PRE FEASIBILITY REPORT

MAHARAJPUR IRON ORE MINE

(Lease Area: 193.229 ha)

AT VILLAGE– MAHARAJPUR, KADALI BARI, AMBADIHA & MACHAKAMDANA
TAHSIL—PANCHPIR IN
MAYURBHANJ DISTRICT OF ODISHA STATE

Mining Lessee:

SRI DINESH CHANDRA DAS

REGD OFFICE : BAHALDA ROAD,
MAYURBHANJ, ODISHA

Prepared by: ***MARCH-2015***

VISIONTEK CONSULTANCY SERVICES PVT. LTD.
(An Enviro Engineering Consulting Cell)

Plot No.-108, District Centre, Chandrasekharpur, Bhubaneswar-16,
Phone No. : 0674-2744594, 3250790
E-mail-visiontekin@yahoo.co.in , visiontekin@gmail.com
Visit us at - www.vcspl.org

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

CHAPTER – 1
EXECUTIVE SUMMARY

Sl.no	Project	:	Maharajpur Iron Ore Mine
1	Name of Company/Mine Owner	:	Sri Dinesh Chandra Das
2	Location		
	Forest Division	:	Baripada Forest Division, Mayurbhanj district
	Village	:	Maharajpur Hill block, Kadali-bari, Ambadiha & Machakamdana
	Tehsil	:	Panchpir
	District	:	Mayurbhanj
	State	:	Odisha
3	Mining lease Area & Type of Land	:	Total Lease Are = 193.229 ha (Forest = 175.762 ha & Non-forest = 17.467 ha)
4	Geographical Co-ordinates		See table below
5	Name of Rivers/Nallahs/Tanks/Springs/ Lakes etc		Tentua Nadi -1.5km NW Khadkai River - 4.0km E Similipal Tiger Reserve – 3.1km SE
6	Name of Reserve Forest(s), Wildlife Sanctuary/National Parks etc.		Badampahar RF – with in Lease area Similipal RF – Adjacent
7	Topography of ML Area		Elevation: 440-700 AMSL
8	Name of Mineral to be mined		Iron Ore
9	Rate of Production (in MTPA)		1.0 Tonnes/annum of Iron Ore
10	Life of mine		6 Years, As per present reserve calculation.
11	Reserve in Million Tonnes		Geological Reserves: 45, 28, 005 MT Mineable Reserve:37, 89, 715 MT
12	Drilling/Blasting		Drilling and blasting are practiced occasionally for loosening of hard strata. Blast holes are drilled by 100 mm dia jack hammer drills associated with compatible size compressors.
13	Ultimate depth of Mining		48m (up to 425 mRL)
14	Ground water table		425m – 430m below ground level
15	Water Requirement & Source		Requirement: 55 KLD Source: Ground water / Surface water as per suitability.
16	Cost of project (Rs)		49.30Crores
17	Any other (Specify)		None

Direction	Latitude (N)	Longitude (E)
C	22° 00' 15.565"N	86° 07' 30.360"E
C’	21° 59' 44.642"N	86° 07' 26.593"E
D	22° 00' 23.143"N	86° 06' 27.694"E
D’	21° 59' 45.353"N	86° 06' 23.145"E

Sri Dinesh Chandra Das, the Lessee of Maharajpur Iron Ore Mining Lease is a Private individual firm having its Registrated office at Bahalda Road, Mayurbhanj, Odisha. The total lease area of 193.229 hectares is situated in village Maharajpur Hill block, Kadali-bari, Ambadiha & Machakamdana in Mayurbhanj district of Odisha State.

The said lease is located in survey of India Topo Sheet No. 73 J/4 & 73 K/1, bounded by Latitude: 21^0 59' 44.64 to 22^0 00' 23.14" N Longitude: 86^0 06' 23.14" to 86^0 07' 30.35" E. The Lease area is easily accessible with village road passes through the lease area and connects Jashipur and Rairangpur state highway at a distance of 3.5 km. Badampahad is the nearest rail head which is 10.0 kms from the lease hold. Rairangpur is the nearest major town situated at a distance of 30 Km and Baripada is the district headquarters at a distance of 65 Km from the mines.

As the lease has been expired on 2009, the present lessee has applied for the renewal. Now, the mine has been closed since 2009 due to forest clearance and environmental clearance.

Now, the Lessee is applying for the Environmental Clearance of Maharajpur iron Ore Mines over an area of 193.229 ha for the production of 1.0 million TPA of Iron ore.

