BCD OPERATIONS PTY LTD

RL 1/1999 BEACONSFIELD

ANNUAL REPORT 2010

Ken Morrison
December 2010

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SUMMARY

A program of 813.3 metres of drilling tested approximately 400 metres of strike in Tasmania Reef Mine Sequence correlates under Teriary sediment cover, immediately north-northwest of the pre existing Pease Creek drilling. The drilling comprised 5 RC percussion holes (PCRC007, 008, 009a, 009b, 010), three RC aircore holes (PCAC011, 012, 013) and a single diamond drill hole (PCDD014) to 132.3 metres. Logging interpreted the fence of drilling to have penetrated the Ordovician stratigraphy close to the Eaglehawk Gully Formation-Salisbury Hill Formation contact, as planned. In detail it appears that the lower Eaglehawk Gully Formation rocks are easier to drill with RC percussion and maintain hole integrity, than are the interbedded granule conglomerates and coarser sandstones in the upper Salisbury Hill Formation. Several holes terminated prior to intended depth and reduced the effectiveness of the test in the underlying Ordovician target rocks.

Two narrow gold bearing structures were discovered and understanding of both the geology of the mineralisation and drilling methods to improve productivity in future increased as a result of the program. In PCRC009b, anomalous intersections of 3m @ 0.48 ppm Au from 70 metres, and 2m @ 0.87 ppm Au from 85 metres were encountered in carbonaceous quartz sandstone interpreted as belonging in the uppermost Salisbury Hill Formation. These intersections occurred in a zone where the Tertiary-Ordovician contact drops in elevation, causing an abrupt increase in thickness of the Tertiary sediments to the north of the intersections. The dip extension of the PCRC009b intersections was tested by PCDD014 which diamond drilled down to 132.3 metres, passing approximately 20 metres beneath the original intersections. Two narrow quartz-sulphide bearing structures intersected in PCDD014 assayed 0.4 m @ 1.62 ppm Au from 91.5 metres and 0.3m @ 2.27 ppm Au from 113.1 metres. They correlate well with the two PCRC009b intersections, demonstrating a steep southerly apparent dip, conformable to both the prevailing interpretation for the main Pease Creek prospect and to the Tasmania Reef at Beaconsfield.

The morphology of the Tertiary-Ordovician contact suggests that the original Devonian mineralised structures have been reactivated as a normal fault, down thrown to the north, prior to the deposition of the Tertiary sediments. This provides encouragement for the potential of geophysics to pick structural drill targets beneath cover along several untested strike intervals between North Tasmania and North Pease Creek. Recommendations for the next round of exploration at Pease Creek include the trialling of CSAMT to pick structural discontinuities beneath the Tertiary cover, prior to drilling the Tertiary with aircore, above positions where predicted structures in the lower Eaglehawk Gully Formation can be drilled.

INTRODUCTION & TENEMENT DETAILS

Retention Licence 1/1999 Beaconsfield is a 2 km^2 RL located immediately northwest of the town of Beaconsfield (Figure 1). The licence shares its southern boundary with CML 1767P/M, the mining lease held over the Tasmania Reef. Access to the licence is via the West Tamar Highway, Yorktown Road and Holwell Road. Access within the licence is generally good with a number of all weather gravel tracks, generally of 2WD standard. The topography of RL 1/1999 largely consists of an elevated surface at 50 - 70 metres A.S.L. underlain by Tertiary gravel. The area is covered by dry sclerophyll regrowth, in part swampy vegetation, and most of the area has been disturbed in the search for gravel for construction purposes in the past 30 – 40 years. RL 1/1999

largely occupies Crown Land and multiple use State Forest. A small portion of the area is used for residential, rural residential and agriculture purposes.

RL 1/1999 was granted to Beaconsfield Operations Pty Ltd on behalf of the Beaconsfield Mine Joint Venture on 7th January 2000 to allow the Pease Creek prospect to be further considered as a potential source of ore to compliment production from the nearby Beaconsfield Gold Mine (now Tasmania Mine). The licence replaced EL 7/88 which was in place when the Pease Creek prospect was discovered by RC percussion and diamond drilling between 1997 and 1999. Application to extend the tenure of RL 1/1999 was initially sought by Hills (2006) and subsequent applications have also been granted by the Minister for Energy and Resources. In February 2010 Mineral Resources Tasmania approved the amalgamation of RL 1/1999 with adjoining remnants of EL 27/2000, which was relinquished at that time.

This report covers exploration conducted in the year ending 21 December, 2010.

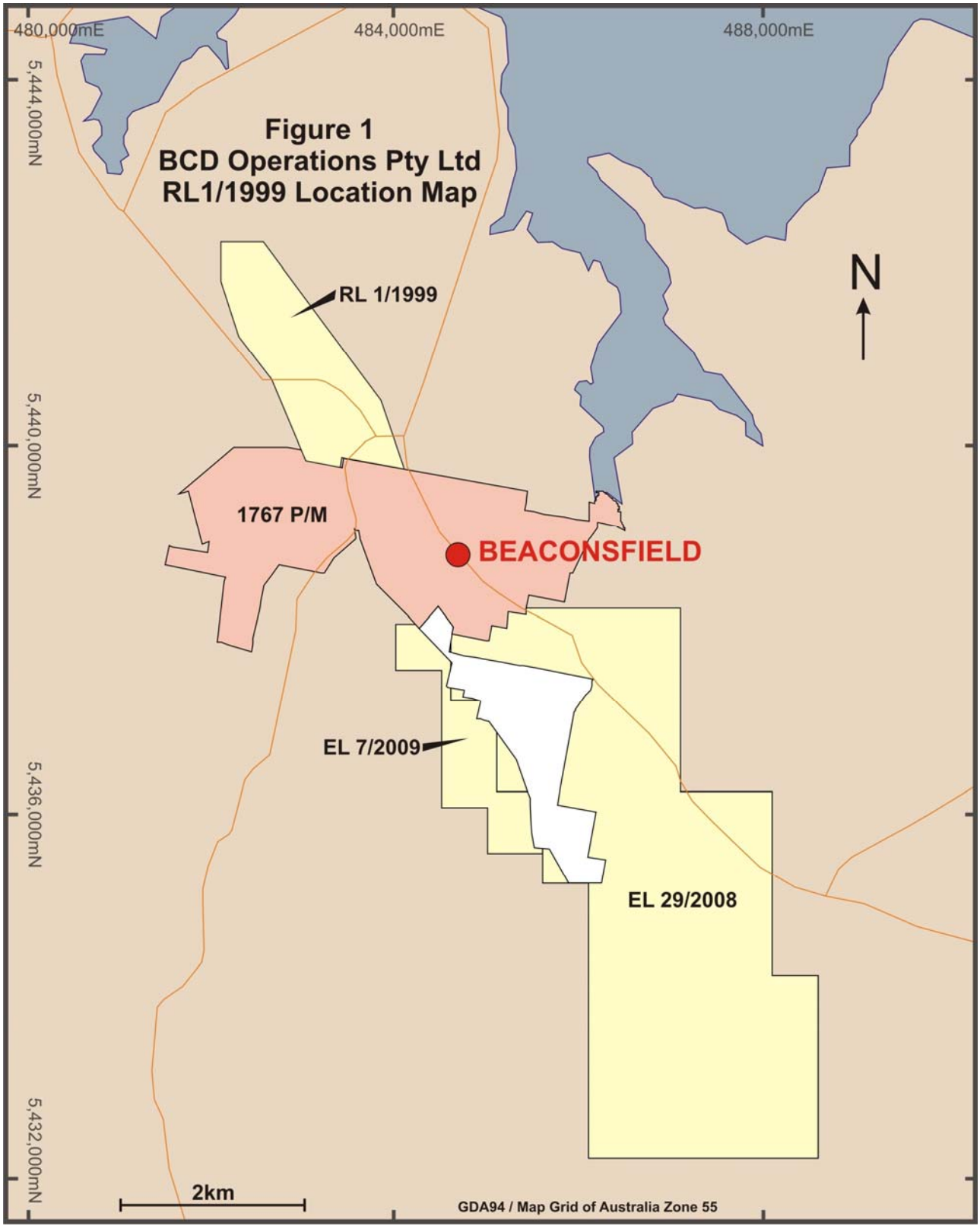
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Figure 1
BCD Operations Pty Ltd
RL1/1999 Location Map
RL 1/1999
N
1767 P/M
BEACONSFIELD
EL 7/2009
EL 29/2008
2km
GDA94 / Map Grid of Australia Zone 55

GEOLOGY

The Tasmania Gold Mine at Beaconsfield mines an orogenic mineralised quartz-carbonate shear structure of Middle Devonian age, the Tasmania Reef, which crosscuts an easterly dipping thrust slice of Ordovician siliciclastic and carbonate stratigraphy. This deposit provides the model upon which the geology of the Pease Creek prospect, and other exploration targets along strike from the Tasmania Reef, are interpreted (Hills, 2006).

REGIONAL GEOLOGY

The West Tamar region sits at the boundary between eastern and western Tasmania. On-lapping Cambrian to Silurian sedimentary sequences, the Dundas Group and overlying Wurawina Supergroup, of western Tasmanian affinity, overlain by Devonian turbidites, the Corn Hill Formation, of eastern Tasmanian affinity, are exposed in a narrow window immediately west of the Tamar River (MacDonald et al., 2001; Reed et al., 2001; 2002; Rickards et al., 2002). Imbricate thrust faulting in a regional compressional regime during the Devonian Tabberabberan Orogeny resulted in at least three imbricated thrust-bounded slices of the Palaeozoic stratigraphy now exposed in the Beaconsfield district (MacDonald et al., 2001). Dilational shear zones within the thrust slices provided a focus for mineralising fluids, generally presumed to be derived from the oceanic crustal basement, but potentially derived from either granitic magma or from the metamorphism of the Mathinna Supergroup turbidite host rocks, during the later stages of the Tabberabberan Orogeny. One such mineralised shear zone is host to the Tasmania Reef and similar shear zones are the principal targets for exploration of the Beaconsfield district tenements including RL 1/1999.

LOCAL GEOLOGY

Across RL 1/1999, and particularly in the vicinity of the Pease Creek prospect, only patchy outcrop is exposed through the cover of Cainozoic sediments. However, the broad regional stratigraphy has been confirmed by mapping and drill core logging. The Pease Creek structure as illustrated is modelled on the Tasmania Reef 3 km to the south. Dilational shears within the brittle Denison Group correlates developed parallel to the southwest directed thrusting direction and formed a locus for subsequent quartz + ankerite + sulphide mineralisation. By analogy with the Tasmania Reef, the shears at the Pease Creek prospect are presumed to be near vertical, with a predominantly dextral transcurrent sense of movement. Evidence for the faults is somewhat circumstantial but fits well with:

- Crush zones logged in B42 and B46 in particular;
- The lack of a mineralised intercept in B46; and
- The logic of depicting mineralisation approximately parallel to the Tasmania Reef.

At a detailed scale, the structural geology of the Pease Creek prospect is poorly known and more than one mineralised trend may exist.

EXPLORATION PHILOSOPHY

Hills (2007) contains a comprehensive overview of past exploration philosophy and results, much of which is copied in the current report.

The Tasmania Reef is a quartz + ankerite + gold + arsenopyrite + chalcopyrite + sphalerite + galena reef of mesothermal type. The reef strikes in a northeasterly direction and dips moderately to the southeast. It is hosted within the carbonaceous sandstones, grits and pebbly conglomerates of the

Salisbury Hill Formation and the calcareous sandstones and siltstones and interbedded limestones of the Eaglehawk Gully Formation.

The reef occupies a dilational shear zone, the principal control on which appears to be the relative rheology of the host rock. Dilation and consequently reef development is most pronounced in the most brittle strata. The reef does not 'make' in the Cabbage Tree Conglomerate at the base of the Salisbury Hill Formation, nor within the Flowery Gully Limestone which stratigraphically overlies the Eaglehawk Gully Formation. Within the host stratigraphy, local variations in the rheological index (expressed as the ratio E:UCS[1]) appears to be the critical factor in reef thickness. It is not simply a matter of whether the rock is strong, nor is it simply related to elasticity (Hills, 2006).

Chemically the host rocks are bimodal. The lower part of the mine sequence, corresponding approximately with the Salisbury Hill Formation, is carbonaceous and indicates a reduced assemblage, whilst the upper part of the mine sequence contains carbonate, indicating an oxidised assemblage.

Gold distribution within the reef is almost certainly related to the rheology and possibly also to the chemistry of the host rocks.

The Tasmania Reef structure has undergone an apparent dextral offset of around 40 metres, although there is also evidence for a normal strike slip component to this displacement. The deformation responsible for the formation of the Tasmania Reef is considered to be the Middle Devonian Tabberabberan Orogeny, with the Tasmania Reef structure opening under a roughly northeast/southwest principal stress regime.

There is evidence of mineralisation in a number of other orientations than that of the Tasmania Reef. The North Tasmania reef strikes more towards 080º, dipping moderately southwards. This vein is quite sulphidic, particularly rich in chalcopyrite.

Mineralisation in the Moonlight-cum-Wonder workings has a wide range of orientations (including sub-horizontal and both north-south and east-west striking) along a trend which strikes north-north-westerly, parallel to the regional strike. This model was the prime target of diamond drilling at the Pease Creek prospect by Diamond Ventures NL (Bucknell and Morrison, 2003b).

Quartz veins in the old workings at Salisbury, 6 km south-southeast from the Tasmania Reef, dip shallowly to the west and are hosted within quartz sandstones and grits in the hangingwall to a thrust? contact with Cambrian ultramafics and polymict schistose conglomerates.

Any rocks older than Middle Devonian may be mineralised and the nature and orientation of the mineralisation may vary. Empirically however, the perceived trap for gold mineralisation at Pease Creek is structurally dilational zones formed under a northeast/southwest principal stress regime in the Middle Devonian and the ideal trap rocks are the Salisbury Hill and Eaglehawk Gully Formation rocks which host the Tasmania Reef at Beaconsfield.

PREVIOUS EXPLORATION

The first phase of exploration within the bounds of what is now RL 1/1999 was undertaken by Bates (1979) and consisted of limited mapping and drilling of two fences of RAB holes drilled

[1] E = Tangential Young's Modulus (GPa), UCS = Uniaxial Compressive Strength (MPa)

across the line of the North Tasmania workings near the southern boundary of the licence. A result of 1m @ 1.5 g/t Au from RB35 on Line 3 at Brandy Creek/North Tasmania was encouraging. Work by Hamlyn (1982) included grid based mapping at 1:2000 and mapping of North Tasmania Adits 1, 2 and 3 and the London Adit also at North Tasmania. Hicks (1989) completed mapping at 1:5000 scale (using airphotos as the base), regional BLEG sampling, an aeromagnetics/radiometrics survey and RC and RAB drilling programs. Most of the drilling occurred in the vicinity of the Tasmania Reef but some holes were drilled at Brandy Creek following up the earlier RB35 intersection. Later work in the North Tasmania area including reopening the North Tasmania Inclined Shaft to 24 metres and mapping and sampling the London Adit (Blanchard and McGain, 1991).

In 1995 a series of 25 RC holes (BRC1 to BRC25) for 1409 metres (including a total of 140 m of diamond tails on BRC24 and BRC25) were drilled in the Pease Creek area (McKeown, 1995). This was essentially a 'wildcat' program and represented the first attempt at exploration north of the Yorktown Road.

Diamond drilling of the North Tasmania Reef was proposed by Newnham (1996). This program was completed with 4 diamond holes (B37 to B40) but failed to locate economic mineralisation (Hills, 1997). A high resolution helimagnetic survey and subsequent enhancement and interpretation of the data also covered the current licence (MacDonald, 1998).

Following establishment of an Exploration Agreement with Diamond Ventures NL (DDV) on 8th November 2002, work commenced on further ground reconnaissance of the tenement. DDV collected several hundred grid based "C" horizon soil samples from the strike extension of Cabbage Tree Hill over the summer of 2002/03 (Bucknell, 2003). This work led to the identification of targets for follow-up RAB percussion drilling which was undertaken at Pease Creek South and Lyons prospect without success (Bucknell & Morrison, 2003a; Morrison, 2004).

PEASE CREEK &NORTH PEASE CREEK

Anomalous gold mineralisation reported by McKeown (1995) from BRC15 of the order of 2m @ 0.163 g/t Au was followed up with a 10 hole program in 1997 (BRC26 to BRC35 for 697 metres). The results of the 1997 RC drilling were quite encouraging, with BRC29 in particular showing promise. That hole returned 2m @ 2.89 g/t Au from 73m and was terminated at 75m. A diamond tail was added and extended the zone of mineralisation to 13.0m @ 1.21 g/t Au from 68m. A diamond tail was also added to BRC34, extending it beneath BRC29 and intersected lower tenor mineralisation of 3.0m @ 0.53 g/t Au from 145.6m. BRC29 was twinned with a diamond drill hole (B41) which returned a strong result of 10.0m @ 5.3g/t Au from 66.5m, including 3.5m @ 11.06g/t Au from 71.0m in August 1997 (Hills, 1997).

Drilling at Pease Creek continued until late 1997 with holes B42 to B44, B44A and B46 plus a diamond tail on BRC28. Total diamond drilling to that point totalled 1145m. Up to that point a number of intercepts had been obtained with the general tenor of mineralisation around 5m @ 1.5 – 2.0g/t Au and tentative thoughts on likely mineralisation scenarios had been expressed with little defensible evidence. Results of all previous work at Pease Creek were reported by Hills (1997) and MacDonald (1998).

