QUEENSLAND EPITHERMAL MINERALS LTD

EXPLORATION PERMIT FOR MINERALS 4707

NUGGETY GULLY

ANNUAL REPORT

FOR PERIOD ENDING 12TH APRIL, 2008

Report By: **JULDEX PTY LTD**

Tenure Holder: **QUEENSLAND EPITHERMAL MINERALS LTD**

Submitted By: **JULDEX PTY LTD**

Distribution: **-Department of Mines and Energy, Brisbane.**
-Queensland Epithermal Minerals Ltd, Cairns.

SUMMARY

This is the annual report for EPM 4707.

QEP continues to explore EPM 4707 "Nuggety Gulley" for sedimentary hosted gold deposits related to intrusive hosted gold deposits. The surface area has been bulk sampled by previous tenants and this project is involved in testing for extensions to the near surface areas of mineralisation and testing for the presence of further mineralisation at depth.

Work continues and is focused on a non JORC compliant resource estimate, around half a million tonnes of altered auriferous sediments.

The area has potential for additional resources requiring testing of alluvials and hard rock bedrock sources.

A collaborative drilling fund application has been made to the department.

The exploration objective for EPM 4707 this year has been to evaluate and further test targets identified from previous exploration in the area while exploring for new anomalies. The aim was to test the highest priority targets while assembling and planning additional drill targets with the aim of complementing historical data with interpretation of geophysical surveys, mapping and drilling.

EPM 4707 is comprised of 3 main areas of exploration focus:

- Maggie May Prospect – Historical compilation and site evaluation
- Janelle's Hope Prospect – Historical compilation, site evaluation and diamond drilling program
- Brumby Hill, Becky's Hope, Drizzle Prospects – Historical compilation and site evaluation

From a historical exploration complication of all three areas, Janelle's hope prospect was considered the highest priority target for drilling. Following on from successful RC drilling and geochemical shallow RAB drilling program, with results including 3m at 2.7g/t Au, 8m at 1.8g/t Au and 36m at 1.12g/t Au including 12 at 2.9g/t Au, a diamond drill hole was drilled at Janelle's hope with results indicating the presence of altered and veining in conglomerates and sediments.

Regional Geology maps, Aeromagnetics and recent drilling has further enhanced the possibility of sediment hosted gold related to buried intrusive hosted mineralisation in sediments and ultramafics in the Broken River area.

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1.0 Introduction

Exploration Permit for Minerals (EPM) 4707 is comprised of a small number of sub blocks making up the Broken River Project which is situated 210 kilometers west of Townsville, North Queensland (Figure 1). The site contains and is located close to previously operated small gold mines. In particular the Big Rush Mine nearby which was operated by the Lynch group.

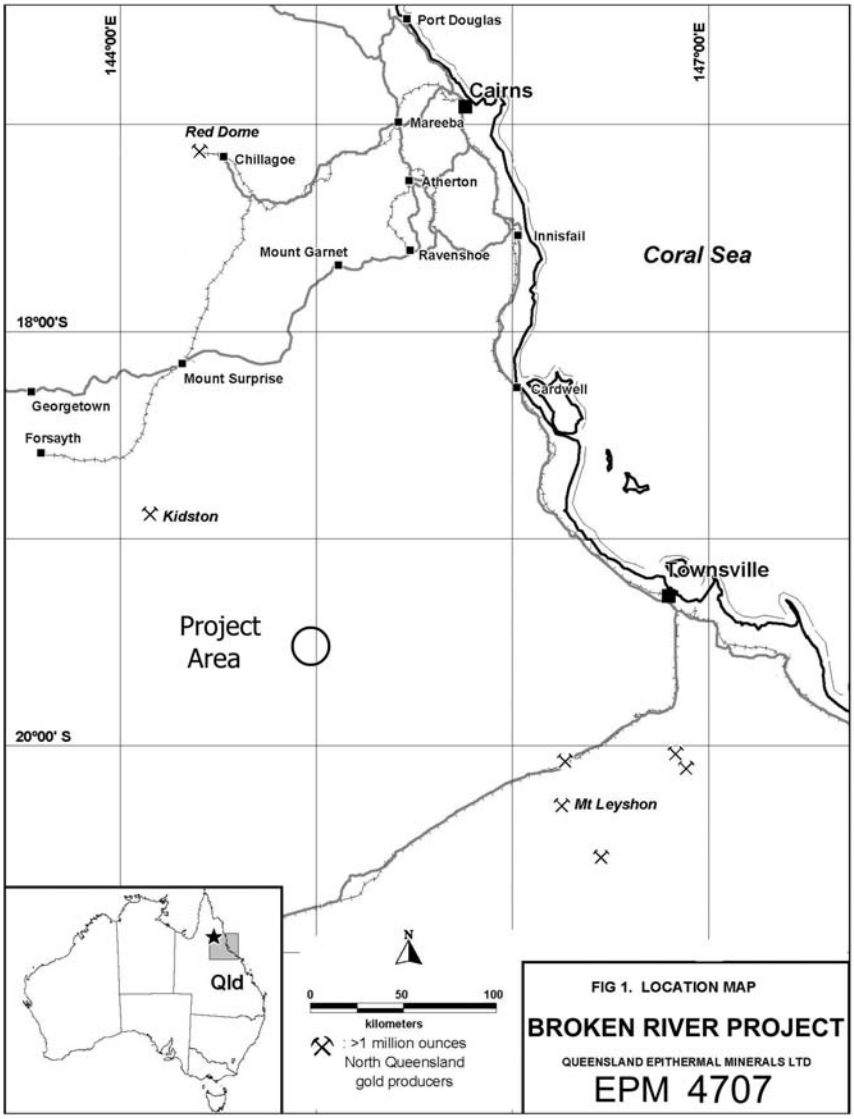


Figure 1 – EPM 4707 Project locality

The Broken River project is owned entirely by Queensland Epithermal Minerals Ltd (QEP). The company is managed by Juldex Pty Ltd.

2.0 Tenure Information

The details for EPM4707 are as below in Table 1 and 2 and illustrated in Figure 2.

