A REPORT ON GEOPHYSICAL SURVEYS CONDUCTED IN THE BOX HOLE

PROJECT AREA N.T

Undertaken on behalf of
Uramet Minerals

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June 2008
Summary and Recommendations

This report presents a summary of the geophysical programmes conducted by Uramet Minerals within the Box Hole project area and makes recommendations regarding possible drill targets based largely on a re-interpretation of the bouguer gravity data.

Detailed gravity, IP and VTEM surveys have been conducted at Box Hole over the period of the last nine months and an improved understanding of the prospectivity of the area has been acquired and potential drill targets identified.

Gravity and IP are proven techniques in the search for MVT Pb/Zn deposits. EM is rarely successful in the direct detection of MVT deposits but does provide useful stratigraphic and structural information which contributes to an improved understanding of the geology.

MVT targets are difficult geophysical targets in many ways as the physical size and grade of deposits are quite variable. Modeling of the bouguer gravity response of the Cadjeput orebody (3.9 mt @13.5% Zn, 3.9%Pb ) on the Lennard Shelf of Western Australia at various depths beneath the surface indicates that at a depth of 25 metres below ground level the response is only 0.4mgal and at a depth of 100 metres only 0.2mgal. The Cadjeput mineralization has a width of between 80 and 100 metres and consists of two lenses approximately 5 metres thick. The mineralization extends over a strike-length of approximately 3000 metres. The orebody is not evident on the bouguer gravity profile due to variations in local geology which mask the contribution of the orebody.

The experience of the initial exploration using IP on the Lennard Shelf is worth noting in that until an understanding of mineralization was obtained initial IP surveys using small dipole spacing were considered unsuccessful. Initial IP surveys of the Cadjeput orebody even following discovery failed to detect a discrete anomaly over the mineralization. An IP effect was however detected over a marcasite halo some 500 metres from the main mineralization. The Cadjeput experience shows that care is required in interpreting the initial results of geophysical surveys in the search for MVT deposits.

Within the Box Hole area interpretation of the VTEM data by a number of geophysicists has failed to identify any EM responses which indicate the presence of a discrete conductive source. This is not really surprising as MVT ore-bodies do not present as massive interconnected mineralized sources. The VTEM responses are interpreted as being due to conductive formational horizons within the Box Hole stratigraphy. These conductors coincide with less dense units within the Eurowie Sandstone Member and as such contribute to the mapping of the local geology.

As part of the VTEM survey, the earths magnetic field was also recorded and whilst this is dominated by the deep seated underlying basement enhancement of the high frequency, albeit low amplitude, components of the field produces some interesting responses.
The Kings Workings mineralized trend is associated with a low amplitude (<1nT) magnetic response that extends the entire length of the known mineralization. Weak magnetic responses are also associated with section of the mineralized horizon which occurs along the northwestern margin of the survey area. The polarity of the magnetic response changes along the mineralized horizon from positive to negative based on the correlation with the revised geology. If this relationship is real there is scope to extend the known mineralization based on the magnetic data.

Weak magnetic responses (less than 1nT) are also associated with some of the N-S trending faults. Along the western margin and eastern margins of the area linear anomalies with amplitudes of up to 2nT appear to be related to anomalies within the Eurowie Sandstone Member.

There are no obvious significant discrete anomalies which might be interpreted as iron sulphides which are related to mineralization (other than that which occurs along the Kings Workings trend and north-western mineralization).

Graham Elliott (geophysical consultant) in his review of the IP data identified a limited number of priority IP responses which are considered to be realistic drill targets. These targets are at depths ranging from 25-200 metres. The calculated apparent resistivity responses of the IP surveys have also been identified by Uramet geologists as possibly reflecting silicification which is an integral part of the mineralizing process associated with the flow of fluids in the development of MVT deposits. There are instances where these resistivity “highs” coincide with residual gravity “highs”. Some of these locations are justifiability included as drill targets to test this hypothesis in the planned drill programme at Box Hole.

