

# **EXPLORATION REPORT FOR EAST COAST BAUXITE PROJECT**

## **BAUXITE DEPOSITS OF SAPPARLA 2 & 3 BLOCKS**

**CHINTAPALLE AREA,  
DISTRICT - VISAKHAPATNAM, ANDHRA PRADESH**

**EXECUTIVE SUMMARY**



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# **GEOLOGICAL REPORT ON EXPLORATION (EAST COAST BAUXITE PROJECT) BAUXITE DEPOSIT OF SAPPARLA 2 & 3 BLOCKS VISA KHAPATNAM, ANDHRA PRADESH**

## **EXECUTIVE SUMMARY**

### **1.0 LOCATION**

The bauxite deposits are situated at about 180 km from Vishakhapatnam on the State highway connecting the latter to the hydroelectric projects on the Sileru River. Each of the two bauxite-bearing plateaus extends over an area of about 1.5 sq.km. and occurs as a blanket, capping the khondalites. They are situated on the tops of two hills at elevations of about 1000 to 1250 m above mean sea level.

### **2.0 GEOLOGY**

The deposits are characterized by flat or gently rolling surface and presence of outcrops of bauxite over considerable stretches with thin overburden at places. . The other characteristics of the ore are its low silica and Titania (2 to 3 %), moderate alumina (45-50 %) and somewhat high iron oxide (about 20%) contents. The predominant aluminous mineral is gibbsite, which accounts for over 95 % of the total alumina. This is very favourable for economic extraction of alumina by Bayer's process. Boehmite occurs in very minor quantities in some places. Hematite, goethite, kaolin, rutile/anatase and in some cases lepidocrocite and sillimanite are the other minerals constituting the ore.

### **3.0 MINERALISATION**

Deposit is a product of Insitu chemical weathering of Khondalite, the parent rock. It occurs as a blanket cover over Khondalite. The major Bauxite mineral is gibbsite with minor amount of other bauxite minerals.

### **4.0 QUANTUM OF WORK DONE**

Covering 3.12 sq.km carried out the exploration. by large scale geological mapping and topographic survey; drilling of 173 vertical boreholes and 24 inclined boreholes (4178.10 m) by dry method; excavating 15 deep pits; chemical analysis of 5449 samples; carrying out integrated laboratory studies for determining the chemistry and mineralogy; and conducting three ore beneficiation tests and three autoclave tests.

## 5.0 ORE RESERVE ESTIMATION

The ore reserves and their grade have been estimated by standard methods, at a cut-off of +40%  $\text{Al}_2\text{O}_3$  and -5%  $\text{SiO}_2$ . The accuracies of estimates of the basic parameters of bauxite have been computed by statistical methods to categorise the reserves into A, B & C categories, the stipulated accuracies for tonnages of these three categories for tonnages of these three categories being 90 %, 70-90 % and less than 70 % respectively.

A total of 72.58 million tones of in situ reserves of bauxite, comprising 9.54, 28.11 and 34.93 million tones of A, B & C categories respectively has been estimated to be available from the two blocks together. The average thickness of the ore bodies is 13.15 m and their average contents of  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$  and  $\text{Fe}_2\text{O}_3$  are 2.18 %, 47.69 % and 21.32 % respectively. The block-wise reserves are:

