CHAPTER-I

EXECUTIVE SUMMARY

Chromite ore is used in stainless steel making, chemical industries and many other exterior projects. Now as demand in the relevant industries has been increased, the company is unable to supply due to restriction in production capacities of the mine. So the lessee has proposed for enhancement of production of chromite ore up to 0.5 million TPA during the plan period.

M/s Misrilall Mines Pvt. Ltd. is a mining company, located at Jajpur district in Odisha having its regd. office at Mineral House, 27A, Camac Street, Kolkata, 700016. The company has well experienced personnel in exploration, mining, beneficiation and trading of chrome ore as well as ferro-chrome making. The lease area is over an area of 246.858 hectares. The lease was granted on 15.05.1954 and executed on 20.08.1959 for a period of twenty years in favour of Sri Misrilall Jain. The 1st renewal of Mining Lease over 259 hectares granted on dated 14.03.1974 and executed on 20.08.1974 for a period of 20 years. The 2nd renewal of Mining Lease over 246.858 hectares granted on dated 13.07.1997 and executed on 26.07.1997 for a period of 20 years. The Lessee had applied for 3rd renewal over the same area. In the mean while, under section 8A of MMDR act 2015, the lease period has been extended by the State Govt. upto 31.03.2020. The lease hold is featured in survey of India toposheet No. - 73 G/16 on a scale of 1 : 50,000 within Latitude: 21^0 02' 42.64" - 21^0 03' 49.65" N and Longitude: 85^0 48' 35.38" - 85^0 49' 49.92" E.

As per Statutory provision of MOEF Govt. of India, a pre feasibility Report has to submitted along with the application for obtaining Terms of Reference for obtaining Environmental Clearance for the mining lease with the production target of chromite ore 0.5 million TPA. Therefore, a Pre feasibility report has been prepared for the said production.

The mines will give direct employment of to 160 people and 146 persons will be employed on contractual basis mostly from economically backward classes. Allied activities like repairing of village roads, schools, drinking water, improvement in education & health facilities will also take place.

The project shall be carried out in a sustainable way with a target to develop human and environment together with an eco-friendly mining method. Overall it will have not any adverse impacts on any of the environmental or socio-economic parameters; hence from environment & socio-economic point of view, the proposed production level shall be feasible for all purpose.

CHAPTER-II

INTRODUCTION

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

M/s Misrilall Mines Pvt. Ltd. is a mining company, located at Jajpur district of Odisha having its registered office at Mineral House, 27A, Camac Street, Kolkata, 700016. The company is well experienced in exploration, mining, beneficiation and trading of chrome ore as well as ferro-chrome making. The lease area is over an area of 246.858 hectares. The lease was granted on 15.05.1954 and executed on 20.08.1959 for a period of twenty years in favour of Sri Misrilall Jain. The 1st renewal of Mining Lease over 259 hectares granted on dated 14.03.1974 and executed on 20.08.1974 for a period of 20 years. The 2nd renewal of Mining Lease over 246.858 hectares granted on dated 13.07.1997 and executed on 26.07.1997 for a period of 20 years. The Lessee had applied for 3rd renewal over the same area. In the mean while, under section 8A of MMDR act 2015, the lease period has been extended by the State Govt. upto 31.03.2020. A copy of Mining Lease deed is attached as **Annexure – I.** The lease hold is featured in survey of India toposheet No - 73 G/16 on a scale of 1:50,000 within Latitude: 21^0 02’ 42.64” - 21^0 03' 49.65" N and Longitude: 85^0 48' 35.38" - 85^0 49' 49.92" E.

(ii) Brief description of nature of the project.

The Mine planning has been outlined for two years, i.e. 2018-19 to 2019-20 **(Annexure – II)**. The proposed Planning has been made to obtain total production of 10,00,280 tonnes of Chrome ore during plan period. Keeping in view the market demand of Chrome ore in the present scenario, the lessee intends to enhance the production from 0.35 million TPA to 0.5 million TPA of chrome ore.

