

## OCCURRENCE OF GRAPHITE VEINS IN KOTUHENA

### INTRODUCTION

Occurrence of graphite in Sri Lanka was first revealed by Dr. Ananda Coomaraswamy in his reports submitted to the Government Mineralogist Department in 1903. Kahatagaha and Kolongaha mines in Maduragoda, Dodangaslanda area are the major graphite producers in Sri Lanka since the beginning of the graphite industry in Sri Lanka about 150 years ago. The Both mines have driven their vertical shafts down to in excess of 1000 meters increasing the difficulty in extraction and also the cost of production.

In recent efforts to cut down the cost of production, new prospects have been thoroughly investigated for shallow deposits. The present study has been undertaken to identify new deposits in the area.

### LOCATION

Kotuhena mines are situated 30 km NE of Kurunegala, the capital city of the Wayamba Province of Sri Lanka. The mine can be reached from Kurunegala on the Kurunegala-Matale roads (Fig. 1). The mining area is about 400 meters above MSL (Figure 2).

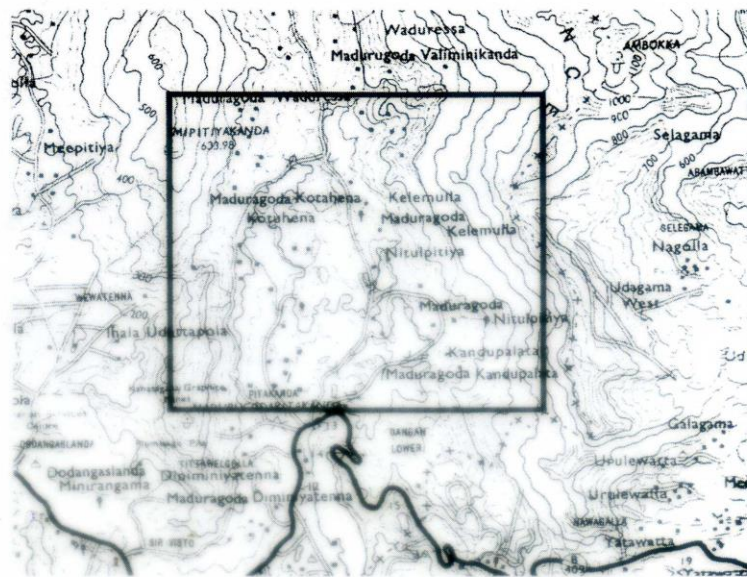
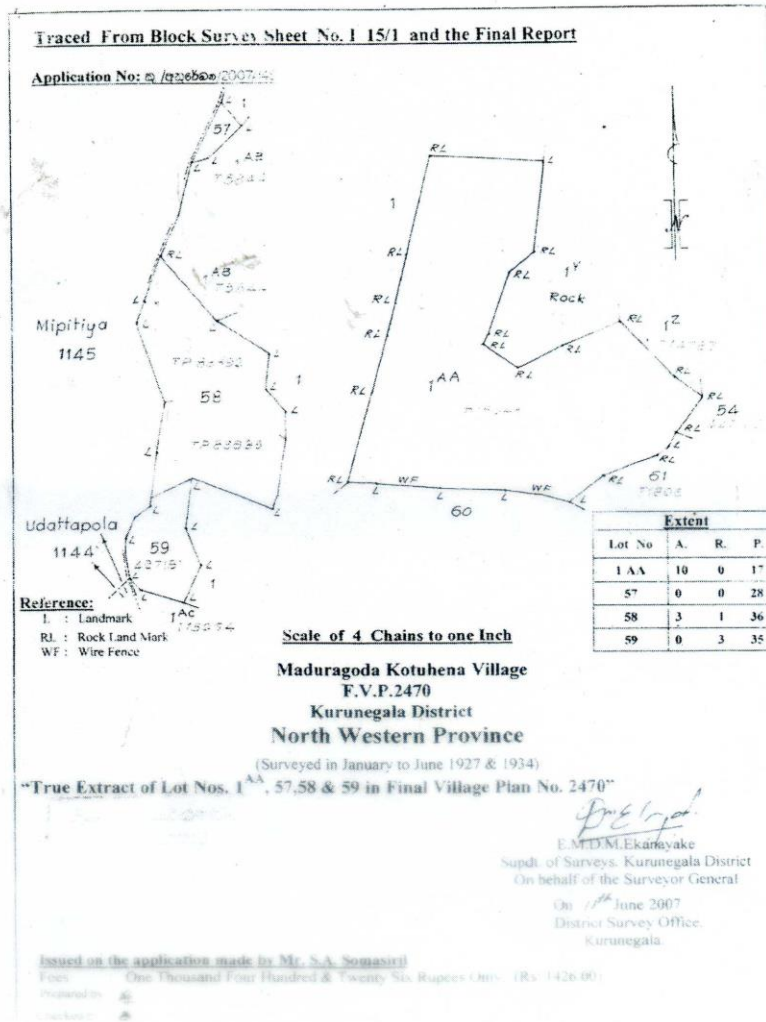