**Block -2** : 34.32 million tones with 2.50 %  $\text{SiO}_2$  & 47.36 %  $\text{Al}_2\text{O}_3$ .

**Block -3** : 38.26 million tones with 1.90 %  $\text{SiO}_2$  & 47.99 %  $\text{Al}_2\text{O}_3$ .

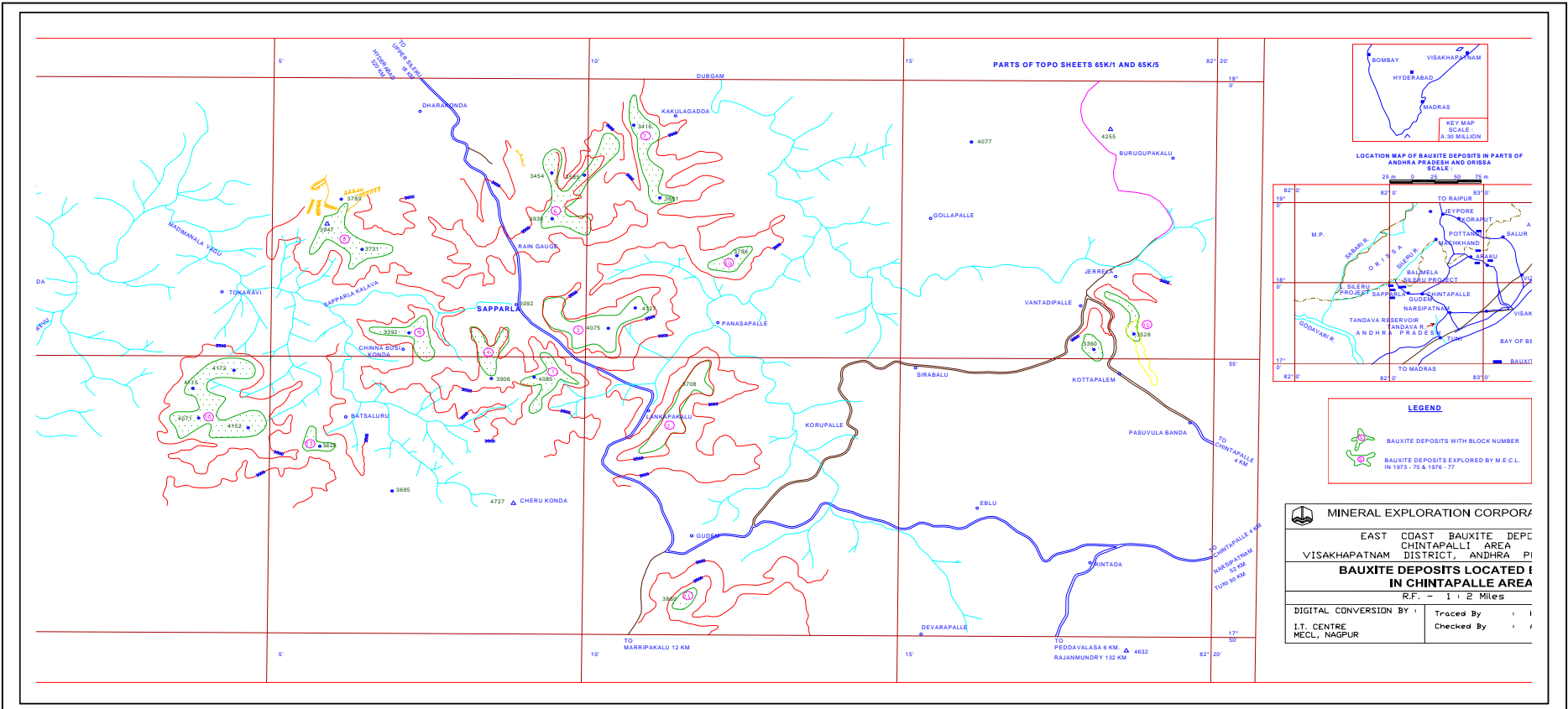
The results of the bench scale beneficiation tests by high intensity wet magnetic separation methods indicate that the alumina content of the Sapparla bauxite with about 46 %  $\text{Al}_2\text{O}_3$ , 3 to 4 %  $\text{SiO}_2$  and 24 %  $\text{Fe}_2\text{O}_3$  can be upgraded by about 3.5 units with a percentage recovery of 88. These tests on a sample with 34.57 %  $\text{Al}_2\text{O}_3$ , 1.54 %  $\text{SiO}_2$  and 39.76 %  $\text{Fe}_2\text{O}_3$  upgraded the alumina to 45.56 % at a weight percent recovery of about 68.