The gravity survey at Box Hole consists of a merged dataset of stations located at intervals of 500 metres and a detailed survey in which stations were spaced at intervals of 50 metres along lines 250 metres apart. The calculated Bouguer gravity field at Box Hole is a combination of regional responses associated with basement rocks which produces a significant regional gradient increasing from west to east and superimposed on this regional trend are local variations in the Bouguer response which are related to lateral changes in density and thickness of the dolostones and Eurowie Sandstone Member.

Bouguer “lows” occur within the increasing west to east regional field which are directly associated with conductive horizons identified by the VTEM survey. In the east these units are clearly associated with horizons within the outcropping Eurowie Sandstone Member. Whilst no specific horizons within the Eurowie Sandstone have been identified mapping of the Eurowie Sanstone has shown that the Member includes quartz arenites, shales and silstones. Evaporites have also been identified. The association of bouguer “lows” and conductivity “highs” is not restricted to areas of outcropping Eurowie Sandstone but also occurs within the areas of dolostone near the Kings Workings Pb/Zn occurrence. This may simply reflect the presence of Eurowie Sandstone underlying the dolostones in local areas of structural uplift.
Regional residual separations of the components that make up the bouguer response highlight a number of shallow higher frequency responses. A number of these residual anomalies occur along the margin of the bouguer “lows” associated with the Eurowie Sandstone. The significance of these anomalies is not clear but Uramet geologists have postulated that the local increase in density along the contact zone may be due to a diagenetic process. As indicated above IP resistivity “highs” are in places associated with these local gravity anomalies. The drill programme has been designed to test the source of these resistivity/ bouguer anomalies.

A limited number of isolated discrete bouguer anomalies have been identified which are considered to be potential drill targets for MVT mineralization. The anomalies include targets in the general area of the Kings Workings mineralized horizon and these are single line anomalies on traverses spaced 250 metres apart. Whilst none of these anomalies constitute high priority targets the anomalies have amplitudes of the order of 0.5mgal which are consistent with the responses observed over known MVT deposits. Interpretation of potential field data is complicated by the fact that in theory there are an infinite number of solutions. In modeling the data certain constraints have been placed on the inversion process to test whether solutions can be obtained which are consistent with the geometry and density contrast of known MVT deposits. Density contrasts of the order of 1gm/cc have been used in the modeling and estimates of the “strike length “of the mineralization have been based on the line spacing. Allowing for these constraints on the inversion the estimates are not unrealistic and do not rule out the possibility of mineralization being the source of the anomaly. There are only a limited number of targets and it is recommended that these be included in the proposed drill programme.

The one negative factor is that these anomalies occur close to the Kings Workings where IP traverses have been undertaken both historically by McPhar and more recently by Zonge.

Major faults are an integral part of the MVT mineralizing process in providing channel ways for the movement of fluids. There are a number of linear gradients evident within the gravity data that may reflect possible faults. There is one particular “lineament” which trends WNW-ESE across the central part of the Box Hole survey area. It is evident on both the bouguer response and also in the VTEM EM data. In a geological map recently compiled by Uramet geologists there are a number of WNW trending faults or lineaments which occur spatially close to the inferred geophysical lineament. This inferred structure may also have an impact on the known mineralization as there is a spatial relationship with the location of the Kings Workings and the weakly mineralized trend in the north western part of the project area.
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Introduction

The Box Hole project area is located 250 km east of Alice Springs within the Huckitta 1:250 000 sheet area and is centred around the Box Hole Pb/Zn Mine which in the early 1960s produced small tonnages of high grade galena ore.

The area has been explored by a number of different companies over the years with most of the focus on exploring for extensions of the Box Hole mineralization. More recently Uramet Minerals have conducted extensive exploration programmes over the current EL which has included gravity, IP and most recently a VTEM Helicopter survey.

Various phases of the recent geophysical surveys conducted by Uramet Minerals have been interpreted and commented on by a number of geophysical consultants which are referenced in the report.

