EL31251_2023_AS_05_App4_Review_MiniMeWest

MINIME WEST PROSPECT

Review of previous exploration, interpretation of new gravity data & drillsite recommendations

The MiniMe West prospect is located in the south central part of EL31251, 170 kilometres east of Alice Springs. The prospect has two discrete semi-circular gravity anomalies 700 metres apart, each of about one milliGal amplitude; refer Figures 1 and 3. The southernmost gravity anomaly is adjacent the named MiniMe West prospect investigated by Mithril, whilst the northernmost anomaly occurs in isolation.

Multiple geophysical and geochemical datasets have been acquired by previous explorers, notably Mithril Resources Ltd, who drilled seven RC holes for a total of 1,012 metres. Gempart (NT) Pty Ltd completed a detailed ground gravity survey in 2018 encompassing the prospect area. Synthesis of all exploration information and interpretation of the combined data sets has identified a high density targets which should be drilled to test for possible mineralisation of economic value. Potential orebody models include IOCG, skarn and pegmatites, and target elements include Cu, Au, Ni, Mo, W and REE's.

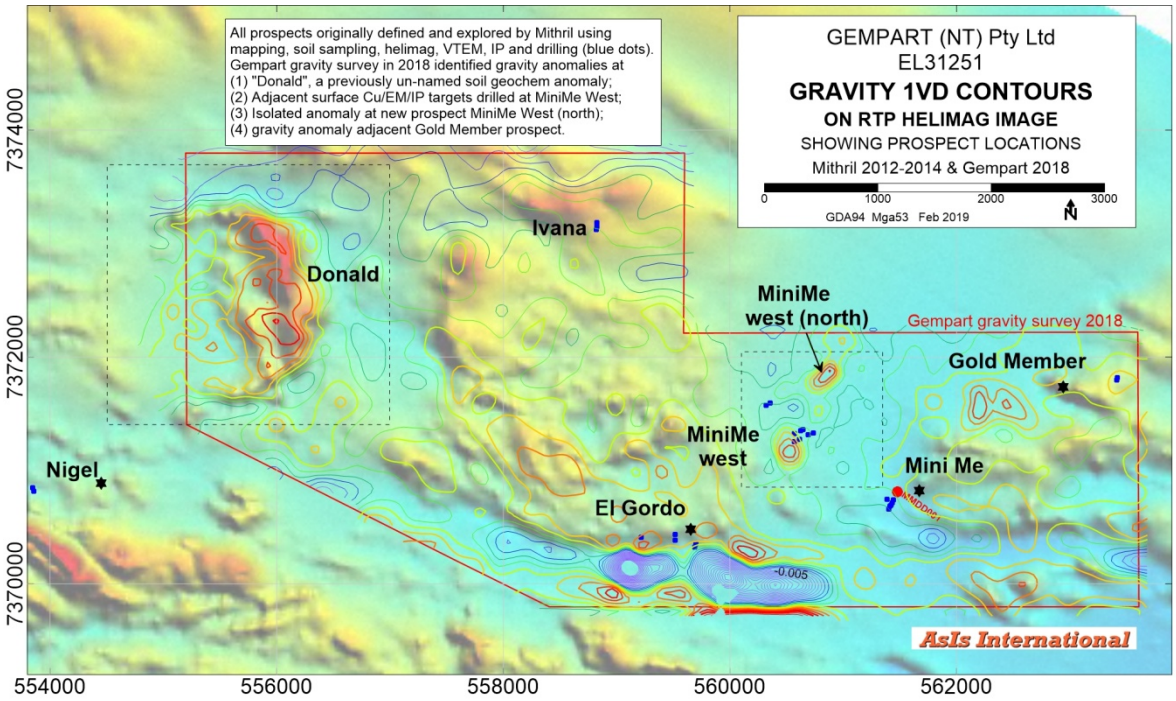

Figure 1. Location of MiniMe West prospect on EL31251.

Geology

The latest available published geology is from the Illogwa 1:250,000 mapsheet published in 1985. It is understood the NTGS have been conducting further mapping in recent years. The prospect area is in the Arunta Block, and comprises outcrop/subcrop of the (?) Albarta Metamorphics, a division of the Palaeoproterozoic Strangways Metamorphic Complex. The rocks are described as quartzofeldspathic gneiss, biotite and muscovite-biotite schist, massive and compositionally layered amphibolite; minor calc-silicate rock, hornblende gneiss, magnetite-quartzite, granitic gneiss, porphyroblastic feldspar gneiss and biotite gneiss. Geoscience Australia quote the maximum intrusion age as 1771+/-3Ma, and a metamorphic age of 567+/-9Ma.

Exploration by Mithril 2012-2014

Mithril carried out soil sampling initially on a 200x400 metre grid in 2012; sample number series MI-701 to MI-740. An infill traverse was completed in 2013 on 25 metre centres to investigate an airborne EM anomaly; series VTEMSOIL039-047. Assays on the -5mm +1.6mm fraction were determined for As, Ba, Ca, Co, Cr, Cu, Fe, Mg, Mn, Ni, P, Pb, and Zn. Refer Lockhead, A., McKinnon-Matthews, J., 2012, and Mizow, D., 2013.

A maximum Cu value of 68ppm occurs coincident with the northern gravity anomaly. There were no other assays of particular significance.

Plans showing data acquisition locations and summary of exploration results are included at Figures 2 and 3 respectively.

Geological mapping and rock chip sampling identified quartz veins, some cupriferous, some barren. Better surface sample Cu assays returned 1.90%, 1.60%, 1.24%, and 0.54%. A zone of intense hematite alteration was noted at 560600E 7371340N.

Mithril acquired a substantial amount of airborne geophysical data including airborne EM and magnetics/radiometrics over a large area encompassing many prospects, including the MiniMe West prospect.

A versatile time domain electromagnetic (VTEM) survey was flown by Geotech Airborne Pty Ltd in October 2012 (Mizow, D., 2012). Flightlines oriented at 030-210 degrees were spaced at 300 metres with Tx-Rx loop at a mean terrain clearance of 50 metres. Infill lines at 150 metre spacing were completed in some areas, including over MiniMe West prospect. Interpretation by K. Blundell identified low amplitude early time anomalies, consistent with a fault response, coincident with the zone of veining and hematite alteration.

Low-level helicopter-borne magnetics and radiometrics data were acquired by Daishsat Surveys in March 2012 (Lockhead, A., McKinnon-Matthews, J., 2012). Flightlines oriented 035-215 degrees were flown at a spacing of 100 metres with sensor at a mean terrain clearance of 30 metres. The magnetic pattern over the prospect area is quiescent, with maximum background variation of 100-200 nT. There are no specific magnetic anomalies of note, indicative of a low-magnetite system.

The response in the K, U and Th channels of the airborne radiometric data is benign.

Mithril carried out IP surveys to further investigate the coincident subtle VTEM anomalies and surface Cu anomalism. A distinct chargeability high and resistivity low was defined over 600 metres strike length.