The mineable reserve of in-situ and float iron ore in the lease area is 37, 89,715 MT. During the ensuing scheme period (3 years) around 15,10,012 MT ore will be exploited, Keeping in view the maximum production target at 10,00,000 MT per annum, the remaining reserve 22,79,703 MT will be exhausted over 2.27 years or say 3 years after this plan period. However, the life of the mine is relative & will depend on increase & decrease of production in subsequent years and result of exploration.

Mining will be done by opencast Semi-mechanized method. Benches having maximum 4 m height and mininmum 6m width will be developed. The gradient of the road ways will be maintained at 1 in 16 gradients. The ultimate pit slope will be maintained at around 45^0 or less. In-situ iron ore will be loosened through drilling and blasting and manual means of mining would be adopted in case of float excavation.

Considering the cost of the project, cost of production, sale value of Iron ore, expenditure towards peripheral development etc. the project is viable and is encouraged as it provides employment to 146 persons in mining directly and many more in the locality indirectly.

CHAPTER – 2
INTRODUCTION OF THE PROJECT & BACKGROUND INFORMATION

(i) Identification of project and project proponent.

MAHARAJPUR IRON ORE MINE was first executed on 28.10.1959 for a period of 30 years in favour of OMC Ltd. OMC Ltd surrendered the lease w.e.f. 13.08.1968. Then the mine was again executed in favour of Smt. Sumatibala Dash wife of Ajaya Kumar Dash over an area of 501.675 ha for a period of 30 years w.e.f. 06.04.1979. Part of the lease area was surrendered by Smt. Sumatibala Dash and was accepted by Dept. of Mining & Geology Govt. of Odisha vide letter No.5885/MG dt.26.06.1988, whereby, the lease area was reduced to 193.229 ha. Lease area over 193.229 a was transferred by Smt. S. Dash in favour of Partha Das S/o Shyamapada Das on 25.09.1989. Again the Mining Lease was transferred by Partha Das in favour of Dinesh Chandra Das S/o late Haran Chandra Das on 15.11.1994 vide Govt. Order No.1447/SM dt.07.02.1994. The mine was in operation by the present lessee from the date of transfer i.e.15.11.1994 till the end of the lease period i.e. 05.04.2009. As the lease expired on 2009, the present lessee has applied for the renewal.

Surface right was granted in favor of Smt. S. Das in three phases over 20.23 ha, 4.88 ha and 41.40 ha. As lease area consist of 175.762 ha forest land and 17.467 ha non-forest land. As per forest stipulation lease has to obtain forest clearance for total forest land. Surface right which were obtained prior to Forest Act, 1982 would be invalid.

Statutory Clearances

- As per rule, mining plan should have been prepared for the year 2009-10 to 2013-14, but due to personal health problem of the lessee, the mining plan could not prepared for the period 2009-10 to 2013-14 which is a violation. So to comply the violation and to full-fill the statutory requirements of IBM, present mining plan is being prepared for the period from 2014-15 to 2018-19. **Annexure – 1.**
- Forest Diversion Proposal is being prepared and submitted to Concern Authority after approval of Mining Plan.

SRI DINESH CHANDRA DAS, the lessee is a private individual firm having its head office at Bahalda Road, Mayurbhanj, Odisha. He is economically sound and having two decades of experience in mining sector. Lessee has got one more mining lease within the state of Odisha.

(ii) Brief description of nature of the project.

The proposed production capacity of Maharajpur Iron ore mine is 1.0 million TPA by open-cast semi-mechanized method. This is an existing mine and the mining is closed since 2009 due to statutory requirements.

(iii) Need for the project and its importance to the country and or region

The most important and common use of Iron ore is in the Steel making Industries. Steel plants are the backbone of any country's development, especially for a developing country like India as it is important for all infrastructure development in the country; its utilization needs to be optimized. Iron & steel industries are normally heavy industries & they need massive amount of raw material. Iron ore is the principal raw material along with cooking coal and limestone. As per estimation, currently steel production in the country is gradually growing up.

This has necessitated the production of raw materials to cater the demand and also these value added product will fetch more revenue to the state as well as to the country as a whole.

(iv) Demand-Supply Gap

India is one of the major producers and exporters of high grade iron ore. India's Iron production was 136.02 Mt in 2012-13. The major iron ore producing states are Odisha, Jharkhand, Chhatishgarh, Karnataka and Goa. Inia is World's 3rd largest iron ore exporters after Austrellia and Brazil. India's Iron ore experts were 18.37 Mt (~13.5 %) in 2012-13. All major steel producers of India are implementing their growth plan to enhance production capacity. The Iron ore requirement is expected to increase to about 206 Mt/yr by 2016-17 and 500 Mt/yr by 2025. In order to meet enhanced requirement of iron ore, all iron ore producers are taking necessary action to expand their existing mines. Iron ore production capacity will be enhanced to meet the expanded requirement in the next 3-4

years. The iron ore from Maharajpur Iron Ore Mines will be sold to domestic steel producers.