This report is focused predominantly on the results of the bouguer gravity survey but also includes reference to the VTEM and IP survey results. Field mapping conducted by Uramet geologists which has been interpreted in conjunction with the geophysical data has identified specific target areas which are discussed in this report.

Datums and Projections referred to in this report

Unless otherwise stated the coordinates and maps which accompany this report are registered in GDA94, Zone 53. The coordinates referred to in the VTEM survey are in WGS84 which for all practical purposes are equivalent to GDA94.

Various versions of the geology of the Box Hill project area have been produced in the past. Attempts to register these maps for interpretation in a GIS environment have identified discrepancies in the mapping. Recently Uramet geologists undertook detailed field mapping and a revised geological map has now been compiled in GDA94 datum and UTM Zone 53 projection. Wherever possible this map has been used as a geological reference.

Summary of data referred to in the report

The extent of the geophysical surveys conducted by Uramet at Box Hole is summarized in figure 2.

In 2006 Uramet commissioned a helicopter supported gravity survey of the exploration licence at station intervals of 500 metres. In 2007 a more detailed survey consisting of 1742 stations was carried out at station spacing of 50 metres and along lines 250 meters apart. The data from both of these surveys have now been incorporated into a single database. A bouguer map of the combined surveys along with the station locations is shown in figure 4. Both of the surveys were conducted by Daishat Pty. Ltd. A detailed
operations report was presented by Daishat titled “Uramet Minerals Ltd- Box Hole Gravity Survey 2007 Report Number 07030”.

Following the completion of the survey by Dasishat Cowan Geodata produced an interpretation report on the survey which included a series of imaged products of the data (Reference—Processing, Data Enhancement and Interpretation of a Detailed Gravity Survey, Box Hole Project, Northern Territory –Cowan Geodata Services –December 2007).

During August and October 2007 Zonge Engineering and Research carried out an IP survey at Box Hole which consisted of 18 lines of dipole-dipole at 50m and 100m electrode spacing totaling 27.9 km in length. Profiles of chargeability and resistivity were presented by Zonge along with depth slices of resistivity and chargeability. A logistics report titled “Box Hole Northern Territory – Dipole-Dipole Survey- Technical and Logistics Summary –December 2007” was submitted by Zonge at the completion of the survey.


In October 2007 Geotech flew a helicopter borne VTEM survey totaling 428 km over the Box Hole project area consisting of E-W flight lines which acquired both dB/dt and B-field EM data. A logistics report titled “Helicopter-Borne Geophysical Survey Utilising the Versatile Time Domain Electromagnetic System (VTEM)- Project A236-December 2007” was presented by Geotech at the completion of the survey detailing the survey specifications. In this report Geotech indicated that 26 channels of EM data were acquired for each survey area ranging from SF9 to SF34. This however is generally not the case and different channel numbers are present in the databases provided by Geotech. In the case of the Box Hole survey the data presented in the Geosoft GDB is in the form of an array which is set to show 26 channels ranging from SF9 to 34, however the actual dataset includes a number of additional early channels with real values which range from SF to SF8. These early time channels are not included in any of the other survey areas neither is channel SF9. Some care is required in extracting data from the Geosoft database.

Cowan Geodata compiled a number of images from the VTEM data including CDI profiles for selected lines. Cowan Geodata also undertook an interpretation of the VTEM data which is presented in a report titled “Processing, Data Enhancement and Interpretation of a VTEM Survey, Box Hole Project, Northern Territory –Cowan Geodata Services –January 2008”.

More recently Dr. Jovan Silic undertook a detailed interpretation of the VTEM data. A final report is being compiled.
Geological Summary

A summary of the geology of the project area is presented in figure 3 which is the map recently compiled by Uramet Minerals based on detailed field mapping and incorporating historical NTGS and exploration mapping.

The primary target in the Box Hole project area is MVT (Mississippi- Valley-type) Pb/Zn mineralization in dolostones of the Cambrian aged Arrinthurunga Formation which outcrops within the western half of the Exploration Licence area. To the east the Eurowie Sandstone Member which separates the Upper and Lower Arrinthurunga Formation outcrops.

