

**REPORT ON THE RECONNAISSANCE "VLF" SURVEY CONDUCTED IN
MEEPITIYA, DODAMGASLANDA FOR RS MINES (PVT) LTD, WIJEKON
HOUSE, MADIPOLA, MATALE.**

25/04/2016.

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1.0 INTRODUCTION

As per the request made by the Managing Director, RS Mines(Pvt)Ltd, Wijekoon House, Madipola, Matale, a reconnaissance geophysical survey using VLF(EM-16) was carried out for prospecting graphite at given area in Meepitiya Village, Dadamgaslanda on 9/04/2016 and 16/04/2016.

The given area for the VLF survey is about 35 acres. Several abandoned graphite mine structures and mine out rocks are observed within the given area. The details of some visited abandoned graphite mine structures are given in table (1.1). Many of abandoned graphite mine structures have been filled partly/completely from mined out rocks or collapsed. Therefore, details of abandoned mines and occurrence and nature of graphite veins could not be collected. It was noted that most of abandoned graphite mine structures are concentrated at the northeastern border of the land.

| Type of structure | Coordinate | | Remark |
|---------------------------|------------|--------|------------------------------------|
| | X | Y | |
| Abandoned pit | 174342 | 265816 | |
| Abandoned pit | 174298 | 265752 | |
| Abandoned pit | 174355 | 265790 | |
| Abandoned large pit | 174360 | 265783 | Partly filled |
| Abandoned shaft and adit. | 174341 | 265765 | Clear up to adit level |
| Abandoned shaft | 174342 | 265750 | Collapsed adit |
| Abandoned pit | 174351 | 265722 | |
| Abandoned pit | 174404 | 265631 | |
| Abandoned pit | 174400 | 265532 | |
| Abandoned adit and pit | 174198 | 265512 | filled and adit along the vein |
| Abandoned pit | 174228 | 265567 | |
| Abandoned pit | 174230 | 265583 | |
| Abandoned pit | 174252 | 265426 | Filled with mined out rocks |
| Abandoned pit | 174261 | 265426 | Filled with mined out rocks |
| Abandoned pit | 174256 | 265437 | Filled with mined out rocks |
| Abandoned pit | 174173 | 265460 | Partly filled and vein in the pit. |

Table (1.1): Details of some visited abandoned graphite mine structures, Meepitiya Village, Dadamgaslanda.

The visited abandoned graphite mine structures and mined out rocks along the slopes are given in the plate (1.1 and 1.2) and plate (1.3) respectively.



Plate (1.1): Visited abandoned graphite mine structures, Meepitiya Village, Dadamgaslanda.



Plate (1.2): Visited abandoned adit structures and its dumped materials from adit , Meepitiya Village, Dadamgaslanda.

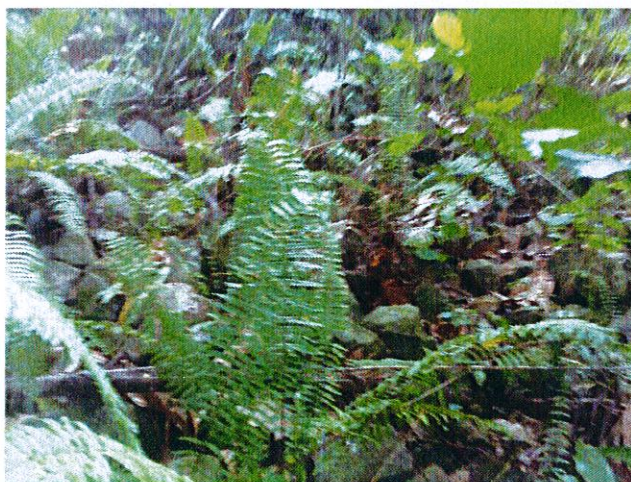


Plate (1.3): Dumped mined out rocks along the slope in survey area, Meepitiya Village, Dadamgaslanda.

The objective of the reconnaissance survey is to assess the potential of graphite occurrences within the given area in reserved grid unit (174000 E/265000 N). The details of the reconnaissance VLF survey and results are given below for further implementation.