Autoclave tests carried out on three samples of bauxite have shown that about 92-96 % of the total alumina and 98 % of the gibbsitic alumina is likely to be recovered by Bayer's process

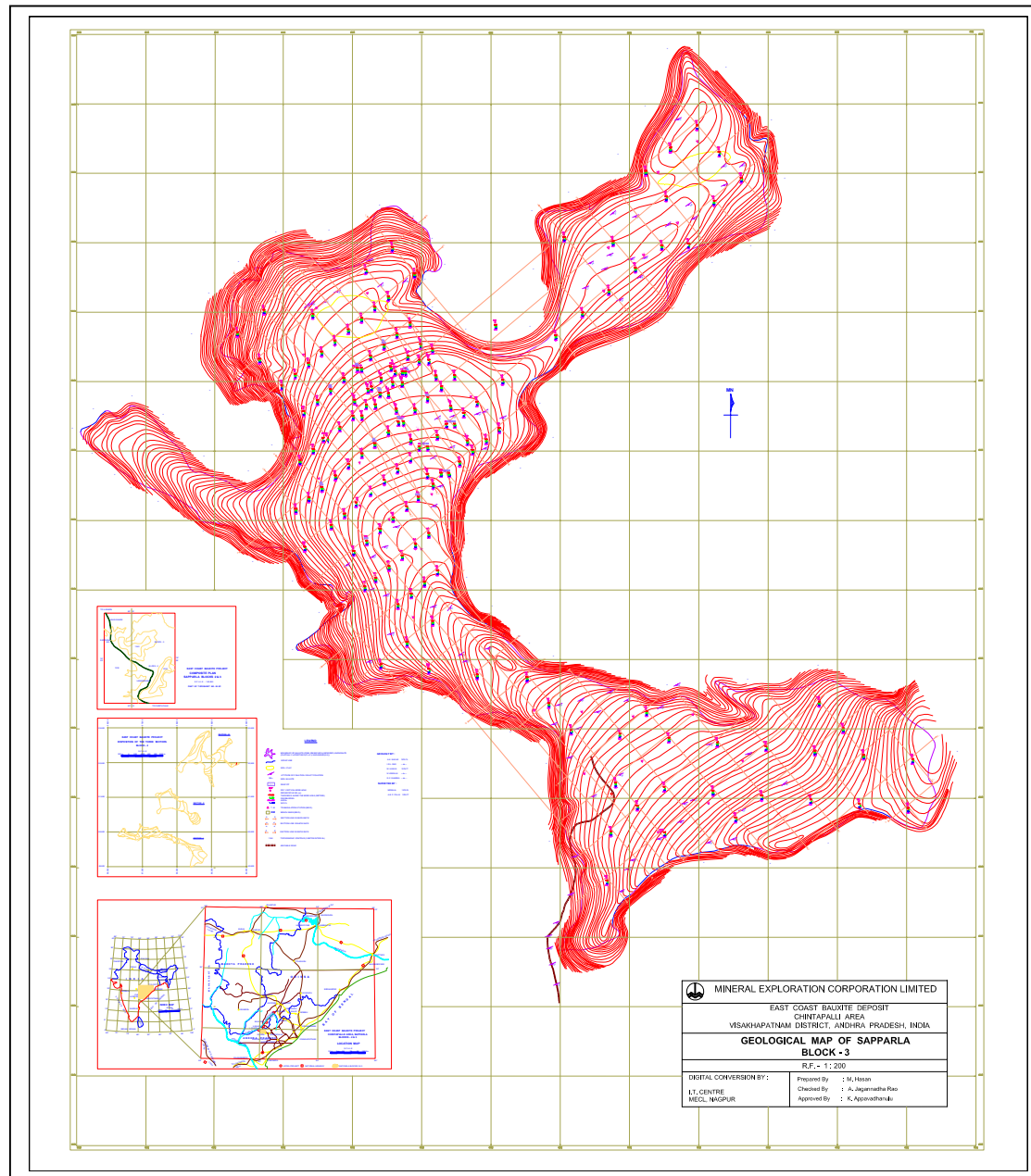
**The deposit has been categorised under Category 'A' of UNFC 221.**

