COLLABORATIVE EXPLORATION INITIATIVE QLD – ROUND 2

FINAL REPORT FOR THE MARIMO Zn-Pb PROJECT 2019

Cloncurry, Queensland

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Teck

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1. Summary

The following report is Teck Australia's Final Report for the Queensland Governments' Collaborative Exploration Initiative (CEI) - North West Queensland, Round 2. In this final report Teck presents the results from recent diamond drilling (MRDD001) carried out under the CEI within EPM 26372 which is located in the Marimo basin in northwest Queensland ~ 5km south of Cloncurry. The main objective of the drilling campaign was to establish Zn prospectivity of the Answer Slates within the Marimo basin.

The Marimo Project covers the Marimo basin (part of the broader Marimo-Staveley Belt), and features Palaeoproterozoic sediments that are considered highly prospective for SHMS Pb-Zn-Ag mineralization, as demonstrated by the occurrence of the Dugald River deposit, which is interpreted to occur in equivalent units ~50km north. Units of the Marimo basin (in particular the Answer Slates) are from a key metallogenic epoch – the Gun Supersequence of ~ 1655Ma. The area has low exploration maturity for SHMS systems, with few deep drillholes completed within the basin. Anomalous zinc geochemistry has been defined in aircore drilling programs, and prospective host units of a carbonaceous shale correspond to a conductive response in an airborne EM survey that covers the basin but this feature nor the overlying units have not been effectively tested by deep Reverse Circulation (RC) and/or diamond drill holes. Therefore, a 905m diamond drill hole to test stratigraphy drilling into the conductive carbonaceous sediment toward the contact with the older Staveley Formation in the western part of the Marimo basin within EPM 26372 was drilled.

Diamond drilling (HQ & NQ) commenced on the 7th of August 2019 and was completed on the 1st of September 2019. The hole was terminated at 905m in the Staveley. In addition to drilling, wireline logging and Truscan XRF data was collected.

Drilling at MRDD001 has confirmed several key assumptions about basin architecture within the Marimo basin, including stratigraphic contacts and their characteristics, structural relationships and favourable targets for Zn mineralisation. Detailed XRF geochemical data has allowed us make a robust lithological interpretation of the drillcore.

2. Introduction

The Marimo Project is located in northwest Queensland approximately 5km south of Cloncurry (Figure 1) within the Cloncurry (SF54-2) 1:250,000 map sheet. It is an area in which Teck is actively exploring for Dugald River-style Zn-Pb-Ag mineralisation. The EPM 26372 tenement in which drilling was completed, is located on the Cloncurry (SF54-2) & Duchess (SF64-6) 1:250,000 map sheets. EPM 26372 (White Range Consolidated) is centered approximately 40km south of Cloncurry and spans the border of the Roxmere and Brightlands pastoral leases.

Teck is currently managing the project under a earn-in and JV agreement with Young Australia Mines Ltd

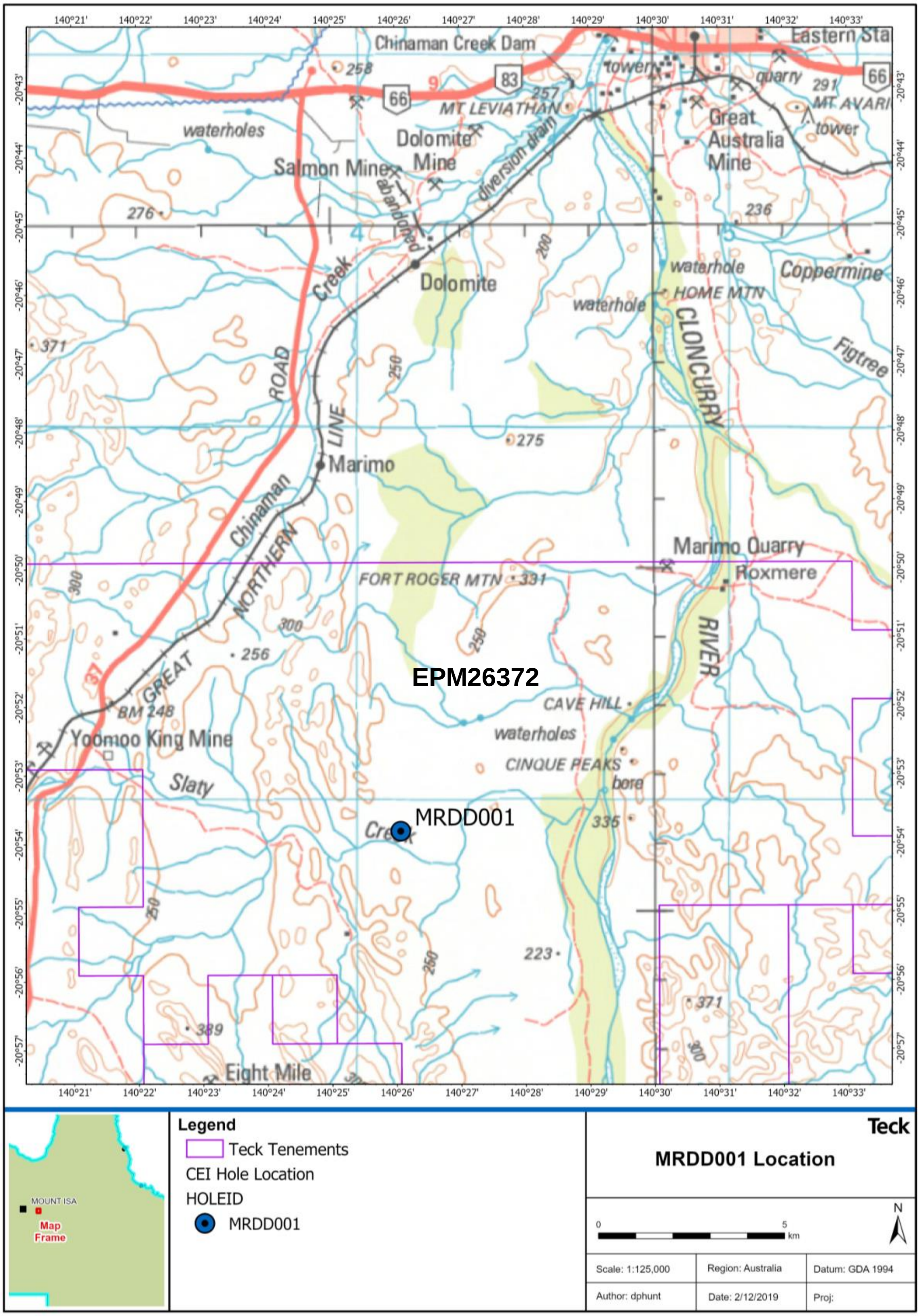

Figure 1: Location diagram showing MRDD001 drillhole.

3. Regional Context

3.1 Regional Geology

Teck's Marimo project is located in the highly prospective Palaeoproterozoic Marimo-Staveley belt of the Eastern Succession. This belt is correlated to the contemporaneous Wonga Belt, along strike to the north of Marimo, which hosts the Dugald River Zn-Pb-Ag deposit (Foster & Austin, 2007). The Marimo-Staveley belt is composed of ~1655- ~1605 Ma sediments deposited in a platformal extensional tectonic setting constituting part of the Isa Superbasin. The Isa Superbasin itself overlies the Calvert and Leichhardt Superbasins which are widely thought to be the source rocks for metalliferous brines that formed these world class deposits during the Isa Superbasin sag-phase.

Three distinct supersequences are recognised within the Mount Isa Inlier which are composed of the Eastern and Western Fold Belts, which are separated by the Kalkadoon-Leichhardt Belt. The Leichhardt Supersequence consists of those typically formed within a rift basin, with mafic volcanic rocks being extruded early in the rifting history and coarse to medium-grained clastic sediments filling the grabens. Finer grained sediments, tending towards carbonates and evaporates, were deposited during the sag phase of the rifting cycle. The volcanic component of this cycle is represented by the basalts of the Eastern Creek Volcanics with the sedimentary facies represented by the clastic Myally Subgroup and the more carbonate-dominant Quilalar Formation.

The Mt Isa Supersequence is generally represented by the Mount Isa and McNamara Groups which are regarded as coeval. Underlying these sequences are the sediment-dominated Surprise Creek Formation and the more restricted volcanic facies of the Fiery Creek Volcanics and Carters Bore Rhyolite belonging to the Calvert Supersequence. These sequences were laid down in local grabens and half grabens unlike the sediments of the McNamara Group which are more widespread and more representative of a sag phase within the rift cycle.

The Marimo-Staveley belt has been subject to Greenschist facies metamorphism during the Isan orogeny (Blenkinsop (Ed), 2005). Deformation is dominated by E-W directed inversion which occurred during the D2 event during the Isan Orogeny. In the Marimo area this has resulted in and curvilinear thrust geometries trending N-S and extensive reverse fault reactivation on oblique structures.

3.2 Geochronology

The Proterozoic metasediments of the Marimo basin were previously placed within the Mary Kathleen stratigraphic grouping of ~ 1740-1730Ma age.

These units (including the Answer Slate, Kuridala Fm, Staveley Fm, Marimo Slate and Agate Downs Siltstone) have been assigned to the “Young Australia Group” of the Isa Supersequence (Foster & Austin, 2007) since 2007. The new age date for the Answer Slate is ~1655Ma. The location of the Young Australia group is shown in Figure 2.

This previously inaccurate allocation has resulted in incorrect geological interpretations and an underestimation of the zinc prospectivity of the area. Peak zinc deposit formation in the Carpentaria province was between 1660-1590Ma (McGoldrick and Large, 1998). The new age date has increased our view of the prospectivity of the Marimo basin, and opened up opportunities for a re-interpretation of structure and geological history in the area.