2.0 TOPOGRAPHY, GENERAL GEOLOGY AND STRUTURE OF THE AREA.

The surveyed area is located on the western slope of ridge structure.

Geologically, the area covered by the proposed project belongs to the Highland Complex of Sri Lanka and entirely consists of granulite grade metamorphic rocks such as garnetiferous quartzofeldpathic gneisses, quartzite, garnet sillimanite graphite gneiss, and hornblende biotite gneiss, granitic gneiss.

According to the geology map published by Geological Survey and Mines Bureau (GSMB), these rock bands are trending along the direction of north south and Maduragoda antiform axis running along the surveyed area. It was noted that Kahatagaha and Ragedara graphite mines are located at the area very close to Maduragoda antiform axis. In addition, two NEE-SWW oriented fractures are running in reserved grid unit.

3.0 METHOD OF SURVEY.

The VLF survey was conducted mainly along the direction of north to south. The separation of the two lines is about 50 m and readings were taken at every 25-30 m intervals along the each lines. The lines and points arrangement for selected survey lines are given in figure (3.1).

During the survey, EM-16(VLF) instrument with NWC 22.3-N.W. Cape, Australia (standard plug in crystal) was used (plate: 3.1). Each and every location, inclinometer and quadrature readings were taken during the survey (annex: 3.1).

The signal strength of some places within the study area is weak. Also it was noted that graphite bearing mine out rocks could be seen on the ground surface in the area close to the abandoned mine structures. During the field, obtaining readings along the line-5 towards the north is very difficult due to un-cleared ground (bushes) and private lands.