Table 1 Tenement Size and Expenditure Commitments

EPM	Current Size	Expenditure Commitments
4707	5 sub-blocks	$25,000

Table 2 The Mungana NEWS Tenement

GRANTED TENEMENT		
EPM no.	**Townsville Block No.**	**Sub-Blocks**
4707	2962	J, N, O, R, U
Total number of Sub-blocks		5

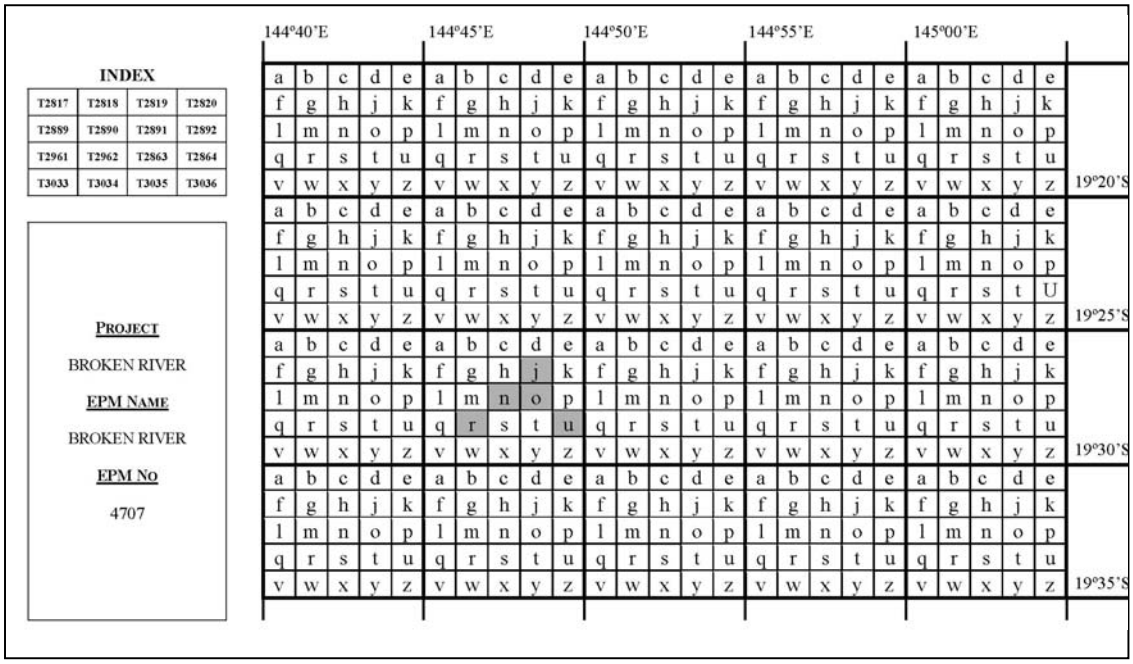


Figure 2 – EPM 4707 Tenement Boundary

3.0 Location and Access.

The project is located 60 kilometers south-south west of Greenvale around the co-ordinates of long. 19º20´S, lat. 145º25´E. Access is via the Harveys Range and Gregory Development Road from Townsville and a gravel road links the area to Greenvale. Access within the tenements is by property tracks constructed by the landowners and previous tenants.

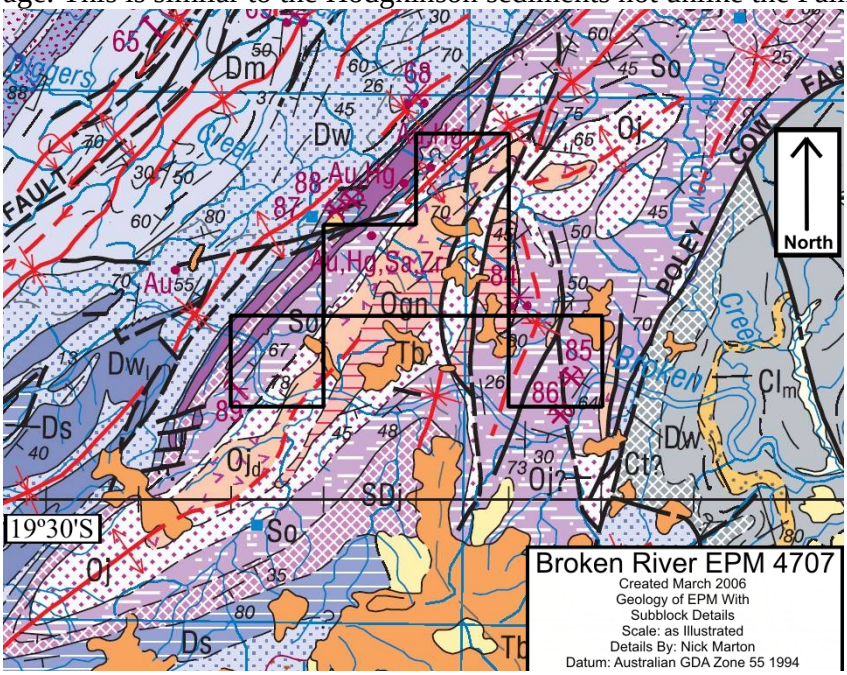
The area experiences little rainfall however a wet and dry season is experienced and during the wet period access is severely limited. Work programs are therefore planned

around the dry period, between May and November each year, limiting field operations to six months per annum. The availability of a Core drill rig held up progress until one was obtained in mid December. During the drill program a severe thunderstorm caused flash flooding nearly cutting access off to the site and concluded the program prematurely.

Plate 1 – Turtle Creek Flash Flood causing difficulties with road access to drill site

4.0 Geology

The Broken River Province contains a large area of principally flysch type sediments and associated prospects in a complex fault-bound and folded rift basin of mid-Palaeozoic age. This is similar to the Hodgkinson sediments not unlike the Palmer River Area.



4.1 Regional Geology

The EPM covers a variety of detrital and chemical sedimentary rocks, from Ordovician to Middle Devonian age. Tonalite stocks have intruded Ordovician volcanogenic sediments and Tertiary basaltic vents within the EPM have resulted in large areas of vesicular basalt lava covering the Palaeozoic geology. Both Tertiary and Quaternary erosional cycles have caused erosion of the peneplane and laterite and regolith formation. (Plates 1, 2 &3)

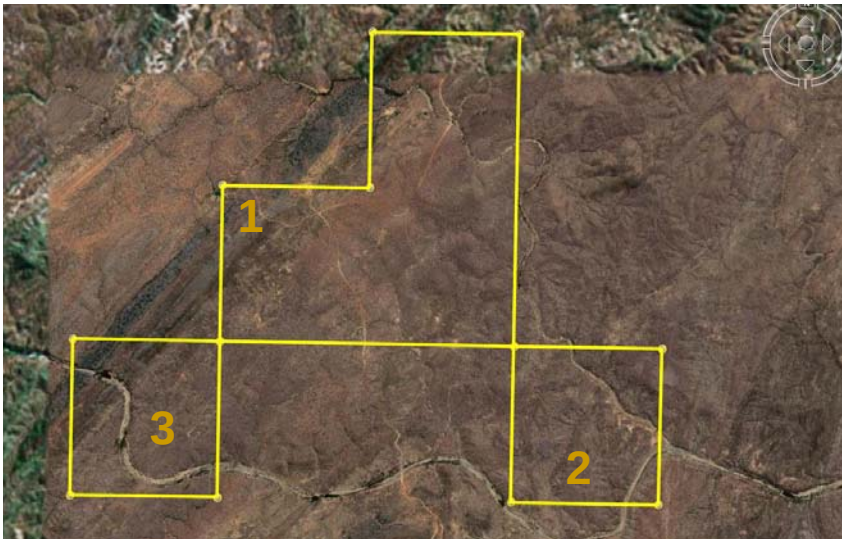
The conceptual exploration target is hosted by Silurian and Devonian Calcareous sedimentary rocks which include bioclastic limestone units, marls, and calcareous mudstones is exposed around the hinge zone of an isoclinal to tightly folded, steeply south-westerly plunging anticline (Broken River Anticline). It was envisaged that a combination of the right structural traps and lithology in this area might act as a locus for gold mineralisation by way of acid solutions reacting with the calcareous rocks and causing gold precipitation adjacent to non-reactive (non-calcareous) enveloping horizons. The area is underlain by possible intrusives (Figure 5)