Activity during 1998 was confined to a helimagnetic survey which was undertaken to explore the entire area of EL 7/88 prior to compulsory relinquishment in October 1998. A detailed report was prepared by White (1998). A number of anomalous features were delineated but little additional

light was cast over the Pease Creek prospect (MacDonald, 1998). A number of unanswered questions remained in regard to the nature of mineralisation at Pease Creek and an application for extension sought and was ultimately granted by MRT to allow further investigations to take place.

A single diamond drill hole, (B51) was drilled during 1999 (Hills and MacDonald, 1999). The purpose of the hole was to follow up on the possible strike extension of low grade mineralisation encountered in earlier drilling. Mineralisation of similar tenor to that encountered in previous drilling was intersected by B51 some 100m NE along strike and 150m down dip of the previous eastern-most hole, B44. The effect of B51 was to provide some areal extent to the previous limits of known mineralisation which in turn allowed a low grade Inferred Resource of 264,000t @ 1.6g/t Au (14,000 ounces) to be estimated. This Inferred Resource provided the basis for the application for the Retention Licence.

Diamond Ventures NL targeted the Pease Creek prospect with a single diamond drill hole oriented at 90º to previous drilling to test for thrust bedding parallel mineralised veins. They found none but the hole encountered drilling problems and achieved very poor core recovery in the Salisbury Hill Formation so cannot considered a valid test (Bucknell & Morrison, 2003b).

In September 2004, Beaconsfield Gold NL undertook an orientation seismic survey over the Pease Creek prospect as part on their exploration effort on the adjacent licence, EL 27/2000. The primary aim of the survey was to determine whether the tool could be used to map the base of the Tertiary sediments and thereby assist with the planning of future drilling programs elsewhere on the BGNL tenements. Pease Creek was chosen because of its well understood Tertiary profile resulting from previous drilling. The work was undertaken Hydro Tasmania and a report on the study is contained in Morrison and Muir (2004) as an appendix.

Morrison and Muir (2004) also reinterpreted airborne geophysical data from the 1998 helimag survey (White, 1998) and the earlier fixed wing magnetic and radiometric survey (Bishop, 1988). The fixed wing data generated a number of trends parallel to the Tasmania Reef which were subsequently the target of an orientation scale soil geochemistry program on the BGNL tenements adjacent to the Pease Creek prospect, using the A-horizon mobile metal ion method.

BGNL continued RC and diamond drilling on their adjacent properties EL 12/1999 and EL 27/2000 immediately north of the Pease Creek prospect throughout 2005 and early 2006 (Morrison, 2005; 2006). 27 holes comprising 3,930.7m of RC and diamond drilling were completed in that period.

In 2008 a fence of three 100 metre RC percussion drill holes was sited approximately 25 metres west of the best previous Pease Creek intersection, in diamond drill hole B41. The fence of drill holes was located so that, barring a major fault displacement, the strike extension of the B41 intercept of 10 metres @ 5.3 ppm Au near base of oxidation would be tested, but despite the horizontal distance to B41 being only 25 metres, minor gold intersections only were encountered in two holes. PCRC-2 intersected 2m @ 0.38 ppm Au and 1200 ppm As from 62 metres down hole (base oxidation @ 45m) and PCRC-3 intersected 2m @ 0.38 ppm Au and 46 ppm As from 52 metres down hole (base oxidation @ 68m).

B54 and H3, drilled from the surface and underground respectively, were collared from within CML 1767 P/M and designed to test the North Tasmania Reef position. They passed into the southern portion of RL 1/1999 at depth but did not encounter significant mineralisation.

Three RC percussion drill holes (212 metres) were completed during 2009 at North Pease Creek, to test the possibility of low angle veining in the hangingwall of the Cabbage Tree Thrust. The Cabbage Tree Thrust was predicted to project along strike beneath cover to a position near the RL 1/1999 - EL 27/2000 boundary at North Pease Creek and the prospect required testing jointly from within both tenements. The thrust was intersected in the predicted position and although quartz and calcite veining were present in the hangingwall Salisbury Hills Formation conglomerates, the target was only weakly mineralised. Best intersections were 2m @ 0.22 ppm gold and 46 ppm arsenic from 52m in PCRC004 and 2m @ 0.22 ppm gold and 14 ppm arsenic from 56m in PCRC005. The target was considered adequately tested and down graded.

In 2010 part of the previous BGNL EL 27/2000 was amalgamated with RL 1/1999, including much of the area drilled by BGNL from 2004-2006 as the North Tasmania prospect (Morrison, 2005, 2006, 2010).

The location of all recorded drilling undertaken on and adjacent to RL 1/1999 is shown on Figure 2.

INFERRED RESOURCE

Full details of the method of estimation of the JORC (1999) compliant Inferred Resource were presented by Hills and MacDonald (1999) and are not reiterated here. Summary results are shown in the table below.

Polygon	Area (m)	E.H.T. (m)	ρ (t/m^{-3})	Tonnes (t)	Grade (g/t Au)	Grams Au (g)	Ounces (oz)
BRD29	1910	6.6	2.8	35,083	1.21	42,450	1,365
BRD34	3280	1.5	2.8	13,868	0.53	7,350	236
B41	1680	5.0	2.8	23,332	5.30	123,659	3,976
B43	2420	3.8	2.8	25,546	1.49	38,063	1,224
B44	4010	2.7	2.8	30,203	1.53	46,211	1,486
B44A	2110	2.9	2.8	17,074	1.42	24,245	780
B46	5820	2.1	2.8	34,548	0.97	68,059	2.188
B51	13140	2.3	2.8	84,622	0.98	82,929	2,666
Total				**264,275**	**1.64**		**13,920**

In summary, the Pease Creek Inferred Mineral Resource remains as it was at 15th September 1999, being **264,000 t @ 1.6 g/t Au (14,000 ounces Au).**

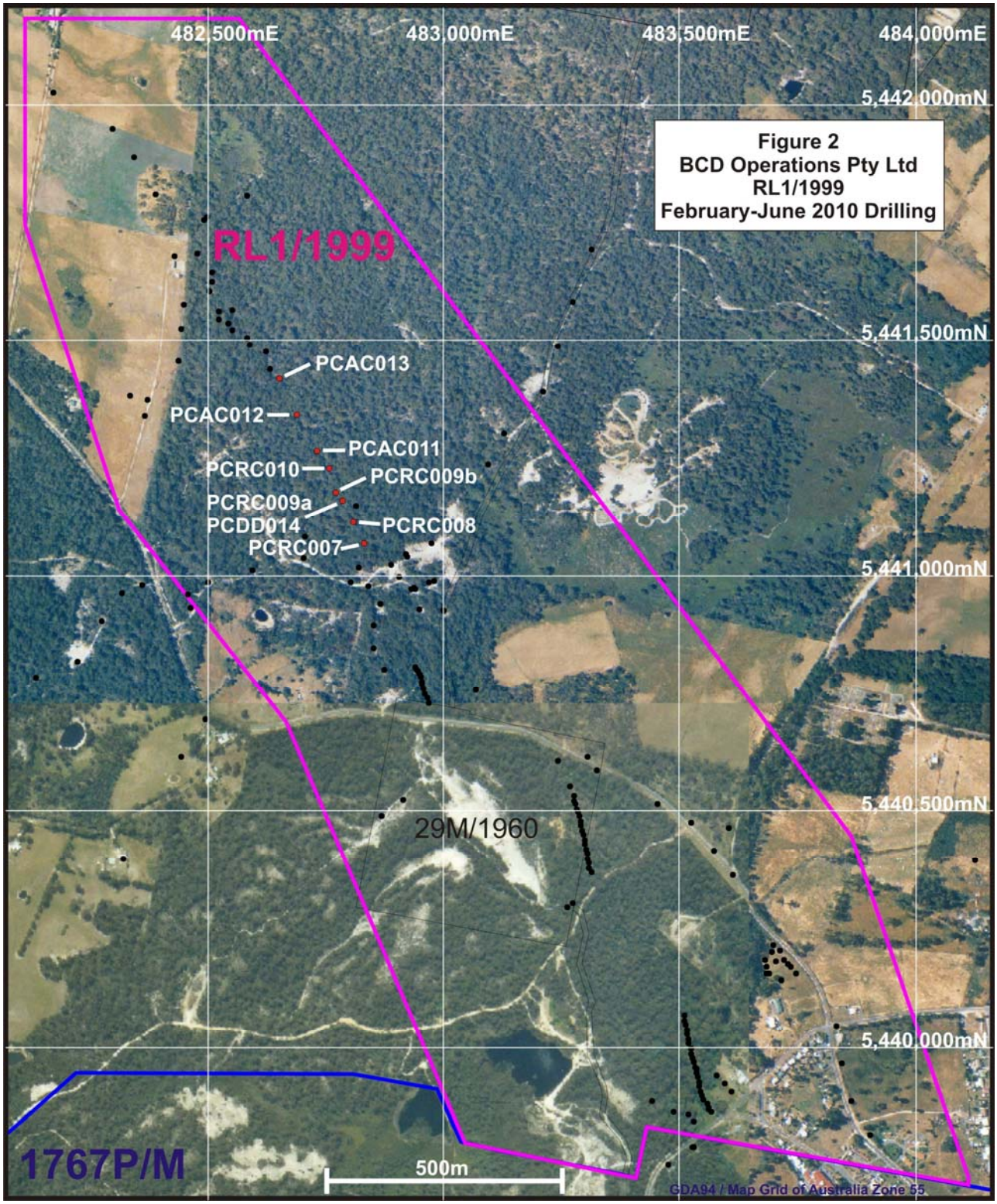
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Figure 2
BCD Operations Pty Ltd
RL1/1999
February-June 2010 Drilling
RL1/1999
PCAC013
PCAC012
PCAC011
PCRC010
PCRC009b
PCRC009a
PCDD014
PCRC008
PCRC007
29M/1960
1767P/M
500m
GDA94 / Map Grid of Australia Zone 55

WORK COMPLETED-2010

A fence of RC percussion, air core and one diamond drill hole tested a portion of the Mine Sequence geology along strike to the north-northwest of previous Pease Creek drilling (Figures 2 and 3). This program was the first stage of infill drilling to complete coverage between the Pease Creek and North Pease Creek prospects.

As part of the work program approval process, a botanical and fauna habitat survey was undertaken to assist siting the drill pads and access tracks in the least damaging locations which would allow the exploration aims to be achieved. The survey was conducted by Philip Milner Landscape Consultant Pty Ltd and consisted of a database review and a field survey (Appendix A). The exploration area vegetation community is classed as *Eucalyptus amygdalina* Coastal Forest and Woodland and consists mainly of Black peppermint and She-oak open forest tree cover with a near continuous heath, sedge and Grasstree ground cover. Within the exploration area, no threatened or endangered communities or flora or fauna species are listed on the Natural Values database, under the three relevant State and Commonwealth Acts, but it is recognised that habitats receptive to hosting several species of threatened mammals, birds and plants occur in the Coastal Forest and Woodland and that this community is also susceptible to *Phytophthora* infestation.

The field survey (Appendix A) concluded that no threatened or endangered species or habitats were observed but that patches of Grasstree which are locally common should be avoided wherever possible, because the threatened Shiny Grasstree and Sand Grasstree *Xantherea sp* are sometimes difficult to identify within communities dominated by the common species which occurs at Pease Creek. Furthermore, Grasstrees in general are recognised as being particularly susceptible to *Phytophthora* dieback. Gorse was observed in badly disturbed areas along the access tracks to the exploration area and the normal cleanliness and hygiene measures for equipment and crew, to inhibit weed and *Phytophthora* spread, were recommended.

A program of 813.3 metres of drilling tested approximately 400 metres of strike in Tasmania Reef Mine Sequence correlates under Teriary sediment cover, immediately north-northwest of pre existing Pease Creek drilling (Figure 2). The drilling comprised 5 RC percussion holes (PCRC007, 008, 009a, 009b, 010), three RC aircore holes (PCAC011, 012, 013) and a single diamond drill hole (PCDD014) to 132.3 metres, including reeming 57 metres in PCRC009a. Spaulding Drillers did the percussion and aircore drilling and Boart Longyear drilled the diamond hole. All holes were inclined and azimuthed along strike to the north-northwest, as shown on the long section (Figure 3). All drill hole details, logged data and assay results are in Appendix C (CD version of the report only).

As with previous campaigns on the Pease Creek and North Pease Creek prospects, constant drilling problems involving hole stability, loss of return circulation and eventual torque build up and rod jamming occurred, mainly in the Tertiary cover sediments. This caused several holes to be terminated prior to intended depth and limited the effectiveness of the test in the underlying Ordovician target rocks (Figure 3). Logging interpreted the fence of drilling to have penetrated the Ordovician stratigraphy close to the Eaglehawk Gully Formation-Salisbury Hill Formation contact as planned, and in detail it appears that the lower Eaglehawk Gully Formation rocks (including the matrix supported granule conglomerate/granule sandstone PEB Bed correlates) are easier to drill

with RC percussion and maintain hole integrity, than are the interbedded granule conglomerates and coarser sandstones in the upper Salisbury Hill Formation. This is possibly due to the carbonate content in the matrix of the Eaglehawk Gully Formation rocks, whick may cause them to be slightly less brittle when hit by the hammer, than the underlying more siliceous rocks.

Despite the drilling problems, two narrow gold bearing structures were discovered and understanding of both the geology of the mineralisation and drilling methods to improve productivity in future increased as a result of this program. In PCRC009b, anomalous intersections of 3m @ 0.48 ppm Au from 70 metres, and 2m @ 0.87 ppm Au from 85 metres were encountered in carbonaceous quartz sandstone interpreted as belonging in the uppermost Salisbury Hill Formation. These intersections occurred in a zone where the Tertiary-Ordovician contact drops in elevation, causing an abrupt increase in thickness to the Tertiary sediments to the north of the intersections (as shown on Figure 3). The dip extension of the PCRC009b intersections was tested by PCDD014 which reemed out PCRC009a and diamond drilled down to 132.3 metres, passing approximately 20 metres beneath the original intersections. Two narrow quartz-sulphide bearing structures intersected in PCDD014 assayed 0.4 m @ 1.62 ppm Au from 91.5 metres and 0.3m @ 2.27 ppm Au from 113.1 metres. They correlate well with the two PCRC009b intersections (Figure 3), demonstrating a steep southerly apparent dip, conformable to both the prevailing interpretation for the main Pease Creek prospect and to the Tasmania Reef at Beaconsfield.

The morphology of the Tertiary-Ordovician contact shown on Figure 3 suggests that it is likely that the original Devonian mineralised structures have been reactivated as a normal fault, downthrown to the north, prior to the deposition of the Tertiary sediments. This provides encouragement for the potential of geophysics to pick structural drill targets beneath cover along several untested strike intervals between North Tasmania and North Pease Creek.

Core samples of carbonaceous sandstone from PCDD014 were examined petrographically by Doug Mason, Mason Geoscience Pty Ltd, and two main conclusions were reported (Appendix B).

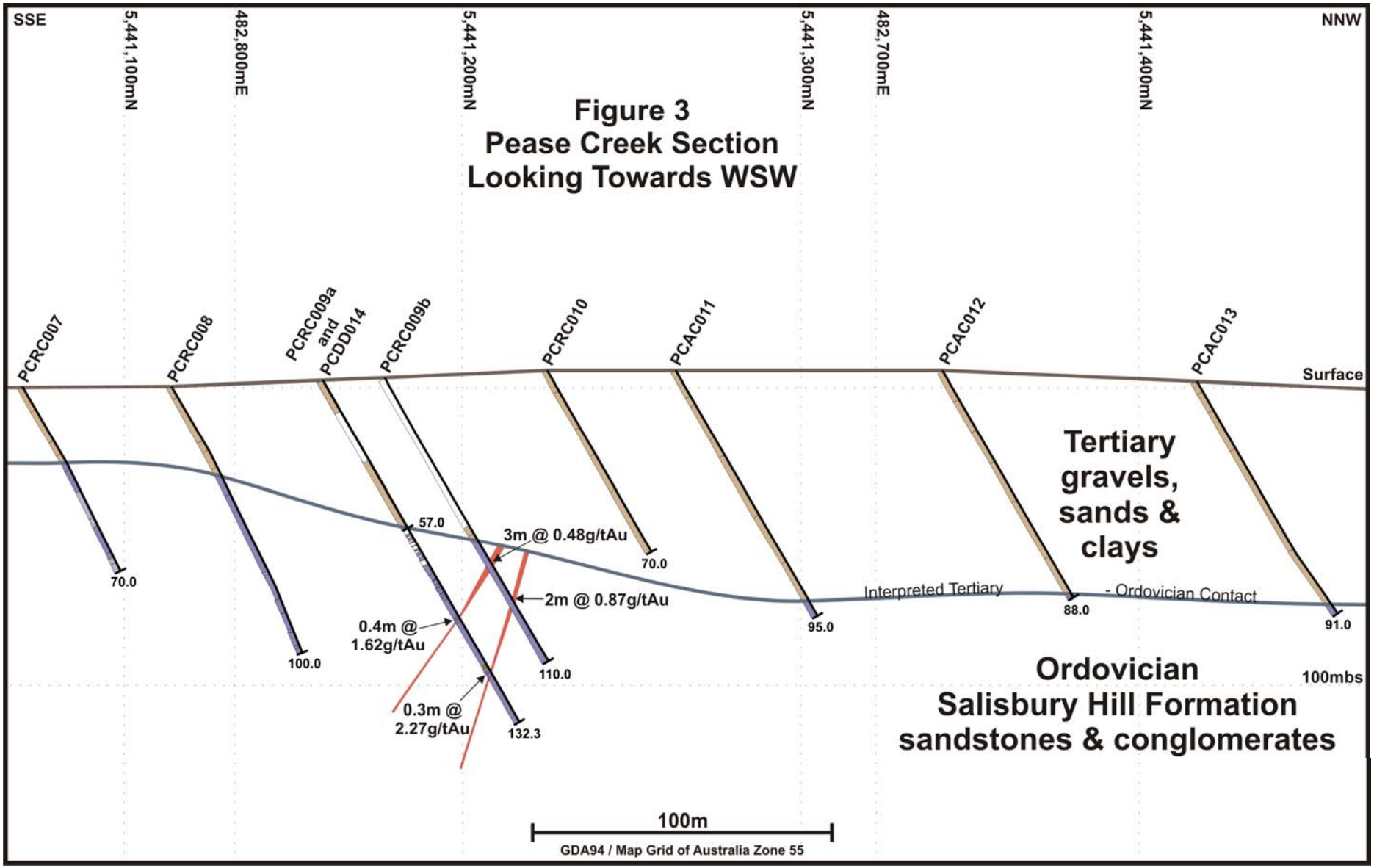
- The carbonaceous material was interpreted as being detrital and metamorphosed to pyrobitumen.
- No free gold was seen and the interpretation was that gold occurs as either inclusions or lattice substitutions in sulphides. The sulphides identified, in order of abundance, were; pyrite, marcasite, arsenopyrite and possible tennanite-tetrahedrite.