(v) Imports vs. Indigenous production

Development and industrial growth of a country depends to a great extent on the availability of economic minerals. The Iron ore, one such economic mineral are plentily availability in Jharkhand, Chattishgarh & Odisha. The Maharajpur Iron ore deposit comes under the state of Odisha and being exploited economically by a number of organizations. The Iron ores produced from the area observed to be of High Quality and thus favorably cater to the needs of different Steel & Ferro Alloys industries. As far as Iron ore production is concerned with reference to the Importing of the said ore, it is advantageous to mine the mineral rather than importing the same.

(vi) Export Possibility

The Iron ore produced from the mines shall be entirely sold in domestic marked and the size specification of the ore depends on the requirement of customer.

(vii) Domestic/ export Markets

As the grade of saleable iron ore available is around 65% Fe, blending of sub-grade and saleable ore can be taken up. The lessee has a proposal to install a 200TPH capacity crusher cum screening plant to bring the ROM to required size range stipulated by buyers.

Threshold values for iron ore has been taken as 45% and. Iron ore in between 45 to 58% Fe has been termed as sub-grade ore which are proposed to be stacked separately for future blending.

Employment Generation (Direct and Indirect) due to the project

The mining operation is carried out by open cast semi-mechanical method. Buffer zone of the applied RML area is dominated by the ST population. Literacy level is poor. Therefore, 80% of the employment is kept under un-skilled category. They will be employed for manual breaking, digging, sorting, sizing, road construction & maintenance etc. Though machines are deployed for the above works, local people are employed as a part of socio-economic improvement program. Total 9 nos. of Managerial and Supervisory personnel will be engaged and 26 nos. of Semi-skilled workers will be employed. Considering OMS 10 MT, total 93 nos. of labours will be employed.

Total Employment = Management & Supervisory (9) + Semi-Skilled (26) + Un-Skilled (93) + Watchman (2) + Helper (16) = 146 nos.

Besides the direct employment in the mines, indirect engagement may be two to three times. Mining activity in the area has brought some positive effect like better employment potentiality, better he**a**lth care, better living, better sanitation conditions, better education facilities etc.

CHAPTER – 3
PROJECT DESCRIPTION

(i) Type of project including interlinked and interdependent projects, if any.

The Maharajpur Iron Ore Mine is a mine for exploitation of Iron Ore. The method of mining will be open cast Semi-mechanized. The targeted production is ~ 1.0 million TPA. This is not linked or dependant on any other project so far, as the production of iron ore is concerned.

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

Maharajpur Iron Ore Mine is coming within the Survey of India toposheet No: 73-J/4 & 73 K/1. It is bounded by Latitude: $21^0$59'44.64 to $22^0$00'23.14" N Longitude: $86^0$06'23.14 to $86^0$07'30.35"E. The area falls in the Village- Maharajpur Hill block, Kadali-bari, Ambadiha & Machakamdana, Taluka – Panchpir, in the district of Mayurbhanj of Odisha State. The Lease area is easily accessible with village road passes through the lease area and connects Jashipur and Rairangpur state highway at a distance of 3.5 km. Badampahad is the nearest rail head which is 10.0 kms from the lease hold. Rairangpur is the nearest major town situated at a distance of 30 Km and Baripada is the district headquarters at a distance of 65 Km from the mines.

Topographical **Location Map attached as Plate -1**.and satellite image **attached as Plate-1(a).**

(iii) Details of alternate sites considered and the basis of selecting the proposed site, Particularly the environmental considerations gone into should be highlighted.

Being a mining project it is site specific. No alternate site can be worked out. It has to be carried out within lease area allotted by the State Government. As far as the environmental considerations, the lessee is abiding by all relevant acts & rule and provisions of EP Act. All precaution measures will be taken within the 10 km radius of the area for environmental management.

(iv) Size or magnitude of operation

Total lease area is 193.229 ha (Forest area -175.762 ha & Non-forest area – 17.467 ha). As per EIA notification 2006, it is coming under "Category A" mines (Similipal National Park falling within 10km radius). It is proposed to produce ~ 1.0 million TPA Iron Ore from this mine.

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

The various mining operations such as drilling, blasting, excavation, loading, sizing and transportation will be practiced in opencast semi-mechanised mining. Height and width of the benches will be kept at 4m and 6m respectively. The gradient of the road ways will be maintained at 1 in 16 gradients. The ultimate pit slope will be maintained at around 45^0 or less. In-situ iron ore will be loosened through drilling and blasting and manual means of mining would be adopted in case of float excavation.