Structurally the area is folded along north northwest trending synclines and north-south trending faults are prominent.

Previous exploration has been largely concentrated along a 6km strike length centred on the Kings Workings where approximately 15 t of galena averaging 65-70% Pb and 60g/t Ag were mined in the early 1960s. The mineralization is typical of MVT deposits involving low temperature replacement and vug filling components. It has been shown that the Kings Workings mineralization has little depth extent and is limited to a narrow 2 metres thick, flat lying horizon.

A complete summary of previous exploration undertaken in the project area is included in a report written by Dunster et al and published in October 2007 by NTGS titled “Geology and resource potential of the southern Georgina Basin”

Geophysical Responses of MVT type deposits.

As an appendix to this report profiles are included of the geophysical responses of MVT deposits compiled by the Geological Survey of Cana at Pine Point in NWT. These confirm that IP and gravity are the main geophysical methods utilized in exploring for MVT type deposits. Seismic reflection is also an effective tool but considerably more expensive that either IP or gravity. The recorded bouguer responses over known MVT deposits range up to 0.8mgal at the Pyramid No 1 ore body.

Similar conclusions have been reached in the exploration for MVT deposits in Devonian limestone along the Lennard Shelf in Western Australia. An extract from a publication on these deposits concludes that IP is the most effective tool. Gravity as a direct indicator of mineralization is limited by the effects of structure and variations in the thickness of the limestone. This reference indicates that the modeled gravity response of the Cadjebut orebody (3mt @13.5%Zn, 3.9%Pb) at 25 metres depth is 0.4mgal and at 100metres is 0.2mgal. The actual orebody is not identifiable on gravity profiles due to surrounding geological “noise”.

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On the Lennard Shelf gravity surveys have been effectively used to map structural features which have a controlling influence on mineralization.

Ambiguities will always exist in the interpretation of anomalies related to MVT deposits. In the appendix A an example is taken from the Pine Point area showing IP and bouguer gravity anomalies which are similar in many respects but which are due to quite different sources. The one is largely the result of infill material in a karst related cavity whilst the other is due to mineralization. A problem in interpretation can occur where a sink hole and mineralization coincide which is a real possibility.

Although conductive minerals are abundant a lack of discernible EM responses over MVT deposits indicates a discontinuous distribution of the mineralization.

Where pyrrhotite is present a small magnetic response is possible.

**Discussion of Geophysical Data**

Whilst the main focus in this report is directed at the interpretation of the bouguer gravity data and drill targets identified by Uramet geologists a brief summary is included with comments on the other geophysical datasets compiled by Uramet Minerals.

1. VTEM EM survey

An interpretation of the VTEM EM data by the author failed to identify any significant EM anomalies. This opinion agrees with the conclusion reached by Cowan Geodata and more recently by Dr Jovan Silic. Dr Silic selected 25 anomalies for detailed interpretation and concluded that none warranted further investigation. The absence of any significant anomalies indicative of a massive Pb/Zn mineralization is not surprising as MVT deposits tend not to produce a significant EM response as outlined in an earlier section of the report.

The VTEM EM data does however map the stratigraphy and there is an excellent correlation between the EM conductive units and Bouguer gravity “lows” as shown in the accompanying figure 4. The conductive and less dense source of these anomalies has not as yet been identified in the field but appears to occur within the Eurowie Sandstone Member which although described as a sandstone unit also includes siltstones and shales along with quartz arenites. These units are discussed further in the following section which discusses the gravity data in more detail.

Dr Silic indicated that he felt that there may be a technical problem with the VTEM data acquired at Box Hole as inversions of the EM data implied a highly conductive layer at a depth of 150 metres beneath the entire survey area. This hypothesis is not consistent with the known geology. The alternative explanation is that it is due to a problem in the data acquired by Geotech. Similar issues were not apparent in the interpretation of the Boat Hill data. This issue remains to be resolved and further discussions held with both Dr
Silic and Geotech. A particular issue which needs to be clarified is whether the different format in which the Box Hole data were presented to that stated in the report may have contributed to the problem.

