PRE-FEASIBILITY REPORT

FOR

THE PROPOSED
PRODUCTION CAPACITY ENHANCEMENT
of
IRON ORE MINES
From

0.05 MTPA to 2.95 MTPA
&
1.0 MTPA Beneficiation Plant

LEASE AREA: 192.25 HECTARES

CATEGORY OF MINE: 'A' (Fully Mechanized)
VILLAGE: CHHOTEDONGAR
TEHSIL & DISTRICT: NARAYANPUR
STATE: CHHATTISGARH

APPLICANT:

JAYASWAL NECO INDUSTRIES LTD

Siltara Industrial Growth Centre, Siltara
Raipur

Chhattisgarh- 493111

(Pre-feasibility Report prepared as per MOEF circular No.J-11013/41/2006-IA.II(I) Dated 30-12-2010)

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1. EXECUTIVE SUMMARY

M/s Jayaswal Neco Industries Ltd (JNIL) is a Public Ltd. Company registered under Indian Companies Act, 1957 having corporate office at F-8, MIDC, Industrial Area, Hingna Road, Nagpur. The company has set up an Integrated Steel Plant at Siltara Growth Center, Raipur, Chhattisgarh. M/s Jayaswal Neco Industries Limited (JNIL) obtained mining lease of 192.25 Hectares iron ore mine located at village Chhotedongar, Tehsil and District Narayanpur (Chattisgarh). The mining lease is valid for a period of 50 years, till June 2055. The entire 192.25 ha area falls under reserve forest. In-principle Forest Clearance was granted for 91 ha area (vide letter no 8-31/99-FC date 11.08.2004) and Final Forest Clearance was granted for 35.74 ha area (vide letter No.8-31/99-FC dated 18.01.2007). JNIL has paid NPV for the entire ML area (192.25 ha forest land). The mine is an operational mine.

In order to meet iron ore requirement for the Steel Plant the company was granted Mining lease of Iron Ore over 192.25 Hectares at village Chhotedongar, Tahsil and District Narayanpur, State Chhattisgarh for a period of 30 years from 21.06.2005 to 20.06.2035. Mining Plan for 34.75 ha area was approved by IBM vide letter no BST/ Fe/ MPLN- 738/ NGP dated 02.04.2001 for production of ROM @ 71,820 Tonnes/ Annum with graded ore production 50,274 Tonnes/ Annum. As per MMDR Amendment Act, 2015 the mining lease period shall be deemed to have been extended for a period of 50 years. Accrodingly the period was ammended vide letter dated 19.05.2015 of the Mineral Resource Department Government of Chhattsigarh and now the lease is to exprire of 21-06-2055. The registration nunber of the lessee is IBM/4800/2011 and mine code is 30CHG01001.

Initially the Environment Clearance was obtained vide Letter No.J-11015/152/2005-IA.II(M) dated 05.02.2007 for ROM iron ore production 0.05 MTPA (50000 tons per annum). Due to critical law and order / Naxalite problem in Baster area and other insurgency issues, mining could start only in 2016. Now JNIL decided to go for enhancement of iron ore production, as the government is willing to provide more security for the mining operations.

Mining Plan has been approved by IBM vide letter dated 29.03.2019 for ROM production of 2.95 Million Tons Per Annum (MTPA) (for the conceptual period) with graded ore production of 2.5 MTPA. Beneficiation of sub-grade ore would result in the final usable graded production of iron ore of 2.75 MTPA. Therefore 1.0 MTPA capacity beneficiation plant on

non-mineralized portion has been proposed inside the ML area. Till date 35.74 ha land had been cleared and handed over by the forest department. Detailed exploration had been done only on this 35.74 ha area. The proved minable reserve of the area is 23.18 MT Therefore mining activity will be restricted within this 35.74 ha area for production of 2.95 MTPA ROM iron ore.

The Mineral Reserve after detailed exploration on 34.74 hectares is estimated to be 34.016 Million Tonnes (MT) and Mineable Reserve (as per 111, 122 classification of UNFC) is 23.18 MT. The production planned for the year (2019-20) is 1.4 MTPA ROM and for the conceptual period (2020-2021 to 2028-29) is 2.95 MTPA . The life of the mine of the present available 34.74 Hectare will be 9 years

Location: The mine is located at Village Chotedongar, Tehsil and District Narayanpur, Chhattisgarh. The lease area falls under Survey of India Toposheet No.65 E/7 and is bounded by Latitudes. 19º 25' 40.356" N to19º 27’ 09.423” N and Longitudes 81º15’ 37.175” E to 81º 17' 34.507” E. The area falls under the South Bastar region of Chhattisgarh.

Approach: Village Chhotedongar is situated at a distance of about 43 km from Narayanpur the District Head Quarter. Narayanpur is around 210 km from Raipur (Capital of CG). The mine is located about 300 km from Siltara, where the Steel Plant of JNIL is situated. The nearest railhead for the area is Keoti, which is at a distance of about 140 Km form the mine falls under the proposed Dalli-Rajhara - Rowghat railway line.

Physiography & Drainage: Regionally the area forms a part of the hilly terrain which extends from the Bailadila hill range in the south to Rowghat hill range in the north and from Baster plateau in the east to Gadchiroli district of Maharashtra in the west. Within this hilly terrain there are distinct hill ranges most prominent being the Bailadila hill range towards South and Rowghat hill range in the North. Within these two hill ranges there are number of smaller hill ranges having more or less N-S alignment on a regional basis. Chhote dongar hill range is lying more or less in the centre of this hilly region.

The ML area is located on Chhote dongar hill range which is one such N-S aligned hill range located aerially about 3 Km west of village Chhote dongar rising from the ground level of

about 450 MRL contour level to more than 939 MRL contour level. Locally the ML area forms a part of the hill range comprising of two parallel ridges trending broadly NNW – SSE and located south of Madin river about 3 Km west and WSW of village Chhote dongar. The two parallel ridges close in the fashion of a Greek letter omega (Ω). The head of this omega points towards NNW with one portion stretched as a broad arrow head originating from triangulation point 939 and pointing towards north. The ML area itself includes the arcuate portion of the head of this omega and comprises of five distinct ridges arranged serially in an arcade fashion, each separated from each other by a saddle.

Mining Method: Open cast fully mechanized method using excavator, rock breaker, drilling and blasting, crushing, sizing and screening shall be done. The main equipment shall be crusher and screen, Excavator, Rock Breaker, Ripper Dozer, Wagon drill, Pay-loader, Dumper, DG sets, Workshop, Oil Shed, Water Pump, etc. Site Mixed Slurry or Cartridge type explosives shall be purchased daily from suppliers. Considering 300 working days, the maximum material handling during the proposal period (2019-20) will be 4667 tons per day or 1556 m^3/day; comprising 0.77 MTPA sized lumps, 0.42 MTPA crushed fines and 0.21 MTPA sub-grade material. During the conceptual plan period the maximum excavation of ROM will be 2.95 MTPA or 9834 tons/day or 3278 m^3/day. (comprising 1.623 MTPA sized lumps, 0.885 MTPA crushed fines and 0.442 MTPA sub-grade material). There will be no wastes or overburden material. Daily 54 holes will be drilled for blasting. The requirement of explosives is 1051 kg/day (19.46 kg x 54). NONEL (non electric delay detonators) shall be used for blasting. Water requirement will be 330 KL per day ((150 for mines and 180 for Beneficiation plant). 221 people (161 people for Mine operation & 60 people for Beneficiation plant) will get employment in the mines.

