



KARORA RESOURCES PTY LTD
Co-Funded Drilling – Final Report
Testing the Hunt East Concept
March 2022

GSWA bibliographic data sheet

Project Name:	Testing the Hunt East Concept
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Tenement Holder:	St Ives Gold Mining Company (Gold Fields)
Report Type:	Co-Funded Drilling Final Report
Report Title:	Co-Funded Drilling – Final Report Testing the Hunt East Concept, March 2022
Report Period:	
Author:	John Stockfeld
Date of report:	31 March 2022
1:250 000 map sheet:	SH51-14 WIDGIEMOOLTHA
1:100 000 map sheet:	3235 LAKE LEFROY
Geodetic Datum:	KNO- mine grid (GDA94 Regional)
Project Zone:	51
Target Commodity:	Nickel (Ni)
Keywords:	Beta Hunt, nickel
Prospects drilled:	Hunt East
List of Assays:	Au, Ni, Fe, Mg, As, Cu, S, Co

ABSTRACT:

- Location:** Beta Hunt Mine site, 2km southeast from the Kambalda East town-site, Western Australia.
- Geology:** The main rock types in the area are Lunnon Basalt, Kambalda Komatiite and porphyry intrusions.
- Work done:** Three diamond drill holes for a total of 776.0 metres were completed from surface, in a poorly tested area east of the Beta Hunt Mine in October 2021. The drill core was geologically and structurally logged, photographed and sampled for nickel, gold and multi-elements.
- Results:** Two of the three holes completed intersected sediment on the basalt-ultramafic contact which precludes any prospectivity for nickel. Interflow sediments were also intersected by these holes which is also consistent with the flanking environment, outside any potential mineralised corridor. The third hole intersected two main sulphide zones, one an interflow horizon sitting at the boundary between two ultramafic flows, and the other a chloritic zone at the contact. Some interflow sediments were also intersected by this hole.
- Conclusion:** The Hunt East prospect remains a viable target which requires further work. The co-funded drilling has established that a thick sediment occurs in the eastern parts of the zone that was originally conceived as the target zone, and that therefore any remaining prospectivity is on the western side of this corridor. Sulphides at the contact appear to be affected by shearing which may be associated with large-scale thrusting observed within the upper levels of the Hunt mine to the immediate west. Nevertheless, interflow sulphides sitting immediately above a thick spinifex zone, which latter indicates a flow top, are indicative of a mineralised corridor. Further work will be undertaken to test the contact and to better understand the relationship between any mineralisation that occurs here and that which is remobilized on the large-scale thrust sheets.

CO-FUNDED DRILLING - VERIFICATION LISTING

EXPLORATION WORK TYPE	FILE NAME	FORMAT
Office Studies		
Literature search		
Database compilation		
Computer modelling		
Reprocessing of data		
General research		
Report preparation	Co-Funded Drilling Final Report, Testing the Hunt East concept, March 2022.pdf	pdf
Data review		
Resource Modelling		
Airborne Exploration Surveys		
Aeromagnetics		
Radiometrics		
Electromagnetics		
Gravity		
Digital terrain modelling		
Other (specify)		
Remote Sensing		
Aerial photography		
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
Ground Exploration Surveys		
<i>Geological mapping</i>		
Regional		
Reconnaissance		
Prospect		
Underground		
Costean		
<i>Ground geophysics</i>		
Radiometrics		
Magnetics		
Gravity		
Digital terrain modelling		
Electromagnetics		
SP/AP/EP		
IP		
AMT		

Resistivity		
Complex resistivity		
Seismic reflection		
Well logging		
Geophysical interpretation		
Other (specify)		
Geochemical Surveying		
Drill sample		
Stream sediment		
Soil		
Rock chip (in pit)		
Laterite		
Water		
Biochemistry		
Isotope		
Whole rock		
Mineral analysis		
Other (specify)		
Drilling		
Diamond	BH_WADL4_GEO2021.txt BH_WASL4_COLL2021.txt BH_WADS4_SURV2021.txt BH_WADL4_ORI2021.txt BH_WADG4_ASS2021.txt	txt txt txt txt txt
Reverse circulation		
Rotary air blast		
Air core		
Auger		
Groundwater drilling		
All drilling		
Geological Drill Log Codes	BH_logging codes.xlsx	xlsx

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1.0 INTRODUCTION

Drill testing of the Hunt East prospect was undertaken in a co-funded program during October 2021. The prospect is a conceptual one identified on the basis of correlations between nickel deposits on opposite sides of the Kambalda Dome. The Hunt nickel shoot is understood to correlate with the Fisher shoot. Each consists of two parallel nickel belts, however the correlation between two belts on the north of the Dome and two belts on the south is incomplete: there is a mismatch between the two belts at Fisher and the two at Beta Hunt. The question therefore arises as to whether the unmatched belt at Fisher correlates with a nickel shoot as yet undiscovered in the poorly tested ground between the Hunt and Lunnion shoots. As such, the Hunt East target is a largely conceptual one. The potential for such a shoot to exist was first identified in a study of the Kambalda Dome undertaken by Western Mining Corporation (WMC) in 1994 and no work had been conducted on this prospect since.

