BARRICK GOLD OF AUSTRALIA LIMITED

(ABN 008 143 137)

PROJECT 8440

TANAMI (NT) JV

BIRRINDUDU

EL 5889, EL 23472

ANNUAL REPORT

Period 1 January 2004 – 31 December 2004

TECHNICAL REPORT No. 1148

MAP SHEET: SE52-11 (Birrindudu)

DISTRIBUTION:

1. BGAL – Perth 8440.332
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4. Central Land Council
5. NT DBIRD

Graeme J Purcell

February 2005

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1.0 SUMMARY

The Birrindudu Project comprises Exploration Licences (EL) 5889 and 23472 and forms part of the Tanami (NT) JV, a Joint Venture agreement between Tanami Gold NL (TGNL) and Barrick Gold of Australia Limited (BGAL). The tenements were granted during 2002-2003 for a period of six years.

Work conducted on EL 5889 during 2004 involved geological compilation, surficial lag sampling, rock-chip sampling, reconnaissance vacuum drilling and aircore drilling. These activities are summarised in Table 1 and illustrated in Figure 1. There were no on-ground activities undertaken on EL 23472 as the access agreement with the Central Land Council is currently pending.

Table 1
Summary of Exploration Activities

Tenement	Rock Chips	Lags	Drill BLEG	Vacuum Drilling		Aircore Drilling	
				Holes	Metres	Holes	Metres
EL 5889	18	116	436	384	3,290	52	3,363
EL 23472	-	-	-	-	-	-	-
Totals	**18**	**116**	**436**	**384**	**3,290**	**52**	**3,363**

2.0 LOCATION AND ACCESS

The Birrindudu Project is located approximately 250km east-southeast of Halls Creek, in the northwestern region of the Tanami Desert. The tenement group lies on the Birrindudu (SE52-11) 1:250,000 geological map sheet. Access from Halls Creek is southeast via the unsealed Tanami Highway for approximately 320km to the Tanami Mine, then 80km north along the Lajamanu (Hooker Creek) Road to the Supplejack Downs homestead, then 40km northwest using station tracks to a base camp, then 30km through trackless scrub. Access from Alice Springs is northwest via the Tanami Highway for approximately 700km until the Lajamanu turnoff (Figure 2).

When conducting exploration activities, a temporary fly-camp was used as the exploration base. The tenement group contains no historical tracks (Figure 2). The Lajamanu community is the nearest established town and is approximately 190km by road to the northeast.

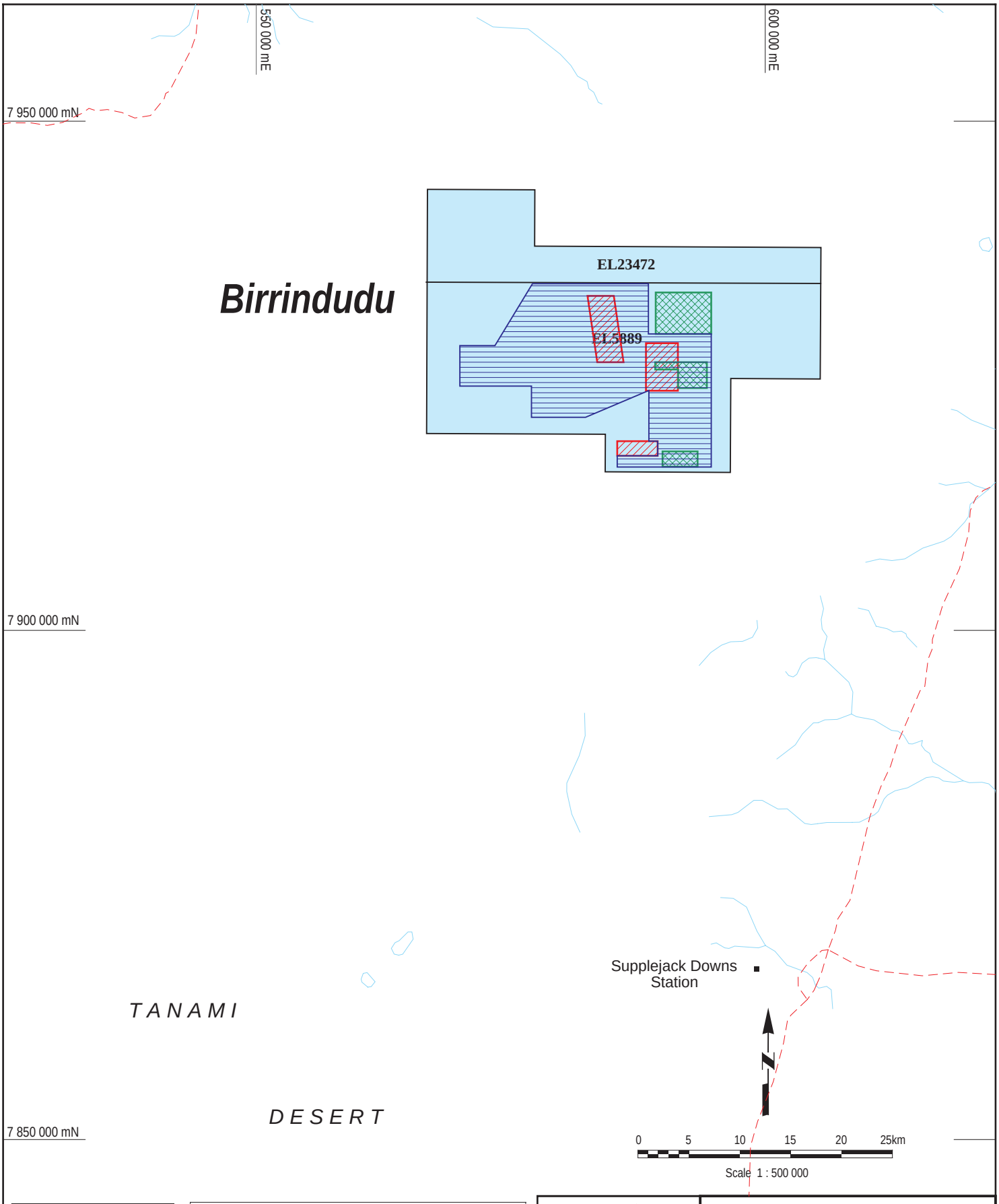
The area is affected annually by high temperatures and seasonal rainfall associated with the northern monsoon, which generally extends from November to April. During this time access via road may be restricted due to wet conditions.