In EPM 4707 sub-blocks there are 3 main prospect areas. The first is the Maggie May Prospect area. The second area is the Janelle's Hope Prospect and the third area is the Brumby Hill, Becky's Hope, Drizzle Prospects. Below is a Summary of the three Areas:

Maggie May Prospect (1): Altered and weakly quartz veined gritty sandstone and conglomerate. Drilling has resulted in an inferred diluted resource of 63 000 t averaging 1.13 g/t Au beneath one of four geochemical anomalies.

Janelle's Hope Prospect (2): Zones of silicification, fine quartz veining and sericite alteration of the matrix, along subsidiary shears of the Digger Creek Fault, host Au-As mineralisation within a conglomerate host rock. Newmont estimated, from drilling, a non JORC Compliant resource of 452 500 to 654 000 t containing 20 700 to 29 900 oz Au.

Brumby Hill, Becky's Hope, Drizzle Prospects (3): Recorded extensive areas of quartz stringer veining and flooding in moderately altered clastic sediments. Jarosite and brecciation also noted.



5.0 Structure and Mineralisation

Extrusive and possible intrusive igneous rocks range from felsic to basic in type as they intrude the resource area. A well developed lateritic profile exists, which may have affected gold distribution close to the surface.

Plate 2 – Janelle's Hope mineralised sediments

Gold mineralisation occurs in several locations as vein-type emplacements in a structurally controlled locally, which have resulted in a number of small mines being operated historically in this area.

6.0 Work Carried out and Results.

6.1 Janelle's Hope

The prospect has been significantly drill tested in the late 80's by Newmont with RC and RAB drilling. From the work, a Non JORC/43-101 compliant resource of 452,500 to 654,000 t containing 20,700 to 29,900 oz Au was estimated. From the previously submitted report by geologist consultant JNK Exploration, drilling was recommended for further testing

Aeromagnetic data was acquired for the prospect area and the surrounds. It was found that the Broken River tenement has several magnetic anomalies coincident with prospects. It was also found that Janelle's Hope has a large coincident circular magnetic anomaly. With no geological explanation a deeper hidden intrusive is implied (Figure 5)

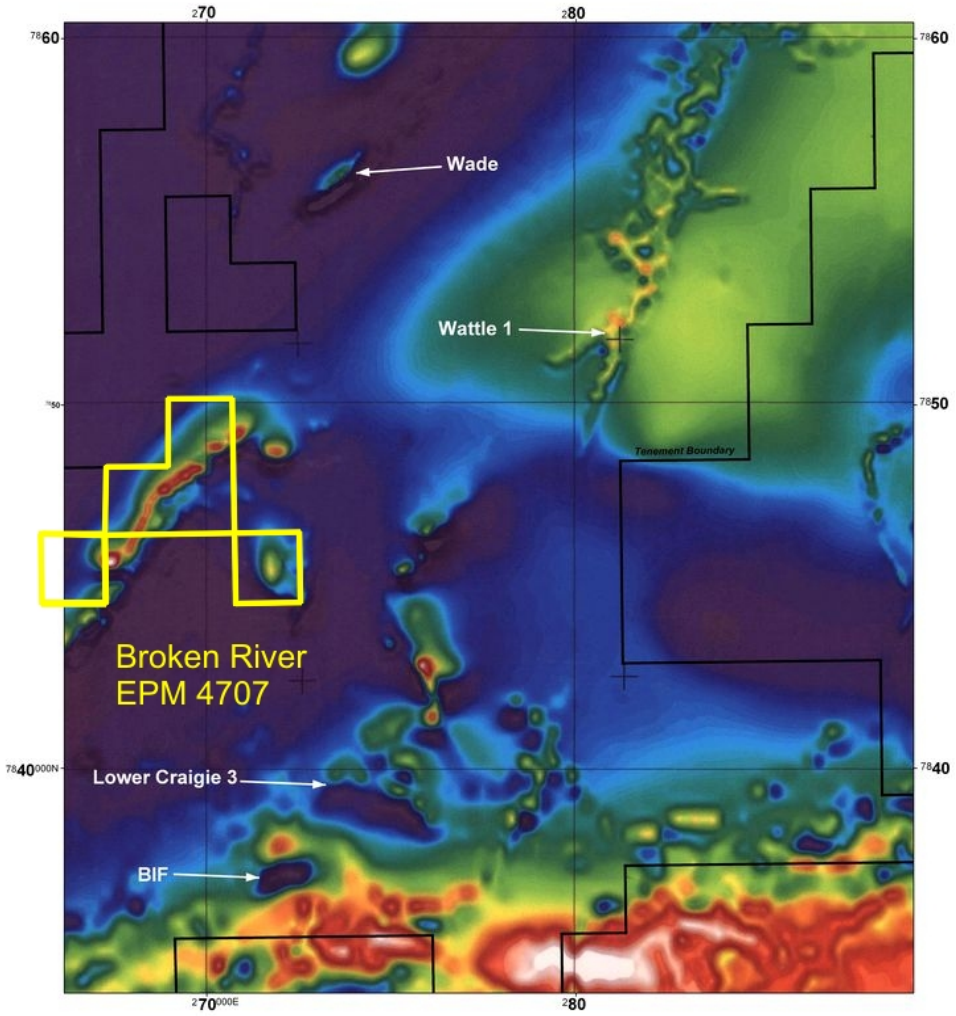


Figure 5 – EPM 4707 Aeromagnetics

From the previous drilling zones were found to be open to depth and along strike. The best drill intersection at Janelle's Hope was a RC hole drilled by Newmont JHR 4800-1. JHR 4800-1 drilled 36m at 1.12g/t Au including 12m at 2.9g/t Au. It had higher grade portions such as 2m at 5.7g/t Au and 2m at 4.0g/t Au. Surface Rock chip samples along the section indicate that the mineralisation is plunging almost vertically.