Due to soft nature of strata, rock breakers are deployed for loosening of the working faces. Drilling and blasting are practiced occasionally for loosening of hard strata. Loosened ROM ore is excavated and loaded by the excavators into the tippers which carries the ROM ore for feeding of crusher / screens. Oversized screened materials are broken manually with the help of hammers. After sizing manually as well as mechanically in the crushing and screening units, saleable iron ore is dispatched to the various destinations as per the demand or purchase order. Surface Plan attached as **Plate – 2**.

Minerals Processing:

The lessee has a proposal to install a 200TPH capacity crusher cum screening plant to bring the RoM to required size range stipulated by buyers. This can be decided after obtaining environmental clearance for the purpose. Flow sheet of different makes vary as per their configuration. Hence, it is not possible right now to depict the exact flow chart of the unit.

Mine development:

The mining plan has been prepared for the period from 2014-15 to 2018-19. As out of the total lease area most of the land use comes under forest category, so keeping in view the approval of FDP, only three years i.e. 2016-17 to 2018-19 has been considered for detail planning as lessee would try to obtain FC and EC till end of 2015-16.

During 2016-17, the development will be confined only to old quarry. Development will be commenced by exploiting the top most benches from the extreme southern end of the existing quarry along the safety zone. During 2017-18, development will be carried out by extending quarry R.L. depth wardly. In the process, 4 nos. of benches will be formed. All these benches will move towards western direction. In the year 2018-19 to fulfil the targeted production, the benches of previous year will be extended depth-ward. Development Plan attached as **Plate – 3.**

The year-wise quantum of development, production of Iron ore, generation of waste and sub-grade for the scheme period is given below:

Year	Pit no.	Total excavation (ROM) in m^3	Over-burden in m^3	Rom			Ore To Waste Ratio
				Cut off grade/ high grade ore	Sub - grade ore	Mineral rejects/inter-burden	
				MT	MT	M^3	MT/ M^3
2016-17	Old quarry	70770	0	173387	24770	14154	1:0.7
2017-18	Old quarry	121720	22950	298214	42602	24344	1:0.14
2018-19	Old quarry, WQ-2	346800	27540	849660	121380	69360	1:0.10
Total		**539290**	**50490**	**1321261**	**188752**	**107858**	1:0.3

(vi) Raw material required along with estimated quantity, likely source, marketing area of final product/s, mode of transport of raw Material and Finished Product.

Mining project raw material is not required. Here the Iron Ore produced from the mine is the raw material for other industries. The Iron ore produced from the mines will be transported by Rail/Road to various domestic consuming Iron & Steel industries.

(vii) Resource optimization / recycling and reuse envisaged in the project

The mineable reserve of in-situ and float iron ore in the lease area is 37, 89,715 MT. During the ensuing scheme period (3 years) around 15,10,012 MT ore will be exploited, Keeping in view the maximum production target at 10,00,000 MT per annum, the remaining reserve 22,79,703 MT will be exhausted over 2.27 years or say 3 years after this plan period. However, the life of the mine is relative & will depend on increase & decrease of production in subsequent years and result of exploration.

(viii) Availability of water its source, Energy / power requirement and source

The ground water level of the area, observed from open wells, tube wells, nallas, nearby the mining lease hold area lies between 425 to 700 below ground level. Water required for domestic purpose, will be sourced from ground water, i.e., existing dug well from nearby village.

Consumption of Water (Domestic)

At a rate of 55 KLD, 8000 Liters of potable water will be consumed for drinking & other purpose.

Consumption of water for Mining Activities and Plantation

About 45000 liters/day of water will be required for sprinkling purpose to suppress the dust and another 2000 Liters/day will be required for the plantation. Surface water shall be used for this purpose.

Total Consumption of Water

A total of 8000 liters + 45000 liters + 2000 liters = 55000 liters of water is required at the mine site daily (55 KLD) for various purposes.

Power requirement

Total 28 KW/month will be required for office purpose only which will be sourced from State grid.

(ix) Quantity of wastes to be generated (liquid and solid) and scheme for their Management/disposal.

Total 2, 54, 552 Tonnes of waste will be generated along with left out re-handled waste from the existing dump during this proposed plan period. It has been proposed to dump the generated waste in a barren area at the northern side of the lease temporarily. The said proposed area for dumping is devoid of any mineral from the geological mapping point of view. However, the said proposed dump area is to be proved barren by putting bore holes in the first year of the plan period. If the area is proved to be mineralized then a modification to this approved plan will be submitted with the proposal of new site for dumping. If the area is proved to be barren then the dump will be permanent and the waste will be stacked in this dump till the conceptual period. The dump will be extended along the barren zone of the area. The year wise dumping has been shown in **Plate-3**.