Drilling was aimed at testing in the first instance for a sediment-free corridor on the contact. Sediment on the contact is understood to preclude the possibility of nickel mineralisation. Further indicators of prospectivity on the contact are mineralisation in the overlying units at the base of the ultramafic flows and thinner flow units.

The co-funded drilling has achieved its objectives, successfully testing the contact in the target zone, closing out the possibility of a mineralised corridor on the eastern side while also identifying a prospective zone on the western side that warrants further work.

2.0 LOCATION

Beta Hunt is an underground mine located 2km southeast of Kambalda and 60km south of Kalgoorlie in Western Australia (Figure 1). The mining rights for the Beta Hunt Mine are held by Karora through a sub-lease agreement with St Ives Gold Mining Company (SIGMC) which gives Karora the right to explore for and mine nickel and gold within the Beta Hunt Sub-lease. The Sub-lease covers mining leases for a total area of 960.4 ha.

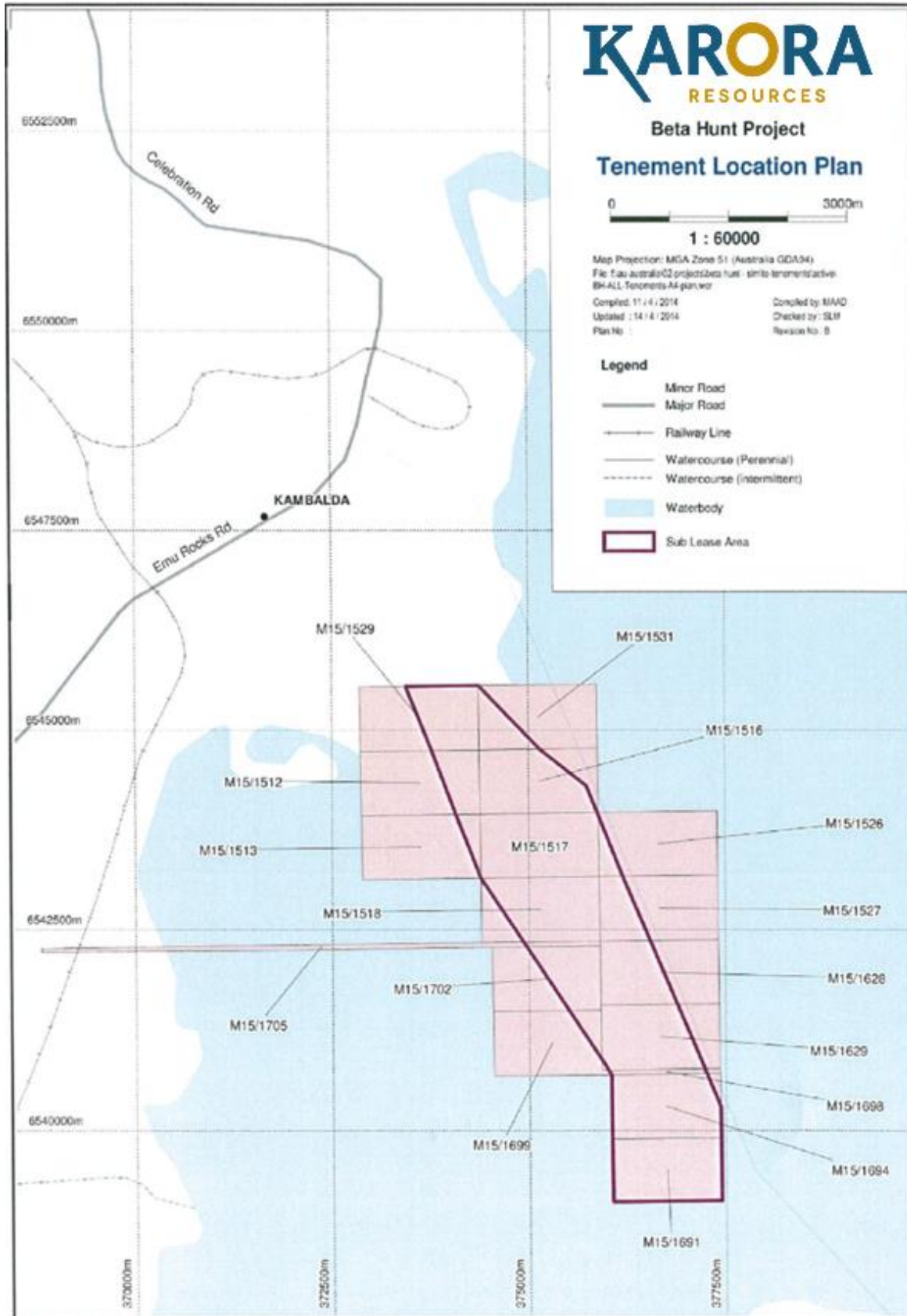


Figure 1: Beta Hunt Sub-lease - Location and Tenure.