All drilling at Janelle's Hope has been RAB and RC drilling. It was decided that core drilling should take place to provide an understanding of what the sediments, alteration and mineralisation look like at depth. In the later part of 2007 a diamond drill rig became available. In late December 2007 a diamond core drilling program was carried out.

First, an aerial surveillance was carried out to inspect the country to see if the wet season had started and if road access was possible. It was determined that the area had not yet had significant rain and henceforth the drilling program was put into action.

Plate 3 – Janelle's Hope

There were 5 field campaigns to Broken River this season. The first campaign was to evaluate the site and to construct a drill program with the aim of further testing the project to expand known mineralisation for the previous RAB and RC drilling. During this campaign a detailed study was undertaken and the drilling program was outlined.

The second field campaign comprised a surveying program, relocating previous drill holes, roads and grid for GIS drafting purposes. During this time a second evaluation of the drill sites was undertaken and it confirmed the proposed drill hole was the best test for the area. Further mapping and drafting was recommended.

The third and fourth field campaigns consisted of creating the infrastructure necessary for the completion of the proposed diamond drill program, including assessing site accessibility, and creating roads and drill pads. A backhoe was contacted from Mareeba, North Queensland to open up the road access and to create the pads and sumps.

The final campaign was the NQ2 diamond drill program with a total of 47.1m drilled before severe weather stopped drilling. On the basis of results from historical data, RAB drilling results and Newmont's RC drill holes, one diamond hole was drilled at the Janelle's Hope project. QEP twinned JHR 4800-1 20m uphill along the same section. Hole DCDH-1 was drilled on the 22nd of December 2007 (Plate 2 & 3).The aim of

drilling was to intercept the zones of anomalous Au, identified by the previous RC and RAB program and other historical data. Assay results are pending although the mineralogy of surface rock samples suggest alteration may be related to a porphyry system (Appendix 1 petrology, Appendix 2 survey data, Figure 6 for cross section).

Plates 4 & 5 Diamond Drill hole DCDH1

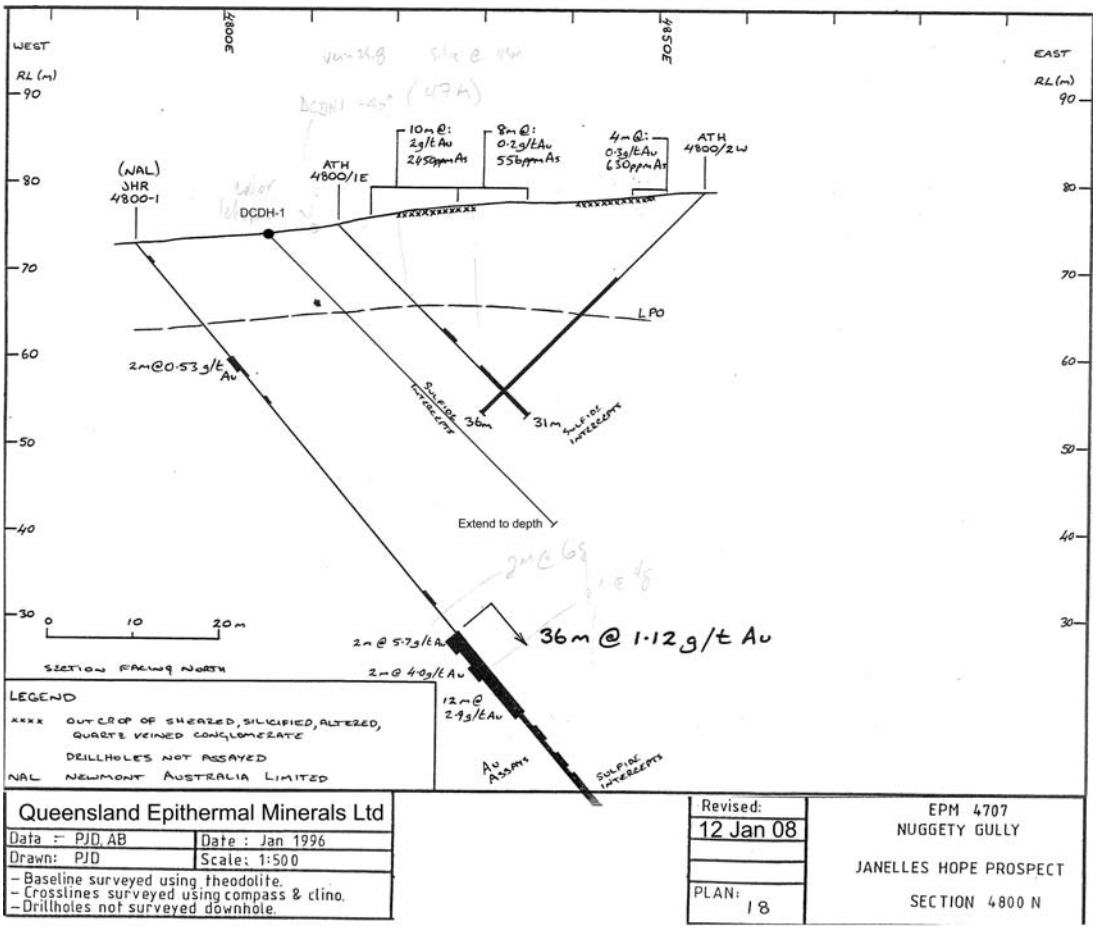


Figure 6 – DCDH1 Cross Section

The drill hole successfully intersected veins within the sediments. However at depth the drill hole changed from veined sediments to possible breccia. This was unknown before, as all previous drill recovery was from chips. Petrology of the outcrops also indicated altered ultramafics including chrome mica. The area has not been previously assayed for platinum.

The hole was cut off at 47.1m as there was some concern about the incoming weather with the already flooded river crossing so close to Christmas holidays. The hole was capped and concreted so it could be extended at a later date.

Summary:

With the work that has been completed, the exploration program has identified rock types, alteration, structure and mineralisation. It is unclear as to how the brecciation occurs with sediments. Additional drilling is required to test. The rest of the deposit should have continued drilling to create a JORC/ NI43-101 compliant resource. This new mineralisation has upgraded the prospect, and should be targeted for further drilling.

6.2 Maggie May

QEP and Werrie Gold tested the Maggie May prospect. The work resulted in 63000t @ 1.13g/t Au.

It is anticipated that with the positive results from the drilling at Janelle's Hope that further resource definition drilling could take place to continue resource definition.

6.3 Brumby Hill, Becky's Hope, Drizzle Prospects

As previously reported, geological consultant JNK reviewed the prospect areas to locate geological settings anogalous with Jannels hope and Maggie may. JNK located previously unrecorded extensive areas of quartz stringer veining and flooding in moderately altered clastic sediments. Jarosite and brecciation was also noted. This area is magnetically anomalous and is recommended for further exploration.

7.0 Conclusions and Recommendations:

Exploration in the project areas has highlighted several anomalous areas of exploration interest requiring further work.