2. Magnetic Data

As part of the VTEM survey Geotech acquired total magnetic intensity data from a sensor located in a separate bird positioned approximately 65 metres above the above the ground. The data quality is acceptable but as no tie lines were flown leveling of the data presents some difficulties. Cowan Geo-data, as part of the reprocessing of the VTEM data, re-leveled the total magnetic intensity data and produced a much improved magnetic image. Further processing of the data has utilized the Cowan Geodata grids.

The TMI is dominated by long wavelength anomalies due to deep seated basement features. In an effort to identify low amplitude residual anomalies associated with the sediments it was found that the most informative image, free from noise related artifacts, is the AGC (Automatic Gain Control) image which retains good coherency in what are very low amplitude high frequency responses. Figure A which presents the data as an AGC image shows that whilst the high frequency anomalies are of the order of 1-2 nT these anomalies can be traced for distances of up to 1-2 km. Now that Uramet has compiled an accurately registered geological map the sources of these magnetic anomalies can be resolved with greater confidence.

There appear to be four principal sources for these anomalies:
1. linear anomalies within the Eurowie Sandstone particularly close to the contact with the dolostones.
2. anomalies directly associated with N-S trending faults
3. a 4km long, weak (0.3nT) anomaly associated with the mineralization which extends through the Kings Workings. Modeling of this anomaly suggests a weakly magnetic, 120 m wide depth limited source centred on the mineralized horizon.
4. a complex relationship in terms of the polarity of the magnetic response of the mineralization along the north western boundary of the area. This may define extensions of known mineralization.

Examples of these types of anomalies are shown in figure 5

There are no anomalies which would suggest a significant development of iron sulphides such as occurs in association with some MVT deposits.

3. Radiometric Data

Whilst no radiometric data was acquired as part of the VTEM survey NTGS radiometric data is available over the Box Hole project area. Individual channel (K, U, Th ) responses are low and there is little in the way of correlation between individual channels. It is not expected that the radiometric responses will have any direct association to mineralization but the following observations are evident.
The potassium channel shows a general lack of response over the Eurowie Sandstone and a slightly elevated response over the dolostones particularly in the southern part of the project area (see figure 6). Over the main mineralized zone there is a potassium low which could reflect a zone where silicification has produced a less weathered profile. In sediments potassium responses often relate to the development of clays.

4. IP Data

A review of all IP data acquired over the project area was conducted by Graham Elliott on behalf of Uramet Minerals. Elliott interpreted two chargeable horizons within the stratigraphy, one of which correlates with the Kings Workings mineralization. Elliott also identified specific anomalies which were recommended for drilling.

A series of maps are included which shows the relationship of the “inferred mineralized horizons” identified by Elliott in relation to the other geophysical datasets (Figures 7, 8 &9).

In the case of the VTEM data there is a very close correlation between the anomalous IP zones and the non conductive VTEM areas (see figure 7).

There is a close correlation along the western margin between the outer chargeable layer identified by Elliott and the weak but continuous magnetic anomalies which are evident in the AGC magnetic image (see figure 8).

Further comments are included in the following section regarding the correlations between the IP data and the bouguer gravity field.

5. Bouguer Gravity Data

As indicated earlier in this report the bouguer gravity dataset consists of a detailed 50 metres station spaced survey which has been merged with a semi regional survey in which stations are spaced 500 metres apart. In all of the images of the bouguer data or of any filtered products the station locations are shown so that readers are aware of the variations in the detail.

The bouguer gravity field over the Box Hole project area is made up of a number of components namely:

1. The Box Hole project area is located along a regional bouguer gradient with the field increasing from west to east.

2. Superimposed on the regional field are local variations in density which include a number of prominent bouguer “lows” (see figure 4) which are coincident with conductivity “highs”. These anomalies are particularly prominent along the eastern half of the project area where the Eurowie Sandstone Member outcrops. Although described
as sandstone the Eurowie Sandstone Member also includes siltstone and shale horizons (Reference NTGS Explanatory Notes Huckitta 1:250,000 Geological Map Series). Mapping has not however identified a specific horizon which would readily explain the highly conductive nature of the sediment.

