

## EXECUTIVE SUMMARY

### INTRODUCTION

The area under reference is situated in Village Kajali Dongari , District - Jhabua (M.P.). The mining lease was earlier granted to Shri T.S. Poddar. After the expiry of the mining lease the same was granted under mining lease to M/s. Jalan Ispat Castings Ltd. for a period of 20 years w.e.f. 17.08.1998 to 16.08.2018. The mining lease has now been transferred in the name of present lessee M/s. S.R. Ferro Alloys under Rule 37 of M.C.R. 1960 for the balance period of the mining lease vide State Govt. of M.P., Mineral Resources Department Bhopal letter No. 2-113/97/12/1 dated 05.12.2006. The transfer deed was executed on 08.12.2006. The Mining Plan was earlier approved under Rule-22 of MCR 1960 for grant of mining lease. Subsequently the Scheme of Mining has been approved under Rule 12 (3) of MCDR 1988.

The previous lessee M/s. Jalan Ispat Castings Ltd. worked the mine for 4 years period upto Oct. 2001. The mining operations was suspended by the Collector, Jhabua in Nov. 2001 and the mine remained closed upto 11.12.2006. The mine reopened on 12.12.2006 after transfer of the mining lease to the present lessee. This application is for enhancement of production upto 1.50 LTA.

### Location

The lease area falls in Meghanagar Tehsil of Jhabua Distt. of Madhya Pradesh State in khasra No. 177 of Kajali Dongri village. The lease area is approachable from district headquarter Jhabua via Meghanagar upto Kajali Dongari village. Meghanagar is 17 kms from Jhabua and the lease area is 8 kms from Meghnagar. Meghanagar is nearest railway station situated on Delhi - Mumbai section of Railway.. The mining lease area is a part of the Survey of India toposheet no. 46 J /5. Geographically the ML area falls under following co-ordinates

Latitude	N 22 <sup>0</sup> 56' 25" to 22 <sup>0</sup> 57' 01"
Longitude	E 74 <sup>0</sup> 28' 08" to 74 <sup>0</sup> 28' 28"

## **PROJECT DESCRIPTION**

### **Topography & Drainage**

The lease area is Undulating having general slope towards west. The highest elevation of the lease area is 299 mRL towards south on top of mound and the lowest elevation is 266 mRL in north-west direction.

The general slope of the area is towards north direction and the area is drained by a seasonal nalla flowing about 25 mts. away from the western boundary of the lease area in north direction. This confluences in Pat river situated at about 500m in north direction.

### **Salient Features of Mining**

- Mining is proposed by other than fully mechanized opencast method.
- Estimated Mineable Reserves: 1.65 million tonnes
- Maximum rate of production will be around 1,50,000 tonnes/annum.
- Anticipated life of mine is 11 years.
- A maximum bench height of 6.0 mtr would be maintained. The width of the bench will be in between 3m to 15m.
- Blasting is proposed for heaving purpose.
- 0.75 Million tonnes of total waste will be generated during life of mine.
- Concurrent backfilling of solid waste will be carried out in future from 9<sup>th</sup> year onwards. The manner of disposal of waste will be mechanical. The OB/waste will be and unloaded mechanically.
- All the mineral transportation from mine head to the destination will be done by trucks. Trucks will be hired by the consumers from local transporters of Meghnagar & Jhabua.
- About 350 people will be engaged as direct employment including managerial staff.

## DESCRIPTION OF THE ENVIRONMENT

### Meteorology (Pre Monsoon 2008)

Sl. No.	Parameters	Data
1	Maximum temperature ( <sup>0</sup> C)	43.6
2	Minimum temperature ( <sup>0</sup> C)	13.0
3	Maximum Relative Humidity (%)	85.0
4	Minimum Relative Humidity (%)	9.0
5	Total Rainfall (mm)	Nil
6	Predominant wind direction	From West

### Ambient Air Quality

Six locations of the study area are monitored for Ambient Air Quality, including one in lease area and 5 locations in buffer zone with due consideration to the wind direction and the distance from the site considering calculated coverage factors 'Ajk'. Pre-calibrated R.D. Samplers have been used for monitoring the existing AAQ status. The summary of Ambient Air Quality test results are given below.