Figure 1. Location map of the study area

5. Kotuhena Land Plot, 12 Acres in total.



6. Kotuhena Scanning Report

**OCCURRENCE OF GRAPHITE VEINS IN KOTUHENA**

**A preliminary reserve assessment**

Report prepared by

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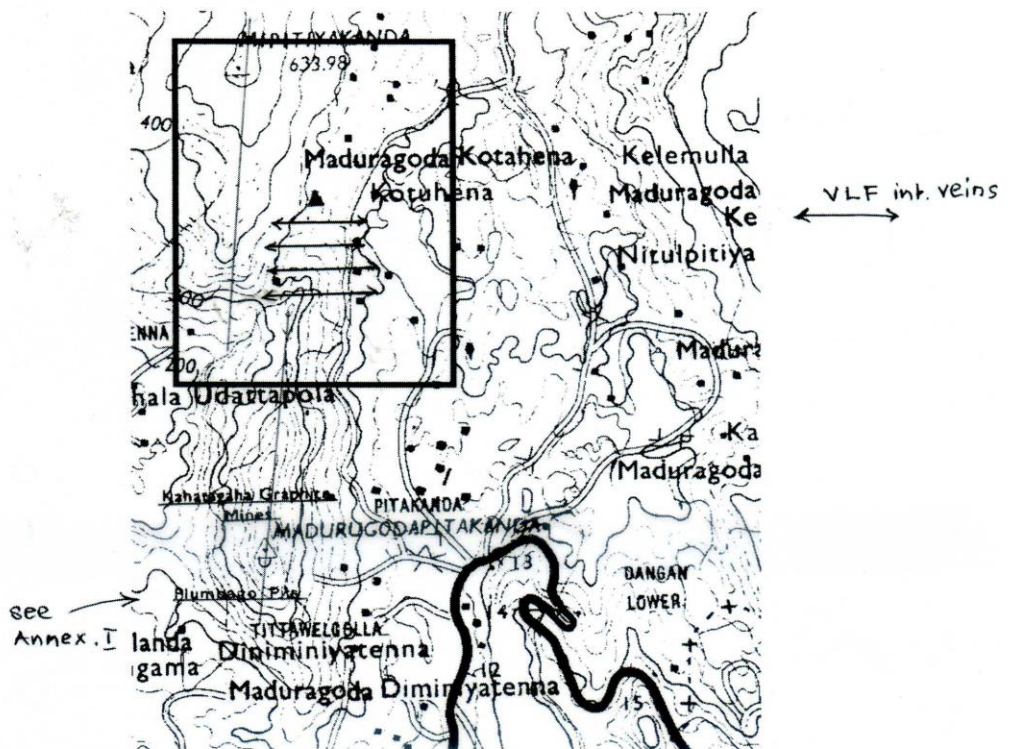


Figure 2. Location map with contours. Please note the old workings (Plumbago mines)

**GENERAL**

The mineralization in general is of vein type with a common E-W strike direction and dipping southerly. More than 100 veins of varying degree of dimensions have been identified at early stages of exploration in the area. Available drill data from the references show that the veins may have a horizontal extensions varying from 20 M. to 150 M. averaging at about 60 M. The thickness of the veins too vary from minute 20 cm to exceptionally large 90 cm.

