



## **INTERIM DRILLING REPORT**

to accompany lodgement of drill core

**KRODA PROSPECT**

**EXPLORATION LICENCE 29896**

**BARROW CREEK PROJECT**

**June, 2019**

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Operator	Gladiator Resources Limited
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Target Commodity	Gold
Datum/Zone	GDA94/ MGA Zone 53
250,000 mapsheet	Barrow Creek (SF 5306)
100,000 mapsheet	Crawford 5655, Taylor 5755

**Distribution:**

- o NT DPIR
- o Prodigy Gold NL
- o Gladiator Resources Limited

## Table of Contents

Tables .....	2
1 Abstract.....	3
2 Introduction .....	3
3 Induced Polarisation (IP) Survey – Kroda Target .....	4
4 Kroda drilling program 2018.....	7
4.1 Introduction .....	7
4.2 Reverse Circulation (RC) drilling.....	10
4.3 Diamond core drilling.....	10
4.3.1 Introduction .....	10
4.3.2 KDD-001 detailed observations .....	10
4.3.3 KDD-002 detailed observations .....	25
4.3.4 Magnetic susceptibility testing .....	40
4.3.5 Sampling and assay results .....	41
5 Conclusions.....	41

## Tables

Table 1	High priority drill targets generated by the Kroda IP survey
Table 2	Drill holes completed on the Kroda project area in 2018
Table 3	2018 Kroda diamond drilling intersections in excess of 0.5 ppm Au

## Figures

Figure 1	Map of the North Arunta JV Project Area
Figure 2	IP lines and electrode stations over the Kroda target
Figure 3	Chargeability sections
Figure 4	Kroda 2018 program drill hole locations and access
Figure 5	Drill hole traces superimposed over chargeability isosurfaces
Figure 6	HQ diamond core from hole KDD-001
Figure 7	Gold assays versus core magnetic susceptibility - KDD-001
Figure 8	Gold assays versus core magnetic susceptibility - KDD-002
Figure 9	North-south section through Kroda-3

## Appendices

Appendix 01	Kroda_Collars_2018_12.xlsx
Appendix 02	Kroda_Survey_2018_12.xlsx
Appendix 03	Kroda_Core_Recovery_2018.xlsx
Appendix 04	Kroda_Diamond_Geology.xlsx
Appendix 05	Kroda KDD-001_Core_Photos_Wet.pdf
Appendix 06	Kroda KDD-002_Core_Photos_Wet.pdf
Appendix 07	Kroda KRCDD-005_Core_Photos_Wet.pdf
Appendix 08	Kroda_Assay_Results_Core_2019_01.xlsx

## 1 Abstract

The Barrow Creek Project is located approximately 320km NNW of Alice in the western Arunta region (**Figure 1**) and includes twenty four (24) Exploration Licences. Gladiator Resources Limited (Gladiator) is exploring the tenements for gold mineralisation. Exploration Licence 29896 is held by Prodigy Gold NL (Prodigy), formerly ABM Resources NL. Gladiator Resources Ltd (Gladiator) is the manager of the tenements under the terms of the North Arunta Joint Venture agreement between Prodigy and Thunderbird Metals Pty Ltd (Thunderbird). Subsequent to the establishment of the North Arunta Joint Venture, Thunderbird assigned its rights to Gladiator in April 2018.

A high resolution dipole-dipole IP survey conducted over the Kroda prospect in 2018 identified several deep, broad zones of chargeability located 100-300 m below an area of historical, near surface gold mineralisation. A deep drilling program conducted in late 2018 aimed to test these newly identified targets and to determine the nature of the observed anomalism.

The details and key findings of the diamond coring component of the drilling program are summarised in this Interim Drilling Report which has been prepared to accompany submission of diamond drill core from holes KDD-001, KDD-002 and KRCDD-005 to the NTGS Alice Springs Core Facility. Full results of the drilling program (including complete results from RC holes and interpretations) will be presented in the Barrow Creek Project Group Annual Report 2019.

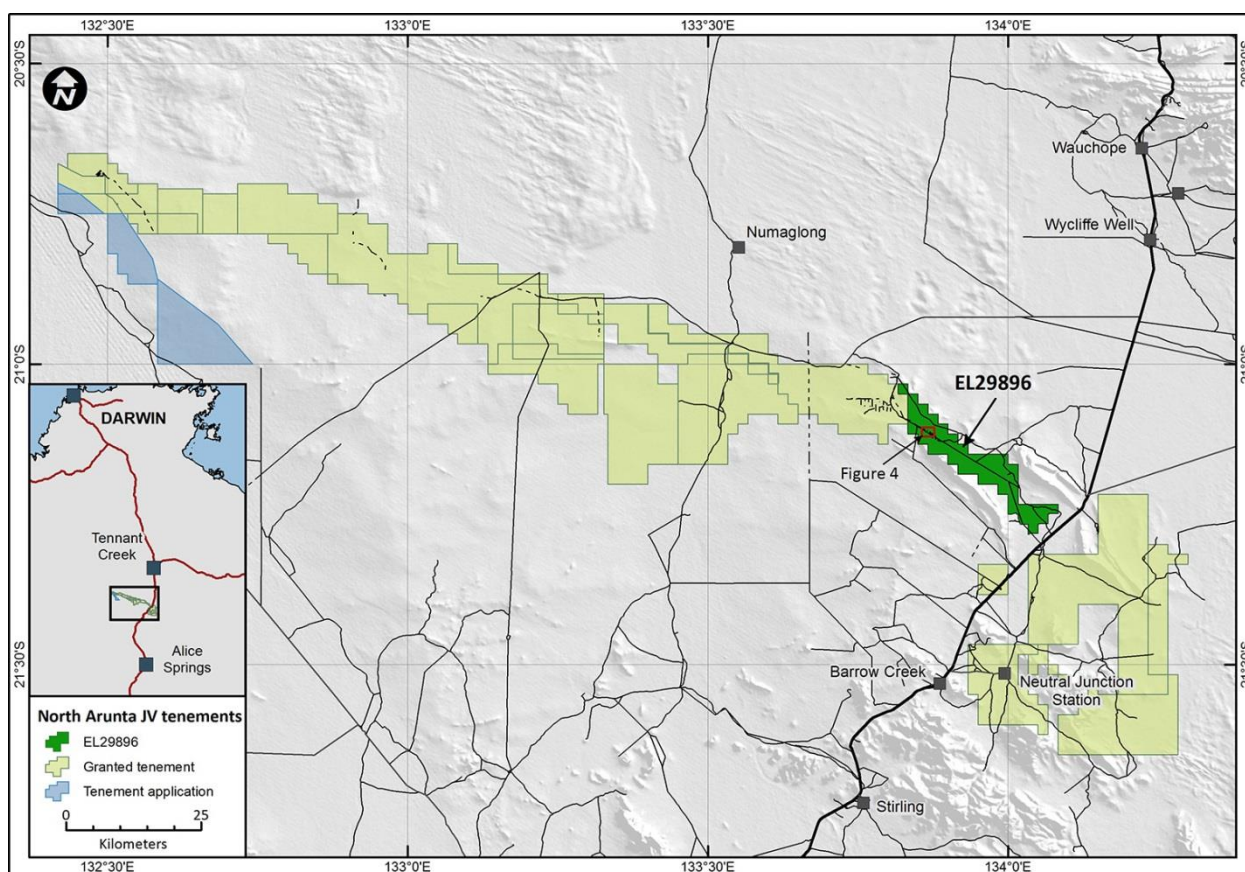
KDD-001 and KDD-002 were designed to test the historical Kroda-3 shear-hosted gold occurrence. Both HQ-size diamond holes were cored from surface to EOH. Both encountered significant sulphide mineralisation (mostly arsenopyrite but also with abundant pyrite/chalcopyrite) and the assayed sections returned significant gold numbers. KRCDD-005 is a 60m HQ diamond tail which was preceded by 141m of RC. The hole was designed to test a deep IP anomaly along strike from the Kroda-3 target.

## 2 Introduction

The North Arunta JV Project covers a >200km-long section of the 'Willowra suture', a fossil collisional zone and first-order control on gold in the Tanami Orogen. In addition to gold, the Arunta Orogen is also prospective for copper, lead-zinc, nickel, tin, tantalum, lithium, REE and vanadium ores. The Kroda prospects have gold mineralisation associated with structural dilatant zones within a shear zone cutting through amphibolite facies metasedimentary rock of the Lander Rock Formation.

Geologists from Thunderbird Metals/Gladiator Resources undertook a reconnaissance mission to ELs 26825 and 29896 in early May, 2018 with the primary aims being to meet with local stakeholders and service providers and to check access to proposed work areas. This was followed by a high resolution dipole-dipole IP survey which was conducted over the Kroda prospect (EL29896) in June/July of 2018. This program identified several deep, broad zones of chargeability located 100-300 m below an area of historical, near surface gold mineralisation. An on-ground clearance by traditional owners and representatives from the CLC in August resulted in a renewal of the terms of the previous Sacred Site Clearance Certificate until 31<sup>st</sup> Dec, 2019.

A deep drilling program was completed at the Kroda prospect in late 2018 (1926m RC & 270m Diamond) with the primary aims of determining the nature of the observed anomalism in the newly identified IP survey targets and to follow up on historical drilling results at the Kroda-3 target.



**Figure 1:** Map of the North Arunta JV Project Area with the location of the tenement which is the subject of this drilling report highlighted.

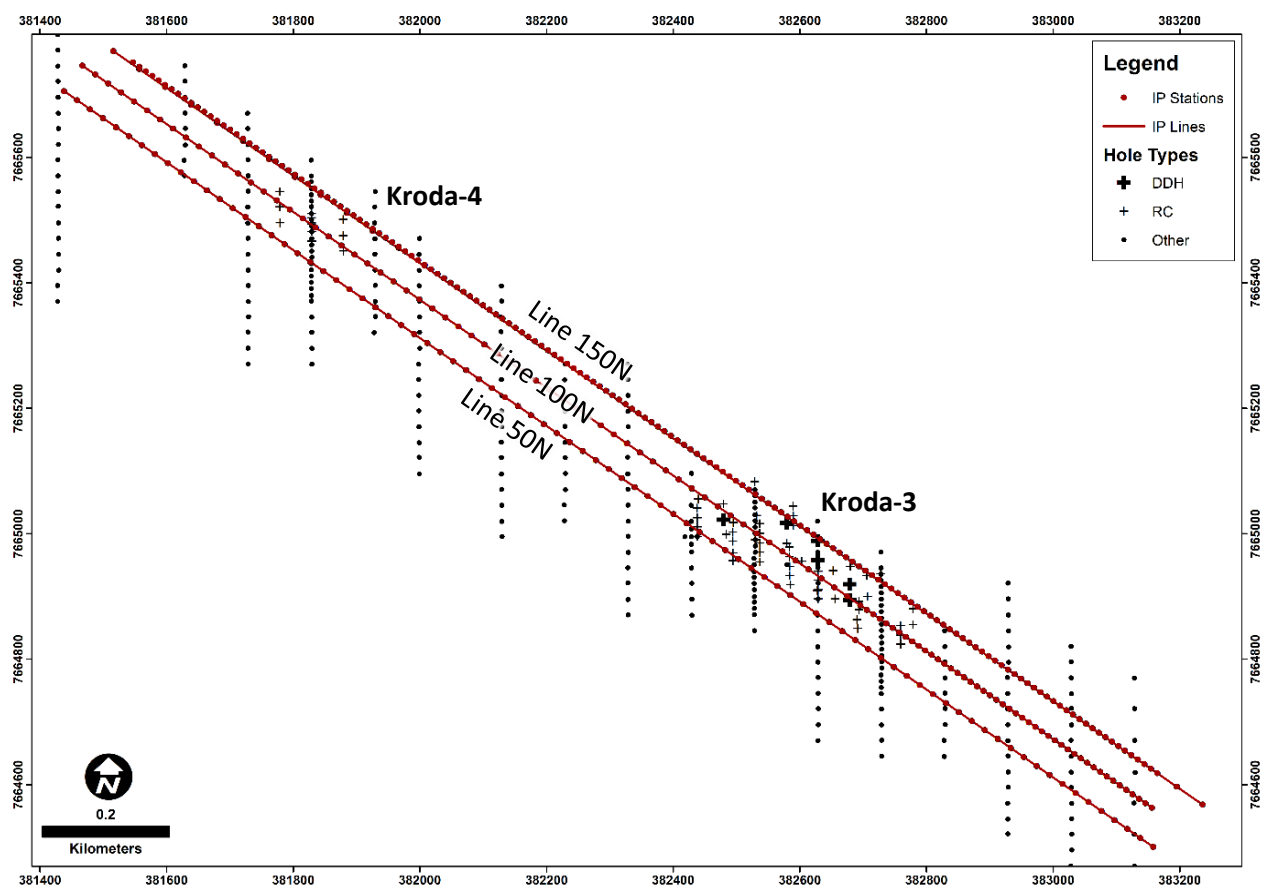
### 3 Induced Polarisation (IP) Survey – Kroda Target

In June/July 2018, Fender Geophysics Ltd was contracted to carry out a high-resolution induced polarisation (IP) survey over the Kroda Target, consisting of three lines of dipole-dipole IP (**Figure 2**). The survey defined three large, deep-seated IP chargeability anomalies (apparent chargeability >20msec) situated below the area of known mineralisation (**Figure 3, Table 1**). The survey data were processed for interpretation by Dr Amanda Buckingham of Fathom Geophysics and Thunderbird Metals Ltd.

