# Round 18 GDC Program Oonagalabi Diamond Drilling Final Report

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Title Operator: Litchfield Minerals Ltd.

Tenement: EL32279

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Contents

Copyright Statement........................................................................................................................ 3

Abstract.............................................................................................................................................. 4

Introduction........................................................................................................................................ 5

Regional Context ............................................................................................................................... 6

Historical Exploration ........................................................................................................................ 7

Exploration Rationale ........................................................................................................................ 8

Details of Collaborative Program ...................................................................................................... 8

Drilling Results................................................................................................................................... 9

Interpretation and Conclusion..........................................................................................................13

Figures

Figure 1. Location map for the Oonagalabi Project..........................................................................5

Figure 2. Irindina-Aileron contact map...............................................................................................7

Figure 3. Planned location of Diamond Holes.....................................................................................9

Figure 4. Cross-section of OGRD001...............................................................................................10

Figure 5. Mo-Ni bearing vein in OGRD001.......................................................................................11

Figure 6. Cross-section of OGDD002...............................................................................................12

Figure 7. Very coarse-grained sulphides in OGDD002.....................................................................12

Appendices

Appendix 1. Drilling Data: Core assays, Magnetic Susceptibility, Lithology, Alteration, Veins, Downhole Surveys, Drill Collars

Appendix 2. Core Photographs

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## 1. Abstract

In June 2025, Litchfield Minerals Ltd (Litchfield) were successfully awarded co-funding in Round 18 of the Geophysics and Drilling Collaboration (GDC) Program administered by the Northern Territory Government. The co-funding was provided for two diamond drill holes testing magnetic anomalies within Litchfield's Oonagalabi Project in tenement EL32279 in central Australia.

The Oonagalabi prospect in the Harts Range hosts a sizeable Cu-Zn-Au-Ag mineralised zone within a 3 km trend of metasedimentary rocks, including calc-silicate rocks and marble.

Previous drilling by Litchfield Minerals in March 2025 (hole OGRC002) indicated potential overprinting of copper and zinc by a Bi-Co +/- precious metal mineralisation associated with magnetite alteration, potentially related to a large magnetic anomaly. The co-funded drilling tested this anomalism at the Bomb Diggity target with an 800 m deep diamond drill hole (OGRD001) through a pipe-like magnetic feature generated through 3D inversions of 2024 drone magnetic data. The hole aimed to investigate if a magnetic intrusion could explain the magnetic anomalism in the Oonagalabi Main Zone and whether it was a potential source or trap for mineralisation.

A second co-funded 300m diamond drill hole (OGDD002) aimed to test another magnetic anomaly, inferred to be a structural extension of the magnetic feature at Bomb Diggity into the western IP chargeability zone of the main Oonagalabi prospect.

Hole OGRD001 at the Bomb Diggity Target drilled to 800 m depth including an 81.5 m RC pre-collar. The hole contained intercalated felsic gneiss and mafic amphibolite, with boudinage and sigma clasts in gneiss indicating high levels of shear. Magnetic susceptibility did not indicate a homogenous magnetic unit, as interpreted by geophysics after prior magnetic surveys. The geology observed may suggest that layers of amphibolite are responsible for the unexplained magnetic anomaly; however, the modelled anomaly does not follow expected local structural trends in stratigraphy. Quartz and calcite veins were minimal, as was presence of sulphides, except for a single 10 cm thick quartz-calcite vein containing apparent hydrothermal nickel, iron sulphide and molybdenite mineralisation.

Hole OGDD002 drilled to 300.1 m depth and intersected typical Oonagalabi copper-zinc mineralisation within two limbs of meta-carbonate and calc-silicate rocks of the Oonagalabi Formation. Mineralised intervals within this hole contained pyrite, chalcopyrite, sphalerite, pyrrhotite, and galena, with minor magnetite, and very rare molybdenite. These sulphides range in coarseness and appear disseminated through the matrix of the rock (particularly in anthophyllite and calc-silicate zones). Some sulphides were observed within quartz and calcite veins and rarely appeared to show a sheared texture. There was no indication of a separate Bi-Co mineralising event, and magnetite appeared disseminated within the core, and in quartz and calcite veins.

