EXECUTIVE SUMMARY

Introduction

M/s Satyarth and Company a partnership firm is granted a mining lease over an area of 19.75 ha of land falling in Kalwar Village, Bhanupratapur Taluka, Kanker district, Chhattisgarh so as to mine Iron Ore. M/s Satyarth and Company intends to produce 0.02 million tonnes per annum of iron ore.

Location

The mine is located in Kalwar village, Bhanupratappur Taluka, Kanker District, Chhattisgarh. Geographically the lease area is a part of Survey of India toposheet no. 64 D /15 and falls under the following Coordinates:

Latitude	:	N 20 26'10" to 20 26'12"
Longitude	:	E 80 58'10" to 80 58'12"

Topography

The general elevation of the area is around 475 m MSL. The lease area is foot hills slopes in the form of predominant type which is covered by thin Lateritic soils with small boulders and pebbles of float ore. The general slope is toward south east. There are some local nallah which away towards southeast from the lease area. The Sindary river is about 5 km towards south from the area. The thickness of Lateritic soil varies from 2 m to 3 m in the lease area.

Baseline Environment

Summary of Micro meteorological Data Monitored at site

Sl.No	Parameters	Data
1	Maximum temperature (^{0}C)	39

2	Minimum temperature (^{0}C)	24
3	Maximum Relative Humidity (%)	35
4	Minimum Relative Humidity (%)	22
5	Total Rainfall (mm)	1250
6	Predominant wind direction	N

Ambient Air Quality

Two monitoring locations in mine lease area and six locations in buffer zone were selected with due consideration to the wind direction and the distance from the site. Summary of Ambient Air Quality test results are given below.

Ambient Air Quality Levels in the Study Area (Units: µg / m^3)

	SPM	RPM	SO_2	NO_X
Core Zone	125.0-171.0	25.8-59.9	7.0-10.2	9.4-16.7
Buffer Zone	109.0-168.0	23.8-93.6	6.4-15.2	8.4-18.2

The ambient air quality observed during the study period is well within the prescribed National Ambient Air Quality Standards.

Impacts

From the proposed open cast mining operation, the main air pollutant would be dust or particulate matter generated by ore/waste extraction and handling operations, transportation of ore. The emissions of Sulphur dioxide (SO_2), Oxides of Nitrogen (NO_X) will be contributed by diesel operated excavation and vehicles plying on haul roads are marginal.

Control Measures

S.No	Dust Source	Control measure
1	Haul Road	• Compaction, gradation and drainage on both sides. • Proper maintenance. • Regular water spraying.

2	Truck Movement	• No overloading of trucks. • Trucks to be covered with tarpaulin while transporting ore. • Enforcing speed limit.
3	Waste dumps	• Terraced dumping and compaction. • Plantation on dumps. • Water spraying on dump roads.
4	Mine pit	• Regular water spraying in working areas. • Green belt surrounding ML • Simultaneous backfilling of completely worked out portions and plantation over the backfilled surface.

Noise Quality

A preliminary survey was undertaken at 8 locations i.e. 2 locations in mine lease area and six locations in buffer zone, to identify the major noise generating sources in the area.

Sources of Noise Pollution

The main sources of noise in the mine are classified as follows:

- Stationary Mining Equipment
- Mobile Mining Equipment
- Transportation Vehicles
- DG sets

In order to protect the workers from higher noise levels, the management of this Iron Ore mine of M/s Satyarth and Company will adopt the following noise abatement measures.

- Proper and timely maintenance of mining machinery & DG sets.
- Provision of earmuffs/ear plugs to workers in noise prone zones in the mine.
- Green barriers surrounding the ML area.

The ambient noise level monitoring was carried out in and around the existing mine area shows that ambient noise levels are well within the statutory limits.

Water Quality

2 surface water and four ground water sampling stations were fixed to know the effect of mining activity on the water quality as per drinking water and other usages. It is observed

that the physio-chemical characteristic of the samples analyzed were well within the permissible limits of the prescribed drinking water standards.

Wastewater generation

There is no wastewater generation from mine.

Impact on ground water table

The ground water is available below 15 m of the surface level. The proposed working will be above ground water table, so there will be no effect on the ground water due to mining activity.

Impact on surface water bodies

No surface water sources are located with in the mine area, which are likely to get disturbed as a result of extension of the mine working. Since the storm water drains or garland drains constructed around the pit shall drain the water away from the pit and lead the water into natural drainage profile. Only surface water that needs diversion is precipitation water. Therefore impact on surface water bodies is not envisaged.

Soil Quality

Soil samples were collected from four locations from the core and buffer zone to evaluate the soil quality in the study area. The soil texture of the study area ranges between Silty Clay Loam and Sandy loam. All the samples are showing moderately fertile nature.