**Total Exploration Cost is Rs. 56.84 Lakhs.**

# Regional Geological Map, East Coast Bauxite Belt, Chintapalli Area, Andhra Pradesh



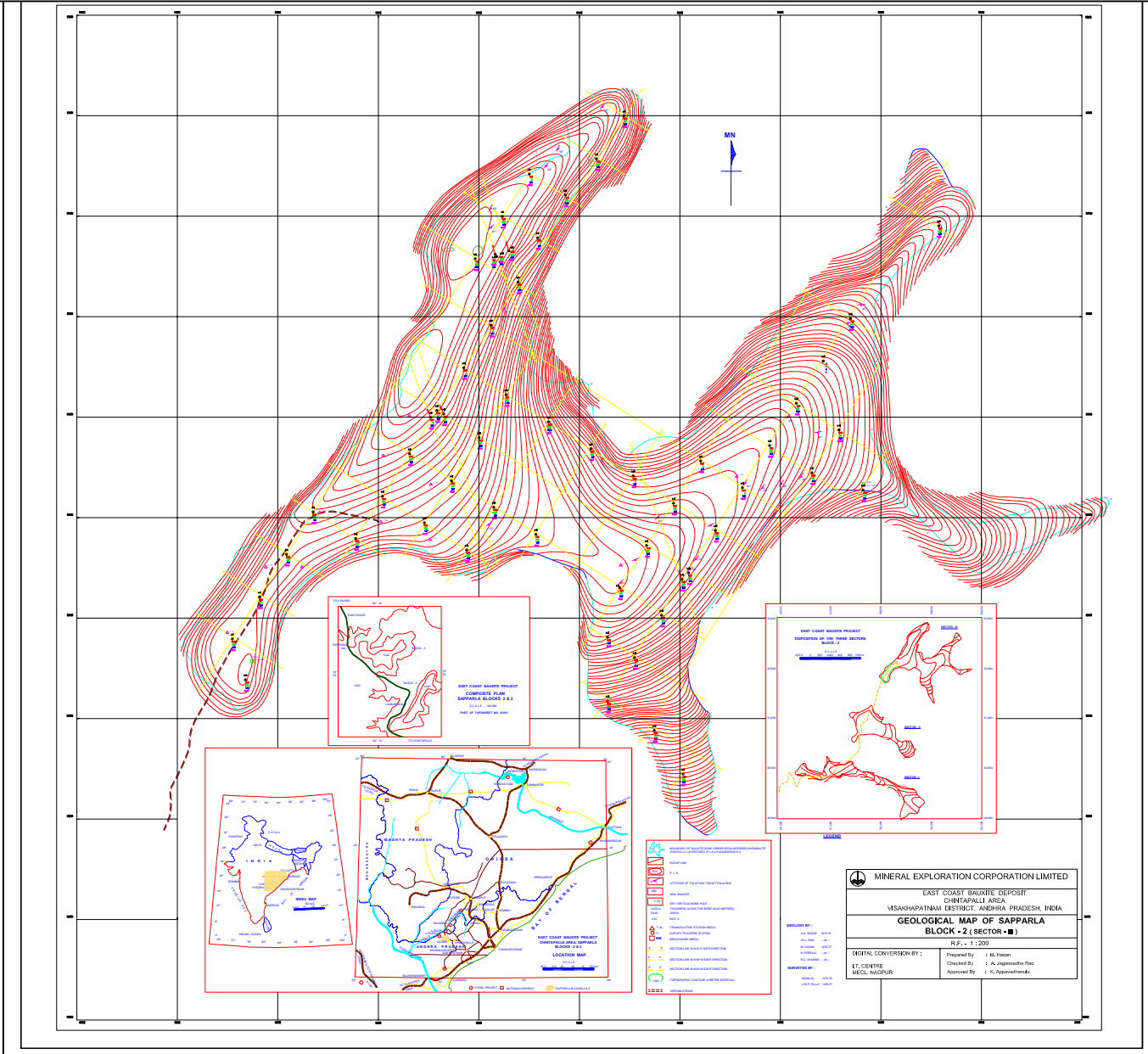
# Geological map of Sapparla Bauxite Deposit, Block - 3, Andhra Pradesh