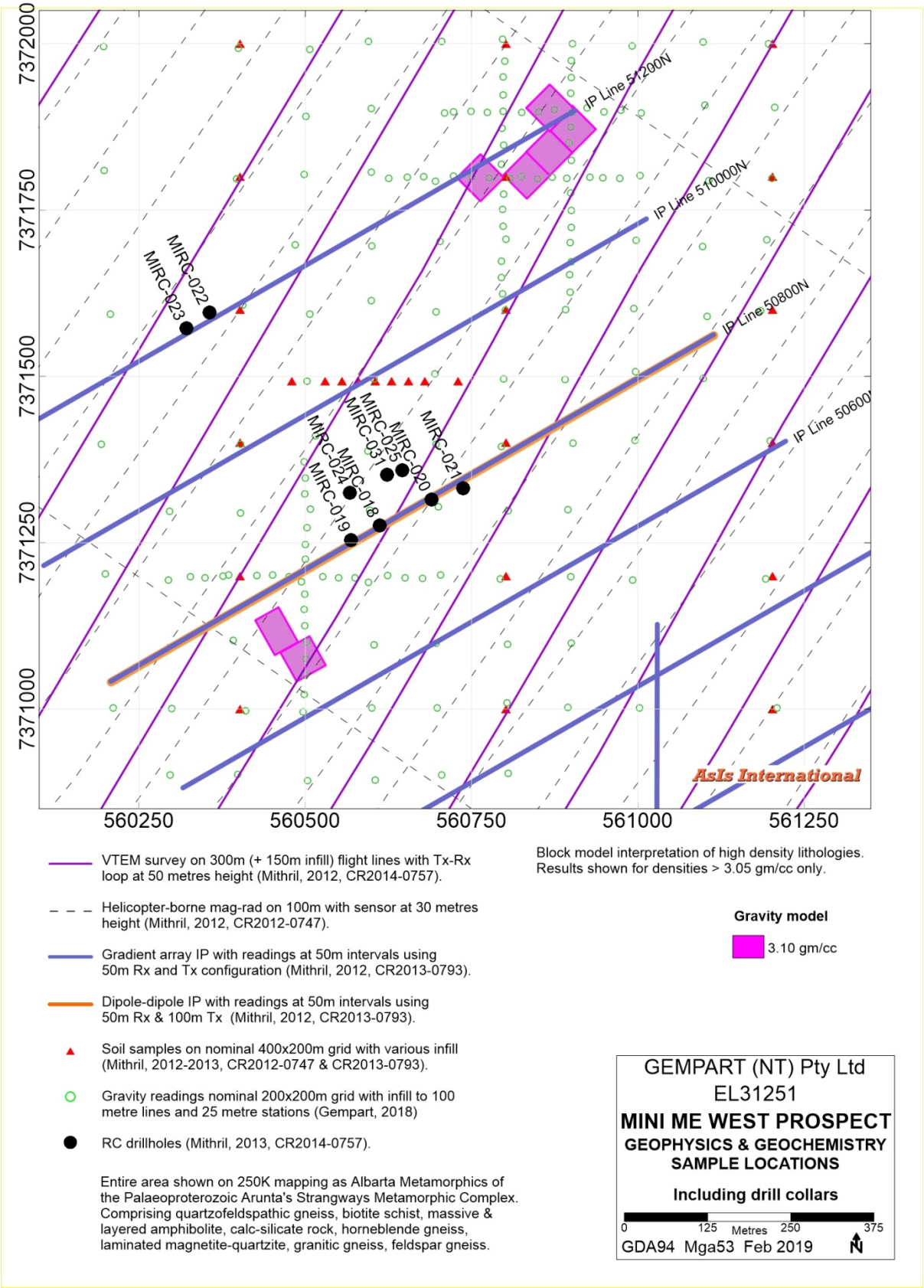

Figure 2. Location of Mithril soil samples, airborne and ground geophysical traverses, drillholes, and Gempart gravity readings.

Nine RC holes were drilled in late 2013 on three sections targeting the interpreted IP chargeability anomaly; refer drill sections 01, 02 and 03 in Figures 4, 5 and 6. Dominant lithologies were granitic and mafic gneisses and mylonites, with lesser schist, amphibolites and gabbro. Best assays were two one metre intervals of 0.4% Cu in a granite mylonite in MIRC-025. It was concluded that several thin intervals of typically 5 percent pyrite are the source of the EM and IP anomalies.

Table 1. MiniMe West prospect. RC drillholes completed by Mithril 2013.

HOLE_ID	EAST_MGA_Z53	NORTH_MGA_Z53	RL	AZI_MAG	DIP	LENGTH
MIRC-018	560612	7371276	346	60	-60	121
MIRC-019	560569	7371254	346	60	-60	199
MIRC-020	560690	7371315	344	240	-60	151
MIRC-021	560737	7371332	344	240	-60	205
MIRC-022	560356	7371596	343	62	-60	127
MIRC-023	560321	7371572	343	62	-60	157
MIRC-024	560567	7371325	347	62	-60	109
MIRC-025	560646	7371359	346	240	-60	109
MIRC-031	560623	7371352	346		-90	43

Exploration by Gempart 2018

A ground gravity survey was conducted over an area encompassing the MiniMe West prospect area in November 2018. Contractor Daishsat Surveys acquired readings on a nominal 200x200 metre grid, with infill readings on 100 metre lines and station spacing 100 or 50 metres. Two discrete equidimensional positive anomalies were defined at the prospect area. One, the southern anomaly, has amplitude one milliGal and is located immediately adjacent to the area of Cu anomalism, and EM/IP anomalies. The gravity anomaly was not tested by any of the RC drillholes.

The northern gravity anomaly 700 metres to the north is similar in size and amplitude. It is coincident with a Cu in soil value of 68 ppm. There are no other exploration anomalies of interest in the area.

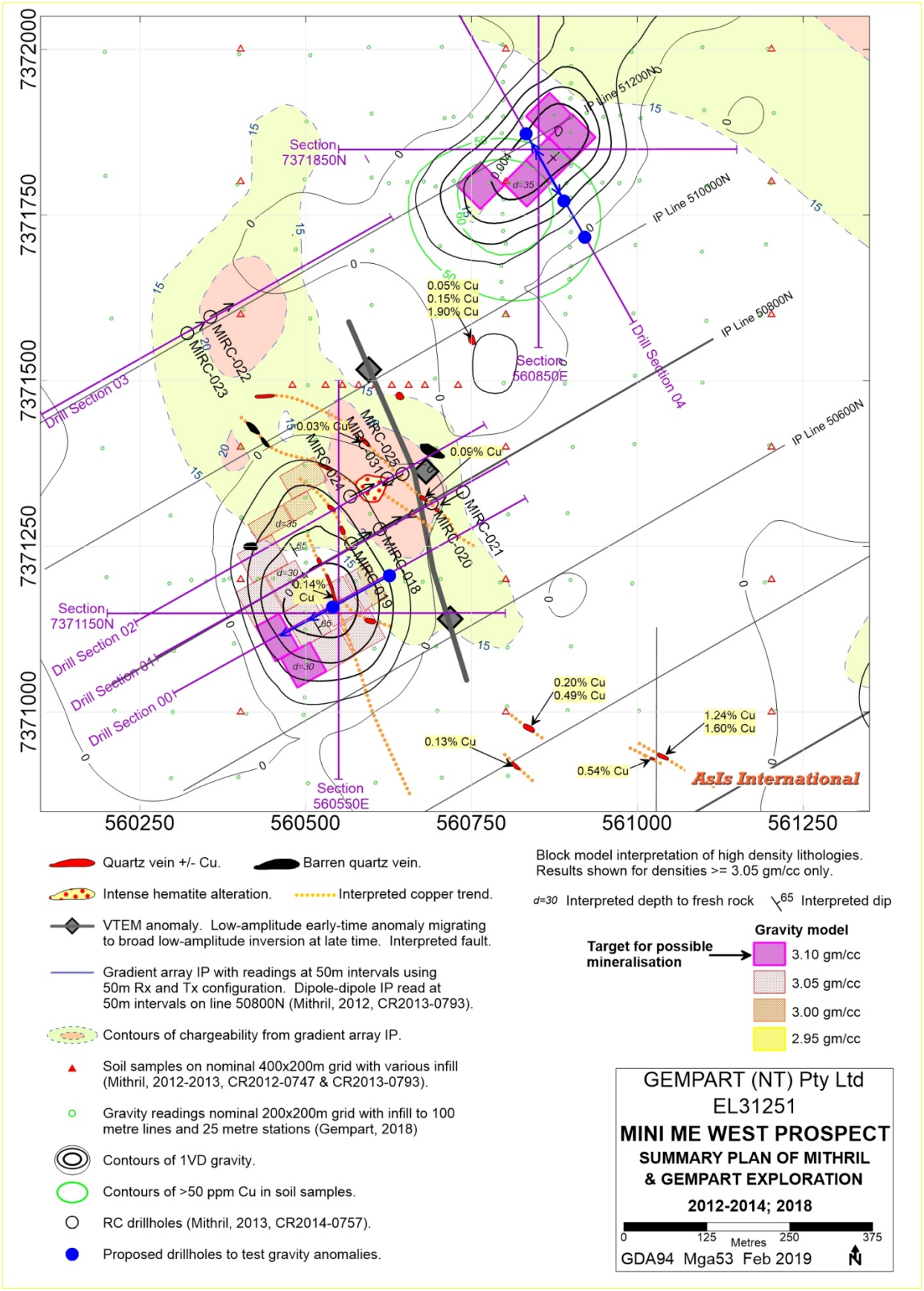

Figure 3. MiniMe West prospect. Summary plan of Mithril & Gempart exploration.