3 Marginal to the bouguer gravity lows and conductivity highs are localized residual anomalies of short wavelength. These are particularly evident on the calculated derivative and residual maps of the bouguer data (see figure 11).

The source of these anomalies is not obvious. Uramet geologists have suggested that it may well be due to a diagenetic process along the contact between the Eurowie Sandstone and the dolostones. Drilling across these contact zones will help solve what is the source of these anomalies.

4. There are a number of lateral changes in density which are reflected as a series of “steps” in the recorded bouguer field. Figure 10 is based on calculating the maximum horizontal gradient which highlights these lateral changes in the bouguer values. The margins of the bouguer “lows” which area discussed above are particularly obvious in this method of presentation.

These gradient changes are evident on E-W profiles drawn across the project area. Particularly evident is the major step along the western boundary of the surveyed area. Lesser amplitude steps are obvious across the area. The significance of these lateral changes in the bouguer field within the dolostones is not known but there appears to be an increase in the field where on the geological map there is an increase in the number of trend lines. Where there are few or no trend lines shown the field is relatively flat. An example of this is seen in the area east of the north westerly mineralized belt.

5. A significant change is seen in the bouguer field across a WNW-ESE trending line which is designated LL’ on figure 12. This “lineament” is reflected not only in the bouguer gravity data but also in the VTEM EM response. The highly conductive zones terminate against this lineament as do the associated bouguer lows.

There is also a significant change in the gravity field from south to north across this lineament in the western half of the survey area.

The recently revised geological map shows an interpreted series of WNW-ESE trending faults in the general area of lineament LL’. Perhaps significantly there is also a significant change in the location of the mineralized horizons across this inferred structure.

As the above shows the gravity responses are quite complex and the aim is to identify potential anomalies within this complexity.

The following section discusses possible target areas based largely on the gravity field but also based on the other recorded geophysical responses.
Discussions of anomalies and recommendations for drilling.

Discussions with Uramet geologists have identified a series of bouguer anomalies which are considered to warrant further interpretation. The general locations of these anomalies are shown in figure 13.

Prior to discussing the specific anomalies some brief comments are included regarding the geophysical response of the Kings Workings.

Kings Workings

The Kings Workings has received the most attention in the course of previous exploration. Drilling has suggested that the mineralization is confined to a very narrow 2m thick horizon. The IP survey conducted by Zonge on behalf of Uramet Minerals has confirmed the shallow nature of the mineralization.

Figure 14 shows the bouguer profile across the main part of the Kings Workings. There is no well defined anomaly associated with the mineralization. Variation of between 0.1 and 0.2 mgals occur in the near vicinity of the mineralization.

Discussion of specific target areas

Five specific areas have been identified by Uramet geologists following discussions for further modeling to determine whether the bouguer anomalies warrant drilling as possible MVT targets.

Note regarding modeling of gravity data

In theory there are an infinite number of solutions to inverting a bouguer anomaly. Generally geology provides controls on what are appropriate models. In the modeling of the following targets, models have been applied which are consistent with MVT type mineralization. Lensoid or vertical cylindrical shaped bodies are applied simply to test whether these models are realistic possibilities.

Area BX1 (579950E, 7529400N)

Area BX1 is located approximately 1km south of the mineralization at Kings Workings. Regional residual separation has identified a single line anomaly which has amplitude of approximately 0.4mgal which falls within the range of interest.

Figure 15 shows the bouguer profile across the anomaly and realistically it is difficult to separate the “anomaly” from a noisy background. Inversion of the anomaly, based on the assumption that the source has a “strike” length of 200 metres and a density contrast of 1gm/cc, results in a shallow sheet-like source with a width of 20 metres. The local
regional is difficult to calculate from the profile data. Modeling of gridded data produces a similar result. The assumption is that the anomaly is due to a flat lying lens.