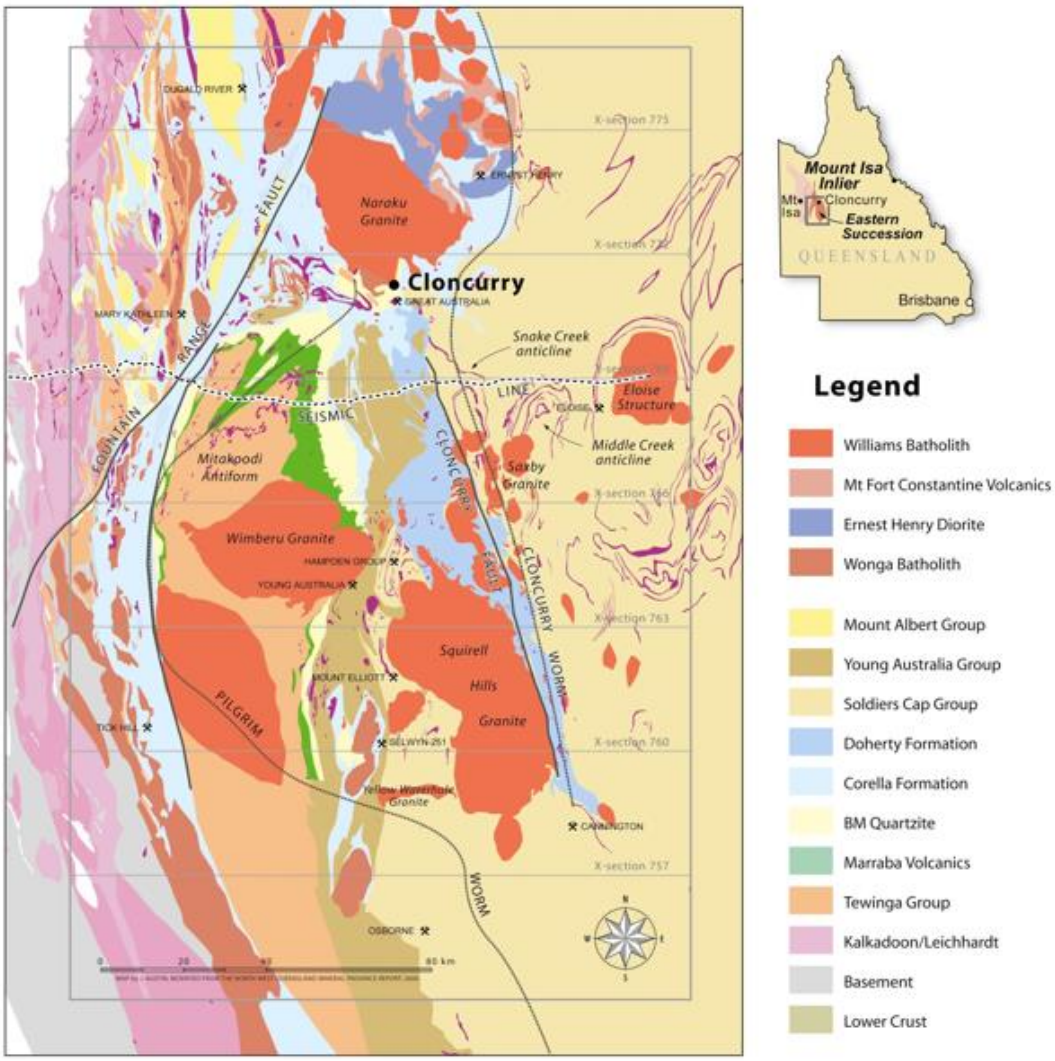

Figure 2: Locality Map. Geology shown here is modified from the NWQMPR. The Cloncurry and Pilgrim Worms are shown as dotted lines. Grey lines show cross-sections used for the 3D model.

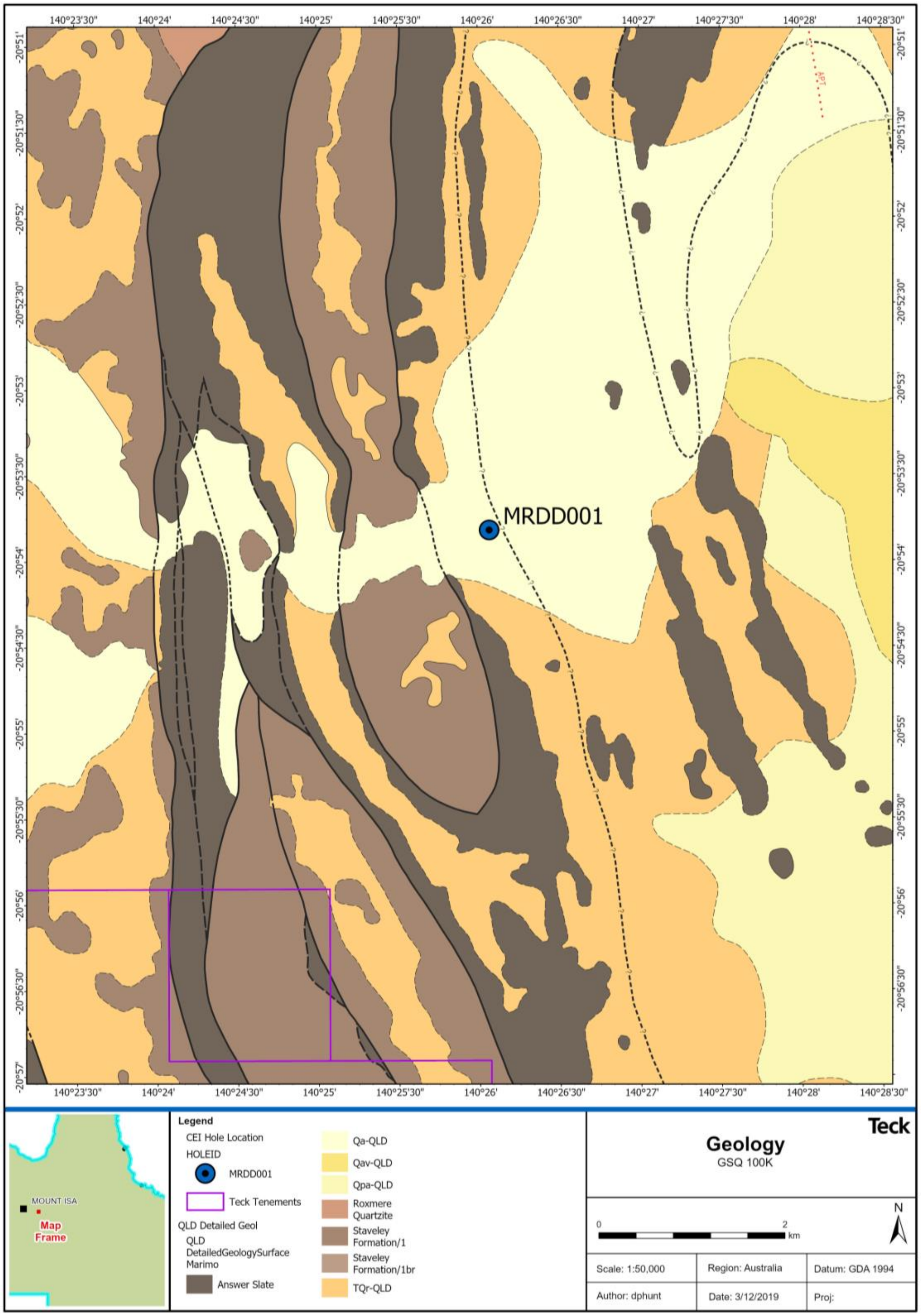

Figure 3: 100K Digital surface geology map of the Marimo basin area

3.3 Metallogenic Context

Copper occurrences are common in the area, but these post-date the time of peak zinc mineralisation. Despite numerous small zinc showings, and widespread geochemical (Pb-Zn) anomalism, there have been no significant zinc discoveries within the Marimo-Stavely belt to date.

The Dugald River Zn-Pb-Ag deposit is located ~75km to the northwest of the Marimo project area. This is a high-grade SHMS style stratiform deposit hosted within metamorphosed slates (Coocerina Fm) of the Mt Albert Group. Mineral Resources are; 63 Mt @ 12.0% Zn, 1.9% Pb, 31g/t Ag (MMG, 2015). The geology of the Dugald River deposit is described in Newbery et al (1993).

According to Foster and Austin (2007), the Young Australia group represents the temporal equivalent of the Mt Albert Group which hosts the giant Dugald River deposit (Figure 4). This provides a strong indication that the Marimo basin may be highly prospective for zinc, which has been largely unrecognised by previous explorers. Figure 5 shows where the Answer Slates sit within a regional stratigraphic compilation. This is significant for Teck, as it shows the Answer slates correlating with the Dugald River deposit host in the Mt Albert group.

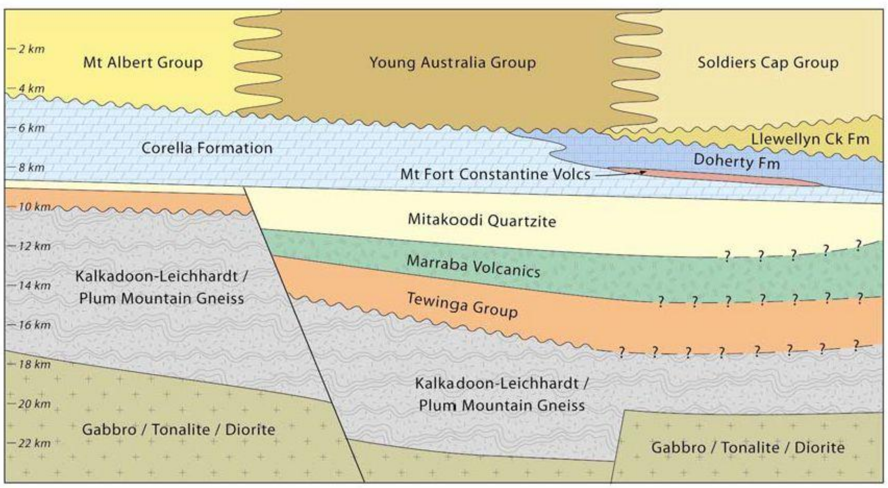

Figure 4: Cartoon of the stratigraphic relationships in the Eastern Succession: from Foster & Austin (2005)

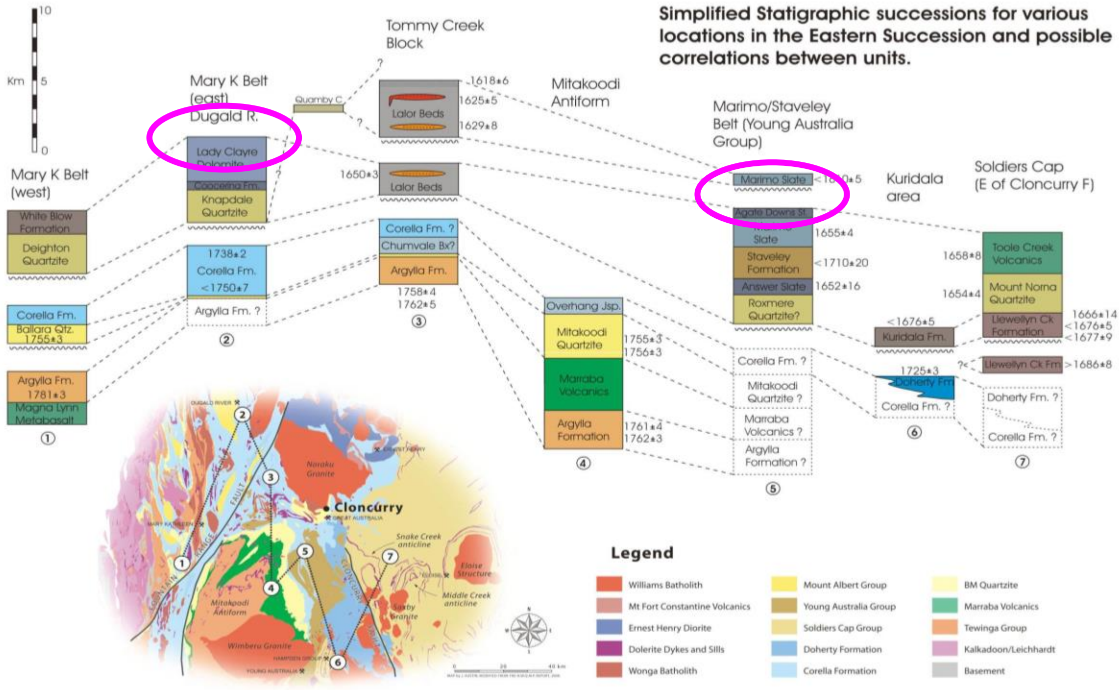

Figure 5: Suggested correlations between simplified stratigraphic columns in the Eastern Succession: from Blenkinsop (2005).

3.4 Geophysics

3.4.1 Airborne Electromagnetics

The Marimo project area is covered by the 1992 airborne electromagnetic (AEM) survey flown by BHP (Kuridala Geotem survey). While this survey is inferred to have only a relatively shallow depth of investigation, the AEM response is observed to map out conductive horizons within the metasedimentary formations of interest. Of particular interest is conductive stratigraphy, outlined in Figure 6 below, which runs ~N-S along the interpreted western margin of the Marimo basin. This conductor is semi-coincident with an anomalous geochemical trend (Zn) seen in the bottom-of-hole RAB data. This conductor may represent a potentially reduced host unit for SHMS style mineralization.