Analytical data from this study and from the previous work indicate that produced graphite from this area are of very high quality needle type and do not contain common gangue such as pyrite, chalcopyrite etc. (Wijayananda, 1987).

Annex I depicts the veins as detected by the VLF scanning. The study revealed at least 7 large veins toward the south within the claim. The assumptions used in the reserve calculation are as follows.

1. Number of veins revealed in the study is 6
2. Average thickness of the veins is 60 cm.
3. EW extension of the veins is averaging at 60 M.
4. Depth of average extraction planned is 200 M.

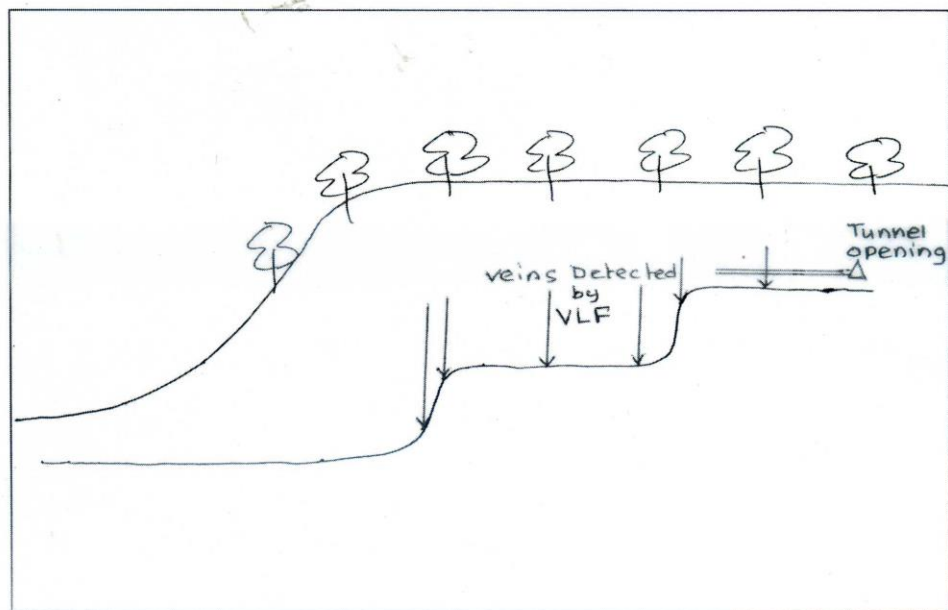


Figure 3. The VLF scanning traverse on the slope of the NS ridge

#### RESERVE CALCULATION

The volume of graphite extractable from one vein is calculated as follows

Avg. Thickness in Meters x EW Extension in Meters x Depth of mining in Meters

$$= 0.60 \times 60 \times 200$$

$$= 7,200 \text{ cu.M.}$$

Annex I

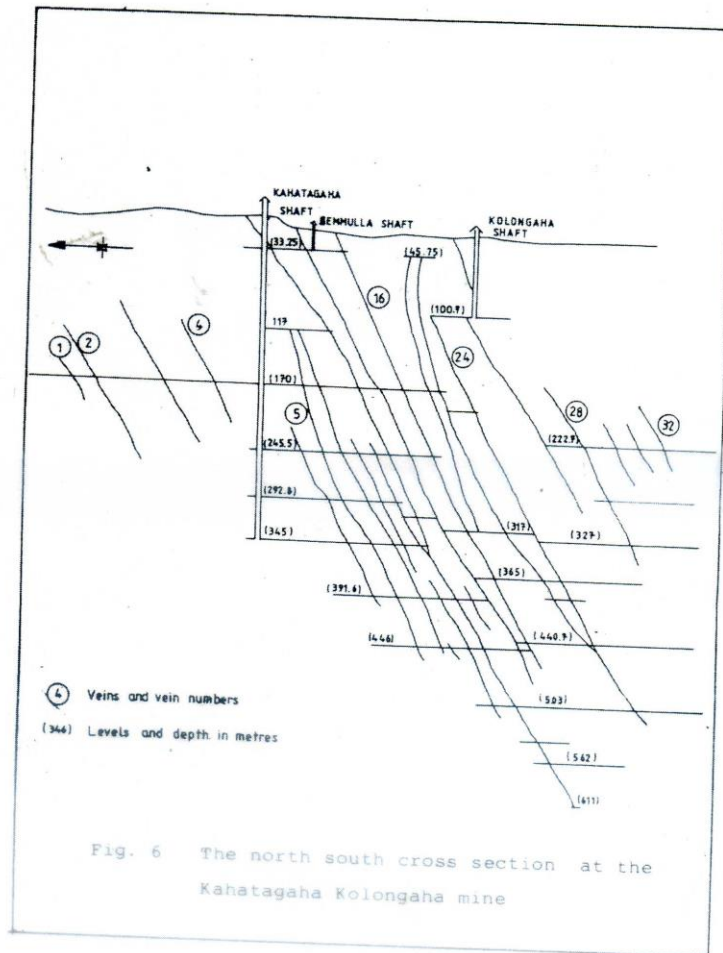


Fig. 6 The north south cross section at the Kahatagaha Kolongaha mine

#### **EXPLORATION AT KOTUHENA**

Vein graphite deposits are confined to the Highland Complex and the South Western Group of lithological zones of the island. Therefore geological mapping has been extensively used to isolate graphite bearing areas for detailed study. Traditional knowledge on presence of graphite veins, abandoned mines etc have also been of immense value in identifying graphite prospects.

Since graphite is a very good electrical conductor, geophysical methods are found to be the most productive in its exploration. Usually Vertical Electrical Soundings, Very Low Frequency (VLF) radio wave induced magnetic anomaly mapping have been very popular.

At Kotuhena mines and in the vicinity, the VLF-EM technique has been used to detect occurrence of graphite veins.