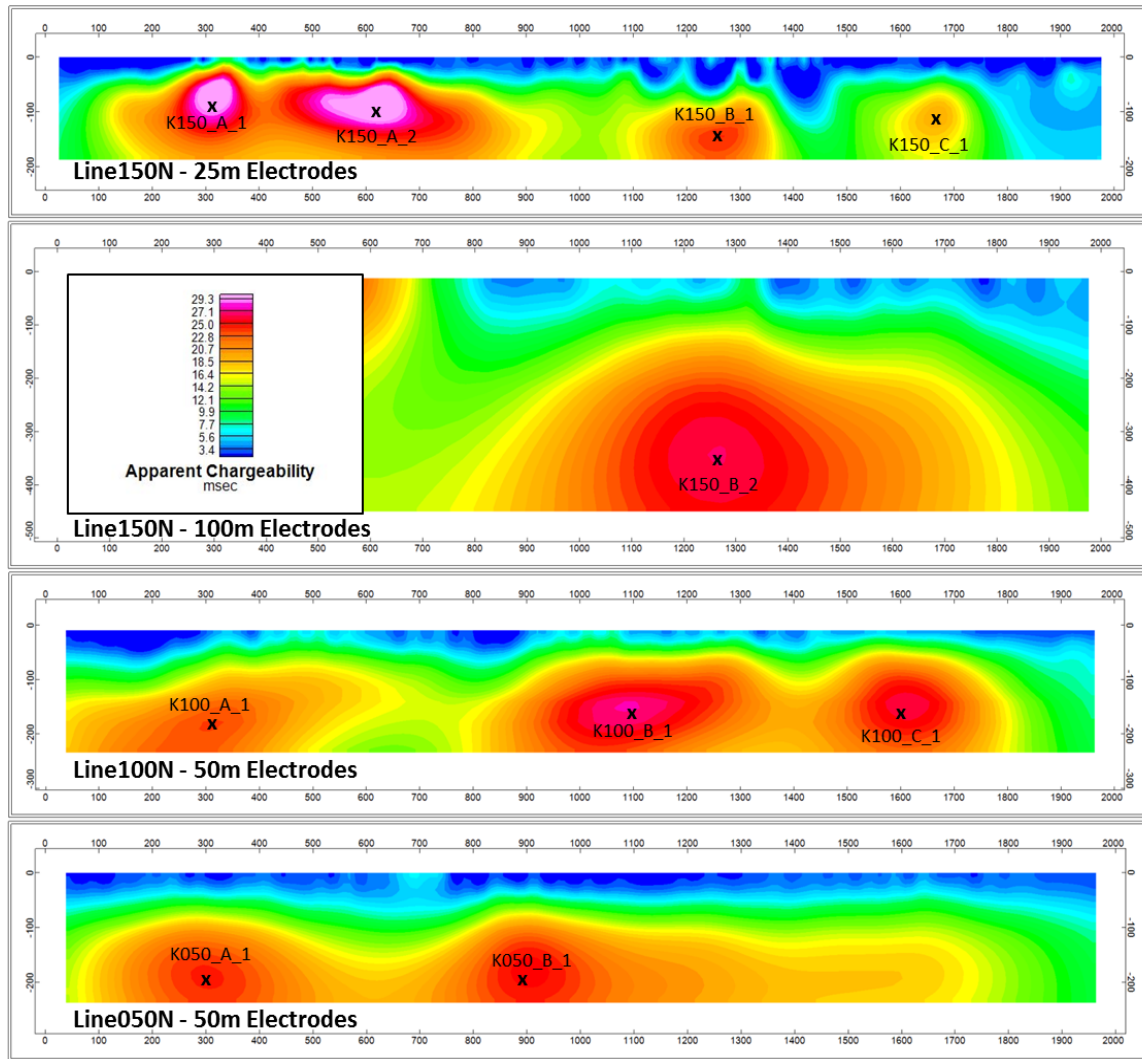
As illustrated in **Figure 3**, none of the IP anomalies extend to the surface. The anomalies have never been tested by previous explorers since the bulk of the historic drilling was relatively shallow and the few deeper holes completed in the area failed to intersect the anomalous zones. It is also notable that the newly identified IP chargeability anomalies are considerably more intense than those associated with known, shallow gold mineralisation. At the time of their discovery, the nature of these anomalous zones was uncertain. However, in the context of the prospect geology, metallogeny and historic exploration results, the newly identified IP chargeability anomalies were interpreted as possible broad domains of disseminated sulphides associated with the hydrothermal system responsible for the known gold mineralisation at Kroda-3 and Kroda-4. As such, they were considered high priority drill targets for additional Kroda-style gold mineralisation at depth and along strike from shallow historic gold intercepts at Kroda-3 and Kroda-4.



The IP survey data and 3D inversion surfaces were presented as appendices to the Barrow Creek Project (GR162) group annual report (September, 2018).



**Figure 2:** IP lines and electrode stations over the Kroda Target (or Kroda Prospect), a greater than 1.7km-long gold-in-soil anomaly coincident with the Kroda shear zone and broad, shallow gold intercepts by previous explorers at the Kroda-3 and Kroda-4 prospects. The IP survey line 150N was completed at 25m and 100m electrode spacings, designed to obtain both ultra-high resolution near surface and deeper IP data. Lines 100N and 050N were completed at 50m electrode spacing only. This spacing emerged as the optimal design for the local ground conditions and for obtaining the best depth information at the best possible resolution.



**Figure 3:** Chargeability sections show large and high tenor anomalies and targets (x), interpreted as zones of sulphide mineralisation. Model depths using appropriate data sensitivities are 180-250m for the 25 and 50m electrode spacing (all lines) and 450m for the 100m electrode spacing (Line 150N only). The left side of the sections are the north-western ends of the survey lines and the south-eastern ends are to the right.

Target ID	Line	Target	Easting (m)	Northing	RL (m)	Depth (m)
K150_A_1	150N	A	381772	7665594	356	100
K150_A_2	150N	A	382028	7665413	344	110
K150_B_1	150N	B	382542	7665056	308	145
K150_B_2	150N	B	382542	7665056	103	350
K150_C_1	150N	C	382887	7664812	345	105
K100_A_1	100N	A	381753	7665547	276	180
K100_B_1	100N	B	382388	7665101	293	160
K100_C_1	100N	C	382809	7664809	290	160
K050_A_1	050N	A	381706	7665521	256	200
K050_B_1	050N	B	382197	7665177	253	200

**Table 1:** High priority targets generated by the Kroda IP survey

## 4 Kroda drilling program 2018

### 4.1 Introduction

The 2018 drilling program at the Kroda prospect was designed to test Induced Polarisation (IP) anomalism underling an area of known, shallow gold mineralisation, provide crucial structural and lithological data and verify historical gold grades.

The program required construction of several tracks to provide access to planned drill sites (**Figure 4**). A local operator (Phillips Earthmoving – Tenant Creek) was contracted to undertake the track and drill pad construction work. The area was found to be crossed by several unmarked minor tracks, including the old main station track. Some of these are apparently used for cattle mustering and also provide access for traditional owners. With minimal remedial work required, the existing track network was found to provide suitable access to much of the area which reduced considerably the amount of clearing needed to be undertaken (**Figure 4**).

Drill holes were designed to test each of the identified chargeability anomalies (targets A, B and C; **Table 1**). The anomalous zones had been untested by (mostly shallow) historical drilling. Locations and orientation of drill hole collars are presented in **Table 2** and **Appendix 01**. Downhole survey data are provided in **Appendix 2** and hole traces are shown superimposed over the chargeability isosurfaces in **Figure 5**.

United Drilling Services (UDS) was contracted to carry out both the RC and Diamond drilling work using a multipurpose DE840 rig. The program was conducted over a three week period from mid-November to early December, 2018. 1,926m of RC drilling and 270m of HQ-size diamond drilling was completed for a total of 2,196m. Alice Springs-based geologist (Gary Price) was contracted to supervise the drilling work, supported by a field assistant (Vincent Janima) from the local indigenous community. The field team was accommodated at the Barrow Creek Roadhouse for the duration of the program.

RC chips were analysed with a portable XRF unit as an integral part of the logging procedure. Priority sample intervals were then selected for geochemical analysis by combining and comparing the pXRF data with traditional lithological logs. At the conclusion of the drilling program, several batches of RC chip samples were submitted to Intertek (Alice Springs/Perth) for preparation and analysis while logging and sampling of the diamond core (**Figure 6**) was undertaken at the NTGS Core facility in Alice Springs.