Analysis of baseline concentrations (Units: µg / m<sup>3</sup>)

	SPM	RPM	SO <sub>2</sub>	NO <sub>X</sub>
Core Zone	198 - 257	42 – 88.6	11.6 – 14.4	14.2 – 21.9
NAAQ Standard for industrial area Annual Average / 24 Hrs	360/500	120/150	80/120	80/120
Buffer Zone	86 - 144	26.1 - 46	3.7 – 7.8	6.9 – 12.1
NAAQ Standard for residential area Annual Average / 24 Hrs	140/200	60/100	60/80	60/80

### Noise Level

A preliminary survey was undertaken at 6 locations i.e. one in mine lease area and 5 locations in buffer zone during study period, to identify the major noise generating sources in the area. Summary of noise level data of different locations are given below.

### Noise Levels during Study Period [Units:dB(A)]

	N-1	N-2	N-3	N-4	N-5	N-6
L <sub>min</sub>	38.1	37.6	36.9	37.1	36.6	36.6
L <sub>Max</sub>	52.9	55.1	54.3	53.4	53.7	53.7
L <sub>d</sub>	52.0	52.3	50.1	50.8	50.4	50.2
Standard	75	75	55	55	55	55
L <sub>dn</sub>	50.7	51.3	44.8	46.3	44.2	43.8
L <sub>n</sub>	41.6	41.8	40.4	41.6	41.8	41.8
Standard	70	70	45	45	45	45
L <sub>min</sub>	Minimum Noise Level Recorded					
L <sub>Max</sub>	Maximum Noise Level Recorded					
L <sub>d</sub>	Day Equivalents					
L <sub>n</sub>	Night Equivalents					
L <sub>dn</sub>	Day-Night Equivalents					

The major noise generating sources are mining related activities, commercial activities, traffic and blasting. The ambient noise level in and around the existing mine area is well within the statutory limits.

### Traffic Density

The characteristics and volume of traffic in the buffer zone was studied during the monitoring period, on Meghnagar – Madrani road. Summary of the traffic study is given below.

Type of Vehicle	Total traffic on Meghnagar- Madrani road (in 24 hrs)
HMV	28
LMV	52
2 & 3 Wheelers	70
Total	150

## WATER ENVIRONMENT

### Water Resources

#### Surface Water

There is no river, nalla or any surface water source within ML area. Besides a network of many seasonal nalla in the study area The area is drained by a seasonal nalla flowing about 25 mts. away from the western boundary of the proposed lease area in north direction. This confluences in Pat river situated at about 500m in north direction. Anas river form a part of study area towards west direction and flowing towards north west.

### Ground Water

The ground water table in the lease area varies from 15m to 20m bgl(260mRL). In the study area, the general water table in the hilly region ranges between 50m – 60m bgl. The water table on the hill tops is at quite a great depth, where as in plain area it varies between 12m to 16m bgl. Ground water potential of the study area is ranges between 1 to 5 l/s.

### Water Quality

Two surface water and six ground water samples were collected and tested to know the water quality of study area. Summary of the water quality test results are given below.

#### Summary of Water Quality Test Results

S. No.	Parameter	Unit	Surface Water	Ground Water	Desirable limits as per IS: 10500
1	pH	-	7.1 – 7.4	6.92 – 7.98	6.5 – 8.5
2	Total Dissolved Solids	mg/l	280 – 435	284 – 468	500
3	Total Hardness as CaCO <sub>3</sub>	mg/l	172 – 260	198 – 297	300
4	Chloride as Cl	mg/l	23 – 26	38 – 88	250
5	Fluoride as F	mg/l	0.62 – 0.82	0.48 – 0.72	1.0
6	Turbidity	NTU	1.2 – 2.1	1.0 – 2.1	5

Perusal of the above table shows that physio-chemical characteristic of the samples analyzed were well within the desirable limits of the prescribed drinking water standards IS:10500.