JNIL planned to set up beneficiation plant of 1.0 MTPA capacity within the leasehold area during conceptual period. In beneficiation circuit various modern systems has been proposed so that minimum tailing is generated that does not require tailing pond. These tailings will be dumped either on earmarked waste dump-site and later used for reclamation. The water, which will be generated after beneficiation shall be recycled and reused after treatment.

The mining lease area covers the upper half portion of the ridges from 700 MRL to top. The working will start from 880 MRL and during the proposed plan period (2019-20), the hill slope will be sliced till 874 m RL. There will be bench height of 6 m and bench width of 18 m. Slope will be less than 45^{o}. During the conceptual plan period (2021 to 2028), the hill slope will be sliced till 808 MRL. The ground elevation is at 520 MRL. The Ultimate depth of the pit will be 54 m (288 m above ground level). No ground water is present above 520 MRL. The ground water table present at foot hill varies from 6 m (post monsoon) to 12 m pre-monsoon. The annual rainfall of the area is 1476 mm. Therefore the annual runoff will be 28.4 lakhs cubic meter.

Waste Generation and Management: No overburden will be encountered during mining. However 0.5 ha area (on non-mineralized portion) has been earmarked as dump site (SE of working pit). However, during conceptual period about 0.640 Lakh cum waste is expected to be generated. A flat area devoid of ore covering 5 ha has been selected in the north-central part of the lease area for proposed waste dump. Part of the waste material will be utilised for maintaining haul road. The height of dump (if any required) will be kept below 6.0 m and that of sub grade dump will be kept below 7.0 m. Slopes will maintained by angle of repose, hence additional stabilization is not required. The construction of garland drain with sedimentation basins around the dump yard will be done. Plantation of the vertiber grass or other suitable methods throughout the slope and terraces of the dump will be done at the end of conceptual period for further control of erosion and to stabilize the dump.

Project Cost :

The total cost of the Project for enhancement of the production capacity will be Rs.62.72 Crores where mine project cost will be Rs.42.72 Crores and Beneficiation plant project cost will be Rs. 20 Crores. The basic infrastructure preparation along with facilities like loading, weighing etc. needs to be done for the enhanced production of 2.95 MTPA with 1.0 MTPA beneficiation unit. The entire transportation will be outsourced through private transport contracts, who will be entrusted with the transportation work with strict monitoring conditions.

Project benefits:

On operation of the mine there will be an employment generation for around 1500 persons directly and indirectly, this will be a boon to the critically effected Naxal region, where the people will get an opportunity to work and earn in mine which will being in peace and stability in the region. Apart from the same the State Government will get a revenue of around Rs.90 crores per annum by way of royalty and Rs 30 crores per annum as contribution to DM Fund. Apart from the same the state government will generate substantial revenue on Petrol and Diesel due to operation of this mine. This will enable the State Government to provide more resources for local area development activities.

Details of the Project

1	Name of the Applicant / lessee	:	M/s Jayaswal Neco Industries Ltd
2	Name of mine	:	Chhotedongar Iron Ore Mine
3	State	:	Chhattisgarh
4	District	:	Narayanpur
5	Tehsil	:	Narayanpur
6	Forest Circle	:	Kanker
7	Forest Division	:	Narayanpur
8	Forest Range	:	Chhotedongar Reserve Forest
9	Village	:	Chhotedongar
10	Topo sheet No	:	65 E/7
11	IBM Registration no	:	IBM/4800/2011
12	Address of Applicant	:	Postal Address - M/s Jayaswal Neco Industries Ltd. (Steel Plant Division) Siltara Growth Centre, Siltara, District- Raipur, State-Chhattisgarh, Pin - 493111 Phone- 07721-264241 / 264263 FAX- 07721-264279 / 264240 Email id - spd@necoindia.com
13	Mine code	:	30CHG01001
14	Lease area in ha	:	Forest - 192.25 ha
15	Forest diverted area	:	35.74 Ha (27.65 ha for mining and other purposes over ore body - I and 8.09 ha for approach road & infrastructures).
16	Name of Mineral	:	Iron ore

17	Lease period	:	50 years from 21.06.2005 to 20.06.2055
18	Mineral Reserve (111&122 & 333)	:	25.357 Million Tonnes (34.74 Hectare)
19	Mineral resources in entire ML area	:	87.044 Million Tonnes
20	Total Mineable Mineral Reserve/ Resource in entire ML area	:	77.519 Million Tonnes
21	Date of opening and commencement of mining operation	:	11.02.2016
22	IBM Registration no	:	IBM/4800/2011
23	Production proposal (2019-20)	:	1.4 MTPA
24	Production proposal during conceptual period (2020-2025)	:	2.95 MTPA
25	Existing EC permission	:	50,000 tonnes per annum
26	Plantation proposal per year in numbers	:	@ 100 saplings per year
27	Plantation proposal per year in area	:	Over 0.1 ha area per year
28	Back filling proposal in ha	:	Not proposed
29	Bank Guarantee Amount	:	Rs.1500000/- + Rs.4424100/- = Rs.5924100/-
30	Validity of BG	:	23.05.2022
31	R&R issues	:	None
32	Pending court cases, litigation, prohibition orders, if any	:	None
33	Eco-sensitive zones (Wildlife sanctuary, national park, migratory corridors of wild animals, biosphere reserves, etc	:	None within 15 km area

2. INTRODUCTION OF PROJECT / BACKGROUND INFORMATION

(i) Identification of Project and Project proponent. In case of mining project, a copy of mining lease / letter of intent should be given:

Capacity Enhancement (Production) of Iron Ore Mine from 0.05 MTPA to 2.95 MTPA by installation of crushing and screening facility along with installation ofbeneficiation unit of 1.0 MTPA capacity within mining lease area to convert sub-grade ore to graded ore. [MTPA: Million tons per annum)

Category of Project: "A" Category.

Project Proponent: Jayaswal Neco Industries Limited

M/s Jayaswal Neco Industries Ltd (JNIL) is a Public Ltd. Company registered under Indian Companies Act, 1957 having corporate office at F-8, MIDC, Industrial Area, Hingna Road, Nagpur. The company has set up an Integrated Steel Plant at Siltara Growth Center, Raipur, Chhattisgarh. M/s Jayaswal Neco Industries Limited (JNIL) obtained mining lease of 192.25 Hectares iron ore mine located at village Chhotedongar, Tehsil and District Narayanpur (Chattisgarh). The mining lease is valid for a period of 50 years, till June 2055. The entire 192.25 ha area falls under reserve forest. In-principle Forest Clearance was granted for 91 ha area (vide letter no 8-31/99-FC date 11.08.2004) and Final Forest Clearance was granted for 35.74 ha area (vide letter No.8-31/99-FC dated 18.01.2007). JNIL has paid NPV for the entire ML area (192.25 ha forest land). The mine is an operational mine.