This interpretation of the pyrobitumen origin differs from previous thinking generated from a combination of core logging and petrography, that the pyrobitumen was part of the alteration assemblage, along with sulphides and carbonates. Interestingly carbonates were not recorded in the PCDD014 samples, so the nature of Pease Creek alteration and gold mineralisation remains not well understood in comparison to the Tasmania Reef.

The extent of hydrothermal alteration, including gold mineralisation, encountered along >1000 metres of strike length from Pease Creek to North Pease Creek requires the area to be ranked as very prospective. However, effectively testing the ground has always been limited by extremely difficult drilling conditions in both the overlying wet Tertiary sediments and the dry, brittle, vuggy Ordovician upper Salisbury Hill Formation rocks, which by analogy with the Tasmania Reef are

expected to host the maximum reef width development. Some progress has been made in improving rate of penetration and core recovery in the Ordovician rocks by targeting pierce points in the lowermost Eaglehawk Gully Formation, which is more calcareous, less porous and brittle and more stable when drilled, than the underlying granule conglomerates of the Salisbury Hill Formation. The logic in this approach is to find the mineralised structures first with easier drilling, then test their maximum development with more difficult, more costly drilling. Several drilling methods have been tried to precollar the Tertiary sediments and none are especially successful, but large diameter (>120 mm if possible) aircore shows the most potential.

Recommendations for the next round of exploration at Pease Creek include the trialling of CSAMT to pick structural discontinuities beneath the Tertiary cover, prior to drilling the Tertiary with aircore above positions where predicted structures in the lower Eaglehawk Gully Formation can be drilled. Initial drilling of the target rocks, including reeming the precollar, would be with reverse circulation percussion (using a Premier PR4 hammer) then if warranted, mineralisation can be confirmed with deeper diamond drill holes.


SSE
NNW
5,441,100mN
482,800mE
5,441,200mN
5,441,300mN
482,700mE
5,441,400mN
Figure 3
Pease Creek Section
Looking Towards WSW
PCRC007
PCRC008
PCRC009a and PCDD014
PCRC009b
PCRC010
PCAC011
PCAC012
PCAC013
Surface
Tertiary gravels, sands & clays
70.0
100.0
57.0
3m @ 0.48g/tAu
2m @ 0.87g/tAu
0.4m @ 1.62g/tAu
0.3m @ 2.27g/tAu
70.0
110.0
132.3
95.0
Interpreted Tertiary - Ordovician Contact
88.0
91.0
Ordovician
Salisbury Hill Formation
sandstones & conglomerates
100mbs
100m
GDA94 / Map Grid of Australia Zone 55

EXPENDITURE

BCD NL 2010 Exploration Expenditure	RL1/1999		
	without GST	GST	with GST
Geoscientific Costs			
Geology	$42,442.27	$1,478.46	$43,920.73
Geochemistry	$2,158.50	$215.85	$2,374.35
Geophysics	$0.00	$0.00	$0.00
Remote Sensing	$0.00	$0.00	$0.00
Drilling & Gridding Costs			
Gridding	$0.00	$0.00	$0.00
Drilling	$121,611.96	$12,161.20	$133,773.16
Land Access Costs	$0.00	$0.00	$0.00
Rehabilitation Costs	$5,280.00	$528.00	$5,808.00
Feasibility Study Costs	$0.00	$0.00	$0.00
Other Costs (Environmental Survey)	$1,912.00	$191.20	$2,103.20
Administration Costs	$701.00	$30.20	$731.20
TOTAL COSTS From 1/12/2009 To 30/11/2010	$174,105.73	$14,604.91	$188,710.64

PAST AND CURRENT EXPENDITURE

2002 – 03	$49,249
2003 – 04	$29,494
2004 - 05	Nil
2005 – 06	Nil
2006 – 07	Nil
2007 – 08	Nil
2008 – 09	$49,050
2009	$44,782
2010	**$174,106**
Total	**$346,681**

FUTURE EXPLORATION AND EXPENDITURE

Further drilling at Pease Creek is planned and an initial fence of RC percussion drilling along the strike of the Salisbury Hill Formation will test the North Tasmania prospect, between the southern boundary of RL 1/1999 and Brandy Pond.

Discussions with Zonge Engineering are in progress regarding the potential to run a CSAMT line from Middle Arm Gorge to Pease Creek, with the aim to detect structures under Cainozoic cover sediments, and allow more focussed drill targets to be generated. The geophysics is planned for March-May 2011 and approximately half of the proposed line is within RL 1/1999. A program budgeted in the range of $100,000 - $150,000, depending on the early results achieved, is planned for 2011.

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APPENDIX A

Botanical and Fauna Habitat Survey Report

BEACONSFIELD EXPLORATION PROGRAM

BRANDY POND AND PEASE CREEK

BOTANICAL AND FAUNA HABITAT SURVEY

FOR BEACONSFIELD GOLD

27TH July 2009

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Introduction:
Beaconsfield Gold NL is undertaking an exploratory drilling program at two locations to the north of Beaconsfield at Brandy Pond (North Tasmania) and Pease Creek within tenement RL1/1999.
A flora and fauna habitat survey is required as part of the MRT license conditions to determine any likely impacts on threatened species or threatened vegetation communities.

Objectives:
The objectives of this survey were to:

- Undertake a desktop survey to confirm the known biological records and the natural values which may be present in the exploration target area or in the vicinity.
- Undertake a field survey to observe and record the natural values present, including the vegetation types and plant communities, the flora and in particular any threatened species, and the presence of any species of or potential habitat for any threatened fauna.
- Determine the possible impacts of the proposed exploration program on the natural values present and make recommendations on how those impacts can be minimized.

Location of Study Area:
Both exploration target areas are located within exploration tenement RL1/1999 to the immediate north of the town boundary of Beaconsfield
Area 1. is known as Brandy Pond or North Tasmania and it is located within the Crown Land gravel reserve and to the immediate east of Brandy pond itself, with Yorktown Road to the north-east and Holwell Road to the south. The survey line follows a disused vehicular track.
GRID Ref Point: 483527E – 5439971N (GDA 94)
Area 2. known as Pease Creek is also located within a Crown Land gravel reserve and is off the Yorktown Road about 2 km north of the Beaconsfield town boundary. The survey line passes through native vegetation between two existing vehicular tracks.
GRID Ref Point: 482638E – 5441451N (GDA 94). Starting point of survey.

Site Description:
Both exploration target areas are located on the undulating hills north of Beaconsfield, between the Middle Arm and West Arm of the Tamar River and are also part of the foothills of the Dazzler Range which is located to the west. Both sites are composed largely of quartzite gravels which have been actively quarried and subjected to high levels of disturbance in the past although there are areas of remnant vegetation remaining in both locations.

Desktop Survey of Natural Values:
The DPIW database "The Natural Values Atlas" was accessed for the known biological records of the locality and environs. Records of threatened species known to occur within a 5,000 metre radius of each site were also accessed. Data sourced included the vegetation types and plant communities, the occurrence of any threatened plant communities, the location of any threatened species of plants, and threatened fauna known or expected to occur in the vicinity.

Desktop Survey Results:
VEGETATION COMMUNITIES: The following vegetation communities are mapped under the TasVeg mapping program as occurring within 1,000 metres of the study area reference points;

1. Brandy Pond: 483527E – 5439971N
2. Pease Creek: 482768E – 5441095N

VEGETATION COMMUNITY	TasVeg Code / colour----------	Extent in Study Area
Eucalyptus amygdalina Coastal Forest & Woodland	DAC / Bright green	The predominant community within the study area
Eucalyptus amygdalina Forest & Woodland on Sandstone	DAS / Bright green with diagonal lines.	Mainly distributed south-east of Brandy Pond ref.
Eucalyptus ovata Forest & Woodland	DOV / Dark Green with vertical lines	Small localized patch north-east of Brandy Pond ref.
Leptospermum Scrub	SLW / Pink with horizontal lines	Small localized area in the Pease Creek study area
Melaleuca ericifolia Swamp Forest	NME / Grey-green with "z"	Very small area south-west of Pease Ck ref. Area on eastern edge of Brandy Pond ref.
Melaleuca squarrosa Scrub	SMR / Maroon with diagonal lines	Small area south-west of Pease Ck ref. Small area on Cabbage Tree Hill.
Inland Heathland (undifferentiated)	SHU / Pink with "z"	Relatively large area in eastern half of Pease Creek study area
Coastal Heathland	SCH / Brown	2 localized patches Pease Ck. A number of areas west of Brandy Pond.
Lowland Grassland Complex	GCL / Yellow-green	One localized patch in the east
Extra-urban miscellaneous (Gravel Pits)	FUM / yellow-green with "z"	The study area is within a gravel reserve
Agricultural Land	FAG / Cream	Around the periphery of the study area and includes urban Beaconsfield

THREATENED VEGETATION COMMUNITIES: The following vegetation communities are either listed as threatened under the Tasmanian *Nature Conservation Act 2002* or are considered to have conservation significance.

- *Eucalyptus ovata* Forest & Woodland (DOV) is a listed threatened community under the Act and requires further reservation across the state.
- *Eucalyptus amygdalina* Coastal Forest & Woodland (DAC) is generally well-reserved however it is under-reserved in some regions of the state particularly in its old-growth condition and is being targeted for additional reservation under the Regional Forest Agreement.
- *Eucalyptus amygdalina* Forest & Woodland on Sandstone is listed as a threatened community under the Act and is being targeted under the RFA for further reservation.
- *Melaleuca ericifolia* Swamp Forest is also a listed threatened community.
- Lowland Grasslands (GCL) are of conservation significance and threatened nationally, particularly communities in good condition which are inadequately reserved in Tasmania.

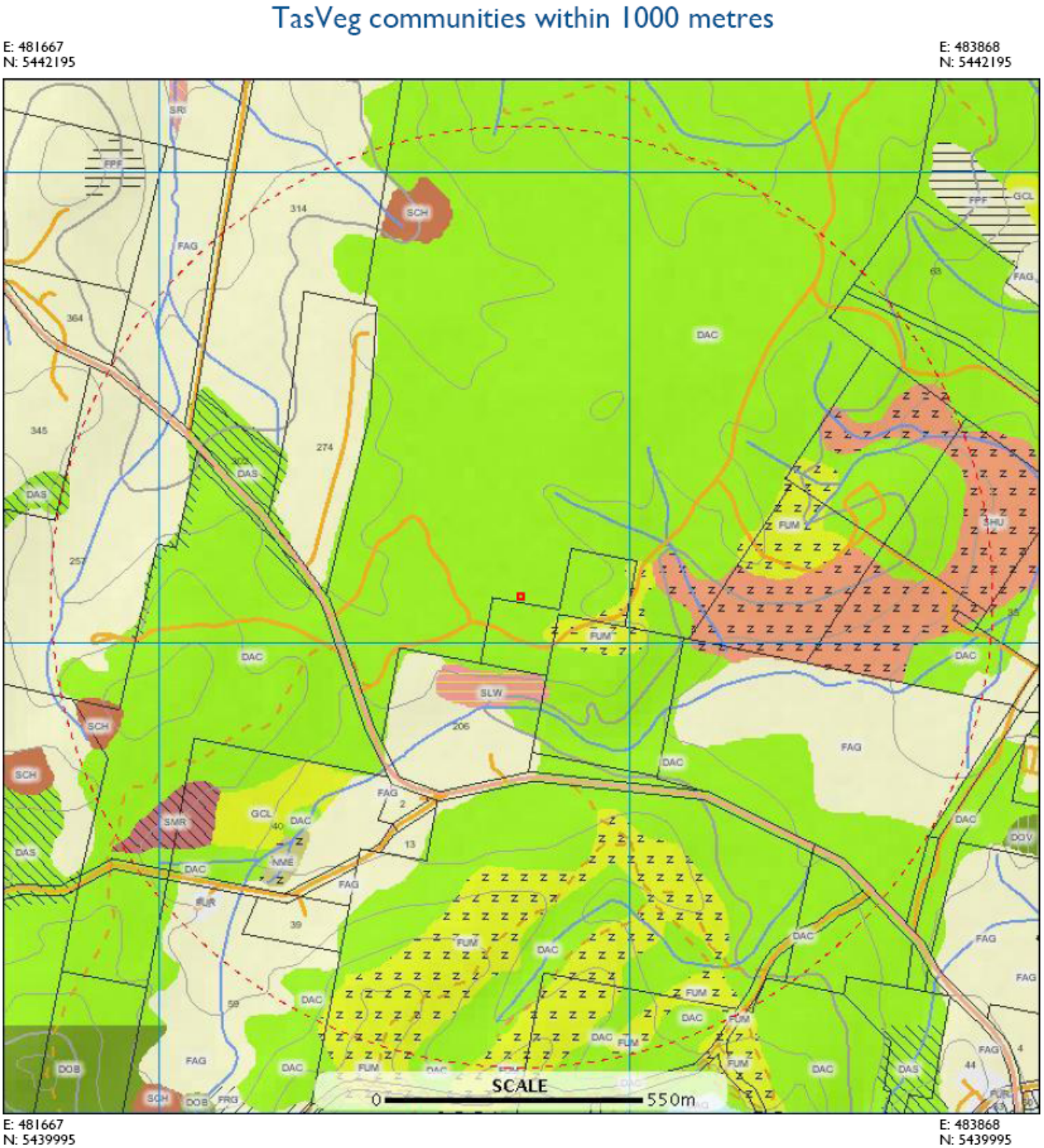


FIGURE 1: Vegetation communities as per TasVeg vegetation mapping program within 1,000 metres of Pease Creek reference point 482768E – 5441095N.

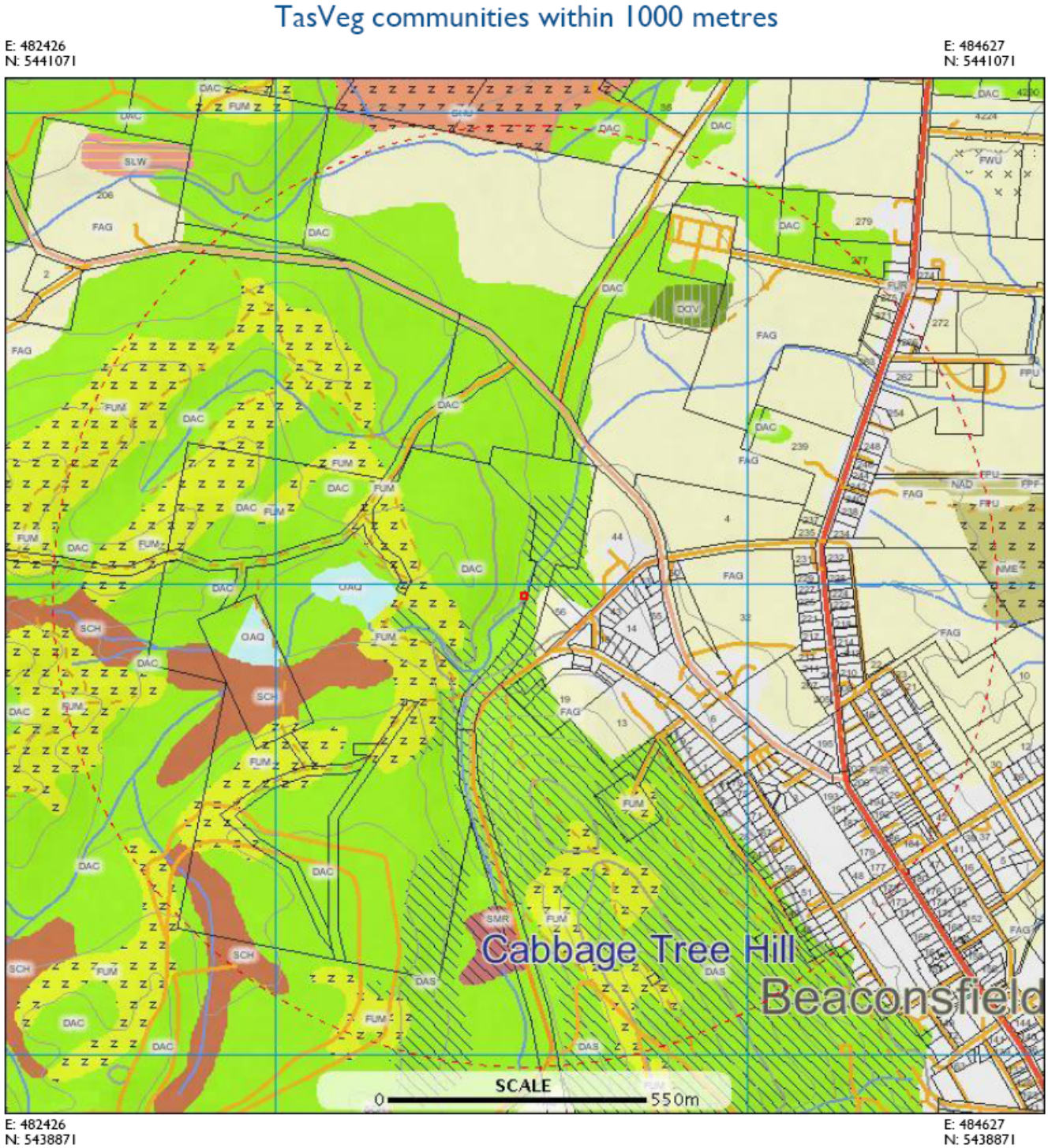


FIGURE 2: Vegetation communities as per TasVeg vegetation mapping program within 1,000 metres of Brandy Pond reference point 483527E – 5439971N.