## 2. Introduction

The Oonagalabi Project is located in Harts Range, approximately 125 km northeast of Alice Springs on Mount Riddock Station (220 km by road). The project can be accessed from Alice Springs via the Stuart Highway, then by heading east on the Plenty Highway until the Mount Riddock Station turn-off. From there, Oonagalabi is 40 km by station track (Figure 1)

The tenement sits within the broader Harts Range–Strangways Range structural corridor, a region recognised for its complex geological history and mineral endowment. The area hosts multiple styles of mineralisation including the Arltunga goldfield, the Mud Tank carbonatite, the Oonagalabi copper–zinc prospect, and numerous pegmatite-hosted mineral occurrences throughout the Harts Range mica fields.

Litchfield are actively exploring within the Oonagalabi area, where recent drilling and geophysical surveys have confirmed the presence of a large copper–zinc prospect. Ongoing work will determine whether this mineralisation occurs as part of a broader regional crustal-scale zone associated with the boundary between the Irindina and Aileron provinces, a geological setting potentially suitable for the formation of large mineral deposits.

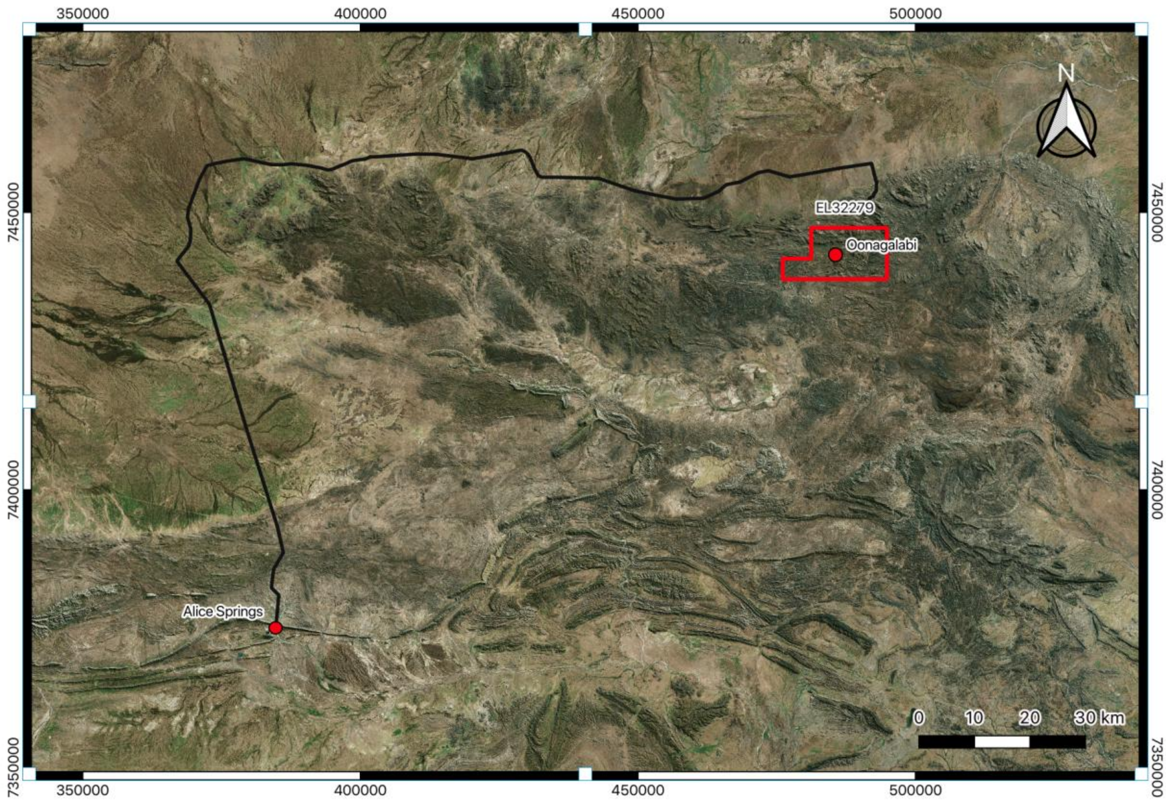


*Figure 1: Map showing location of EL32279 from Alice Springs, with the black line indicating highways and major station tracks.*