Need for the project and its importance to the country and or region

The Environmental Clearance for production of 0.35 million TPA has already been obtained from MoEF & CC upto 2020 (Copy attached as **Annexure – III**). The expansion in production capacity from 0.35 million TPA to 0.5 million TPA will meet the Chrome Ore requirement of the nearby Ferrochrome industries of Odisha as well as in India.

Importance to Country and Region:

Following benefits are envisaged due to this project

- Ferro Chrome is a strategic metal for the country
- The project will generate direct & indirect employment opportunities and other taxes
- It generates revenue to the State by way of royalties
- It will uplift the living standard and socioeconomic condition of the local people

(iii) Demand-Supply Gap

- About 96% of total Chrome Ore production is used in metallurgical applications i.e. for Ferro Chrome production (94% high carbon Ferro chrome, 4% L.C Ferro Chrome & 2% M.C Ferro Chrome). The balance chrome ore is used for foundry, chemical & refractory industry.
- About 29 Million Tonnes of Chrome Ore was produced in 2014 & South Africa accounts for about 54% of global Chromite production, followed by Kazakhistan with 15%, Turkey & India with 6%.
- Demand for Chrome Ore and Ferro Chrome is expected to remain strong as Stainless Steel production in India is expected to increase from 3.1 million Tonnes in 2014 to 5.4 million Tonnes in 2020.
- Further, per capita consumption of Stainless Steel in India is about 2kgs whereas in China it is about 8kg & in developed countries about 18-20kg. This provides a huge opportunity for growth in India.
- So, requirement of Ferro Chrome would increase substantially due to higher Stainless Steel production & consumption.

(iv) Imports vs. Indigenous production

India's Chrome Ore is mostly used for Ferro Chrome production & exports have been discouraged due to high export duty. About 2.5 MT of Chrome Ore is required for production of 1.0 MT Ferro Chrome & only vertically integrated producers (having access to Chrome Ore) can survive in such a competitive market. Also, moving 2.5 MT of Chrome Ore to/from a distance adds to logistics cost thus making Ferro Chrome operations unviable.

(v) Export Possibility

The chrome ore from Saruabil Chromite Mines of M/s. Misrilall Mines Pvt. Ltd has a good market demand in India as well as in the world. Hence, there is a good export possibility of Chrome ore.

Domestic/ export Markets

Huge quantity of chrome ore are required for stainless steel making by many industries like, Visa Steel, Balasore Alloys, Jindal Stainless, Metsil Exports Pvt. Ltd., Sreechem Industries, Jay Balaji Industries, etc.

(vi) Employment Generation (Direct and Indirect) due to the project

The mines shall give direct employment of to 160 people and 146 persons will be employed on contractual basis.

CHAPTER-III

PROJECT DESCRIPTION

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

M/s Misrilall Mines Pvt. Ltd. has proposed expansion in production capacity from 0.35 million TPA to 0.5 million TPA of Chrome Ore from Saruabil Chromite Mines, ML area-246.858 ha. The chrome ore is then enriched/value added to Ferro Chrome plans in the nearby industries like, Visa Steel, Jindal Stainless Limited, Balasore Alloys Limited etc.

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

This area is located at a distance of 45 KM from the Jajpur Road. The nearest railway station is Tomka at a distance of about 19 kms from the ML area. Saruabil chromite mines lease area is located in Kaliapani P.S. of Jajpur District, Odisha and is a part of Survey of India Toposheet No. : - 73 G/16 on a scale of 1: 50,000 within Latitude: 21^0 02' 42.64" - 21^0 03' 49.65" N and Longitude: 85^0 48' 35.38" - 85^0 49' 49.92" E. Location map of the ML area is attached as **Annexure – IV**.

(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 alternative site can be worked out. It has to be carried out within lease area allotted by Mining Department, Government of Odisha. As far as the environmental considerations, the lessee is abiding by all relevant acts & rule and provisions of EP Act.