Land Use

Mine Lease Area

At present the entire ML area is non forest govt. revenue land of village Kalwar, Tehsil Bhanupratappur, district Kanker. The ML area is falling under Khasra No. 44 & 46 with 18.38 ha. and 01.37 ha. respectively.

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Land use in the Study area

Village wise land use details of the study area as per census 2001 is summarized below:

Land use	Area (in ha)	Percentage (%)
Forest land	1584	70.5
Irrigated land	468	1.5
Un irrigated land	4534	14.4
Culturable waste land	1997	6.4
Area N/A for cultivation	886	2.8
Total	**9469**	**100**

The mining lease area covers an extent of 19.75 hectares. This consists of area for Iron ore exploitation and dumping of waste and sub-grade minerals etc. The stage wise land use pattern and Post mining land use are given below

Stage wise land use

S No	Land Use	Present	Conceptual Plan Period
1	Area of excavation	--	2.45
2	Storage of top soil	--	1.2250
3	Over Burden Dump	--	2.2050
4	Green belt/ Dump Afforestation	--	0.030
5	Un-used land	19.75	13.84
	Total	**19.75**	**19.75**

Flora

The local varieties of trees like shal, babul and thorny bushes shrubs are main vegetation in the area. Except these vast, tract of area does not have flora importance.

Fauna

Natural Fauna is field mice, rabbits, foxes. Domestic animals like cows, buffaloes and goats are available.

Socio Economics

The information on socio-economic aspects of the study area (10 km radius) has been compiled from Census 2001. A brief summary of the same is given below

Socio-Economic Details within the Study Area (10 kms radius)

	Description	Numbers
Demographic Details		
1	Total Villages	18
2	Total no. of House Hold	1985
3	Total Population	10157
4	Total SC Population	517
5	Total ST Population	517
Literacy Level		
1	Total Literate Population	6478
Employment Pattern		
1	Total Working Population	4682
2	Total Non-Workers	4356
3	Total Marginal Workers	1119

Storm water management

The rainwater accumulating in the work area will be used for dust suppression and green belt development. The only pollution anticipated in the surface drainage water is the suspended solids, due to wash off from the dumps and from the pumped out water from the mine. For this purpose retaining wall with garland drain are provided surrounding the waste dump. The discharge from this drain as well as the pumped out water from the pit during the rains are diverted to an unused workings, which allows the sediments to settle. Therefore, the impacts due to storm water flow, there by soil erosion, followed by siltation are minimal.

Waste Generation & Management

The total quantity of wastes generated during the life of the mine will be about 33,000 tonnes. During the conceptual stage part of these wastes will be backfilled in the excavated portions. The height of the dumps will be kept about 1.0 m and the spread will be along the boundary of lease area within 7.5 m width. The dead slopes of the waste dumps will be simultaneously afforestated.

Afforestation

Under plantation programme, it is suggested to develop green belt all along the boundary of mine lease area. An area of 0.030 ha land has been proposed for phased green belt plantation during the initial five years.

The species going to be planted are agaves, acacia, cassia, Pongamia, etc., as these are having a better chance of survival in this region. Plantations will be done at a spacing of 2 x 2 m.

The main aim of the plantation of the mined out areas is to stabilize the area to protect it from rain and Soil erosion and to improve the aesthetics. For this purpose mined out area of about 2.45 ha will be reclaimed by backfilling and afforested

Socio-Economic Benefits

There is positive impact on socio-economics of people living in the villages. The villages in the buffer zone depend upon agriculture. Mining operations in the subject area has positive impact by providing Job opportunities. Besides, there is indirect employment in transportation of ore to destinations. The State Government will earn higher revenue after proposed expansion by way of royalty, sales tax, cess etc. The Government of India will earn Income tax and valuable foreign exchange through the export of the product used goods.

Environmental Monitoring Programme

All the environmental parameters viz. air, water, noise and soil will be monitored regularly, once in every season, every year in order to detect any changes from the baseline status. Monitoring program will be followed till the mining operations continue.

The monitoring system will also include:

(i) Examination of signs of slope failures and excess erosions along the waste dumps.
(ii) Continued analysis of mine site drainage water at regular intervals to monitor suspended solid content in particular and other parameters in general.
(iii) Efficacy of check dams at the waste disposal area and to improve the silt arresting arrangement.

For implementation of Environment Management Plan a small unit called Environment Management Cell will be formed under the control of the Project Manager. The job of this cell will be:

1. Implementation of pollution control measure.
2. Monitoring programme implementation.
3. Post-plantation care.
4. To estimate the efficiency of pollution control measures taken.
5. To bring out any other unforeseen effect on environment not covered under report.
6. Seeking expert's advice when needed.

Conclusion

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and transportation of ore in closed trucks. There will be an insignificant impact on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area. Monitoring program will be followed till the mining operations continue. It will be ensured that the pollution shall not spread in buffer zone. Hence, it can be summarized that the development of the mine will have a positive impact on the socio-economic of the area and lead to sustainable development of the region.