In order to meet iron ore requirement for the plant the company was granted Mining lease of Iron Ore over 192.25 Hectares at village Chhotedongar, Tahsil and District Narayanpur, State Chhattisgarh for a period of 30 years from 21.06.2005 to 20.06.2035. Mining Plan for 192.25 ha area was approved by IBM vide letter no BST/ Fe/ MPLN- 738/ NGP dated 02.04.2001 for maximum production of ROM @ 71,820 Tonnes/ Annum with graded ore production 50,274 Tonnes/ Annum. As per MMDR Amendment Act, 2015 the mining lease period shall be deemed to have been extended for a period of 50 years from the date of execution of lease deed, hence mining lease period of this mine is supposed to expire on 20.06.2055. The supplementary lease deed for the extended lease period from 21.06.2035

to 20.06.2055 has been executed on 24.12.2008. The registration no of the lessee is IBM/4800/2011 and mine code is 30CHG01001.

JNIL have facility for production of 1.20 MTPA pellets, 0.275 MTPA Sponge Iron, 0.65 MTPA blast furnace and 1.2 MTPA finished Steel products, at Siltara, near Raipur, CG. The Iron ore requirement of the Steel Plant Division situated at Raipur will be met through this captive source. The company will have a continuous supply of graded ore at a production cost, which will be economical resulting in long-term sustainability and competitiveness. The total requirement of iron ore by JNIL is given below :

Name of the Unit	**Fe%**	**Quantity (MTPA)**
Blast Furnace	58-65%	1.17
DRI (Sponge Iron Plant	60-66%	0.48
Sinter Plant (Independent)	58 -65%	0.60
Pellet Plant	60 - 66%	1.38
Total	58 - 66%	3.63

(ii) Brief description of nature of the project:

Open cast fully mechanized method using excavator, rock breaker, drilling and blasting, crushing, sizing and screening shall be done. The main equipment shall be crusher and screen, Excavator, Rock Breaker, Ripper Dozer, Wagon drill, Pay-loader, Dumper, DG sets, Workshop, Oil Shed, Water Pump, etc. Site Mixed Slurry or Cartridge type explosives shall be purchased daily from suppliers. Considering 300 working days, the maximum material handling during the proposal period (2019-20) will be 4667 tons per day or 1556 m^3/day; comprising 0.77 MTPA sized lumps, 0.42 MTPA crushed fines and 0.21 MTPA sub-grade material. During the conceptual plan period the maximum excavation of ROM will be 2.95 MTPA or 9834 tons/day or 3278 m^3/day. (comprising 1.623 MTPA sized lumps, 0.885 MTPA crushed fines and 0.442 MTPA sub-grade material). There will be no wastes or overburden material. Daily 54 holes will be drilled for blasting. The requirement of explosives is 1051 kg/day (1946 kg x 54). NONEL (non-electric delay detonators) shall be used for blasting.

Water requirement will be 330 KL per day (150 for mines and 180 for Beneficiation plant). 221 people will get employment in the mines.

JNIL also planned to set up beneficiation plant of 1.0 MTPA capacity within the leasehold in non-mineralized area during conceptual period. In beneficiation circuit various modern systems has been proposed so that minimum tailing is generated that does not require tailing pond. These tailings will be dumped either on earmarked waste dump-site and later used for reclamation. The water, which will be generated after beneficiation shall be recycled and reused after treatment.

(iii) Need of Project and importance to the country or Region:

JNIL have facility for production of 1.20 MTPA pellets, 0.275 MTPA Sponge Iron, 0.65 MTPA blast furnace and 1.2 MTPA finished Steel products, at Siltara, near Raipur, CG. The Iron ore requirement of the Steel Plant Division situated at Raipur will be met through this captive source. The company will have a continuous supply of graded ore at a production cost, which will be economical resulting in long-term sustainability and competitiveness.

On operation of the mine there will be an employment generation for around 1500 persons directly and indirectly, this will be a boon to the critically effected Naxal region, where the people will get an opportunity to work and earn in mine which will being in peace and stability in the region. Apart from the same the State Government will also generate a revenue of around Rs.90 crores per annum by way of royalty and Rs 30 crores per annum as contribution to DM Fund. Apart from the same the state government will generate substantial revenue on Petrol and Diesel due to operation of this mine. This will enable the State Government to provide more resources for local area development activities.

JNIL will invest Rs. 62.72 Crores in this backward/ undeveloped naxalite infested area marked with recurrent insurgency during the last 18-20 years. The project will generate direct employment for about 221 persons and indirect employment for about 1500 persons.

(iv) Demand – Supply Gap:

The mine will partially meet the requirement of steel plant of JNIL.

(v) Imports Vs Indigenous production:

Not envisaged now.

(vi) Export Possibility:

May arise in future.

(vii) Domestic / Export Markets:

Yet to be explored.

(viii) Employment Generation (Direct & Indirect) due to project:

The project will generate direct employment for about 221 persons and indirect employment for about 1500 persons.

3. Project Description:

Type of project including interlinked and interdependent projects, if any:

The project will supply iron ore to the existing steel plant division of JNIL located at Silatara, Raipur. Presently the required iron ore is purchased from open market. EC of the existing steel plant has been obtained. The plant is operating since late 1990's

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

Co-Ordinates of boundary pillars as per DGPS survey of the lease area

Boundary Pillar No	Latitude	Longitude
A	19^0 26' 03.401" N	81^0 17' 25.404" E
B	19^0 26' 26.153" N	81^0 17' 12.947" E
C	19^0 26' 40.178" N	81^0 16' 38.374" E
D	19^0 26' 10.554" N	81^0 15' 49.649" E
E	19^0 25' 48.414" N	81^0 15' 53.656" E
F	19^0 25' 40.356" N	81^0 15' 41.491" E
G	19^0 25' 45.653" N	81^0 15' 37.175" E
H	19^0 25' 58.141" N	81^0 15' 43.086" E
I	19^0 26' 12.264" N	81^0 15' 40.105" E
J	19^0 26' 22.542" N	81^0 15' 50.902" E
K	19^0 26' 25.435" N	81^0 16' 03.451" E
L	19^0 26' 28.403" N	81^0 16' 09.321" E
M	19^0 26' 34.212" N	81^0 16' 12.982" E
N	19^0 26' 40.014" N	81^0 16' 22.211" E

O	19^0 26' 43.873" N	81^0 16' 39.539" E
P	19^0 27' 02.099" N	81^0 17' 04.975" E
Q	19^0 27' 06.642" N	81^0 17' 02.795" E
R	19^0 27' 09.423" N	81^0 17' 07.024" E
S	19^0 26' 09.044" N	81^0 17' 34.507" E

Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental conditions gone into to be highlighted:

Alternate site cannot be considered as mining is as area specific activity, more over this is an expansion proposal of the operating mine.

Size and Magnitude of Operation:

Mining Plan has been approved by IBM vide letter dated 29.03.2019 for ROM production of 2.95 Million Tons Per Annum (MTPA) with graded ore production of 2.5 MTPA. Beneficiation of sub-grade ore would result in the final usable graded production of iron ore of 2.75 MTPA. Till date 35.74 ha land had been cleared and handed over by the forest department. Detailed exploration had been done only on this 35.74 ha area. Therefore mining activity will be restricted within this 35.74 ha area for production of 2.95 MTPA ROM iron ore.