#### **VLF SCANNING IN THE STUDY AREA**

The mine and the surrounding area has been covered by a reconnaissance geological mapping in order to track the veins from abandoned mines. After geological mapping prospective traverses for VLF scanning have been established. Despite the difficult climb, a traverse has been selected to cross cut the veins running in the E-W direction ( Fig. 2).

ABEM-WADI equipment has been used to do the scanning. The points where high intensity magnetic fields were detected have been marked on the ground. The vein No. 1 as detected in the study has been already met in the tunnel being cut along the NS direction as shown in the figure 2.

#### **RESERVE ASSESSMENT**

It is a long known fact that the mountain range running in the NS direction starting from Maduragoda to Viharakele is stuffed with graphite veins. At the southern end the Kahatagaha mines which are operating for past 150 years have continuously produced very high quality graphite for export. The cross section drawn (Fig. 3) based on drill data in shafts and tunnels operational even today at the southern end of the range shows the numerous veins extending down in excess of 600 meters.

At the northern end, there are several mines in operation up to date. Therefore it is assumed that the entire ridge is underlain by many EW trending graphite veins.

The number of veins detected in the southern half of the ridge within the Claim is 6

Therefore the total volume of graphite extractable in the southern part of the Claim

=6 x 7,200

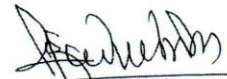
=43,200 cu. M.

Specific Gravity of Graphite = 2.2

The Tonnage expected = 95,000 MT

It is also expected a similar number of veins in the northern half of the Claim and therefore the total tonnage expected is in excess of 190,000 MT.

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