The project covers an area of gently undulating hills and aeolian sand plains, dominated by spinifex, acacia thickets and sparse stands of eucalypts. Scarps of flat lying Proterozoic sandstones (20-50m) surround the plains to the east, south and west of the project, and support little but spinifex and sparse acacia scrub. Occasional springs and ephemeral waterholes occur close to these scarps.

3.0 TENURE

The Birrindudu Project comprises two Exploration Licences, and forms part of the Tanami (NT) JV project. Details are listed in Table 2 and illustrated in Figure 3.

Tanami Exploration NL, a wholly owned subsidiary of Tanami Gold NL (TGNL), is the registered title-holder of this tenement. Barrick Gold of Australia Limited (BGAL) are managers of exploration through the Tanami (NT) JV agreement with TGNL, commencing 13 December 2000.



Locality Map

Legend

- Barrick Tenements
- Area of VAC drilling
- Area of AC drilling
- Area of surface sampling

Projection Based on AGD84 (Zone 52)

BARRICK AUSTRALIA

BIRRINDUDU EXPLORATION INDEX MAP

Project: **8440 - TANAMI (NT) JV**

Originator: G.P.	Date Drawn: Feb 2004	Scale	Technical Report No.
Drawn By: D.F.B.	Revised:	1 : 500 000	1148

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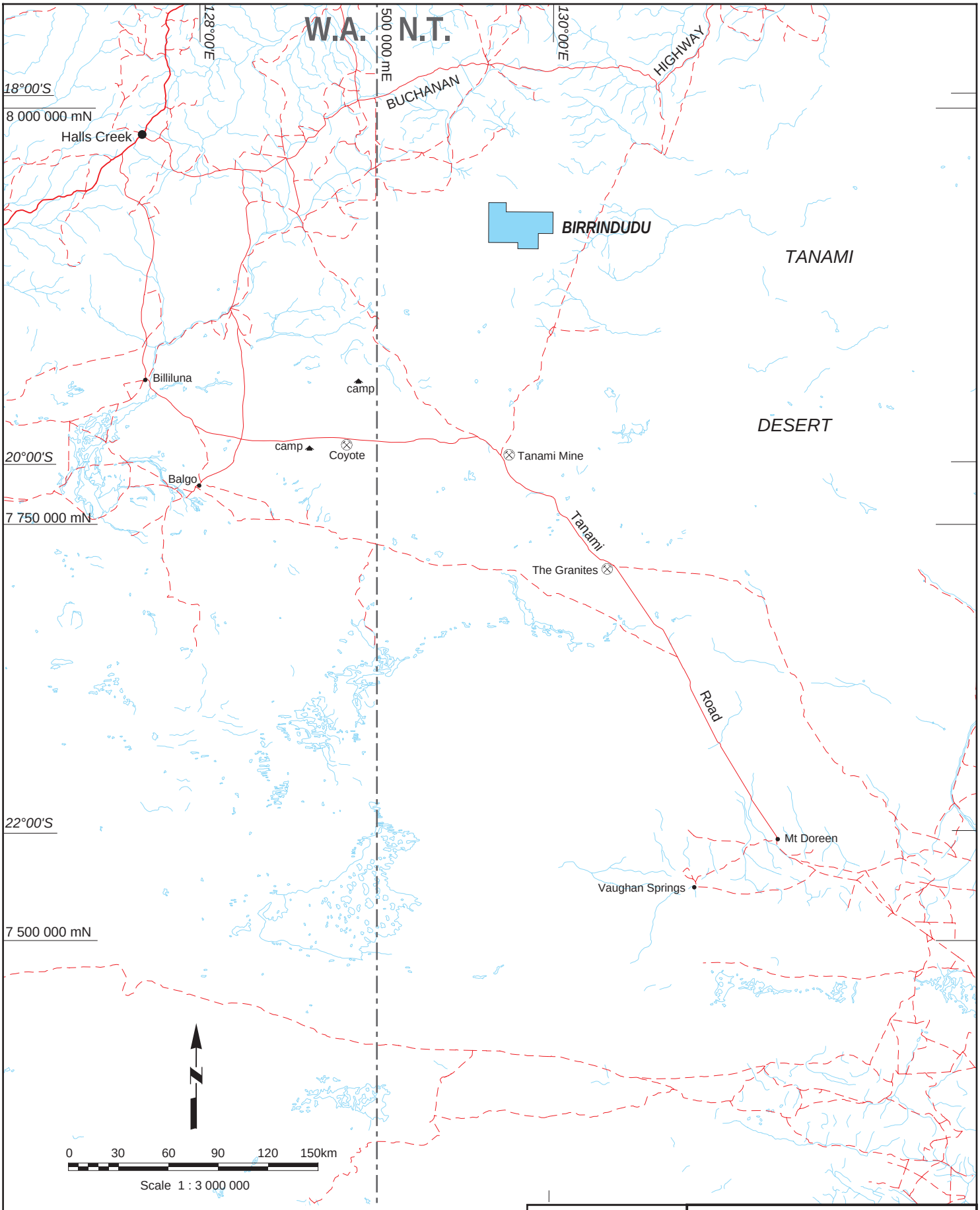
DATE: 24-Feb-05 10:38

Figure No.: 1



Locality Map

Legend

Barrick Tenements

Projection Based on AGD84 (Zone 52)

BARRICK AUSTRALIA

BIRRINDUDU LOCATION

Project: 8440 - TANAMI (NT) JV

Originator: G.P.	Date Drawn: Dec 2000	Scale	Technical Report No.
Drawn By: D.F.B.	Revised: Jan 2004	1 : 3 000 000	1148