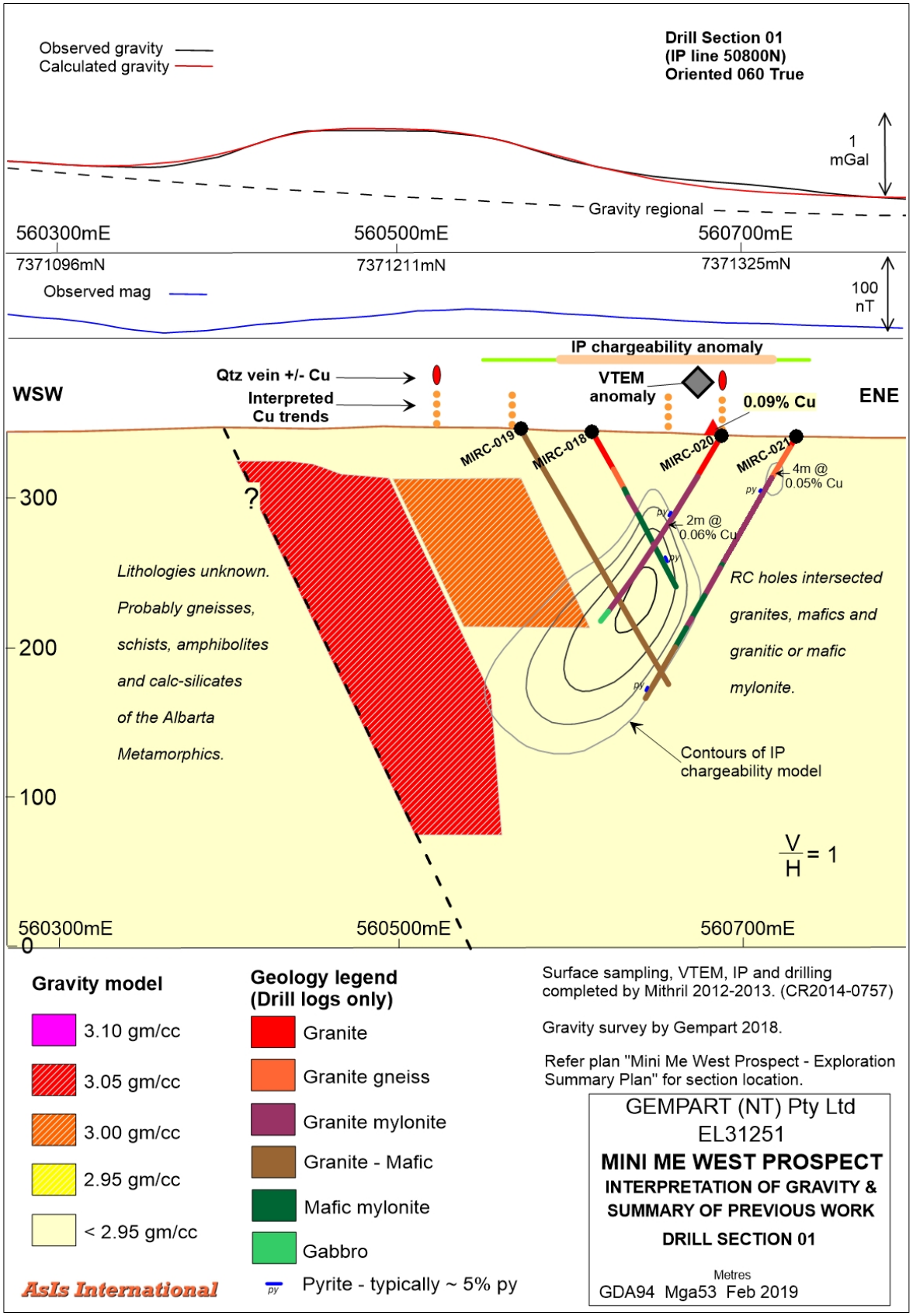

Figure 4. MiniMe West prospect. Interpretation of gravity and summary of exploration on drill section 01.

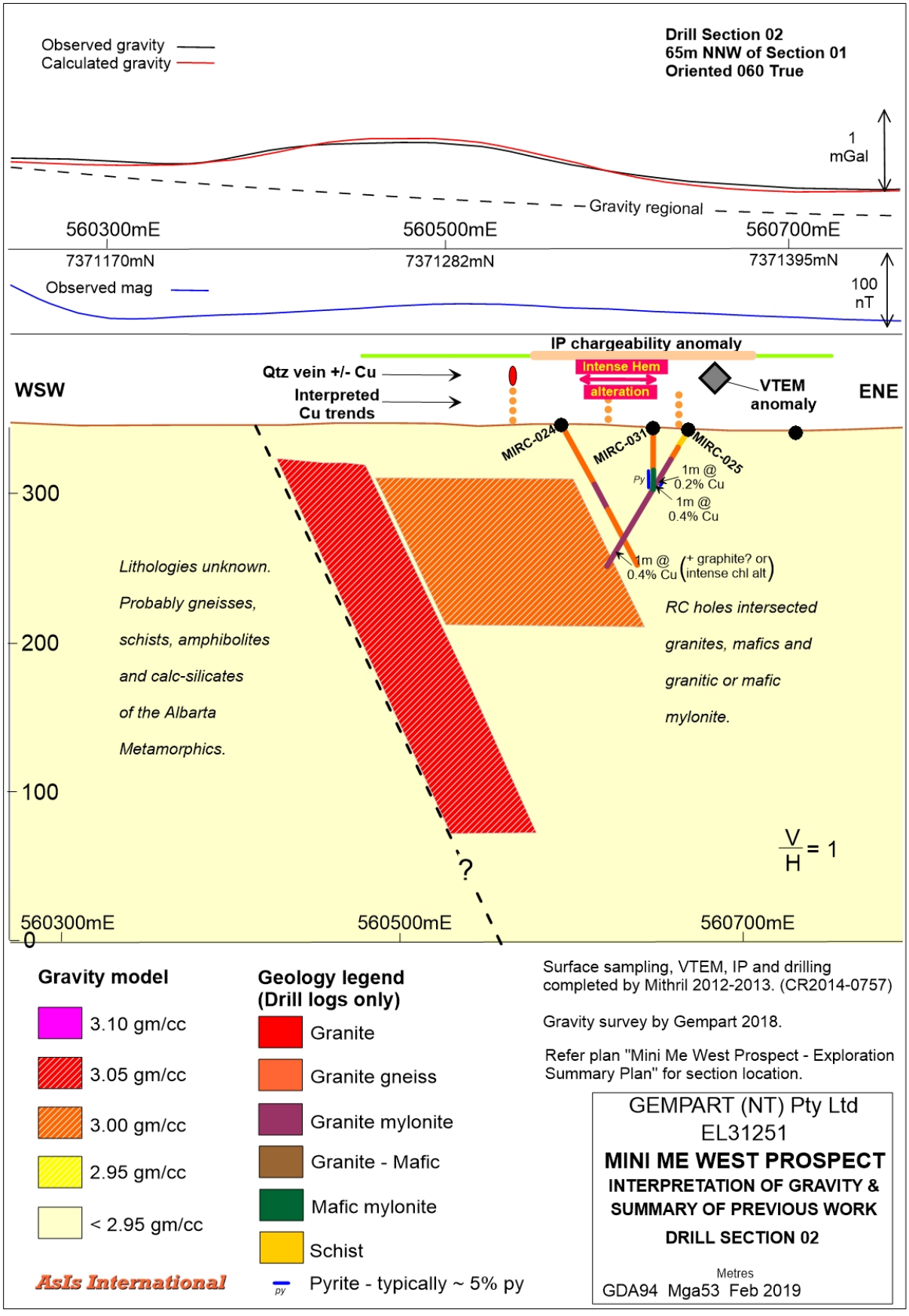

Figure 5. MiniMe West prospect. Interpretation of gravity and summary of exploration on drill section 02.