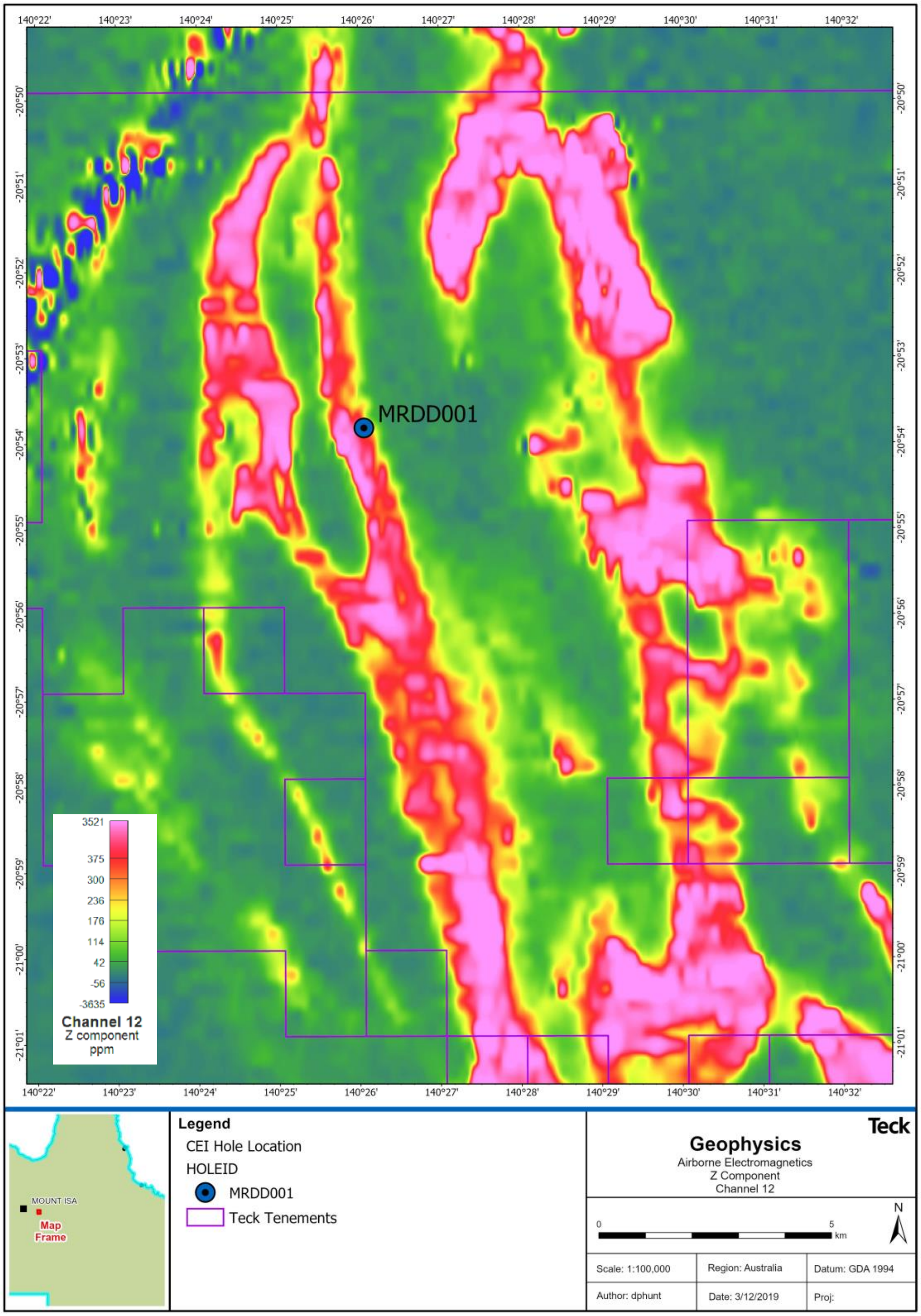

Figure 6: Historic airborne EM image (Z component Channel 12).

3.4.2 Airborne Magnetics

The high resolution airborne magnetic survey flown by the GSQ in 2017 covers the Marimo project area. This survey has produced highly detailed datasets which have been processed and imaged by Teck Australia. Figure 7 shows a magnetic image over the project area. The Marimo basin shows low magnetic amplitudes internally, increasing near the base of the Answer Slates, with contrasting curvilinear highs where the Stavely outcrops. Figure 7 below shows that MRDD001 is collared on a moderate high with outcropping Stavely formation to the west displaying a variable but locally high magnetic signature.

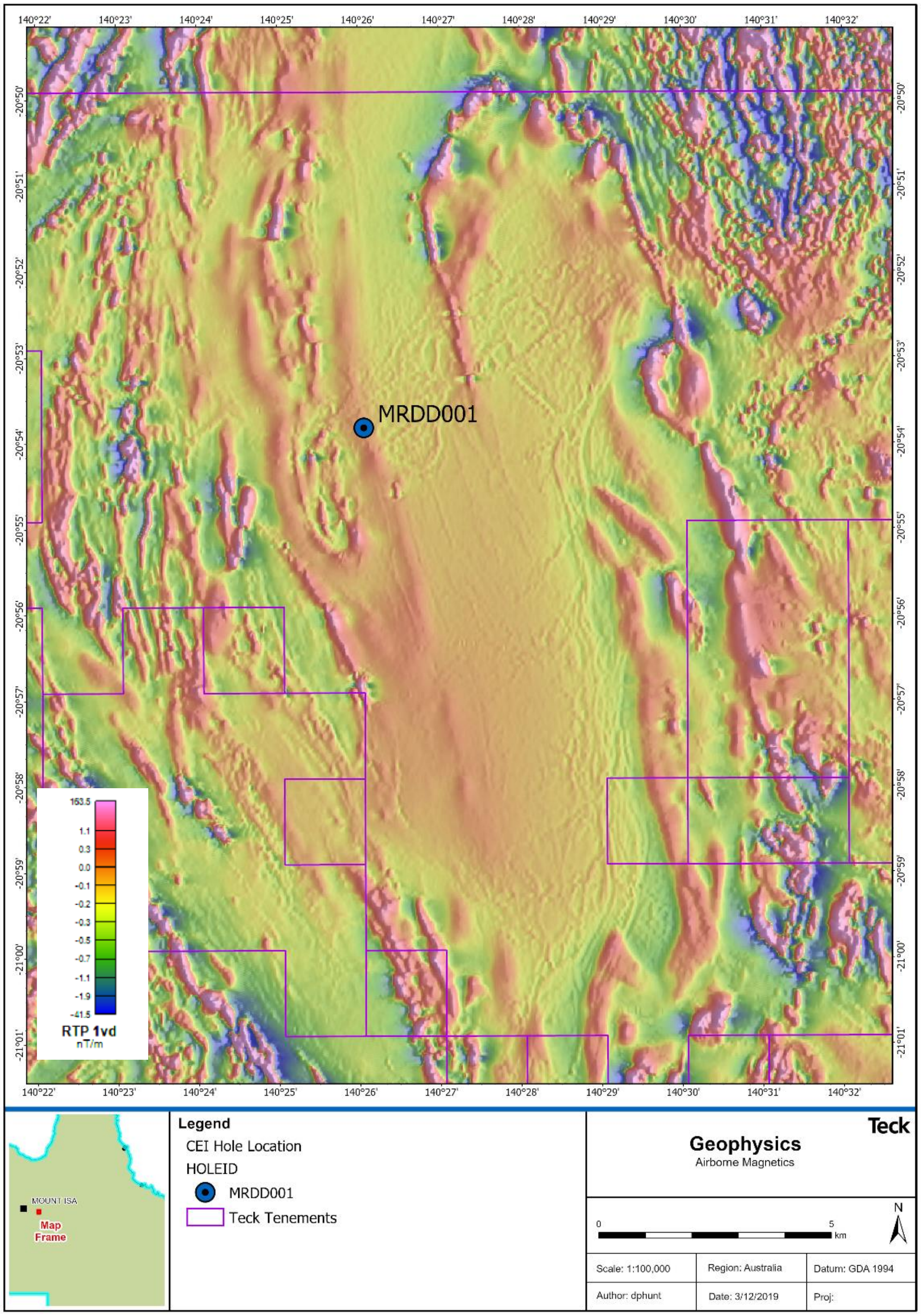

Figure 7: GSQ magnetics image TMI RTP 1VD, East shade

4 Summary of CEI Marimo Diamond Drilling Campaign

MRDD001 was collared on the 7th August 2019 and was completed on the 1st of September 2019. Drilling was completed by Titeline Drilling Pty Ltd using a KL 1600 drill rig. Collar details are specified in Table 1 below. Core logging, geochemical and geophysical analysis and stratigraphic interpretation was completed by Rod King and Darren Hunt with the results of this work presented in Section 5.

The objective of this drill test was to confirm permissive target horizons at explorable depth, reduce structural architecture uncertainty, and confirm that the basin hosts carbonaceous siltstone typical of those units that host Zn-Pb mineral deposits in the Mount Isa inlier and thus warranting follow-up exploration.

Drillhole MRDD001 (Table 1) was designed to test the Western Basin Margin of the Marimo basin drilling through an interval of Lower Answer Slates, targeting the basal contact on the western side of the basin in an interpreted growth position. It was planned to intersect a historical bottom-of-hole RAB Zn anomaly, and a prominent linear conductor evident in historic AEM data

Additional objectives of the drill hole were to investigate the following:

- Relationship of conductivity to pyrite content and whether this provides a vector toward SHMS mineralization.
- Nature of the Zn/Pb/Ba anomalism and whether the aircore anomalism in the target area away from the margin was representing Zn mineralization at depth moving up to the unconformity through fault leakage.
- The petrophysical nature of the units-and thus aiding refinement of magnetic, gravity and EM datasets.

Hole ID	MGA E	MGA N	ELEVATION	DIP	AZI	Final DEPTH (m)	HQ Depth
MRDD001	441176	7689146	226	-55	250	905	451

Table 1: Collar details of Drillhole MRD001

5 Results

Below is a summary of the geological, geochemical and geophysical data collected and significant findings.

5.1 Geology

MRDD001 was collared in unconsolidated red-brown alluvial sands and clays and was cored from surface, to a depth of 905m. Figure 8 shows the conceptual geological cross section which was developed prior to drilling. The trace of the drillhole is overlain, along with zinc (top) and copper (bottom) values. Metasediments of the Answer Slates were intersected to a depth of 782.5 m before passing into metasediments of the Staveley formation. Overall the units were intersected in MRDD001 as expected based on this model.

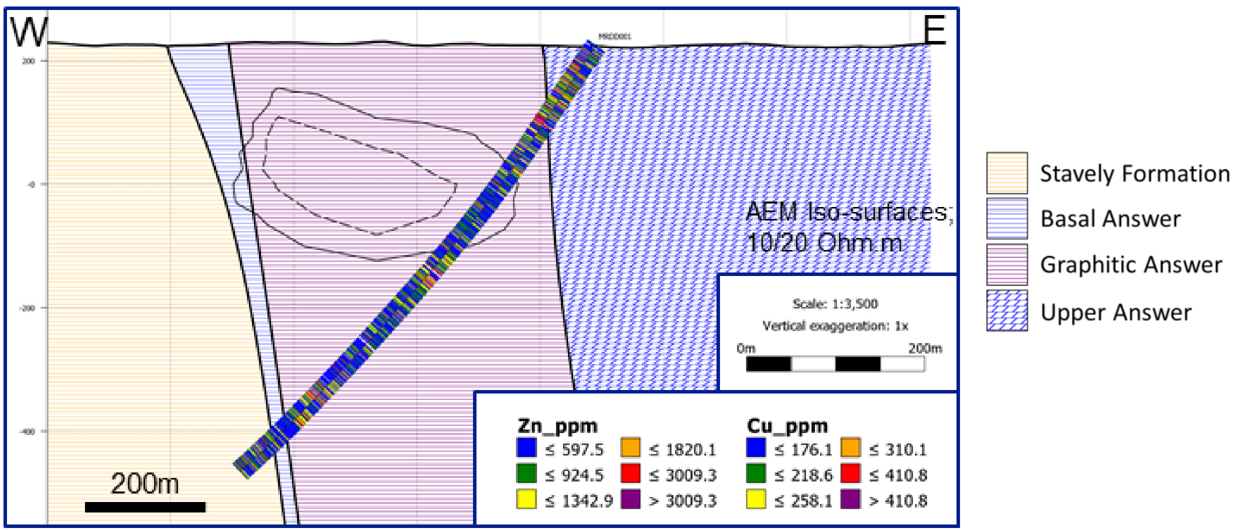

Figure 8: Conceptual geological cross section prior to drilling showing drillhole trace, along with zinc (top) and copper (bottom) values.