## 3. Regional Context

Tenement EL32279 is situated in the southern portion of the Aileron Province (Figure 2) on the southern margin of the North Australian Craton. The east of the tenure is a few kilometres away from the surface expression of the crustal boundary between the Paleoproterozoic Aileron Province and the younger Neoproterozoic to Cambrian Irindina Province.

The Paleoproterozoic Aileron Province is mainly comprised of metasedimentary successions deposited between ca 1.86 and ca 1.76 Ga. These rocks underwent Paleoproterozoic episodes of regional high thermal-gradient metamorphism, deformation and magmatism between ca. 1.83 Ga and ca. 1.7 Ga, with further deformation and magmatism extending into the Phanerozoic.

The Aileron Province hosts a variety of base metal deposits and prospects within metasedimentary successions and/or intrusions, as well as granite-related tungsten- molybdenum mineralisation, and rare earth element-associated carbonatite. Elsewhere from EL32779, the ca 1.81-1.79 Ga Strangways Metamorphic Complex that covers most of tenement, hosts several small historical copper-zinc-lead prospects that have previously been interpreted as a variety of basin-hosted, volcanic-associated and/or granite-related prospects and deposits.

The Irindina Province is a Neoproterozoic to Cambrian basin comprised of upper amphibolite and granulite facies rocks that were metamorphosed between 490–460 Ma, partly overlapping with the Larapinta Event. The Irindina basin is known to have experienced two episodes of mafic magmatism – an earlier event at 540–500 Ma, and a later, post deformation episode at 410–360 Ma. The 540–500 Ma magmatism involves the Riddoch Metagabbro, Entia Gneiss, and the Coggans Gabbro. The 410–360 Ma episode includes the Lloyd Gabbronorite, known to host some nickel copper-platinum group element mineralisation. The Lloyd Gabbronorite is volumetrically small in exposed outcrop but there is considerable potential for this unit to extend undercover.

There have only been small-scale mining activities in the Irindina Province associated largely with pegmatite-hosted mica deposits. More generally, the Irindina Province is considered prospective for nickel-copper mineralisation along with copper, rare-earth element, uranium, gold, and tungsten mineralisation. Several deep crustal shear zones and faults occur on the northern and southern margins of the Irindina Province, and within the southern portion of the Aileron Province. Both provinces have potential for mineralisation associated with these structural conduits spanning a broad period of geological time.