Project description with process details (a schematic diagram/flow chart showing the project layout, components of the project etc. should be given:

Open cast fully mechanized method using excavator, rock breaker, drilling and blasting, crushing, sizing and screening shall be done. The main equipment shall be crusher and screen, Excavator, Rock Breaker, Ripper Dozer, Wagon drill, Pay-loader, Dumper, DG sets, Workshop, Oil Shed, Water Pump, etc. Site Mixed Slurry or Cartridge type explosives shall be purchased daily from suppliers. Considering 300 working days, the maximum material handling during the proposal period (2019-20) will be 4667 tons per day or 1556 m^3/day; comprising 0.77 MTPA sized lumps, 0.42 MTPA crushed fines and 0.21 MTPA sub-grade material. During the conceptual plan period the maximum excavation of ROM will be 2.95 MTPA or 9834 tons/day or 3278 m^3/day. (comprising 1.623 MTPA sized lumps, 0.885 MTPA crushed fines and 0.442 MTPA sub-grade material). There will be no wastes or overburden material. Daily 54 holes will be drilled for blasting. The requirement of explosives is 1051 kg/day (1946 kg x 54). NONEL (non electric delay detonators) shall be used for blasting. Water requirement will be 330 KL per day (150 for mines and 180 for Beneficiation plant). 221 people will get employment in the mines.

JNIL planned to set up beneficiation plant of 1.0 MTPA capacity within the leasehold area during conceptual period. In beneficiation circuit various modern systems has been proposed so that minimum tailing is generated that does not require tailing pond. These tailings will be dumped either on earmarked waste dump-site and later used for reclamation. The water, which will be generated after beneficiation shall be recycled and reused after treatment.

The mining lease area covers the upper half portion of the ridges from 700 MRL to top. The working will start from 880 MRL and during the proposed plan period (2019-20), the hill slope will be sliced till 874 m RL. There will be bench height of 6 m and bench width of 18 m. Slope will be less than 45^{o}. During the conceptual plan period (2021 to 2028), the hill slope will be sliced till 808 MRL. The ground elevation is at 520 MRL. The Ultimate depth of the pit will be 54 m (288 m above ground level). No ground water is present above 520 MRL. The ground water table present at foot hill varies from 6 m (post monsoon) to 12 m pre-monsoon. The annual rainfall of the area is 1476 mm. Therefore the annual runoff will be 28.4 lakhs cubic meter.

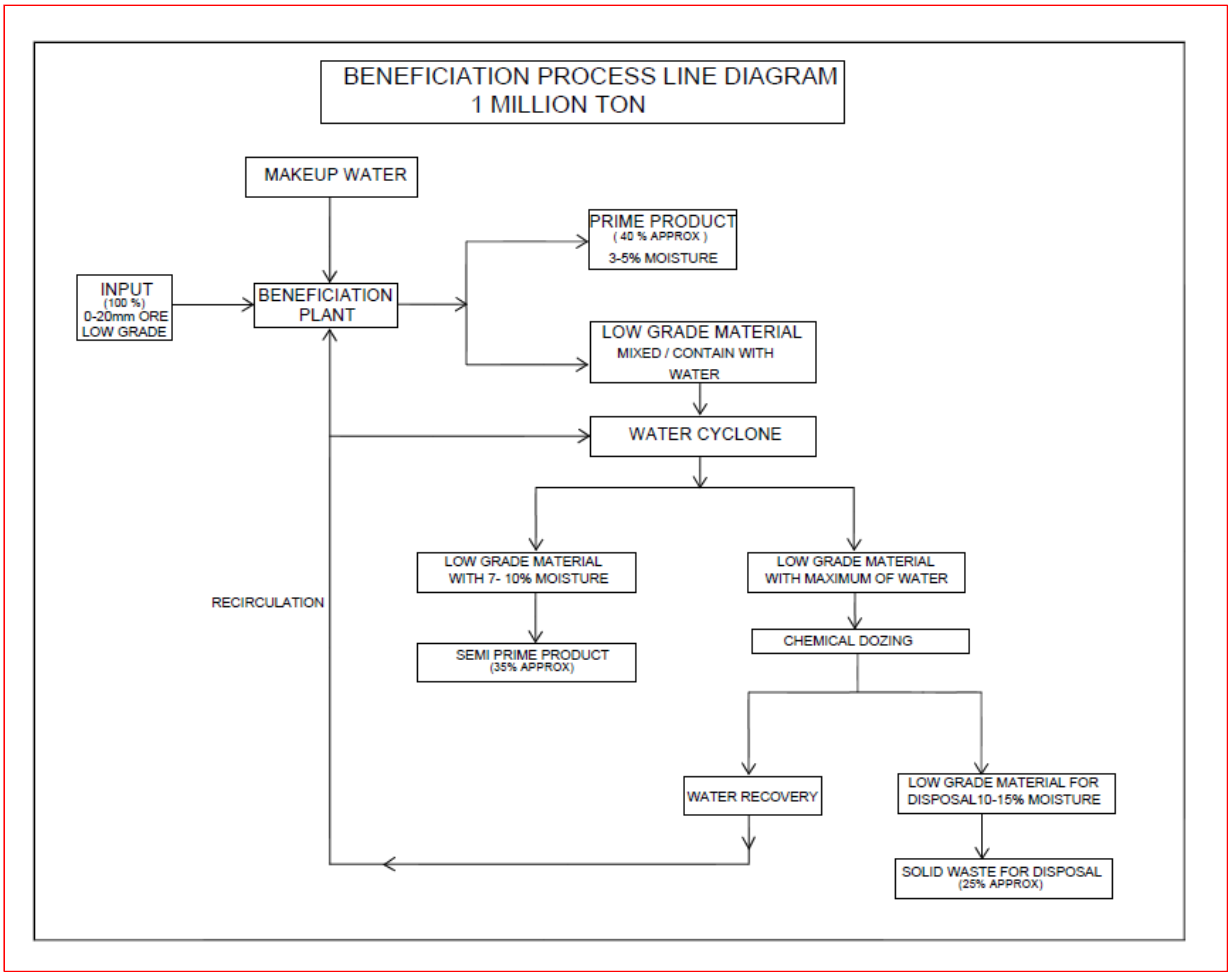
Waste Generation and Management: No overburden will be encountered during mining. However 0.5 ha area (on non-mineralized portion) has been earmarked as dump site (SE of working pit). However, during conceptual period about 0.640 Lakh cum waste is expected to be generated. A flat area devoid of ore covering 5 ha has been selected in the north-central part of the lease area for proposed waste dump. Part of the waste material will be utilised for maintaining haul road. The height of dump (if any required) will be kept below 6.0 m and that of sub grade dump will be kept below 7.0 m. Slopes will maintained by angle of repose, hence additional stabilization is not required. The construction of garland drain with sedimentation basins around the dump yard will be done. Plantation of the vertiber grass or other suitable methods throughout the slope and terraces of the dump will be done at the end of conceptual period for further control of erosion and to stabilize the dump.

Beneficiation Plant (1.0 MTPA) for Utilizing Sub-Grade Iron Ore: M/s Jayaswal Neco Industries Ltd. proposes to set up one beneficiation plant of 1.0 MTPA capacity within the leasehold area of Chhotedongar Iron Ore Mine to beneficiate sub grade ore generated during the process of mining, screening and crushing as per mineral conservation point of

view. The proposal has been made with a view to use low grade ore Fe% below 58, generated during processing of ROM to remove clay. After beneficiation, there shall be generation of calibrated ore and waste in the ratio, which shall depend upon Fe content of the sub grade material. The calibrated ore shall be sent to end use steel plant for its usage.