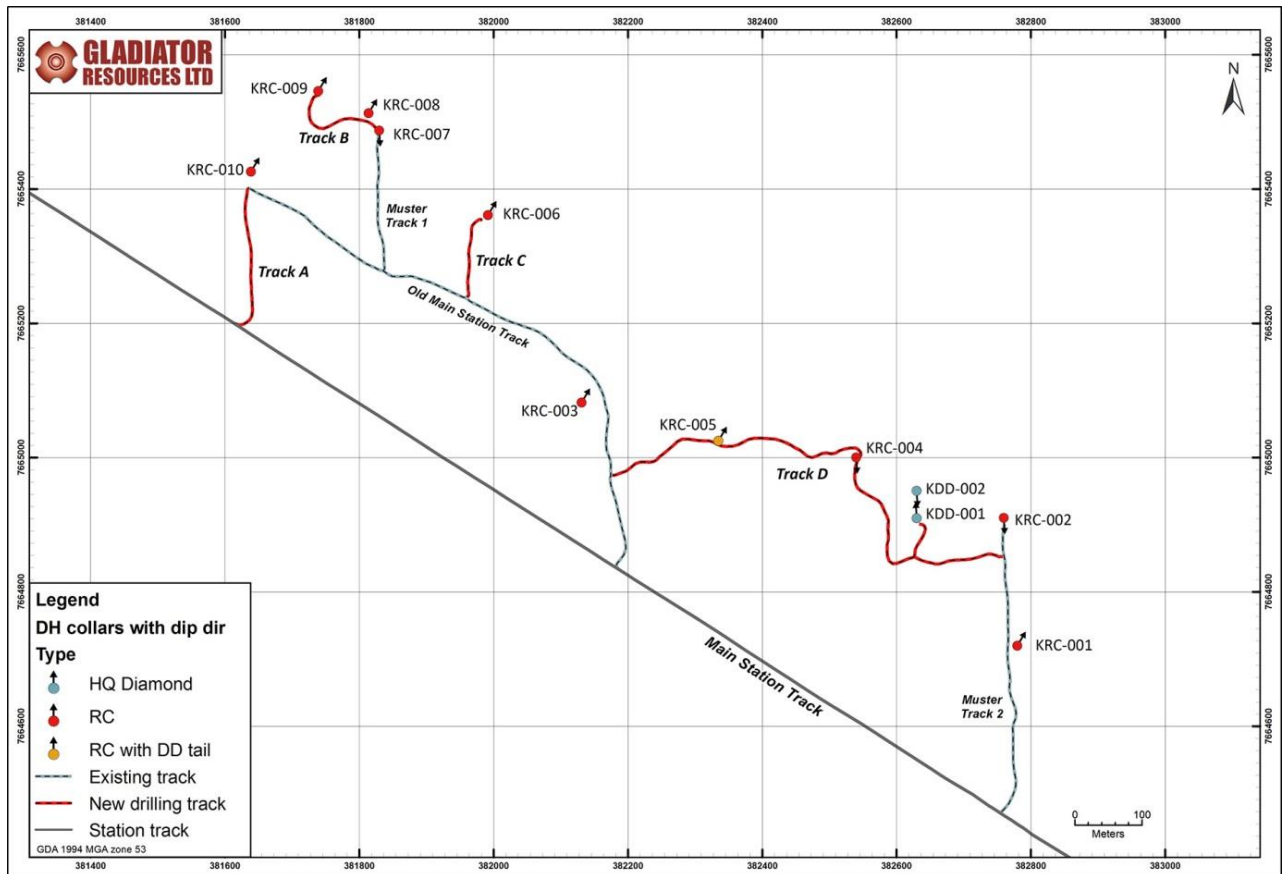
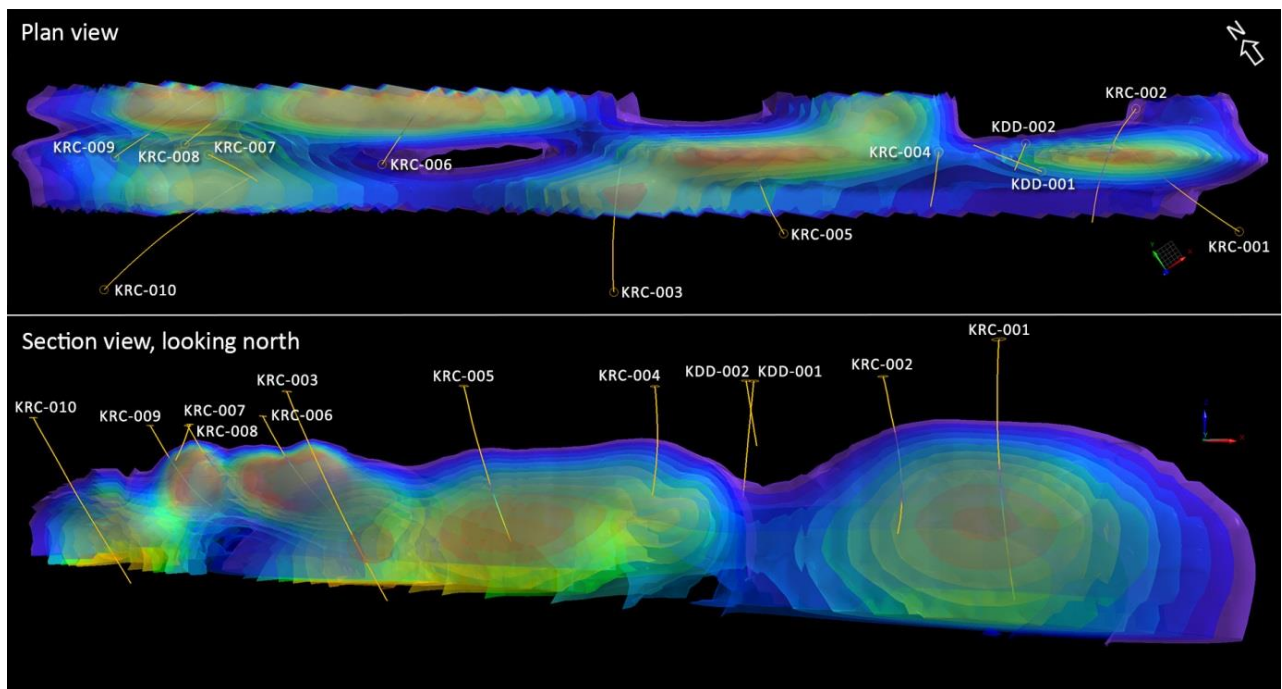


Figure 4: Kroda 2018 program drill hole locations and access.

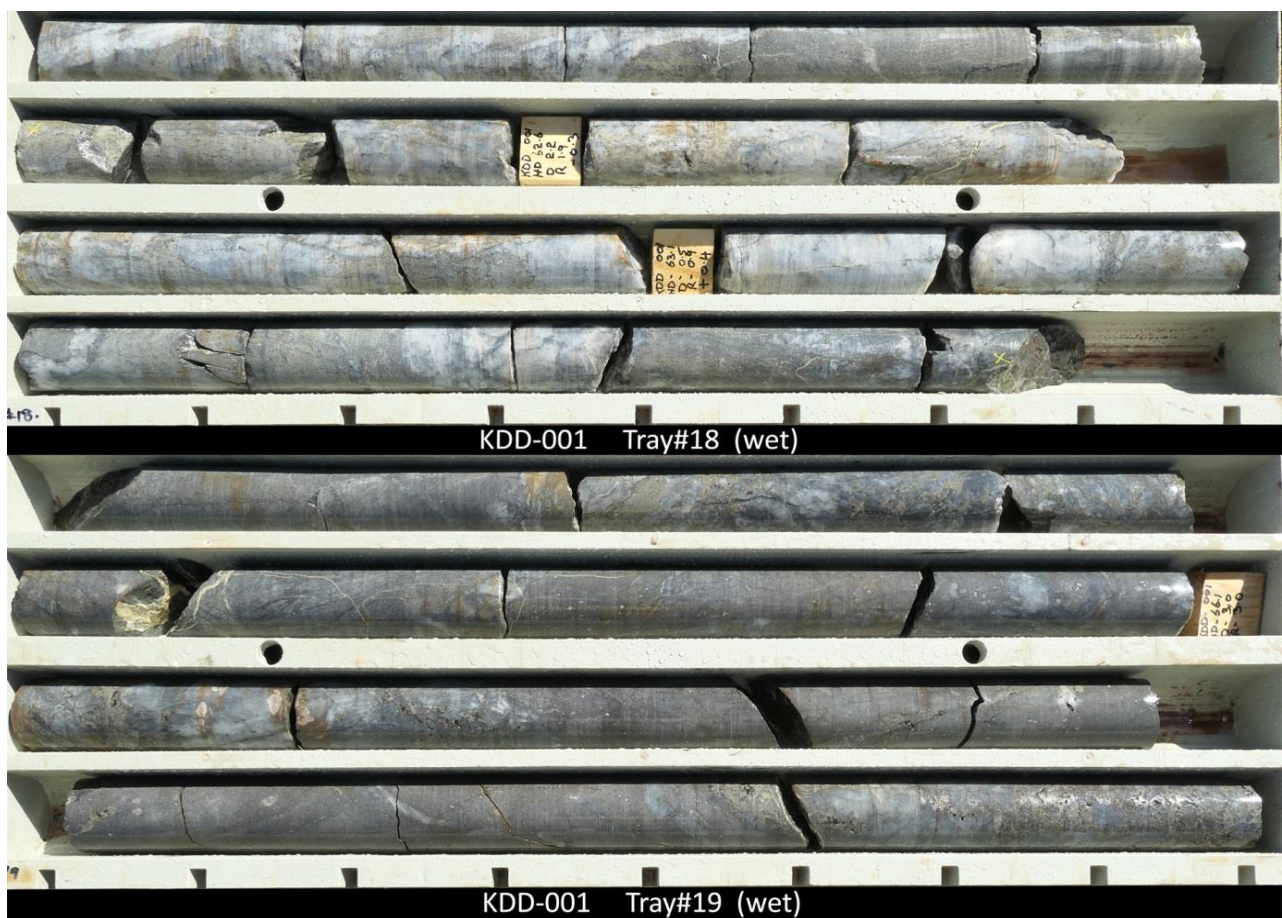
HoleID	Type	Easting	Northing	RL	RC (m)	Diamond (m)	Total depth (m)	Dip	Azimuth (grid)
KRC-001	RC	382780	7664720	451	250		250	-60	31
KRC-002	RC	382760	7664910	453	230		230	-60	176
KRC-003	RC	382131	7665082	453	300		300	-60	31
KRC-004	RC	382540	7665000	453	150		150	-60	176
<b>KRCDD-005</b>	<b>RC&amp;DD</b>	<b>382335</b>	<b>7665025</b>	<b>454</b>	<b>141</b>	<b>60</b>	<b>201</b>	<b>-60</b>	<b>31</b>
KRC-006	RC	381992	7665361	454	180		180	-60	31
KRC-007	RC	381830	7665487	453	75		75	-60	176
KRC-008	RC	381814	7665513	453	130		130	-60	31
KRC-009	RC	381739	7665546	456	170		170	-60	31
KRC-010	RC	381639	7665426	455	300		300	-60	31
<b>KDD-001</b>	<b>DD</b>	<b>382630</b>	<b>7664910</b>	<b>446</b>		<b>125</b>	<b>125</b>	<b>-70</b>	<b>356</b>
<b>KDD-002</b>	<b>DD</b>	<b>382630</b>	<b>7664950</b>	<b>453</b>		<b>85</b>	<b>85</b>	<b>-60</b>	<b>176</b>
<b>Total</b>					<b>1926</b>	<b>270</b>	<b>2196</b>		

Table 2: Drill holes completed on the Kroda project area in 2018. Diamond holes shown in bold text.





**Figure 5:** Kroda 2018 program drill hole traces superimposed over chargeability isosurfaces. The drilling program was designed to test all major anomalies identified during the 2018 induced polarisation (IP) geophysical survey and to verify mineralisation and grades at the historical Kroda 3 and 4 prospects.



**Figure 6:** HQ diamond core from hole KDD-001 (approximately 61 to 68m) showing extensive pervasive silicification and massive pyrite/arsenopyrite.

## 4.2 Reverse Circulation (RC) drilling

A full account of the results of the RC drilling component of the campaign including full geological logs, pXRF data and RC chip photographs will be presented in the 2019 Barrow Creek Project Group Annual Report.

## 4.3 Diamond core drilling

### 4.3.1 Introduction

Three diamond holes were completed at the end of the drilling program in early December, 2018. KDD-001 and KDD-002 form a pair of 'scissor' holes, designed to test the historical Kroda-3 shear-hosted gold occurrence. Both of these holes are HQ-size and cored from surface to EOH. Significant sulphide mineralisation (mostly arsenopyrite but also with abundant pyrite/chalcopyrite) was encountered in both holes and the assayed sections returned significant gold numbers. KRCDD-005 is a 60m HQ diamond tail which was preceded by 141m of RC. The hole was designed to test a deep IP anomaly along strike from the Kroda-3 target. Minor sulphide mineralisation was encountered in this hole and minor gold values (< 5 ppm Au) were returned from the assayed intervals.

Core recovery and geological logs for the three diamond holes are provided in **Appendix 3** and **Appendix 4** respectively. Core photographs can be found in **Appendices 05-07**.