Community Codes: *Eucalyptus amygdalina* Coastal Forest & Woodland **DAC /** *Eucalyptus amygdalina* Forest & Woodland on Sandstone **DAS /** *Eucalyptus ovata* Forest & Woodland **DOV /** *Melaleuca ericifolia* Forest **NME /** Lowland Grassland Complex **GCL /** Coastal Heathland **SCH /** Inland Heathland (undifferentiated) **SHU /** Disturbed land & gravel pits **FUM /** Agricultural land **FAG.**

THREATENED FLORA: No species of threatened flora listed under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* are recorded on the Natural Values Atlas database as occurring within 500 metres of the study area reference point.
There are 10 species of threatened flora recorded on the database as occurring within 3,000 metres of the study area reference point.

- *Epacris virgata* Pretty Heath is provisionally listed as vulnerable under the State Act and listing is also pending under the Commonwealth Act. This species is a serpentinite endemic and is largely restricted to the nearby Dans Hill Forest Reserve and as there is no ultramafic geology in the study area this species would not be present.
- *Spyridium obcordatum,* Creeping Dustymiller is listed as vulnerable under both State and Commonwealth Acts. This species also occurs on the nearby serpentine as well as dolerite in the central north of the state. There is no dolerite or serpentine within the study area and this species would not be present.
- *Acacia ulicifolia,* the Juniper Wattle is listed as rare under the State Act. There are 10 records on the database dating from 1892 up to the present with one recorded location in the vicinity of the Pease Creek target area. The species is known to occur on the quartzite geology which is widespread within the study area and is one of the species most likely to be present.
- *Brunonia australis,* the Blue Pincushion is listed as rare under the Tasmanian Act although it is being considered for delisting due to its relatively wide distribution. There are 10 records for the species dating from 1931 until the present. This species may be present within the study area.
- *Cynoglossum australe,* the Coast Hounds-tongue is listed as rare under the State Act. There is one 1978 record for the species in the vicinity of the Pease Creek target area and may be present.
- *Gratiola pubescens,* the Hairy Brooklime is listed as vulnerable under the State Act and there is one 2008 record of the species from the Dans Hill area. It is unlikely to be present in the study area.
- *Pultenaea mollis,* the Soft Bushpea is listed as being vulnerable under the State Act. There is one very early record of the species by Leonard Rodway from the Beaconsfield area. As there are no recent records for this species it is most unlikely to be present in the study area.
- *Thelymitra holmesii,* the Bluestar Sun-orchid is listed as rare under the State Act with two records from 2002 between the Pease Creek target area and Beauty Point. This is a recently described species allied to *T. pauciflora* and its distribution is not yet well known. Its known habitat is heathland or heathy open forest on clay soils with poor to moderate drainage, often in swamp margins. It flowers from November to December.
- *Xanthorrhoea* aff. *bracteata,* the Shiny Grasstree is provisionally listed as vulnerable under the Tasmanian Act and listing is also pending under the Commonwealth Act. There are 4 records on the database including one in the vicinity of the Pease Creek target area, and the others in the vicinity of the Beaconsfield Reservoir which is closer to the Brandy Pond target area and on Cabbage Tree Hill.. This taxon tends to occur with the more widespread *X. australis* and can be easily confused with immature plants of that species. In the field it is characterized by being trunkless and by having multiple crowns.
- *Xanthorrhoea arenaria,* the Sand Grasstree is also a dwarfed trunkless species which is listed as being vulnerable under both State and Commonwealth Acts and mainly occurs in the north-east between Bridport and Freycinet National Park. There are 7 records from the locality, between the Pease Creek site and the Beauty Point township, all but one from 2006, which indicates an outlying occurrence of the species from its usual distribution.

THREATENED FAUNA: There were no threatened fauna recorded on the database as occurring within 500 metres of the study area reference point.
The following species of fauna which are listed under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* are recorded on the data base as occurring within 5,000 metres of the study area reference point.

- The Wedge-tailed Eagle, *Aquila audax* ssp *fleayi.* The Tasmanian subspecies is listed as endangered under both State and Commonwealth Acts. There are two records from the area, one from the 1980's and the other from 2001. The species requires large trees within tracts of old-growth forest for successful nesting.
- The White-bellied Sea-eagle, *Haliaeetus leucogaster* is listed as vulnerable in Tasmania. There are 4 records for the locality the most recent being 1996 and it is known from the Tamar River and estuary.
- The Spotted-tailed Quoll, *Dasyurus maculatus* is listed as being rare in Tasmania and vulnerable nationally. There are two records for the locality the most recent being 1998.
- The Eastern-barred Bandicoot, *Parameles gunnii* is listed as endangered under the Commonwealth Act. There are 4 records on the database from about 1968 up to 1992.
- The New Holland Mouse, *Pseudomys novaehollandiae* is endangered in Tasmania. There is one undated record with an approximate location of the species for the area.

The following species of threatened fauna which are listed under the State and/or Commonwealth Acts have potential to occur within the study area based on habitat mapping within the known geographical range of each.

- The Masked Owl, *Tyoto novaehollandiae* ssp *castinops.* The Tasmanian subspecies is listed as endangered under the Tasmanian Act. This species requires large tree hollows for nesting and old-growth forest for its survival.
- The White (Grey) Goshawk, *Accipiter novaehollandiae* is endangered in Tasmania and requires mature wet forest as habitat.
- The Swift Parrot, *Lathamus discolor,* is listed as endangered under both State and Commonwealth Acts.
- The Australian Grayling, *Prototroctes mareana* is a fish which is listed as being vulnerable under both Acts.
- The Eastern Dwarf Galaxia, *Galaxiella pusilla* is also a fish which is listed as being vulnerable under both Acts.
- The Central-north Burrowing Crayfish is also endangered under both Acts.
- The Green and Gold Frog, *Litoria raniformis* is listed as vulnerable in Tasmania and Nationally.

Field Survey:
Methodology: The field survey was undertaken on foot and focused on the two areas targeted for the drilling program near Brandy Pond and near Pease Creek.
The target area near Brandy Pond followed an overgrown vehicular track for a distance of approximately 200 metres and each drill pad is to be located off this track.
The target area near Pease Creek followed a transect for about 500 metres through remnant bush to connect two existing vehicular tracks. The exploration program will include the formation of a number of drill pads. This transect was surveyed over a width of about 100 metres to determine the route of least impact on the local vegetation.

Vascular plant species were recorded, vegetation communities were observed and cross-referenced with the TasVeg map sourced from the Natural Values Atlas database. Suitable habitat for threatened species of fauna was also observed.

Limitations: The survey was conducted in winter when most species of plants are not flowering. No botanical survey can guarantee that all flora will be observed and recorded in a single survey in one year due to seasonal and annual variation in abundance and the possible absence of flowers and fertile material for identification. Ephemeral species which may have been present includes species of orchids, lilies, herbs, grasses and other graminoids. However all significant species known to occur in the study area and its environd have been considered in this report.

Field Survey Results:

Brandy Pond (North Tasmania): The site was accessed via a 4-wheel drive track from Holwell Road on the outskirts of Beaconsfield. The field survey followed an existing but overgrown vehicular track and the two proposed drill pads are to be located off this track and in the vicinity of the following Grid Reference points: No.1: 483527E – 5439971N and No.2: 483499E – 5440912N. The locality has a history of disturbance with the clearing of vegetation for gravel extraction and the formation of access roads and tracks.

VEGETATION COMMUNITIES: The vegetation community observed in the exploration target area was *Eucalyptus amygdalina* Coastal Forest with *Eucalyptus viminalis* present as a co-dominant canopy tree. The tree canopy is intact in this location on a sheltered southward facing slope and has relatively mature trees of both species present reaching up to 25 metres in height. The understorey in this location is quite shrubby and has regenerated following past disturbances. The community *Eucalyptus amygdalina* Coastal Forest and Woodland is relatively widespread in northern and eastern Tasmania and often occurs on siliceous soils and gravels from sea level up to 100 metres (occasionally to 450 metres). No trees are to be removed in order to undertake the drilling program so there will be minimal impact on the community in this location.

THREATENED VEGETATION COMMUNITIES: This exploration target area is located adjacent to the interface between an area of siliceous gravels and the north-eastern extremity of the Cabbage Tree Hill formation of predominantly sandstone. The vegetation community on this geology is defined as *Eucalyptus amygdalina* Forest and Woodland on Sandstone which is listed under the *Nature Conservation Act 2002* as being a threatened community. The exploration program in this locality will not impact on this threatened vegetation community.
No other threatened vegetation communities were observed during the field survey.

THREATENED FLORA: No plant species listed under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* was observed during the field survey of the Brandy Pond target area.
Of the species listed on the database and referred to in this report under desktop research the most likely species to occur in this exploration target area would be *Acacia ulicifolia, Brunonia australis* and *Xanthorrhoea* aff *bracteata.* The first two species were not present however the close relative of the Grasstree *Xanthorrhoea australis* was observed in the general survey area. While it is difficult to distinguish the two species in the field in their immature form and in the absence of flowers or old flower spikes it is considered that the species in this location is the non-threatened species *Xanthorrhoea australis.*

Although not a listed threatened species *X. australis* is considered to be of conservation significance as it is it is declining due to infection by the root pathogen *Phytophthora cinnamoni.*

THREATENED FAUNA: No species of threatened fauna listed under the State or Commonwealth Acts were observed during the field survey.

THREATENED FAUNA HABITAT: Potential habitat such as old-growth forest, large mature trees or trees with large hollows for species such as the Wedge-tailed Eagle, Masked Owl or White (Grey) Goshawk was not observed or present in the area surveyed.
There was no suitable habitat observed for the Dwarf Galaxia, Australian Grayling or the Green and Gold Frog however they may be present in or adjacent to the nearby Brandy Pond and the old Beaconsfield Reservoir. No evidence was observed for the presence of the Spotted-tailed Quoll, the Central North Burrowing Crayfish, the Tasmanian Devil, the New Holland Mouse or the Eastern Barred Bandicoot although it is quite possible that the Quoll and the Devil are present in the general area.
Swift Parrots may visit the locality in season however it is not preferred habitat for the species.

ENVIRONMENTAL WEEDS: Two species of environmental weeds were observed during the field survey in small numbers and usually associated with areas of past disturbance. Blackberry were present along the access track to the site and an occasional Gorse plant was also observed.
Other environmental weeds were observed in the gravel reserve but outside of the exploration target area subject to this survey. The weeds observed included Berrybush *Cotoneaster sp.,* the mainland Pittosporum *Pittosporum undulatum,* Spanish Heath *Erica lusitanica* and the Irish Strawberry Tree *Arbutus unedo* all of which have the potential to spread further.

PHYTOPHTHORA: Even though the general area has been subject to gravel extraction and other disturbances there was no evidence observed for the presence of the root pathogen *Phytophthora cinnamomi* within the area covered by the survey. A number of immature plants of the Grasstree *Xanthorrhoea australis* were observed during the survey. This species is very susceptible to the disease and is used an indicator plant for the disease's presence. The Grasstrees appeared to be quite healthy.

Field Survey Results:
Pease Creek: This site is located to the north of the previous target area and was accessed from an existing vehicular track. The survey was conducted along a transect about 100 metres in width through remnant bushland over a low gravelly ridge between two existing vehicular tracks. The area is within a gravel reserve which has been subject to past gravel extraction as well as other disturbances and is extensively utilized as a tip by brainless locals.
It is proposed that a number of drill sites are to be established along this transect, and the 100 metre wide survey was undertaken to determine the route of least impact on the local vegetation.
The starting point of the survey was GRID REF: 482638E – 5441451N and it then extended eastwards for about 500 metres to a second vehicular track and gravel pit in the vicinity of GRID REF: 482816E – 5440977N.

VEGETATION COMMUNITIES: The vegetation community in the area surveyed was *Eucalyptus amygdalina* Coastal Forest and Woodland (TasVeg Code DAC) with an open canopy of short trunked and low branched trees below 15 metres in height. The community had a well established understorey of predominantly Black She-oak *Allocasuarina littoralis* and a heathy to sedgy ground layer of vegetation. This community is relatively widespread in the north and east of the state.

The area of Grasstrees observed within the survey area is considered to be a sub-community of the *Eucalyptus amygdalina* Coastal Forest and Woodland which has some conservation significance and care should be taken to minimize disturbance of this area during site works.

THREATENED VEGETATION COMMUNITIES: Where Black She-oak *Allocasuarina littoralis* forms a dense closed canopy with few emergent Eucalypts and a deep layer of litter with sparse vegetation or sedges at ground level it forms a distinct community defined as *Allocasuarina littoralis* Forest (TasVeg Code NAL). It usually occurs as small patches within other forest and woodland types such as the above Black Peppermint community. This community is listed under the Tasmanian *Nature Conservation Act 2002.*
However the vegetation observed during this survey is considered to fit within the definition of *Eucalyptus amygdalina* Coastal Forest and Woodland and that the threatened community is not present.

THREATENED FLORA: Of the threatened species known to occur within 3,000 metres of this locality the following 6 had some potential to be present based on the proximity of previous records.

- *Acacia ulicifolia* is known to occur within 1,000 metres of the site but was not present in the survey area.
- Although *Brunonia australis* is an herbaceous plant it would have been observable had it been present. The species was not observed during the survey.
- *Cynoglossum australe* is also a herb-like plant which has been recorded once not far from this site, however it was not observed during this survey.
- *Thelymitra holmesii* is an orchid which would not have been observable at the time of the survey however no habitat considered to be suitable for the species was observed during the survey and it is considered that the species would be unlikely to be present.
- *Xanthorrhoea arenaria,* the Dwarf Grasstree. There were plants of *Xanthorrhoea sp.* observed during the survey but they were not considered to represent this species.
- *Xanthorrhoea* aff *bracteata,* Shiny Grasstree. A large patch of Grasstrees was observed in the south-eastern portion of the survey transect. The patch covered an area of approximately 500 square metres and consisted of over 300 individual plants. Most of the plants were large robust individuals with single crowns and leaves exceeding 120cm. A small number were observed with multiple (3 – 5) crowns. There were no old-growth plants with well established trunks present however other field characteristics determine that the species is considered to be *Xanthorrhoea australis* and not the threatened species *X.* aff *bracteata.* The other characteristic which separates the two species is the size of the flower spike and there were a number of old spikes from a previous flowering present. Most were broken so a total length could not be measured however it was possible to compare the diameter of the scapes (flower stems). Of the 11 stems measured seven were 20mm or greater in diameter with the greatest at 37mm, three were between 14 and 19mm, and only one was measured at 12mm in diameter.
  The flower stem caliper of *X. bracteata* is characterized by being quite slender and usually from 4 – 9 mm in diameter.

FLORA OF CONSERVATION SIGNIFICANCE: Although not listed as a threatened species the Grasstree *Xanthorrhoea australis* is considered to be of conservation significance as it is declining where ever it occurs in the state due to infection by the root pathogen *Phytophthora cinnamomi.* The patch of Grasstrees observed during the survey were very healthy although two plants were observed which displayed symptoms of potential infection of the disease.

For this reason it is important that the impact of the proposed exploration program me minimized in the area of the Grasstrees and that strict disease management protocols are followed during site works and exploration activities..

THREATENED FAUNA: No species of threatened fauna listed under the State or Commonwealth Act were observed during the survey and no evidence of the presence of any threatened species was observed.

THREATENED FAUNA HABITAT: There was no potential habitat such as old-growth forest, old-growth trees or tree with large hollows observed in the area surveyed for the Wedge-tailed Eagle, the White-bellied Sea-eagle or the White (Grey) Goshawk.
There were no wetlands or streams within the survey area so there was no potential habitat present for the Australian Grayling, Dwarf Galaxia, the Central North Burrowing Crayfish or the Green and Gold Frog.
It is likely that the Tasmanian Devil and the Spotted-tailed Quoll are present in the locality although no evidence such as tracks or scats was observed and no potential den sites were observed.
The New Holland Mouse inhabits heathlands and heathy woodlands in the north and north-east of the state and could potentially occur in the area however a targeted survey would be required to determine its presence.
The Eastern Barred Bandicoot would be more likely to occur in vegetation adjacent to farmland and is not likely to be present in this survey area..
The Swift Parrot may visit the locality in season however the vegetation in the locality is not preferred habitat for the species.