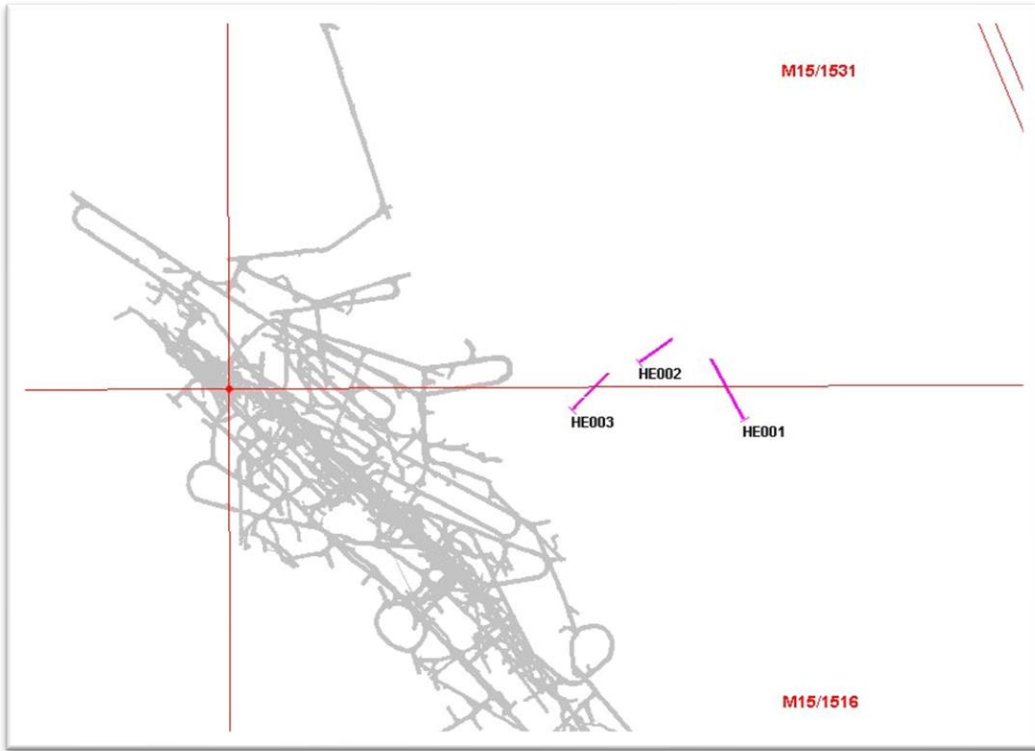


Figure 2: Location of the drillholes with lease boundaries.

3.0 GEOLOGY

The Beta Hunt mine is located in the Kambalda – St Ives area of the Archean Norseman-Wiluna greenstone belt, where the stratigraphy consists mainly of mafic-ultramafic lava flows and porphyry intrusions. The mine area is underlain by the north-northwest trending corridor of basalt and komatiite rocks termed the Kambalda Dome (Figure 3)