Follow up exploration on anomalous areas has produced some encouraging results. A larger exploration budget is recommended to continue the diamond drill program started this year. Further drilling is recommended Janelle's Hope, to test areas of known mineralisation for deeper mineralisation potential as well as expanding the near surface drilling to increase known mineralisation area. It is recommended this program cover the 1km sq area

It is also recommended that other prospects should be drill tested. Drilling will further improve the geological knowledge and resource estimate for the areas as well as expand known mineralisation and to test new areas, to build a larger known resource around the project area.

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9.0 STATEMENT OF EXPENDITURE
For EPM 4707 from the period April 2007 to April 2008

Please refer to the separate Statement of Expenditure

Appendix 1
Janelle's Hope Petrology Report 2007

Mason Geoscience Pty Ltd

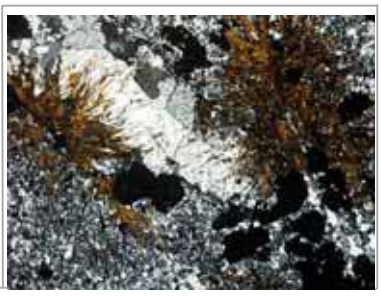
Petrological Services for the
Minerals Exploration and Mining Industry

ABN 64 140 231 481 ACN 063 539 686

Postal & Delivery: 141 Yarrabee Rd Greenhill SA 5140 Australia
Phone: +61-8-8390-1507 Fax: +61-8-8390-1194
Email: masongeo@ozemail.com.au

Petrographic Descriptions for Eight Rock Samples from Dingo Hill Project (Whypalla, Mystery Hill, Sybil Regional)

REPORT #	**3366**
CLIENT	**Queensland Minerals (Australia) Pty Ltd**
ORDER NO	**P.O. # 1656**
CONTACT	**Kate Ward / Al Marton / Leanne Morton**
REPORT BY	**Dr Douglas R Mason**
SIGNED	
	for Mason Geoscience Pty Ltd
DATE	**17 January 2008**



Petrographic Descriptions for Eight Rock Samples from Dingo Hill Project (Whypalla, Mystery Hill, Sybil Regional)

SUMMARY

1. Rock Samples

- A collection of 8 surface rock samples from the Dingo Hill Project (Whypalla, Mystery Hill, Sybil Regional; Queensland) has been studied using optical petrographic methods, supplemented by mineragraphic observations for some samples.

2. Brief Results

- A summary of rock names and mineralogy is provided in TABLE 1.
- *Sample 67007*: A fragmental rock suffered strong pervasive replacement by quartz + actinolite + magnetite, accompanied by thin veinlets of quartz + minor actinolite.
- *Sample 67009*: Massive vein rock formed by space-filling crystallisation of abundant quartz, accompanied by minor sericite, pyrite, sphalerite and chalcopyrite. Mild deformation occurred during vein formation.
- *Sample 67012:* Medium-grained massive peraluminous granodiorite crystallised to form the primary igneous assemblage of plagioclase + quartz + K-feldspar + muscovite + minor biotite + trace zircon.
- *Sample 67013*: Quartz-rich vein formed by crystallisation of abundant massive space-filling quartz, with minor late vugh-filling quartz.
- *Sample 67021, 67022*: Both samples are inferred to have formed as ultrabasic igneous rocks, possibly chromite-bearing peridotite, but have suffered strong pervasive replacement by quartz + calcite + minor fuchsite + trace pyrite, accompanied by veins of quartz and calcite. The accessory primary chromite survived, providing minor Cr to form Cr-bearing white mica (ie fuchsite) around chromite grains and along stylolites.
- *Sample 67025, 67027:* Both samples formed as conglomeratic sediments composed of meta-sedimentary lithic fragments (siltstone, arenites) and vein quartz fragments, in minor fine matrix, modified by low-grade metamorphic ductile deformation and pervasive alteration by sericite + ?pyrite.

TABLE 1: SUMMARY OF ROCK NAMES AND MINERALOGY

SAMPLE	ROCK NAME	MINERALOGY*			
		Primary**	**Alteration**	**Veins*****	**Weathering**
67007	Quartz-actinolite veined and high-intensity quartz-actinolite-magnetite altered fragmental rock	-	Qtz, act, ?grp, mt	Qtz, act	Hem
67009	Partly weathered, fractured quartz-sulphide-sericite vein rock	-	-	Qtz, ser, py, cpy, sph	Goe, ?jar, cov
67012	Partly weathered, albite-sericite altered muscovite granodiorite	Qtz, Kf, mus, bio, zir	Alb, ser	-	Goe
67013	Partly weathered, quartz-rich vein	-	-	Qtz; Qtz	Goe
67021	Carbonate-quartz veined and high-intensity quartz-pyrite-fuchsite altered ultrabasic igneous rock	Crsp	Qtz, car(cal), py, fuch	Qtz, car(cal)	-
67022	Calcite-quartz veined and high-intensity calcite-quartz-fuchsite altered ultrabasic rock	Crsp	Car(cal), qtz, fuch, py	Car(cal), qtz	-
67025	Partly weathered, low-intensity sericite-?pyrite altered meta-conglomerate	Qtz, mus, zir	Ser, ?py	-	Goe
67027	Partly weathered, sericite-?pyrite altered meta-conglomerate	Qtz, mus	Ser, ?py	-	Goe

NOTES

*: Minerals are listed in each paragenesis according to approximate decreasing abundance.

**: Only primary minerals currently present in the rock are listed. Others may have been present, but are altered.

***: Earlier parageneses are separated from later parageneses by a semicolon.

Mineral abbreviations

Act = actinolite; alb = albite; bio = biotite; cal = calcite; car = carbonate mineral; cov = covellite; cpy = chalcopyrite; Crsp = Cr-spinel (chromite); fuch = fuchsite (Cr-white mica); goe = goethite; grp = graphite; hem = hematite; jar = jarosite; Kf = K-feldspar; mt = magnetite; mus = muscovite; py = pyrite; qtz = quartz; ser = sericite; sph = sphalerite; zir = zircon; ?min = uncertain mineral identification.

1 INTRODUCTION

A collection of 8 surface rock samples was received from Ms Kate Ward / Mr Al Marton (Queensland Minerals Australia Pty Ltd, Cairns, Qld) on 6 December 2007.

A purchase order #1656 was subsequently provided for the work, and indicated that the samples originate from the Dingo Hill project. Notes from Ms Ward indicated that the samples related to particular areas of interest (Whypalla, Mystery Hill and Sybil Regional) but no sample list was provided.

Excerpts from this report were provided by email to Mr Marton and Ms Leanne Morton on 11 January 2008. This report contains the full results of this work.