The geological core logging conducted at the conclusion of the program (**Appendix 04**) was undertaken with the aim of identifying priority intervals for geochemical analysis. Hence, this initial logging focussed primarily on key aspects that were of direct relevance to potential gold mineralisation. This included logging of bulk lithology and lithological contacts, alteration type and intensity, vein type and percentage and the percentage and type of visible sulphides along with brief comments of any relevant features observed during the first-pass examination of the core. Core mark-up, recoveries and orientation marks were all completed by a contract field assistant from XM Logistics prior to core cutting and sampling with all selected core samples being dispatched to Intertek, Alice Springs for sample preparation and chemical analysis which was completed at Intertek's Perth laboratories.

Following encouraging assay results from the two Kroda-3 scissor holes, a decision was made to supplement the initial logging with a more detailed re-examination of the KDD-001 & -002 core samples. The aim was to complete a preliminary interpretation of the gold mineralisation and its relationship to the sulphides, focussing on intervals containing high gold grades within the freshly cut samples. A program of magnetic susceptibility testing of the core was also carried out to assist with interpretation and future targeting.

The following observations and photographic plates come from the detailed study undertaken by consultant geologist Gary Price at the NTGS Alice Springs Core Facility in February, 2019.

### 4.3.2 KDD-001 detailed observations

#### First interval sampled; 4 to 12 metres depth

The first core sampling started at 4 metres depth, with 2.22g/t Au being confirmed in sample; 17204 (interval 4-5 metres). The geological log indicated the base of transported contact between clays and saprock at 3.9 metres depth which was confirmed in the core re-examination (**Plate 1**).





**Plate 1:** First two core trays for KDD-001, showing transported red-brown sands/clays to the contact with underlying saprock contact at 3.9 metres.

**Non-sampled interval; 12 to 20 metres depth**

Re-examination of core confirmed weakly foliated and interbedded metapsammite/metapelite with weak to moderate chlorite alteration and occasional thin quartz veinlets which was in agreement with the

original geological log. An interval of weakly oxidised calc-silicate was logged 14.8 to 16.25 metres which is not expected to contain significant gold values (**Plate 2**).



**Plate 2:** Weakly oxidised calc-silicate unit logged from 14.8 to 16.25 metres.

### **Second sampled interval; 20 to 36 metres depth**

Gold assays for the second sampled interval between 20-36metres were disappointing. Logging did not identify any massive quartz veining, but the interval did contain moderate-strong haematite and chlorite alteration, minor brecciation textures and intervals containing low percentages of thin quartz veining. There was some core loss between 32.8-33.4 metres owing to a cavity (**Plate 3**).

Minor gold anomalism from 32-35 metres (maximum assay was 0.833ppm Au between 32-33m) where drilling recoveries were poor owing to either a cavity, or heavily broken/sheared clay zone that was washed-out by drilling action.

The interval between 32.8 to 33.4 metres may be a small mineralised zone with assay representation being compromised owing to poor sample recovery. The highest gold assay (0.833ppm Au) occurred immediately above the cavity (sample; 17226 from 32-33 metres) and a re-examination of heavily broken core fragments identified strong foliation, strong chlorite and moderate silica alteration and minor thin cross-cutting quartz veining running sub-parallel to the prevailing fabric.





**Plate 3:** Poor sample recovery from 32.8 to 33.4 metres which may be a small mineralised zone. Assay results may not be representative owing to poor sample recovery.

#### **Non sampled interval; 36 to 50 metres depth**

Re-examination of this interval confirmed weakly foliated and interbedded metapsammite/metapelite with weak to moderate chlorite alteration, and increasing haematite mottling to 40.4 metres depth.

Interval from 40.4 to 46.05 metres contains several intervals of coarse quartz veining hosted within weakly to moderately silicified metapsammite/metapelite. Veins are thick (up to 50mm+ diameter) and trend sub-parallel to prevailing foliation (**Plates 4-8**). Close examination of several core samples comprising coarse quartz veining identified minor patchy sulphides (py, cpy) within haematite-filled fractures and vugs and visible smearing of sulphides was observed around cut core surface in some samples examined.

Interval from 46.05 to 47.05 metres comprises a thin interval of haematite replacement with gossanous textures from 46.05-46.2 metres (**Plate 9**), above a broken interval of massive quartz veining from 46.2-47.05 metres (**Plate 10**). Rounding textures were noted with most of the coarse quartz vein fragments suggesting drilling encountered a heavily broken interval with some core loss being resultant.

The haematite zone at the start of this interval is currently interpreted to be the hanging wall contact for the wide interval of gold hosted mineralisation identified by sampling of the third interval immediately below.

Interval 47.05 to 50 metres, to the start of next sampled interval contains heavily silicified metapsammite which has a similar bleached appearance to the core from 50 metres depth where sampling was completed (**Plates 11-13**).



Several intervals of coarse quartz veining were logged earlier along with minor coarse sulphides (aspy, py). Sampling conducted from 50 to 60 metres depth identified strongly anomalous gold grades between; 0.084g/t and 1.686g/t which has potential to be economic. Non-sampled core from the interval above has the same appearance/alteration and textures, intervals of coarse quartz veining and limited visible sulphides.



**Plates 4&5:** Interval 40.6 to 40.8m showing strong silicification and haematite fracture infillings.



**Plates 6&7:** Interval 44 to 44.1 metres showing coarse quartz veining, sub-parallel to foliation.



**Plate 8 (left):** Heavily silicified, veined and fractured core sample around 45 metres depth.

**Plate 9 (right):** Interval from 46.05 to 46.2 metres comprises a thin interval of intense haematite replacement with gossanous textures.





**Plate 10:** Example of massive quartz veining from interval 46.2-47.05 metres.



**Plate 11:** Interval 47.05 to 50 metres was not sampled, but contains heavily silicified metapsammite which has a similar bleached appearance to core that was sampled from 50 metres depth.



**Plates 12 & 13:** Interval around 48 metres depth showing strong silicification and coarse sulphides.

**Third sampled interval; 50 to 76 metres**

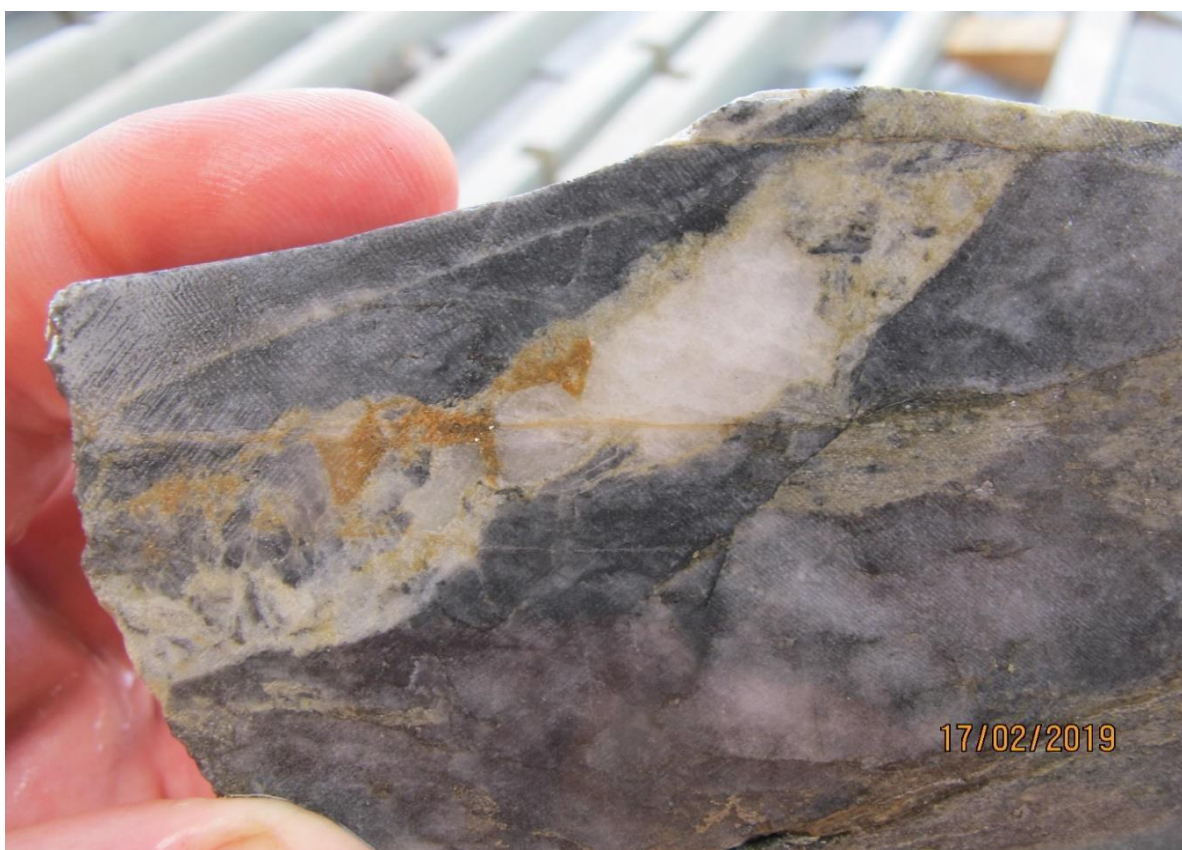
Gold assays for the third sampled interval between 50-76 metres were extremely significant, with a mineralised interval of 10 metres in width being confirmed by assaying to host potentially economic gold-mineralisation at a depth of around 50 metres below surface. A detailed re-examination of core was conducted across the entire interval to identify key/significant mineralisation features.

Sampling conducted from 50 to 60 metres depth identified strongly anomalous gold grades between; 0.084g/t and 1.686g/t within heavily silicified metapsammite which was strongly altered and bleached but the remnant sedimentary fabric and textures were still visible with only minor quartz veining being logged. The highest assay within this interval was for sample; 17233 from 55 to 56 metres which contained a 30 cm long interval of coarse quartz veining and visible sulphides (py, cpy) which was interpreted to overprint and run oblique to an earlier quartz vein which was concordant to the remnant foliation (**Plates 14 & 15**).



**Plate 14:** Core interval 55 to 56 metres which contained a 30 cm long interval of coarse quartz veining





**Plate 15:** Coarse quartz veining containing visible sulphides (py, cpy) from 55.7-55.9 metres. The quartz vein is interpreted to overprint an earlier vein which was sub-parallel to the remnant foliation

The most significant anomalous gold results in Hole KDD-001 were identified from 60 to 70 metres depth. The best interval was assayed at an average grade of; 10 metres @ 12.84g/t Au which included maximum assays of; 26g/t Au from 60-61 metres depth, 37.95g/t Au (repeat 49.92g/t Au) from 68-69 metres and 36.68g/t Au (repeat of 25.3g/t Au) from 69-70 metres.

A close examination of the lowest and highest-grade samples was conducted across the extent of the 10m interval to determine which textures, features or alteration may be associated with the highest gold grades when compared to the lower grade intervals.

From 60 to 61 metres (grade 26g/t), core was strongly silicified but still contained some remnant sedimentary textures (**Plates 16 & 17**). Coarse quartz-sericite veining was observed to cross-cut (overprint) and ran sub-parallel to oblique to the earlier fabric. Veined and sericite-altered zones contained coarse anhedral to subhedral arsenopyrite masses up to 2-3mm diameter that were formed/aligned with the late-stage veining, with lesser fine masses of disseminated pyrite and chalcopyrite was observed. Late stage veining, comprising opaque white-grey quartz with frosty textures was noted to cross-cut the heavily mineralised quartz-sericite veining and these veins had very diffuse edges.



**Plates 16 & 17:** Core interval 60.4-50.6 metres showing coarse quartz-sericite veining which overprints earlier fabric. Coarse anhedral to subhedral arsenopyrite masses up to 2-3 mm diameter are formed/aligned with the late-stage veining, with lesser fine masses of disseminated pyrite and chalcopyrite was observed.