(iv) Size or magnitude of operation.

Size of the lease area is 246.858 ha. The proposed production of chromite ore will be 0.5 million TPA.

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

Location Details

1	Village	Saruabil
2	Tehsil	Sukinda
3	District	Jajpur
4	State	Odisha
5	Latitude	21^0 02' 42.64" - 21^0 03' 49.65" N
6	Longitude	85^0 48' 35.38" - 85^0 49' 49.92" E
7	Toposheet No.	73 G/16 (F45N19)

Mining Details

S. No.	Particulars	Details
1	Method of Mining	Fully mechanized opencast
2	Proposed Production	0.35 million TPA to 0.5 million TPA
3	Elevation Range	129.3 mRL to 186.8 mRL
4	General Ground level	150 mRL
5	Total Mineral resources	10.411 million tonne as on 31.03.2018
6	Ultimate Working Depth	104 m depth from surface
7	Total waste generation at the end of life of mine	Overburden waste from Opencast working: 46,80,000CuM

a. Regional Geology:

M.L area under reference is located in western slope of eastern part in Sukinda valley between quartzite ridges of Mahagiri Hill in the south and Daitari Hill in north. Chromite in this region mainly occurs as bands, lenses and pockets in the ultramafic rocks of serpentinised, dunite, peridotite. The ultra basic rocks are all of Precambrian and lie parallel or sub-parallel to major tectonic zones of peninsular India which intrude in to the pre-existing sediments and volcanics, subsequently got regionally metamorphosed and tectonically deformed. Sukinda ultramafic belt as well as igneous complex of Boula-Nuasahi is intrusive into the Precambrian Metamorphites namely the quartzites and quartz muscovite sericite schists. Chromite bearing ultramafics of Sukinda area have intruded into the Precambrian Metamorphites in the form of lopoliths. The intrusive has a width of 2-5 kilometers and extends for about 25 kilometers in an ENE-WNW direction from Kansa in the east to Maruabil and beyond in the west. The ultramafic body consists essentially of magnesite-rich dunite-peridotite with the Chromite bands and subordinate amount of Pyroxenite devoid of Chromite mineralization. There are as many as six Chromite bands, fairly thick and persistent both along strike direction of the intrusive and with depth as observed in the quarry and bore-hole sections from Saruabil in the east to Bhimtanagar in the west. Further west at Kalrangi, Kathpal, Maruabil - the chrome ore bodies do not exhibit any regular alignment, rather these are exposed in disjointed bands and lenses apparently disrupted by the emplacement of younger granite. The granite is exposed at several places around Maruabil and also encountered in the borehole sections at the western part of TISCO's quarry, Kalrangi and Kathpal mines. Small exposures of diorite are found in Kathpal and Bhimtanagar. Besides, several dolerite dykes have intruded into the ultramafics, quartzites as well as the granites.

This happens to be the last stage of igneous activity in this Precambrian terrain. Soil, alluvium and laterite of recent origin overlie ultramafics unconformably.

The general stratigraphy for the region has been studied by various authors in different times. The region belongs to the Iron Ore Group of rocks described by Sarkar in his stratigraphy of 1979. The litho-sequences of the areas formulated by Late R.N. Pattnaik is given as follows:

Pre Cambrian Iron Ore Group		Alluvium
		Laterite
		----------UNCONFORMITY----------
	Upper Sequence	Dolerite
		Pegmatite & quartz vein
		Granite & Granophyre
		Conglomeritic grit,
		Sand-stone & ortho quartzite
		Meta-lava, ultra-mafic with chromite ore zones
		----------UNCONFORMITY----------
	Lower Sequence	Banded chert
		Banded Magnetite
		Chert
		Shale
		Carbonaceous phyllite with alternating lava flow
		----------BASE NOT SEEN----------

It is postulated that the ultramafic rocks are intrusive in to the lower sequence of rocks which are enriched with chromite.

b. Local Geology:

