

**PROJECT REPORT
FOR
FOREST CLEARANCE**

**BHADIGUND LIMESTONE MINES.
M.L No. 2660
AREA : 40.12 HA**



STEEL AUTHORITY OF INDIA LIMITED,
VISVESVARAYA IRON AND STEEL PLANT,
BHADRAVATHI – 577 301.

ABOUT SAIL-VISL

Steel Authority of India Ltd is the Major central public sector Steel manufacturing company in India. This company having 5 integrated steel plants (BSP, DSP, RSP, BSP, ISP), 3 Special Alloy steel plants (ASP, SSP, VISP) 8 captive Iron ore mines, 6 captive Limestone Mines, 5 captive Dolomite Mines, 3 captive Coal Mines and 1 captive Dunite mines. Visvesvaraya Iron and Steel Plant is one of the unit of Steel Authority of India Limited located at Bhadravathi. It is 260 km North West of Bangalore in the state of Karnataka. The plant is situated on the banks of River Bhadra.

The Great Visionary SIR M. VISVESVARAYA started this plant in the year 1918. This plant was taken over by Steel Authority of India Limited in the year 1998 under Ministry of Steel, Govt. of India. This plant manufactures Pig Iron, Alloy and Special Steels, which are useful for Automobile Industry, Defense, Aeronautics, etc; The Plant has ISO-9000 certification for Alloy and Steel manufacture. Visvesvaraya Iron and Steel Plant is having two Captive Mines to fulfill the requirements of raw materials (Lime stone and Dunite) to the plant.

- Bhadigund Limestone Mines.
- Kenchapura Dunite Mines.

BHADIGUND LIME STONE MINES - A PREVIEW.

Bhadigund Limestone Mines is owned by Visvesvaraya Iron & Steel Plant of Steel Authority of India Ltd , is situated at Bhadigund Village of Bhadravati Taluq in Kukwada-Ubrani State Forest Range of Shimoga District. The Mine is connected by Road and the distance is 25 kms from Bhadravathi.

The Bhadigund Limestone Mine is in operation working since 1938-39 and all the infrastructure facilities required for mining are available. The nearest Post Office is available at Bhadigund village, which is about 0.75 km. from the mine site. The mines are well connected by road. Electric supply to the mine is from Karnataka Electricity Board and the drinking water is provided through bore wells. The present requirement of Limestone as flux to BF is about 1,00,000 tones per annum.

In the year 1997 Forest clearance was granted for 40.12 Ha forest land for 20 years with effect from 01/05/1997

THE DETAILS OF THE MINES ARE AS FOLLOWS:

Lease area	:	40.12Ha.
Survey No.	:	Survey No. 1
Village	:	Bhadigunda Village
Taluk	:	Bhadravati
District	:	Shimoga
State	:	Karnataka
Type of Area	:	Forest Land
Location of Forest	:	Kukvadi Ubrani State Forest
Top sheet No	:	48 O/13
Latitude	:	13 ⁰ 53' 00" N
Longitude	:	75 ⁰ 51' 15" E

STATUS OF GOVT. CLEARANCE:

1	Extent	40.12 Ha
2	Validity of Mining Lease	March 2023
3	Validity of Environment Clearance	Co-terminus with Forest Clearance / Mining Lease
4	Forest Clearance	April 2017
5	Validity of Approved Mining Plan	March 2018
6	Validity of Air and Water consent	June 2015

PRODUCTION DETAILS:

Sl.No.	Year	Production (in Tons)
1	2000-2001	34911
2	2001-2002	33931
3	2002-2003	33584
4	2003-2004	37612
5	2004-2005	33873
6	2005-2006	23884
7	2006-2007	38209
8	2007-2008	54823
9	2008-2009	34808
10	2009-2010	48326
11	2010-2011	56188
12	2011-2012	44801
13	2012-2013	30460
14	2013-2014	9437

GEOLOGY & EXPLORATION:

PHYSIOGRAPHY:

The mine terrain is hilly, the rainwater passing through the lease area, which joins the main drainage pattern in the western direction. The trend of the hill is along NNW to SSE. The hilltop consists of few trees and neighboring area belongs to forest department covered with jungle wood, teakwood, bamboo and other trees etc. The highest & lowest elevation in the lease area is 790 m & 700 m respectively from the assumed benchmark 710 m RL. The area is having sparse growth and only thorny bushes are seen.

Annual rainfall is 500 mm to 750 mm and maximum temperature 38°C during summer and 16°C during winter months.

REGIONAL GEOLOGY:

The rock types exposed in the area belongs to Shimoga schist belt. According to B.Rama Rao, they are the best sections of middle dharwars .The Succession of the rock types is as follows.

MIDDLE DHARWARS:

Granite porphyry masses of Rangadurga, Balekal and probably granites of Honnali, Shimoga and adjacent parts.

- a) Banded hematite quartzite.
- b) Lime stones, dolomites and siliceous limestone
- c) Phyllitic and chlorite schist, gray or greenish.
- d) Conglomerate (showing pebbles of quartzite and Quartz porphyries), telepathic grits and greywacke.

The origin of the limestone has been considered to be formed by the process of contact alteration of hornblende schist with the production of various calsilicates and their subsequent decomposition-giving rise to crystalline limestone.