Table 2 contains a geological log summary of MRD001 and includes the following broad units which are described in detail under section 5.1.2.

Depth	Stratigraphic Unit
0m – 11.4 m	Alluvial Cover
11.4m – 174.6m	Answer Upper Phyllites
174.6m - 424.8m	Answer Graded Sandstones
424.8m - 628m	Answer Fine-grained Sandstones
628m – 688.7m	Answer Marine Siltstones
688.7m – 782.5m	Answer Carbonate
782.5m – 905m	Undivided Staveley formation

Table 2: Geological log summary or MRD001

5.1.1 Principal Components Analysis

A principle components analysis (PCA) was undertaken on nine key rock-forming elements measured from TruScan on MRDD001. Truscan data is described separately in Section 5.3. The key elements included Al, Ca, Fe, K, Na, P, S, Si and Mg. Assay data are a 1m composited sample from 10cm XRF intervals. The PCA was undertaken using ioGas, version 7.0. The dataset was log transformed and analyzed using a Robust Principal Components Analysis (PCA).

After completing the principle components analysis, core logging was undertaken to capture information about the lithological composition of the stratigraphy with an emphasis on determining contact relationships, styles of sedimentation, sedimentary structure and elements of post depositional alteration, deformation, and metamorphism. Geological classification of rock units was then used for manual domaining of the downhole geochemical data. A graphic summary of this is shown in Figure 9, where two snapshots are shown of the PCA and litho-geochemical domains are presented in different colours and is effective in isolating discrete lithological units. Some key features in Figure 9 include:

- ⇨ 28 samples with incomplete assays that remain unattributed and their distribution can be seen as red intervals
- ⇨ The Staveley Formation is chemically subdivided into three distinct chemical units, which can also be effectively mapped visually in core

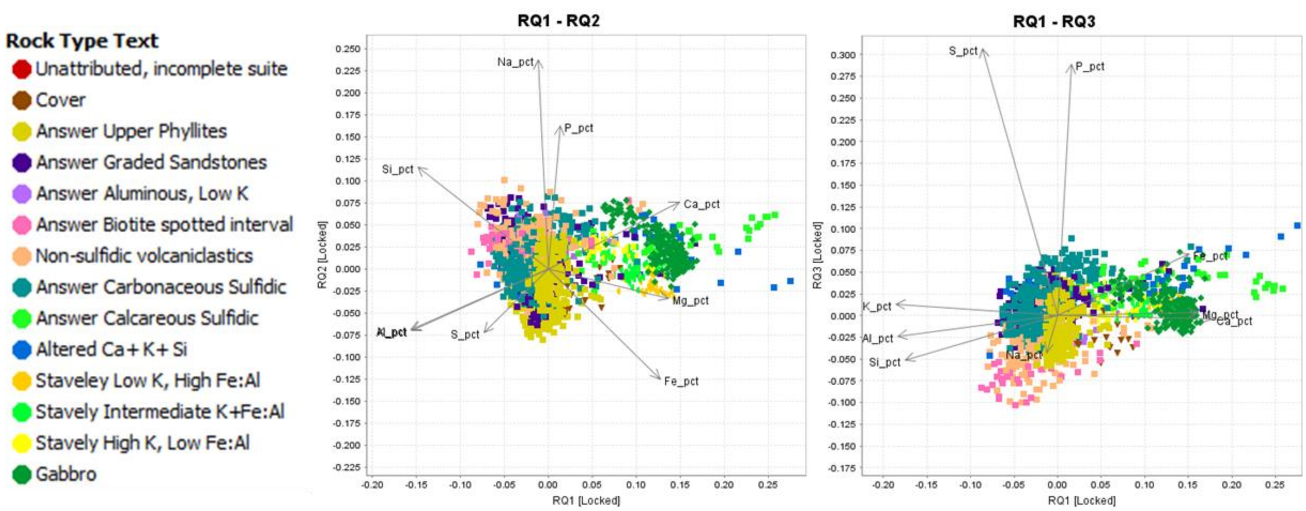

Figure 9: Principle Components 1, 2 and 3, selected for presentation. Each colour represented in the graphic is a geologically constrained geochemical domain and the legend is shown in lithostratigraphic order (left).

A stratigraphic subdivision of the intersected metasedimentary sequence in MRDD001 is shown in Figure 10.

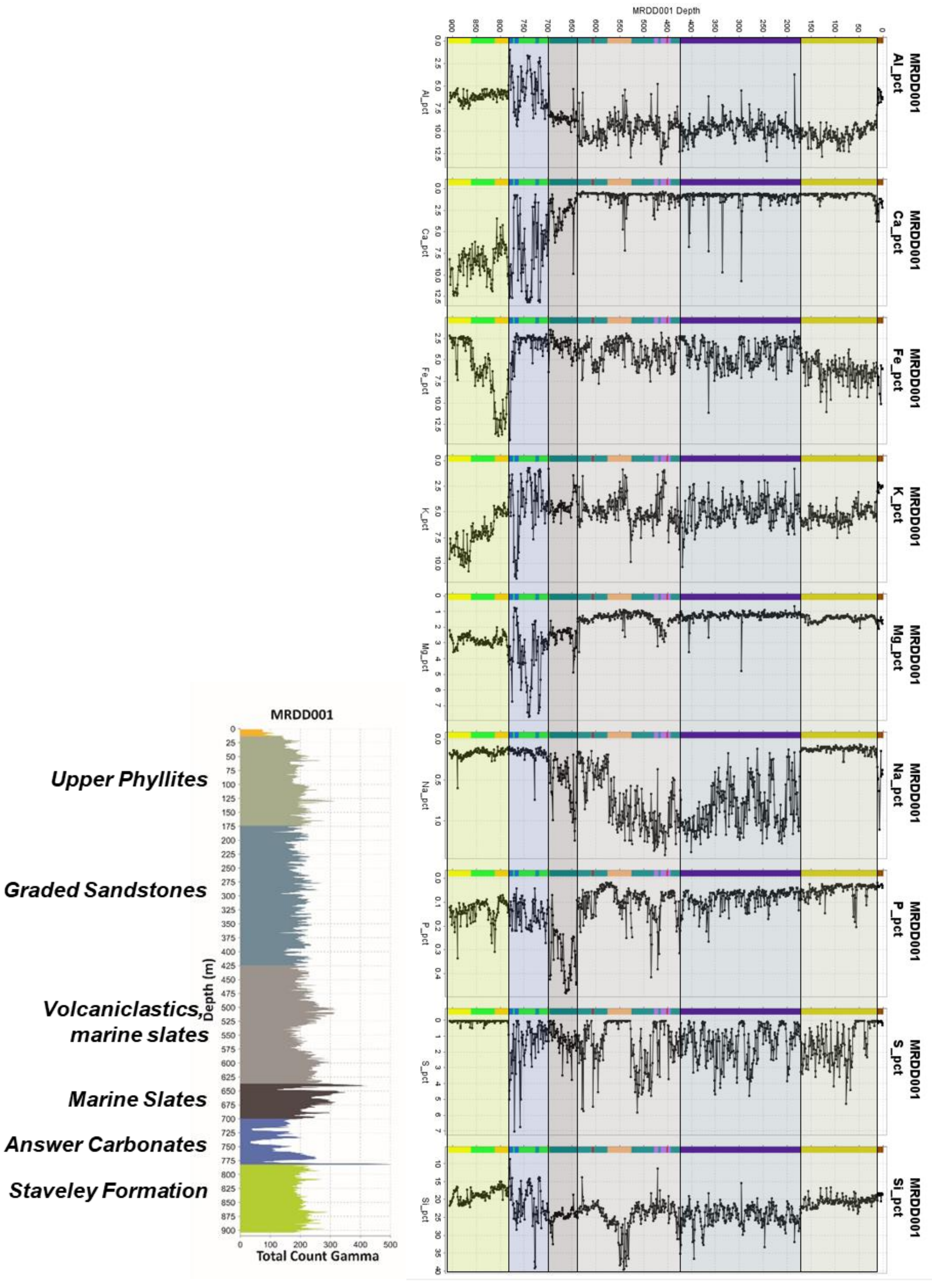

Figure 10: Stratigraphic subdivision of the intersected metasedimentary sequence in MRDD001. On the left hand side of the figure is a lithostratigraphic subdivision based on gamma logs and grouping lithologies and chemostratigraphic units identified through geological logging and principle components analysis. Elemental data follows that same colour coding of the lithostratigraphy but presented with a 50% transparency. The y-axis of each downhole plot shows a colour coded bar which corresponds to the PCA-derived legend presented in Figure 14 above.

Overall, the drillhole was successful in intersecting all target horizons, and at depths close to those predicted from the geological model. The stratigraphy was found to be right-way-up and was not significantly deformed, with most primary sedimentary textures and structures preserved, despite being metamorphosed to greenschist facies. Results presented for MRDD001 are presented below, but are presented from the bottom of hole up, imitating the stratigraphic younging trend.

5.1.2 Stratigraphic Description

5.1.2.1 Staveley formation (905 – 782.5m)

There are three key lithotypes recognized within the Formation, each with conformable and gradational contacts. The lower contact is not intersected in drilling and the upper contact of the Staveley formation with the Answer Slate is not preserved, texturally obliterated by intense alteration and example core photos are presented in Figure 11 with example sections annotated in the text.

The lowermost comprises dolomitic sandstones and lesser beds of sandy dolostones that are variably hematised and chloritic along primary bedding bands and lamellae with localized biotite spotting (D and E) developed in more dolomitic units. Green crystals, (at this time considered to be epidote) are common throughout and may be rimmed by a pale alteration halo against the green and reddish host lithology (F and G). The epidote crystals may be variably hematised and vary in colour from deep glassy green to pale yellow-green. Thick pink carbonate veins are common throughout this lower Stavely lithology (H). There are no clear sedimentary structures present to give strong indications of a depositional environment; bedding is commonly wavy, non-parallel and discontinuous and may be chaotically bedded while laminated dolostones (D) show indications of tidal influence or biogenic carbonate cementation but at no time were intertidal or emergent. This lithology then passes gradationally into more laminated dark cream to tan-coloured sandy dolostones and variable hematised and weakly chloritic dolomitic sandstones (C) which do not feature the distinctive biotite spotting or epidotization of the lowermost unit. Sedimentary structures are very similar to the underlying unit but there is some textural evidence suggesting stromatolitic structures indicating relatively shallow water to tidal flat facies (B). The uppermost lithology of the Staveley Formation is a cream to grey coloured dolomitic sandstone with green crystals dispersed along bedding horizons which are laminated to very thinly bedded (A). this unit becomes progressively more altered and texturally obliterated by carbonate, silica and sulfide alteration with the main sulfide being pyrite and pyrrhotite, while minor blebs of chalcopyrite occurs sporadically throughout the altered zone (Figure 12). This style of alteration occurs from 774.1 to 784 m, with the upper Staveley Fm contact occurring somewhere within that zone.