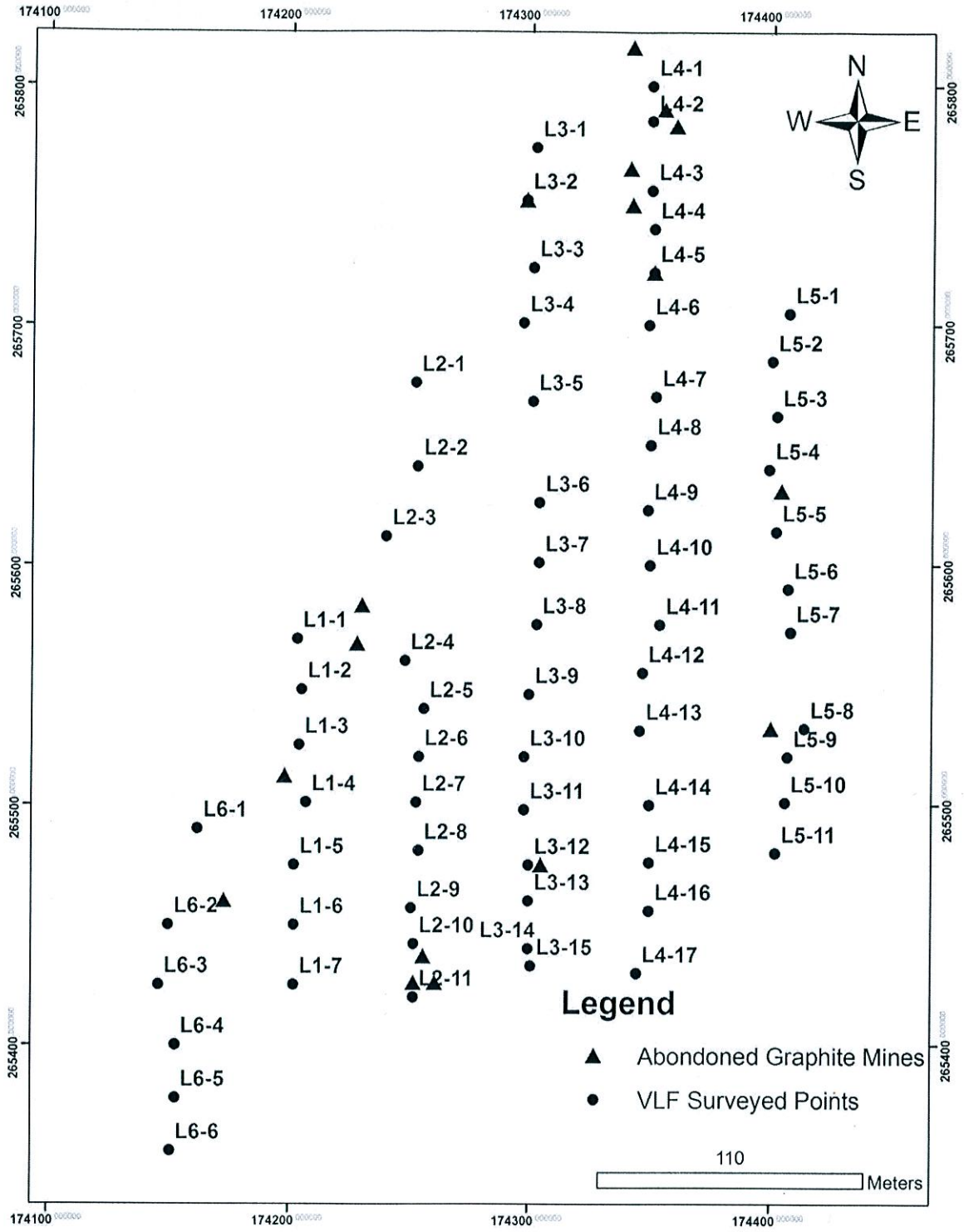


Figure (3.1): The lines and points arrangement for selected survey lines in the study area, Meepitiya Village, Dadamgaslanda..

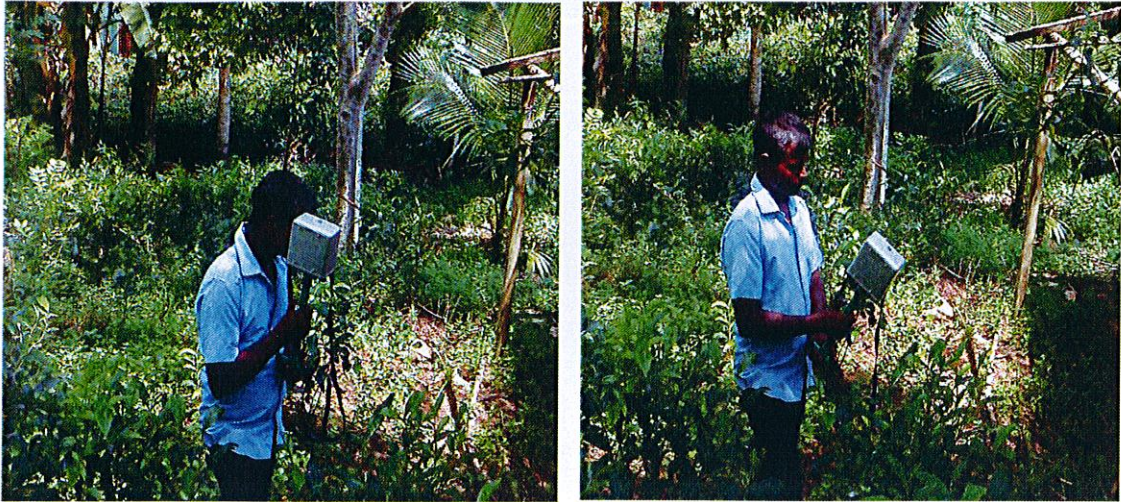


Plate (3.1): VLF Measurement in the field, Meepitiya Village, Dadamgaslanda.

4.0 RESULTS.

The obtained inclinometer and quadrature readings, and potential conductive bodies with orientations along the each lines (north to south) are given in figure (4.1, 4.2, 4.3, 4.4, 4.5 and 4.6). It was noted that quadrature component was negligible along all lines.