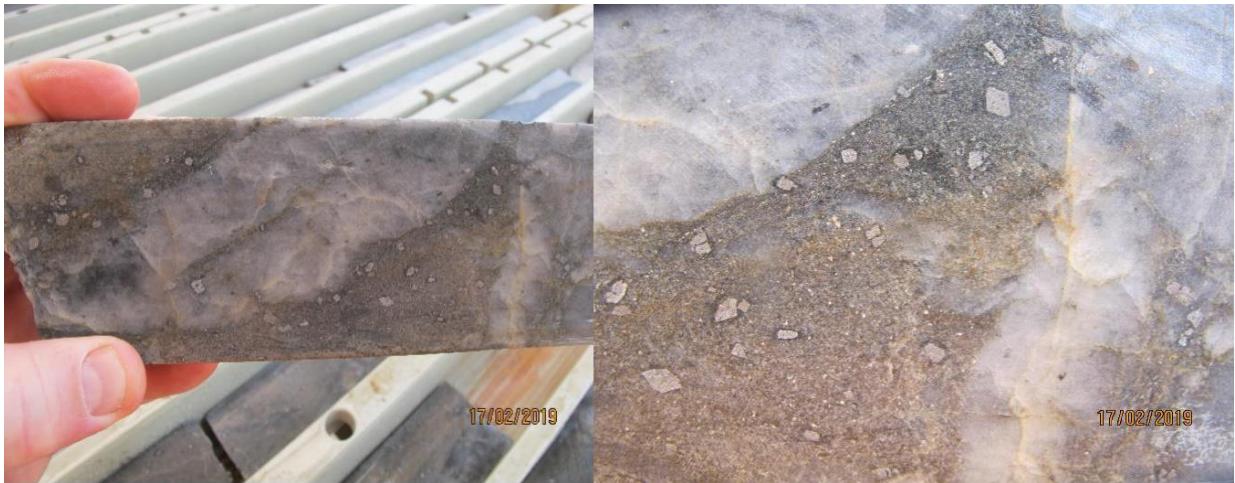
A close examination of core was from 61 to 63 metres to examine the part of the interval that contained assays <1g/t. This revealed an interval of strong silicification, which still contained remnant sedimentary fabric with frequent cross-cutting veins (opaque quartz veins up to 50mm+). Coarse subhedral to euhedral arsenopyrite masses up to 2 mm+ were noted to occur frequently within the remnant fabric in some parts of the interval with only minor pyrite and/or chalcopyrite being observed. From a mining perspective, the interval 61-63 metres was interpreted to be internal waste (dilution), comprising only weakly mineralised wall rock (**Plates 18-23**).

Similar textures were observed from 63 to 70 metres with an increasing frequency of quartz-sericite veining and coarse visible sulphides (py-cpy) being observed. A decrease in coarse arsenopyrite was noted over the same interval. Massive quartz veining was logged from around 66 to 70 metres depth. Coarse zones containing up to 5%+ coarse pyrite-chalcopyrite was observed to be intermittent throughout the interval and corresponded with the highest gold grades (**Plate 24-29**).

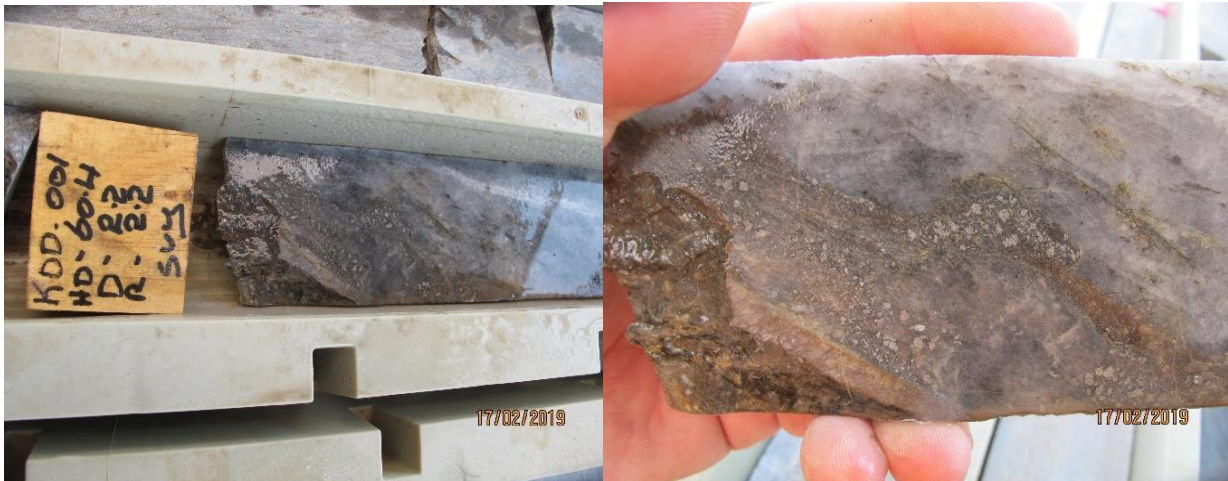


**Plates 18 & 19:** Core interval 62.5-62.6 metres showing coarse arsenopyrite masses (subhedral to euhedral) which are aligned to the remnant foliation and pre-date cross-cutting quartz veining.





**Plates 20 & 21:** Core interval 62.5 metres showing coarse arsenopyrite masses in relationship to late-stage quartz veining. Sulphide masses appear to have been re-aligned as a result of the vein emplacement.



**Plates 22 & 23:** Examples of cut core at 62.6 metres (left) and 63 metres (right) showing cross-cutting quartz vein and alignment of sulphides (arsenopyrite) along remnant foliation as a result of regional metamorphism (upgrading of sulphides that pre-dated gold mineralisation event).



**Plates 24 & 25:** Core interval 66-67 metres, showing coarse pyrite-chalcocopyrite emplacement within a heavily brecciated massive quartz vein. Sample 17245 was assayed at 9.14g/t Au from 66-67 metres.





**Plates 26 & 27:** Core interval 67.8-70.5 metres. Close-up of core sample 67.9 metres depth showing close to massive pyrite and chalcopyrite infilling within brecciated massive quartz matrix.



**Plate 28:** Close-up of core sample 68.2 metres depth showing close to massive pyrite and chalcopyrite infilling within brecciated quartz matrix. Quartz host cross-cuts remnant fabric but appears to be partially constrained by the pre-existing foliation.





**Plate 29:** Close-up of core sample 68.4 metres depth showing close to massive pyrite and chalcopyrite infilling within brecciated quartz matrix.

Coarse calcite veins and veinlets were logged from 74 metres depth. These cross-cut the foliation in a random manner and veins contain annealing textures (**Plate 30**). This was interpreted to suggest that these features were late-stage, low-temperature vein infills that post-date the gold mineralisation at Kroda 3 and had probably formed as a result of regional unloading.

A subtle footwall contact could be discerned between the massive quartz-sulphide zone with heavily to moderately-altered metapsammite at 69.3 metres depth with an anomalous gold grade of 1.19g/t Au being determined in sample; 17250 from 70-71 metres. From this depth, a decrease in alteration intensity was observed in association with minor quartz veining exhibiting predominantly ductile deformation textures. Coarse subhedral arsenopyrite masses were observed with only minor pyrite- chalcopyrite being observed in small masses along vein fractures (**Plates 31 & 32**).

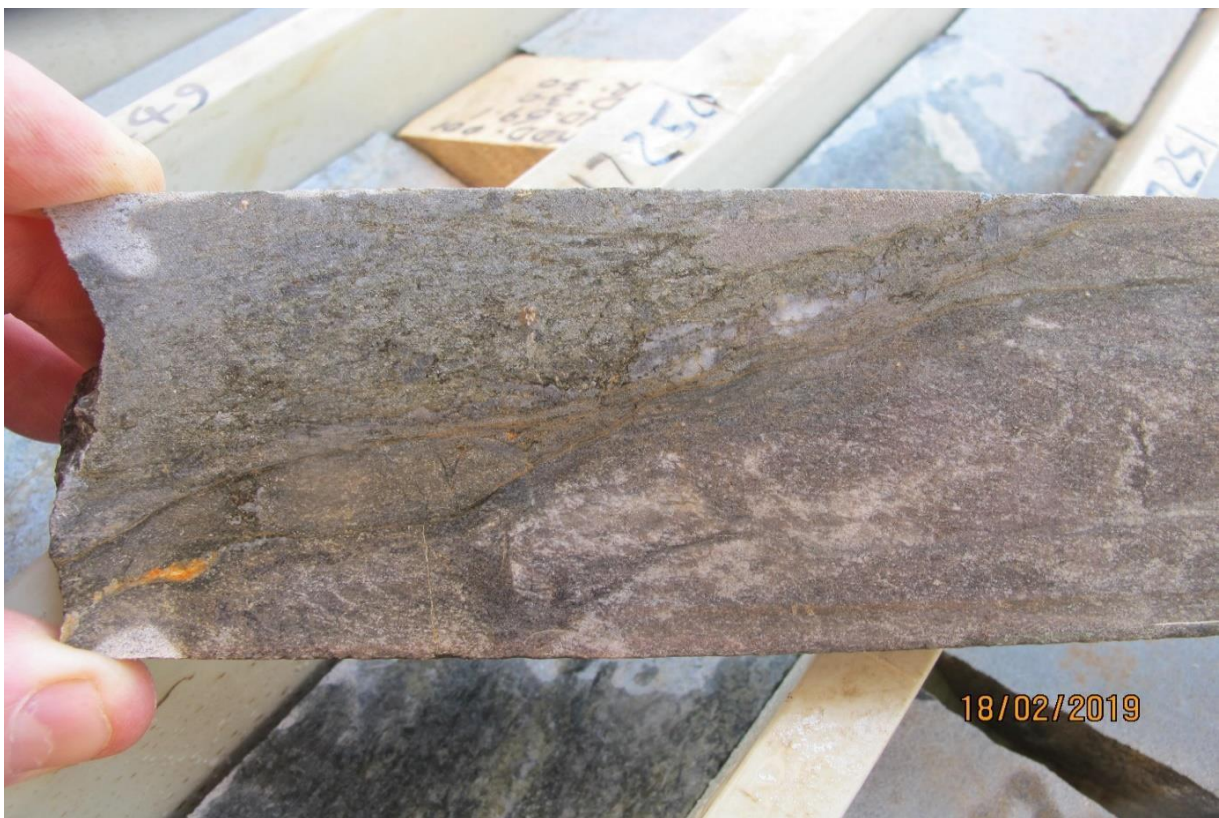


**Plate 30:** Coarse calcite veins and veinlets logged from 74 metres depth. Veins cross-cut the foliation in a random manner and contain annealing textures.





**Plate 31:** Core sample from 69.8 metres depth, showing moderately-altered metapsammite and lesser subhedral arsenopyrite masses.



**Plate 32:** Core sample from 69.9 metres depth, showing lesser quartz veining exhibiting ductile deformation textures. Coarse subhedral arsenopyrite masses were observed with only minor pyrite-chalcopyrite being observed in small masses along vein fractures

**Non sampled interval; 76 to 82 metres depth**

This interval was logged as weakly to moderately silicious metapsammite, with intermittent zones of quartz veining and occasional patchy sulphides (arsenopyrite dominant). Small intervals with thin cross-cutting quartz veining exhibiting strong ductile deformation were observed within the interval (**Plates 33 & 34**). Coarse calcite veining was also noted along cross-cutting brittle fractures.

**Fourth sampled interval; 82 to 86 metres**

This interval was logged as weakly to moderately silicious metapsammite, which was a continuation of the non-sampled zone above however, an interval of massive quartz veining was logged from 83 to 84.55 metres which contained late-stage quartz-sericite veining, which contained ductile and brittle textures and localised vuggy zones (**Plates 35&36**). Only minor sulphides were observed within the massive quartz zones however. This included coarse arsenopyrite, with lesser finely disseminated pyrite-chalcopyrite which was noted to also occur within/around the coarser arsenopyrite.

The highest gold grades (1.88 & 1.96g/t Au) were confirmed between 83-85 metres in association with the massive quartz veining and strong silicification (**Plates 37 & 38**).

