.1999 on the above mentioned subject seeking prior approval of the Central Government in accordance with Section 2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Advisory Committee constituted by the Central Government under Section 3 of the aforesaid Act.

After careful consideration of the proposal of the State Government and on the basis of the recommendation of the above mentioned Advisory Committee, the Central Government hereby conveys its approval under Section-2 of the Forest (Conservation) Act, 1980 for renewal of mining lease over 1767.140 hectare of forest land (180.320 hectare already broken up for 12.24 hectare fresh area to be broken up & 662.287 hectare blank area to be afforested in favour of M/s NMDC Ltd., Bailadila Iron Ore project in Distt. Bastar subject to following conditions:-

- Legal status of forest land shall remain unchanged.
- Compensatory afforestation will be carried out over degraded forest land twice the area i.e. 1389.208 hectare. *project cost - same*
- Entire land covered by mining lease should be kept free from encroachments and existing encroachments should be removed immediately. *near 519 houses. Rehabilitation of houses. Same*
- Afforestation will be carried out over 662.287 hectare of blank area at the project cost. Detailed afforestation scheme of native tree species in this regard will be prepared in consultation with the State Forest Department and submitted to this Ministry within 3 months positively. A committee consisting of CF(Central), Regional Office, Bhopal and the nodal office of the State Government and CF(Territorial shall monitor progress of afforestation in this condition). The entire area of 662.287 hectare will be fenced at the cost of the project agency and maintained as green area. *Report to be sent*

as follows in copy of...

26/12/97

Shri Krishna

General Manager
N.M.D.C.
Bailadila Iron Ore Project
Deposit 14 & 11C
P. O. - Kirandul
Distt. - Dantewada



TO : DIRECTOR, NMDCL, BANGALORE
FROM : REGIONAL OFFICE, BHOJIPUR, NEW DELHI. T-563 P.02

- viii. Fencing, protection and regeneration of the safety zone area will be done at the project cost. Besides this, afforestation over one and a half times of safety zone area in degraded forest elsewhere will be done at the project cost. - *Fencing done, chain link station plants, concrete pillars*
- ix. Dencarcation of mining lease area will be done on the ground at project cost using four feet high reinforced cement concrete pillars with serial numbers, forward & back bearings and distance from pillar to pillar. ... ?
- x. The user agency will make arrangement for free supply of fuelwood preferably alternate energy source to labourers and staff working on the project site so as to avoid any pressure on the adjacent forest areas. - *Gas*
- xi. Reclamation of lease areas will be done as per plan in consultation with the State Forest Department at the cost of user agency. - *in done*
- xii. The period of permission for lease under the Forest (Conservation) Act, 1980 will be for 10 years co-terminus with lease under MMMD Act, 1957 w.e.f. the date of expiry of previous lease. - *2017*
- xiii. The approval under the Forest (Conservation) Act, 1980 is subject to the clearance under the Environmental Protection Act, 1986, if applicable. - *Copy of EC.*
- xiv. Any other condition that the State Govt. or the Chief Conservator of Forests (Central), Regional Office, Bangalore may impose from time to time in the interest of afforestation and protection of forests.

In pursuance of the Hon'ble Supreme Court order dated 17.12.1999 in the IA's No. 426 in the matter of WP(C) No. 202/95 per this order, modalities in respect of various types of afforestation, fencing & protection of safety zone, reclamation plan, etc. are being worked by this Ministry. Therefore, an amount of Rs. 10,80,31,687/- realised from the user agency on account of above works in the instant proposal should be kept intact in the Reserve Fund and shall not be utilised till further orders.

Yours faithfully,

R.K. Gupta
(R.K. GUPTA)

Assistant Inspector General of Forests

- 1. The Principal Chief Conservator of Forests, Government of Madhya Pradesh, Bhopal.
- 2. The Officer, Office of the Principal Chief Conservator of Forests, Government of Madhya Pradesh, Bhopal.
- 3. The Chief Conservator of Forest, Regional Office, Bhopal.
- 4. The Regional Office, New Delhi
- 5. The Regional Office, Mysore, Mys HMDC Ltd., Bailadila Iron Ore Project, Kirandul-494 556, Madhya Pradesh.
- 6. The Regional Office, Bangalore
- 7. The Regional Office, Bhopal
- 8. The Regional Office, Bhopal
- 9. The Regional Office, Bhopal

(R.K. GUPTA)