2 METHODS

At Mason Geoscience Pty Ltd the samples were examined in hand sample and marked for section preparation. Polished thin sections were considered appropriate for most samples because of the possibility of them containing sulphides and/or oxide minerals of interest. Conventional transmitted polarised light microscopy was used to prepare the routine petrographic descriptions. Additional mineragraphic observations are provided where a polished thin section is available. Paragenetic stages of development of each rock are indicated in the mineral modal list, where each mineral is assigned to a numerical paragenesis (paragenesis 1 is earliest; paragenesis 2 overprints 1; paragenesis 3 overprints both 2 and 1; etc). The paragenetic stages display relative timing within each sample, and are not meant to be directly equated between samples although this may be correct for some samples.

3 PETROGRAPHIC DESCRIPTIONS

The petrographic descriptions are provided in the following pages. A combined petrographic and mineragraphic description is provided where a polished thin section is available.

A small selection of colour photomicrographs is provided with the descriptions to illustrate particular features of the rocks.

SAMPLE : 67021

SECTION NO. : 67021

HAND SPECIMEN : The grab rock sample represents a patchy dark grey to white rock, apparently modified by strong deformation. Thin white veinlets locally cut the rock. Minor small bright green patches are locally present (fuchsite, see below).

Smears of native copper on the sawn surface are clearly artefacts from preparation, and therefore support an anthropogenic origin for the native copper observed in the previous sample.

The sample effervesces strongly in reaction with dilute HCl, suggesting calcite occurs in veins and patches throughout the rock.

ROCK NAME : Carbonate-quartz veined and high-intensity quartz-pyrite-fuchsite altered ultrabasic igneous rock

PETROGRAPHY AND MINERAGRAPHY :

A visual estimate of the modal mineral abundances gives the following:

Mineral	Vol %	Origin
Cr-spinel (chromite)	<1	Relict primary igneous 1
Quartz	63	Alteration 2 / vein filling 2
Carbonate (calcite)	35	Alteration 2 / vein filling 2
Pyrite	Tr	Alteration 2
Fuchsite	<1	Stylolite seals 2

In polished thin section, this sample displays strong ductile deformation overprinted by strong pervasive alteration and veining.

Quartz is abundant, and occurs in different forms:

i) Most quartz occurs as small anhedral grains which form a sutured alteration mosaic through much of the rock. Within this quartzose mat, a precursor strong ductile structure is preserved by pale brown lamination. The structure appears to represent a strongly folded schistosity.

ii) Some quartz occurs as fine-grained veinlet fillings which cut the quartz-altered schistose rock in varied orientations.

Carbonate (calcite) is moderately abundant. Most occurs as coarse-grained granular patches of disrupted vein-like appearance, but some calcite also forms late discontinuous thin veinlets.

Pyrite occurs in trace amount as tiny subhedral crystals sparsely sprinkled through the rock.

Fuchsite is present in minor amount as pale green water-clear flakes, mostly concentrated along thin stylolitic surfaces.

Cr-spinel (chromite) occurs in minor amount as blocky grains <0.4 mm in size. They display their typical deep red colour in plane transmitted light, and medium grey colour with low reflectivity in plane reflected light. All display brittle microcracking, and some are partly enclosed by fine-grained fuchsite which trails into stylolitic surfaces.

INTERPRETATION :

This sample is considered to have formed as an ultrabasic igneous rock. It contained accessory Cr-spinel (chromite) crystals, but all other primary minerals and textures have been destroyed. It may have formed as a peridotitic rock tectonically emplaced as an Alpine-type ultramafic body. Such emplacement commonly generates a strong structure, which is partly preserved in this rock, and most likely caused serpentinisation.

Subsequent strong alteration affected the rock, generating new alteration quartz + calcite + minor fuchsite + trace pyrite. Quartz formed pervasively as a replacement mosaic, preserving the precursor strong foliation of the (?serpentinised) ultrabasic rock. Calcite formed as alteration patches and veins. Minor fuchsite was concentrated along thin stylolitic surfaces, and fuchsite aggregates locally enclose precursor Cr-spinel from which the Cr-bearing fuchsite was derived. Late thin fractures were sealed by calcite. The primary Cr-spinel grains mostly survived all these effects.

FIG. 5: SAMPLE 67021 (Transmitted light, crossed polarisers, Obj. x4, Image P1172446)
This view illustrates complete pervasive replacement of precursor ultramafic rock by fine-grained quartz mosaic (white to grey), cut by quartz-rich veins (centre, bottom centre) and later calcite-filled veinlets (right).

FIG. 6: SAMPLE 67021 (Transmitted plane polarised light, Obj. x20, Image P1172448)
This view captures small grains of relict primary Cr-spinel (dark red, chromite) which confirms the ultramafic igneous composition of the precursor rock. Note the development of alteration fuchsite (Cr-mica, pale green) around the chromite and along stylolitic trails leading away from the source grain.

SAMPLE : 67022

SECTION NO. : 67022

HAND SPECIMEN: The grab rock sample represents a fine-grained patchy white to dark greenish grey rock, cut by white carbonate veins up to ~1 cm wide.

The section offcut effervesces strongly in reaction with dilute HCl, suggesting calcite occurs abundantly in host rock and in white veins.

ROCK NAME : Calcite-quartz veined and high-intensity calcite-quartz-fuchsite altered ultrabasic rock

PETROGRAPHY AND MINERAGRAPHY :

A visual estimate of the modal mineral abundances gives the following:

Mineral	Vol %	Origin
Cr-spinel (chromite)	Tr	Relict primary igneous 1
Carbonate (calcite)	69	Alteration 2 / vein filling 2
Quartz	30	Alteration 2 / vein filling 2
Fuchsite	<1	Alteration 2 / stylolite filling 2
Pyrite	Tr	Alteration 2

In polished thin section, this sample displays a veined and pervasively altered texture.

Carbonate (calcite) is abundant. Much occurs as anhedral grains which form a pervasive granular alteration mosaic through much of the rock. Some calcite also forms anhedral to subhedral grains which fill veins up to several millimetres wide: the grains and crystals project inwards from vein margins.

Quartz is the other principal mineral. Most occurs as small anhedral grains concentrated in dense mosaics which appear to represent alteration patches of precursor host rock.

Cr-spinel (chromite) occurs in trace amount as ragged grains ~0.4-0.8 mm in size. They are very sparsely and irregularly scattered through the rock, and display the deep red colour in plane transmitted light and medium grey colour in plane reflected light that are typical of this mineral.

Fuchsite occurs in minor amount as pale green water-clear flakes which locally form diffuse clouds around Cr-spinel grains, but more commonly are concentrated along uncommon stylolitic trails.

Pyrite occurs as rare tiny crystals sparsely disseminated through calcite.

INTERPRETATION :

This sample is considered to have formed as an ultrabasic igneous rock. It contained minor Cr-spinel grains, but all the principal primary minerals have been completely destroyed. It may have formed as a peridotitic rock.