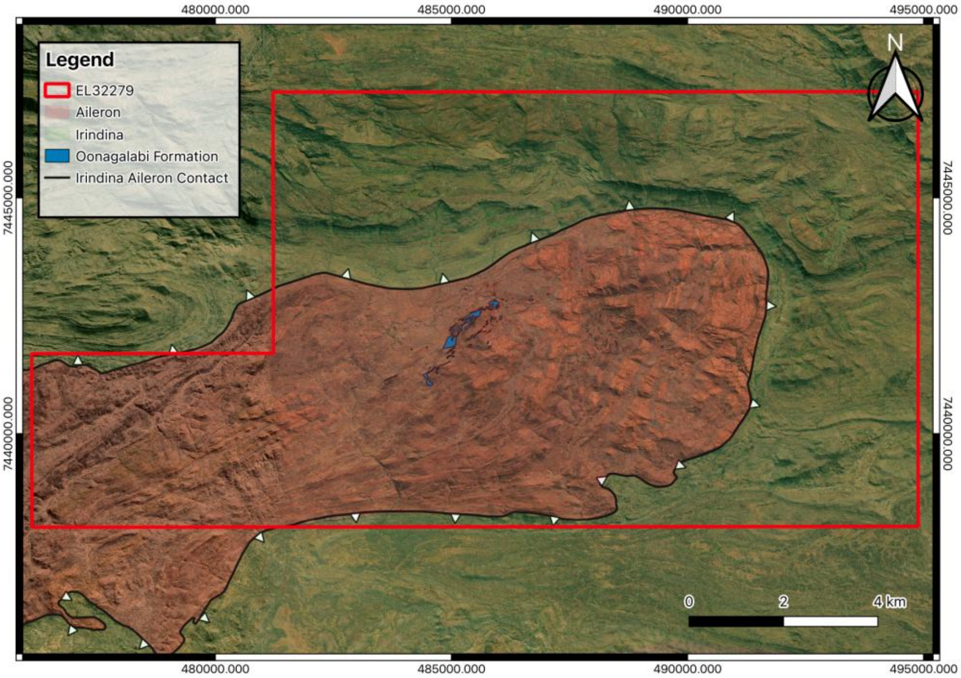


*Figure 2: A map showing the thrusted contact of the Irindina and Aileron Provinces, with the mineralised Oonagalabi Formation shown in blue.*

## 4. Historical Exploration

Historical exploration at Oonagalabi, largely in the 1970s-1980s focused on base metal sulphides within an interpreted sediment-hosted, carbonate replacement-type prospect. Exploration for industrial garnets on the tenure was also completed in the 1980s-1990s.

The Oonagalabi prospect was first systematically explored by Russgar in the early 1970s. They completed surface mapping, geophysical surveys (aeromagnetic, VLF EM, ground magnetics, and resistivity surveys), along with drilling of 14 percussion holes (626.6 m total). This work defined an extensive alteration system with variable base metal mineralisation. The best drill intercept was 37.7 m at 1% Cu and 1.7% Zn from 1.5 m depth in hole PDH-L. The VLF survey generated an anomaly described as a good conductor, located immediately northwest of the outcropping mineralised Oonagalabi Formation.

Kinex continued exploring Oonagalabi in the late 1970s to early 1980s, completing soil sampling and mapping, trialling an IP survey and drilling 7 holes (4 percussion holes for 534 m and 3 diamond holes for 549.2 m) with best intercepts of 27 m at 0.76% Cu and 1.95% Zn from 68 m (ONT79-1), and 24 m at 0.63% Cu and 1.52% Zn from 138 m (RPO-2).

In the 2000s, Silex completed geological mapping and a pole-dipole IP survey over most of the outcropping Oonagalabi Formation. 3D inversion modelling of the IP chargeability data showed a steeply plunging anomaly to the west. Silex were awarded GDC co-funding to test this anomaly with diamond drill hole SLX001. This drill hole did not intercept mineralised or altered rock.

Since October 2024, Litchfield Minerals have completed 203 soil and 28 rock chip samples, acquired/processed Sentinel-2 multi-spectral data, 613-line km drone magnetics and 1044-line km airborne EM, 36.2-line km pole-dipole IP lines, ground EM and DHEM, 231 gravity stations and 19 RC drillholes across EL32779.

## 5. Exploration Rationale

Oonagalabi is currently interpreted as a carbonate replacement base metal prospect. Exploration at Oonagalabi has demonstrated extensive disseminated, low to medium-grade copper and zinc mineralisation within altered rocks. One interpretation is that the Oonagalabi system may contain a higher-grade remobilised sulphide zone similar to some deposits in the nearby Jervois mineral field (e.g. Rockface, Reward Deeps), or a currently unidentified higher-grade structural feeder zone.