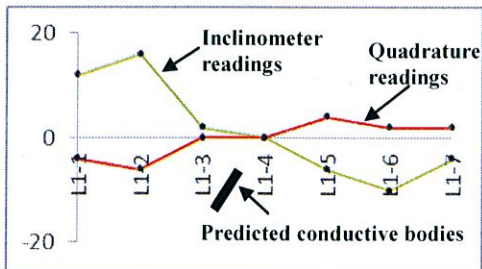


Figure (4.1): Inclinometer and quadrature readings, and potential conductive bodies with orientations along the line L1.

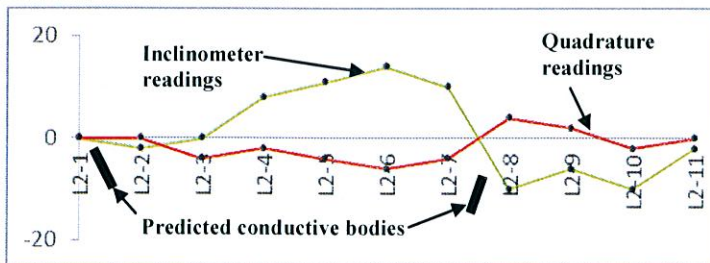


Figure (4.2): Inclinometer and quadrature readings, and potential conductive bodies with orientations along the line L2.

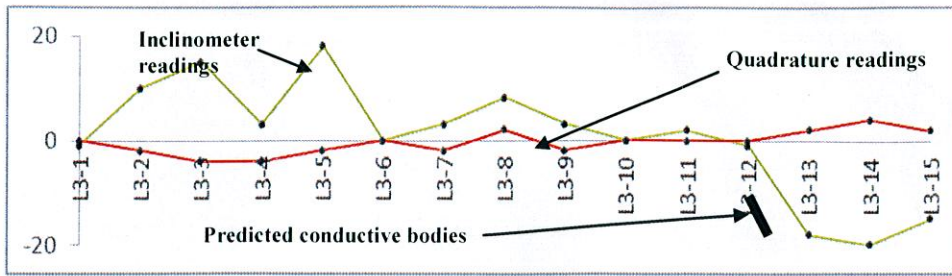


Figure (4.3): Inclinometer and quadrature readings, and potential conductive bodies with orientations along the line L3

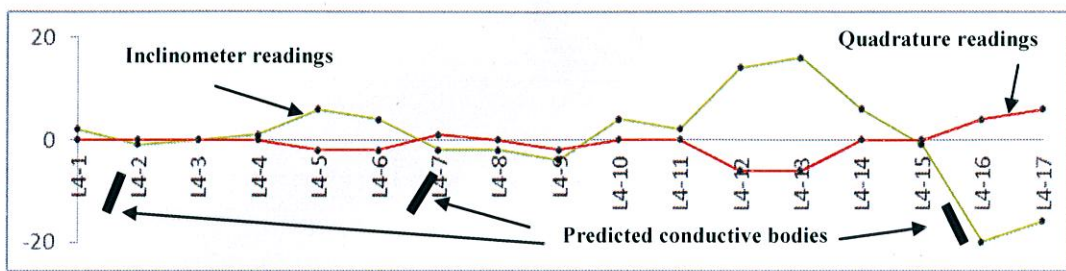


Figure (4.4): Inclinometer and quadrature readings, and potential conductive bodies with orientations along the line L4.

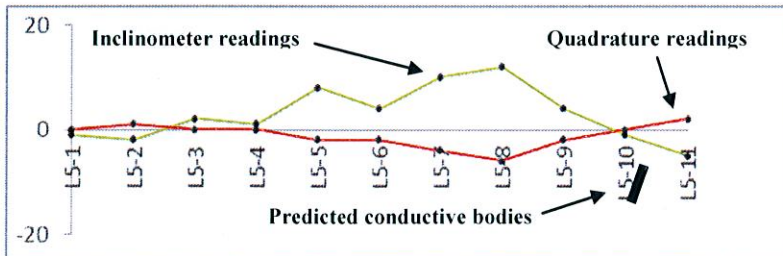


Figure (4.5): Inclinometer and quadrature readings, and potential conductive bodies with orientations along the line L5.