The process of beneficiation shall be through close circuit, such that the total water used or say discharged after beneficiation shall be recirculated in the system, after necessary treatment. There shall be zero discharge of water. Total water requirement as makeup water shall be around 180 KL/day. Groundwater or harvested rain-water from storage pits shall be used for beneficiation. In the beneficiation circuit latest technology shall be incorporated, to produce tailing in the form of moist waste and does not call for tailing dam management. These wastes, shall be dumped either on earmarked waste dump site or in the quarries for reclamation for subsequent plantation. Around 2.5 MW power will be required to run the plant, which will be taken by State Electricity Board. DG sets of 2500 KVA will also be installed for smooth running of the plant.

The beneficiation plant will be compactly established on 4 hectares in non-mineralized area inside the mining lease area. Out of total mining lease area of 192.25 ha only 112.10 ha is mineralized area. The Latitude and Longitude of the beneficiation plant site is $19^0$26’34.24” to $19^0$26’53.03” N and $81^0$17’11.86” to $81^0$17’22.43”E. No rehabilitation or resettlement issues are involved. Greenery and greenbelt development will be done as per the requirement in lease area.



Mining Details during Conceptual Plan Period

Conceptual Period	Volume to be Excavated (Million Cum)	RL (m)	Quantity of Mineralized ROM (Million Tonnes)	Generation of Sub Grade Fines (Under size) @ 15% of ROM (Million Tonnes)	Recovery of Graded lump as per required size of the plant @ 55% of ROM (Million Tonnes)	Generation of crushed Fines as per required size of the plant @ 30% of ROM (Million Tonnes)	Generation of Waste (Cum)
(2020-21 to 2024-25)	4.917	880 to 838 MRL	14.750	2.212	8.113	4.425	64,000
(2025-26 to 2028-29)	3.069	838 to 808 MRL	9.207	1.381	5.064	2.762	--
Total	7.986	880 to 808 MRL	23.957	3.593	13.177	7.187	64,000

Mining Details during Conceptual Plan Period

Sl. No.	Description		Details
1	Type of ore to be mined	:	Hematitic iron ore along with float ore
2	Method of mining	:	Open Cast Fully Mechanised Method using excavator, rock breaker, at places by drilling and blasting followed by Sizing and Screening.
3	Machineries to be used	:	Excavator, rock breaker, wagon drill, ripper dozer, air compressor, dumper, pay loader, truck mounted water sprinkler, water pump, weigh bridge, fuel oil storage system with dispensing unit, hired trucks for transporting mineral, ambulance, DG sets etc.
4	Average working days in a year	:	300 Days
5	Maximum excavation of R.O.M	:	2.95 million tonnes/ Annum
6	Generation of sub grade primary fines below 10 mm size from mineralized ROM @ 15 % recovery	:	0.442 million tonnes/ annum
7	Production of sized lump (10 to 40 mm size) from mineralized ROM @ 55 % recovery after sizing and screening	:	1.623 million tonnes/annum
8	Generation crushed fines (below 10 mm size) from mineralized ROM @ 30 % recovery after sizing and screening	:	0.885 million tonnes/annum
9	Maximum production of mineralized ROM / Day (2.95 million tonnes / 300 days)	:	9,834 tonnes/ day or 3,278 Cum/ day
10	Maximum generation of waste as side burden per day which is medium hard in nature	:	Nil
11	Proposed maximum material handling per day (ROM + Waste) (9,834 tonnes/day + Nil) or (3,278 cum/day + Nil)	:	9,834 tonnes/ day or 3,278 Cum/ day
12	70 % of ROM may require drilling and blasting (9,834 tonnes x 70 %)	:	6,884 tonnes/ Day Tonne
13	No of holes to be drilled per day (6,884 tonnes/ 129 tonnes)	:	54 holes
14	No of persons to be employed	:	161 nos

Sl. No.	Description		Details
15	Explosives required to blast 54 nos holes in a day (54 holes x 19.46 Kg charge per hole)	:	1,051 Kg/ day or 1,051 Kg x 26 days = 27,326 Kg/ month + detonating fuse NONEL of standard length + exploder
16	Water Requirement for mine	:	150 KL/ day
17	Mineral Processing	:	During conceptual period 2020-21 onwards their nos will be increased to 4 + 1 = 5 ie, 4 nos crusher with inbuilt screen + 1 standby and 4 nos multiple decker power screen + 1 standby. **For Conceptual Period (2020-21 onwards) -** **Requirement of 5 nos 250 TPH Multiple Decker Power Screen for screening of mineralized ROM @ 2.95 MTPA as per required size of the plant -** 250 TPH x 5 nos x 10.5 hrs x 90 % x 300 days = 3.5 MTPA **Recovery of mineralized ROM after screening @ 85 % of ROM -** 2.95 MTPA x 85 % Recovery = 2.50 MTPA **Requirement of 4 nos 250 TPH crusher with inbuilt screen for processing 2.50 MTPA mineralized ROM after screening as per required size of the plant -** 250 TPH x 4 nos. X 10.5 hrs x 80 % x 300 Days = 2.52 MTPA

Name of Plant and Machinery

Sl. No	Name of Machinery	Capacity	Quantity Required	Purpose
1	Wagon drill operated by Compressor	100 mm dia	4 Nos	Drilling of blast holes (3 + 1 stand by)
2	Portable air compressor diesel operated	400 CFM	4 Nos	Power for drilling to run 3 nos wagon drill +1 stand by compressors each of 400 CFM capacity would be required.
3	Excavator required for loading ROM on dumpers at mines	3 cum bucket capacity	6 nos	5 nos + 1 standby for loading ROM on dumpers at mines site for transporting to stack yard/ mineral

	site			processing plant.
Sl. No	Name of Machinery	Capacity	Quantity Required	Purpose
4	Rock Breaker	--	2 Nos	For rock breaking
5	Hyva Dumper	--	18 No's	Transportation of R.O.M from mine's face to stack yard/ crushing and screening yard (16 + 2 standby)
6	Water sprinkler	10 KL	4 Nos	For sprinkling of water on haul roads and for plantation
7	Pay Loader (Tyre Mounted)	3 cum bucket capacity	5 nos	4 nos + 1 standby for collection and loading screened products on transportation trucks and miscellaneous work.
8	Ripper Dozers	_	--	For loosening medium hard strata, Plot cleaning, Dump cleaning and miscellaneous work to be deployed as per requirement.
9	Ambulance	--	2 Nos	For shifting patients and injured persons to first aid station/ hospital (1 + 1 standby)
10	Mobile Multiple Decker Power Screen	250 TPH Capacity	6 Nos	For Dry Screening located inside the lease area. (5 nos + 1 standby)
11	Mobile Crusher with Screen	250 TPH Capacity	5 Sets	For Crushing, Sizing and screening located inside the lease area.(4 nos + 1 standby)
12	Excavators required for feeding to 4nos crushers and 5 nos screens	3 cum bucket capacity	10 nos	9 nos + 1 standby for feeding to 4 nos crushers and 4 nos screens.
13	Fuel pump with HSD storage tank	20 KL	5 nos	For dispensing fuel oil to mining machineries (3 nos will be installed during proposal period and 2 nos during conceptual period)
14	Electrical Sub-station with Transformers.	--	--	For supply of power in future.
15	DG Sets	--	--	DG sets will be installed as per requirement to meet 1 to 5 MW power requirement for mining and other purposes.
16	Weigh Bridge	--	6 no	For weighing material for transportation.
17	Hired trucks for transportation of ore	25 Tonne	334	Daily 8,334 tonnes of ore will be transported for which total 334 nos of hired trucks of 25 tonne capacity are required per day on an average.