ENVIRONMENTAL WEEDS: No environmental weeds were observed in the survey area which is surprising considering the degree of disturbance in adjacent areas and the extent of rubbish dumping in the locality. Gorse was however observed in the vicinity but outside the survey area and care should be taken to ensure that it does not spread as a result of exploration activities.

PHYTOPHTHORA : If the disease was present in the survey area it is only at background levels almost all the Grasstrees observed were very healthy with only two plants observed which displayed potential symptoms of the disease infection. Grasstrees are very susceptible to the disease and are used as indicators of the disease's presence. Exploration activities in the locality should aim for minimal disturbance to the Grasstrees and to the following of strict hygiene protocols to prevent the further introduction or spread of the disease into the Grasstree population.

Survey Conclusions:
No vegetation communities listed as threatened under the Tasmanian *Nature Conservation Act 2002* was observed within the areas surveyed.
No species of flora which is listed under the Tasmanian *Threatened Species Protection Act 1995* or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* was observed within the areas surveyed.
One species of flora recorded in the Pease Creek survey is considered to be of conservation significance ie the Grasstree *Xanthorrhoea australis.*
No species of threatened fauna listed under the above threatened species acts were observed during the survey.
The proposed exploration program will have no significant impact on potential habitat for any species of threatened fauna which may occur in the locality.

The two species of environmental weeds observed were Gorse near both sites and Blackberry near Brandy Pond.
Both sites are susceptible to Phytophthora infection and will require precautions during the exploration program.

Recommendations:
Brandy Pond (North Tasmania)
VEGETATION COMMUNITIES: Limit clearing of vegetation to the existing overgrown vehicular track and the two proposed drill pads to the minimum specification for safe access. Avoid the falling of any standing mature trees unless there are OH&S issues.

THREATENED VEGETATION COMMUNITIES: The exploration program is being undertaken in *Eucalyptus amygdalina* Coastal Forest a non-threatened community and will not impact on the adjacent threatened community *Eucalyptus amygdalina* Forest on Sandstone so no specific action is required.

THREATENED FLORA: No species of threatened flora was observed during the survey and no specific action is required.

THREATENED FAUNA: No species of threatened fauna was observed during the survey and no specific action is required.

THREATENED FAUNA HABITAT: As no mature standing trees are to be removed during the exploration program there will be no impact on potential habitat for threatened species of fauna, however any disturbance of understorey vegetation should be limited to the clearing of the disused vehicular track and the two drill pads.

ENVIRONMENTAL WEEDS: Ensure that the Blackberry infestation and associated soil at the beginning of the track is cleared away from the track to prevent it establishing within the exploration area.
PHYTOPHTHORA: Follow accepted protocols in regard to hygiene and washdown procedures for machinery and equipment , including the drill rig to ensure that the pathogen is not inadvertently spread into the work sites by way of infected soil, mud or gravel adhered to tyres, boots and tools.

Recommendations:
Pease Creek:
VEGETATION COMMUNITIES: In order to limit disturbance to the Grasstree sub-community it is recommended that no excavated track be formed through this area and that vehicles and equipment access the area along a single flagged route avoiding Grasstrees where possible. Drill pads should also be located away from Grasstrees as much as possible.
Avoid falling any mature standing trees unless there are OH&S issues.

THREATENED VEGETATION COMMUNITIES: No listed threatened vegetation community was observed during the field survey and no other specific action is required.

THREATENED FLORA: No species of threatened flora was observed or recorded during the field survey and no specific action is required.

THREATENED FAUNA HABITAT: As no mature standing trees are to be removed and the disturbance of understorey vegetation will be limited if these recommendations are followed the exploration program as proposed will have no impact on potential habitat for any species of threatened fauna.

ENVIRONMENTAL WEEDS: Ensure that Gorse which was observed nearby in the gravel reserve is not inadvertently introduced into the exploration target area by was of infested soil or gravels.

PHYTOPHTHORA: The location appears to be free of Phytophthora infection or is present only at background levels so it is essential that strict hygiene protocols are followed to ensure that the disease is not inadvertently introduced or activated into the area of Grasstrees which is highly sensitive to the pathogen. It is quite likely that the disease is present elsewhere within the gravel reserve.
Hygiene procedures should include the washdown and treatment of all machinery, equipment and tools to ensure that the disease is not introduced by way of extraneous soil, mud or gravel adhered to tyres, equipment or boots.

Philip Milner

Vegetation Consultant

APPENDIX 1: Vegetation Communities and Species Recorded

Survey Area 1: Brandy Pond

1. *Eucalyptus amygdalina* Coastal Forest and Woodland (TasVeg Code DAC)

This community in the vicinity of Brandy Pond in located on a south facing slope above Brandy Creek and is relatively sheltered resulting in canopy trees over 20 metres in height. The White Gum *Eucalyptus viminalis* is present as a co-dominant species with the Black Peppermint *Eucalyptus amygdalina.* The understorey is relatively shrubby and dense with some wet forest species present.
This community ir relatively widespread in the north and north-east of the state although it is under-reserved in some locations particularly in its old-growth condition.

DOMINANT TREES	Common Name	Abundance in Locality
Eucalyptus amygdalina	Black Peppermint	common
Eucalyptus viminalis	White Gum	common
UNDERSTOREY TREES / LARGE SHRUBS		
Allocasuarina littoralis	Black She-oak	occasional
Acacia melanoxylon	Blackwood	common
Acacia verticillata	Prickly Moses	occasional
Acacia dealbata	Silver Wattle	uncommon sapling only
Banksia marginata	Silver Banksia	occasional
Exocarpus cupressiformis	Native Cherry	occasional
MEDIUM SHRUBS		
Aotus ericoides	Goldenpea	occasional
Acacia terminalis	Sunshine Wattle	occasional
Cassinia aculeata	Dollybush	occasional
Goodie lotifolia	Smooth Goldentip	uncommon
Leptomeria drupacea	Native Currant	uncommon
Leptospermum scoparium	Manuka	common
Leucopogon australis	Spike Beardheath	uncommon
Lomatia tinctoria	Guitarplant	uncommon
Melaleuca squarrosa	Scented Paperbark	uncommon
Olearia lirata	Forest Daisybush	common
SMALL SHRUBS		
Acacia myrtifolia	Red-stem Wattle	occasional
Acrotriche serrulata	Ants Delight	occasional
Astroloma humifusa	Cranberry Heath	occasional
Bauera rubioides	Wiry Bauera	occasional
Bossiiaea prostrata	Creeping Bossia	uncommon
Epacris impressa	Native Heath	uncommon
Gonocarpus teucrioides	Forest Raspwort	occasional
Goodenia lanata	Trailing Native-primrose	occasional
Persoonia juniperina	Prickly Geebung	uncommon

BRANDY POND PLANT LIST (cont)

SMALL SHRUBS (cont)		
Pimelea humilis	Dwarf Riceflower	uncommon
CLIMBING PLANTS		
Billardiera mutabilis	Apple-berry	occasional
Cassytha melantha	Large Dodder-laurel	occasional
Clematis aristata	Southern Clematis	occasional
HERBS & HERB-LIKE PLANTS		
Acaena novae-zelandiae	Buzzy	occasional
Helichrysum scorpioides	Scorpion Everlasting	occasional
Senecio linearifolius	Fireweed	occasional
ORCHIDS		
Chiloglottis reflexa	Autumn Bird-orchid	common
Corybas aconitiflorus	Spurred Helmet Orchid	occasional
GRASSES & GRAMINOIDS		
Balaskion tetraphyllum	Tassel Cord-rush	occasional
Dianella tasmanica	Tasman Flax-lily	occasional
Gahnia grandis	Cutting Grass	occasional
Juncus sp.	A Rush	occasional
Lepidosperma spp.	Sword Sedge	occasional
Lomandra longifolia	Matrush	occasional
Patersonia fragilis	Short Purpleflag	occasional
Xanthorrhoea australis	Southern Grasstree	uncommon
FERNS & ALLIED PLANTS		
Blechnum wattsii	Hard Waterfern	occasional
Calochlaena dubia	Rainbow Fern	common
Gleichenia dicarpa	Pouched Coral Fern	occasional
Pteridium esculentum	Bracken	common
ENVIRONMENTAL WEEDS		
Arbutus unedo	Irish Strawberry Tree	uncommon
Cotoneaster sp.	Berrybush	occasional
Erica lusitanica	Spanish Heath	common
Pittosporum undulatum	Sweet Pittosporum	occasional
Rubus fruticosa	Blackberry	common
Ulex europa	Gorse	common

Survey Area 2: Pease Creek

2. *Eucalyptus amygdalina* Coastal Forest and Woodland (TasVeg Code DAC)

The community in this location is located on a low gravelly ridgeline and has a relatively open canopy dominated by lower trees of *Eucalyptus amygdalina* than those observed near Brandy Pond. The understorey is predominantly Casuarina and the lower layers more open and less shrubby than Brandy Pond and composed of heathland species and sedge-like plants.

DOMINANT TREES		
Eucalyptus amygdalina	Black Peppermint	common
UNDERSTOREY TREES		
Allocasuarina littoralis	Black She-oak	common
Exocarpus cupressiformis	Native Cherry	occasional
LARGE SHRUBS		
Acacia dealbata	Silver Wattle	uncommon
Banksia marginata	Silver Banksia	occasional
Melaleuca squarrosa	Scented Paperbark	occasional
MEDIUM SHRUBS		
Acacia terminalis	Sunshine Wattle	occasional
Leptospermum scoparium	Manuka	common
Leucopogon australis	Spike Beard-heath	occasional
Lomatia tinctoria	Guitarplant	occasional
SMALL SHRUBS		
Acacia myrtifolia	Redstem Wattle	occasional
Acacia suavolens	Sweet-scented Wattle	occasional
Acrotriche serrulata	Ants Delight	common
Astroloma humifusa	Cranberry Heath	occasional
Epacris impressa	Native Heath	common
Gonocarpus tetragynus	Forest Raspwort	occasional
Hibbertia riparia	Erect Guineaflower	occasional
Leucopogon ericoides	Pink Beardheath	occasional
Platylobium triangulare	Common Flatpea	occasional
Styphelia adscendens	Golden Heath	occasional
CLIMBING PLANTS		
Cassytha glabella	Slender Dodder-laurel	uncommon
HERBS & HERB-LIKE PLANTS		
Gonocarpus micranthus	Creeping Raspwort	occasional
Goodenia lanata	Creeping Native-primrose	occasional

PEASE CREEK PLANT LIST (cont)

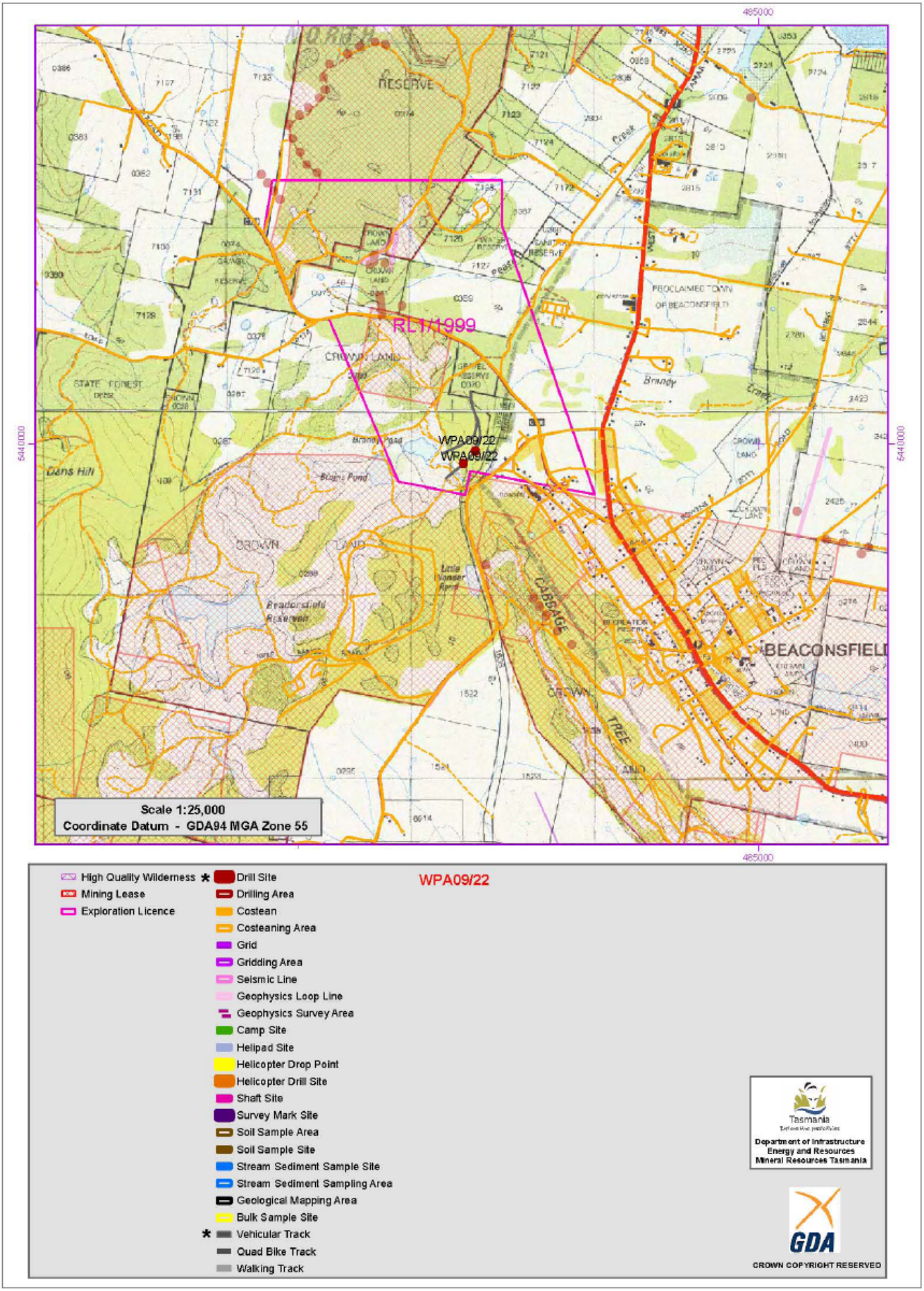
ORCHIDS		
Acianthus caudatus	Mayfly Orchid	occasional
Chiloglottis reflexa	Autumn Bird-orchid	common
GRASSES & GRAMINOIDS		
Caesia parviflora	Grasslily	uncommon
Gahnia grandis	Cutting Grass	uncommon
Hypolaena fastigiata	Tassel Roperush	occasional
Lepidosperma spp.	Sword Sedge	common
Lomandra longifolia	Matrush	common
Patersonia fragilis	Short Purpleflag	common
Xanthorrhoea australis	Southern Grasstree	common
FERNS & ALLIED PLANTS		
Gleichenia dicarpa	Pouched Coralfern	occasional
Lycopodium deuterodensum	Conifer Clubmoss	common
Pteridium esculentum	Bracken	common
ENVIRONMENTAL WEEDS		
Ulex europa	Gorse	occasional