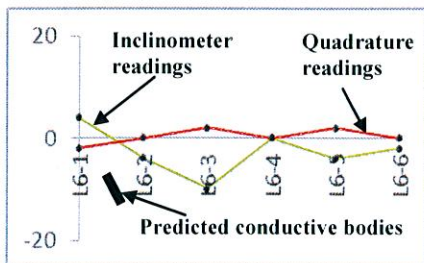


Figure (4.6): Inclinometer and quadrature readings, and potential conductive bodies with orientations along the line L6.

Higher positive VLF reading (inclinometer) was observed along the line 3 while higher negative reading (inclinometer) was observed along the line 4 and 3. The most of obtained quadrature readings are zero or close to zero. It was noted that inclinometer and quadrature readings in early part of the line-4(L4-1, L4-2, L4-3, and L4-4) are zero or close to zero. It could be due to the presence of number of conductive bodies in the subsurface formation. Also, five abandoned graphite mine structures are situated in and around the early part of the line-4.

5.0 DISCUSSION.

All findings of the survey were plotted on the two dimensional sheet (figure 5.1). It revealed that all predicted conductive bodies are not located in and around the existing abandoned graphite mine structures. Some of abandoned graphite mine structures are situated at the area close to the predicted conductive bodies and some are not close to the predicted conductive bodies. Also, details of abandoned mine structures (depth, orientations, occurrence of graphite veins, etc) are not known. Therefore, it is very difficult to explain the reason for that.

VLF readings in early part of the line-4(L4-1, L4-2, L4-3, and L4-4) are zero or close to zero. It could be due to the presence of number of conductive bodies in the subsurface formation. Also, it was noted that five abandoned graphite mine structures are situated in and around the early part of the line-4. These conditions are not observed in the early part of the line-3. Therefore, it is assumed that predicted conductive bodies could be extended toward the eastern site.

The predicted conductive bodies are trending along the direction of E-W or EEN-SWW. According to the findings, about three possible graphite veins (predicted veins) could be identified in the investigated area. It was noted that vein-1 is crossing the all selected VLF surveyed lines while lateral distribution of vein-2 is limited (vein-2 crosses only L-2 and L-4). No much VLF data available for vein-3 to predict the lateral distribution of vein.

In addition, please note that depth to conductive bodies and details of the conductive bodies (thickness, dipping, quality, etc.) could not be predicted from the VLF findings.

6.0 CONCLUSIONS.

Based on the findings of the VLF survey, following conclusion could be made for further implementation of the project.

- Very promising conditions are observed for occurrence of graphite in the investigated area and graphite veins are oriented along the direction of E-W or EEN-SWW. Three possible graphite veins (predicted veins) could be identified and lateral distribution of vein-2 is limited.
- Conductive bodies could be occurred relatively at deeper level.

- The depth to conductive bodies and details of the conductive bodies (thickness, dipping, quality, etc.) could not be predicted from the VLF findings.
- It is recommended to study the findings of the detailed VLF survey with local and regional geology and structures of the area to select the suitable points and orientations for drilling activities.
- It is recommended to execute the drilling activities in order to decide the vein thickness and to collect the samples for analysis. Also, drilling points and orientations should be selected for the cutting of E-W or EEN-SWW oriented graphite veins of 1 and 3.