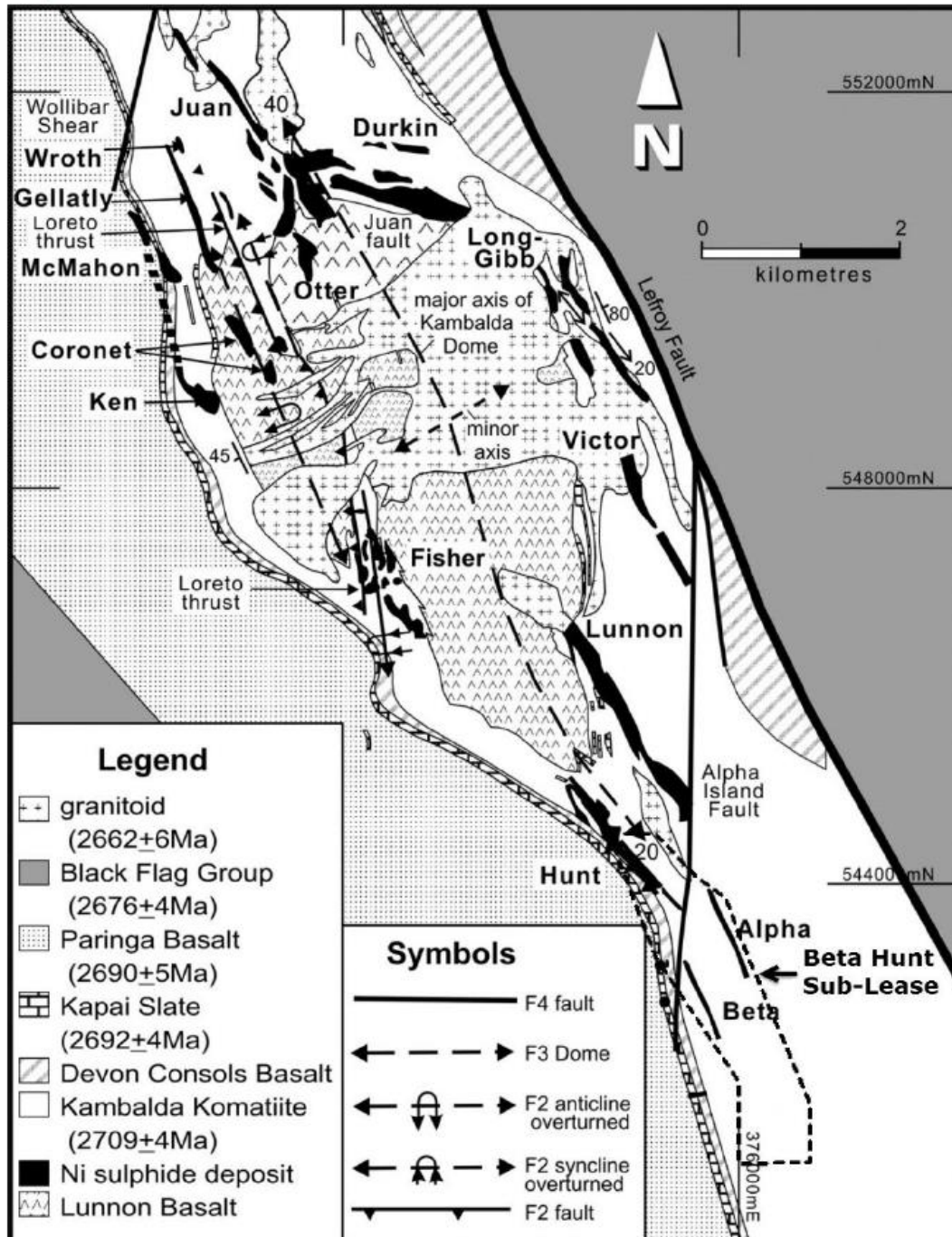


Figure 3: Regional Geology of the Kambalda Dome showing nickel sulphide deposits (from Archibald, 2004).

The Beta Hunt mine area covers the basal section of the Kambalda stratigraphic sequence which comprises:

Lunnon Basalt - the lowest stratigraphic formation, directly overlying the Kambalda Granodiorite basement. Comprises a tholeiitic basalt sequence of thin lava flows (low magnesium, pillow basalt), minor interflow sediments and concordant dolerite dykes, and is between 4-5km thick.

Kambalda Komatiite - the Kambalda Komatiite (ultramafic rock) is a sequence of high-MgO ultramafic flows between 100m to >1200m thick comprising two members: the lower Silver Lake Member, and upper Tripod Hill Member. The Silver Lake Member comprises one or more komatiite flows (10-100m thick) that are subdivided into a lower cumulate zone and an upper spinifex textured zone. The Tripod Hill Member consists of numerous thin (<0.5-10m) komatiite flows. The nickel sulphide orebodies occur at the base of the Silver Lake Member on the contact with the Lunnon Basalt.

Interflow sediments - thin (<5m) interflow sedimentary rocks are common on the contact between the Lunnon Basalt and Kambalda Komatiite and within the komatiite lavas, particularly in the less differentiated Silver Lake Member.

Granitoid Intrusions – The basal sequence is intruded by granitoids, dykes and sills of mafic, intermediate and felsic composition. Felsic intrusives of sodic rhyolite composition are coarse grained, porphyritic and quartz-rich, and commonly occur throughout the sequence as dykes and sills. Intermediate intrusives (typically dacitic composition) are more variable in texture and composition, but porphyritic types are common and contain feldspar phenocrysts in a biotite-amphibole matrix. Mafic intrusives of basaltic composition are less common. The Kambalda Granodiorite in the core of the Kambalda dome is trondhjemitic in composition and has associated felsic dykes.

The structural geology of the Sub-Lease area is dominated by the south-southeast plunging portion of the double-plunging Kambalda Dome, which on the southern side has a steep east-dipping eastern limb and a shallow west-dipping western limb. The context for this structure and the mineralisation is provided by the 2010 regional synthesis of the deformation history of the Eastern Yilgarn Craton by Blewett et al. This study represents an important update on Swager's 1997 synthesis: while four main deformation events were previously recognised, six are recognised in the latest interpretation. The new sixfold deformation nomenclature places nickel mineralisation at the start of the deformational sequence and its remobilization along with gold mineralisation late in the sequence, closely associated with a significant stress switch. The sequence of deformation events is summarized in Table 1.

Table 1: Summary of the deformation history at Beta Hunt.

Event	Type	Direction	Style	Significant features and associations
D1	Extension	ENE-WSW	Rifting leads to NNW-trending linear structures	Syn-volcanic extensional faults including the nickel shoots at Kambalda.
D2	Contraction	ENE-WSW	NNW upright folding and ENE thrust faulting	Terminates greenstone volcanism.
D3	Extension		Development of extensional core complexes and domes.	Formation of granite-cored domes. Prepares the EYC for gold endowment.
D4	Contraction	Stress switch	Sinistral strike-slip faulting Reactivation of D3 structures	Onset of the most endowed period of gold mineralisation
D4a	Contraction	ENE-WSW	NNW upright folding and ENE thrust faulting	All events up to and including D4a involve block movements up and down to NE or SW within a NNW- to NW-oriented architectural framework.
D4b	Contraction	WNW-ESE	NNW sinistral strike-slip shearing and (ESE) thrusting	Significant change in regional stress field: obliquity with pre-existing architecture. New network of stress heterogeneity. Most gold deposited during D4b. Regionally pervasive.
D5	Contraction	NE-SW	N to NNE dextral strike-slip faulting, mostly brittle structures.	Establishment of a regionally consistent NE-SW oriented shortening vector. In Kambalda: NNE-trending brittle faulting inc. Alpha Island Fault.
D6	Minor extension		Low-strain vertical shortening and horizontal extension	

4.0 HISTORICAL

The Hunt shoot is a significant part of the early mining history of the nickel field, having been intersected in 1970 during the traverse drilling carried out across the Kambalda Dome by Western Mining Corporation (WMC) and originally accessed from the Silver Lake shaft. Subsequent drilling through the 1970s and 1980s led to the East Alpha and Beta shoots being defined and then interpreted as the down-plunge extensions respectively of the Lunnon and Hunt shoots.