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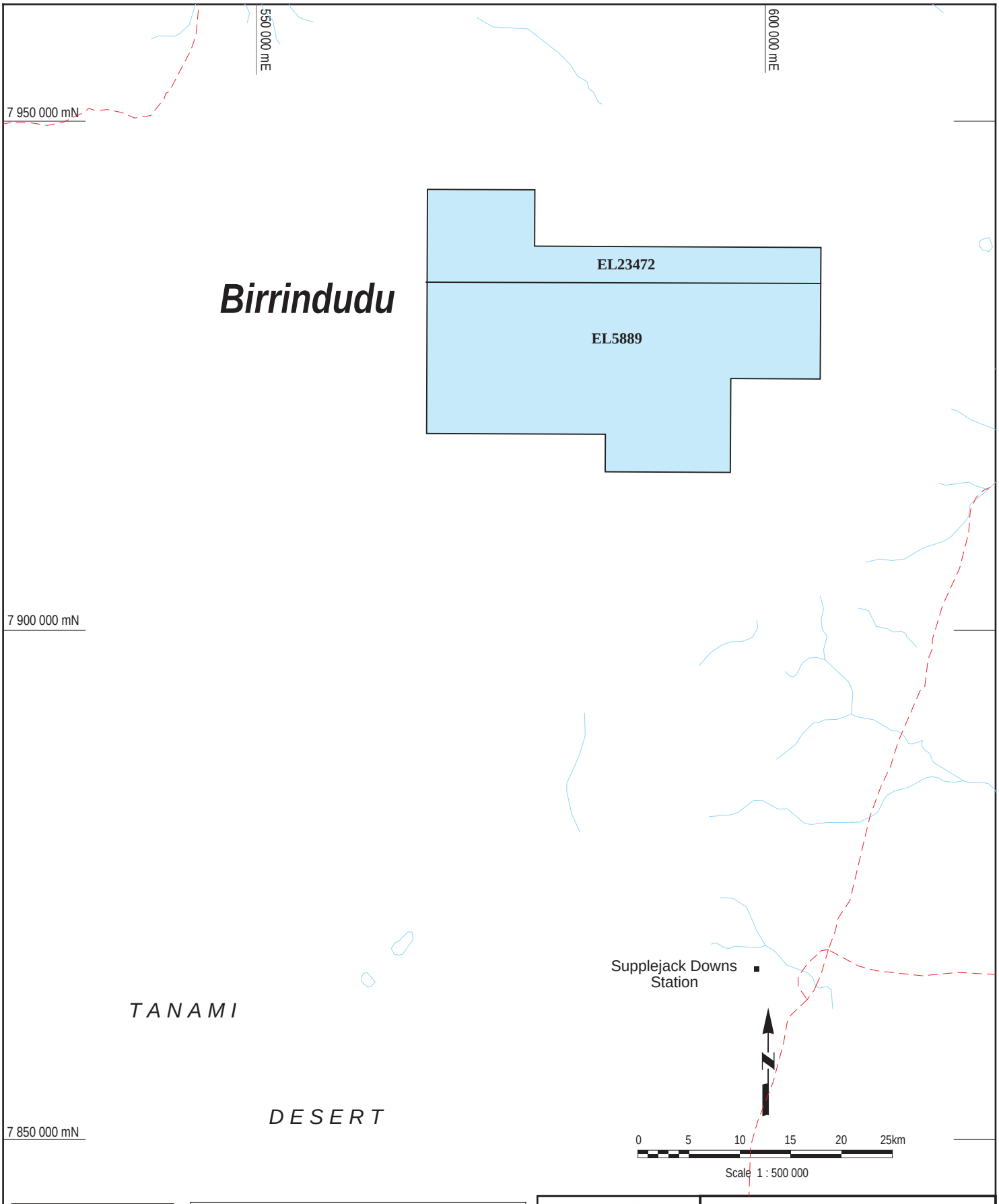
Figure No.: 2



Locality Map

Legend

Barrick Tenements

Projection Based on AGD84 (Zone 52)

BARRICK AUSTRALIA

BIRRINDUDU TENEMENTS

Project: **8440 - TANAMI (NT) JV**

Originator: G.P.	Date Drawn: Feb 2004	Scale	Technical Report No.
Drawn By: D.F.B.	Revised:	1 : 500 000	1148

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Figure No.: 3

Table 2 Tenement Register (as at 31 Dec 04)					
Tenement	**Area**	**Commences**	**Expires**	**Req. Exp.**	**Comments**
EL 5889	197 blocks (632.4km^2)	22/08/2002	21/08/2008	$41,500	
EL 23472	62 blocks (199km^2)	28/01/2003	27/01/2009	$35,000	Access agreement pending
Totals	**259 blocks (831.4km^2)**			$76,500	

4.0 GEOLOGY

4.1 Regional Geology

Basement is rarely exposed and is composed of Archaean granites and gneisses. Basement rocks have SHRIMP U-Pb zircon dates of 2504 ± 4Ma and 2514 ± 3Ma. The basement was subjected to the Barramundi Orogeny (1882 ± 14Ma), prior to the deposition of the overlying sediments.

Post-Barramundi rifting led to deposition of mafic volcanics, volcaniclastics and subordinate clastics and calc-silicates of the McFarlane Peak Group. This was succeeded by the deposition of the Tanami Group in a passive margin environment. These rocks include carbonaceous siltstone, minor banded ironstone and calc-silicates of the Dead Bullock Formation, which is conformably overlain by several thousand metres of turbiditic sandstones of the Killi-Killi Formation.

The sedimentary pile was later intruded by doleritic sills, prior to and during the subsequent deformation of the Tanami Orogenic Event. The Tanami Orogenic Event occurred between 1830-1845Ma and was a period of regional deformation and metamorphism across the Tanami Inlier. The Pargee Sandstone, a thick molasse of interbedded conglomerate, sands and minor silts, was deposited unconformably on the Tanami Group in a sub-basin created during the Tanami Orogenic Event.

Local intracontinental rifting (1825 to 1815Ma), led to subaqueous and subaerial sedimentation and felsic to mafic volcanism forming the Mount Charles Formation, Mount Winnecke Group and the Nanny Goat Volcanics.

Three overlapping periods of I-type granitic plutonism occurred at this time producing the Winnecke Suite (1830-1820Ma), the Inningarra-Coomarie Suites (1820-1810Ma) and the Granites-Frederick Suites (1810-1790Ma). The Palaeoproterozoic basement was then exhumed, eroded and covered by the Neoproterozoic Birrindudu Group sediments comprising the Gardiner Sandstone, Talbot Well Formation and Coomarie Sandstone.