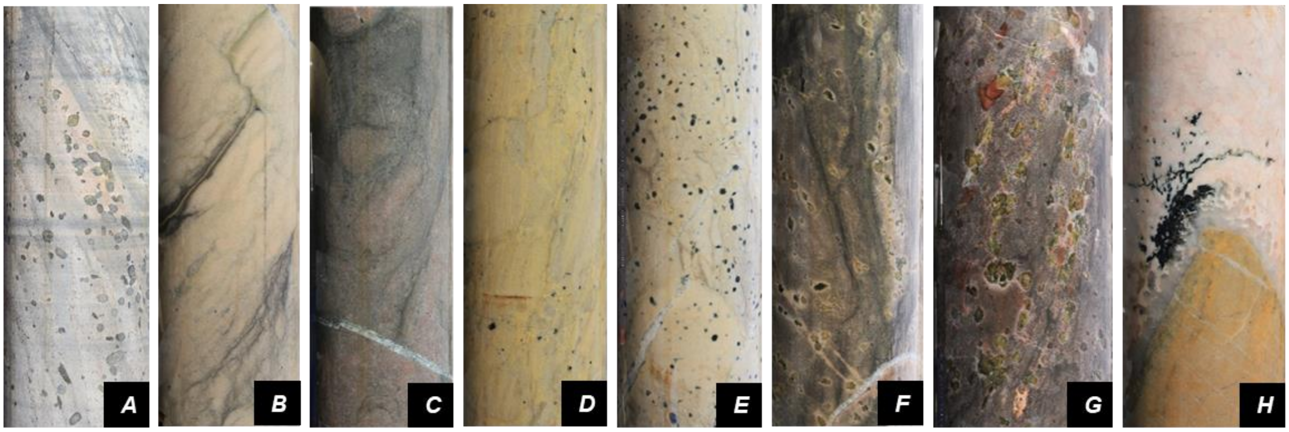

Figure 11: Synopsis of the lithologies found within the Staveley Formation in MRDD001. Stavely Unit 1: Low K, High Fe:Al, A: MRDD001-782.3m-Lower Contact-zone of intense alteration with glassy euhedral crystals py-po with minor garnet and biotite-intense carbonate and silica alteration zone. Staveley Unit 2: Intermediate K+Fe:Al, B: MRDD001-830.8m-dolomitic sandstone weakly clay altered, C: MRDD001-847.9m-hematitic and chloritic sandy dolostone. Staveley Unit 3: D: High K, Low Fe:Al, D: MRDD001-868.1m-laminated dolostone, E: MRDD001-870.3m-biotite chlorite spotted carbonate, F: MRDD001-873.2m-coronas around epidote crystals, G: MRDD001-892.2m-hematitic and coarse grained epidote in dolomitic sandstone or sandy dolostone, H: MRDD001-903m-pink carbonate and quartz vein cross cutting a dolomitic sandstone or sandy dolostone.

Figure 12: Altered zone at the top of the Staveley Formation. Alteration is texturally destructive and features strong carbonate replacement and lesser silicification. Sulfidation is associated with carbonatization with key sulfide species being pyrite, pyrrhotite and minor chalcopyrite (pictured).

5.1.2.2 The Answer Slate (782.5 – 11.4m)

The Answer Slate in MRDD001 is stratigraphically broken into 5 major lithostratigraphic groups, with each containing a range of interbedded lithologies. Each lithostratigraphic grouping is based on sedimentary composition, sedimentary structures, geochemical compositions (not easily determined by eye) and downhole physical property data, principally gamma logs.

5.1.2.3 Answer Slate: Carbonate Unit (782.5 – 688.7m)

The lowermost lithology is an interbedded carbonate and dolomitic siltstone-sandstone package (Figure 13 A, D). The basal contact with the Staveley Formation is not preserved but is comprised of generally non-sulfidic, wavy parallel to discontinuous parallel laminated stylolitic carbonates and dolomitic siltstones Figure 14. The unit is transgressive, with a continuous fining upward trend expressed lithologically as it becomes less calcareous and increasing shaley and carbonaceous. Two distinctive carbonate beds (Figure 13 B) are present at ~715-720 and ~725-730 m depth, producing distinctive gamma lows. Above these beds, the unit becomes decreasingly carbonatic and increasingly sulfidic, containing both pyrite and pyrrhotite which is typically partially replacing early carbonate nodules.

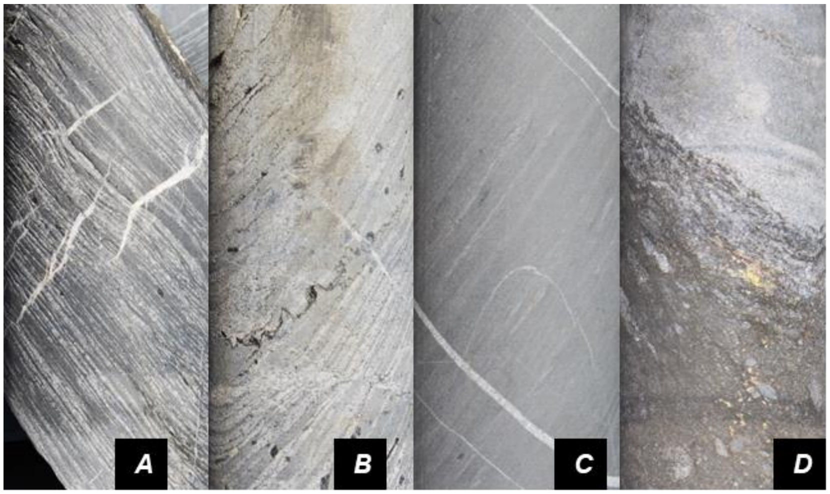

Figure 13: Answer Slate Carbonates. A: MRDD001-716.6m-carbonate laminated siltstone, B: MRDD001-717.7m-carbonate beds, C: MRDD001-735.7m-laminated sandstone weakly pyritic and weakly carbonate cemented, D: MRDD001-780.2m-faulted and brecciated and sulfide mineralized zone po py cpy

Figure 14: Interval of silicified and weakly pyritic carbonate developed within the basal Answer Slate.

5.1.2.4 Answer Slate: Marine Siltstones (688.7 – 628.0m)

This lithological suite of the Answer Slate is a part of a conformable and gradational trend into quiescent deep water marine conditions from the underlying transgressive, carbonate-rich lithology Figure 15. The marine siltstone and phyllites are typically very thinly laminated to massively bedded siltstones and phyllites. This unit is also characterized by a pronounced gamma high and is interpreted to be part of the late marine transgression, contain the maximum flooding surface and early marine regression. At the highest gamma peak, the unit is dominantly micaceous phyllite and can contain biotite books up to 5 - 7.5 mm in size. They are weakly calcareous at the base (Figure 15 B) but trend into carbonaceous and sulfidic toward the top, with up to 10-20% laminated or banded pyrite or pyrrhotite in narrow intervals. Sulfides may also be finely disseminated or medium grained blebs to 2-3 mm (Figure 15 A). Key chemical characteristics of this unit are Aluminous (+high K) sulfidic (High Fe+S), pronounced phosphorous high which decreases up sequence along with elevated Ca, Mg, which also both decrease up sequence and are inversely correlated with Na which increases systematically up sequence to the upper contact. The depositional environment is interpreted to be relatively quiescent, below storm wave base and deep marine

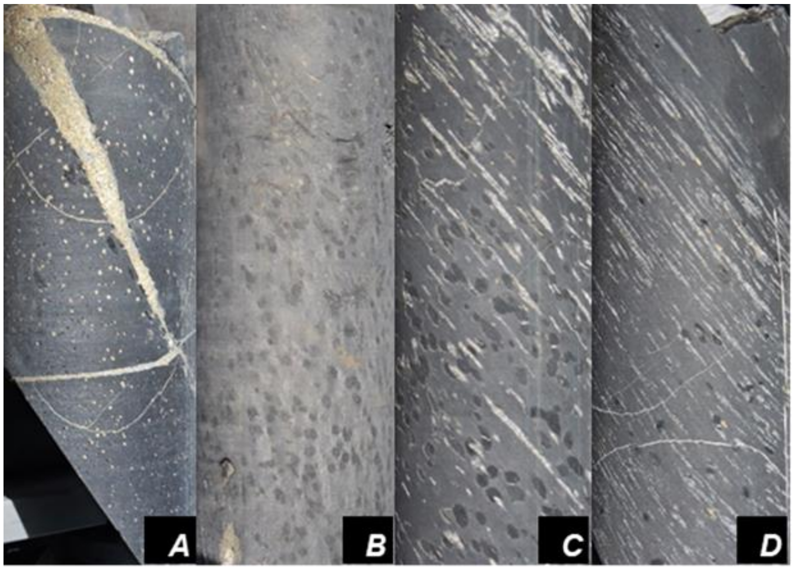

Figure 15: Answer Slate Marine Siltstones and Phyllites core examples. A: MRDD001-630.2m-graphitic phyllite with sulfide blebs and veins and biotite books, B: MRDD001-672.4m-carbonaceous and biotitic phyllite, C: MRDD001-704m-gradational contact of biotitic phyllite trending downhole into lenticular nodule bearing and ptygmatic carbonate vein bearing siltstone, D: MRDD001-712.9m-pyritic and carbonate altered siltstone.

5.1.2.5 Answer Slate –Fine-grained Sandstones (628.0 - 424.8m)

Stratigraphically above the finely laminated carbonaceous and sulfidic marine shales is a conformable, coarsening upward sequence of distinctly interbedded marine shales and siltstones becoming dominated by graded sandstone beds Figure 16. There is a distinct shift sedimentary structures from the base to the top of the unit. Near the base of the unit, normally graded grey sandstone beds are interbedded with or may fine into laminated sulfidic siltstones (Figure 16 G). These beds are interpreted to be turbiditic and may originate from localized slumps or slope failures as rounded to sub-angular clasts of semi-lithified carbonaceous siltstone are commonly found within these beds (Figure 16 C & D). Sedimentary features associated with these beds include scours, cross bedding, flame structures (Figure 16 A), slump folding (Figure 16 B), load casts, ball and pillow, rip-up clasts (Figure 16 F) with more thick graded beds above. Geochemical features of this unit include localized calcium concentrations associated with calcareous, stylolitic graded sandstones, a step-wise increase in K concentrations upsequence, progressive increase in Na concentrations and generally an inversely correlated S:Si relationship where sandy beds are generally non-sulfidic, while phyllite dominated interbeds (Figure 16 H), are more sulfidic. The sedimentary environment for this horizon is interpreted to be transitional from a mid-to-outer shelf environment, to increasingly shallower water, mid-shelf, pro-delta setting where slope failures may be common become a significant contributing sediment source to these downslope deposits.