The Protective measures and precautions to be undertaken for the waste dump the management shall be as follows:

i) The overall slope of the dump shall be maintained at angle of repose not exceeding 37^0 from horizontal.
ii) The retaining wall has to be made to arrest the waste dump materials for consolidation.
iii) Garland drains are to be paved around the dump to arrest possible wash off in rainy seasons.
iv) Suitable grass planting / Coir-matting will be done over the dump slope, which will hold the materials in its fibrous and spread over roots to protect wash off in the rainy seasons
v) Plantations of grass and sapling will be done in alternate years.

CHAPTER – 4
SITE ANALYSIS

(i) General

Maharajpur Iron ore Mines over an area of 193.229 hectares situated in village Maharajpur Hill block, Kadali-bari, Ambadiha & Machakamdana under Panchpir Tehsil in the district of Mayurbhanj of Odisha State. And it is located in survey of India Topo Sheet No. 73 J / 4 & 73 K/1. Limited by the Co-ordinates:

Latitude: 21^0 59' 44.64 to 22^0 00' 23.14" N

Longitude: 86^0 06' 23.14 to 86^0 07' 30.35" E

(ii) Connectivity

The Lease area is easily accessible with village road passes through the lease area and connects Jashipur and Rairangpur state highway at a distance of 3.5 km. Badampahad is the nearest rail head which is 10.0 kms from the lease hold. Rairangpur is the nearest major town situated at a distance of 30 Km and Baripada is the district headquarters at a distance of 65 Km from the mines.

Location map of the ML area is attached.

(iii) Land Form, Land use and Land ownership.

The area bears undulated hilly topography. The mining lease hold area over 193.229 hectares contains forest and private waste land situated in village Maharajpur Hill block, Kadali-bari, Ambadiha & Machakamdana, in the district of Mayurbhanj of Odisha State. Land type of the project area is given below.

Type of Land	**Area in ha.**
Forest	175.762
Non-forest	17.467
Total	**193.229**

(iv) Topography (along with map)

The lease hold area represents rugged topography being bisected by number of geomorphic valleys.The highest altitude of 700m is noted in SE corner of the area and lowest altitude of 440 m at the western boundary. The maximum gradient of the area is 1 in 2 and minimum is 1 in 35.

(v) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of 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.

This mining lease area over 193.229 ha is confined with 175.762 ha forest and 17.467 ha non-forest land. The details of which has given in the land schedule. The entire lease area falls under Villages Maharajpur Hill block, Kadali-bari, Ambadiha & Machakamdana in the district of Mayurbhanj of Odisha State. Khadkai River which Constitute the main drainage of the area, flows at an aerial distance of 4.0 Km in east of the mines. There is a Similipal Tiger Reserve (National Park), situated within 10Kms radius of the lease area.

(vi) Existing Infrastructure.

For proper functioning of the day to day operation of the mine, for the storage of record an office room already exists in the lease area. The following services are proposed at site:

Rest shelter- A suitable rest shelter of stipulated specification is proposed to be provided adjacent to each quarry with a provision of constant by adequet supply of drinking water during th working hours of the mine. Attention has also been paid to keep the shelter in neat and clean conditions.

First-aid station-First aid station is also proposed to be available adjacent to the rest shelter in each quarry and having all the necessary articles in first aid box as the injured persons may receive the first aid treatment.

Blasting shelter-Proper blasting shelters are proposed to be provided in each quarry for the shelter of blaster at the time of blasting.

(vii) Soil Classification.

The soil is lateritic in nature. There is no top soil in the lease hold area. As no toxic substance will be generated or involved, the impact on soil quality is not likely to be more

intensive than the existing level. However, the dust generated during operation of mining activity, loading and unloading and vehicular movements normally constitute heavier particles that would readily settle on very small areas within the lease area.

(viii) Climatic data from secondary sources.

The area experiences subtropical dry to wet climate. The hottest months are May and June when temperature remains around 44^0 C. During December and January the minimum temperature remains around 9^0 C. The area is devoid of large variability of temperature and free exposure. The normal rainfall at Mayurbhanj is about 1250 mm. On an average 80% of rainfall is received during the monsoon season (i.e. Mid-June to September). Wind direction and speed are most impact factors for the transportation of dusts. Relative humidity varies between 10 % to 96 %. Area remains calm for nearly 50% of the year. Predominant wind direction is SW.

(ix) Social Infrastructure available.