The region has been cut by large west-northwest trending faults. These structures manifest themselves as large prominent quartz ridges or as drainages. Recent field mapping indicates that these structures were long lived with various episodes and orientations of movement.

Gold mineralisation in the Tanami is extensive. The endowment of the region exceeds 13Moz of gold with the Callie system being the largest single deposit, which contains more than 6Moz of gold. Mineralisation in the Tanami region is diverse, ranging from epithermal styles at the Tanami group of mines, to the deeper lode gold deposit at Groundrush. Locally some deposits favour certain lithologies, however it is clear that gold mineralisation is lithologically indiscriminate and occurs in almost all rock types across the Tanami region.

4.2 Local Geology

The bulk of the Project comprises deformed and metamorphosed sediments of the Tanami Complex. Lithologies include shale, siltstone, carbonaceous shale, ferruginous shale, chert, cherty BIF, dolerite, fine to medium-grained greywacke and volcanics. Massive granitic stocks intrude the sediments. The Brown's Range Dome comprises uplifted Archaean basement and outcrops 30km to the southwest of the Project. Surrounding the tenement group are thick sequences of flat lying Birrindudu Group sediments. The sandstone forms elevated plateaus, which unconformably overlie Tanami Complex rocks, and rise from 20 - 50m above the surrounding topography. Cambrian flood basalts cover the northern portion of the Project.

Aeromagnetic interpretation suggests numerous structures traverse the tenement, dominated by north-south trending shear corridor in the western portion of the Project area. Weakly developed WNW trending Trans-Tanami Style Fault Zones, and smaller-scale brittle faults transect the area. The package has been multiply deformed giving rise to a well-developed fold interference pattern. Evidence suggests that thrusting has occurred within the package, giving rise to stratigraphic thickening and repetition.

Outcrop of Tanami Complex lithologies is sparse. Sporadic highly weathered subcrop is more common throughout the Project and limited to slight topographic rises where deflationary lag is well developed. Elsewhere, stratigraphy is commonly overlain by a transported horizon of variable thickness, with localised palaeochannel development. A veneer of aeolian sand from 1-3m thick covers the majority of the tenement.

5.0 PREVIOUS EXPLORATION

There is no record of historical exploration within the Birrindudu tenement group.

Early explorers Davidson and Talbot passed through the region in 1901 and 1909 respectively, where they recorded the presence of gold at a number of locations, including The Granites, Tanami and Larranganni Bluff (Kookaburra/Sandpiper mineralised system). More recent activities by the NTGS within the Tanami region have been extensive. A mapping project of the Birrindudu (SE52-11) 1:250,000 geological map sheet is in progress.

Barrick first conducted exploration within the tenement group during 2003 with all activities detailed in Purcell, 2004.

6.0 EXPLORATION ACTIVITIES AND RESULTS

All exploration activities were carried out on the Australian Map Grid (AMG84) in Zone 52.

6.1 Surface Geochemistry

A total of 18 rock chip samples and 116 Lag samples were collected during the reporting period. The surface geochemistry data files are listed in Appendix 1.

6.1.1 Lag Sampling

The lag samples were taken from previously unsampled areas of good lag development identified while completing the regional reconnaissance vacuum-drilling programme (Plate 1).

Samples were taken from an area of approximately five metres in diameter. Sample material was scraped/broomed from the surface and sieved (-6mm+2mm) to remove aeolian sand and organic contamination. A nominal weight of 500g of lag was collected. The samples were stored in numbered plastic bags and were submitted to Genalysis Laboratory Services P/L in Adelaide for preparation and to Perth for

analysis. All samples were analysed for Au by the B/ETA technique (lower detection limit of 0.1ppb) and As by ICP MS (0.5ppm). Multi-element analyses were also completed on all samples by Aqua Regia digest with ICP MS and AAS finish, including Ag (lower detection limit of 0.1ppm), Ba (1ppm), Be (0.05ppm), Bi (0.01ppm), Cd (0.05ppm), Ce (0.01ppm), Co (0.1ppm), Cs (0.002ppm), Cu (1ppm), Li (0.1ppm), Mo (0.1ppm), Ni (1ppm), Pb (1ppm), Pd (0.01ppm), Pt (0.005ppm), Sb (0.02ppm), Sc (1ppm), Se (1ppm), Sn (0.05ppm), Sr (0.02ppm), Ta (0.01ppm), Te (0.05ppm), Th (0.01ppm), Tl (0.01ppm), U (0.01ppm), W (0.05ppm), Zr (0.1ppm) and Zn (1ppm).

No significant gold or arsenic anomalism was identified from the lag sampling programme.

6.1.2 Rock Chip Sampling

The rockchip samples were taken from areas of subcrop and outcrop identified while completing the regional reconnaissance vacuum-drilling programme (Plate 1).

A nominal 2kg sample was obtained by rock chipping over an area of approximately 2m in diameter. The samples were stored in numbered plastic bags and were submitted to Genalysis Laboratory Services P/L in Adelaide for preparation and to Perth for analysis. All samples were analysed for Au by the B/ETA technique (lower detection limit of 0.1ppb) and As by ICP MS (0.5ppm). Multi-element analyses were also completed on all samples by Aqua Regia digest with ICP MS and AAS finish, including Ag (lower detection limit of 0.1ppm), Ba (1ppm), Be (0.05ppm), Bi (0.01ppm), Cd (0.05ppm), Ce (0.01ppm), Co (0.1ppm), Cs (0.002ppm), Cu (1ppm), Li (0.1ppm), Mo (0.1ppm), Ni (1ppm), Pb (1ppm), Pd (0.01ppm), Pt (0.005ppm), Sb (0.02ppm), Sc (1ppm), Se (1ppm), Sn (0.05ppm), Sr (0.02ppm), Ta (0.01ppm), Te (0.05ppm), Th (0.01ppm), Tl (0.01ppm), U (0.01ppm), W (0.05ppm), Zr (0.1ppm) and Zn (1ppm).

No significant gold or arsenic anomalism was noted from the rockchip sampling programme.