Deep surface drilling of these shoots and others continued through the 1990s, leading to the last of the major nickel shoot discoveries on the Dome, the Coronet shoot which was intersected in 1991. That discovery, in an area previously drilled and considered to have limited prospectivity led to a rethink of the controls on the distribution of nickel mineralization on the Dome. This culminated in a major study of the ore environment across the entirety of the Kambalda Dome and the way in which the nickel shoots are interrelated (Williams, 1994).

One major finding of Williams' study was that the nickel shoots can be correlated across the Dome, the six main mineralised trends at the north end of the Dome correlating with the seven recognized in the south.

Gold mineralization within the immediate footwall was recognized during the early days of nickel mining however it was not until 1980 when WMC committed to gold processing that testing of the gold mineralization potential of the area commenced.

5.0 THE DRILL TARGET

The drill target was a conceptual one based on correlations between the nickel shoots across the Kambalda Dome. Beta Hunt is understood to correlate with the Fisher deposit. Each has two subparallel mineralised belts which have been exploited in previous mining operations. There is however, a mismatch between these: the western belt at Fisher is interpreted to correlate with the eastern belt at Beta Hunt. Therefore the possibility arises that there may be an undiscovered nickel shoot in the poorly-tested ground between the Hunt and Lunnon shoots. Nickeliferous sediment in two of the widely-spaced holes that penetrate the contact in this area lend support to this hypothesis.

Initially a program of five holes was planned. These were planned to be staggered in a way that gave broad coverage of the untested corridor, testing in the first instance for sediment-free contact. This is understood to be a prerequisite to nickel prospectivity. The original plan for the drill program is shown with the mine workings and existing drilling in Figures 4-6.

Co-funded drilling Round 22, March 2022.

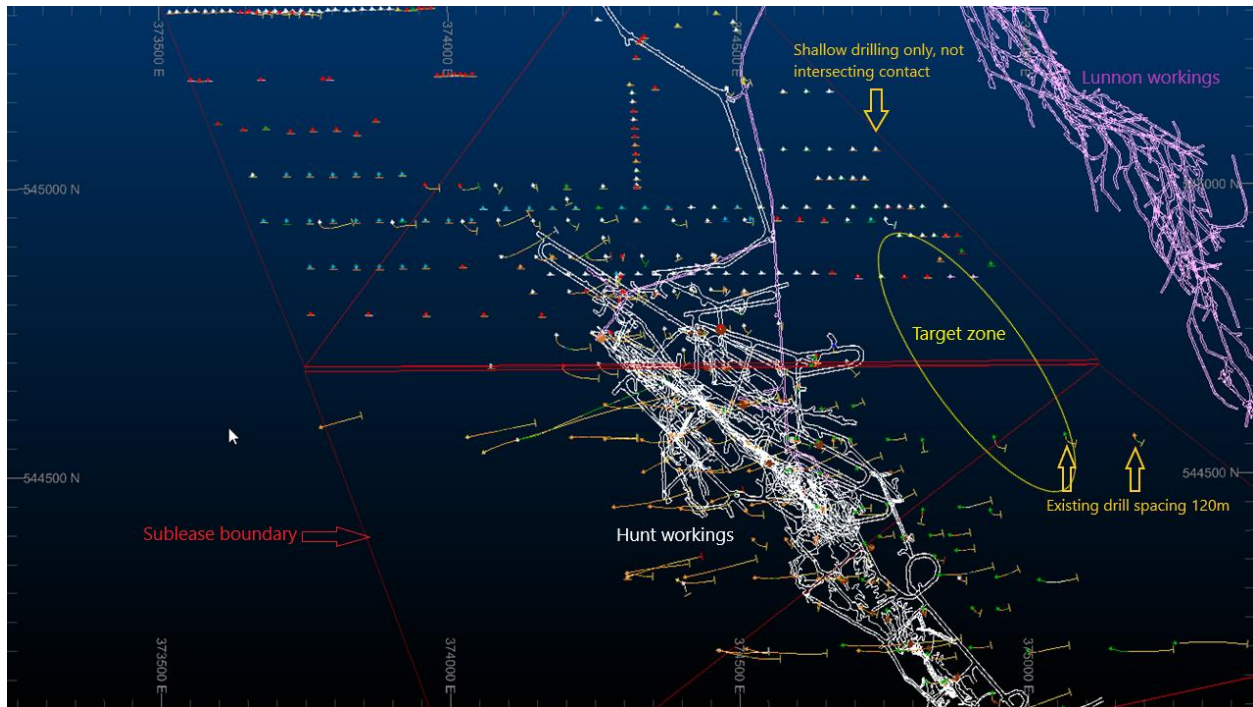


Figure 4: Existing drill coverage and the target zone.