The Oonagalabi area falls within a Geoscience Australia high potential area for an IOCG deposit. The presence of Bi-Co mineralization may indicate similarities to many hydrothermal copper and gold deposits in central Australia (e.g. Tennant Creek and Rover Mineral Fields, and Jervois), possibly hinting at an intrusive-related origin for at least some of the Oonagalabi mineralisation.

The identification of Bi-Co +/- precious metals associated with magnetite overprinting pre-existing mineralisation at Oonagalabi and high intensity magnetic anomalies generated from 3D inversion modelling of magnetic data may support such an interpretation. It is possible that a younger metallogenic episode, distinct from earlier copper-zinc mineralisation, may be present at Oonagalabi.

The co-funding proposal aimed to test this idea with two diamond drill holes targeting magnetic anomalies. Hole OGRD001 aimed to test a pipe-like magnetic feature (the Bomb Diggity target) generated through 3D inversions of 2024 drone magnetic data. The hole aimed to investigate if a magnetic intrusion could explain the magnetic anomalism and whether it was a potential source or trap for mineralisation. Hole OGDD002 aimed to test another magnetic anomaly, inferred to be a structural extension of the magnetic feature at Bomb Diggity into the western IP chargeability zone of the main Oonagalabi prospect.

Demonstrating multiple mineralisation events will have significant local and regional exploration implications.

## 6. Details of Collaborative Program

Litchfield proposed two diamond holes (figure 3):

- OGGG001 (E: 485402 mE, N: 7742483 mN) at a true north azimuth of 328° and-85° declination. A pre-collar was planned from 0-50m followed by HQ to a final depth of 300m.

- OGGG002 (E: 486796 mE, N: 7743450 mN) at a true north azimuth of 360° and-60° declination. A pre-collar was planned from 0-250m followed by HQ to a final depth of 750m.

Full 59 element analysis + gold fire assay was to be completed on the entirety of each hole (0.2-1.2m samples) through Bureau Veritas – Wingfield along with petrology as seen fit.