6.2 Vacuum (VAC) Drilling

A total of 384 VAC holes for 3,290m (BDVA0001-0384) were completed on the Birrindudu Project. A series of scout holes were initially drilled, demonstrating the regolith was amenable to shallow vacuum drilling, consisting of a thin veneer of aeolian dune sands with variable thicknesses of underlying pisolitic lag and transported clays. This drilling established that the pisolitic lag was widespread and was of good quality for effective sampling. A systematic programme was then completed as part of regional reconnaissance. Priority areas were targeted by geological interpretation of high-resolution aeromagnetics that had been validated by reconnaissance mapping. Drilling data files are listed in Appendix 1 and the drill hole collars are included as Plate 2.

Drilling was completed by Tracey Drilling P/L (Tennant Creek), to a minimum depth of the cover bedrock interface (unless water was encountered). Drilling was oriented vertically and spaced on a nominal 400m x 800m pattern.

Samples were collected in 1m increments and placed on the ground in 1m piles. The sampling strategy targeted the pisolitic or lag rich horizon that was located below the aeolian sand cover, other geologically interesting horizons (e.g. quartz veining) and bottom of hole.

The pisolitic/lag rich intervals were sieved (-6mm+2mm) to remove aeolian sand and organic contamination. A nominal weight of 500g of lag was collected and stored in snap-lock plastic bags within numbered calico bags. The samples were dispatched to Ultra Trace Laboratories Perth for preparation and analysis. The samples were subjected to bulk cyanide leach with an

ICP-MS finish to a detection limit of 0.02ppb Au. These samples are included in the activity summary table as 'DRILL BLEG' samples.

Geologically interesting horizons and bottom of hole samples were obtained by spear sampling from one to two adjacent one-metre intervals to a nominal 2kg. The samples were stored in numbered plastic bags and were submitted to Genalysis Laboratory Services P/L in Adelaide for preparation and to Perth for analysis. All samples were analysed for Au by the B/ETA technique (lower detection limit of 0.1ppb) and As by ICP MS (0.5ppm). Multi-element analyses were also completed on all samples by Aqua Regia digest with ICP MS and AAS finish, including Ag (lower detection limit of 0.1ppm), Ba (1ppm), Be (0.05ppm), Bi (0.01ppm), Cd (0.05ppm), Ce (0.01ppm), Co (0.1ppm), Cs (0.002ppm), Cu (1ppm), Li (0.1ppm), Mo (0.1ppm), Ni (1ppm), Pb (1ppm), Pd (0.01ppm), Pt (0.005ppm), Sb (0.02ppm), Sc (1ppm), Se (1ppm), Sn (0.05ppm), Sr (0.02ppm), Ta (0.01ppm), Te (0.05ppm), Th (0.01ppm), Tl (0.01ppm), U (0.01ppm), W (0.05ppm), Zr (0.1ppm) and Zn (1ppm).

Drilling recognised transported cover was deeper than expected in some areas, being up to 18m thick, and perched water tables are occasionally hampered penetration. Aeolian dune sands and channel clays dominated the transported regolith. Locally topographic highs comprised transported regolith indicating an inverted regolith profile. Sporadic holes were drilled to validate these laggable areas. Lithologies intersected included sediments and dolerite of the Killi-Killi Fm and ferruginous/carbonaceous sediments and cherty BIF of the Dead Bullock Fm. Granitic intrusives and platform cover sandstones (fine to coarse-grained quartz arenite) were locally intersected. Bedrock geology identified during drilling correlates reasonably well with the aeromagnetically interpreted and mapped geology.

Assays were generally disappointing, however an encouraging peak value of 34ppb Au was returned from the bottom-of-hole sample in BDVA0113 associated with folded Dead Bullock Formation sediments to the east of the project area. This was coincident with +3ppb Au anomalism from the palaeo-lag BLEG sampling. A further 3km to the north, a maximum value of 51ppm As was returned from BDVA0090, however this was from transported regolith over platform cover sandstones. A series of +1ppb Au palaeo-lag BLEG anomalism was noted to the north and west of the project area, however these were either associated with Cambrian Antrim Plateau Basalt, granite or not supported from bottom-of-hole sampling.

6.3 Aircore (AC) Drilling

An AC programme of 52-holes for 3,363m was drilled testing priority target areas (where perched water tables prevented vacuum holes from penetrating the cover) to the east of the project area. The target areas were positioned on the northern and southern margins of a doubly plunging antiform comprising interpreted Dead Bullock Formation lithologies and displayed strong structural disruption. A third area in the central portion of the antiform targeting Au anomalism identified from vacuum drilling was also tested.

Bostech Drilling P/L completed the AC drilling under contract to blade refusal (unless abandoned). All holes were drilled vertically on a nominal 400x400m and 400x800m pattern.

All drill holes were sampled at 1m increments, collected via a cyclone and placed in 1m piles on the ground beside each hole. A nominal 2kg composite sample was obtained by spear sampling from one to five adjacent one-metre samples. The samples were stored in numbered plastic bags and were submitted to Genalysis Laboratory Services P/L in Adelaide for preparation and to Perth for analysis. All samples were analysed for Au by the B/ETA technique (lower detection limit of 0.1ppb) and As by ICP MS (0.5ppm). Multi-element analyses were completed on geological event horizons or geologically interesting horizons (eg quartz veining) by Aqua Regia digest with ICP MS and AAS finish, including Ag (lower detection limit of 0.1ppm), Ba (1ppm), Be (0.05ppm), Bi (0.01ppm), Cd (0.05ppm), Ce (0.01ppm), Co (0.1ppm), Cs (0.002ppm), Cu (1ppm), Li (0.1ppm), Mo (0.1ppm), Ni (1ppm), Pb (1ppm), Pd (0.01ppm), Pt (0.005ppm), Sb (0.02ppm), Sc (1ppm), Se (1ppm), Sn (0.05ppm), Sr (0.02ppm), Ta (0.01ppm), Te (0.05ppm), Th (0.01ppm), Tl (0.01ppm), U (0.01ppm), W (0.05ppm), Zr (0.1ppm) and Zn (1ppm).