DESCRIPTION OF THE DEPOSIT :

The various rock types exposed in the area are as follows:

- a) Ferruginous and Magnesian rocks.
- b) Limestone
- c) Pyrite and chlorite schist.

The general strike of the limestone is northwest – South East direction and some places change in the strike direction towards NNW-SSE could also be observed. The strike length of limestone deposit is 1125 m in North-West and South-East direction and average width of the deposit is 300 m. Dip is usually steep varying between 60° to 80° towards east. While this is the general pattern, limestone in the quarry has shown light folding configuration of beds and reversal of dip. Dolerite inclusion could be noticed traversing the limestone in mines. Particularly along the northern boundary it occurs as a dyke, cutting across the limestone and the dyke is highly weathered. Good exposures of Ferruginous and Manganese rocks can be seen on the higher contour of a hill called Bheemangundi towards north-east of the quarry where BMD (present M/s MML) a State owned PSU had its Manganese Mine. Phyllites are exposed on a hillock near 12th mile cutting and the general strike of these is N 30° W to S 30° E with a dip of 80° towards N 60° E. Chlorite schist is also found in 12th mile cutting towards the west of main quarry and the general trend of these schist is N 30° W to S 30° E with an easterly dip ranging from 60° to 70°.

RESERVES:

Bhadigund Limestone Mine has been divided into two working quarries i.e. Main Quarry and East Quarry. At present the mining operations are carried out at Main Quarry. The Limestone reserves have been computed based on the exploration work conducted by NMDC & Govt. of Karnataka and details are given below:

a) MAIN QUARRY:

Type of Ore	Reserves in Million tones	Cao %	Mgo %	R2O3	SiO2	Loss %
High Calcium Lime Stone	12.628	50.08	2.61	1.67	6.36	39.15
Low Magnesium Lime Stone	0.68	42.59	5.09	3.76	7.22	42.05
High Magnesium Lime Stone	5.82	33.69	12	3.32	9.39	41.85
Total	19.13					

b) EAST QUARRY:

Type of Ore	Reserves in Million tones	Cao %	Mgo %	R2O3	SiO2	Loss %
High Calcium Lime Stone	1.99	48.48	1.92	1.16	6.77	40.55
Low Magnesium Lime Stone	0.02	41.4	5.5	2.2	10.2	40.4
High Magnesium Lime Stone	0.65	30.55	12.86	3.35	15.9	37.1
Total	2.66					

Total reserves in Main Quarry+East Quarry 19.125+ 2.659 = 21.784 Million Tones.

At present, the above types of ores are being mined and used at Blast Furnace as flux.

There is no sub grade mineral in the mining lease area.

The above total reserves were estimated during 1968 – 69 in Bhadigund Lime Stone Mine over an extent of 40.12 Ha.

METHOD OF MINING:

The method of mining is OPEN CAST MINE.

HEIGHT & WIDTH OF THE BENCH:

Height of the bench is 5 to 6 meters and width of the bench is 9 to 12 meters and length of the bench is about 200m & Slope of the bench is are maintained with 45° to 60°.

DRILLING AND BLASTING:

Drilling & Blasting are required for excavation of Limestone. Drilling with two stages are essential, primary drilling of DTH (110mm) and secondary drilling with jackhammer.

EXCAVATION:

Blasted material i.e. ROM is loaded into tippers by hydraulic excavator with the bucket capacity of 0.9 m³. wheel loader is deployed for maintaining of haulage road and house keeping work. Present production capacity of mine is 1,00,000 Tons/annum.

TRANSPORTATION:

Blasted material i.e. ROM is transported by tippers to VISL factory Bhadravathi for making sizing of 10mm to 40mm captive use at Blast Furnace as flux.

MINING MACHINERY DEPLOYED:

L&T Excavator 0.9 m ³	-	1 No
Water Tanker	-	1 No.
Trippers (10 tons)	-	5 No
Compressor with DTH &Jacks	-	1 No
Jeep	-	1 No

ENVIRONMENT MANAGEMENT PLAN

1. TOP SOIL MANAGEMENT :

Top soil removed earlier dumped/ stacked in the dump yard, and it is already stabilized due to afforestation and natural vegetation.

2. WASTE DUMP MANAGEMENT :

At present no waste/soil occurring along with limestone handled, due to restricted production. The waste dumped earlier has stabilized over the years through afforestation and natural vegetation has come up. A retaining walls have been built to arrest washing away of silt.

3. LAND RECLAMATION AND REHABILITATION :

Land reclamation measures are proposed to be taken up at the end of the mining activities in the Lease Area by planting trees on the ultimate bench slopes. There is no Beneficiation plant or crushing and Screening Plant. Further there is no habitation except mine workers in the lease area.

4. DETAILS OF AFFORESTATION WORK CARRIED OUT AT BHADIGUND LIMESTONE MINES

Sl. No.	Year	Type of saplings	Total No. of saplings
1	2009-10	Teak, Honge,	1100
2	2010-11	Honge, Neem, Teak, Ashoka, Akash Mallige and Ficus	2222
3	2011-12	Teak, Vonge	2500
4	2012-13	Teak	2500
5	2013-14	Teak, Vonge, Silver Ocke	2500
6	2014-15	Teak	2000

5. AIR QUALITY MONITORING:

Environment dept is monitoring air quality once in a month.