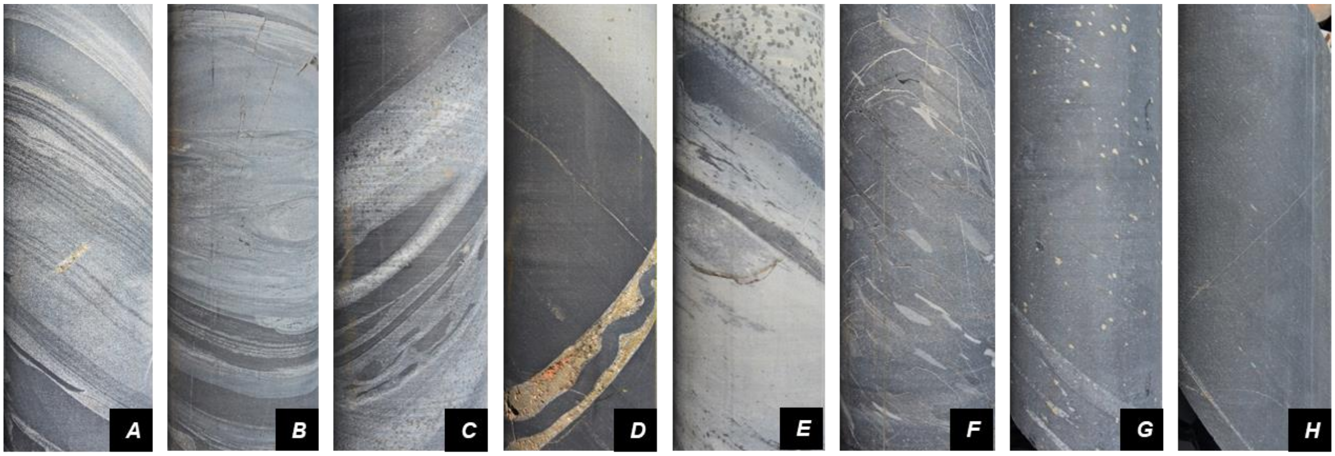

Figure 16: Core photographs showing a range of lithologies and sedimentary features that are characteristic of the Answer Slate Graded Sandstone Unit. Photos are arranged left to right, shallowest to deepest. Overall this is a coarsening upward sequence. A: MRDD001-426m-laminated sandstone and siltstones with flame structures, B: MRDD001-463.7m-convolute bedding drag folding and soft sediment deformation, C: MRDD001-493.1m-turbiditic sandstone bed, D: MRDD001-517.6m-turbidite bed? Overlying a sulfidic black siltstone with py-po vein, E: MRDD001-529.6m scour marks at the top of an interpreted tuff, F: MRDD001-551m-ripups clasts of carbonate in a matric of poorly sorted sandstone-siltstone, G: MRDD001-589.4m-sulfidic black siltstone, H: MRDD001-625m-dark grey, possibly graphite-bearing phyllite.

5.1.2.6 Answer Slate: Graded Sandstones (424.8 – 174.6m)

The sandstone package continues upwards into a subdivision of the unit termed the Graded Sandstones Figure 17. This subdivision is based on an emerging lithology that dominates this part of the sequence and features a dark black to blueish hued lithic sandstone to siltstone that forms very thick, normally graded beds to 3-5 m thick (Figure 17 E). These beds are typically interbedded with other lithologies including light grey laminated sandstones or darker grey siltstones, with bands of sandstone (Figure 17 D). With the exception of these very thick sandstone beds (Figure 17 A), sedimentary structures are very similar to the underlying sequence and features scours, cross bedding, flame structures (Figure 17 D), slump folding (Figure 17 C), overturned cross beds Figure 17 and Figure 18, load casts, ball and pillow, rip-up clasts (Figure 17 B), along with intervals of finely laminated siltstones and sandstones. Overall the unit is conformable with both the underlying and overlying stratigraphic units with no significant difference in the gamma logs, which indicate an overall aggradational plot trend. The base contact of this lithology is coincident with a change from HQ to NQ rod sizes and where the core diameter changes is ~10cm of mud containing rounded clasts of rock. It is unclear if this represents a late, muddy cataclasite (fault) or simply some drill cuttings that have settled at the bottom of the hole and later cored with NQ.

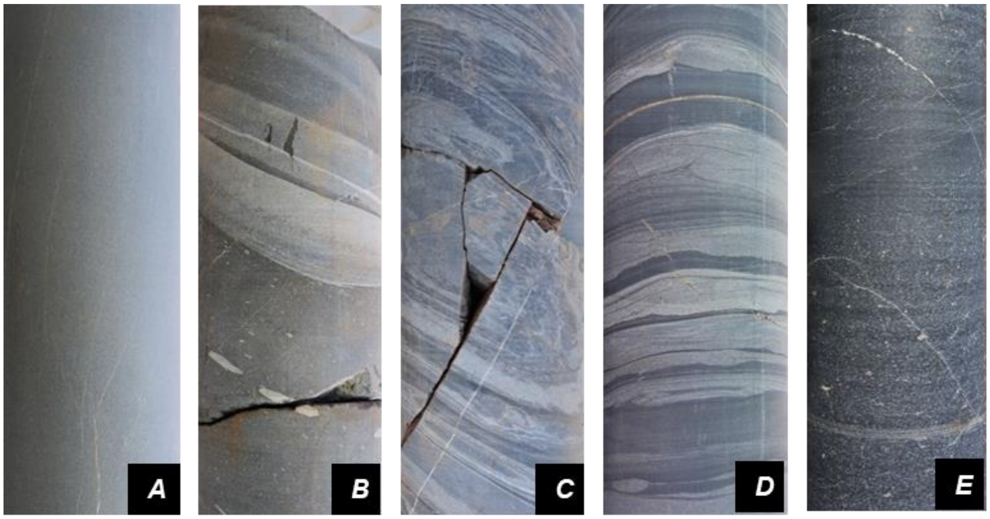

Figure 17: Photographs of core highlighting the range of lithotypes and sedimentary textures within the Answer Slate Upper sandstone package. A:MRDD001-265.0m-massive to thick bedded sandstone, B: MRDD001-193.6m-argillaceous (consolidated tuffs?) rip-ups of black siltstone within light grey wavy-non parallel normally graded sandstone, C: MRDD001-213.2m-load cast or slump fold bounded by thick bedded sandstone - intraformational folding - consistent bedding above and below no stratigraphic repetition, D: MRDD001-319.6m-Flame and ball and pillow structures in thin bedded to laminated sandstones and siltstones, E: MRDD001-424m-thick bedded sulfidic siltstone poorly sorted with sandy grained.

Figure 18: Photograph of intraformational overturned cross stratification within interbedded, normally graded sandstones. This soft sediment structure is interpreted to arise from current shear and scour of a partially liquefied sand bed.

5.1.2.7 Answer Slate: Upper Phyllites (174.6 – 11.4m)

The uppermost sequence intersected in MRDD001 is a unit of the Answer Slate labelled the Upper Phyllites (Figure 19). The upper contact is unconformable with the overlying alluvial cover, while the basal contact is conformable on the underlying sandstones and comprises finely laminated to thin bedded, normally graded sandstones, siltstones and phyllites (Figure 19 C). These sediments typically contain even parallel to wavy non-parallel laminae, low angle cross stratification (Figure 19 B), rhythmic layering (Figure 19 A) and are moderately sulfidic throughout (Figure 19 C & D), generally 1-5%. The depositional facies is interpreted to be below storm wave base, pro-deltaic, deep marine.

There is a pronounced geochemical shift from the underlying sandstones particularly in Na where there is a rapid decrease in the element, whereas P, K, Mg and Ca typically show a continuous, gradational decrease and an increase in S, Al and K. Results from TruScan indicated that this unit was strongly anomalous in zinc, silver and lead with localized 1m intervals returning values up to 3% Zn (Figure 20). Follow-up detailed logging revealed that at the intervals delineated in TruScan data, core was typically broken in the core boxes, and the brecciated core contained numerous thin, single and branching veins containing carbonate, quartz and sphalerite Figure 21. This vein hosted association with brecciated core is indicative of late-stage faulting, and does not show obvious links to fine-grained bedding parallel mineralisation typical of northern Australian style SHMS deposits.

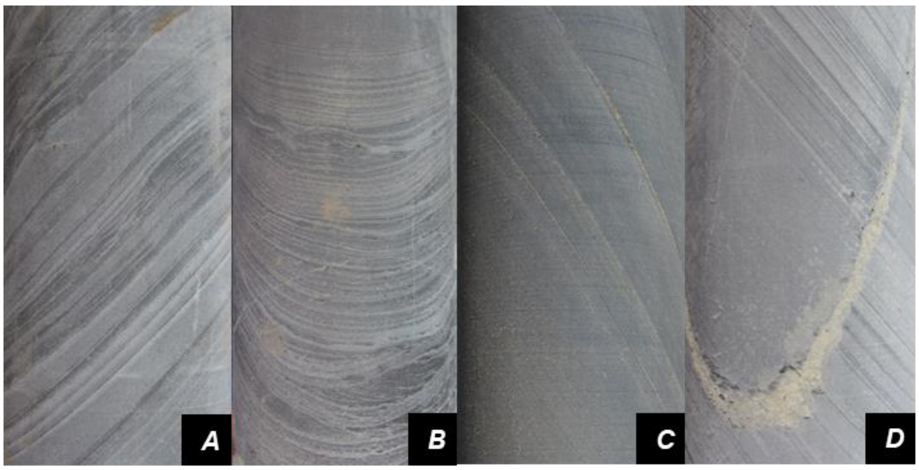

Figure 19: A: MRDD001-36.5m-slightly non-parallel rhythmically bedded biotitic phyllite, B: MRDD001-48.9m-Wavy to non-parallel and low angle cross stratification in phyllite, C: MRDD001-65.4m-planar laminated sulfidic phyllite, D: MRDD001-72.4m-thin planar laminated sulfidic phyllite and vein offset by 20cm

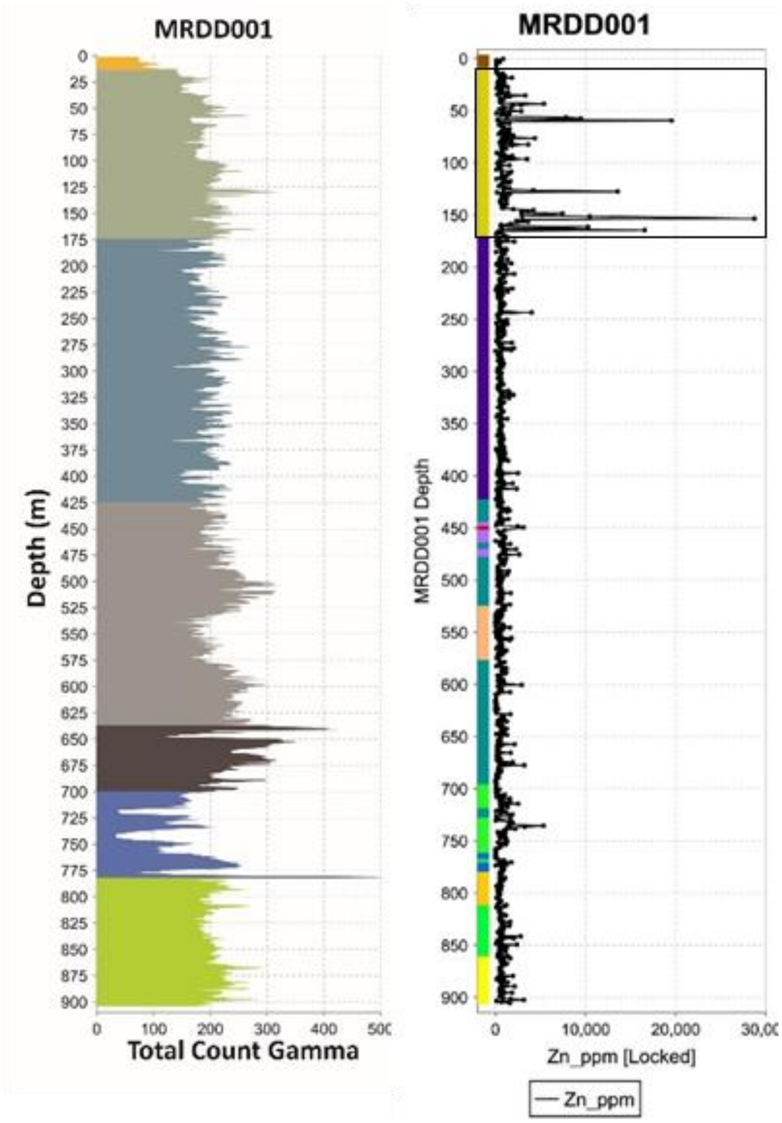

Figure 20: Stratigraphic subdivision on gamma curve and a geochemical log, showing Zn anomalism in TruScan data.