A BLEG analysis was also carried out on the majority of AC holes. The sampling strategy targeted the pisolitic or lag rich horizon that was located below the aeolian sand. The pisolitic/lag rich intervals were sieved (-6mm+2mm) to remove aeolian sand and organic contamination. A nominal weight of 500g of lag was collected and stored in snap-lock plastic bags within numbered calico bags. The samples were dispatched to Ultra Trace Laboratories (Perth). The samples were subjected to bulk cyanide leach with an ICP-MS finish to a detection limit of 0.05ppb Au.

The AC drilling data files are listed in Appendix 1. Drill intersections (>10ppb Au) are summarised in Table 3 and locations shown on Plate 3.

Drilling of the northern target area was disappointing with lithologies comprising mixed oxidised/reduced siltstones and sandstones of Birrindudu Group Platform Cover Sequence. The area is interpreted to be a sub-basin (associated with the targeted structural position?) and is at least 90m in depth. All holes failed to penetrate the cover sequence and the proposed programme was substantially reduced. No significant assays were returned.

Drilling of the southern target area intersected lithologies comprising shales and fine to medium-grained greywackes. Locally restricted medium-grained granitic dykes of less than 1m in thickness were noted and appear responsible for the spotted hornfelsed textures identified in some holes. Veining was noted throughout comprising sugary, bucky and glassy quartz, locally with associated tourmaline and possibly related to nearby granite. No significant assays were returned.

Drilling around the Au-anomalism in the central portion of the antiform intersected lithologies comprising siltstones, shales (locally carbonaceous), fine to medium-grained greywackes and sporadic quartz arenite. Intermittent quartz veining was noted in some holes comprising sugary, bucky and glassy quartz, locally with associated tourmaline and possibly related to rarely intersected granitic dykes. Intervals of Au anomalism up to 191ppb was returned from this area, coincident with intersecting structures and a demagnetised zone identified from geophysics and probable Dead Bullock Formation sediments.

Table 3
Birrindudu Project
Significant AC Drill Anomalism
2004

Hole	Co-ordinates		RL	Azi	Dip	Depth	Gold Anomalism > 50ppb			
	N	E					From	To	Length (m)	Grade (ppb)
BDAC0020	7926800	590800	400	-	-90	66	45-51	c	6	191
							59-66	c!	7	91.4
BDAC0029	7925600	592800	400	-	-90	54	22-23		1	76.0
							28-32	c	4	53.1
BDAC0033	7925200	592400	400	-	-90	57	36-40	c	4	93.5
BDAC0034	7925200	592800	400	-	-90	34	23-27	c	4	65.7
BDAC0039	7924800	592800	400	-	-90	42	41-42	!	1	58.5

c Composite Sample	* Assays not received
! Mineralisation at base of hole	+ Hole incomplete
w Wet Sample	? Data subject to verification

6.4 Petrology

A batch of 3 samples collected during reconnaissance work conducted in November 2003 were submitted for petrological examination to Pontifex and Associates Pty. Ltd. Full descriptions were received February 2004.

All detailed descriptions and locations are included as Appendix 2.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The series of surface geochemical and drilling programmes conducted were designed to complete first pass reconnaissance of previously unexplored areas.

This work failed to intersect any significant mineralisation (>1g/t Au) or highlight any substantial vein corridors and only one specific target was identified. It is considered that outside of this target area limited potential exists for a stand-alone bulk tonnage operation, and no further work is recommended in this instance, however, remnant potential still exists for a smaller satellite style orebody.

The AC anomalism identified in the central eastern portion of the project area remains a valid target, being coincident with intersecting structures and a demagnetised zone identified from geophysics and probable Dead Bullock Formation sediments. Further AC drilling is warranted to test and identify the source of this anomalism.

8.0 REFERENCES

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580000 mE

590000 mE

7930000 mN

7920000 mN

EL 5889

FLY CAMP

ROCK CHIP SAMPLE LOCATION

LAG SAMPLE LOCATION

BARRICK AUSTRALIA

BIRRINDUDU
SURFACE GEOCHEMISTRY
(ROCK CHIP & LAG)

Project: 8440 - TANAMI (NT) JV

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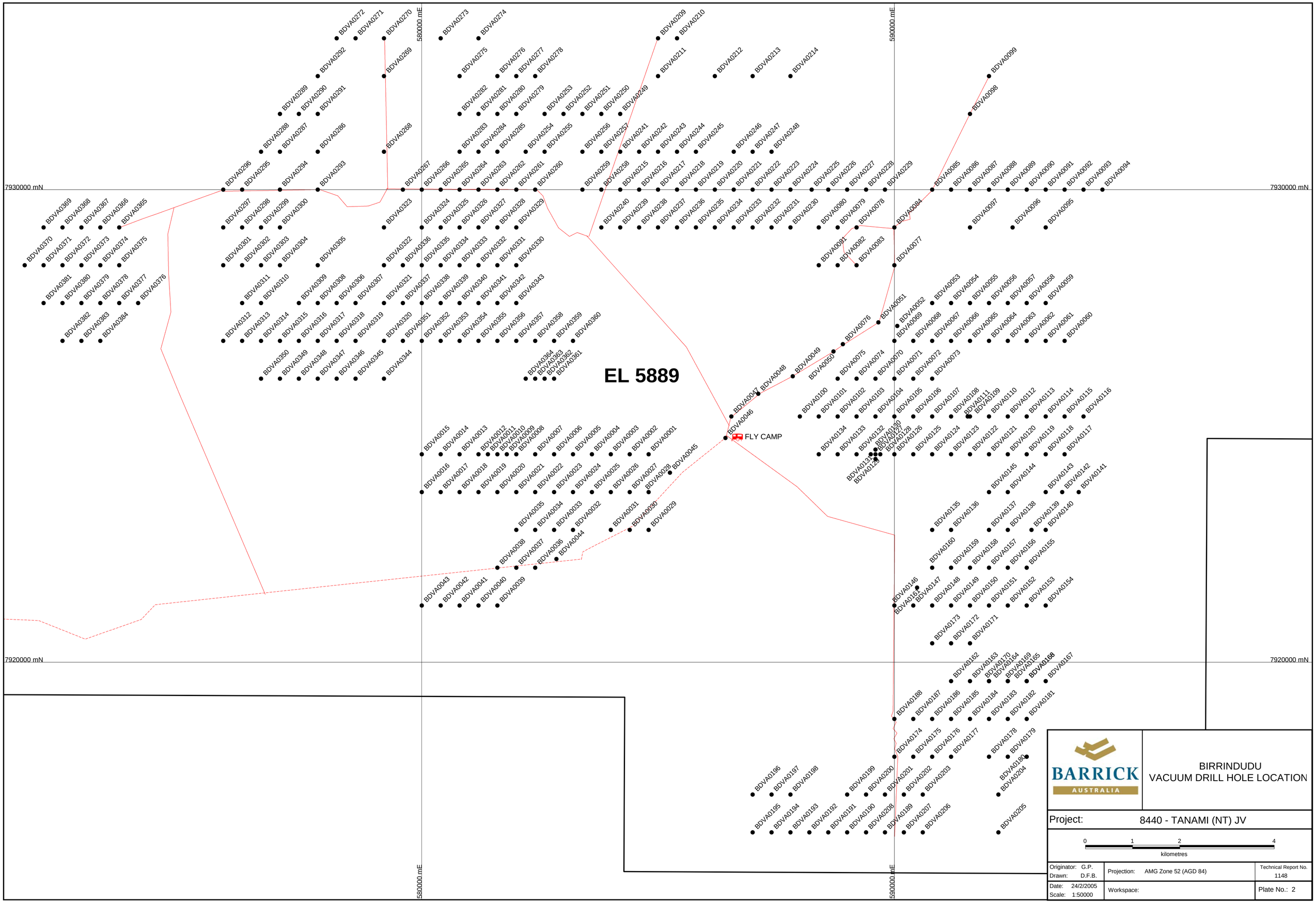
kilometres