18	Washery	0.95 MTPA	1 no	For beneficiation of low grade iron ore @ 0.95 MTPA.
19	Water Pump	5/10 HP	--	As per requirement water pumps will be deployed for pumpimg of accumulated water from quarry.
20	Explosive van	--	1 no	For carrying explosive and detonating fuse, exploder from magazine to blasting site.

Environment Management Plan

Air Pollution Management :

i. Haulage roads will be frequently sprinkled with water for which truck mounted water tankers with sprinkler arrangement have been provided.
ii. Ore will be covered by tarpaulins to prevent spread of dust from it during transportation.
iii. Regular maintenance of vehicles and machineries will be carried out in order to control emissions.
iv. Green belt development will be taken up at backfilled area and all along the roads.
v. The dust respirators will be provided to all the workers in dusty atmosphere; and
vi. Good housekeeping and proper maintenance will be practiced which will help in controlling the pollution.

Water Pollution Management:

There may be runoff from the mining area during monsoon. The runoff will contain silt. This will be treated in settling tanks followed by de-silting tanks and the treated water (overflow) will be let into the natural nallah. Runoff water will be stored and used for dust suppression and plantation during non-monsoon season.

Noise & Vibration Management

i. Noise is best abated at source by choosing machinery and equipment suitably, by proper mounting of equipment & ventilation systems and by providing noise insulating enclosures or padding where practicable.

ii. The equipment's to be procured is new and as such as the noise emission will be optimal for their design/operation. Proper maintenance / working will be done which keeps the noise level within limits.

iii. At the boundary of mining lease green belt of local trees will be planted which will act as acoustic barriers. Planting of bushy trees of rich canopy in and around the mine area to intercept noise transmission. A 7.5 m wide belt of trees of different heights will be useful to attenuate noise in the mining areas.

Plantation:

It is proposed to select the local tree species with the help of forest department all along the boundary of mining lease in order to arrest fugitive dust.

Land Reclamation Measures:

The topography of ML area is hilly. Presently mining will be done over diverted block of ore body adopting slicing method by forming slice of 6 m height from hill top at 880 to 874 MRL till end of proposal period. Due to restriction of boundary of working block, mining will be done by forming benches of 6 m height and 9 m width from 862 to 808 MRL till complete exhaust of ore over ore body during conceptual period. After the entire iron ore is mined out, there will be a quarry over 17.58 ha area. At the end of conceptual period this quarry will be used to store rain-water.

Control during Blasting:

Although JNIL's mining lease is away from any population, All the precautions will be taken to minimize nuisance caused by blasting. All necessary safety precautions will be taken in accordance with the Explosives Act. Precautions are also taken as per permission given under MMR 1961, 106(2)(b) by Director of Mines Safety for deep hole drilling and blasting and usage of heavy earthmoving machinery. Noise due to blasting will be controlled by using non-electrical initiation (NONEL).

NONEL MS delay detonators to be used for both DTH delay and surface delay. Charge per delay to be kept at minimum level with proper delay sequence. Use of NONEL MS delay helps in reducing the charge per delay substantially which is crucial for ground vibration control. The secondary blasting is completely stopped & boulders are broken with help of hydraulic rock breaker.

Control of Ground Vibration:

Blasting shall be carried out by using NONEL. Vibration Studies will be carried out on three year interval by external agency or by procuring MINIMATE (approved blast induced ground vibration measuring device) the frequency of vibration study is three months internally to monitor ground vibration. In order to minimize vibration the following precautions will be taken:

(a) Non -Electric detonators to initiate Blast holes.

(b) Care will be taken to ensure that the effective burden is not excessive and the free faces are kept sufficiently long. The burden is kept at 2.5 to 3 meters and spacing of 4.5 m to 5.5 m.

(c) Explosives charge per delay will be kept as low as possible.

(d) Use of non electric shock tube detonators DTH and HTD detonators.

Currently JNIL is taking all the above precaution for blasting in the existing lease area. peak particle velocity is maintained well below the permissible limit.

The following steps will be taken to minimize excessive noise during blasting.

(a) Blasting will be well designed and to be blasted periodically rather than a couple of hastily unplanned blasts daily. All the explosives with detonators (NONEL) will be used within the blast hole and detonating fuse is not used for trunk line.

(b) Blasting will be planned to minimize boulders.

(c) Hydraulic rock breaker is utilized so that secondary drilling and blasting will be avoided completely.

(d) Plaster shooting will not be carried out at all which increases noise levels.

(e) Secondary blasting & drilling is completely eliminated and same will be continued.

Control of Fly rocks during Blasting:

While Blasting, if the holes are not properly designed and charged, the main thrust of the blast will be upwards and instead of fragmenting the rock, there will be an outward surge resulting in rock fragments flying. In order to prevent fly rocks:

a) Stemming length will be kept equal to the burden or 20-25 times the diameter of blast holes.

b) Inter-row delay will be selected in such a way that each row pushes its burden forward rather than in an upward direction.
c) Hydraulic rock breaker will be utilized to eliminate secondary blasting which results in greater number of fly rocks.
d) Toe formation will be avoided by proper design of drilling and blasting as toe hole blasting involves increased risk of fly rocks.

Raw Material required along with estimated quantity, likely source, marketing area of final product / s, Mode of transport of raw material and finished product:

Iron ore being the basic raw material for manufacturing of iron and steel, this mining project does not require any raw material for any processing. Finished product i.e ROM will be transported to the steel plant through trucks/ dumpers & rail network in future

Basic materials used for operation of mines will be

- Explosives
- Blasting Accessories
- High Speed Diesel Oil
- Lubricants for HEMM
- Spares parts of HEMM
- Tyres
- Machine tools and electrodes, etc

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

1.0 MTPA iron ore beneficiation plant has been proposed in this project, which will convert the sub-graded iron ore to graded / usable iron ore.

Availability of water it's source, Energy / power requirement and source should be given:

The water requirement of the mines is about 330 kl/day. 250 KL water will be supplied from Madin river and perennial nalla locally named Kadam nalla located at 3 Km away from ML area and rest 70 KL water will be suppled through tankers from near by villages. Potable water will be pumped though bore well to water tanker for supply at mine's site.

Quantity of Wastes to be generated (liquid or soild) and scheme of their management / disposal:

No overburden will be encountered during mining. However 0.5 ha area (on non-mineralized portion) has been earmarked as dump site (SE side of working pit). During conceptual period about 0.64 Lakh cum waste (sub-grade or poor grade unusable material) is expected to be generated. Non-mineralized area of 5 ha has been selected in the north-central part of the lease area for proposed waste dump. Part of the waste material will be utilised for maintaining haul road. The height of dump will be kept below 6.0 m. Slopes will maintained less than the angle of repose. The construction of garland drain with sedimentation basins around the dump yard will be done. Appropriate stabilization methods will be followed.