Assistant Inspector General of Forests

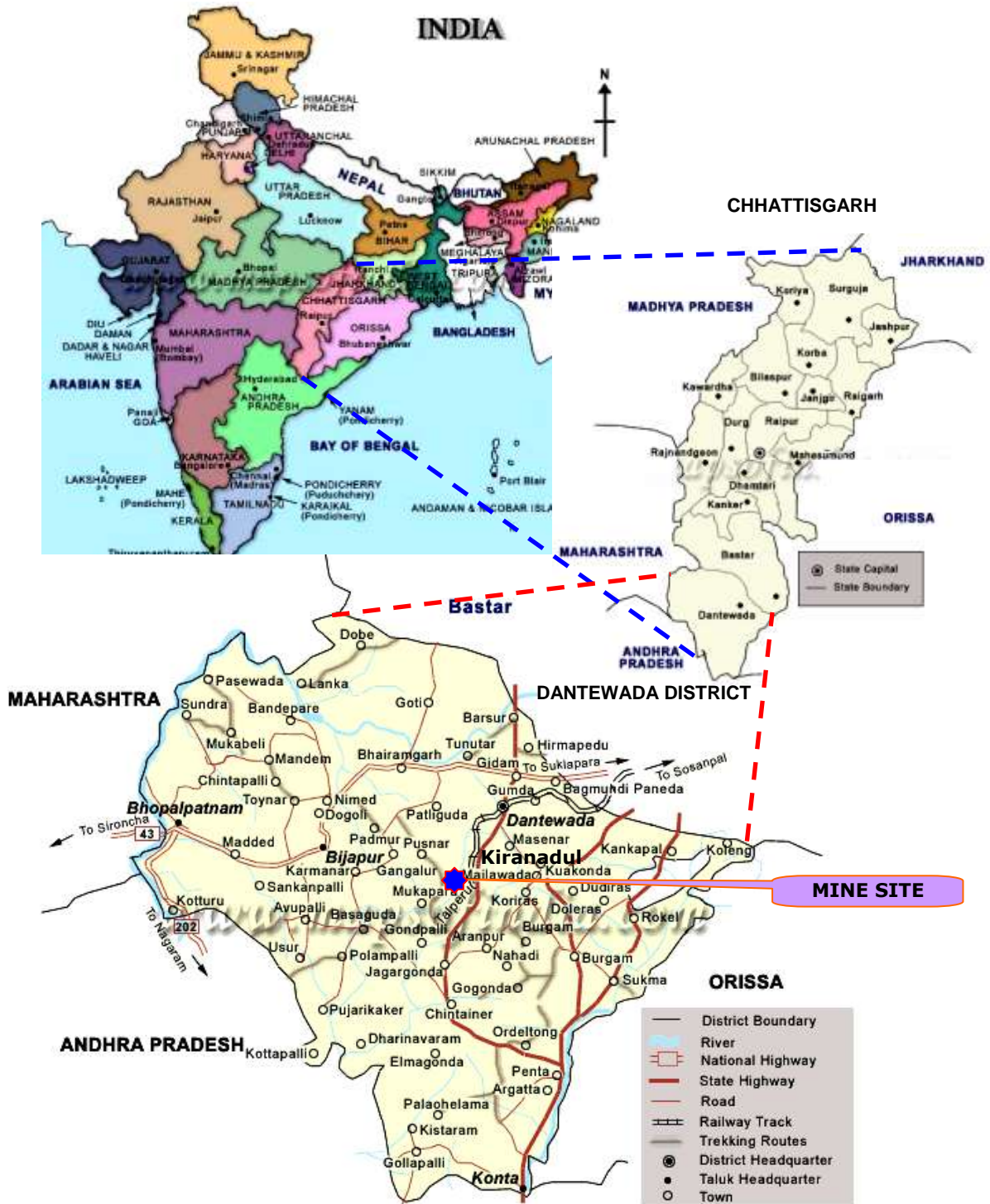
General
N. M. E.
Bailadila Iron
Deposit No.
P. O. - Kirandul
Dist. - Dantewada



Bailadila Iron Ore Project, Deposit 14 & 11C, Kirandul, C.G capacity expansion from 12.0 to 20.0 MTPA.

Pre-Feasibility Report

**PLATE-1
INDEX MAP**



**PLATE-3
EXISTING EQUIPMENT FLOWSHEET**