Originator: G.P. Drawn: D.F.B.	Projection: AMG Zone 52 (AGD 84)	Technical Report No. 1148
Date: 24/2/2005 Scale: 1:50000	Workspace:	Plate No.: 1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EL 5889
FLY CAMP
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Drawn: D.F.B.
Projection: AMG Zone 52 (AGD 84)
Technical Report No. 1148
Date: 24/2/2005
Scale: 1:50000
Workspace:
Plate No.: 2

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BARRICK AUSTRALIA

BIRRINDUDU
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Project: 8440 - TANAMI (NT) JV

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Originator: G.P. Drawn: D.F.B.	Projection: AMG Zone 52 (AGD 84)	Technical Report No. 1148
Date: 24/2/2005 Scale: 1:50000	Workspace:	Plate No.: 3

APPENDIX 1

VERIFICATION LISTING FORM

TEMPLATE 7 - VERIFICATION LISTING FORM

Exploration Work Type	File Name	Format
Office Studies		
Literature search		
Database compilation		
Computer modelling		
Reprocessing of data		
Report	Tr1148_A_2005	pdf
Airborne Exploration Surveys		
Aeromagnetics		
Radiometrics		
Electromagnetics		
Gravity		
Digital terrain modelling		
Other (specify)		
Remote Sensing		
Aerial photography		
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
Ground Exploration Surveys		
Geological Mapping		
Regional		
Reconnaissance		
Prospect		
Underground		
Costean		
Ground geophysics		
Radiometrics		
Magnetics		
Gravity		
Digital terrain modelling		
Electromagnetics		
SP/AP/EP		
IP		
AMT		
Resistivity		
Complex resistivity		
Seismic reflection		
Seismic refraction		
Well logging		
Geophysical interpretation		
Other (specify)		
Geochemical Surveying		
Surface Geochemistry	Tr1148geochem.txt	WA SG2
Stream sediment		
Soil		
Rock chip		
Laterite		
Water		
Biogeochemistry		
Isotope		
Whole rock		
Mineral analysis		
Other (specify)	Petrological Report – Appendix 2	pdf
Drilling		
Data Dictionary	Drillkingdict.txt	
Collar	Tr1148coll.txt	WA SL2
Assay	Tr1148ass.txt	WA DG2
Survey	Tr1148surv.txt	WA DS2
Lithology	Tr1148litho.txt	WA DL1
Events	Tr1148event.txt	WA DL1
Recovery	Tr1148rec.txt	WA DL1
Magnetic Susceptibility	Tr1148mag.txt	WA DL1
Quartz		
Water		
Translation	Translat.txt	
Alteration	Tr1148altn.txt	WA DL1
Vein		
Structure		
Drill	Tr1148drill.txt	WA DL1

APPENDIX 2

PETROLOGICAL REPORT

MINERALOGICAL REPORT No. 8449

by Ian R. Pontifex MSc.

January 27th, 2004

TO :	Mr Graeme Purcell Barrack Gold of Aust Ltd Level 10, 2 Mill Street PERTH WA 6000
YOUR REFERENCE :	Order No. E11932
MATERIAL :	Rock samples from Tanami Tenements
IDENTIFICATION :	Nos. 1 to 10
WORK REQUESTED :	Thin section preparation, petrographic description and report.
SAMPLES & SECTIONS :	Returned to you with this report.
DIGITAL COPY :	Enclosed with hard copy of this report.

PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

Ten rock samples from the Tanami Inlier are described in this report from normal thin sections as requested. Comprehensive field notes were provided for each sample, with comments to be addressed by the petrography, including questions on possible stratigraphic representation. These are incorporated within the individual descriptions, and included in the following summary comments.

Relict textures interpreted through extensive alteration indicate three apparently related samples, numbers 1, 3 and 6, representing original cherty-iron-silicate (amphibole-rich) BIF ± calc-silicate horizons, which have been variously modified by weathering/oxidation of Fe-rich minerals and by secondary low temperature silicification probably supergene but possibly epithermal. Goethitic boxwork after garnets occur in oxidised bands in #1 and finer possible ex-pyrite in #3. Sample #3 has more abundant amphibole than #1 and #6, possibly two different original species in different layers. It may be transitional to calc-silicate, rather than BIF per se, and therefore possibly some affinity with sample #4. Sample 6 has primary, albeit metamorphically recrystallised decussate microplaty hematite, (as well as oxidised ex-amphiboles and intercalated chert layers), indicating transition from silicate facies BIF to primary chert-iron oxide BIF.