Based on the profile data the anomaly is only marginally above background “noise”. Drilling of this anomaly is justified on the basis that it lies less than 200 metres of the mineralized zone that passes through Kings Workings. Essentially a low priority target but worthy of drilling based on proximity to weak mineralization although much of this area has been explored with IP. The results of the modeling are summarized in figure 15.

**Area BX2 (579835E, 7527400N)**

Area BX2 lies at the southern end of the Kings Workings mineralized zone. A number of discrete single line anomalies occur with amplitudes of up to 0.5mgal.

Figure 16 shows an east-west profile across anomaly BX2A. The profile shows that the anomaly is located on a local bouguer high.

Modeling of the anomaly offers a number of alternatives in terms of likely depth ranging from a sheet like source at a depth of 16 metres to a source at 60 metres. Depth is a difficult variable to estimate in gravity surveys.

The anomaly warrants drilling and testing of the anomaly should allow 100 metres of vertical drilling to identify a source.

A summary of the modeling results are shown in figure 16.

**Area BX3 (578960E, 7530650N)**

Area BX3 is located approximately 650 metres WNW of Kings Workings. The anomaly is a single line anomaly which occurs at the western end of a detailed 50 spacing line and as such the background is not well defined. The inversion of the profiled data results in a shallow dipping sheet-like body typical of a mineralized lens at a depth of 37 metres. A density contrast of 1gm/cc has been used. Once again small changes in some of the variables and models produce significant changes in the inversion.

As a target modeling does nothing to discredit the anomaly and as such drilling is recommended. A depth of at least 50 metres should be allowed to fully test the anomaly. The lack of any IP response is a negative factor.

The results of the modeling are summarized in figure 17.
**Area BX4 (578135E, 7533405N)**

Area BX4 is centred on the mineralisation that occurs along the NW margin of the project area. Residual bouguer anomalies, as shown in figure 18 are single point, low amplitude (<0.2mgal) responses.

In Area BX4 the mineralization lies immediately east of a significant bouguer gradient which almost certainly reflects a change in bedrock density or a significant change in the thickness of the dolostones. Whether this reflects a major N-S trending fault is uncertain.

A weak positive magnetic response is observed in association with the mineralization at this point. The magnetic response along strike however is quite variable with changes in polarity of the anomaly. A distinct negative response is observed to the north over the mineralized horizon and a similar response is also observed to the south. The significance of this is not clear.

Drilling a specific geophysical target in area BX4 is difficult to justify based on the low responses recorded but drilling a series of holes across the zone may assist in understanding the geology and the source of the weak magnetic anomaly.

**Area BX5 (579800E, 7534170N)**

Area BX5 encompasses a linear residual anomaly along the contact between Eurowie Sandstone Member and the dolostones. As figure 19 shows a high frequency residual anomaly lies on the very edge of the contact which is reflected in the bouguer profile by a major step in the recorded bouguer values.

A satisfactory inversion has not been possible for this anomaly but a shallow source is probable. Modeling making certain assumptions implies density contrast of the order of 0.35gm/cc.

An attempt has been made to model the bouguer low which lie to the east of the residual anomaly at the contact. This is highlighted in figure 20. Assuming a density contrast of 0.35gm/cc which is not unreasonable between a dolostone (2.6gm/cc) and a sandy, silty unit (2.45gm/cc) the inversion produces a section as shown. This would imply a maximum thickness of approximately 200 metres for the source of the dominant gravity low. Modeling assuming a lesser density contrast of 0.2gm/cc produces a maximum thickness of approximately 400 metres for the less dense material.

The westernmost contact between the Eurowie Sandstone and the dolostone is a very straight line and the modeling suggests a near vertical contact which may be a fault.
Once again a series of shallow drillholes across this zone will help explain this and other similar anomalies which occur at the contact between the Eurowie Sandstone and the dolostones.