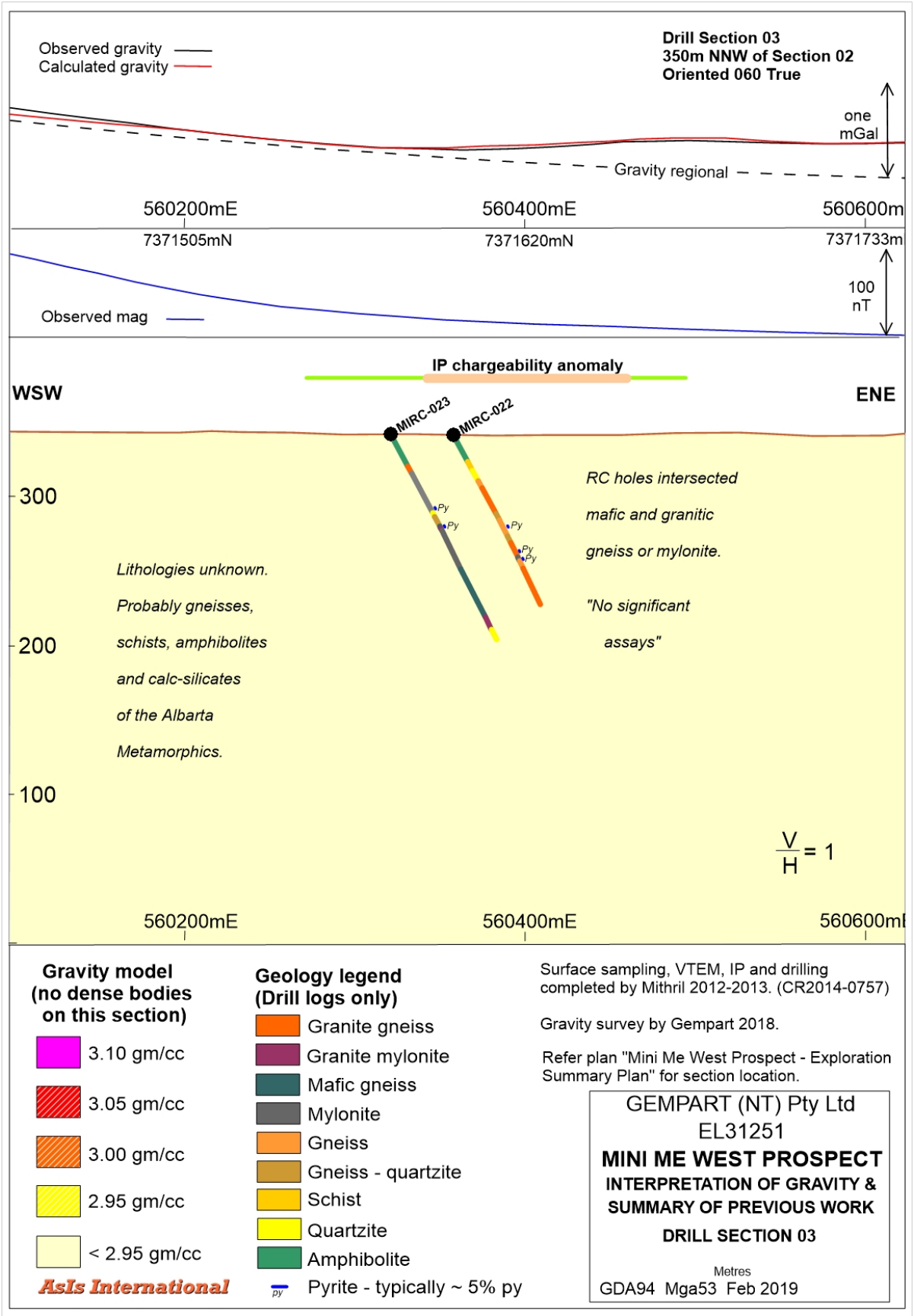

Figure 6. MiniMe West prospect. Interpretation of gravity and summary of exploration on drill section 03.

Interpretation

In order to construct a geological model and define the anomalous mass causing the gravity anomalies, the gravity data were subject to detailed quantitative interpretation. The aeromagnetic data were not modelled as there is insufficient signal to allow any meaningful interpretation. The process was:

1. Derive profiles on 100 metre spaced NS and EW traverses from the gridded gravity. In places this was closed up to 50 metre spacing.
2. Using the depths to fresh rock from drilling as a guide, forward model the gravity.
3. Interpret lithologies and structures from the data and model.

A 3D view of the final model built up of tabular blocks of elevated density is shown at Figure 7. The results suggest the higher density source material of the southern anomaly is 350 metres long and 250 metres wide striking 330 degrees True. Depth to fresh rock is typically 30 metres. Dips are interpreted to be 60-70 degrees towards ESE. It is noted that the RC holes drilled towards 240 degrees tended to lift, whereas those drilled towards 060 degrees tended to drop. This is consistent with the interpreted ESE dips. The highest inferred densities are 3.10 gm/cc. The interpreted model on gravity is shown at Figure 8, and geological sections shown at Figures 4, 5, 6, 9, and 10. Figure 11 is a section showing proposed drillholes to test the source of the gravity anomaly.

The northern anomaly high density source is interpreted to be 200 metres long, 100 metres wide and striking 45 degrees True. Depth to fresh rock is assumed to be similar to the southern anomaly i.e. 30 metres. The anomaly is symmetrical, suggesting a very steep to vertical dip. The highest inferred densities are 3.10 gm/cc.

The lithologies of higher density are interpreted to represent amphibolites, calc-silicate rocks and mafic or granitic gneiss. The interpreted model on gravity is shown at Figure 8, and geological sections shown at Figures 12 and 13. Figure 14 is a section showing proposed drillholes to test the source of the gravity anomaly.

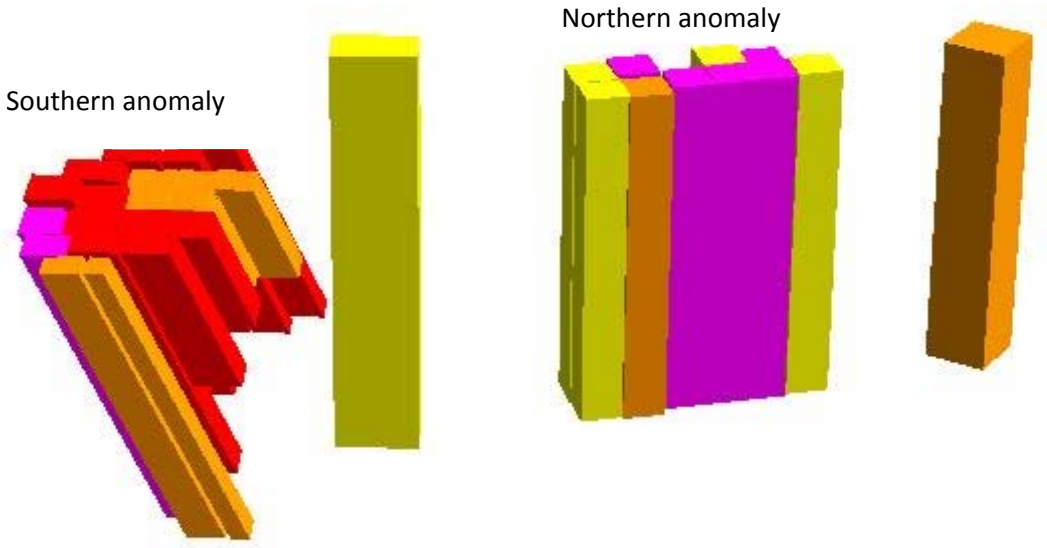

Figure 7. MiniMe West prospect. 3D view, looking NNW, of interpreted gravity model. Southern model on the left; northern model on the right. The model components of highest density are shown in magenta.