Accessibility: A village road passes through the lease area and connects Jashipur and Rairangpur state highway at a distance of 3.5 km. Badampahad is the nearest rail head which is 10 kms from the lease hold.

Market facilities: Local market sits at Badampahar on Sunday. However, fully fledged market facilities are available at Rairangapur (29km) and Baripada (65km).

Electricity: Electricity has been made available in the M.L. area for office & quarters. Mine is operated manually.

Medical facilities: A State Govt. hospital with qualified doctor & paramedical staff is available at Jashipur to provide free medical facilities to the local people.

Education: Education up to college level is available at Jashipur. Engineering colleges are available at Rairangpur and Baripada (District Head Quarter).

Other facilities: Post, telegraph, telephone and bank facilities are available at Jashipur.

CHAPTER – 5
PLANNING BRIEF

(I) Planning Concept (type of industries, facilities, transportation etc.) Town and Country Planning/Development authority Classification.

The various mining operations such as drilling, blasting, excavation, loading, sizing and transportation will be affected by jack hammer drill associated with compatible size compressors. Power gel explosive in conjunction with safety fuse & ordinary / electric detonators are used for blasting to loosen hard rock mass for ease in excavation. Open cast semi-mechanized method of mining will be adopted. Height and width of the benches will be kept at 4 m and 6 m respectively. The gradient of the road ways will be maintained at 1 in 16 gradients. The ultimate pit slope will be maintained at around 45^0 or less. The production schedule will be as follows.

Year	Pit no.	Total excavation (ROM) in m^3	Over-burden in m^3	Rom			Ore To Waste Ratio
				Cut off grade/ high grade ore	Sub - grade ore	Mineral rejects/inter-burden	
				MT	MT	M^3	MT/ M^3
2016-17	Old quarry	70770	0	173387	24770	14154	1:0.7
2017-18	Old quarry	121720	22950	298214	42602	24344	1:0.14
2018-19	Old quarry, WQ-2	346800	27540	849660	121380	69360	1:0.10
Total		**539290**	**50490**	**1321261**	**188752**	**107858**	1:0.3

(II) Population projection.

It has been proposed that the work will be carried out by OTFM method. It has been calculated that, about 146 nos. of employees are required. Hence, there will be an overall improvement of socio-economic status of the people of surrounding areas.

Administrative & supervisory personnel will be only 9 numbers which includes statutorily required personnel under MMR, 1961 & MCDR, 1988 as follows.

Sl. No.	Designation	Qualification / Experience	Numbers
1	Mines Manager	1st class manager certificate of competency	1
2	Mining Engineer	B Tech in mining with 10 years of experience	1
3	Geologist	M Sc Geology with 10 years of experience	1
4	Sr. Surveyor	Having surveyor's certificate of competency	1
5	Mines Foreman	Fore mans certificate of competency	2
6	Mining mate	Mate certificate of competency	1
7	Blaster	Blasting certificate of competency	1
8	Time keeper	Graduate	1
Total	**---**	**---**	**9**

Semi Skilled / Un-skilled **Workers**

Semi-Skilled		
Designation	**Qualification**	**Persons**
Excavator operator	Valid driving licence	5
Tipper driver	Valid driving licence	17
Wagon drill operator	Valid driving licence	4
Total		**26**
Un-Skilled		
Labours	---	93
Peon, Watchman	---	2
Helpers	---	16
Total		**111**

Total employment = 9 + 26 + 111 =146 nos.

Keeping in view the production enhancement, Lessee has proposed to employ 146 persons will be employed directly and many more will be benefited indirectly.

(III) Land use planning (breakup along with green belt etc.)

The proposed land use pattern of the ML area.

Sl	Type of land use	As at present (ha)	As at the end of plan period (up to 2019)	As at the end of Conceptual period (up to 2029)
1	Area under excavation	6.477	6.477	14.797
2	Overburden dump	1.62	3.686	9.407
3	Mineral storage	2.09	2.09	2.09
4	Sub-grade Stack	0.18	0.18	0.18
5	Roads	2.602	2.897	2.897
6	Green belt	0	1.35	8.015
7	Infrastructure	0.013	0.10	0.036
Sub-Total		**12.982**	**16.78**	**37.422**
Un-disturbed area		**180.247**	**176.449**	**155.807**
Total		**193.229**	**193.229**	**193.229**

Afforestation and Reclamation / Rehabilitation: A total of 2160 saplings of native species will be planted over an area of 1.35 hectares during this scheme period

Year	Area m^2	Type of saplings	No. Of sapling	Distance between sapling (m x m)
2016-17	4500	Anacardium occidentale	720	2.5 x 2.5
2017-18	4500	Ziziphus jujuba	720	2.5 x 2.5
2018-19	4500	Anacardium occidentale	720	2.5 x 2.5
TOTAL	**13500**		**2160**	

(IV) Assessment of Infrastructure Demand (Physical & Social)

All infrastructure facilities like rest shed, drinking water, and first-aid are available in the mine. Rest shed is proposed to be kept clean & tidy. Portable blasting shelters are proposed to be provided near the quarries.