Subsequent deformation and invasion by hydrothermal fluid resulted in complete replacement by the alteration and vein-forming assemblage of calcite + quartz + minor fuchsite + pyrite. The calcite and quartz both formed as alteration of the precursor rock, and as fillings in variably oriented veins. Fuchsite formed as clouds around Cr-spinel, and as trails along stylolitic surfaces. Pyrite formed as rare small grains in calcite.

FIG. 7: SAMPLE 67022 (Transmitted plane polarised light, Obj. x4, Image P1172451)
This view illustrates the occurrence of fine-grained fuchsite (pale green, Cr-mica) concentrated along a sinuous stylolite surface in vein-forming calcite (background).

SAMPLE : 67025

SECTION NO. : 67025

HAND SPECIMEN : The grab rock sample represents a coarse fragmental rock (conglomerate) composed of closely-packed subangular to subrounded cream to pale grey lithic fragments ranging up to centimetre size, in similar finer-grained matrix. Weathering has generated a dull orange-brown ferruginous stain along subparallel surfaces (?weak foliation) which bend around the large lithic fragments.

ROCK NAME : Partly weathered, low-intensity sericite-?pyrite altered meta-conglomerate

PETROGRAPHY AND MINERAGRAPHY :

A visual estimate of the modal mineral abundances gives the following:

Mineral	Vol %	Origin
Quartz	76	Clastic lithic fragments 1
Muscovite	2	Clastic lithic fragments 1
Zircon	Tr	Clastic lithic fragments 1
Sericite	20	Alteration 2
Goethite	2	Weathering 3

In polished thin section, this sample displays a framework-supported primary coarse fragmental texture (conglomerate), modified by weak ductile deformation and alteration, and selective pervasive oxidation of weathering origin. Primary textures of the primary clasts are preserved, indicating they include fine-grained meta-sediment (meta-siltstone), meta-arenite, and polycrystalline massive vein quartz.

Quartz dominates the rock, and occurs in different forms:

i) Much quartz occurs in the silty and arenaceous sedimentary lithic fragments, where it forms small ovoid grains of varied size from clast to clast.

ii) Much quartz occurs as large strain-shadowed fragments of single quartz grains, and similarly large fragments of polycrystalline vein quartz.

White mica occurs in two forms:

i) Minor muscovite occurs as small but well-shaped flakes in some of the meta-sedimentary lithic fragments.

ii) Much finer-grained sericite occurs as fine-grained alteration of matrix in the lithic fragments and also in the matrix between the lithic fragments.

Zircon occurs in trace amount as rare crystal fragments in the arenaceous lithic fragments.

Goethite is present in minor amount, and occurs in different forms:

i) Some goethite forms dark red cryptocrystalline fillings along thin trails which define an indistinct structure (foliation) through the rock. These folia tend to wrap around the lithic fragments, but generally define a weak foliation.

ii) Some goethite occurs as cryptocrystalline dark red replacements of precursor small cubic crystals up to ~0.4 mm in size located in the matrix areas, and also along some of the (goethite-sealed) foliation trails. These cubic crystal sites most likely formed as pyrite, but none is preserved for confirmation.

INTERPRETATION :

This sample initially formed as a conglomerate composed of subrounded meta-sedimentary lithic fragments (siltstone, sandstones) and vein quartz fragments, in minor fine matrix. It appears to have been modified by a low-grade ductile metamorphic event, resulting in development of a weak foliation enwrapping the competent lithic fragments. A this time, alteration of the rock generated fine-grained sericite and larger euhedral pyrite crystals.

After uplift and erosion, circulation of near-surface meteoric waters caused pervasive oxidation. This produced goethite after pyrite crystals, and concentrations of goethite along the precursor foliation surfaces.

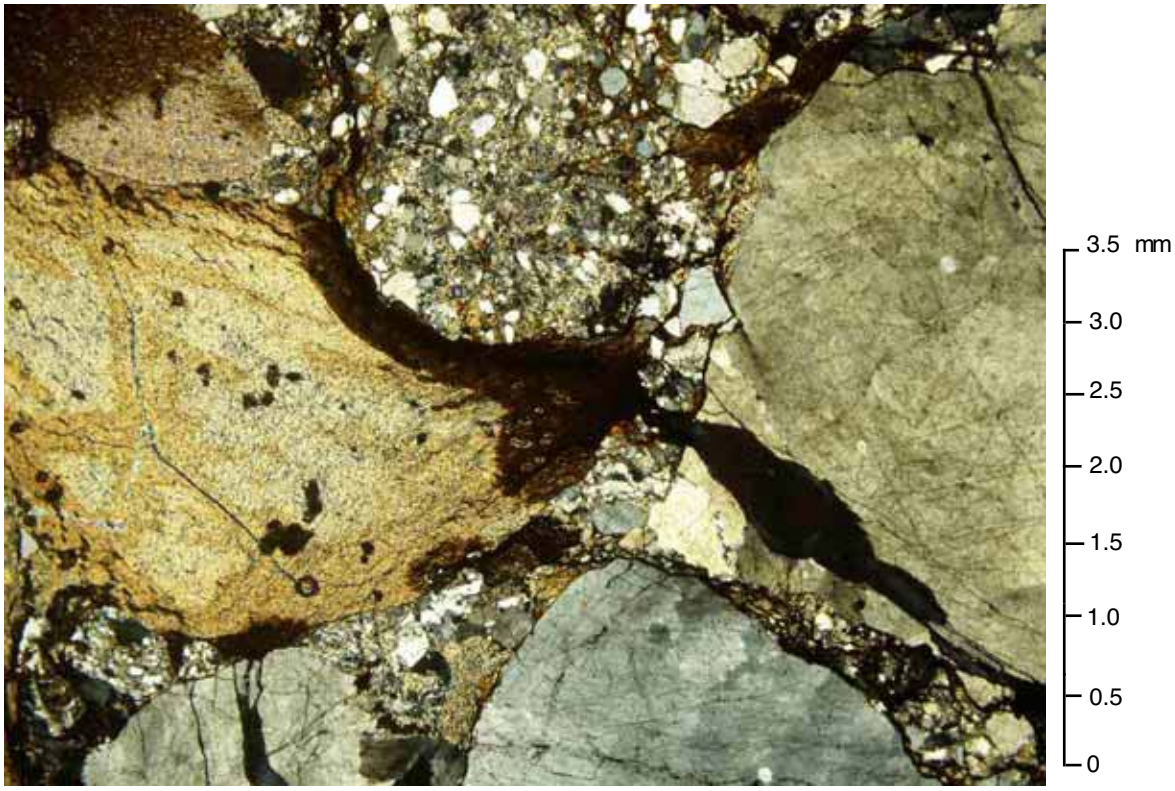


FIG. 8: SAMPLE 67025 (Transmitted light, crossed polarisers, Obj. x2.5, Image P1172453)
This view illustrates the principal clast types in the meta-conglomerate: meta-argillite (left), meta-arenite (top), and vein quartz (bottom, right).