Saruabil Chromite Mine is located in south-eastern part of Sukinda ultramafic complex. The stratigraphy of M.L area as per the surface exposures and lithology intersected by the boreholes is as follows:

Soil & alluvium
Laterite (altered ultramafics) with / without yellow ochre
Nickeliferous limonite with yellow ochre
Silicified cherty rocks
Weathered serpentinite / talc
Quartzite
Ultrabasics (Serpentinite with chromite)

c. Details of Mining

i. *Method of Mining*

At present opencast fully mechanized method of mining is being adopted for chromite mining. In opencast mine the ore and overburden/waste is being extracted by engaging HEMMs. Dumpers are engaged to transport ore from the mine faces to the stack yard and waste to backfilling area/dump yards. Before the loading operation starts the bench floor is cleared by engaging bulldozer. Till date the overall slope of the mines is being maintained at < 30° with individual bench sloped.

ii. Loading & Transport

The mined out Chrome Ore is mostly friable in nature. Thus no Crushing, grinding & screening are required. The ore raised from the mines is stacked at enmarked ore stacks inside the mining lease. Later, Chrome Ore is being transported to the Ferro Chrome industries by road as per the requirement.

(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.

Since this is a mining project, there are no raw materials required as such. Final product from the project, i.e. Chrome Ore will be utilized in the nearby Ferro Chrome industries of Odisha as well as in India. The mode of transport of chrome ore from M.L. Area is by road using trucks.

(vii) Resource optimization / recycling and reuse envisaged in the project, if any, should be briefly outlined.

The resources which are used in the mining will be recycled/ disposed by various methods as stipulated in Consent to Operate (CTO) (**Annexure – V**):

- The ETP sludge generated from Effluent Treatment Plant is disposed through authorized agency.
- Used oil from transformers is sold to the authorized venders as and when required. Hazardous waste, being generated during mining, if any, is being/ will be disposed off by agency duly approved by SPCB.
- Mine quarry water will be discharged through adequate number of pumps (as required) and coursed through pipe line to upgraded Effluent Treatment Plant located within the ML area for treatment. The treated water is being used for dust suppression, Plantation etc.

- The OB & waste generated from opencast mining is being stored for its reclamation and rehabilitation.

(viii) Availability of water its source, Energy /power requirement and source should be given.

a. Water Requirement & its source

About 25m^3/day of ground water will be used for drinking and domestic purpose, and about 350m^3/day of mine water will be pumped out for the ETP use, later for Chrome ore processing, Drilling & Dust Suppression, Equipment & vehicle cleaning, Plantation, etc. NOC has been obtained from CGWA vide letter no. 21-4(73)/CGWA/SER/2008-607 dated 16.04.2015. (Copy enclosed as **Annexure - VI**).

Class of use	Purpose	Peak demand of water at 20 tph capacity plant (in KL /day)	Peak demand of water at 30 tph capacity plant (in KL /day)	Source
Domestic	Drinking	5	5	Bore well water
	Bathing, cooking etc.	20	20	-do-
	Sub-total	**25**	**25**	---
Non-Domestic	Plantation	50	50	Quarry water
	Mineral Processing (make-up water)	47	70	-do-
	Servicing vehicles / machines	2	2	-do-
	Wet drilling & dust suppression	120	120	-do-
	Sub-total	**219**	**242**	---
Total	---	**244**	**267**	---