Wastes Generation during Conceptual Plan Period

Conceptual Period	Volume to be Excavated (Million Cum)	Quantity of Minera-lized ROM (Million Tonnes)	Generation of Sub Grade Fines (Under size) @ 15% of ROM (Million Tonnes)	Recovery of Graded lump as per required size of the plant @ 55 % of ROM (Million Tonnes)	Generation of crushed Fines as per required size of the plant @ 30% of ROM (Million Tonnes)	Generation of Waste (Cum)
(2020-21 to 2024-25)	4.917	14.750	2.212	8.113	4.425	64,000
2025-26 to 2028-29)	3.069	9.207	1.381	5.064	2.762	--
Total	**7.986**	**23.957**	**3.593**	**13.177**	**7.187**	**64,000**

TAILINGS QUANTITY: 443 Ton/Day (out of 3.593 MT sub-grade ore, around 50 to 55% graded material will be generated through beneficiation process) hence the trailing left out will be aound 1.61 MT for the whole of the period upto 2029. .

During processing of ROM substantial quantity of under size primary fines to the tune of 0.21 million tonnes ie 0.7 lakh cum @ 15% of ROM will be generated during the tenure of proposal period. The primary fines may be treated as sub-grade fines or waste depending on its Fe content. The primary fines generated during screening having Fe content above 45% to below 58% will be stacked separately on earmarked area for future use which will be utilised after blending / beneficiation as and when required. The screened fines having Fe content below 45% will be treated as waste.The place for dumping waste has been selected temporarily towards SE of working pit over non mineralized area. The place for dumping sub

grade ore has been selected towards east of working pit. The sub grade fines will be utilised either after blending or beneficiation as and when required. Therefore, these materials will be consumed regularly.

Schematic representations of the feasibility which give information of EIA purpose:

Model TOR of MOEF&CC will be followed for doing the EIA study.

4. Site Analysis:

(i) Connectivity:

The village Chhotedongar is situated at a distance of about 43 kms from Narayanpur on metalled tar road which is connected to Kondagaon located at a distance of about 47 kms. Kondagaon is situated at a distance of about 210 kms from Raipur on NH 43. Narayanpur is also connected with Rajnandgaon at a distance of 188 kms on SH 9. The deposit is located about 300 km. from Siltara Steel Plant of the applicant's company at Raipur .The nearest railhead for the area is Keoti located at a distance of about 140 Km. which is at a distance of about 140 Km form the mine falls under the proposed Dalli-Rajhara - Rowghat railway line. The proposed Dalli- Rajhara-Raoghat Railway line would pass through Antagarh located at about 100 km from the deposit.

(ii) Land Form, Land use and Land Ownership:

Sl. No	Description	AREA in Hectare		
		Present	End of 5 years	End of lease period
1	Area under pits	2.000	7.780	155.31
2	Storage of top soil	--	--	--
3	Area under waste dump	--	0.500	5.000
4	Mineral Storage	--	0.500	1.000
5	Sub grade stack yard	--	1.000	2.000
6	Office, Rest Shed, Toilet, etc	Nil	0.250	1.000

7	Area under roads and Infrastructures like Crushers & Screens, DG Sets, Storage system of HSD oil with dispensing unit, Magazine, Pump house, Occupational health centre, Weigh Bridge, Workshop, Electrical Sub Station with Transformers, Latrine & Urinal, Office & Environment Lab, washery etc.	4.100	8.090	18.94
8	Area for Garland Drain	Nil	0.500	1.000
Total	-	**6.100**	**18.620**	**184.25**

(iii) Topography (along with map):

Regionally the area forms a part of the hilly terrain which extends from the Bailadila hill range in the south to Rowghat hill range in the north and from Baster plateau in the east to Gadchiroli district of Maharashtra in the west. Within this hilly terrain there are distinct hill ranges most prominent being the Bailadila hill range towards South and Rowghat hill range in the North. Within these two hill ranges there are number of smaller hill ranges having more or less N-S alignment on a regional basis. Chhote dongar hill range is lying more or less in the centre of this hilly region.

The ML area is located on Chhote dongar hill range which is one such N-S aligned hill range located aerially about 3 Km west of village Chhote dongar rising from the ground level of about 450 MRL contour level to more than 939 MRL contour level. Locally the ML area forms a part of the hill range comprising of two parallel ridges trending broadly NNW – SSE and located south of Madin river about 3 Km west and WSW of village Chhote dongar. The two parallel ridges close in the fashion of a Greek letter omega (Ω). The head of this omega points towards NNW with one portion stretched as a broad arrow head originating from triangulation point 939 and pointing towards north. The ML area itself includes the arcuate portion of the head of this omega and comprises of five distinct ridges arranged serially in an arcade fashion, each separated from each other by a saddle.

(iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery fo the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given):

Mining lease area: 192.25 Hectares (Reserve Forest)
In-principle clearance obtained: 91 ha area (vide letter no 8-31/99-FC date 11.08.2004)
Forest Clearance obtained: 35.74 ha area (vide letter No.8-31/99-FC dated 18.01.2007).
Existing mining area: 35.74 ha (0.05 MTPA)
Proposed mining area: 35.74 ha (2.95 MTPA)

National park, wildlife sanctuary, etc are not present within 10 km area of the mine site. No main river is located in 10 km area of mine site.

(v) Existing Infrastructure:

Mine is under operation since 2016. Temporary rest Shelter Cum office constructed within mine premises.

(vi) Soil Classification:

Major portion of the area is occupied by hematitic iron ore, BHQ, ferruginous phyllite covered at places by laterite and lateritic soil. No top soil is available in the area. The samples collected from lateritic soil have been analyzed and showes that organic contents and nutrients in it are low. Its permeability is also low and water table exists at greater depth from hill top.

(vii) Climatic Data from secondary sources:

The area is characterised by monsoonic climate with the wet season extending from June to September receiving rainfall from SW monsoon. Some rainfall is also recorded during winter (December to January) from SE monsoon. Remaining part of the year is mostly dry comprising of moderately cold season from October to February and hot dry season from March to May. The area receives average annual rainfall of about 1476 mm during monsoon season. The maximum temperature rises upto 44^0 C during peak summer in May and falls as low as 6^0 C in winter nights during December-January.

(viii) Social Infrastructure available:

Approach road to mine site: Available

The 10 km area around the ML area is undeveloped. The name of surrounding villages are shown below:

Sl No	Name of Village	Distance w.r.t ML Area (Km)	Direction w.r.t ML area	No of House holds	Population		
					Male	Female	Total
1	Dhanora	2.0	W	103	251	124	375
2	Rajpur	2.5	NW	75	186	187	373
3	Gurapara	3.0	NE	60	130	143	273
4	Mundatikra	3.5	ENE	56	121	139	260
5	Bahker	2.0	SE	32	75	81	156

6	Chhotedongar	4.0	E	808	1960	1857	3817

Public facilities like school, primary hospital, market, etc are available at Chhotedongar located at a distance of 4 km from ML area. Potable water source is bore wells and ponds/ streams located near villages. Work force is available from adjacent villages. Electricity is supplied by State Electricity Board.

5. Planning brief:

(i) Planning Concept (types of industries, facilities, transportation etc) Town and Country planning/Development authority Classification:

The ML area falls under mining type, hence no Town & Country Planning approval is required. Approval of State Govt, Central Govt and IBM has been obtained. Facilities like Crushers & Screens, DG Sets, Storage of HSD oil with dispensing unit, Magazine, Pump house, Occupational health centre,Weigh Bridge, Workshop, Electrical Sub Station with Transformers, Latrine & Urinal, Office & Environment Lab, Washery, etc will be set up in the lease hold area.