SAMPLE : 67027

SECTION NO. : 67027

HAND SPECIMEN The grab rock sample represents a coarse-grained framework-supported clastic sedimentary rock (conglomerate) pervaded by dull orange-brown ferruginous staining of weathering origin. Lithic fragments range up to several centimetres in size. Dissolution and deposition of iron oxide along subparallel surfaces appears to define a weak structure (foliation) which enwrapped the lithic fragments.

ROCK NAME : Partly weathered, sericite-?pyrite altered meta-conglomerate

PETROGRAPHY AND MINERAGRAPHY :

A visual estimate of the modal mineral abundances gives the following:

Mineral	Vol %	Origin
Quartz	87	Primary lithic fragments 1
Muscovite	Tr	Primary crystal fragments 1
Sericite	10	Alteration 2
Goethite	3	Weathering 3

In polished thin section, this sample displays a primary coarse clastic sedimentary texture (conglomerate), modified by mild ductile deformational effects, pervasive alteration, and subsequent weathering overprint.

Quartz dominates the rock, and occurs in different forms:

i) Much quartz occurs as primary clastic particles in preserved lithic fragments of siltstone and arenaceous origins. These clasts range from several millimetres up to several centimetres in size.

ii) A significant amount of quartz occurs as small to large crystal fragments, ranging from ~0.2 mm in size up to several millimetres. The larger fragments represent polycrystalline vein quartz.

White mica is the other principal mineral, and two types are distinguished:

i) Most white mica occurs as tiny randomly oriented flecks which form alteration patches distributed through many of the lithic fragments, especially the silty and sandy fragments. The fine grain size and random orientation suggests it is of alteration origin.

ii) Clastic flakes of muscovite occur in trace amount as fragments in the finer-grained matrix areas.

Goethite occurs in minor amount throughout the rock. Much is concentrated along subparallel to wavy surfaces of possible precursor foliation origin, enwrapping and passing through the lithic fragments. The goethite fills, or partly lines, these surfaces as cryptocrystalline dense dark red material. In lithic fragments and in matrix, goethite fills cubic crystal sites of probably precursor ?pyrite origin, but no pyrite is preserved. Some of these sites have been completely dissolved, leaving cubic casts.

INTERPRETATION :

This sample is considered to have formed as a coarse conglomeratic sediment, originally composed of abundant closely-packed lithic fragments (siltstone, arenite, vein quartz fragments) up to several centimetres in size, in minor finer-grained arenaceous matrix composed of smaller quartz and muscovite crystal fragments.

The rock may have suffered a mild ductile deformational event in response to low-grade regional metamorphism, producing a weak foliation through the rock. At this time, pervasive alteration generated fine-grained sericite pervasively through the rock, accompanied by euhedral cubic ?pyrite crystals.

After uplift and erosion, circulation of meteoric waters caused oxidation, producing goethite along foliation surfaces and in ?pyrite crystal sites.

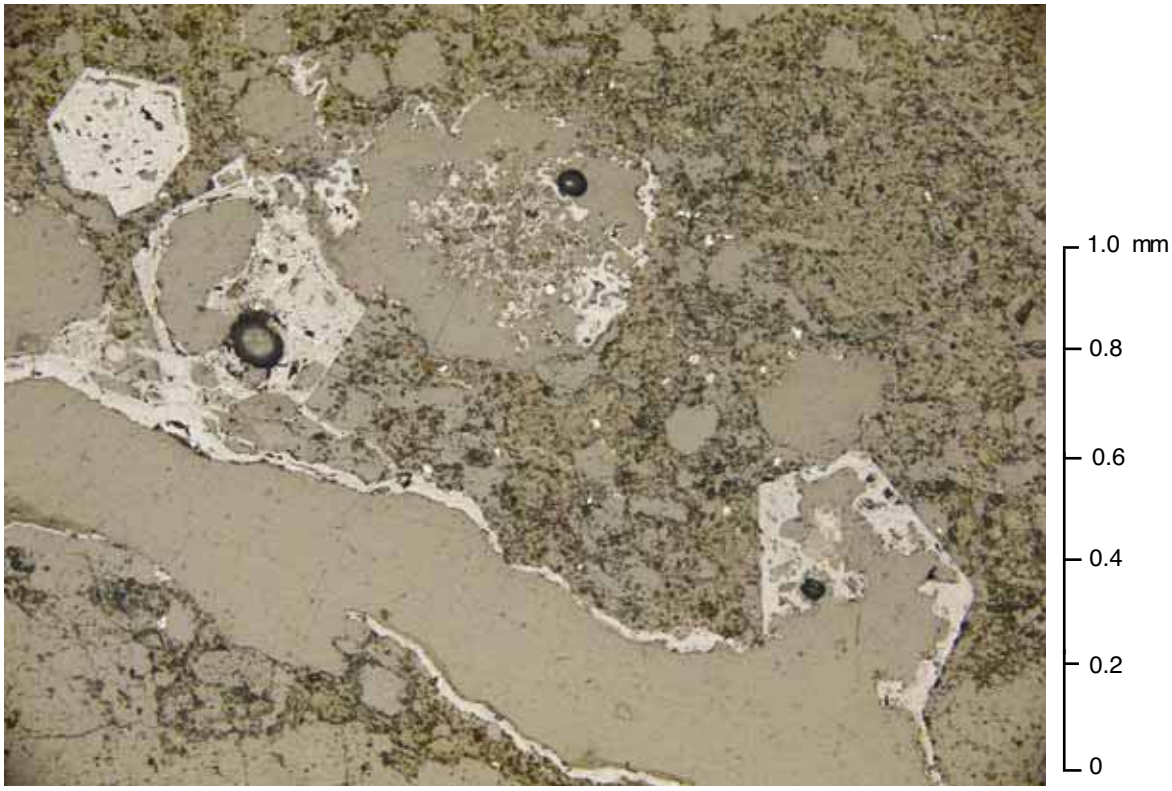


FIG. 9: SAMPLE 67027 (Reflected plane polarised light, Obj. x10, Image P1172454)
This view captures sites of several euhedral pyrite crystals (top left, bottom right) which have suffered complete replacement by goethite (pale grey). No pyrite remains, but the shape of the crystals confirms that pyrite formed as part of an alteration assemblage in this meta-conglomerate.

Appendix 2
Janelle's Hope Survey Data 2007

Appendix 2 – Drill hole survey data

DH_ID	EASTINGS	NORTHINGS	RL	TD	DIP	AZI
DCDH-1	271709	7845999	506	47.1	-45	90