PHOTO 1: Vegetation Community near Brandy Pond

PHOTO 2: Vegetation Community near Pease Creek

PHOTO 3: *Xanthorrhoea australis* near Pease Creek

PHOTO 4: *Xanthorrhoea australis* and habitat near Pease Creek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RESERVE
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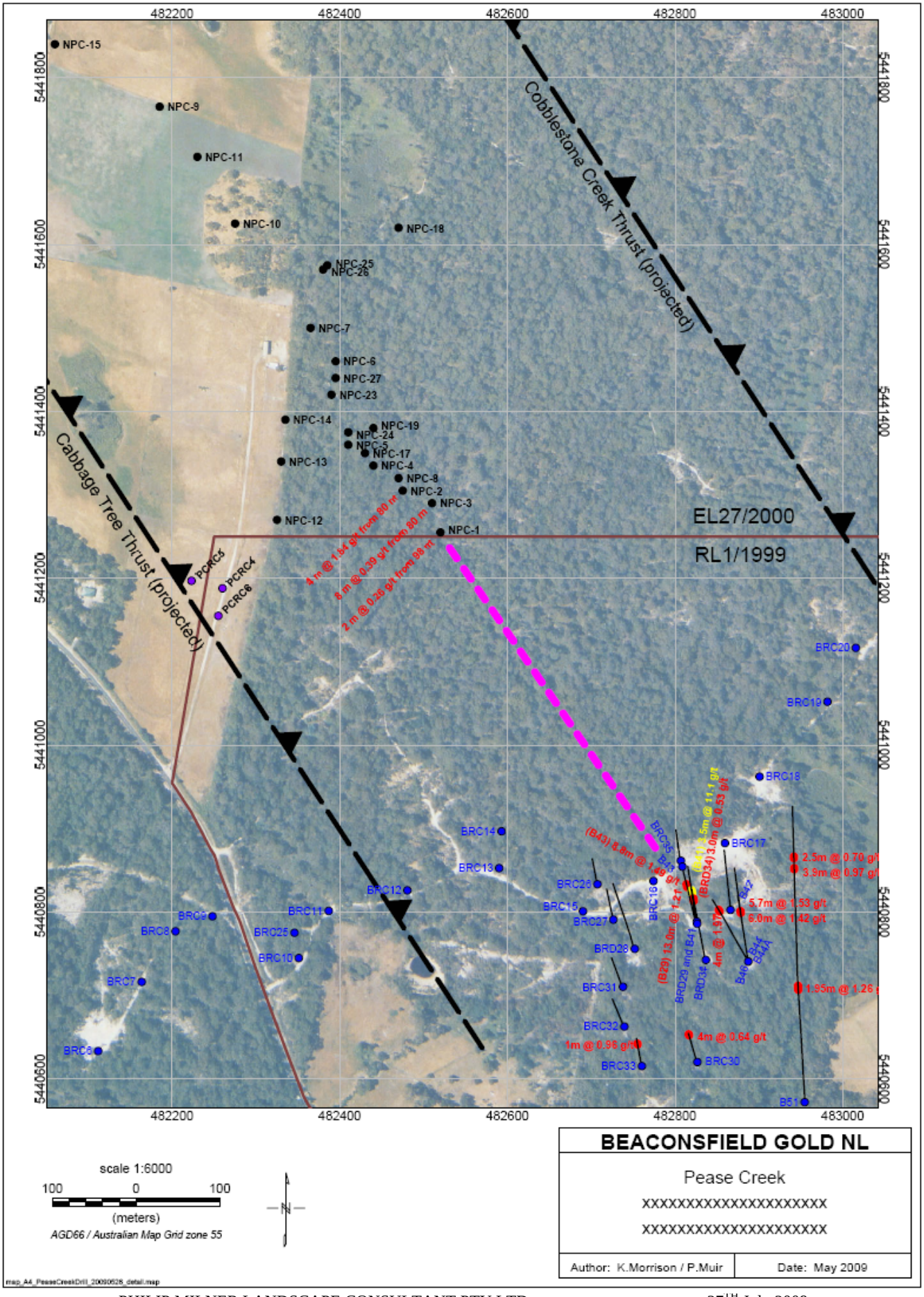
WPA09/22
WPA09/22
PROCLAIMED TOWN OF BEACONSFIELD
CROWN LAND
STATE FOREST
Brandy Creek
Dans Hill
Blairs Pond
Beaconsfield Reservoir
Little Wonder Road
CABBAGE TREE
BEACONSFIELD
Scale 1:25,000
Coordinate Datum - GDA94 MGA Zone 55
WPA09/22
High Quality Wilderness *
Mining Lease
Exploration Licence
Drill Site
Drilling Area
Costean
Costeaning Area
Grid
Gridding Area
Seismic Line
Geophysics Loop Line
Geophysics Survey Area
Camp Site
Helipad Site
Helicopter Drop Point
Helicopter Drill Site
Shaft Site
Survey Mark Site
Soil Sample Area
Soil Sample Site
Stream Sediment Sample Site
Stream Sediment Sampling Area
Geological Mapping Area
Bulk Sample Site
* Vehicular Track
Quad Bike Track
Walking Track
Tasmania
Department of Infrastructure Energy and Resources
Mineral Resources Tasmania
GDA
CROWN COPYRIGHT RESERVED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NPC-5
NPC-17
NPC-13
NPC-4
NPC-8
NPC-2
NPC-3
NPC-12
NPC-1
Cobblestone Creek Thrust (projected)
Cabbage Tree Thrust (projected)
EL27/2000
RL1/1999
PCRC5
PCRC4
PCRC6
4 m @ 1.54 g/t from 80 m
8 m @ 0.39 g/t from 80 m
2 m @ 0.26 g/t from 98 m
BRC20
BRC19
BRC18
BRC17
BRC14
BRC13
BRC12
BRC11
BRC9
BRC8
BRC25
BRC10
BRC7
BRC6
BRC26
BRC15
BRC27
BRC28
BRC31
BRC32
BRC33
BRC30
BRC16
BRC35
B51
(B43) 8.8m @ 1.86 g/t
(B41) 2.5m @ 11.1 g/t
(BRD34) 3.0m @ 0.53 g/t
(B29) 13.0m @ 1.21 g/t
BRD29 and B41
BRD34
4m @ 1.97
B46
B44
B44A
B47
2.5m @ 0.70 g/t
3.9m @ 0.97 g/t
5.7m @ 1.53 g/t
6.0m @ 1.42 g/t
1.95m @ 1.26
4m @ 0.64 g/t
1m @ 0.98 g/t
scale 1:6000
100 0 100
(meters)
AGD66 / Australian Map Grid zone 55
N
BEACONSFIELD GOLD NL
Pease Creek
XXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX
Author: K.Morrison / P.Muir
Date: May 2009
map_A4_PeaseCreekDrill_20090528_detail.map

APPENDIX B

Petrographic Descriptions - Drillcore Samples

Mason Geoscience Pty Ltd

Petrological Services for the
Minerals Exploration and Mining Industry

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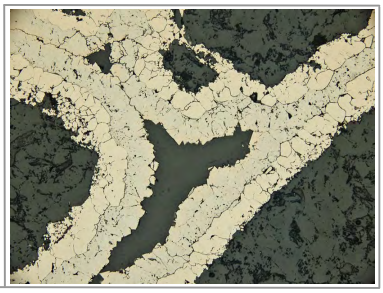
Petrographic Descriptions for Four Drill Core Rock Samples from Pease Creek Project, Beaconsfield Mine Region, Tasmania

REPORT #	**3675**
CLIENT	**BCD Resources NL**
ORDER NO.	**Email, S. Mele, 25 August 2010**
CONTACT	**Shane Mele**
REPORT BY	**Dr Douglas R Mason**
SIGNED	
	for Mason Geoscience Pty Ltd
DATE	**13 October 2010**



Petrographic Descriptions for Four Drill Core Rock Samples from Pease Creek Project, Beaconsfield Mine Region, Tasmania

SUMMARY

1. Rock Samples

- A collection of 4 drill core rock samples from the Pease Creek Project (Beaconsfield Mine region, Tasmania) has been studied using optical petrographic and mineragraphic methods.

2. Brief Results

- A summary of rock names and mineralogy is provided in TABLE 1.

- *Primary rock types*

  – **Sedimentary rock** has been identified as the primary rock type for all 4 samples. It was originally deposited as a well-sorted sandy sediment dominated by closely-packed clastic grains (quartz >> ?ilmenite/?rutile, tourmaline, zircon) accompanied by a moderate proportion of carbonaceous material most likely of plant origin, and minor detrital clays. Lithification produced **carbonaceous sandstone.**

- *Rock Modification*

  – **Low-grade regional metamorphism** affected the rock, causing grain margin suturing of the clastic quartz grains, and causing recrystallisation of the detrital clays to form minor fine-grained white mica (muscovite/sericite). This produced **meta-carbonaceous sandstone**. Carbonaceous material matured to form ?pyrobitumen (responsible for the dark grey colour of the rock in hand sample), but did not crystallise to form graphite. Primary clastic ?ilmenite may have been modified at this stage to form rutile. No specific metamorphic grade indicator minerals are developed, but P-T conditions in the greenschist facies are inferred from the partial preservation of the clastic texture.

  – **Brittle fracturing, brecciation and infiltration by mineralising hydrothermal fluid** overprinted the earlier metamorphic effects. Thinnest fractures are sealed by very fine-grained recrystallised quartz ± trace pyrite. Variably oriented thin fractures and veinlets form a network filled by vughy assemblages of pyrite ± marcasite ± quartz ± arsenopyrite ± unknown (?tennantite-tetrahedrite). Arsenopyrite is observed intergrown with pyrite only in 1 sample; it therefore appears to have an irregular distribution through the rock body. Quartz occurs in minor amount as subhedral bladed prisms. In some fracture fillings, mineralogical zoning is defined by earlier pyrite overgrown by later marcasite. Trace framboidal pyrite forms perfect spheroids in vughs in one sample, suggesting that bacterial activity occurred locally at the end of the mineralisation event. In wider pale grey breccia zones, fragments of host rock and angular quartz grains derived from it are cemented in a matrix of very fine-grained quartz and minor pyrite. **No native gold has been observed** despite careful scanning at x500, which allows resolution of native gold grains down to ~1-2 µm in size. It is inferred that Au may occur as submicron-sized inclusions, or as lattice replacements, in the sulfide minerals.

  – **Relative timing** of the earlier metamorphic and later deformation/mineralisation assemblages is supported by particular observations: carbonaceous material is confined to uniformly distributed small aggregates and grains in the host rock, and does not occur in the fracture fillings; white mica occurs only in the host rock as uniformly distributed flakes between the relict quartz grains, and not in the later fractures or breccia zones; sulfides occur mostly in the later fractures and breccia zones, with only minor pyrite developed as alteration in the host rock.

TABLE 1: SUMMARY OF ROCK NAMES AND MINERALOGY

SAMPLE	ROCK NAME	MINERALOGY*			
		Primary**	**Metamorphic/ Alteration*****	**Fracture seals / veins / breccia cement *** **	**Weath-ering**
SAMPLE 1: PCDD014–91.9m	Sulfide fractured meta-carbonaceous sandstone	Qtz, zir, cbn	Qtz, cbn, ser, rut; Py	Py, mrc	-
SAMPLE 2: PCDD014–112.8m	Brecciated carbonaceous sandstone:				
	Fractured meta-carbonaceous sandstone	Qtz, cbn, tou, rut	Qtz, ser, cbn, rut; Py	-	-
	Quartz-pyrite cemented breccia	Qtz, cbn, tou, rut	Cbn, ser, rut	Qtz, py, unk	-
SAMPLE 3: PCDD014–113.2m	Vughy pyrite-marcasite-quartz fractured meta-carbonaceous sandstone	Qtz, cbn, rut, tou, zir	Mus/ser, cbn, rut; Py	Py; Mrc, qtz; Pyf	-
SAMPLE 4: PCDD014–113.4m	Sulfide-quartz fractured and quartz-sulfide altered meta-sandstone	Qtz	Ser; Qtz, py	Py, qtz, asp	-

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

Asp = arsenopyrite; cbn = non-crystalline carbonaceous material (?pyrobitumen); mrc = marcasite; mus = muscovite (coarser-grained white mica); py = pyrite; pyf = framboidal pyrite; qtz = quartz; rut = rutile; ser = sericite (finer-grained white mica); tou = tourmaline; unk = unknown mineral (?tennantite-tetrahedrite); zir = zircon.

1 INTRODUCTION

A collection of 4 drill core rock samples was received from Mr Shane Mele (BCD Resources NL, Melbourne, Victoria) on 26 August 2010.

Background information was provided by the client, indicating that the samples originate from drill hole PCDD014 at the Pease Creek Project, in the region of the Beaconsfield Gold Mine in Tasmania. For each sample, a brief field description and assay were provided, together with queries for the petrographic work.

Excerpts from this report were provided by email to Mr Mele on 28 September 2010. This report contains the full results of this work.

2 METHODS

At Mason Geoscience Pty Ltd the samples were examined in hand specimen and marked for thin section preparation. Sections were obtained from an external commercial laboratory, and polished thin sections were appropriate given the requirement to identify sulfides and search for native gold. Routine transmitted and reflected polarised light microscopy was used to prepare the combined petrographic and mineragraphic descriptions. 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 insofar as they can be determined within each sample**, and are not meant to be directly equated between samples although this may be correct for some samples.

3 PETROGRAPHIC AND MINERAGRAPHIC DESCRIPTIONS

The combined petrographic and mineragraphic descriptions are provided in the following pages.

SAMPLE #, HOLE : SAMPLE 1: PCDD014 – 91.9m (Pease Creek Project, Beaconsfield Mine Region, Tasmania)

CLIENT NOTE : Dark grey to black bituminous/graphitic sandstone with thin pyritic veinlets occasionally infilling vugs.

ASSAY : 1.62 g/t Au

SECTION NO. : PCDD014, 91.9m

HAND SPECIMEN : The drill core sample represents a fine-grained massive dark grey rock that is quite hard to the hardness tester. Thin, discontinuous, variably oriented fractures define a network through the rock, and are filled by fine-grained lustrous silvery yellow sulfide (pyrite). Some of the fracture fillings are vughy.

ROCK NAME : Sulfide fractured meta-carbonaceous sandstone

PETROGRAPHY AND MINERAGRAPHY :

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

Mineral	Vol %	Origin
Zircon	Tr	Primary clastic grains 1
Quartz	76	Relict clastic grains 1 / metamorphic 2
Carbonaceous material (?pyrobitumen)	10	Metamorphic alteration 2
Sericite	5	Metamorphic alteration 2
Rutile	Tr	Relict clastic grains 1 / metamorphic 2
Pyrite	<1	Alteration 3
Pyrite	7	Fracture fillings 3
Marcasite	Tr	Fracture fillings 3

In polished thin section, this sample displays a partly-preserved non-layered well-sorted clast-supported sedimentary texture, modified by metamorphic suturing, fracturing and alteration effects.

Quartz dominates the rock, and two textural types are recognised:

i) Most quartz occurs as small equant anhedral grains ~0.1-0.2 mm in size. They form a sutured granular mosaic throughout the rock, and are readily interpreted as primary clastic grains which have suffered suturing of grain contacts.

ii) A minor amount of quartz occurs as tiny anhedral grains that form a fine-grained sutured mosaic concentrated along, and in the vicinity of, variably oriented fractures that form a network through the rock (see pyrite below). This is readily interpreted as recrystallised quartz which has formed in the strain envelopes of the fractures.

Carbonaceous material is present in moderate amount. It is distributed more-or-less uniformly through the rock as small ragged aggregates, as tiny flecks, and as thin concentrations along quartz-quartz grain contacts. The material is perfectly opaque, and is readily identified as carbonaceous material. No birefringence is evident, suggesting it is not well-crystallised (ie probably not graphite), so it may be non-crystalline material such as pyrobitumen.

Sericite occurs in minor amount as tiny flecks which tend to form small aggregates through the rock. These may represent sericite-altered ?feldspar clastic grain sites, but no feldspar is preserved for confirmation.

Rutile occurs as uncommon small granules scattered sparsely through the rock.

Zircon forms rare small subrounded grains with typical high relief and high birefringence.

Pyrite is moderately abundant. Some occurs as small disseminated subhedral crystals and small aggregates, but most is concentrated along variably oriented thin fractures which form a network through the rock. Most of the pyrite occurs as small equant anhedral grains in granular mosaic texture, but euhedral pyrite crystals project into uncommon vughs along some of the fracture fillings. Uncommon grains of marcasite (whitish, anisotropic) occur locally in the pyrite aggregates, but mostly marcasite is absent.

INTERPRETATION :

This sample is considered to have initially formed as a well-sorted sandy sediment composed mostly of well-sorted clastic grains (quartz >> ?feldspar >> rutile, zircon). A significant proportion of carbonaceous material was deposited with the mineral grains, and most likely originated as plant materials.

The rock suffered low-grade (greenschist facies) regional metamorphism, causing suturing of the clastic grains, development of minor sericite possibly after precursor clastic ?feldspar grains, and slight redistribution of the carbonaceous material (now pyrobitumen) along some of the quartz-quartz grain boundaries.

At a later time, the rock suffered brittle deformation, producing a network of fractures which encouraged circulation of sulfur-bearing hydrothermal fluid of unknown source. Abundant sulfide (pyrite >> marcasite) was deposited along the fractures, and minor alteration of host rock generated new disseminated pyrite.

CLIENT QUERIES:

Is gold visibly present? If so, what's the relationship with the sulphides? Are the sulphides primary or secondary? What's the pervasive grey/black mineral in the sample?

No native gold has been observed, despite careful scanning at high power (x500). It is possible that small grains of native gold are present but have not been observed or were not captured in this particular section. It is also possible that Au is present as submicron-sized inclusions in the pyrite, or in the pyrite lattice.

The sulfides are considered to be secondary, having been introduced in hydrothermal fluid and deposited as fracture seals and in minor disseminated form.

The pervasive grey/black material is carbonaceous in nature, but its character is difficult to resolve optically. It is not well-crystallised, and therefore is not considered to be graphite. Given that the sulfides were likely introduced in hydrothermal fluid at moderate temperature, then the carbonaceous material may be pyrobitumen.

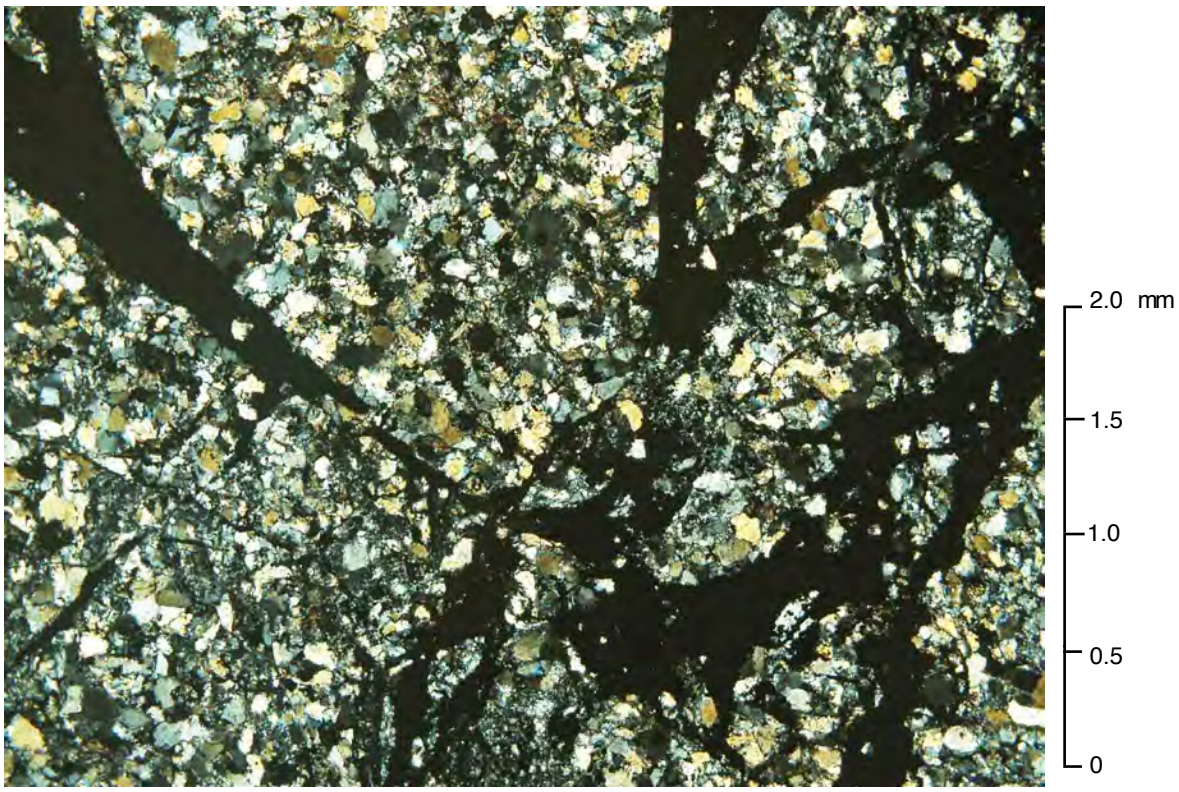


FIG. 1: SAMPLE PCDD014, 91.9m (Transmitted light, crossed polarisers, Obj. x4, Image PA137198)
Meta-carbonaceous sandstone is composed mostly of quartz (pale yellow, white, grey) and lesser fine-grained small patches of carbonaceous material, and is cut by a network of thin fractures filled by fine-grained opaques (pyrite).