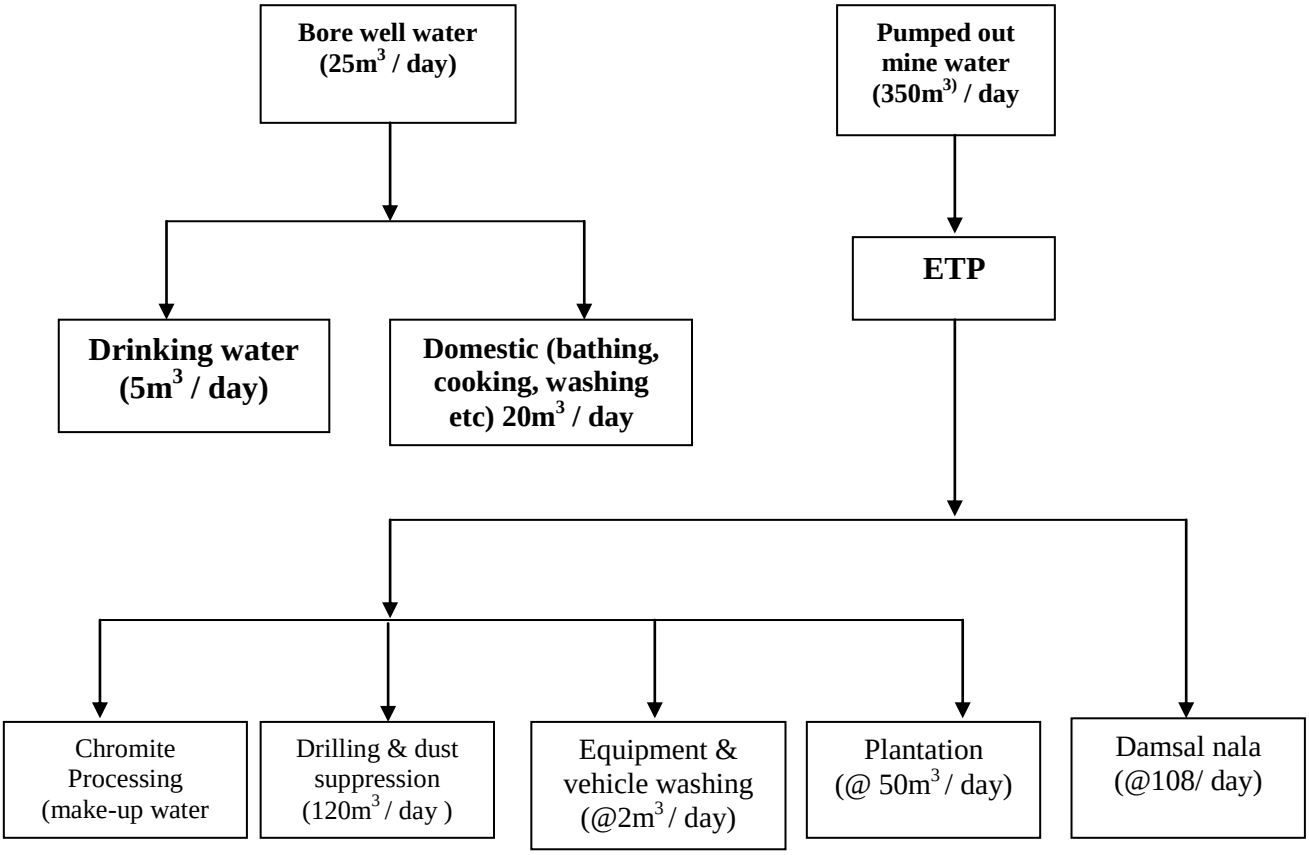
b. Power Requirement & its source

Total power requirement for the proposed expansion project will be about 0.45MW per year and it will be met from CESU grid line. A 650 KVA Sub-station has been established with transformers.

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

A total of 4,680,000m^3 waste material will be generated in plan period will be disposed off over an additional area of 8.35 hectares in 4 numbers of 15m high terraces in a retreating method by extending the existing Dump namely WD-6 towards south-east. Mine seepage water will be discharged through adequate number of pumps and will be coursed through

pipe line to common Effluent Treatment Plant located at ML area for treatment. Treated water is being/will be reused for plantation, dust suppression etc.