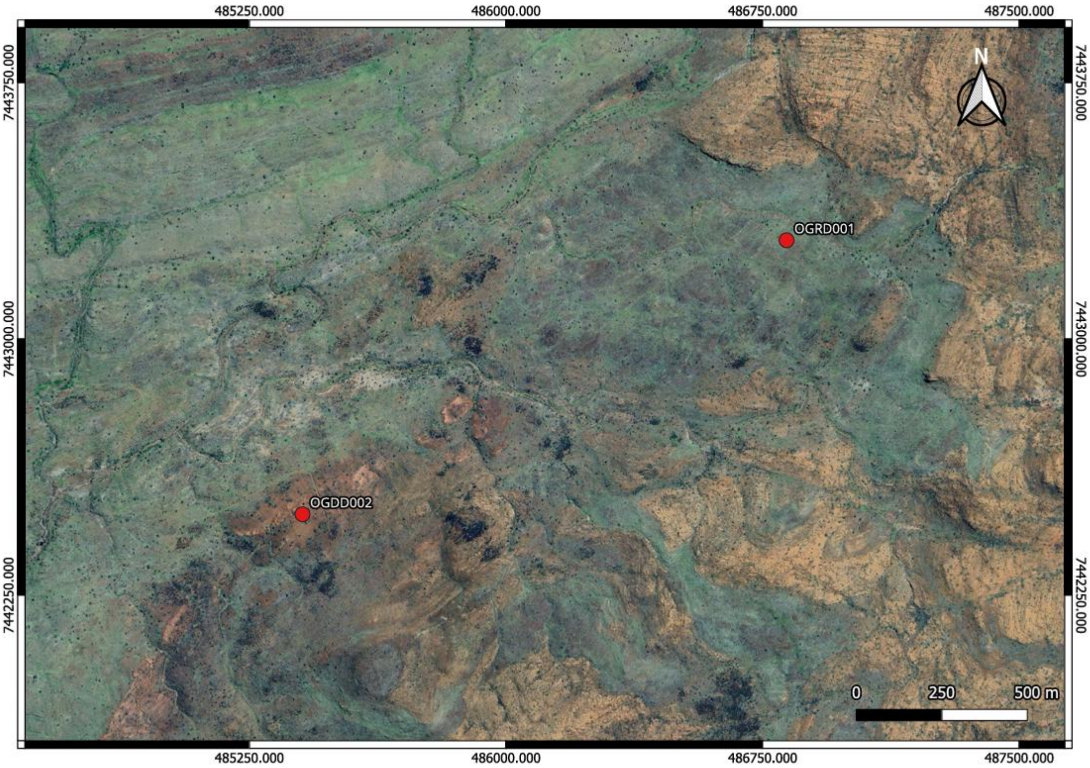


*Figure 3: Planned locations of OGGG001 and OGGG002*

## 7. Drilling Results

### Methods:

Core was collected and logged on site, and magnetic susceptibility point data was collected using a hand-held meter on each meter mark.

The entirety of both holes were sampled; 4 m spear composites of OGRD001's pre-collar were sampled as well as 2 m half-core composites for the remainder of the hole. OGDD002 was sampled as half-core based off textural and lithological changes, with sample sizes between 0.2-1.5 m.

Geochemical sampling was conducted through Bureau Veritas – Wingfield, SA. Samples were ground to 10 microns (PR101) before undergoing a mixed acid digest (MA100: nitric, perchloric, hydrofluoric, final hydrochloric acid), then ICP-AES (MA101) and ICP-MS (MA102) analyses were conducted. 40 g charges of all composites underwent lead collection fire assay – AAS (FA001).

The composite samples submitted to the lab contained repeats and standards as per QAQC industry standards every 25 samples and repeats conducted by Bureau Veritas every 20-30 samples. Eight internal lab standards were analysed and produced acceptable results (IMS-265, IMS-508, IMS-267, OREAS 137, BM21_310, OREAS 120, OREAS 501B, OREAS 525) as well as five standards/blanks submitted by Litchfield (OREAS 628, OREAS 630b, OREAS 625, OREAS 24d, OREAS 23b).

**OGRD001:**

Diamond hole OGRD001 (planned as OGGG002) (E: 486820 mE, N: 7443289 mN, RL: 821 m) was drilled with a true north azimuth of 359.3° and -55.4° declination. An 81.5m RC pre-collar was followed by diamond drilling to complete the 800 m total hole depth.


*Figure 4: Cross section showing OGRD001 and follow-up hole OGRC021 intercepting the Bomb Diggity magnetic target*

OGRD001 consisted of intercalated gneiss/mylonite and amphibolite with occasional fault/fracture zones. Alteration of host rocks was minimal; however, localised zones contained garnet/amphibole alteration. Additionally, iron oxide staining of feldspars in the gneiss was common. Several barren generations of quartz/calcite veining were noted, and the top of the hole contained very low-grade chalcopyrite +- magnetite +- pyrrhotite +- pyrite-bearing quartz veins.

A hydrothermal molybdenite-bearing quartz-carbonate vein containing nickel-bearing sulphides was intersected at 617.2 m depth. This vein (Figure 5) contains molybdenite, iron sulphides (pyrrhotite and/or pyrite) and an unconfirmed mineral that is likely to be either a Ni-bearing sulphide (like pentlandite) or nickeliferous pyrite or pyrrhotite, indicated by assays (Appendix 1). The quartz vein crosscuts the main foliation fabric in the host gneiss.

Magnetic susceptibility measurements did not indicate a large magnetic mass as was modelled (Figure 4) and instead showed small pockets of increased magnetism, generally coincident with meta-mafics (Appendix 1).