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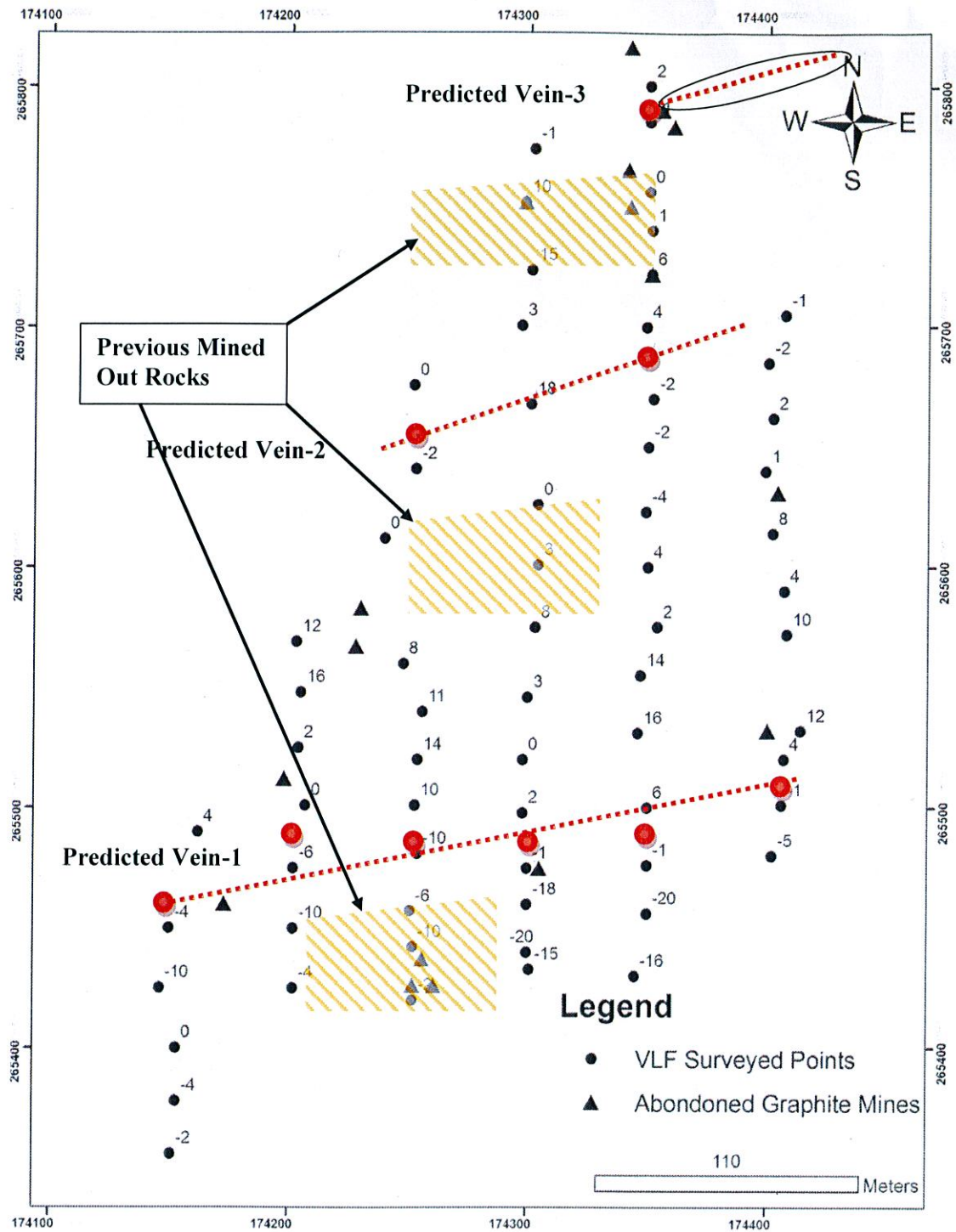


Figure (5.1): Distribution of potential conductive bodies, Meepitiya Village, Dadamgaslanda.