Figure 21: Sphalerite vein in laminated micaceous phyllite

5.2 Geochronology

Geochronology data are yet to be received and will be provided separately in an amended Final Report.

5.3 Truscan Data

XRF analysis and photography was done by contractor Boart Longyear on the MRDD001 core using their proprietary TruScan system. This was done in lieu of traditional geochemical assays, by arrangement with the GSQ. The benefit of TruScan is the high resolution that can be achieved in comparison with traditional assays. Associated high resolution photos allow interpretation on the lithogeochemical data to be carried out in higher detail. See Section 5.1.1 for a principal component analysis which uses the Truscan data in geological interpretation.

5.3.1 XRF Geochemical Analysis

The Truscan system allows measurement of elemental concentrations for Ag, Al, As, Bi, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Nb, Ni, P, Pb, Rb, S, Sb, Se, Si, Sn, Sr, Th, Ti, U, V, W, Y, Zn & Zr.

XRF samples are taken on competent core at an interval of 10cm. Data is composited to 1m for delivery and presentation.

A TruScan log of selected economically significant elements is shown in Figure 22. An interval of elevated Zn and Ag (140-170m) is the most significant feature on this log, although several lesser spikes of anomalism are present deeper in the hole.

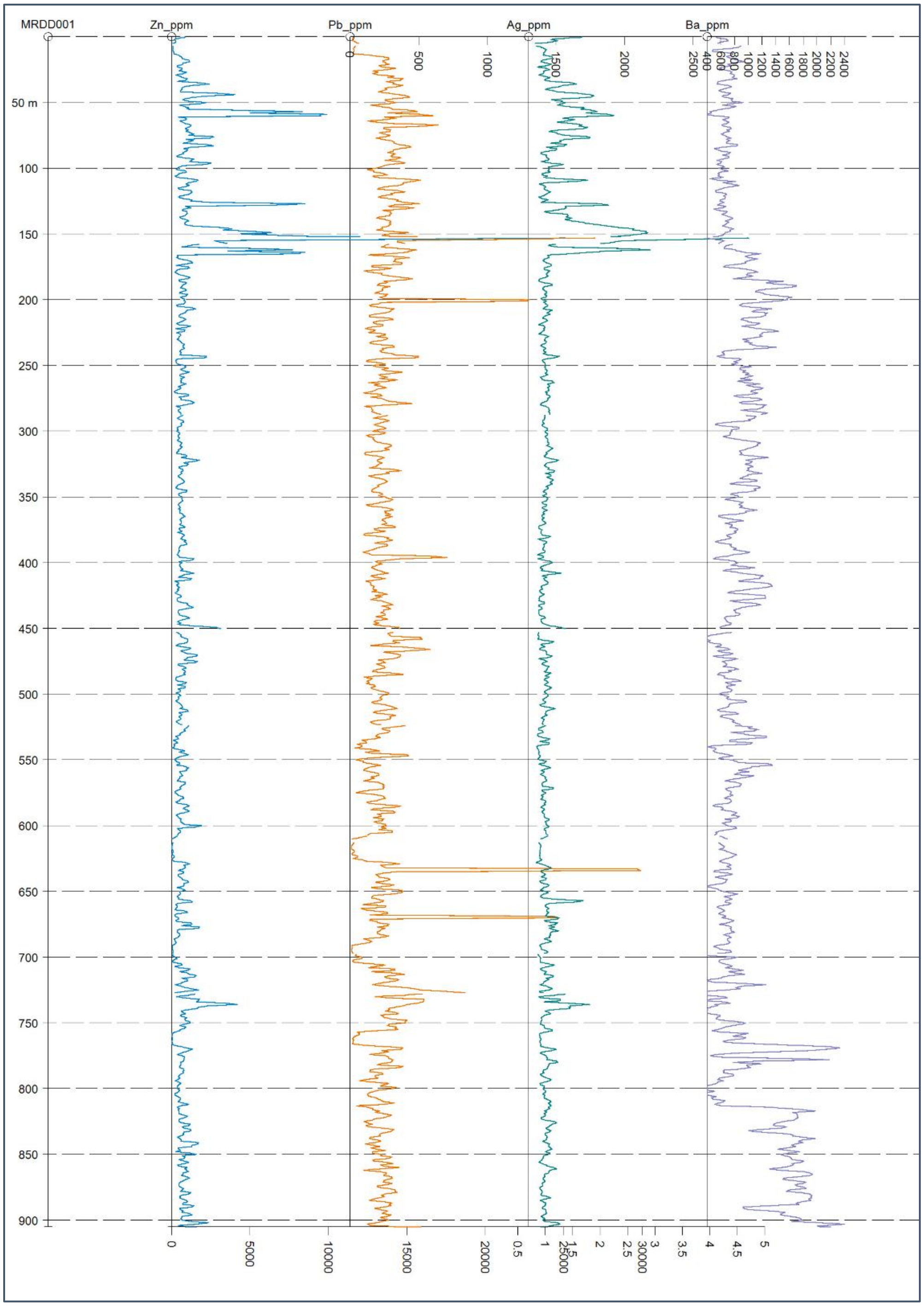

Figure 22: Selected elements from Truscan analysis (1 metre composite data)

The TruScan data has allowed us to interpret geology in fine detail. In addition to identifying a wide zone of shallow Zn/Pb anomalism the data has sufficient resolution to allow its use as an aid in lithological classification.

5.3.2 Photographs

The Truscan system takes photographs using a consistent LED light source. Wet and Dry photos of whole core trays are included at medium resolution as well as stitched photos.

High resolution photographs are taken at each XRF analysis spot at an interval of 10cm. These hi-res photos are stitched to give a detailed image of each core tray row. One of these images is shown below in Figure 23.

Figure 23: TruScan high resolution photograph example. HQ core, 347m depth.

5.4 Downhole Geophysical Logging

MRDD001 has been surveyed with a standard suite of wireline logs for physical property data. The objective of the survey was to characterise the intersected stratigraphies with particular reference to potential hosts for Zn mineralisation.

5.4.1 Survey

The wireline survey was carried out by Qteq over the period 26th September – 2nd October 2019. The logs were run in open hole while the rig was still on site. The following downhole tools were used:

- Acoustic Formation Imager
- Formation Sonic Sonde (full waveform)
- Induction Conductivity
- Magnetic Susceptibility Sonde including magnetic deviation
- Dual Density Combination Sonde (Cs137) including caliper and guard resistivity

(all tools have natural gamma detector as standard)

The data was delivered as a composite LAS format (ASCII) file containing all of the physical property fields. The Acoustic Imager data was presented as WellCAD project files (WCL). All of the data was plotted digitally and the plots delivered in PDF format as 1:200 scale strip logs.

5.4.2 Results

MRDD001 was accessible with downhole tools to ~860m depth. At this point there was a minor blockage in the hole, which was exacerbated by the shallow dip at the end of the hole ~ 42°. The different tools were all stopped at various depths near to this point. Afterwards, the natural gamma dataset was extended to end-of-hole, using handheld spectrometer measurements taken on core at 1m intervals.

The inductive conductivity tool used (Century 9512) was found to be not fit for purpose in this context, because it had an upper response limit of ~2,200mS/m. For this particular geological environment, this limit was too low and resulted in large parts of the conductivity dataset for MRDD001 being saturated (clipped at 2200), meaning that the data is of little use for analysis of conductivity.

The magnetic deviation data was edited by the contractor to exclude azimuth data which was affected by highly magnetic stratigraphy. The deviation data from the magnetic tool was compared with the much sparser data from the reflex single-shot camera measured by the drillers (every ~30m). The datasets compared favourably, with only minor differences overall between the two deviation datasets.

A single-page petrophysical strip log has been created by Teck Australia and is shown below in Figure 24).

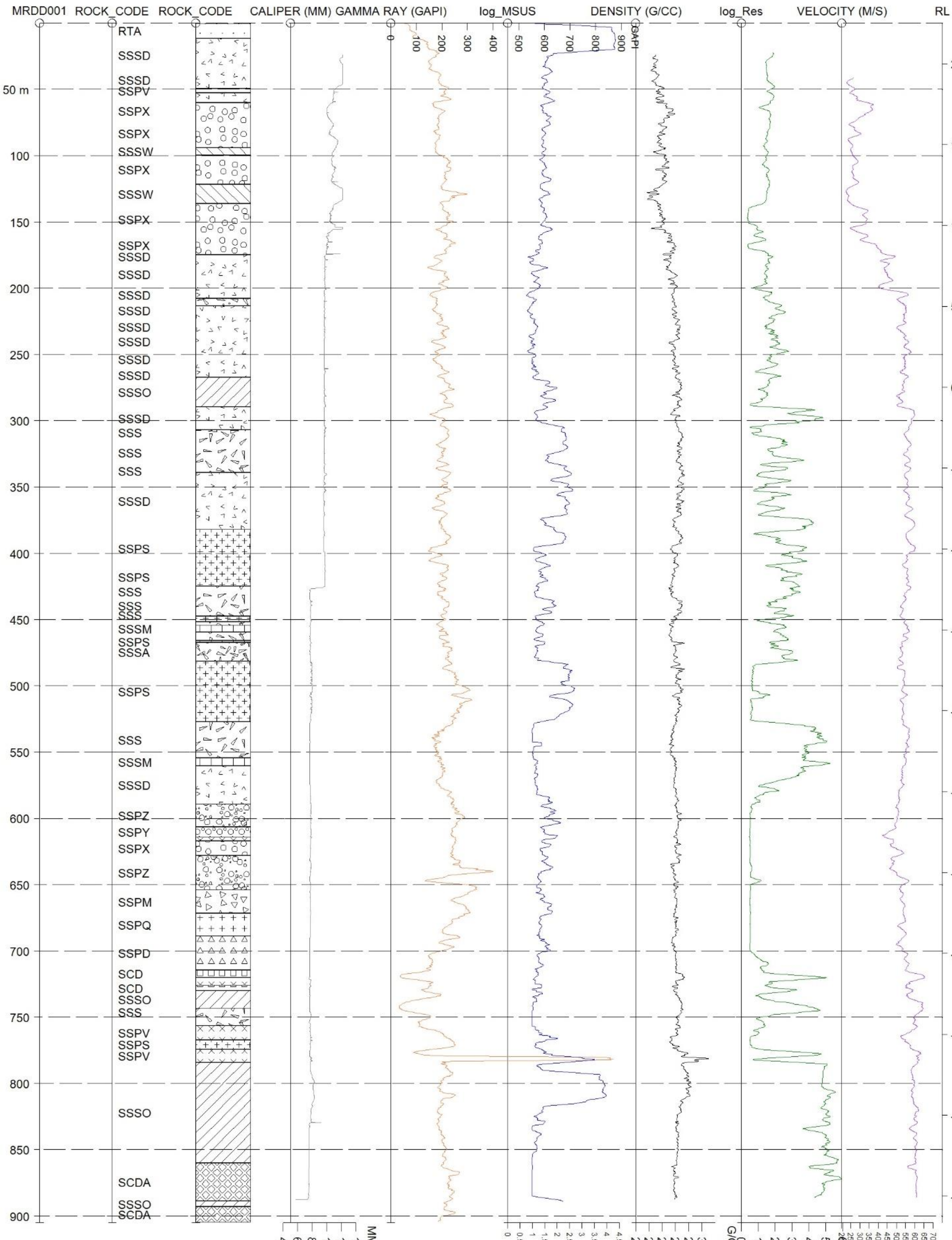

Figure 24: Composite strip log of MRDD001 wireline geophysics results.