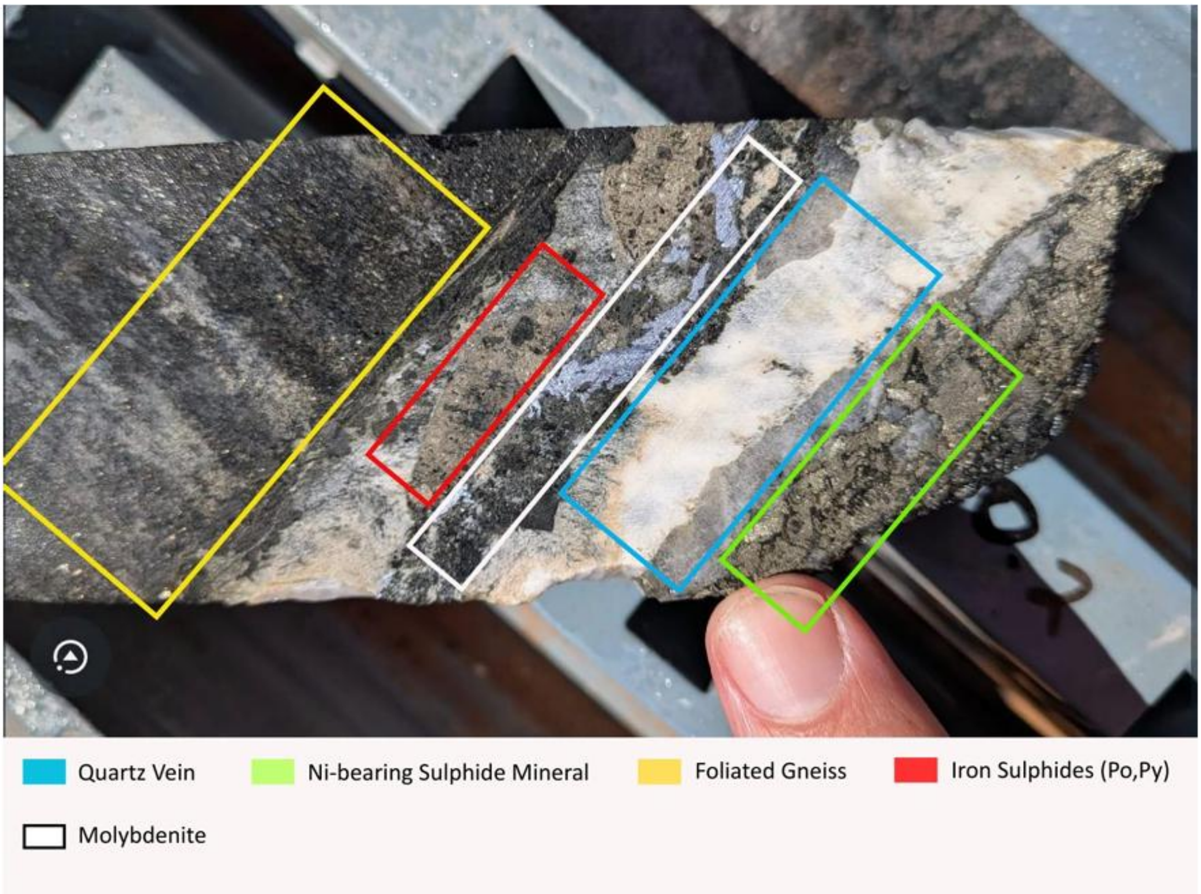


*Figure 5. 617.2m depth in OGRD001 showing 10cm quartz vein with molybdenite-iron sulphide and an unconfirmed nickel-bearing sulphide mineral. Drill core is 10cm wide. The quartz vein crosscuts the main foliation fabric in the host gneiss.*

OGRD002:

Diamond hole OGDD002 (formerly OGGG001) (E: 485405 mE, N: 7442487 mN, RL: 847 m) was drilled at a true north azimuth of 222.56° and-79.83° declination to 300.1 m depth (Figure 6).

The hole intercepted two limbs of the folded Oonagalabi Formation, the first from 10.0-49.2 m depth and the second from 143.1-189.6 m depth. These limbs were made up of massive anthophyllite, calc-silicate rock, and marble. At the base of the upper limb, small-scale fault-propagation folding was noted within gneiss.