Comments based on the geophysical data for the proposed drilling programme at Box Hole

An understanding of the observed geophysical responses often benefits from a drill programme which is designed to test certain concepts. As indicated in the above section some of the residual bouguer anomalies fall into the range of acceptable targets based on amplitude and interpreted geometry and dimensions and are considered justifiable targets. It must be stressed however that none of the anomalies constitute high priority targets.

The modeling of the Cadjebut orebody at various depths shows that detection of such ore bodies is very much a function of the “geological noise envelope”. MVT deposits are often stacked one above the other and as such detection of mineralization at shallow depths is always encouraging in that it may be indicative of further mineralization at depth. Even if mineralization is not intersected it will assist in understanding and reinterpreting the data.

Drill testing of the limited number of IP anomalies recommended by Elliott is also justified as IP is a proven exploration tool in exploring for MVT deposits. The possibility that resistive zones identified by IP resistivity “highs” may reflect silicification should also be tested as this is an integral part of the mineralizing process.
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![Graph showing Bouguer profile with values from the table.](image-url)
Figure 16 - showing the inversion with a source at a depth of 18 metres and a thickness of 12 metres and density contrast of 1gm/cc.
The interpreted width is 273m and a strike length of 250 metres.
Figure 17-Anomaly B
Inversion assuming a density contrast of 1 gm/cc. The interpreted depth is 37m and the body has an assumed length of 200m.
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<th>BX</th>
<th>REDP</th>
<th>VD</th>
<th>Density (g/cc)</th>
<th>BX</th>
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- **Magnetic Profile**
- **Bouguer Profile**
- **Mineralised horizon**
Residual Anomaly along the contact zone
Inverted Bouguer Profile through Anomaly BX5 and adjoining Bouguer Low

A density contrast of 0.35gm/cc is assumed
Appendix A

Appendix A is a collection of published data which shows the geophysical responses of MVT type deposits in the Pine Point region of the NWT in Canada and the Lennard Shelf in Western Australia.

Typical Geological Settings for Pine Point Type MVT Deposits

In the Pine Point region there are approximately 100 known ore bodies which range in size from 100,000t to 17.5mt. The average orebody is 1.32mt of Pb/Zn at approximately 7%Zn and 3%Pb.
Figure showing gravity and IP responses over the Pyramid No1 Ore body in the Pine Point District.

Points to note in this diagram are the amplitude of the Bouguer anomaly (0.8 mgal) and the lack of any EM response in the Turam 400Hz profile confirming the disconnected nature of the mineralisation. A clearer picture of the Bouguer gravity response is shown in following figure. Pyramid No1 orebody contains 9.1mt of ore.
Figure showing a contoured outline of the Pyramid No1 Ore body Bouguer gravity response

5-10 (a) Contour map (10^{-2} mm s^{-2} contours) of the surface gravity anomaly over the Pyramid No. 1 ore body (Seigel et al., 1968). (b) Gravity measurements on section BB from (a) compared with a theoretical fit based on Equation (5-102).
**Figure 8:** Bouguer gravity data over Pine Point orebody A (from Lajoie and Klein, 1979).

Bouguer gravity response of the Pine Point Ore body “A”
Figure showing difficulties encountered in exploring for MVT deposits in karstic terranes. Section A above is over a Pb/Zn ore body whereas section B is over a sink hole filled with boulders etc.
Lennard Shelf Deposits

Blendevalge **20mt@8.3%Zn, 2.5%Pb, 17 g/t Ag**

Cadjebut **3.9mt @13.55%Zn, 3.9% Pb**

Twelve Mile Bore **2.4mt @ 9.7% Zn, 2.4% Pb, 35 g/t Ag**
Bouguer gravity profile across the Cadjebut Ore body
The orebody is not discernible above the local background geological “noise”

Modeling of the ore body at depths of 25 and 100 metres bgl produced responses of 0.4mgal and 0.2 mgal. The orebody has a bulk density of 4.0 gm/cc.
Sirotém traverse across the Cadjeput Ore body

An IP profile across the Cadjeput orebody with the main response occurring over the Cadjeput Fault and not the ore body.