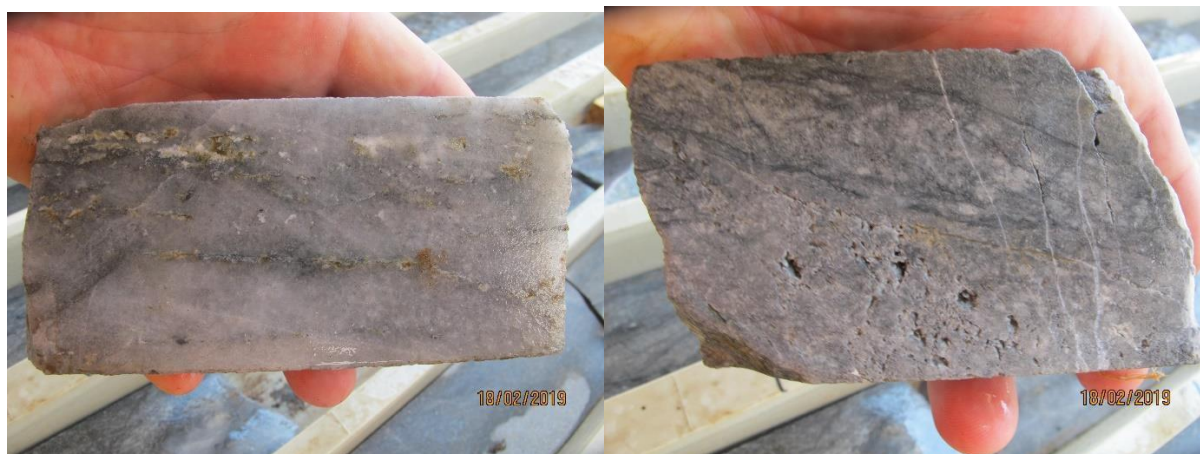
**Non sampled interval; 86 to 125.1 metres depth (EOH)**

Logging confirmed weakly to moderately chloritic metapsammite to EOH. Minor disseminated sulphides were observed (arsenopyrite only) along with a fault zone.



**Plates 33 & 34:** Core interval around 78.5 metres depth, showing small boudins within quartz veining evidence for a strong degree of ductile deformation within footwall.





**Plates 35 & 36:** Core samples 84.1 and 84.3 metres depth, showing massive quartz and intervals of late-stage quartz-sericite veining, which contained ductile and brittle textures and localised vuggy zones.



**Plates 37 & 38:** Core sample from 84.4 metres depth, showing massive quartz veining and coarse sulphide masses. This sample comprised part of the interval which contained the highest gold grades for this sampled zone (1.88 & 1.96g/t Au from 83-85 metres). Gold grade and width of zone suggests that this veining is associated with low-grade footwall mineralisation

#### 4.3.3 KDD-002 detailed observations

##### Non sampled interval; 0 to 36 metres depth

Re-examination of this interval confirmed red-brown haematitic clays from surface, becoming kaolinitic at depth to the interface with saprolite clays and saprock around 5.8 metres. Mottled/kaolinitic saprolite grading to chloritic/reduced saprock was logged to the fresh rock contact with metapsammite at 22.4 metres depth with no quartz veining or strong alteration overprints being observed.

Metapsammite, with intermittent weak haematite-mottling was logged from 22.4 to 29.55 metres which was interpreted to be the upper mineralisation/hanging wall(?) contact (**Plate 39**). From this contact, strong haematite mottling was logged to the start of a broken zone around 31.5metres depth. From 31.5 metres logging identified massive quartz veining to 32.05 metres depth. Quartz samples exhibited broken and rounded textures, which indicated that a broken zone was drilled with some core loss recorded (**Plate 40**).

Moderately to strongly foliated metapsammite with moderate haematite mottling and occasional thin quartz veining was logged to a depth of 45.5 metres with the start of the sampling commencing at 36 metres depth. It should be noted that an increase in silicification was observed in the cut core samples from 39 metres which was not recorded in the original geological log based on observations of un-cut core samples.



**Plate 39:** Start of strong haematite-mottling at 29.55 metres which was interpreted to be the upper mineralisation/hanging wall(?) contact.





**Plate 40:** Interval of massive quartz vein logged from 31.5-32.05 metres depth. Broken core with rounded textures suggested drilling intersected a broken zone with significant core loss being identified.

#### **First interval sampled; 36 to 43 metres depth**

Sampling commenced within the middle of a wide interval of metapsammite, with gold grades ranging from 0.3-0.58g/t Au up to the start of stronger silicification and thin quartz veining at 49 metres depth (**Plates 41 & 42**). Grades then increased to a maximum of 5.99g/t Au in the last sample from 42-43 metres. This interval was logged as metapsammite to a contact with a small interval (30 mm) of massive quartz vein at 42.4 metres depth. This small quartz interval was missed in the original geological log with some core-loss also being interpreted.

The interval then passed into a zone of heavily oxidised/chloritic clays which was logged beyond the sampled interval to a depth of 43.65 metres and interpreted to be a highly oxidised interval of calc- silicate lithology in the original log.





**Plate 41:** Comparison of core samples above/below 49 metres depth showing increase in silicification and veining. Gold grades ranging from 0.3-0.58g/t Au up to the start of stronger silicification and thin quartz veining at 49 metres depth



**Plate 42:** Thin quartz vein with lensoidal symmetry, emplacement concordant to remnant foliation



**Non sampled interval; 43 to 46 metres depth**

This interval comprised of heavily oxidised/chloritic clays to a depth of 43.65 metres which was interpreted to be a calc-silicate unit (**Plate 43**).



**Plate 43:** Heavily oxidised/chloritic clays logged to a depth of 43.65 metres which was interpreted to be a calc-silicate unit.

Re-logging below the calc-silicate unit confirmed an interval of moderately to strongly silicified metapsammite which contained minor quartz veining exhibiting brittle fractures (**Plate 44**). Core was observed to be heavily bleached owing to stronger silicification and minor quartz veining from 45.4 metres depth with the remnant sedimentary foliation fabric still visible (**Plate 45**). Coarse pock- marks were also noted, particularly in the cut core samples immediately below this interval which were evidence of remnant arsenopyrite, subhedral to euhedral sulphide masses which had been oxidised out of the rock fabric (**Plates 46 & 47**).





**Plate 44:** Core interval showing base of calc-silicate unit and silicified and haematite-mottled metapsammite below.



**Plate 45:** Core sample at 44.9 metres depth, showing quartz veining and strong haematite-mottling.

**Second sampled interval; 46 to 54 metres**

The most significant anomalous gold results in Hole KDD-002 were identified from 46 to 54 metres depth. The best interval was assayed at an average grade of; 5 metres @ 15.33g/t Au which included maximum assays of; 32.28g/t Au from 49-50 metres and 33.68g/t Au (repeat of 24.45g/t Au) from 50-51 metres.

A close examination of the lowest and highest-grade samples was conducted across the extent of the sampled interval as with the high-grade zone in hole KDD-001.

From the start of the sampled interval at 46 metres depth re-logging confirmed bleached and heavily silicified metapsammite to 48.9 metres, with a thin interval comprising strongly haematitic and brecciated metapsammite with clay infillings to the contact with massive quartz veining at 49.05 metres depth (**Plates 48 & 49**). Gold grades ranged from 0.13g/t to 0.62g/t Au within the 3 samples assayed.

The most significant gold values were identified from samples collected immediately below this contact, from 49 metres to 51 metres depth. A re-examination of core confirmed massive quartz veining, containing coarse pyrite-chalcopyrite masses from 49.05 to 49.4m as indicated in the original log. Sulphides were widespread at the top of the quartz vein, but became constrained within sulphide-rich horizons towards the base of the massive quartz zone.

From 49.4 metres, lithology comprised metapsammite as per the original geological log which exhibited its remnant sedimentary-foliation fabric with coarse masses of arsenopyrite being observed along the dominant foliation direction. Intermittent zones of strong silica-sericite alteration and quartz veining was confirmed as per the original log and the quartz veining was noted to have very diffused contacts with coarse masses of sulphide (py-cpy) observed to occur within and around the veins as well as cross-cutting fractures. Ductile textures were commonly observed; from gentle flexing of the original foliation to more intense, tight folding of quartz veins with very localised brittle textures were also observed within some parts of the interval (**Plates 50 & 51**).

From 51 to 54 metres gold grades ranged from 0.79g/t to 7.7g/t Au which confirmed the continuation of the mineralisation below the highest-grade zone. A re-examination of core confirmed a continuation of the lithology and alteration described above with a wide interval of quartz veining and coarse sulphides (py-cpy) being noted in the final sample; 17275 from 53-54 metres which was assayed at 7.7g/t Au (**Plates 56-59**).

Quartz veining was noted to continue to a depth of 53.95 metres as was indicated in the original geological log which was only 5cm above the end of the sampled interval (**Plates 60 & 61**).

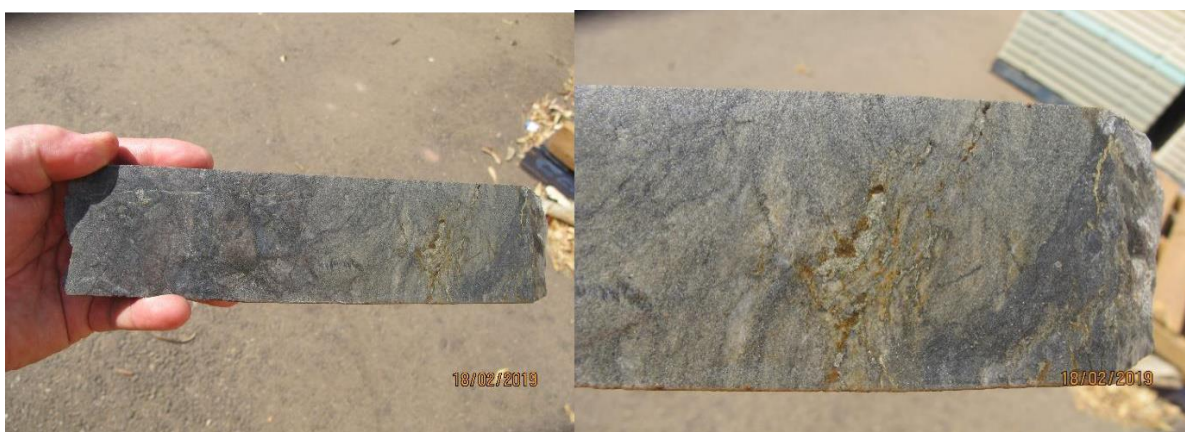




**Plates 46 & 47:** Core sample at start of sampling interval (depth 48 metres), showing etching of arsenopyrite masses suggesting a localised oxidation depression immediate to Hole KDD-002.



**Plates 48 & 49:** Core samples 48.9-49.05 metres depth, showing a thin brecciated zone comprising strongly haematitic/brecciated metapsammite with clay infillings above a contact with massive quartz veining at 49.05 metres depth



**Plates 50 & 51:** Core sample 50.0-50.2 metres depth, showing metapsammite with intact remnant sedimentary-foliation fabric and alignment of coarse masses of arsenopyrite being observed along the dominant foliation direction. Intermittent zones of strong silica-sericite alteration and quartz veining with coarse masses of sulphide (py-cpy) within and around the veins and cross-cutting fractures. Ductile textures, from gentle flexing of the original foliation to more intense, tight folding of quartz veins with very localised brittle textures were also observed within some parts of the interval.





**Plate 52 & 53:** Core samples from 50.2 metres (left) and 50.7 metres (right), showing degree of variation of textures and alteration within the main mineralised zone for Hole KDD-002.