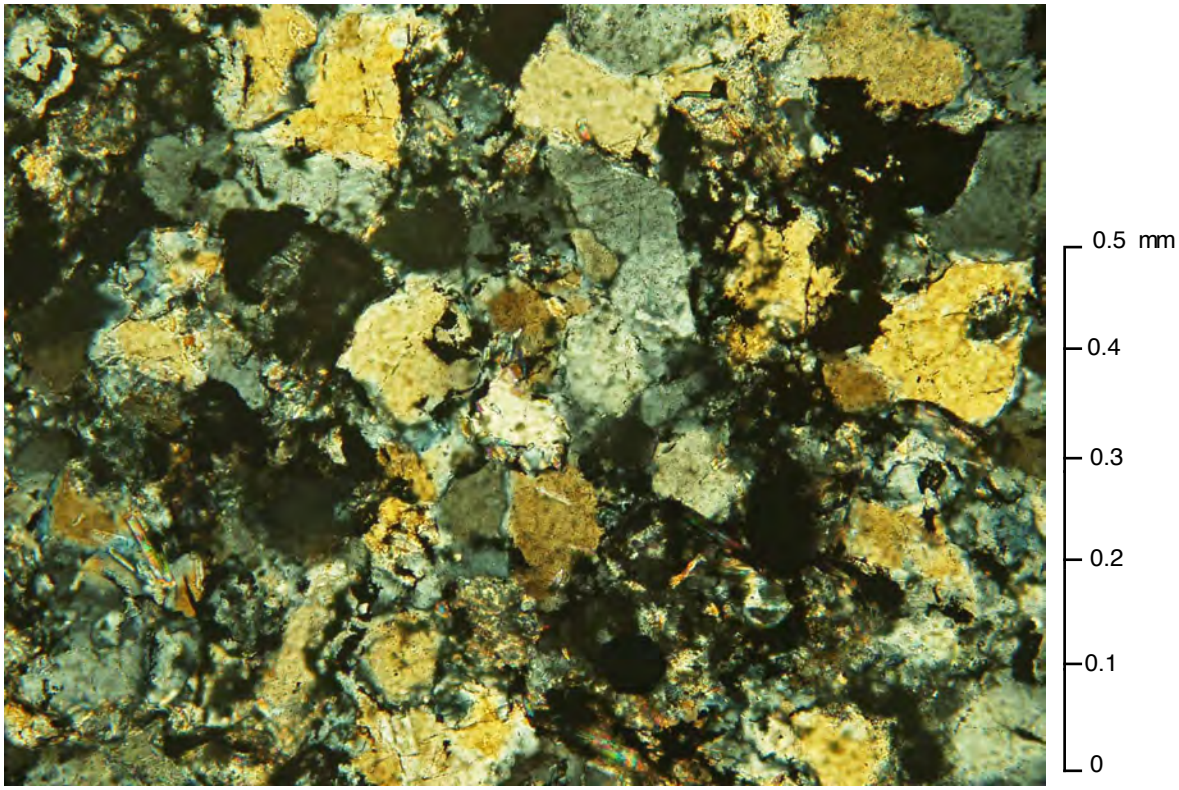


FIG. 2: SAMPLE PCDD014, 91.9m (Transmitted light, crossed polarisers, Obj. x20, Image PA137201)
This closer view of meta-carbonaceous sandstone illustrates abundant quartz grains (yellow, grey) with sutured quartz-quartz contacts attributable to low-grade metamorphism. Small aggregates of opaques (black) are carbonaceous in composition.

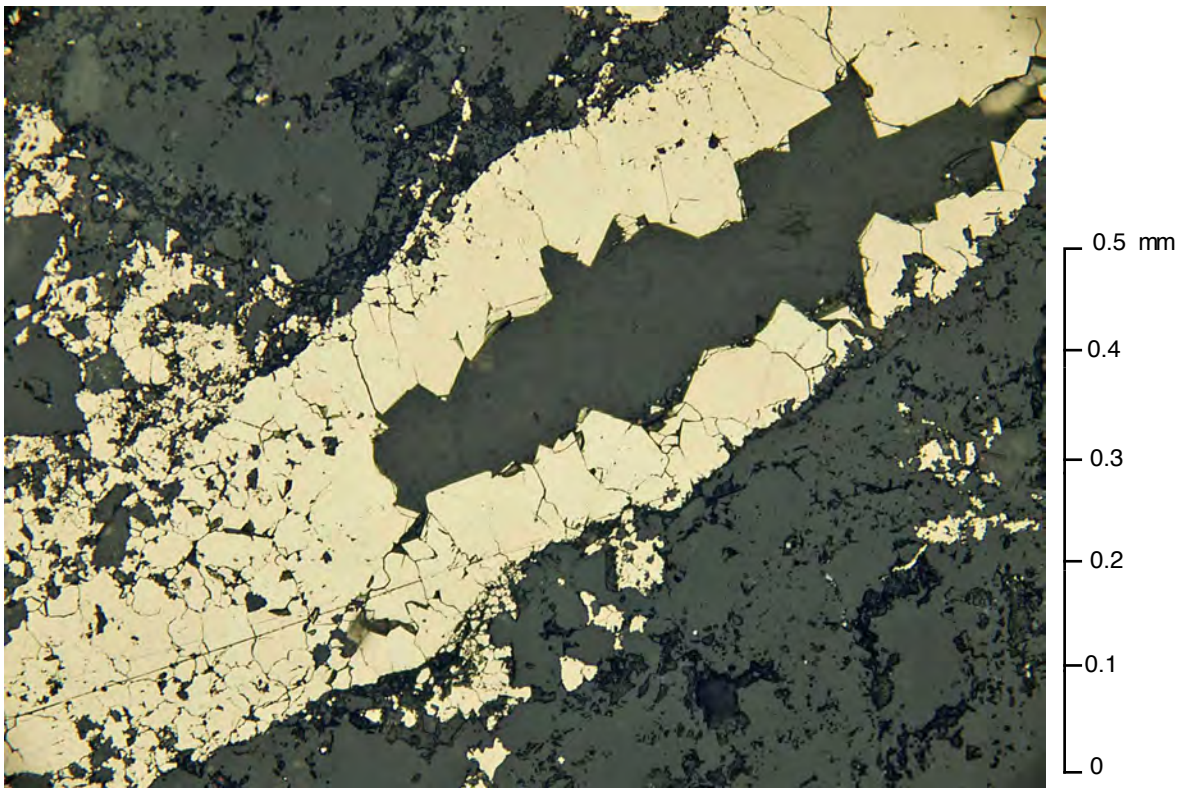


FIG. 3: SAMPLE PCDD014, 91.9m (Reflected plane polarised light, Obj. x20, Image PA137199)
This view of a fracture seal illustrates the granular nature of the pyrite (cream), with local vughs (open space in fracture centre at upper right).

SAMPLE #, HOLE : SAMPLE 2: PCDD014 – 112.8m (Pease Creek Project, Beaconsfield Mine Region, Tasmania)

CLIENT NOTE : Lithological contact between a carbonate limestone and a bituminous/graphitic sandstone.

ASSAY : No assay available

SECTION NO. : PCDD014, 112.8m

HAND SPECIMEN : The drill core sample captures the contact between two rock types: one rock type represents a dark grey to black rock cut by variably oriented minor thin fractures, some with solution cavities, and a paler grey rock type which contains moderately abundant subrounded fragments in pale grey matrix with minor tiny lustrous silvery sulfide grains.

ROCK NAME : Brecciated carbonaceous sandstone:

Fractured meta-carbonaceous sandstone

Quartz-pyrite cemented breccia

PETROGRAPHY AND MINERAGRAPHY :

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

Mineral	Vol %	Origin
Fractured meta-carbonaceous sandstone		
Quartz	89	Relict clastic grains 1 / metamorphic 2
Tourmaline	Tr	Relict clastic grains 1
Sericite	5	Metamorphic 2
Carbonaceous material (?pyrobitumen)	5	Metamorphic 2
Rutile	Tr	Relict clastic grains 1 / metamorphic 2
Pyrite	Tr	Fracture filling 3 / alteration 3
Quartz-pyrite cemented breccia		
Host rock fragments and quartz (see above)	40	Relict host rock and quartz fragments 2a
Quartz	57	Breccia cement 3
Pyrite	3	Breccia cement 3
Unknown (?tennantite-tetrahedrite)	Tr	Breccia cement 3

In polished thin section, this sample displays similar minerals but different textures in host rock and breccia.

Fractured meta-carbonaceous sandstone represents the dark grey to black host rock. It displays a massive non-layered granular metamorphic texture dominated by uniformly sized anhedral quartz grains ~0.1 mm in size, which form a sutured granular mosaic throughout the rock. They are readily interpreted as primary clastic quartz grains which have suffered grain margin suturing. Tourmaline occurs as rare small subrounded grains pleochroic in drab browns.

Sericite occurs in minor amount as small flakes in poorly-defined aggregates between the quartz grains. Opaque material also occurs in minor amount as small ragged aggregates and tiny ragged grains, most likely of carbonaceous origin. No birefringence is observed: it may therefore be non-crystalline (eg ?pyrobitumen). Rutile forms minor small grains and aggregates. Pyrite occurs in trace amount as very sparsely and irregularly disseminated small subhedral to anhedral grains.

Cutting the rock is a network of thin fractures which are sealed by very fine-grained turbid ?quartz and rare tiny pyrite grains.

Quartz-pyrite cemented breccia represents the paler grey part of the rock. It contains moderately abundant subangular to subrounded fragments of the carbonaceous sandstone described above. The host rock fragments range from ~0.4 mm up to ~3 mm in size, and display the same mineralogy and texture as the host rock described above. Smaller angular fragments of quartz are moderately common.

Cement of the breccia is composed mostly of very fine-grained turbid quartz. Pyrite occurs in minor amount, forming small subhedral equant crystals ranging from tens of microns to ~0.2 mm, and small aggregates of tiny grains. Rare small anhedral grains of unknown mineral display pale grey colour under plane reflected light, and appear to be isotropic: it may be a tennantite-tetrahedrite group mineral.

INTERPRETATION :

This sample is considered to have initially formed as a well-sorted clastic sandy sediment composed mostly of quartz grains, accompanied by minor others (rutile, tourmaline). Carbonaceous materials of plant debris origin were uniformly distributed through the sediment.

The rock was modified by low-grade regional metamorphism. This caused suturing of the clastic quartz grains, producing a uniform granular mosaic. Fine-grained sericite most likely formed at this time, either by recrystallisation of minor primary clay matrix or by replacement of minor primary feldspar clastic grains.

At a later time, the rock suffered brittle deformation, which generated randomly oriented fractures in a network, and also produced breccia in zones of higher strain. In the fracture network, recrystallisation of quartz occurred within the thin fractures. In the breccia bands or zones, subangular to subrounded fragments of host rock and small angular quartz grains derived from it were firmly cemented in very fine-grained quartz and minor sericite. A trace of ?tennantite-tetrahedrite might have formed in this assemblage, but is too small and uncommon for positive identification. Only trace pyrite formed by alteration in the host rock at this time.

CLIENT QUERIES:

What's the mineralogy of the two lithologies? What's the nature of the contact (chemical or lithological)?

The mineralogy and texture of the two rock types is addressed above. The contact is tectonic: brittle deformation has caused disruption (brecciation) of the host rock (dark grey), and recementation by quartz + minor pyrite (pale grey breccia zone).

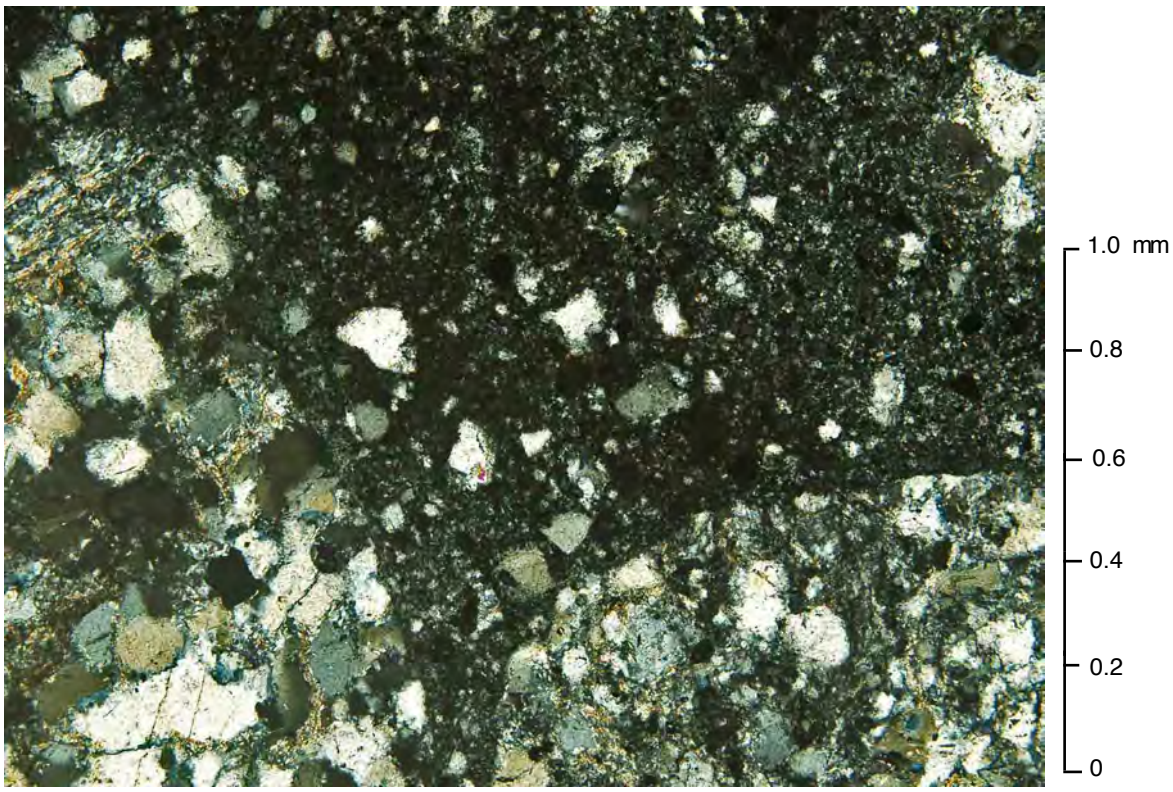


FIG. 4: SAMPLE PCDD014, 112.8m (Transmitted light, crossed polarisers, Obj. x10, Image PA137202)
This view of breccia captures larger fragments of meta-sandstone wall rock lower left, bottom right) and smaller angular crystal fragments of quartz (white), in very fine-grained breccia cement of quartz and minor pyrite.

SAMPLE #, HOLE : SAMPLE 3: PCDD014 – 113.2m (Pease Creek Project, Beaconsfield Mine Region, Tasmania)

CLIENT NOTE : Same as sample 1 [Dark grey to black bituminous/graphitic sandstone with thin pyritic veinlets occasionally infilling vugs]

ASSAY : 2.27 g/t Au

SECTION NO. : PCDD014, 113.2m

HAND SPECIMEN : The drill core sample represents a fine-grained massive dark grey rock, cut by a network of brittle fractures sealed by locally vughy fine-grained sulfide (lustrous silvery pyrite) and minor white to pale grey quartz.

ROCK NAME : Vughy pyrite-marcasite-quartz fractured meta-carbonaceous sandstone

PETROGRAPHY AND MINERAGRAPHY :

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

Mineral	Vol %	Origin
Meta-carbonaceous sandstone		
Quartz	83	Clastic grains 1 / metamorphic 2
Tourmaline	Tr	Clastic grains 1
Zircon	Tr	Clastic grains 1
Muscovite/sericite	10	Metamorphic 2
Carbonaceous material (?pyrobitumen)	5	Relict clastic 1 / metamorphic 2
Rutile	Tr	Relict clastic 1 / metamorphic 2
Pyrite	Tr	Alteration 3
Vughy pyrite-marcasite-quartz fracture fillings		
Pyrite	40	Fracture fillings 3a
Marcasite	38	Fracture fillings 3b
Quartz	2	Fracture filings 3b
Pyrite (framboidal)	Tr	Fracture fillings 3c
Voids (vughs)	20	Remnant open space 3

In polished thin section, this sample displays different mineralogies and textures in host rock and fracture fillings.