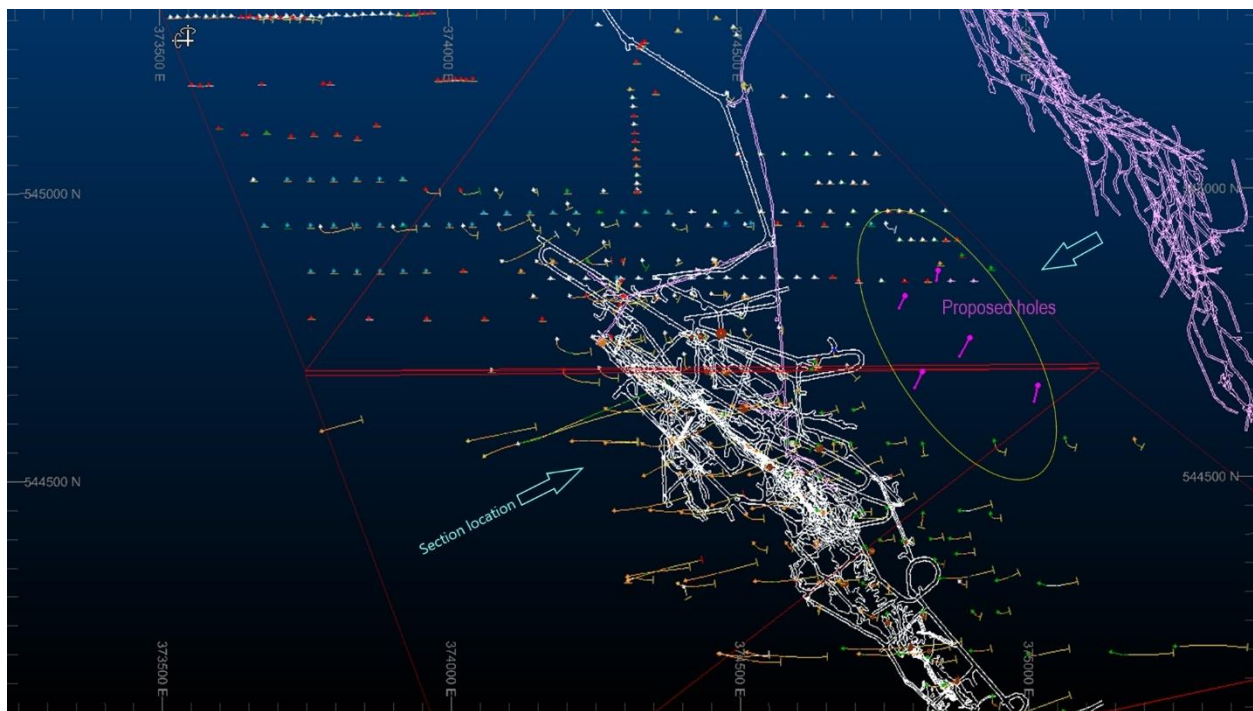


Figure 5: The proposed holes, plan view.