CHAPTER-IV

SITE ANALYSIS

(i) Connectivity

Saruabil Chromite Mine is accessible from Bhubaneswar covering a distance of 134 km consisting of 60 km between Bhubaneswar & Chandikhol on NH-16, 40 km between Chandikhol & Duburi square on Paradeep-Daitari express highway and 16 km between Duburi & Tomka on Duburi-Talcher highway and 18 km between Tomka & M.L area on Tomka-Mangalpur road. The mine is also accessible from Jajpur Road covering a distance of 55 km consisting of 21 km between Jajpur & Duburi, 16 km between Duburi & Tomka and 18 km between Tomka & Saruabil mine.

Major Railway Station Jajpur – Keonjhar Road is situated on Howrah – Bhubaneswar – Chennai route of SE railway at a distance of 55 km south-east of Sukinda valley chromite area and is well connected by road. Bhubaneswar air port (145 km away) is the nearest major air port from the site. However the nearest local railway station is Tomka on the Jakhapura-Banspani Railway line at a distance of 19 Km.

Paradeep port in Odisha State is situated at a distance of 155 km from the mine.

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

Saruabil M.L area over 246.858 hectares consists 241.77 hectares forest land and 5.088 hectares non-forest land.

(iii) Topography (along with map)

M.L area is located at the foot of Daitari hill range in Sukinda valley between northern Daitari hill range (800 mRL) and southern Mahagiri hill range (600 mRL). M.L area represents a moderately hilly terrain. Elevation ranges between 186.8 mRL on SW side and 129.3mRL on NW side of the M.L area and slopes from south to north. The maximum altitude difference is (186.8 – 129.3 =) 57.5m.

(iv) 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.

As per the Supplementary Mining Lease Deed executed on 02.04.2016, the details of land use pattern are as follows:

Forest land		Non-forest land	
Type	**Area (ha)**	**Type**	**Area (ha)**
Revenue forest (S.Jungle, Jungle & G.Jungle)	224.633	Waste land (P.Bani / Patharbani, P.Padia, Patit)	2.250
		Grazing land (Gochara)	7.523
		Agricultural field (Taila, Biali)	2.845
		Unclassified land (U.J. Jogya, Basti Jogya)	1.137
		Water body (Jalasaya)	2.420
		Water way (Nala)	0.008
		Village site (Gharabari, Smasan & Debastali)	2.023
		Road (Rasta)	4.019
Total	**224.633**	**---**	**22.225**

(v) Existing Infrastructure.

Facilities like Office, staff quarters and rest house etc. are provided within the ML area. Regular bus services for school and market to nearby Kaliapani and Jajpur Road, respectively.

Existing Land Use Pattern Due to Mining Activities

Sl. No.	Pattern of Utilization	Area in hectares
A	Mining	51.986
B	Dumping	42.116
C	Mineral storage	5.457
D	Infrastructure	24.5
E	Road	5.50
F	Effluent Treatment Plant	0.56
G	COB plant, Tailing pond	2.312
H	Others (Magazine, Nickel dump, waste filled level area	31.422
Sub Total:		**163.853**

(vi) Soil Classification

The area has lateritic soil / laterite / quartzite boulders along with ultramafic floats on the top. No Top soil is there is anywhere. The colour varies from brown, reddish- brown, brownish-black to black. The texture is sand to sandy loam.

(vii) Climatic data from secondary sources

The climate in the area is sub-tropical and generally cold in winter between November and February and hot in summer between March and June. The monsoon sets in late June and continues up to the end of August. At times, the bay depression and cyclones may cross over this area. It affects weather causing wide spread rains. January, May & August are the coldest, hottest & rainiest month respectively.

The precipitation / rain fall in the monsoon season ranges between 700 mm to 900mm. Average annual rainfall is 1428 mm. The mean minimum & mean maximum temperature shows the variation between 8^0C to 45^0C. The relative humidities are high in south-west monsoon and post monsoon months (shoots up to 90%). Wind speed is generally light to moderate. High speed winds blow in summer and monsoon seasons. Predominant wind direction is south-east.