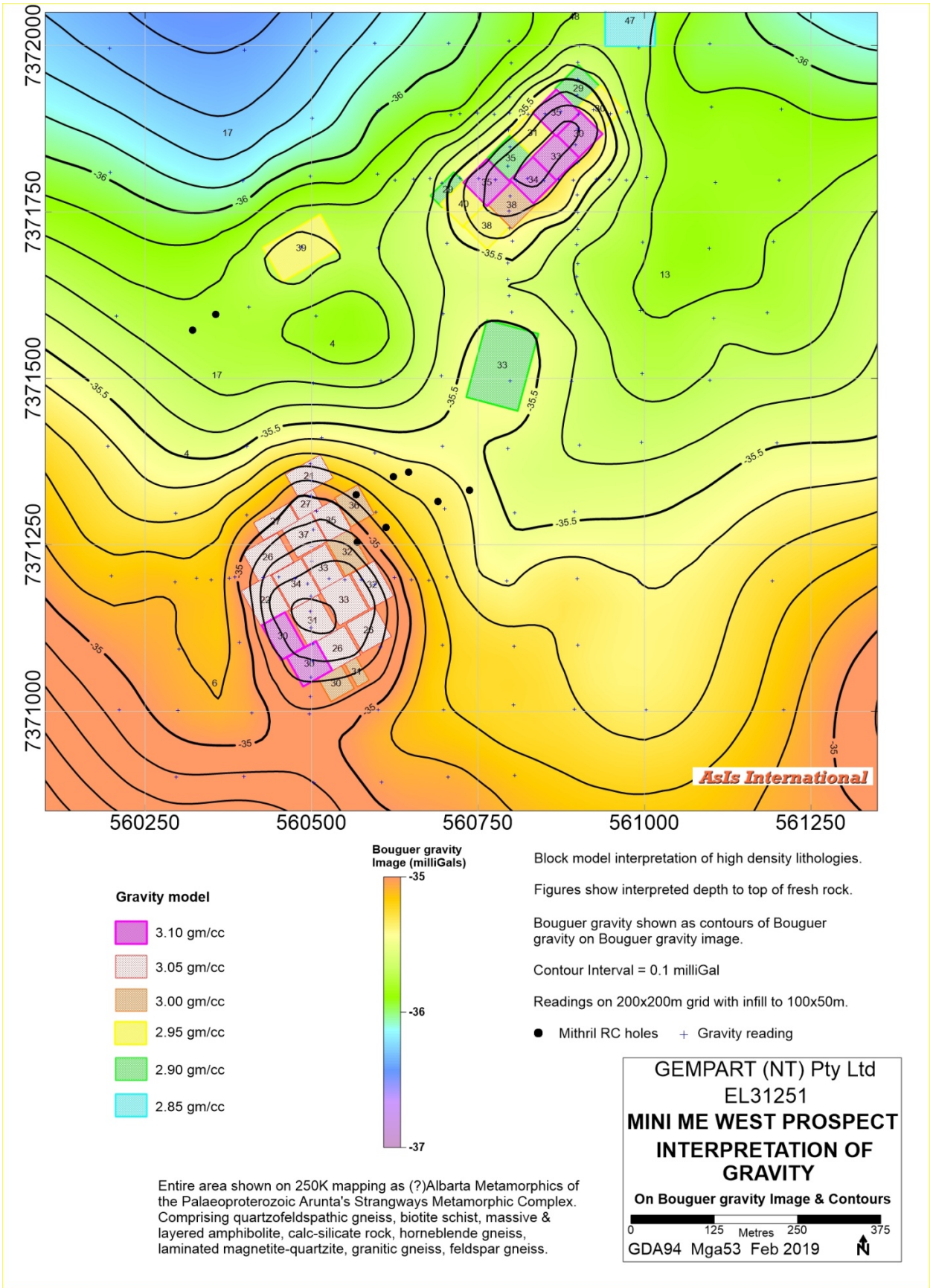

Figure 8. MiniMe West prospect. Interpretation of gravity on gravity image.

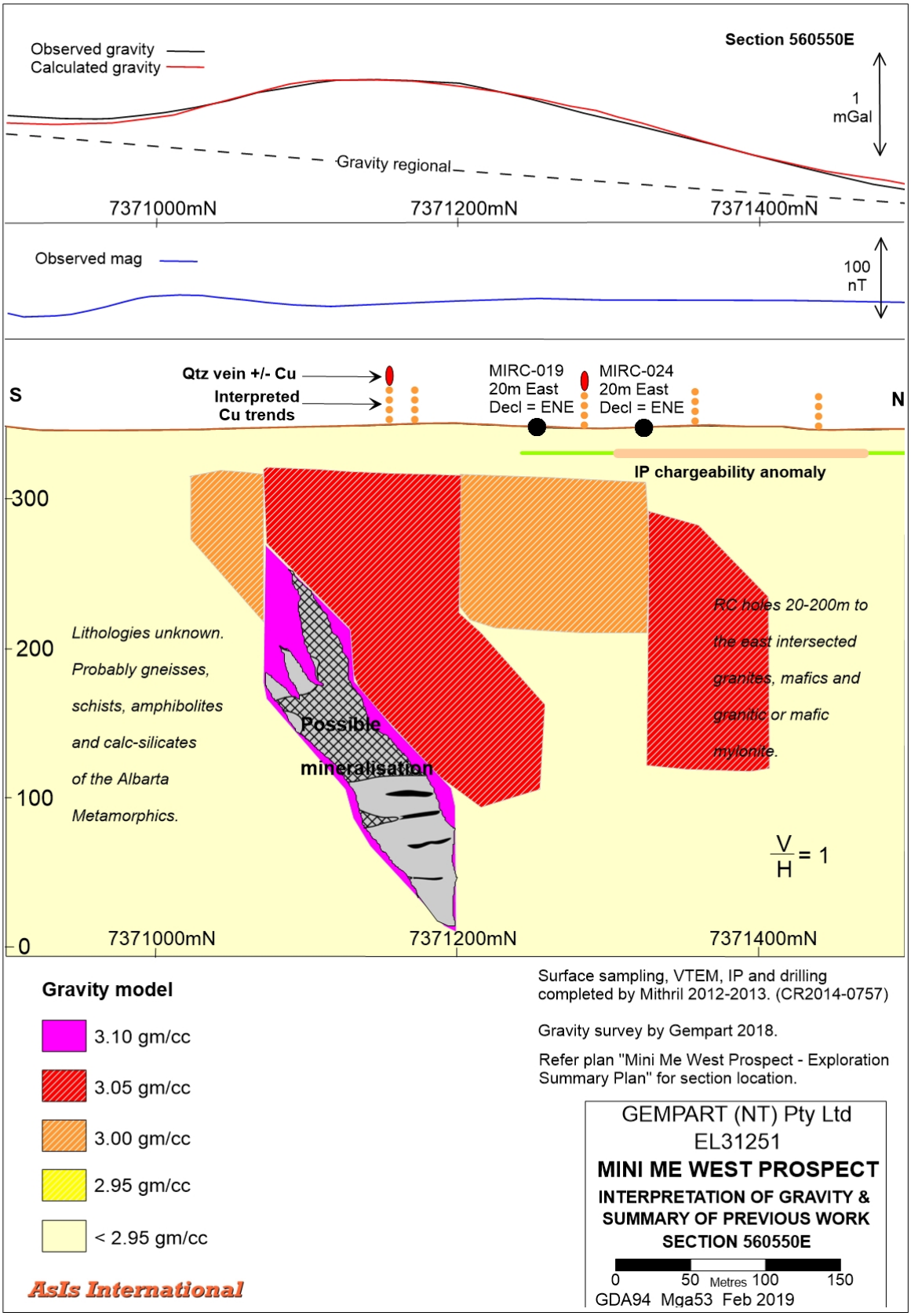

Figure 9. MiniMe West prospect. Interpretation of gravity and summary of exploration on section 560550E.