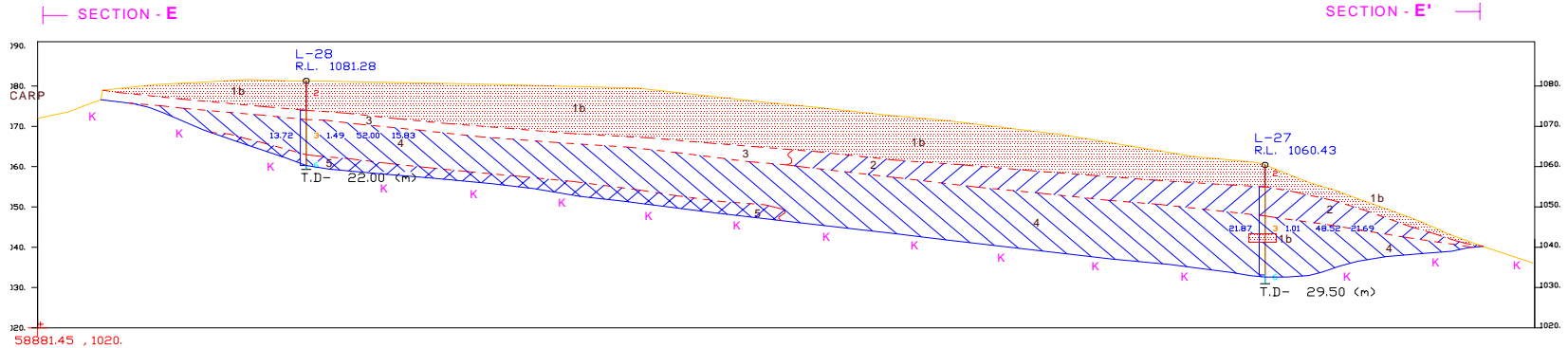
# Geological map of Sapparla Bauxite Deposit, Block – 2(Sector-III), Andhra Pradesh



2°E

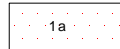
GEOLOGICAL CROSS SECTION ALONG E-E'

S32°W

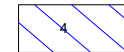


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Dry Vertical Borehole  
Overburden

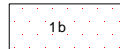


Non-Bauxite (>5% SiO<sub>2</sub> & <40% Al<sub>2</sub>O<sub>3</sub>)

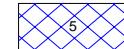


Bauxite zone 50 - 55% Al<sub>2</sub>O<sub>3</sub>

Bauxite column (with >40% Al<sub>2</sub>O<sub>3</sub> & <5% SiO<sub>2</sub>)

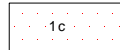


Non-Bauxite (<5% SiO<sub>2</sub> & <40% Al<sub>2</sub>O<sub>3</sub>)



Bauxite zone > 55% Al<sub>2</sub>O<sub>3</sub>

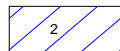
Khondalite (partially lateritised/kalonised)



Non-Bauxite (>5% SiO<sub>2</sub> & >40% Al<sub>2</sub>O<sub>3</sub>)

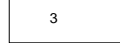
E — — E' Section line

Depth drilled



Bauxite zone 40 - 45% Al<sub>2</sub>O<sub>3</sub>

Thickness of Bauxite



Bauxite zone 45 - 50% Al<sub>2</sub>O<sub>3</sub>

Al<sub>2</sub>O<sub>3</sub>

SiO<sub>2</sub>