Previous petrological studies of samples from the Tanami by Pontifex and Associates, notably by Alan Purvis, suggests that these three samples correlate with various inherently Fe-Si-rich chemical sediments ± calc-silicate associations within the Dead Bullock Formation, Tanami Group (published NTGS stratigraphy), some of which host gold mineralisation. This is largely consistent with the interpretations in your covering notes (except that sample #3 is questioned as a greywacke).

Other relatively different individual lithologies (and stratigraphies) are basically as follows :

#5 Massive medium to coarse lithic sandstone (greywacke), and objectively may be considered as Killi-Killi Formation. [The low abundance of detrital micas and low matrix however suggests possible Mt Charles Formation, (Tanami Mine Sequence).]

#7 Ignimbritic tuff (lithic-vitric-pyroclastic flow-rock), with pervasive sericitic and silicic alteration. As per your field notes, this rock most likely equates with the Nanny Goat Volcanics. (Volcanics are not known to this author in the Birrindudu Group which is annotated on this sample as received).

INDIVIDUAL DESCRIPTIONS

Sample #5 **Massive fine medium to very coarse lithic quartz sandstone with probably sufficient fine matrix to be classified as greywacke. Minor short carbonaceous stylolites, accessory tourmaline and leucoxenised opaque oxides, also within the matrix.**

Field Note : *Coarse-grained greywacke. This sample is sourced from an area comprising highly weathered sediments (shales, greywackes). Possibly volcanic derived sediment? Though in hand sample, it looks similar to greywackes of the Killi-Killi Formation.*

Handspecimen

Massive, compact, fine to coarse impure sandstone (greywacke).

Petrographic

At least 50% of the thin section consists of a very loose packed and vaguely bedded aggregate of angular to subrounded grains, mostly of single crystal quartz, 0.2mm to 2mm size. Subordinate to co-dominant lithic detritus include grains and very small clasts of chert, and of extremely fine quartz-clay-sericite grains which may be inherently shaly or altered felsic volcanic, some weakly carbonaceous.

These grains have a relatively minor intergranular and weakly schistose matrix composed of finer (<0.2mm) equivalents of the above grains and even finer silty and sericitic material, accessory leucoxene and sparse carbonaceous material commonly in short stylolites. Accessory detrital blue and brown tourmaline grains, also leucoxenised opaque-oxide grains are scattered.

Sample #6 **Oxidised/silicified BIF. Dark-ferruginous layers consist of hematite-altered small clusters of fine secondary ferruginised amphibole, together with "primary" decussate microplaty hematite. These alternate with pale layers of completely silicified random prisms of ex-amphibole, also patchy apparently inherent chert.**

Field Note : *Cherty BIF? This sample is sourced from an area of poorly exposed bedrock comprising highly weathered sediments (shales, greywackes) in the vicinity of Sample 5. We interpret this sample/package to represent exposed Dead Bullock Formation.*

Handspecimen

Macroscopically, this sample consists of a sequence of irregularly alternating dark ferruginous layers and of pale siliceous layers, in subequal abundance and varying from 3mm to 10mm thick.

Petrographic

The dark layers are seen in thin section to consist of earthy hematite which pseudomorphically replaces small clusters of a decussate fibro-lamellar-form to possibly "micaceous", probable original amphibole. These layers also include however "primary" decussate microplaty hematite characteristic of (cherty) Fe-oxide dominated BIF, albeit metamorphically recrystallised. Minor cherty quartz is interstitial to these Fe-oxidised minerals. Minor iron stained kaolin occurs locally in these dark layers.

The pale layers are dominated by randomly interlocking fibro-lamellar-form prisms of apparent original amphibole but now completely replaced by secondary quartz (as in sample #3). Patchy fine cherty quartz is mixed with this silicified amphiboles, probably a subordinate inherent rock-forming phase (but possibly part of the pervasive secondary silicification). Minor hematite-altered smaller ?amphibole prisms and/or separate flakes of decussate microplaty hematite are scattered through these pale layers.

The composition and texture of this sample is similar to Sample #3, except that the decussate microplaty hematite indicates an affinity with primary (cherty) iron-oxide-chert BIF, rather than to silicate-facies BIF per se.

Sample #7 **Ignimbritic-tuff (lithic-vitric pyroclastic-flow rock), pervasively sericitised and silicified. [More likely to occur in Nanny Goat Volcanics, rather than Birindudu Group.]**

Field Note : *Ignimbrite? This sample comes from an area of well-exposed moderately weathered bedrock. Pale green colour after sericite (possibly celadonite after the breakdown of volcanic glass)? Interpreted as part of the Mt Winnecke Group (Nanny Goat Volcanics).*
[Also written on the handspecimen submitted "Birrindudu Volcanic?"]

Handspecimen

This is an indurated very fine grained siliceous rock, massive to very weakly foliated (or jointed), incorporating up to 10% clasts and crystals <3mm size, which could be detrital small lithic clasts, but some rounded quartz grains suggest possible (volcanic) phenocrysts.

Petrographic

In thin section, at least 55% of this rock is seen to consist of massive quartz micromosaic crowded with subequal sericite of similar size and distribution, representing a sericite-altered quartz ± feldspathic volcanic groundmass possibly including devitrified glass. An ignimbritic component is indicated by abundant scattered glass shards (10-15%) to 1mm size, also ragged crudely aligned fiamme (10-15%) of glass completely altered to sericite. (These components are not recognised at handspecimen scale).

Relatively more discrete components 1 to 5mm in size consist of subrounded and embayed quartz phenocrysts, and fragments of cherty/microsparry quartz ± limonite, some of which represent altered former probable mafic phenocrysts, and silicified volcanic groundmass fragments.

The rock is identified as a silicified/sericitised ignimbritic-tuff (lithic-vitric pyroclastic-flow rock) and with respect to the field note it is noted that ignimbritic volcanics consistent with your field notes. [This author is unaware however of volcanics, occurring in the Birrindudu Group which seems to be implied by the annotation on the handspecimen.]

Thin Section	Northing	Easting	Field Description.
5	7919590	585105	fresh medium to coarse-grained greywacke. Volcanic derived?
6	7927695	589845	Coarsely bedded cherty BIF
7	7929500	575350	Celadonite bearing volcanic. Ignimbrite?