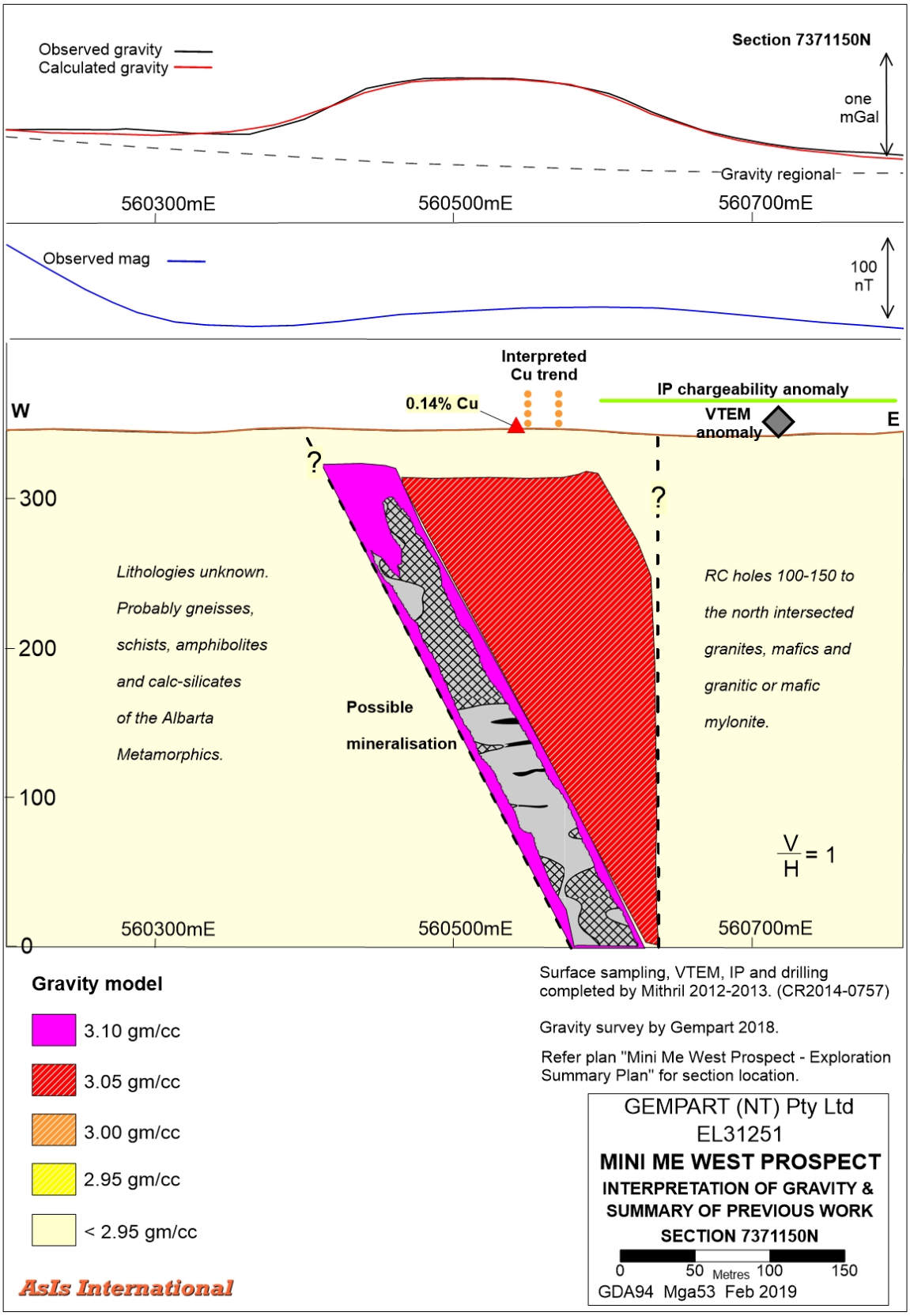

Figure 10. MiniMe West prospect. Interpretation of gravity and summary of exploration on section 7371150N.

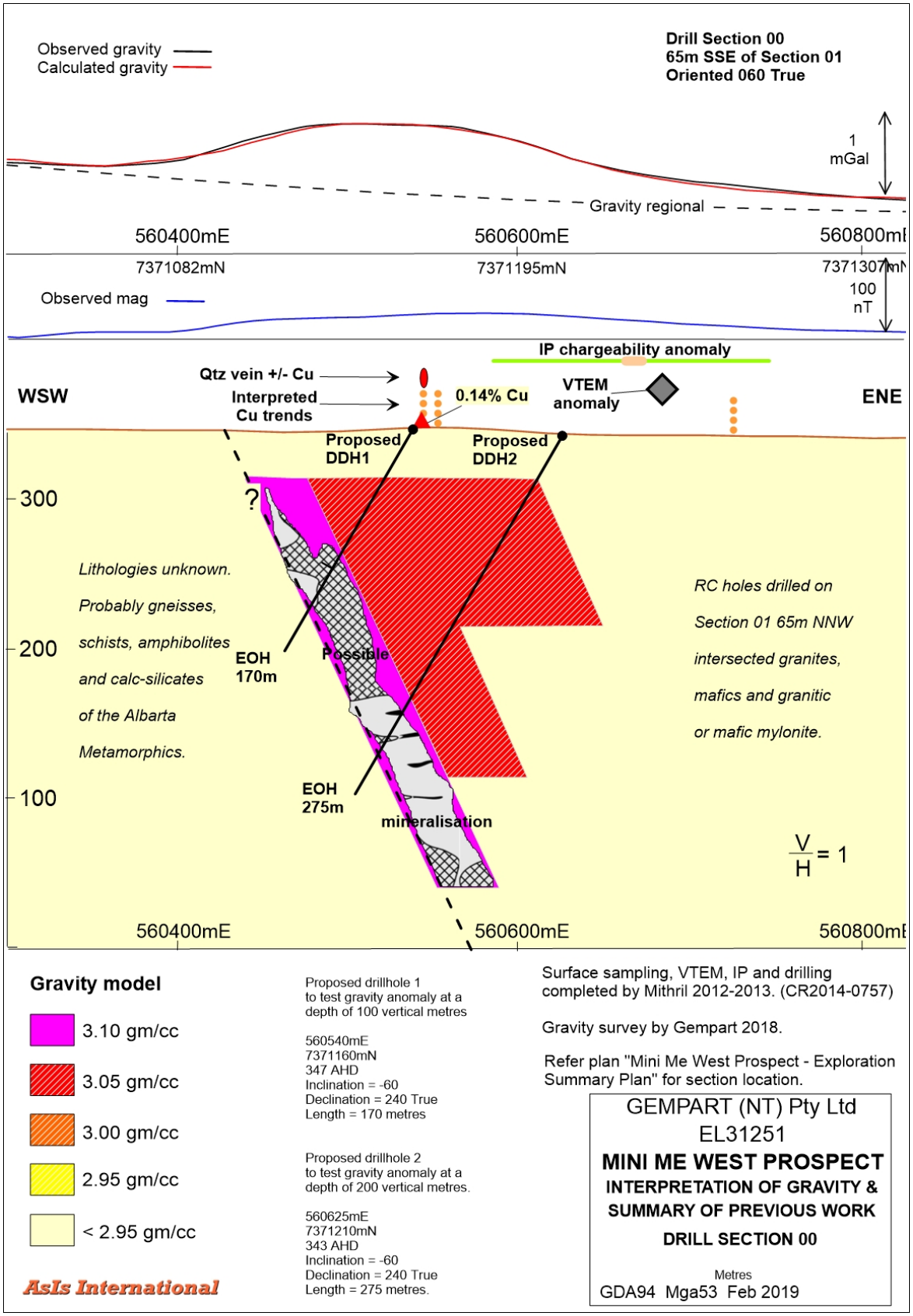

Figure 11. MiniMe West prospect. Interpretation of gravity, summary of exploration and proposed drillholes on drill section 00.