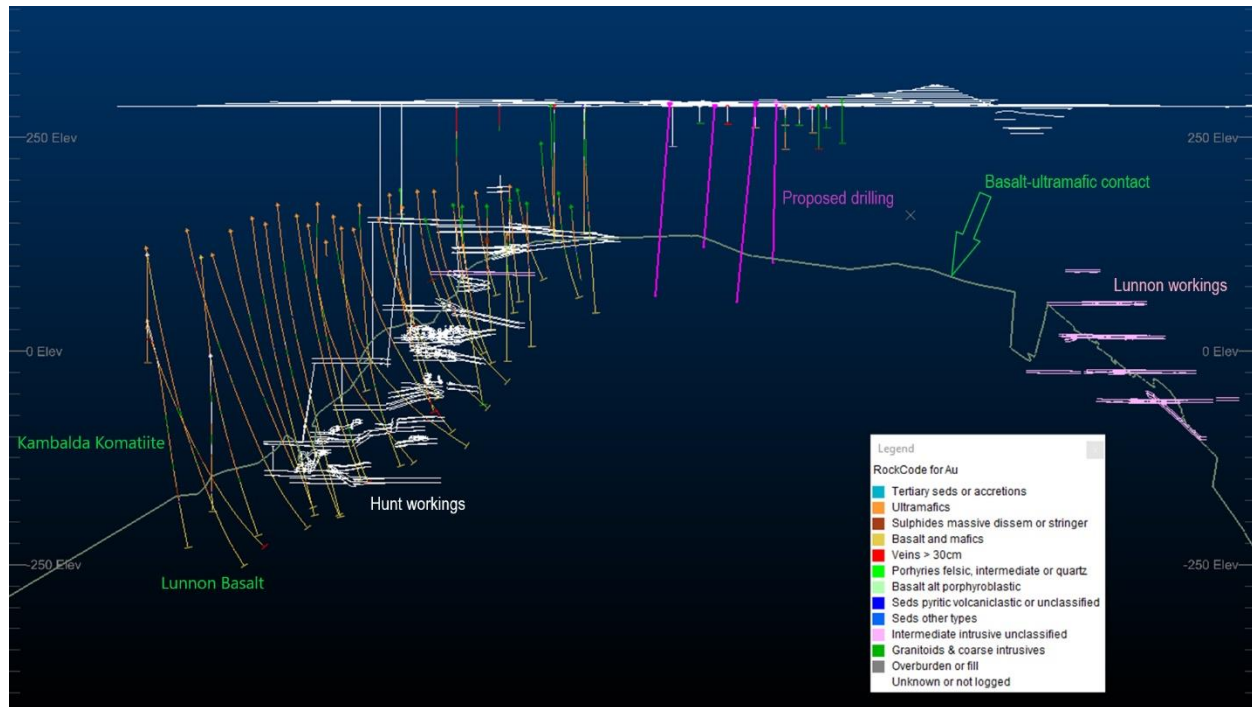


Figure 6: The proposed holes, section looking north.

6.0 WORK COMPLETED

6.1 Drilling Summary

Three holes of the five holes originally proposed were drilled, totaling 776.0 metres as listed in Table 2. One of the holes originally planned was canceled due to sediment being intersected on the contact in nearby drilling undertaken to test a gold target. A fourth hole was completed but did not fall within the co-funding period.

Table 2: Drilling details.

HOLE ID	EASTING	NORTHING	RL	DIP	AZI	LENGTH
HE001	375031	6544718	293	-72	135	288.0
HE002	374914	6544801	293	-78	235	244.0
HE003	374831	6544742	293	-74	224	244.0

Foremost among the objectives of the drilling was to determine whether a sediment-free corridor on the basalt-ultramafic contact could be discerned; this is regarded as the main indicator of mineralisation potential. Additional criteria include the thickness relationships between individual flows in the overlying ultramafic – comparatively thicker flows are known to correspond to a channel environment on the contact, with thinner flows occurring in the flanking environment.

All holes were collared in porphyry which was underlain by the ultramafic units of the Kambalda Komatiite. Between these units various sediment units and small porphyry bodies were intersected. All holes ended in the Lunnon Basalt.

Thick sediment was intersected in the first two holes which eliminated any prospects for nickel mineralisation. Hole HE001-NE intersected six metres of sediment on the contact while HE002-NE intersected four metres. Both holes intersected interflow sediments with each having at least one sediment unit sitting immediately above a spinifex-textured zone in the ultramafic. This indicates in-situ flow units and sediment horizons.

The third hole completed in the co-funded program was the westernmost one, closest to the Hunt mine workings. This hole intersected a barren contact. Five separate sediment horizons were also intersected though only one that sits above a recognisable ultramafic flow top. Textural evidence for the other sediment units in this hole being in-situ is lacking.

Also sitting immediately above an ultramafic flow unit (recognisable from spinifex texture) in the third hole was a sulphidic horizon. This was sampled for nickel.

Logged lithologies are presented in Figure 7.