Meta-carbonaceous sandstone displays a non-layered, clast-supported, well-sorted clastic sedimentary texture modified by mild metamorphic effects.

Quartz is abundant, forming anhedral grains mostly ~0.1 mm in size. They display sutured quartz-quartz grain contacts, suggesting grain boundary modification during metamorphism. White mica occurs in minor amount as small flakes and small aggregates of flakes which mostly occur between, or along boundaries between, the quartz grains. Tourmaline occurs in trace amount as small subrounded grains with dark brown pleochroism, and zircon forms uncommon small subrounded grains. Rutile occurs in trace amount as small angular grains, some of which possibly represent altered Ti-mineral (eg ?ilmenite).

Opaque material occurs in minor amount as small ragged aggregates and tiny flakes that are more-or-less uniformly distributed through the rock. They display no apparent crystallinity, and therefore may be a non-crystalline carbonaceous material such as ?pyrobitumen.

Pyrite occurs in trace amount as uncommon small subhedral crystals and small aggregates that are very sparsely and irregularly disseminated through the rock.

Vughy pyrite-marcasite-quartz fracture fillings sharply cut the rock in varied orientations. Thinnest fractures are sealed entirely by granular pyrite, but thicker fractures are filled by zoned pyrite-marcasite: massive granular pyrite forms along fracture margins, and displays euhedral crystal forms where it projects into late granular marcasite linings. The pyrite and marcasite are readily distinguished, pyrite by its cream colour under plane reflected light, and marcasite by its off-white colour with anisotropism. Quartz is uncommon, forming local anhedral grains and aggregates. Remnant open space (vughs) occur as significant cavities.

Uncommon framboidal pyrite occurs as perfectly spheroidal balls composed of minute (micron-sized) pyrite granules. The framboids occur only in some of the remnant vughs.

INTERPRETATION :

This sample is considered to have evolved through the following stages:

1. Sedimentation

Sedimentation produced a regional stratigraphic sequence, including well-sorted arenaceous clastic sediment composed of abundant quartz grains, accompanied by minor others (tourmaline, ?ilmenite/?rutile, zircon). Minor carbonaceous material, most likely of plant origin, was deposited together with the mineral clastic grains. Minor detrital clays may have formed minor matrix.

2. Metamorphism

Low-grade regional metamorphism affected the rock, causing firm suturing of the quartz grains and producing new muscovite/sericite by recrystallisation of the primary ?clays.

3. Fracturing and mineralisation

At a later time, the rock suffered brittle deformation and invasion by relatively low-temperature hydrothermal fluid. The fractures were sealed by pyrite + marcasite ± quartz, in stages:

i) Pyrite
Initial crystallisation of pyrite formed microgranular seals in thinnest fractures, and formed linings of wider open fractures.

ii) Marcasite + quartz
Crystallisation of marcasite formed a microgranular overgrowth, leaving some open fractures with remnant open space (vughs). Minor quartz formed with the marcasite.

iii) Pyrite
A trace amount of framboidal pyrite formed in some of the vughs. This suggests that bacterial activity occurred late in the genesis of the fracture fillings.

CLIENT QUERIES: *Refer to sample 1 [Is gold visibly present? If so, what's the relationship with the sulphides? Are the sulphides primary or secondary? What's the pervasive grey/black mineral in the sample?]*

No native gold has been observed, despite careful scanning at x500. The Au may occur as submicron-sized inclusions, or in the lattice, within the sulfides (pyrite, or marcasite, or both).

The sulfides clearly are secondary, ie epigenetic, and formed a significant time after the prograde metamorphic event.

The pervasive grey/black material is carbonaceous material, most likely originally of detrital plant debris origin, modified by metamorphic heating to form non-crystalline ?pyrobitumen.

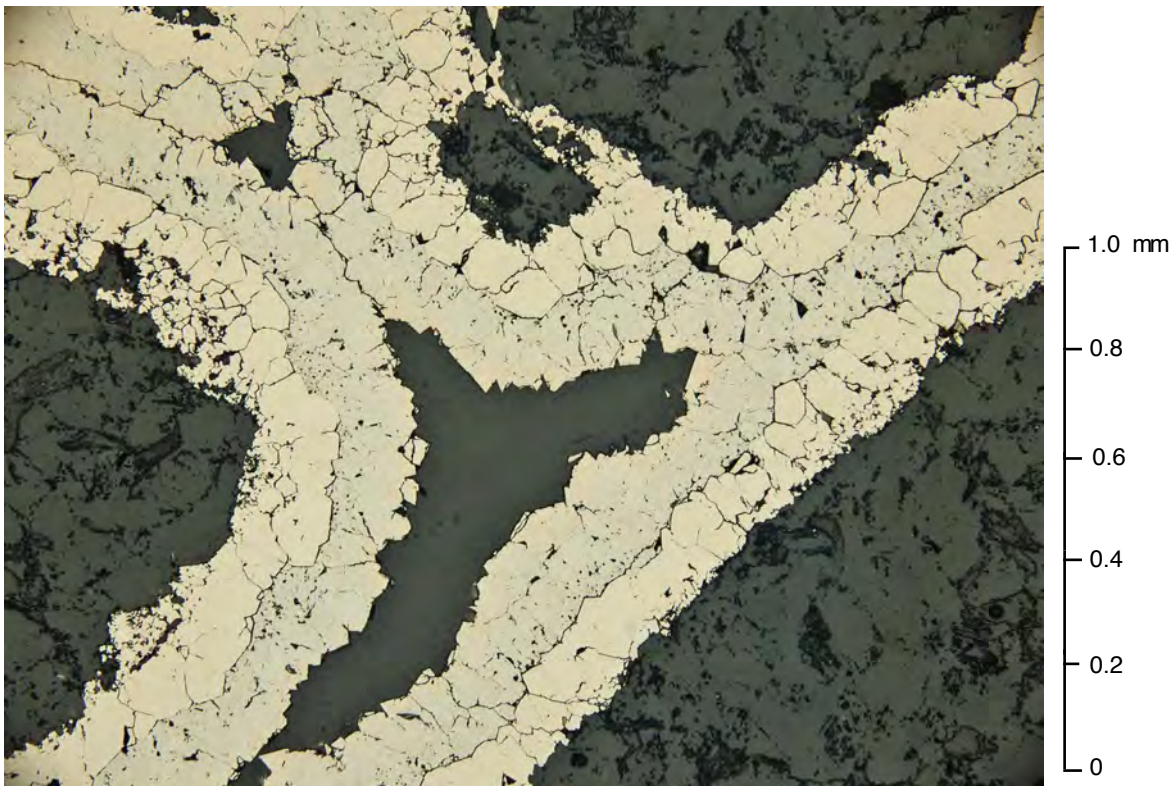


FIG. 5: SAMPLE PCDD014, 113.2m (Reflected plane polarised light, Obj. x10, Image PA137206)
This view captures intersecting fractures oriented NE-SW and NW-SE, filled in zoned manner by granular pyrite (cream) along fracture margins and marcasite (off-white) in an inner zone. Remnant open space (vughs, black angular patches in centre of fracture seals) is locally present.

SAMPLE #, HOLE : SAMPLE 4: PCDD014 – 113.4m (Pease Creek Project, Beaconsfield Mine Region, Tasmania)

CLIENT NOTE : Pale grey silicified sandstone?? with moderate quartz and pyritic veinlets. Pyrite looks secondary inside vugs.

ASSAY : 2.27 g/t Au

SECTION NO. : PCDD014, 113.4m

HAND SPECIMEN : The drill core sample represents a grey to white rock cut by variably oriented fractured and vughy veins filled by lustrous silvery sulfide (pyrite) and local white quartz aggregates.

ROCK NAME : Sulfide-quartz fractured and quartz-sulfide altered meta-sandstone

PETROGRAPHY AND MINERAGRAPHY :

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

Mineral	Vol %	Origin
Quartz-sulfide altered meta-sandstone		
Quartz	40	Relict clastic grains 1 / metamorphic 2
Sericite	10	Metamorphic 2
Quartz	49	Recrystallisation 3
Pyrite	<1	Alteration 3
Sulfide-quartz fracture fillings		
Pyrite	67	Fracture fillings 3
Quartz	20	Fracture fillings 3
Arsenopyrite	3 (0-50)	Fracture fillings 3

In polished thin section, this sample displays different mineralogies and textures in altered host rock and fracture fillings.

Quartz-sulfide altered meta-sandstone locally retains some of its primary well-sorted clastic sedimentary texture, which has been severely modified by metamorphic and subsequent fracturing and alteration effects.

Quartz dominates the rock. Where least-altered, the quartz occurs as equant anhedral grains mostly ~0.1 mm in size, which form an equigranular sutured mosaic. A significant amount of sericite occurs as tiny flakes concentrated between, and long grain contacts, of the quartz. In much of the rock, very fine-grained quartz of alteration or recrystallisation origin has obscured the precursor quartz. Pyrite occurs in minor amount as small subhedral crystals that are very sparsely disseminated through the rock.

Sulfide-quartz fracture fillings cut the rock in varied orientations. They range from very thin to thicker breccia zones containing subangular fragments of host rock enclosed in fracture-seal minerals.

Pyrite dominates the fracture-seal mineralogy, mostly occurring as small subhedral to anhedral grains ranging from tens of microns up to ~0.2 mm in size, in a massive granular texture. Similarly small subhedral to euhedral blocky to prismatic arsenopyrite crystals (white in plane reflected light) occur in the pyritic mosaic: mostly the arsenopyrite crystals are absent, but locally they occur in subequal abundance to the pyrite.

Two types of quartz are observed in the fracture fillings:

i) Some quartz occurs as subhedral to bladed prismatic crystals, with interstices filled by the pyritic mosaic. These quartz crystals contain minute fluid inclusions in light diffuse clouds, and concentrated along microcrack seals, but they are too small for useful petrographic observations.

ii) Some quartz occurs as very fine-grained massive microcrystalline cement which encloses the pyrite and host rock fragments.

INTERPRETATION :

This sample is considered to have initially formed as a well-sorted clastic sediment composed of quartz and minor detrital clays. Much of the primary mineralogy and texture has been obscured by subsequent events.

The rock suffered low-grade regional metamorphism, causing suturing of the quartz grains and recrystallisation of the clays to form new sericite.

At a later time, brittle deformation and invasion by S-As-bearing hydrothermal fluid resulted in partial recrystallisation and alteration of the host rock to produce new quartz + pyrite, and sealing of the fractures by pyrite + quartz + minor arsenopyrite.

CLIENT QUERIES: *Is gold visibly present? If so, what's the relationship with the sulphides? Are the sulphides primary or secondary? What's the nature of the silica?*

No native gold has been observed, despite careful scanning at high power (x500). This suggests that the Au might be hosted as submicron-sized inclusions, or as lattice replacements, within the sulfide minerals.

The sulfides clearly are secondary (ie epigenetic). Three types of quartz are identified: relict clastic quartz which was sutured during low-grade metamorphism, and fracture-filling quartz of both subhedral bladed crystalline type and also fine-grained massive cement type.

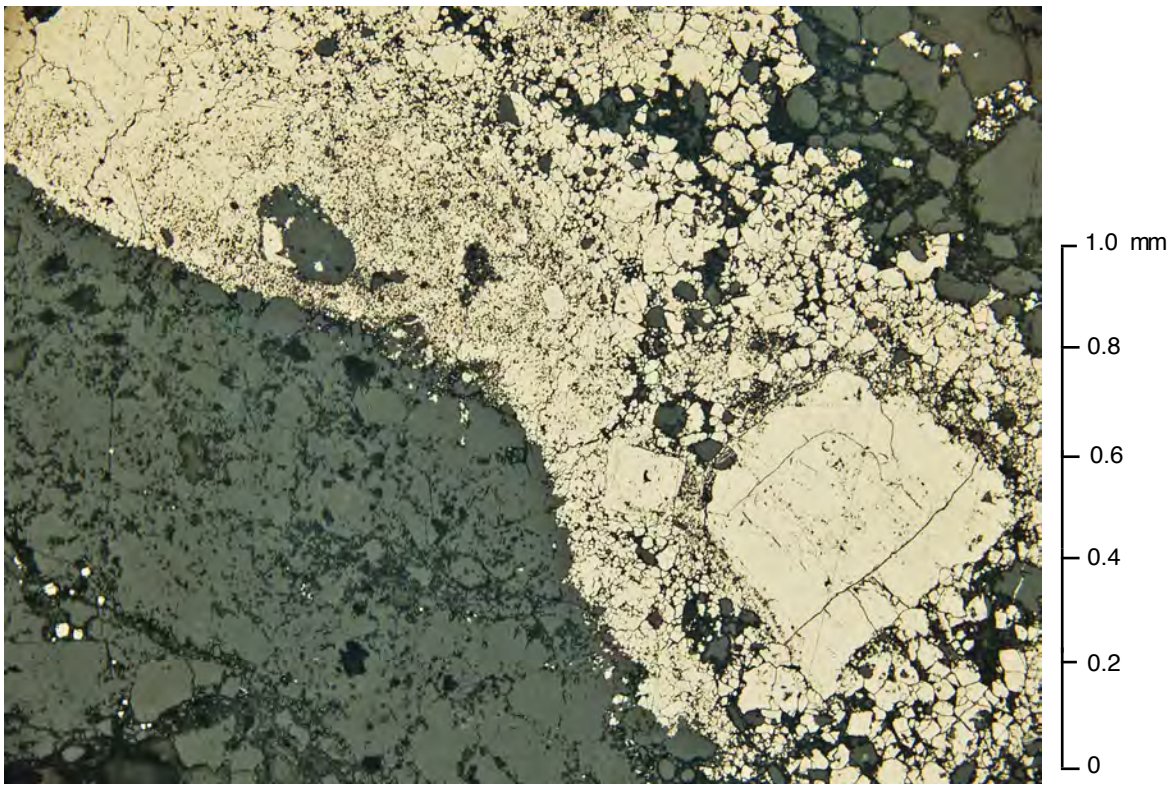


FIG. 6: SAMPLE PCDD014, 113.4m (Reflected plane polarised light, Obj. x10, Image PA137208)
This view captures a fracture seal composed of inequigranular pyrite (cream), in meta-sandstone host rock (lower left).

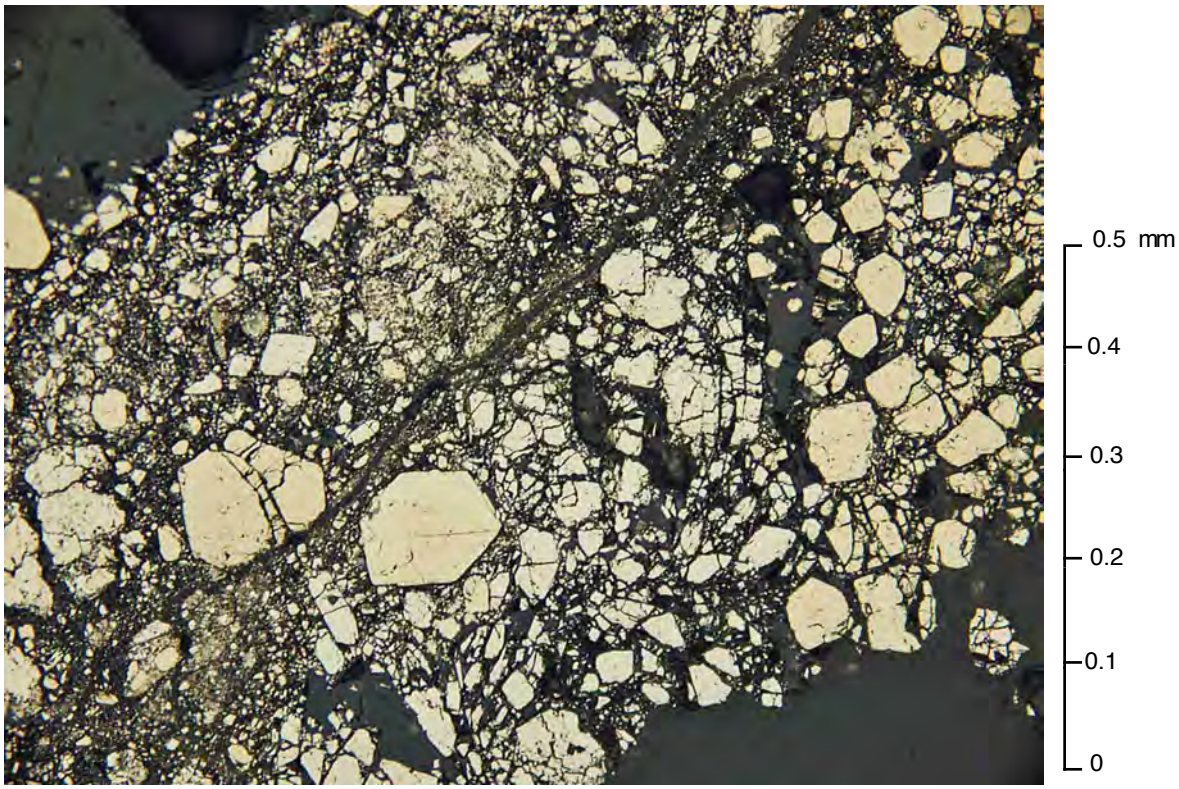


FIG. 7: SAMPLE PCDD014, 113.4m (Reflected plane polarised light, Obj. x20, Image PA137210)
This is a closer view of a fracture filling composed of pyrite (cream) and arsenopyrite (white). Arsenopyrite occurs locally in some fracture seals, but mostly is absent.