Annex-3.1: Field VLF measurements along the surveyed lines

| Line | Point | X | Y | Quadrature | Inclinometer |
|-------------|--------------|----------|----------|-------------------|---------------------|
| L1 | L1-1 | 174203 | 265569 | -4 | 12 |
| | L1-2 | 174205 | 265548 | -6 | 16 |
| | L1-3 | 174204 | 265525 | 0 | 2 |
| | L1-4 | 174207 | 265501 | 0 | 0 |
| | L1-5 | 174202 | 265475 | 4 | -6 |
| | L1-6 | 174202 | 265450 | 2 | -10 |
| | L1-7 | 174202 | 265425 | 2 | -4 |
| L2 | L2-1 | 174252 | 265676 | 0 | 0 |
| | L2-2 | 174253 | 265641 | 0 | -2 |
| | L2-3 | 174240 | 265612 | -4 | 0 |
| | L2-4 | 174248 | 265560 | -2 | 8 |
| | L2-5 | 174256 | 265540 | -4 | 11 |
| | L2-6 | 174254 | 265520 | -6 | 14 |
| | L2-7 | 174253 | 265501 | -4 | 10 |
| | L2-8 | 174254 | 265481 | 4 | -10 |
| | L2-9 | 174251 | 265457 | 2 | -6 |
| | L2-10 | 174252 | 265442 | -2 | -10 |
| | L2-11 | 174252 | 265420 | 0 | -2 |
| L3 | L3-1 | 174302 | 265774 | 0 | -1 |
| | L3-2 | 174298 | 265752 | -2 | 10 |
| | L3-3 | 174301 | 265724 | -4 | 15 |
| | L3-4 | 174297 | 265701 | -4 | 3 |
| | L3-5 | 174301 | 265668 | -2 | 18 |
| | L3-6 | 174304 | 265626 | 0 | 0 |
| | L3-7 | 174304 | 265601 | -2 | 3 |
| | L3-8 | 174303 | 265575 | 2 | 8 |
| | L3-9 | 174300 | 265546 | -2 | 3 |
| | L3-10 | 174298 | 265520 | 0 | 0 |
| | L3-11 | 174298 | 265498 | 0 | 2 |
| | L3-12 | 174300 | 265475 | 0 | -1 |
| | L3-13 | 174300 | 265460 | 2 | -18 |
| | L3-14 | 174300 | 265440 | 4 | -20 |
| L3-15 | 174301 | 265433 | 2 | -15 | |
| L4 | L4-1 | 174350 | 265800 | 0 | 2 |
| | L4-2 | 174350 | 265785 | 0 | -1 |
| | L4-3 | 174350 | 265756 | 0 | 0 |
| | L4-4 | 174351 | 265740 | 0 | 1 |
| | L4-5 | 174351 | 265722 | -2 | 6 |
| | L4-6 | 174349 | 265700 | -2 | 4 |

| | | | | | |
|----|-------|--------|--------|----|-----|
| | L4-7 | 174352 | 265670 | 1 | -2 |
| | L4-8 | 174350 | 265650 | 0 | -2 |
| | L4-9 | 174349 | 265623 | -2 | -4 |
| | L4-10 | 174350 | 265600 | 0 | 4 |
| | L4-11 | 174354 | 265575 | 0 | 2 |
| | L4-12 | 174347 | 265555 | -6 | 14 |
| | L4-13 | 174346 | 265531 | -6 | 16 |
| | L4-14 | 174350 | 265500 | 0 | 6 |
| | L4-15 | 174350 | 265476 | 0 | -1 |
| | L4-16 | 174350 | 265456 | 4 | -20 |
| | L4-17 | 174345 | 265430 | 6 | -16 |
| L5 | L5-1 | 174407 | 265705 | 0 | -1 |
| | L5-2 | 174400 | 265685 | 1 | -2 |
| | L5-3 | 174402 | 265662 | 0 | 2 |
| | L5-4 | 174399 | 265640 | 0 | 1 |
| | L5-5 | 174402 | 265614 | -2 | 8 |
| | L5-6 | 174407 | 265590 | -2 | 4 |
| | L5-7 | 174408 | 265572 | -4 | 10 |
| | L5-8 | 174414 | 265532 | -6 | 12 |
| | L5-9 | 174407 | 265520 | -2 | 4 |
| | L5-10 | 174406 | 265501 | 0 | -1 |
| | L5-11 | 174402 | 265480 | 2 | -5 |
| L6 | L6-1 | 174162 | 265490 | -2 | 4 |
| | L6-2 | 174150 | 265450 | 0 | -4 |
| | L6-3 | 174146 | 265425 | 2 | -10 |
| | L6-4 | 174153 | 265400 | 0 | 0 |
| | L6-5 | 174153 | 265378 | 2 | -4 |
| | L6-6 | 174151 | 265356 | 0 | -2 |