(V) Amenities/ Facilities

Helmets, safety shoes, ear plugs, spectacles, globes, pads etc will be provides for safety of the labour, while working. Rest shed will be provided to take rest in lunch period. Vocational training will be provided to the labours by trained executive to work safety in the mine & processing unit. First-aid as well as medical facilities will be made available in the mine or to take care of the health. In addition to these, following amenities / facilities will be provided to the local communities:

(a) Improvement in cultural status through vocational training and recreational facilities.
(b) Co-operative and fair price shops.
(c) Sports/ games.
(d) Greening out side of the lease area.

CHAPTER – 6
PROPOSED INFRASTRUCTURE

(i) Mining Area (Processing Area)

During plan period, an area of 16.78 hectares will be required for excavation. At conceptual stage, 24.162 ha will be used for mining and allied activities.

(ii) Residential Area (Non Processing Area)

There will be no residential area inside the lease area. Since the lease area is near the village Jashipur, the infrastructural facilities in respect of road, market, telephone, power etc. are well developed.

Accommodation or Housing

The local people will work in the mine staying in their own villages. Migrated people from distance will be accommodated at Jashipur and Rairangpur.

Rest shed & Fast-aid Facilities

The rest shed will be provided near quarry site as per the mines rule, 56. Toilet, Fast-Aid and lunch facilities will be attached with the rest-shed.

(iii) Green Belt

It is a mining project. A green belt is proposed along/inside the lease boundary to form a barrier mainly for dust flow control. During this scheme period, 1.35 ha of land will be used for plantation purposes along the lease boundary. 2160 nos. of saplings proposed to be planted.

(iv) Social Infrastructure

There is provision for develop the social infrastructure like employment of local people in the mines, provision of communicational, educational and medical facilities, sanitation, family planning, provision & supply of clean drinking water capacity building etc.

(v) Connectivity (Traffic and Transportation Road /Rail /Water ways etc.)

The mine is well connected with Jashipur-Rairangpur SH by village road, with a distance of 3.5 km. The nearest railway station is Badampahar.

(vi) Water Quality Management

Surface Water: As a seasonal nala is passing at the southern part of the lease area from west to east three embankments are proposed in the lease area. If necessary the length of embankments will be extended along the length of the Nala. Also two numbers of check dams have been proposed, to avoid siltation, across the Nala.

Ground Water: The depth of the water table is about 15 meter from the lowest contour of the region. The depth of the water table has been assumed based on observation from nearby wells and water tables. The mRL of the water table is around 445 m to 700m.

The deposit is planned to be worked to a depth from minimum of 4m to 128 m till the end of the life of the mine. The lowest mRL of working would be 436m which is above the ground water table. Therefore such depth of working would not affect the ground water table.

(vii) Air Quality Management

Mining activities will have the impact on the air environment because of various operations like quarrying, sizing, sorting, deploying of tippers and diesel operated machineries and blasting.

The ambient air quality of the area is not polluted, as there will be no generation of any dangerous noxious fumes due to blasting. Further, blasting is mainly short hole blasting, the fly rocks produced during blasting, use to fall only within the quarry limit. So there is no such problem of fly rocks. However, every preventive step like plantation along the safety zone will be taken up to minimize generation of dust. Wet drilling and water sprinkling on haul roads will be carried out in the area as a precautionary measure. It is proposed to monitor the AAQ every half- yearly to know its quality. 4 Air sample stations are proposed within the core zone of the lease area. .

(viii) Waste Management

Total 2, 54, 552 Tonnes of waste will be generated along with left out re-handled waste from the existing dump during this proposed plan period. It has been proposed to dump the generated waste in a barren area at the northern side of the lease temporarily. The said proposed area for dumping is devoid of any mineral from the geological mapping point of view. However, the said proposed dump area is to be proved barren by putting bore holes in the first year of the plan period. If the area is proved to be mineralized then a

modification to this approved plan will be submitted with the proposal of new site for dumping. If the area is proved to be barren then the dump will be permanent and the waste will be stacked in this dump till the conceptual period.

As far as possible, waste material will be compacted and stabilized by dumping the various sized materials in a mixture form. There will be automatic compaction of waste materials during the movement of truck/tippers while dumping.