### LAND ENVIRONMENT

#### Land Use

The entire lease area 30.86 ha. is under possession of M/s. S.R. Ferro Alloys (The Lessee). Land use of mining lease area and study area are given below.

**Present Land use of ML area**

S.No.	Category	Land Use (In Ha.)
1	OB dumps/ Mineral Storage	6.0
2	Excavation (voids only)	14.0
3	Road	0.10
4	Green belt / Plantation	0.005
5	Others (Site services)	0.25
6	Undisturbed area	10.505
<b>Total</b>		<b>30.86</b>

**Land use in the Study area**

Land use	Percentage (%)
Forest land	19.36
Irrigated land	4.10
Un irrigated land	36.21
Culturable waste land	26.2
Area N/A for cultivation	14.13
Total	100

**Soil Quality**

Soil samples were collected from three locations from the core and buffer zone to evaluate the soil quality in the study area. All the samples are showing moderately fertile nature.

**BIOLOGICAL ENVIRONMENT**

### **Floral**

The study area has Northern Dry Mixed Deciduous forest in north a patch of fairly dense mixed jungle (Mainly Ber, Zizyphus, Jujuba) mostly spread over the Meghnagar plateau. Teak, Palas, Seesam, Mahua, babool, Mango, Glisidiya, Aanwala, Bamboo, Bahera, Bel, Ber, Chirol, Kardhar, Dhawara, Gular, Moyan, Imli, Kachnar, Mundi, Kasei, Khamar, Khajur, Munga, Peepal, Reunja, SitaPhal, Adusa, Baibiranj, Bilsena, Chind, Gokhru, Kaner, Kewara can be seen in this plateau.

### **Fauna**

Faunal population did not show any special feature. Concentration of animals is sparse. Avi-faunal population was also not rich in the forest areas. There is no Schedule I animal in the ML area. Predominant wild life mammals of the study area include wild goat, rabbit, jackal, fox, etc. Several types of avi-fauna are found in the forests on the hill slopes, including egret, pigeon, dove, cuckoo, koel, owl, woodpecker, sparrow, mayna, etc.

## **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### **Impact on Ambient Air Quality**

From the proposed expansion activity removal, handling, transportation of ore and storage of wastes will causes an additional increase in the concentration of SPM in the atmosphere. Marginal emissions of Sulphur dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>X</sub>) can be anticipated by diesel operated equipments and vehicles plying on haul roads. Based on ISC-AERMOD model the maximum predicted concentrations of SPM during pick operation of mining will be <257µg/m<sup>3</sup> within ML area and <100 µg/m<sup>3</sup> within study area.

### Control Measures of Air Pollution

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	Overburden/Waste Dump	-Consolidation and terracing of dumps. - Afforestation on inactive side of dump. - Water sprinkling of waste dump.
4	Mine pit	-Regular water sprinkling in working areas.
5	Afforestation	- Plantation of native species - Plantation of fast growing trees

### Impact on Noise Level

Increase in vehicles for transportation and haulage due to increase in production will add some noise level in the present monitoring level of noise specially within the active working area. the anticipated noise level at ML boundary from nearest pit boundary will be less than 55 dB (A), which is less than the prescribed limits for industrial area. No additional noise can be anticipated due to proposed mining activities at nearest habitat (about 500m from ML boundary) of Kajali Dongri village.

### Control Measure of Noise Pollution

Noise levels will be kept within acceptable limits by:

- Limiting of speed of haulage vehicles/tippers.
- Restriction of blast hole drilling to only day time hours and usage of sharp drilling bits and delivery of compressed air at optimal pressure during drilling
- Controlled blasting techniques with sequential blasting to reduce noise level and blast induced ground vibrations.