The Acoustic Imager data is obscured within the surface HWT casing, to a depth of ~28m. Below this point there is continuous coverage of acoustic image down to ~882m. The image quality for this borehole is average. The traveltime plot largely lacks sufficient contrast to be useful for structural interpretation. The amplitude data is noisy for the majority of the hole and is affected by vertical 'shadow zones' which are an artefact of logging probably caused by poor centralisation of the sonde. Despite these problems, there are discernible sinusoidal features evident in the data to varying degrees throughout the hole. Figure 25 shows an example of the amplitude log.

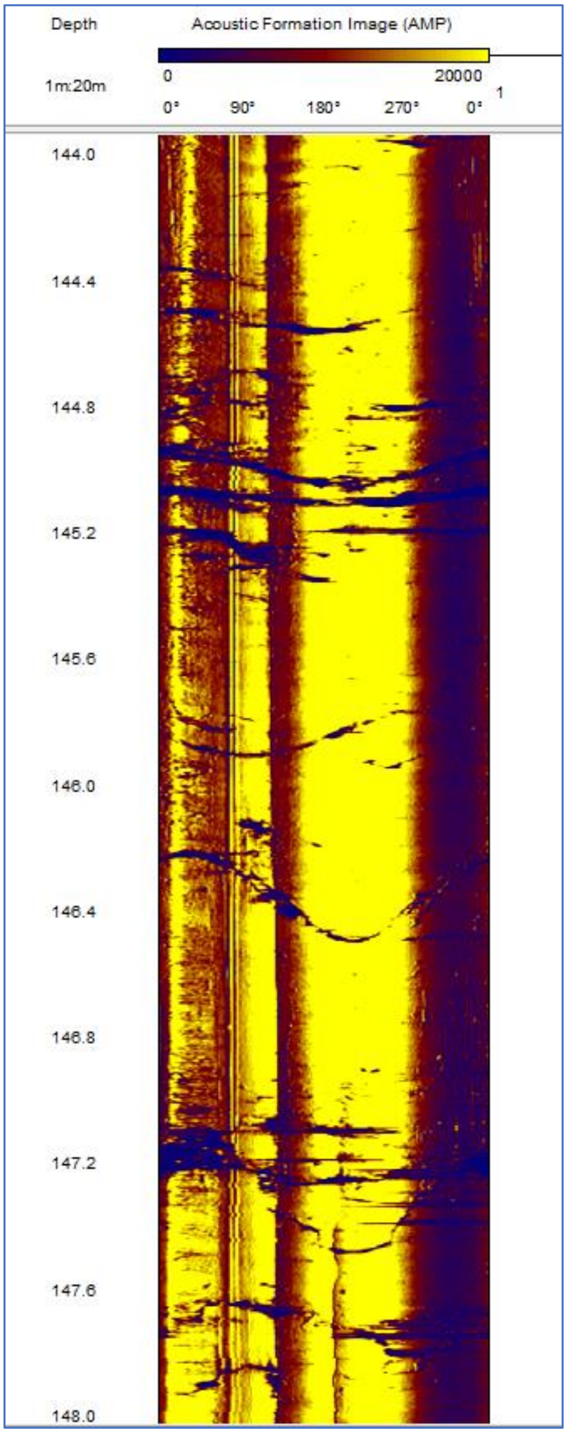

Figure 25: Example of acoustic imager interval from MRDD001, showing several different sinusoidal (planar) features oriented at various angles to the borehole.

The acoustic images have not been interpreted or picked in detail. Preliminary investigation indicates that the sinusoidal features predominantly reflect structures and veins, and not bedding. The major benefit in having access to acoustic imager data is the ability to characterise major faults. Drilling through major structures usually results in core loss, or return of broken/milled core fragments so information on fault aperture and orientation can only be determined via downhole imaging. The caliper data in the wireline logs also assists with ranking the significant of fault intersections. The MRDD001 acoustic image indicates significant fault zones at 59.6m, 155m, 174.4m, 726m, 765m. One of these structural zones (174.4m), which corresponds to a lithological boundary is shown in Figure 26.

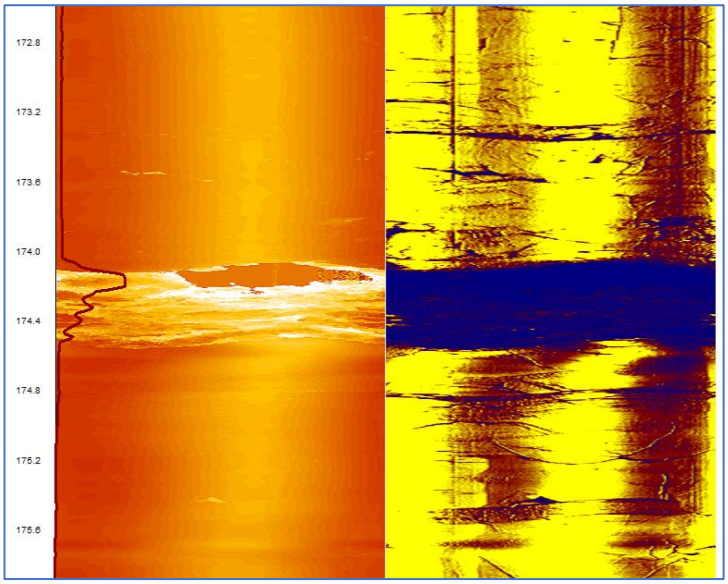

Figure 26: Travel time (left) and amplitude (right) images of a major structure, with caliper trace.

5.4.3 Wireline Interpretation / Discussion

The low velocity layer at the top of hole is indicative of deep weathering altering rock texture and porosity within the zone of oxidisation. Otherwise there are no significant features evident in the sonic velocity log. The density log also exhibits low values at shallow depths, which increases at ~140 – 200m downhole, also interpreted to be caused by deep weathering processes.

The most significant feature in the physical property logs is the Stavely Formation contact at 782.5m, which is a major geological boundary and unconformity. This contact is indicated strongly by the gamma, magnetic susceptibility, density and resistivity logs.

The narrow gamma peak at 781m is a significant feature on the wireline logs. With an amplitude of over 2,700 API units this response is much larger than expected within a normal sedimentary sequence. The gamma spike is interpreted to be caused by locally high Uranium content. There are elevated levels of Uranium in the TruScan XRF data, although they do not seem to be as anomalous in this dataset as in the wireline natural gamma. This gamma spike is likely indicating a redox boundary near the contact between Answer and Stavely stratigraphies.

Wireline density increases to over ~3g/cc in a narrow zone at the base of the Answer stratigraphy, just above the Stavely contact at ~775-785m depth. The rocks within this interval are intensely altered with a high sulphide content. This high density zone also corresponds with a discrete magnetic susceptibility peak and a resistivity low. The density falls sharply as the hole transitions into Stavely carbonates.

The strongest magnetic susceptibility values are seen at the top of the Stavely stratigraphy, between 790 and 815m. This mag-susc anomaly falls within a broader zone of high iron content (XRF) between 770-860m with Fe up to ~15%. Pyrrhotite appears to be largely absent in this interval. The source of this magnetic anomaly is interpreted to be hydrothermal fine-grained magnetite within the transition zone. Regionally the Stavely formation is elevated and highly variable in magnetic response. This wireline feature is characteristic but not necessarily diagnostic of the upper Stavely contact.

There are four zones within the Answer slate stratigraphy in MRDD001 that display low values of resistivity (high conductivity). These may be associated with carbonaceous or sulphidic lithologies which could represent possible hosts for Zn mineralisation.

- ⇨ The low resistivity zone at 140 – 170 metres downhole corresponds to the highest Ag and Zn values in the XRF (TruScan) dataset, making this a significant target of interest. The low resistivity is due to pyritic and carbonaceous content in black siltstones.
- ⇨ Between 480m and 525m, pyritic and carbonaceous siltstones interbedded with thin sandstone layers (with moderate pyrrhotite veining) give rise to another resistivity low. This zone corresponds with a subtle gamma peak and moderate magnetic susceptibility high.
- ⇨ The wide zone between 580m and 700m also shows elevated but variable gamma response and a subtle increase in mag-susc. The interval has been logged as carbonaceous, sulfidic siltstone with sparse pyrrhotite veining and some replacement of carbonate nodules with sulphides.
- ⇨ The deepest resistivity low is situated at ~750-770m, slightly above the transition between Answer slate and Stavely stratigraphy. There is a corresponding gamma peak, and elevated Cu values are seen within this horizon on the XRF data. This interval represents a secondary target, with Cu being a lower-priority target within the Marimo basin.
- ⇨ Elsewhere within the Answer slates, resistivity is highly variable and appears to reflect sedimentary cycles, as does the natural gamma data. The Stavely formation has consistently high resistivity, which reflects the fundamental difference in composition of this unit, with significant carbonate content and infilling of porosity by pervasive silicification.

5.4.4 Conclusions (wireline data)

Structural information has been collected from the wireline acoustic image of borehole MRDD001.

There is a strongly anomalous physical property contrast at the unconformity between Answer Slates and Stavely formation. There are subtle physical property signatures evident within the Answer slate stratigraphy reflecting lithological variations.

Several conductive zones have been defined but not characterised properly due to instrument limitations.

Wireline surveying has advanced our understanding of geology and geophysical signatures within the Marimo basin.

5.5 Geochronology

Geochronology data are yet to be received and will be provided separately in an amended Final Report.

6 Interpretation and Findings

Drilling at MRDD001 has confirmed several key assumptions about basin architecture within the Marimo basin:

- ⇨ There is a significant unconformity at the Answer-Stavely contact which exhibits extensive alteration including silicification and magnetite addition.
- ⇨ Answer slates on the western side of the basin are steeply E-dipping, and stratigraphy is not overturned.
- ⇨ Basal part of the Answer slates are more reduced and represent favourable targets for Zn mineralisation.
- ⇨ Late veins in the upper phyllite is promising as its seen elsewhere in fertile mineral fields

Detailed XRF geochemical data has allowed us make a robust lithological interpretation of the drillcore.

Significant zinc anomalism has been identified in the Upper Phyllites in MRDD001. It is as yet unclear if this is associated with stratiform mineralisation development or is reflecting late stage remobilization along structures.

MRDD001 has a preserved favourable host environment (thick intervals of sulphidic/carbonaceous shales near the base of the Answer slate sequence), however there is no evidence of primary mineralization or proximal alteration.

Assessment of the formation conductivity is incomplete due to limitations of the wireline instrument used. Indicators are that the most prospective horizon may have subordinate conductivity compared with other shale/slate intervals.

7 Data Provided

Data provided with this report includes:

Drilling data including collar, survey details and lithology logs, Wireline log data, TruScan data package and photography. The data are included in Appendix 1-4 and labelled as follows.

- ⇨ Appendix 1 – Drill Data
- ⇨ Appendix 2 – Wireline
- ⇨ Appendix 3 – Truscan Core Photos
- ⇨ Appendix 4 – Truscan Data

Geochronology Assays are yet to be received and will be provided in an amended final report upon receipt.

8 References

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