Garland drain will be developed around the dumped waste to divert the surface run-off water to prevent the washing of waste materials while there is rain. Grass will be sown over the dead dump to control erosion and dust generation. Finally, pot holes will be developed on the dump top and plantation will be undertaken.

Top-Soil Management

As such there is no soil cover the proven portion of the lease. Hence storing of top-soil does not arise during this plan period. Through future exploration if presence of ore is proved in other patches having top-soil, space will be earmarked in the lease to store these which will be decided in the next scheme period.

(ix) Disposal of Mining Machinery:

As most of the machineries are on hired, removal of machinery can be done any time as per requirement.

(x) Safety and Security

At the time of final closure of the mines, all the abandoned pits shall be reclaimed and rehabilitated. Till such time, the area is handed over to the concerned owners; guards shall be engaged for security and safety.

(xi) Disaster Management and Risk Assessment:

As far as the nature of deposit & method of mining is concerned, there is no possibility of landslides, subsidence, flood, fire and tailing dam failure.

Map of seismic zone in India indicates that Odisha falls under seismic zone-I, II & III. In Odisha, minor earth quakes have been felt many often but non was severe.

Employment potential for the area will be 146 numbers. Lessee may need the help of nearest state fire department located at Jashipur and Rairangpur for rescue if any high

risk accident occurs in the area which will be sufficient for the above employment potential.

(xii) Care and maintenance during temporary discontinuance

An emergency plan for the situation of temporary discontinuance due to court order or due to statutory requirements or any other unforeseen circumstances may indicate measures of care, maintenance and monitoring of status of discontinued mining operations expected to re-open in near future.

During the course of mining there may be temporary discontinuance due to unforeseen causes such as court order, statutory requirements, accidents, natural calamities or any other circumstances. Therefore, an emergency plan is necessary to reopen the mine which will include:

- Intimation to authorities concerned in the prescribed form for temporary discontinuance.
- Monitoring of status of unplanned discontinued mining operation in respect of bench height, width, individual bench slope angle, overall quarry slope angle, overhang, undercut, noise levels or any other parameters whose levels either in form of higher side or lower side is dangerous for further mine working.
- Preparation of plan & sections of discontinued mining operation.
- Projection of benches in plan & sections which is safe for further working.
- Formation of safe benches as per plan & sections.
- Management of misfire, maintenance of machinery etc. which is risk free and not dangerous for further working.
- Intimation to the concerned authorities for reopening once the mine is risk free.

(xiii) Power Requirement & Supply / source.

Fuel (Diesel) would be used for operating equipments and heavy machinery.

CHAPTER – 7

REHABILITATION AND RESETTLEMENT(R & R) PLAN.

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

There is no human settlement in the applied lease area which is entirely located in waste land and forest land of 193.229 ha. Therefore, rehabilitation and resettlement proposal is not required. Plantation work is carried out in the area from time to time and shall continue in future also on yearly basis, as a part of rehabilitation to maintain and improve the ecology of the area.

CHAPTER – 8

PROJECT SCHEDULE & COST ESTIMATES

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

The mine will be operated after getting all statutory clearances and expected to get clearance by 2015-16.:

Tentative date of closure of the mine: - after 6 years. (Based on mineralized zone)

It is to be noted here that the area is potential one and the reserve will be much more than the estimated reserve when the exploration will be completed in future.

(ii) Estimated project cost along with analysis in term of economic viability of the project.

The project cost expected for this expansion proposal is 49.30 crores.

Financial Assurance

Net area considered for financial assurance = 17.356 Hectares

Financial assurance for Category-A mine is Rs.25, 000/ hectare or Rs.2, 00,000/- which is in higher side under rule 23F (1) of MCDR, 1988.

Therefore, financial assurance here for the modification period is 17.356 x Rs.25, 000 = Rs.4, 33, 900/- (Rupees four lakh thirty-three thousand nine hundred only).

CHAPTER – 9
ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

(i) Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.

Due to mining activities in the M.L area, 146 nos. of persons, who includes technical, supervisory, other highly-skilled & skilled category, including the present and proposed employment potential some more persons may be associated with this project to carry out some other developmental jobs as per need-base from time to time. Satellite income such as shopping, supply of food items, tailoring, hoteling etc. are extra. Medical, transport, communication facilities including the purchase facilities and cultural improvement will be developed. Moreover the general awareness and lifestyle of the people in the area will be improved.

The support extended in the field of education, medical facilities, recreation facilities shall improve the normal status of the living of the local inhabitants. The members of the family of the employee shall also get proportionate benefit out of it.

This mining project is financial viable and can comply with the environmental norms.