## **Executive Summary of Kajli Dongri Manganese Mine of M/s. S.R. Ferro Alloys**

- Use of low density explosives to have a heaving effect than an explosion
- Provision of ear muffs/ear plugs to workers in noise prone zones in the mine.

### **Control Measure of Water Pollution**

- Total water requirement is 15 m<sup>3</sup>/day.
- There is no waste water generation from the mine, hence contamination of surface and ground water quality is not possible.
- Excavation for Manganese mining will be up to a maximum of 15 m bgl. Hence the proposed mining will not intersect the ground water table.
- Excavated pit will work as water harvesting pit

### **Water Conservation Measure**

To conserve the water following measures are adopted :

- The excavated pit will be available for rain water infiltration
- Water sprinkler will be used for dust suppression.

### **Impact on Land**

Around 92% of the ML area will be used for mining and its allied activities. The changed land use will be restored back through backfilling/afforestation and water reservoir to maintain proper land during regular mining activity and at the conceptual stage.

### **Impact on Flora & Fauna**

The area is thinly vegetated and with no thick vegetation on the plateau top. Sparse growth of vegetation can be seen on the Meghnagar plateau area. No wildlife are found in this area. The mining activity of the proposed project does not change the community structure of the vegetation.

### **Impact on Socio-Economy**

This project provides the local populace with employment and business entrepreneurial opportunity. Unskilled manual labour will be employed from the local community and

they also will have a big opportunity to enter into transport business. The local skilled labour will have additional opportunity to enter into automobile maintenance profession to cater to the needs of the transport trucks.

## **ENVIRONMENTAL MANAGEMENT PLAN**

### **Air Quality Management**

Drilling & blasting operations which generate maximum quantity of dust are intermittently operated and are restricted to only hard rock portions exposed. Water tankers with spraying arrangement will be used for regular water sprinkling on the haul roads to ensure effective dust suppression. Dust masks will be provided to the workers especially for the drillers and for the workers working in the loading operations.

### **Waste Management**

It is estimated that the total quarry waste including soil generated would be around 0.75 million tonnes during the life of mine. The Overburden will be removed in two stages. The soil at the top will be removed first and transported by 10 T tippers for Stacking and later this soil stack shall be reused for spreading over the back filled portions with the overburden and mine wastes.

### **Afforestation**

The mined out areas will be backfilled and reclaimed with dense poly-culture plantation of the local species. Water reservoirs will be created in the abandoned mine pit that shall increase the water availability to surrounding area for longer periods of time. At the end of conceptual stage an area of 15.71 ha. land has been proposed for phased green belt plantation/afforestation The species to be grown in the areas should be dust tolerant, fast growing and fruit yielding species so that a permanent green belt is created.

### **Socio-Economic Benefits**

- Mining will be done with the vision of leaving a positive impact on socio-economics of people living in the nearby villages.

## **Executive Summary of Kajli Dongri Manganese Mine of M/s. S.R. Ferro Alloys**

- Mining operations in the subject area has positive impact by providing job opportunities. There is indirect employment in transportation of ore to destinations.
- Mining activities will benefit the local people due to provision of more infrastructure facilities by the local industry as mining industry boost up the local market.
- A first-aid centre to meet the basic medical needs of employees and surrounding villagers will be provided.

### **ENVIRONMENTAL MONITORING PROGRAMME**

Routine monitoring of all the environmental parameters viz. air, water, noise and soil as per the formulated program based on CPCB and MOEF guidelines every year in order to detect any changes from the baseline status. Monitoring program will be followed till the mining operations continue. For implementation of Environment Management Plan a small unit will be formed under the control of the Mines Manager. The job of this unit will be regular environmental monitoring, preparation and submission of environmental report, green belt development, etc.

## **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. Around Rs.48.0 lakhs and Rs 68.50 lakhs as capital and recurring budget for environmental protection have been formulated to achieve the environmental quality as desired. 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.