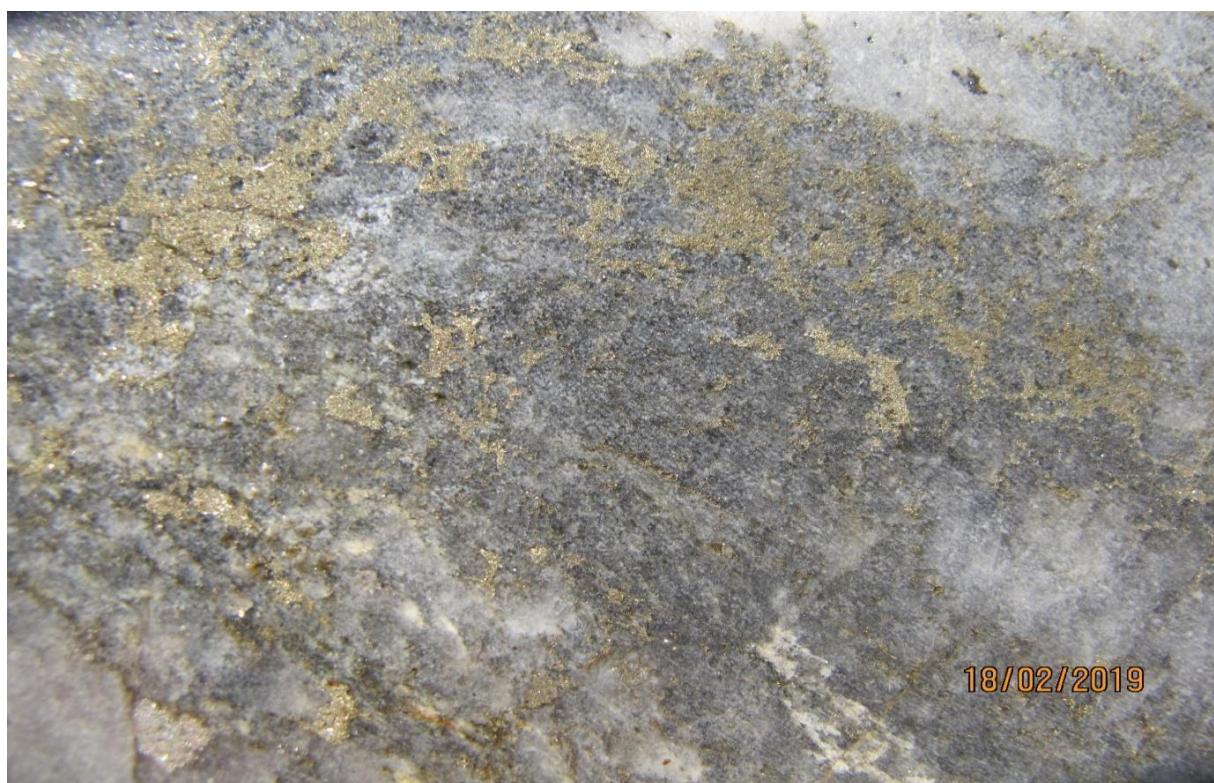


**Plate 54 & 55:** Core sample from 50.5 metres depth, showing weakly silicified metapsammite. Bands of coarse arsenopyrite appear concordant with the remnant sedimentary-foliation fabric and suggest arsenopyrite genesis was a function of regional metamorphic upgrading prior to the gold emplacement at Kroda-3. This sample is interpreted to be a thin zone of internal dilution within a wider mineralised zone.

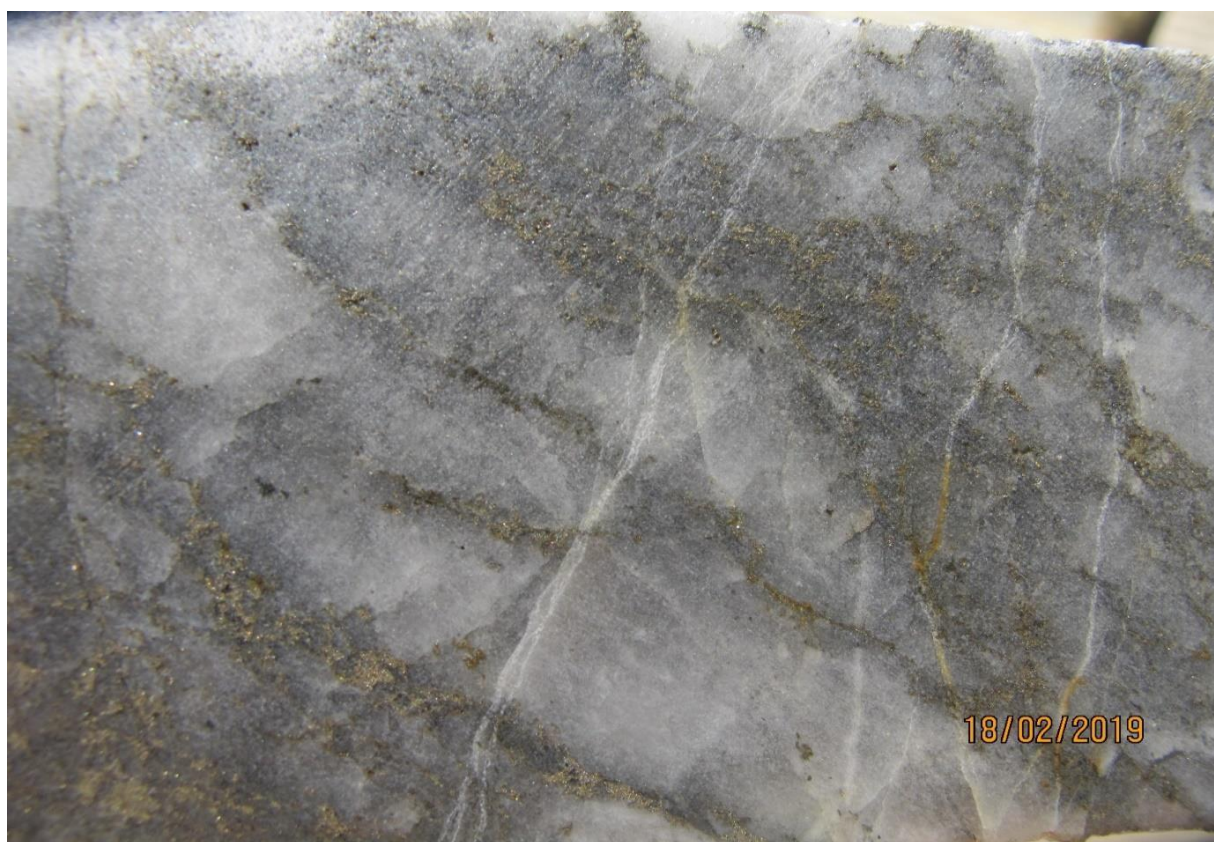


**Plate 56 & 57:** Core sample from 53.5-53.95 metres depth, showing quartz veining and coarse sulphides (py-cpy). This comprised part of the final sample; 17275 from 53-54 metres which was assayed at 7.7g/t Au.





**Plate 58:** Core sample from 53.5-53.95 metres depth, showing coarse pyrite-chalcopyrite within massive quartz veining.



**Plate 59:** Core sample from 53.5-53.95 metres depth, showing bands containing coarse pyrite-chalcopyrite within brittle fractures in massive quartz vein host.





**Plate 60:** Core interval 53.6-54 metres depth (end of sampled interval. Quartz veining was noted to continue to a depth of 53.95 metres as was indicated in the original geological log which was only 5cm above the end of the sampled interval.



**Plate 61:** Close-up of quartz veining exhibiting ductile (boudinaged) textures and coarse sulphides.



**Non sampled interval; 54 to 74 metres depth**

Re-examination of this interval identified weakly foliated/chloritic metapsammite as indicated within the original geological log (**Plate 62**). Minor small masses of arsenopyrite were observed along particular bedding-foliation planes, along with traces of pyrite-chalcopryrite for the first 1-2 metres of the interval. Intermittent pale brown garnet-rich horizons were also noted in the re-logging which indicated a variation in the original lithology and were not identified in detail the original geological log (**Plates 63 & 64**).



**Plate 62:** Core trays for interval 71.5 to 74 metres depth (start of the third sampling interval).



**Plate 63:** Core interval 73.5 metres depth, showing pale brown garnet-rich horizon which shows ductile deformation.



**Plate 64:** Core interval 73.5 metres depth, showing close-up of lithological variation (interbed) below pale brown garnet-rich horizon.



### **Third sampled interval; 74 to 78 metres**

Gold assays for a selected interval containing increased alteration and quartz veining +/- sulphides ranged between 0.07g/t and 0.56g/t Au which suggests potential for a low-grade zone of gold mineralisation running sub-parallel to the main mineralised zone.

The original logging identified weakly foliated/chloritic metapsammite which was interbedded and contained zones of coarse biotite and garnet, in association with silicification and occasional quartz veining which exhibited ductile deformation textures and contained trace to 1% sulphides (aspy, py-cpy). Re-examination of the sampled interval confirmed the original geological log and failed to identify any feature considered significant in regard to gold mineralisation.

### **Non sampled interval; 78 to 84 metres depth**

Re-examination of this interval identified weakly foliated/chloritic metapsammite as indicated within the original geological log. Several small intervals containing weak silicification, minor quartz veining and biotite-garnet alteration were noted within the interval which was not well documented within the original geological logs, but gold assays obtained for similar textures and alteration sampled between 74-78 metres were generally disappointing.

### **Fourth sampled interval; 84 to 85 metres**

Gold assay for the final interval was 0.03g/t.

The original logging identified weakly foliated/chloritic metapsammite which contained up to 5% quartz veining along with minor coarse biotite and sulphides, including arsenopyrite, pyrite- chalcopyrite (**Plates 65 & 66**).

Re-examination of the sampled interval confirmed the original geological log and the resulting assay was disappointing.



**Plate 65:** Core interval 83.9-84.2 metres depth, showing thin interval of massive quartz veining.

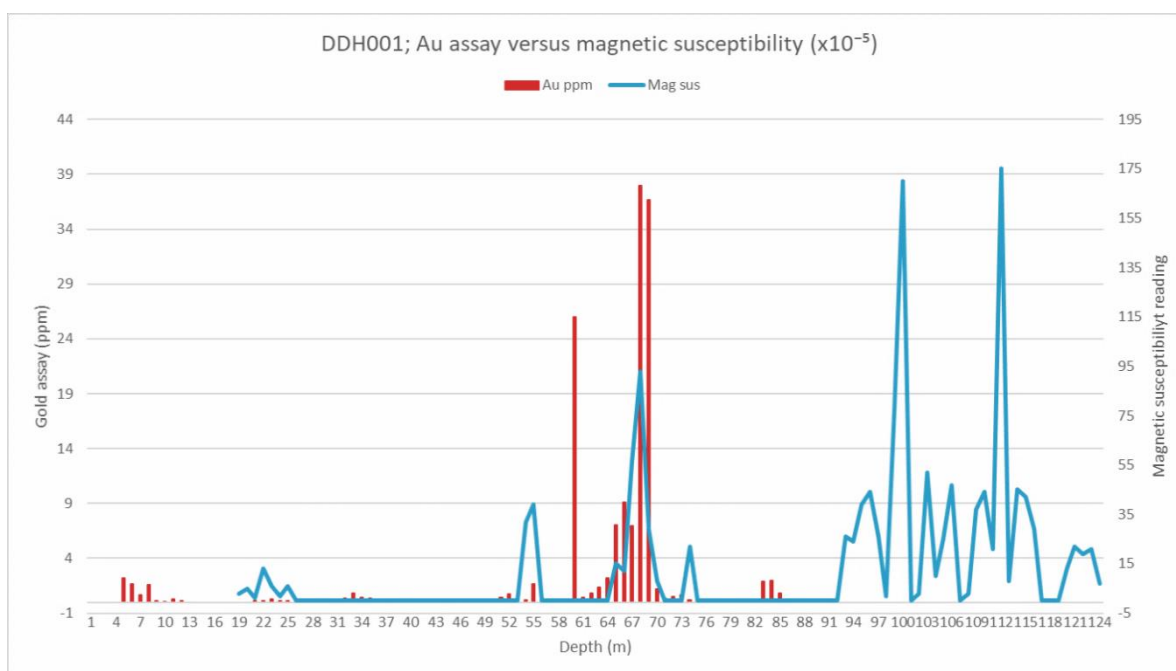


**Plate 66:** Close-up of cut core sample at 84.1 metres depth, showing coarse quartz veining along with coarse biotite and sulphides; including arsenopyrite, lesser pyrite-chalcocopyrite