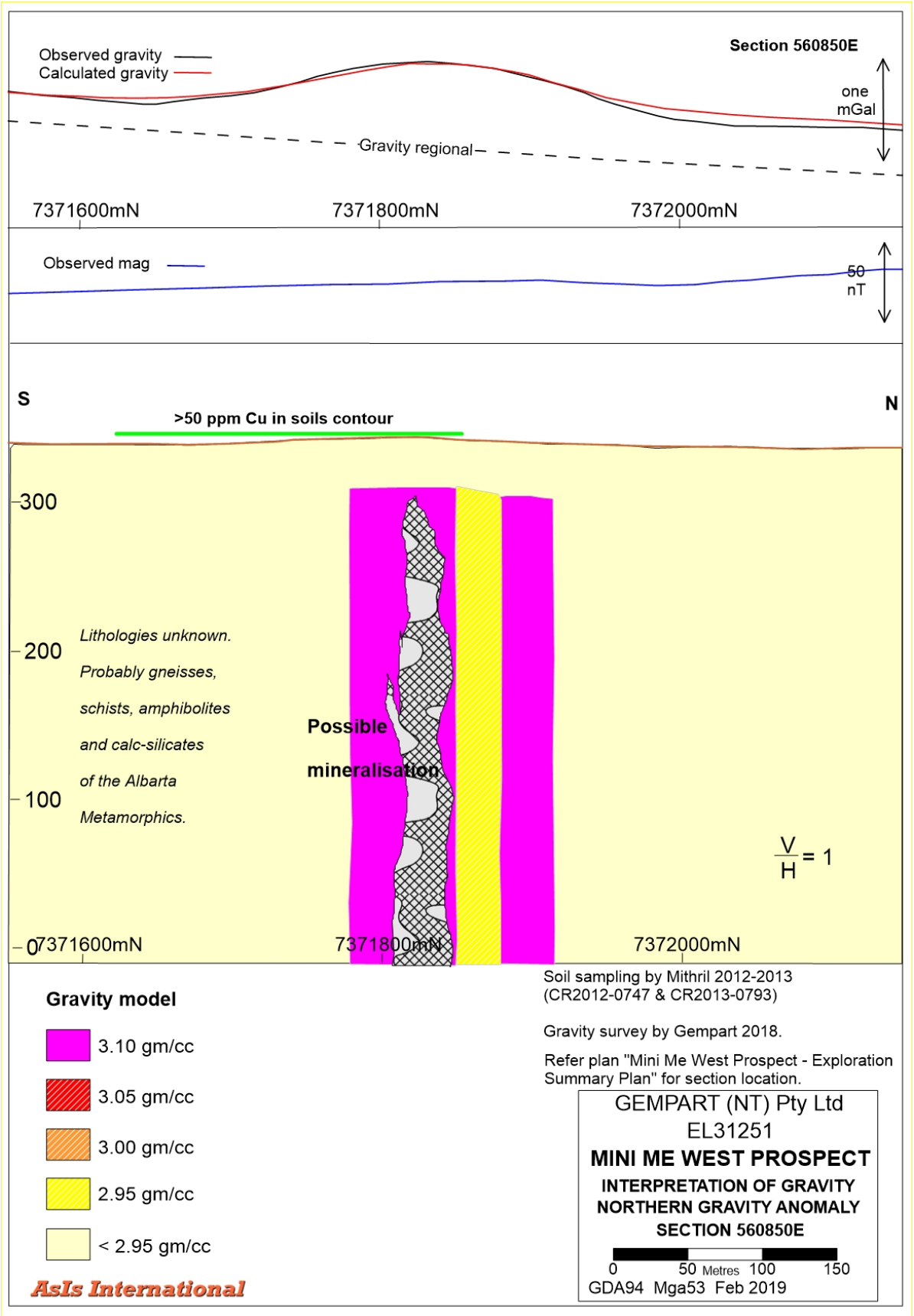

Figure 12. MiniMe West. Interpretation of gravity on section 560850E.

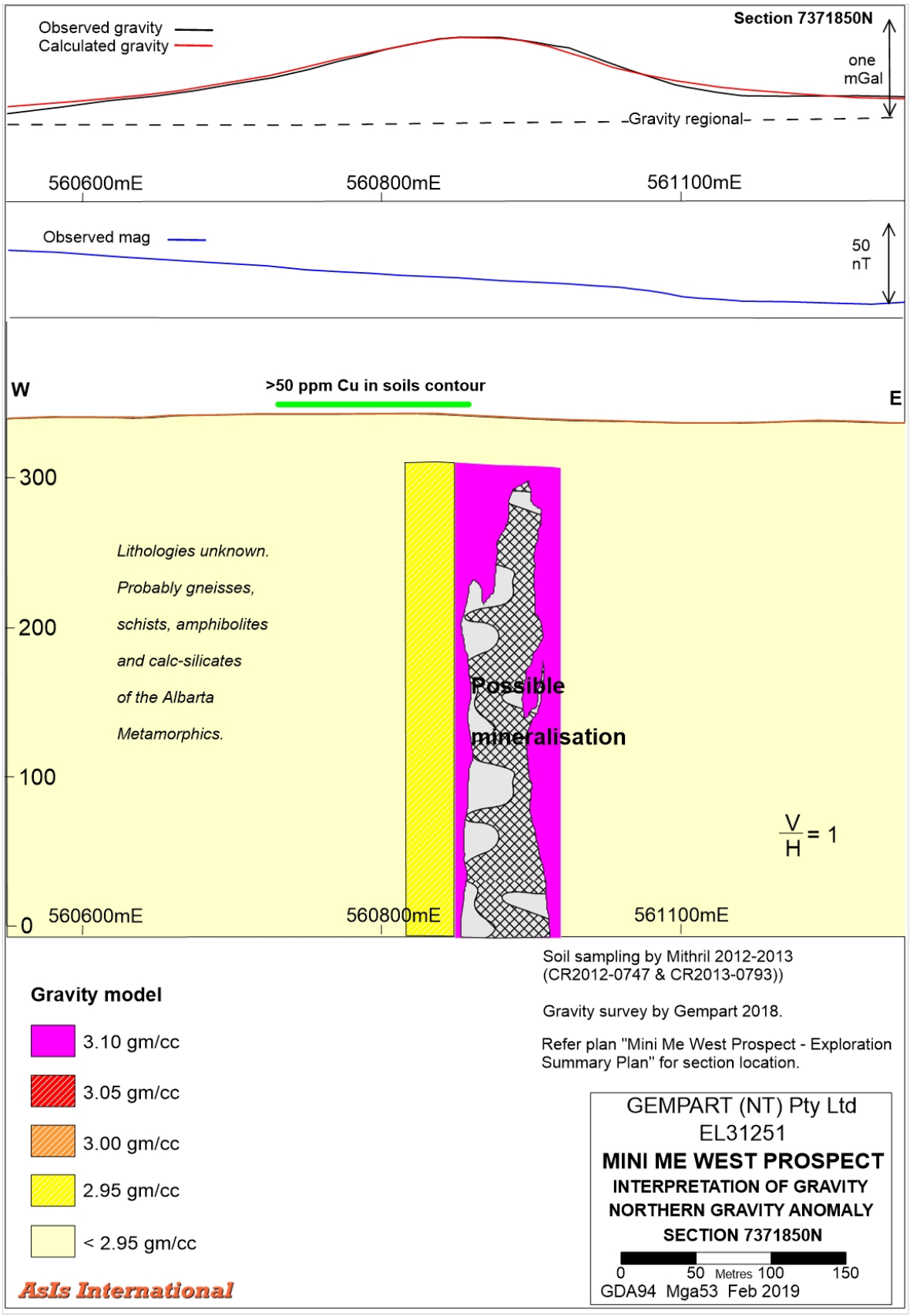

Figure 13. MiniMe West. Interpretation of gravity on section 7371850N.