(viii) Social Infrastructure available

Social infrastructures like, school, dispensary, road, communication, electricity, temple, etc are available in the locality. Facilities like staff quarters, Rest house, office buildings etc are provided within the project area. Regular bus services for school and market to nearby Kaliapani Township and Jajpur Road have been provided, respectively.

CHAPTER-V

PLANNING BRIEF

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

This is an existing mining project. Transportation is being performed by existing road. Education, Medical and communication facilities are available. The Saruabil Chromite Mines project is located in the rural area. Wherever required, sanction of the Circle Officer/Block Development Officer will be taken for any planning needs.

(II) Population projection

Since there will not be any major influx of people from outside in to this region because of the project, there will hardly be any population increase. Most of the workers are employed from surrounding villages.

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

An area of 163.853 hectares land is already degraded / utilized for mining, dumping, office, road etc. Cumulatively, an area of 173.504 hectares is anticipated to be degraded / utilized at the end of the lease period as follows:

Sl. No.	Type of land use		At present (ha)	At the end of plan / lease period (ha)
1	Area under excavation		51.986	53.287
2.	Storage for Topsoil		---	---
3.	Overburden dump		42.116	50.466
4.	Mineral storage		5.457	5.457
5.	Infrastructure (office, VT centre, crèche, canteen, quarters, rest shelter, township etc.)		24.500	24.500
6.	Road		5.500	5.500
7.	Railways		---	---
8.	Tailing Pond		0.462	0.462
9.	Effluent Treatment Plants		0.560	0.560
10.	Mineral Separation Plants (COB Plant)		1.850	1.850
11.	Township area		---	---
12.	Others	Magazine	0.250	0.250
		Nickel-ferrous dump	2.824	2.824
		Waste filled level area	28.348	28.348
---	**Sub-Total**		**163.853**	**173.504**
13.	Green belt / Plantation	Safety zone (part)	3.670	3.670
		Nala barrier (part)	2.540	2.540
		Road barrier (part)	3.220	3.220
		Other barren area	3.570	3.570
		Village site	2.500	2.500
14.	Area which remains untouched		67.505	57.854
---	**Total lease area**		**246.858**	**246.858**

i.Afforestation and Reclamation/Rehabilitation:

Out of 163.853 hectares degraded area as on date, an area of 51.74 hectares has been reclaimed and rehabilitated with the plantation of 210,686 nos. of saplings. Out of which 11.48 hectares has been fully reclaimed & rehabilitated. An area of 40.26 hectares is already rehabilitated with local species such as Neem, Mahaneem, Harida, Bahada, Chakunda, Amla etc.

ii. Post Mining Land Use Plan:

There is no possibility of exhaust of chromite ore in any quarry or part thereof in plan period. Therefore, reclamation (back-filling & plantation) cannot be commenced. Hence, mined out area will be rehabilitated as water reservoir. Waste dump will be rehabilitated by way of plantation. However, the post mining land use will be as follows:

Sl. No.	Type of land use		Post mining land use	As at the end of life of mine (ha)
1.	Area under mining		Water storage / reservoir	53.287
2.	Waste / OB dump		Rehabilitation (Plantation)	31.616
			Rehabilitation (seeds sowing)	18.850
3.	Mineral storage		Shifting to captive plants / sale	5.457
4.	Infrastructure (office, VT centre, crèche, canteen, quarters, rest shelter, township etc.)		Dismantling and disposal	24.500
5.	Road		Reuse by the local public & supervision of plantation site	5.500
6.	Tailing pond		Dismantling, disposal and leveled	0.462
7.	ETP		-do-	0.560
8.	Mineral separation plant		Dismantling and disposal	1.850
9.	Others	Magazine	-do-	0.250
		Nickel-ferrous dump	Rehabilitation (shrubs & bushes)	2.824
		Waste filled level area	Rehabilitation (plantation)	11.730
			Rehabilitation (shrubs & bushes)	16.618
10.	Safety zone, road barrier, nala barrier, other barren area and village site		Green belt / plantation	15.500
11.	Area which remains untouched		---	57.854
	Total		**---**	**246.858**

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

Since the infrastructure is well developed in the project area, hardly any demands for physical and social infrastructure like roads, electricity, water supplies etc are anticipated.