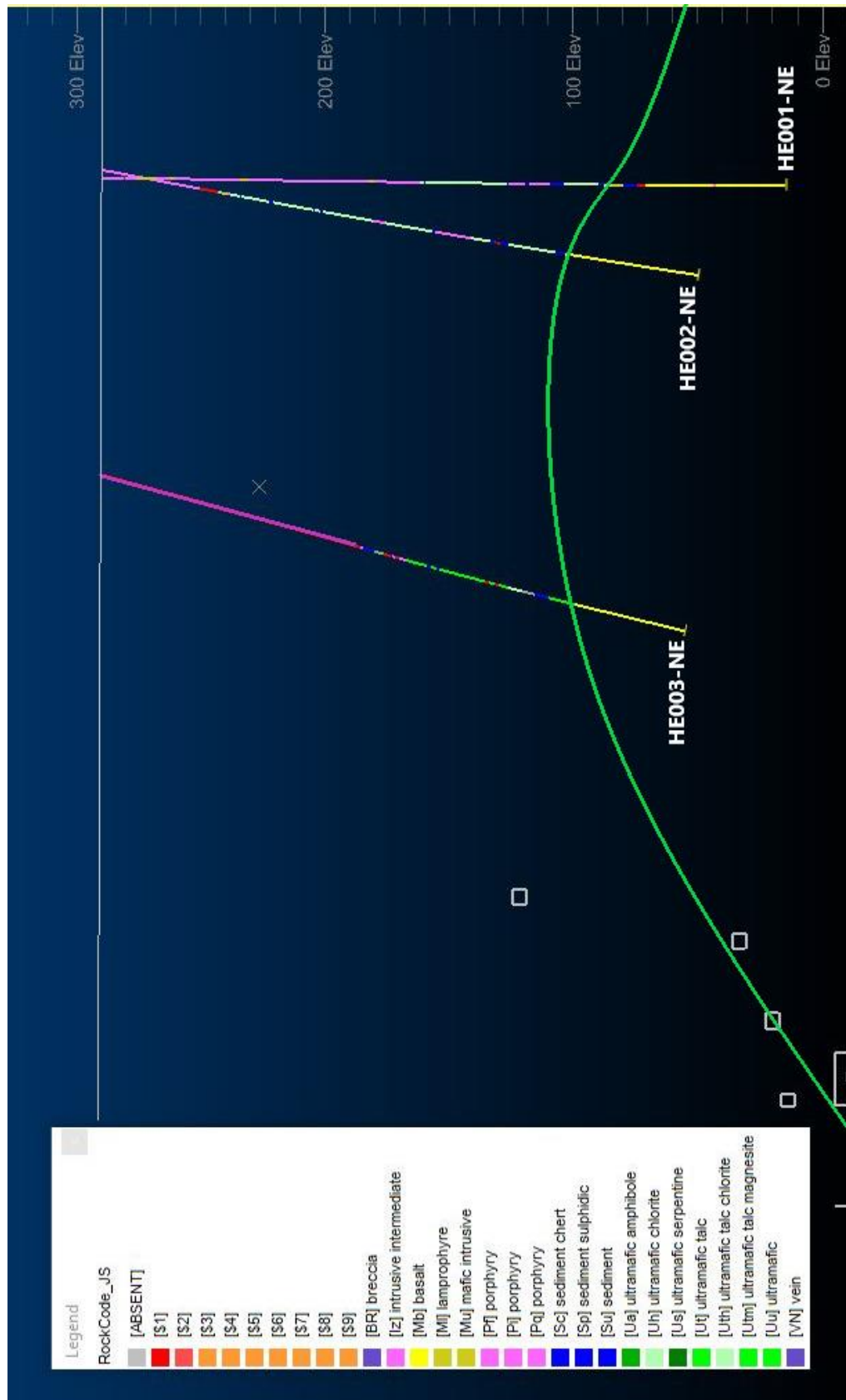


Figure 7: Logged lithologies in sectional view with geological legend.

Section is looking north.

6.2 Nickel, gold and multi-element geochemistry

The core was assayed for nickel in all areas where the stratigraphic relationships (in particular the basalt-ultramafic contact and the tops of ultramafic flow units) indicated nickel mineralisation potential. The core was also sampled for gold in areas where potential mineralisation was indicated by veining and alteration.

Composite nickel assay data compiled as down-hole intercepts are presented in Table 3 and gold assay data are presented in Table 4.

Table 3: Nickel assay data compiled as down-hole intercepts.

Home name	From	To	Metres	Ni %
HE002-NE	181.0	185.7	4.7	0.18
HE003-NE	130.0	135.8	5.8	0.19
HE003-NE	143.3	145.3	2.0	0.15

Table 4: Gold assay data compiled as down-hole intercepts.

Hole name	From	To	Metres	Au g/t
HE001-NE	143.0	144.0	1.0	0.82
HE001-NE	96.0	96.9	0.9	0.51

6.3 Structure

Orientation measurements were taken (where reference lines were available) for major structures and lithological contacts. No major structures that could be correlated between the holes were observed.

Some shearing is evident at the basalt-ultramafic contact in hole HE003-NE. This could have affected the distribution of nickel on the contact should this hole be within a mineralised contact. No orientation line is available for this part of the hole.

6.4 Regional significance

The nickel intercepts are sufficient to indicate that some prospectivity remains for a nickel-mineralised corridor to the east of the Beta Hunt system; the barren contact in hole HE003-NE has not closed out the mineralisation potential. The correlating nickel shoot, the Fisher North Ore Belt on the northern side of the Kambalda Dome is known to consist of isolated pods of mineralisation within a discernible trend and it is reasonable to assume that any nickel shoot in the prospective area to the east of Beta Hunt would have a comparable morphology.

7.0 FURTHER WORK

A fourth hole is planned, originally planned as the fourth of the five holes in the original proposal, where nearby drilling targeting gold has indicated a thinner sediment unit on the contact. This hole will be drilled from the collar location originally planned but with a modified dip to target the zone most likely for a sediment-free corridor to occur.

Sulphides at the contact in hole HE003-NE appear to be affected by shearing which may be associated with large-scale thrusting observed within the upper levels of the Hunt mine to the immediate west. Interflow sulphides sitting immediately above a thin spinifex zone, which latter indicates a flow top, are indicative of a mineralised corridor. Further work will be undertaken to test the contact and to better understand the relationship between any mineralisation that occurs here and that which is remobilized on the large-scale thrust sheets.

8.0 CONCLUSION

The Hunt East prospect remains a viable target which requires further work. The co-funded drilling has established that a thick sediment occurs in the eastern parts of the zone that was originally conceived as the target zone, and that therefore any remaining prospectivity is on the western side of this corridor.

9.0 REFERENCES

Blewett, R.S; Czarnota, K; and Henson P.A, 2010: Structural-event framework for the eastern Yilgarn Craton, Western Australia, and its implications for orogenic gold. *Precambrian Research*, Vol.183: 203–229.

Swager, C.P., 1997. Tectono-stratigraphy of late Archaean greenstone terranes in the southern Eastern Goldfields, Western Australia. *Precambrian Research*, Vol.83, 11–42.

APPENDICES

Appendix 1: Drill logs: HE001-NE, HE002-NE, HE003-NE

Appendix 2: Assay data.

Appendix 3: Beta Hunt logging codes.

Appendix 4: Orientation data from drill logs.