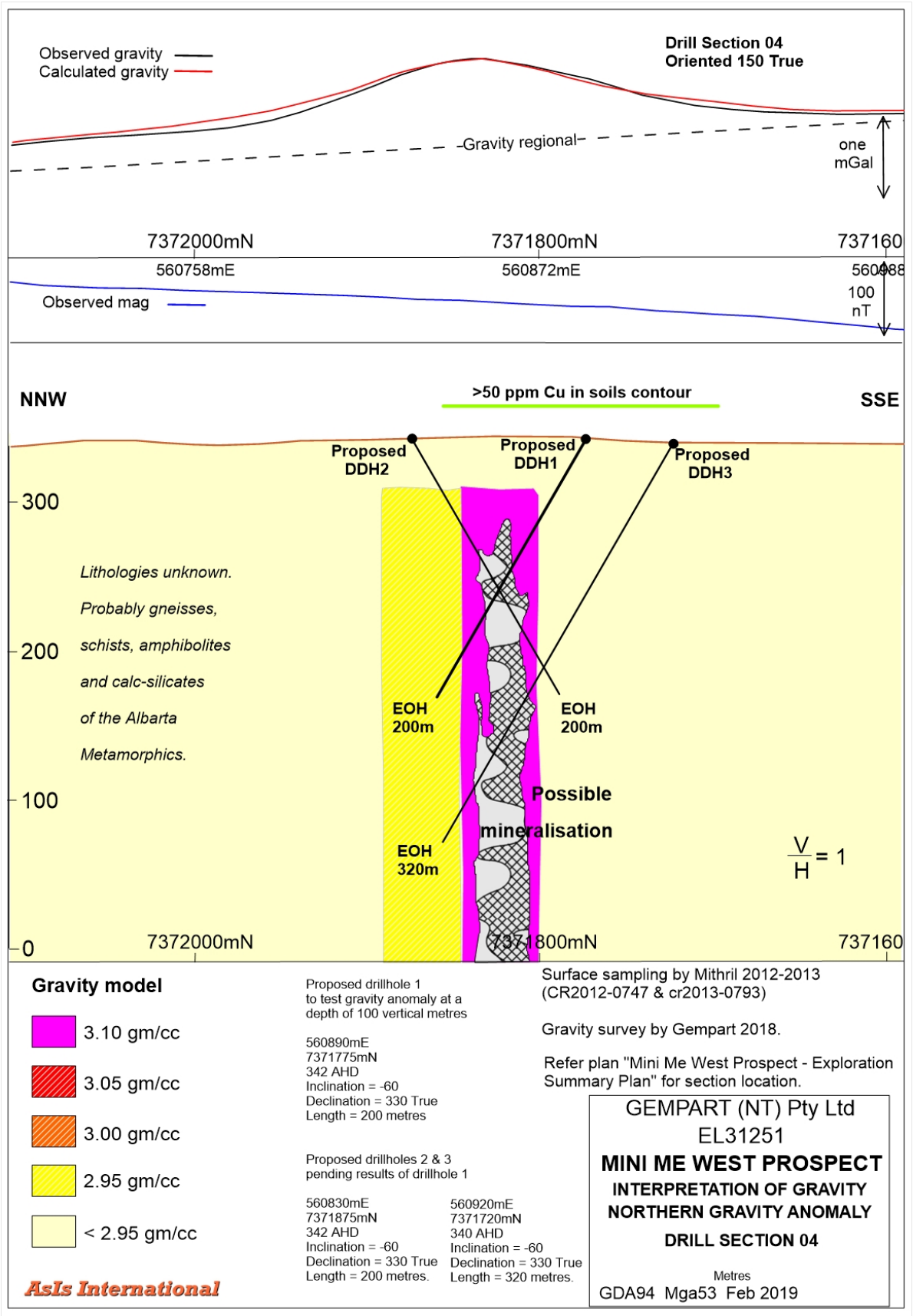

Figure 14. MiniMe West prospect. Interpretation of gravity and proposed drillholes on drill section 04.

Discussion of Results

The source may represent an IOCG or skarn model of mineralisation, with magnetite destruction during the Palaeozoic. Deposits of this type in the Strangways Metamorphic Complex include Johnnies Reward, located in the Strangways Range 150 kilometres to the northwest, and Molyhil Mine, 100 kilometres to the north. The former is a magnetite-copper-lead-zinc-gold metamorphic skarn in Cadney metamorphics, a unit at the top of the Strangways Metamorphic Complex. Molybdenum and tungsten mineralisation at Molyhil occurs as a magnetite / sulphide-rich hornfels unit. Allanite-bearing pegmatites with potential for REE's, lithium, thorium uranium and zirconium occur in Cadney metamorphics at Bluey's Folly 80 kilometres to the northwest in the Amarata Range.

Figure 15 is a Landsat-7 image of the prospect area. There are no distinct patterns that relate to the observed surface geology and mineralisation.

Recommendations for further work

It is highly recommended that the modelled source of the observed gravity anomalies be drilled to test for mineralisation.

Southern Gravity Anomaly

Proposed drillhole 1 is to test the southern gravity anomaly at a depth of 100 metres.

Easting : 560540mE
Northing : 7371160mN
RL : 347 AHD
Inclination : -60
Declination : 240 True
Length : 170 metres

Proposed drillhole 2 is to test the southern gravity anomaly at a depth of 200 metres.

Easting : 560625mE
Northing : 7371210mN
RL : 343 AHD
Inclination : -60
Declination : 240 True
Length : 275 metres.

Northern Gravity Anomaly

Proposed drillhole 1 to test gravity anomaly at a depth of 100 metres.

Easting : 560890mE
Northing : 7371775mN
RL : 342 AHD
Inclination : -60
Declination : 330 True
Length : 200 metres

Proposed drillholes 2 & 3 pending results of drillhole 1

Easting : 560830mE
Northing : 7371875mN
RL : 342 AHD
Inclination : -60
Declination : 330 True
Length : 200 metres.

Easting : 560920mE
Northing : 7371720mN
RL : 340 AHD
Inclination : -60
Declination : 330 True
Length : 320 metres.

G. Bubner 25 February 2019

AsIs International

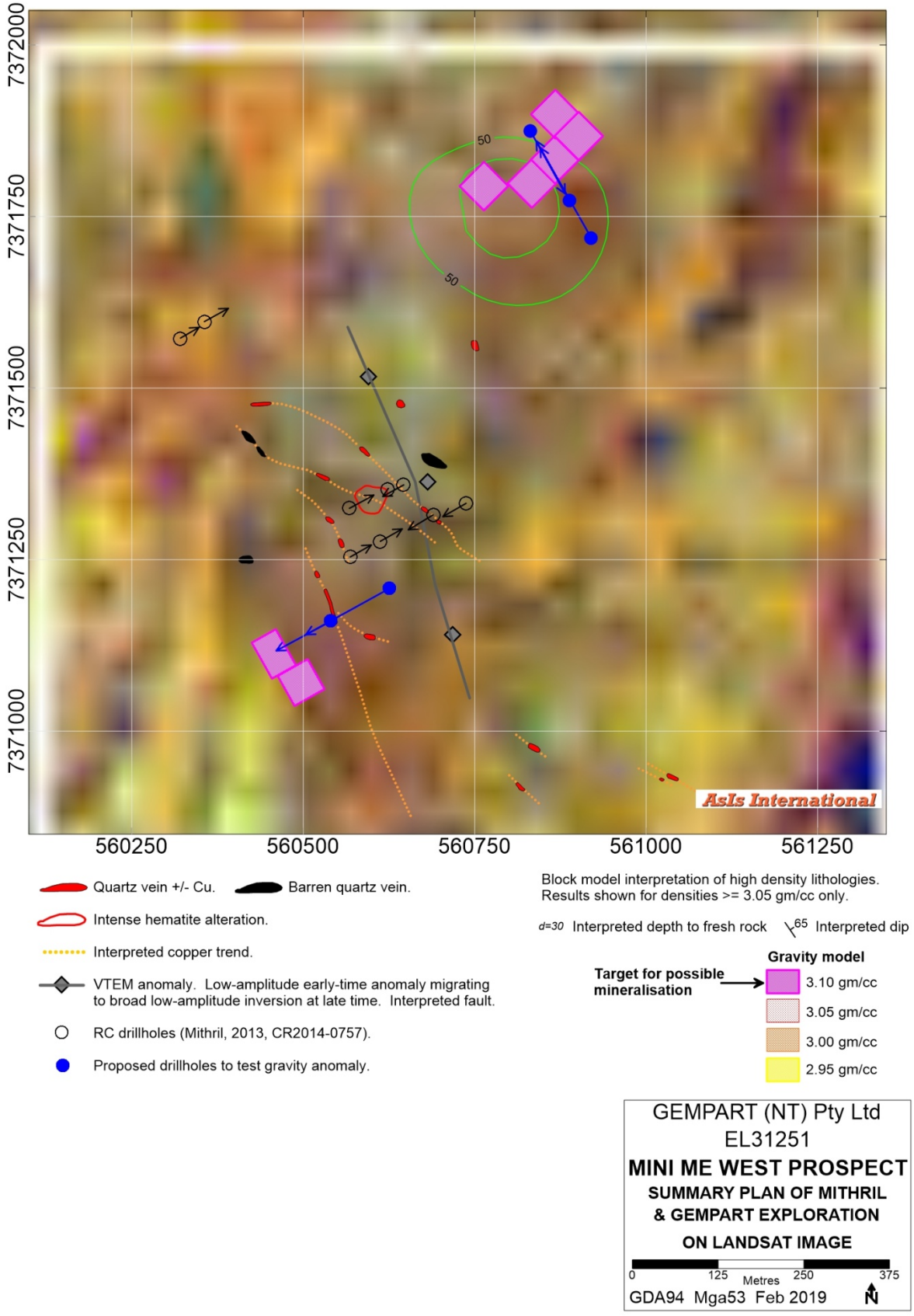

Figure 15. MiniMe West prospect. Summary of exploration on Landsat image.

References

Lockhead, A., McKinnon-Matthews, J., 2012. EL 25643 Mount Isabel and EL 25653 Acacia Bore Sammy JV Project Annual technical report for the period 20 August 2011 to 19 August 2012. Mithril Resources Ltd. Northern Territory Geological Survey, Open File Company Report CR2012-0747.

Mizow, D., 2013. EL 25643 Mt Isabel and EL 25653 Acacia Bore Sammy JV Project Group technical reporting status Annual technical report for the period 20 August 2012 to 19 August 2013. Mithril Resources Ltd. Northern Territory Geological Survey, Open File Company Report CR2013-0793.

Mizow, D., 2014. EL 25643 Mount Isabel and EL 25653 Acacia Bore Sammy Project Annual technical report for the period 20 August 2013 to 19 August 2014. Mithril Resources Ltd. Northern Territory Geological Survey, Open File Company Report CR2014-0757.