(V) Amenities/Facilities.

Saruabil Chromite Mines mining lease area is located in Village Saruabil under Sukinda Tahasil of Jajpur district, Odisha. Primary School level education and dispensary is available inside the ML area. All type of infrastructure facilities such as water, electricity and residential colony are available within the ML area.

CHAPTER-VI

PROPOSED INFRASTRUCTURE

(i) Industrial Area (Processing Area)

During the conceptual plan period, total 173.504 hectares (excluding safety zone and untouched area) area required for mining and other activities.

(ii) Residential Area (Non Processing Area)

No residential area is required for this mining project.

(iii) Green Belt

It is an ongoing mining project. A green belt is proposed along/inside the lease boundary to form a barrier mainly for dust flow control. An area of 15.5 hectares of green belt is developed/ will be developed during the proposed plan period.

(iv) Social Infrastructure

Development of social infrastructure is the prime policy of the company. The company is taking socio economic development initiatives in the periphery of the project area through its CSR activities like drinking water projects, renovation of school building etc are being done.

Apart from the above, the company is also organizing Health camps time to time for its employs. Awareness programs on sanitation, general hygiene and drinking water are being conducted by its employees. M/s Misrilall Mines Pvt. Ltd. is also contributing towards social development by depositing 30% of the royalty of the Ore dispatched as District Mineral Foundation Fund (DMF) under the control of the DMF.

(v) Connectivity

Saruabil Chromite Mine is accessible from Bhubaneswar covering a distance of 134 km consisting of 60 km between Bhubaneswar & Chandikhol on NH-16, 40 km between Chandikhol & Duburi square on Paradeep-Daitari express highway and 16 km between Duburi & Tomka on Duburi-Talcher highway and 18 km between Tomka & M.L area on Tomka-Mangalpur road. The mine is also accessible from Jajpur Road covering a distance of 55 km consisting of 21 km between Jajpur & Duburi, 16 km between Duburi & Tomka and 18 km between Tomka & Saruabil mine.

(vi) Drinking Water Management (Source & Supply of water)

About 25 KLD of water is required at the mine site daily for domestic purposes. The Water will be sourced from ground water drawn from bore well inside the ML area.

(vii) Sewerage System.

The domestic waste water from the mine is disposed off in soak pits via septic tank.

(viii) Industrial Waste and Solid Waste Management

There will be generation of overburden/waste from opencast mine, which will be dumped and used for concurrent backfilling of the mined out area in future. The sludge generated from ETP will be disposed off by RAMKY (An agency authorized by SPCB).

(ix) Power Requirement & Supply / source

Total power requirement for the proposed expansion will be about 0.45MW and it will be met from CESU grid. A 650 KVA substation has been established with transformers.

CHAPTER-VII

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).

No displacement of habitation is proposed in this mining project. So no R & R Plan is required.

CHAPTER-VIII

PROJECT SCHEDULE & COST ESTIMATES

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

Saruabil Chromite Mines is an existing running mine. The proposed 0.5 million TPA of Chrome Ore production will be started after obtaining all statutory clearances from concerned authorities.

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

Total cost of the project is estimated to be 50 Lakh.

CHAPTER-IX

ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

The enhancement of Chrome Ore production from 0.35 million TPA to 0.5 million TPA will be met from opencast mining. Moreover based on development of this project, certain positive impacts will be there on the nearby village population in terms of infrastructure development like education, transport, communication, employment, health etc. The project shall be carried out in a sustainable way with a target to develop human and environment together with an eco-friendly mining method. Overall it will have not any adverse impacts on any of the environmental or socio-economic parameters; hence from environment & socio-economic point of view, the proposed production level shall be feasible for all purpose. Further, Govt. revenue will also increase by means of Royalty, DMF, NMET and other applicable taxes.