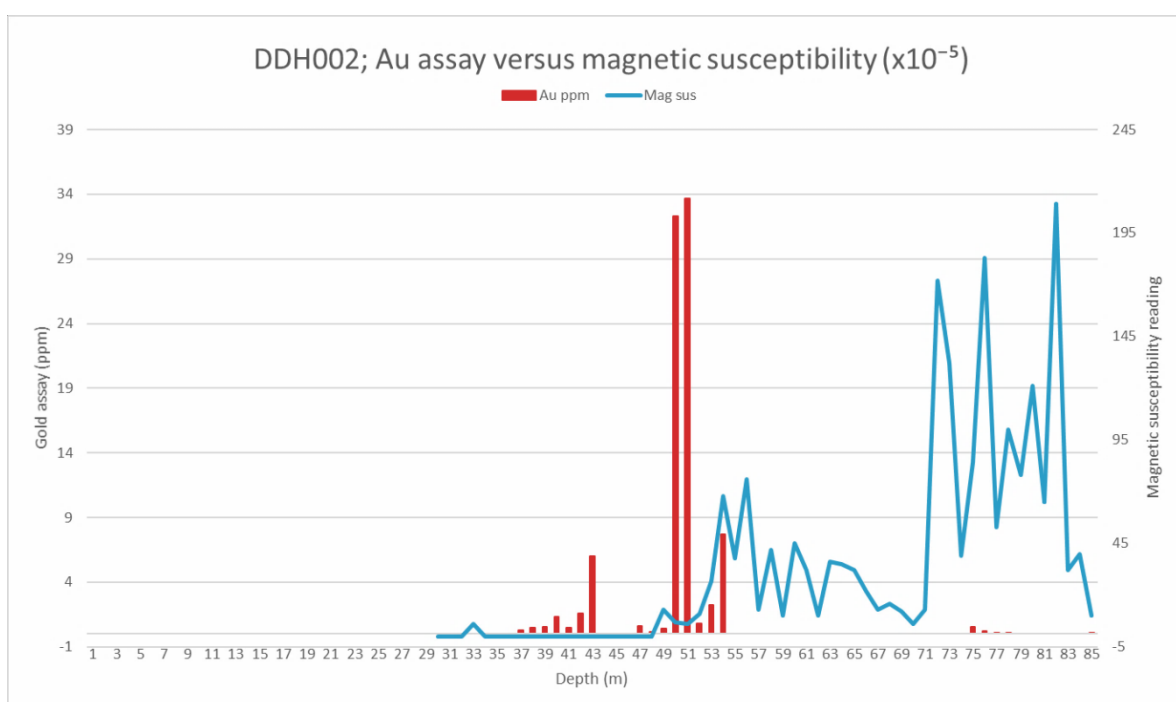


#### 4.3.4 Magnetic susceptibility testing

Magnetic susceptibility testing was conducted for every metre of the fresh core samples for drill holes KDD-001 (**Figure 7**) and KDD-002 (**Figure 8**). Testing was completed using a hand-held meter (Fugro Instruments) loaned from the NTG core facility in Alice Springs.



**Figure 7:** Plot of gold assays versus magnetic susceptibility readings from core samples for KDD-001.



**Figure 8:** Plot of gold assays versus magnetic susceptibility readings from core samples for KDD-002.

Magnetic susceptibility testing of fresh core samples for holes KDD-001 & -002 identified a partial correlation between magnetite content and gold mineralisation. For hole KDD-001, a close correlation was identified between an increase in magnetite content with high gold grades (**Figure 7**) however, no

correlation was observed for KDD-002 (**Figure 8**) which suggests possible magnetite destruction as a function of hydrothermal alteration. Further magnetic susceptibility testing on the diamond tail for hole KRCDD-005, along with 1m RC chip samples for holes KRC-001 to -010 would help to clarify the relationship.

#### 4.3.5 Sampling and assay results

Core sampling intervals and geochemical assay results are provided in **Appendix 08**.

Significant gold assays were returned from holes KDD-001 & -002 including; 9m @ 11.5g/t Au from 62-71 metres depth in hole KDD-001 and 5m @ 15.3g/t Au from 49-54 metres in hole KDD-002 (**Table 3**).

	Target	From (m)	To (m)	Thickness (m)	Au ppm
<b>KDD-001</b>	Kroda 3	4	8	4	1.51
		32	33	1	1.55
		52	53	1	0.72
		55	56	1	1.69
		60	61	1	26
		<b>62</b>	<b>71</b>	<b>9</b>	<b>11.5</b>
		73	74	1	0.64
		83	6	3	1.54
<b>KDD-002</b>	Kroda 3	37	40	3	0.8
		41	43	2	3.79
		46	47	1	0.62
		<b>49</b>	<b>54</b>	<b>5</b>	<b>15.3</b>
		74	75	1	0.56

**Table 3:** 2018 Kroda diamond drilling intersections in excess of 0.5 ppm Au

## 5 Conclusions

As indicated by the geological logs (**Appendix 4**), the IP survey was successful in identifying areas of disseminated sulphide mineralisation at depth. Assay results and the apparent association between sulphides and gold demonstrate what is a potentially a significant mineralising system at the Kroda project area. A full interpretation will be presented in the 2019 annual project report.

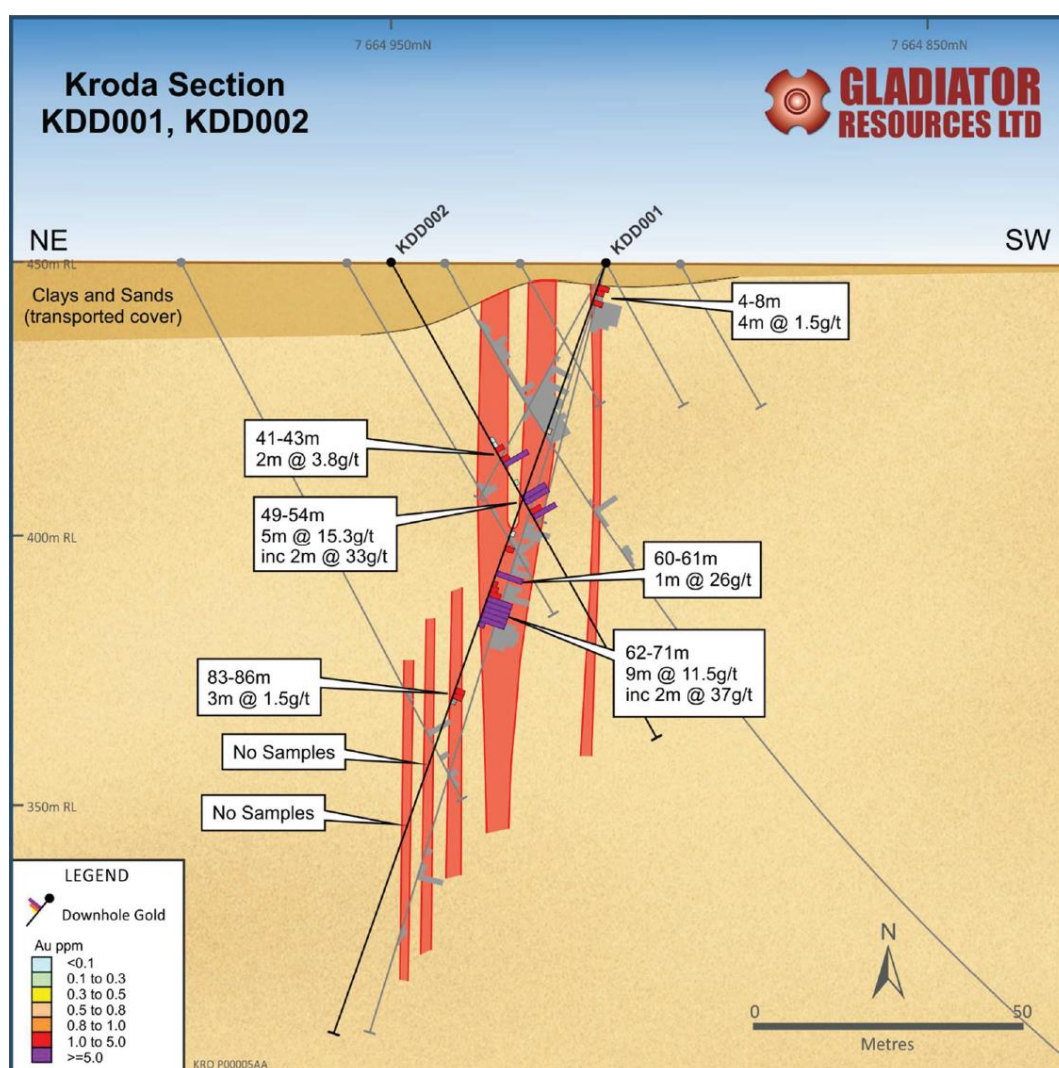
The following key points came from the detailed re-examination of the core:

- 1) Several generations of quartz veining have been interpreted, with a general increase in quartz vein prevalence (%) within mineralised (gold-bearing) intervals,
- 2) A wide zone of silica alteration (halo) is observed around mineralised zones, with localised sericite alteration in high-grade zones,
- 3) Weak-moderate foliation development and chloritic alteration in non-mineralised intervals is interpreted to be related to regional deformation and metamorphism (up-grading),
- 4) Regional metamorphic upgrading has leached/stripped sulphide-rich host rocks (arsenopyrite) and re-precipitated it as coarse, subhedral to euhedral masses within chemically/physically compatible horizons which are concordant with the remnant sedimentary-foliation fabric,
- 5) Garnet-rich zones in the KDD-002 footwall indicate lower-amphibolite metamorphic conditions; i.e., the right temperature/pressure range for higher-temperature copper+/-gold-rich fluids,



- 6) An increase in intensity and frequency of ductile deformation is observed within mineralised corridors, along with preferential 'alignment' of arsenopyrite,
- 7) The highest gold grades are hosted within massive quartz veins, being closely associated with intervals containing coarse pyrite-chalcopyrite and lesser arsenopyrite within areas of veining that contain brecciated textures,
- 8) Magnetic susceptibility testing of fresh core samples for holes KDD-001 & -002 identified a partial correlation between magnetite content and gold mineralisation. For hole KDD-001, a close correlation was observed between an increase in magnetite content with high gold grades (**Figure 7**). However, no such clear correlation is apparent for KDD-002 (**Figure 8**) which may be a result of magnetite destruction during hydrothermal alteration.

The results from KDD-001 & KDD-002 combined with several historic holes suggest that there are multiple steeply dipping and sub-parallel, possibly en-echelon, gold zones at Kroda 3 (**Figure 9**).



**Figure 9:** North-south section 382630mE through Kroda-3. Note: the Au histograms have been truncated at 5 g/t owing to extremely high grades encountered in both holes.

The thickest zone was intersected by both holes and both holes returned very high grades (>25 g/t Au). Hole KDD-001 appears to have been drilled sub-parallel to the thickest and highest-grade zone. This hole intersected 9m at an average gold grade of 11.5 g/t including a very high-grade interval of 2m at 37 g/t and an additional 1m at 26 g/t. Scissor hole KDD-002 confirmed the geometry of the ore zones but

returned narrower intervals, the best being 5m at 15.3 g/t Au. Unfortunately the drilling has shown that despite the encouraging results on this section line, the high grade zone is likely to be small and is not recognised on adjacent sections. Further details will be presented in the 2019 Barrow Creek Project Annual Report.