No relationship between mineralisation and magnetic susceptibility was discerned, and instead meta-mafics produced higher magnetic readings (Appendix 1).

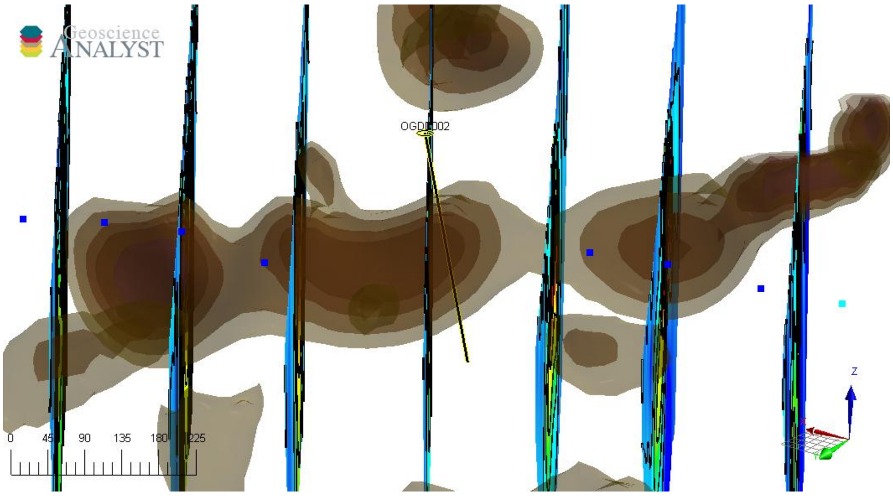


*Figure 6: A cross-section showing OGDD002 intercepting the modelled magnetic anomaly*

Mineralisation consisted of disseminated chalcopyrite-sphalerite-pyrrhotite-pyrite through calc-silicate rock and massive anthophyllite, as well as within veins, occasionally forming very coarse grains (Figure 7).

*Figure 7: Very coarse-grained chalcopyrite-sphalerite-pyrrhotite-pyrite mineralisation at 158 m depth in OGDD002.*

The best mineralised intercepts in OGDD002 were:

- 19.6 m at 0.66% Cu, 2.58% Zn and 5.6g/t Ag from 10.0 m;

- 14.0 m at 0.52% Cu, 1.55% Zn and 6.1g/t Ag from 36.0 m;
- 19.0 m at 1.06% Cu, 0.7% Zn and 5.0g/t Ag from 143.1 m;

- 6.3 m 0.37% Cu, 2.05% Zn and 2.3g/t Ag from 171.5 m; and
- 8.02 m at 0.09%Cu, 0.48% Zn and 0.8g/t Ag from 183.85 m.

Appendix 1 contains the full geochemical data from OGDD002.

## 7. Interpretations and Conclusions

No direct relationship between magnetic anomalism and mineralisation was identified in either drill hole that could explain the targeted magnetic anomalies.

It is possible that the Bomb Diggity anomaly represents discrete intrusions that were not intersected during the drilling, or that they more broadly represent numerous meta-mafic intrusions and sills found within the host succession at Oonagalabi.

Follow-up work on the hydrothermal nickel-molybdenite vein is being conducted as well as a re-interpretation of the anomaly itself.

Drill core from OGDD002 showed a typical mineralisation assemblage made up of medium grained chalcopyrite, sphalerite, pyrite, pyrrhotite, and minor galena and molybdenite. This mineralisation was contained to only the calc-silicate and meta-carbonate units. Small-scale fault-influenced folding seen between limbs suggests a fault-controlled folding regime of the formation or a transition from a ductile deformation regime to a brittle one.

The magnetic anomaly targeted by OGDD002 may represent folded meta-mafics that surround the Oonagalabi Formation. No strong conclusions can be made as to the timing of mineralisation in relation to the host-rock deformation history.