(ii) Population Projection:

Unskilled labour (about 80-100) will be recruited from surrounding villages. The area is dominated by iron ore mines, hence trained workforce is available locally. Staff will stay at Chhotedongar village in rented houses. The managerial, skilled and semi-skilled manpower requirement of the project is given below:

Management and Supervisory Staff

Sl No	Category	No
1	Mine Manager (Certificate Holder)	1
2	Assistant Manager (Certificate Holder)	2
3	Geologist	1
4	Mining Engineer	1
5	Mining Foreman (Certificate Holder)	2
6	Mining Mate (Certificate Holder)	4
7	Office Staff	5
8	Surveyor	2
	Total	**18**

Skilled Staff

Sl No	Category	Nos
1	Compressor Operator	2
2	Excavator, Rock breaker, Payloader and Dozer Operator	10

3	Operator for Crushing and Screening Unit	4
4	Blaster	1
	Total	**17**

Semiskilled Staff

Sl No	Category	Nos
1	Wagon drill Operator	2
2	Driver for dumper, ambulance and water sprinkler	16
3	Blasting helper	2
4	Security Guard for mine and office	15
5	First Aider	1
6	Way Bridge clerk	4
7	Senior Mechanic	1
8	Mechanical Fitter	2
	Total	**43**

(iii) **Land use planning (breakup along with green belt etc):**

Sl. No	Description	AREA in Hectare		
		Present	End of 5 years	End of lease period
1	Area under pits	2.000	7.780	155.31
2	Storage of top soil	--	--	--
3	Area under waste dump	--	0.500	5.000
4	Mineral Storage	--	0.500	1.000
5	Sub grade stack yard	--	1.000	2.000
6	Area under Office, Rest Shed, Toilet.	Nil	0.250	1.000
7	Area under roads and Infrastructures like Crushers & Screens, DG Sets, Storage system of HSD oil with dispensing unit, Magazine, Pump house, Occupational health centre, Weigh Bridge, Workshop, Electrical Sub Station with Transformers, Latrine & Urinal, Office & Environment Lab, washery etc.	4.100	8.090	18.94
8	Area for Garland Drain	Nil	0.500	1.000
Total	-	**6.100**	**18.620**	**184.25**

Note: Greenbelt development along the ML boundary is under progress

(iv) **Assessment of infrastructure demand (Physical as well as Social):**

Physical:

Facilities like Crushers & Screens, DG Sets, Storage of HSD oil with dispensing unit, Magazine, Pump house, Occupational health centre,Weigh Bridge, Workshop, Electrical Sub Station with Transformers, Latrine & Urinal, Office & Environment Lab, Washery, etc will be set up in the lease hold area.

Social: Under CSR activities JNIL taking various rural developmental & infrastructure projects like- Promotion of education & training, community welfare, promotion & development of traditional art & culture protection of national heritage surrounding the mine area as well as nearby villages to improve social life of villagers.

(v) **Amenities / Facilities:**

(a) Hospital: A well-equipped hospital is available at Narayanpur. Small hospital is available at Chhotedongar. JNIL will provide financial assistance to these two hospitals and provide free medicines and doctors

(b) Housing: Staff will stay in rented accommodation in Narayanpur. Few porta cabin type accommodation (10-12 numbers) will be provided for staff.

(c) School: School is available in Narayanpur. JNIL will provide financial assistance to local schools and provide free teacher and educational aids.

(d) Bank Branch: State Bank of India has a local branch in Chhotedongar and Narayanpur.

vi. Electricity- Electricity supplied nearby village- Chhottedonger by Chhattisgarh State Electricity Board.

6. PROPOSED INFRASTRUCTURE:

i. **Industrial Area (Processing Area):**

Not required

ii. **Residential Area (Non Processing area):**

The mine is in the top of the hill, and no permanent construction could be build in the mining lease area.

iii. **Green Belt:**

Greenbelt development is in progress along the ML boundary. This will be continued.

iv. **Social Infrastructure:**

Not envisaged inside ML area as it is hill.

v. **Connectivity(Traffic and Transportation Road/ Rail/Metro/ water ways etc):**

Existing connectivity will be used

vi. **Drinking Water Management (Source and supply of water):**

Drinking water for workers will be purchased

vii. **Sewerage System:**

Not required

viii. **Industrial Waste Management:**

No industrial waste is generated from mining activity.

ix. **Solid waste Management:**

The garbage generated from the mines will be collected in containers in segregated manner and disposed as per local body regulations.

7. REHABILITATION AND RESETTLEMENT PLAN:

(i) **Policy to be adopted (Central/ State) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given):**

Not applicable as the capacity enhancement of the mine is being carried out within the existing mine lease area and no extra land is being taken. There will be no person affected by the project need to be displaced.

8. PROJECT SCHEDULE AND COST ESTIMATES

i. **Likely date of start of construction and likely date of completion (time schedule for the project to be given):**

This being a mine already under operation, the enhanced production will be done only after getting all related statutory approvals from govt agencies.

ii. **Estimated project cost along with analysis in terms of economic viability of the project:**

The total cost of the Project for enhancement of the production capacity will be Rs. 62.72 Crores State Government will generate a revenue of around Rs.90 crores per annum by way of royalty and Rs 30 crores per annum as contribution to DM Fund. This will enable the State Government to provide more resources for local area development activities.

The production cost of graded iron ore has been estimated as Rs 1,508 /- per tonne. The sale value of iron ore is Rs 1,827 /- per tonne declared by IBM on October - 2017. Hence, profit per tonne is Rs 1,827 - Rs 1,508 = Rs 319/-. The total cash flow is Rs 319 (profit per tonne) x 2.75 million tonne (yearly production) = Rs 88 Crores. The total capital investment and cash flow is Rs 62.72 Crores which justifies extraction under present market condition and the average value of the Iron ore mined from this mine will satisfy the required return on the investment.

9. ANALYSIS OF PROPOSALS (FINAL RECOMMENDATIONS)

The detailed exploration had been completed, and, the revised mine plan with enhanced capacity of 2.95 MTPA with 1.0 MTPA beneficiation unit is approved by IBM Raipur on 29.03.2019. Project proponent will implement proper environment management plan, this project will encourage other developmental activities in the area, which will improve employment opportunity and lead to economic growth. The project will not cause any negative impact due to high standard of Environment Management System.

Socio economically local people mostly belong to very low income group and most of them are engaged in cultivating own land. Landless people do work as labourer for earning money. The mining activity provides employment to the local people. There is no endangered fauna and flora or protected monuments or places of historical significance. There does not exist any industry or such sources, which cause water, noise and air pollution. Present land use is only extraction of iron ore. The area is thinly populated and average density is very low. The area is mostly inhibited by agricultural based people as agriculture is the major source of income.

The Iron ore produced from this mine will be used in Steel plant at Raipur. Hence there is permanent demand of iron ore. Based on techno economic feasibility study it is apparent that this iron ore mine is economically viable from mining point of view and the company can take final decision on capital investment. The overall economics of the operation appears highly encouraging. The development of this mine in this region will be welcome to all concern. This will subscribe considerable improvement of the economic condition and hence effectively contribute to stabilise socio economic environment of the region.