KILKENNY

GOLD N.L.

1999 ANNUAL REPORT ON MCN's 4134 – 4152, 4218 - 4225, & 4343 – 4345

For the Reporting Period

1 January 1999 to 31 December 1999

Author: M. Glassock

June 1999

SHEET : SD 59-9

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Kilkenny Gold NL. Katherine Office

Kilkenny Gold N.L. Perth Office

CR99/360

SUMMARY

This report summarises work completed on MCN's 4134 – 4152, 4218 – 4225, & 4343 - 4345 by Kilkenny Gold NL for the twelve-month period to 31/12/99.

Work completed on the reported MCN's during this period includes:

- Geologists Australia interpretation
- Geological mapping
- Water sampling
- Oxide pit design
- Albion^{R} process metallurgical test work
- Feasibility

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1.0 INTRODUCTION

1.1 Title

Kalmet Resources NL (Kalmet) purchased the Maud Creek Prospect from Placer Exploration Ltd (Placer) on 22 August 1996. The tenement package comprised Mineral Claims (MCN's) 4134-4152 and 4343-4348. Kalmet Resources NL became a wholly owned subsidiary of Kilkenny Gold NL in September 1997. Kilkenny Gold NL holds the freehold title to NT Portion 4192 over this group of MCN's.

This report covers the exploration activities of Kilkenny Gold NL's 1999 field season on MCN's 4134-4152, 4218-4225 and 4343-4345.

1.2 Location and Access

The Maud Creek Project is located about 15 kilometres east of the town of Katherine as shown in Figure 1.

Access is either via the all weather bitumen Katherine Gorge Road to the old Maud Creek Station homestead then via a firebreak track that follows Maud Creek upstream to the old Maud Creek Goldfield adjacent to the Main Zone Deposit. Alternatively, access is via the Stuart Highway, 20 kilometres south of Katherine, turning east onto Ross Road travelling towards the radar dome and then past the present Maud Creek Station homestead along station firebreaks and fence lines.

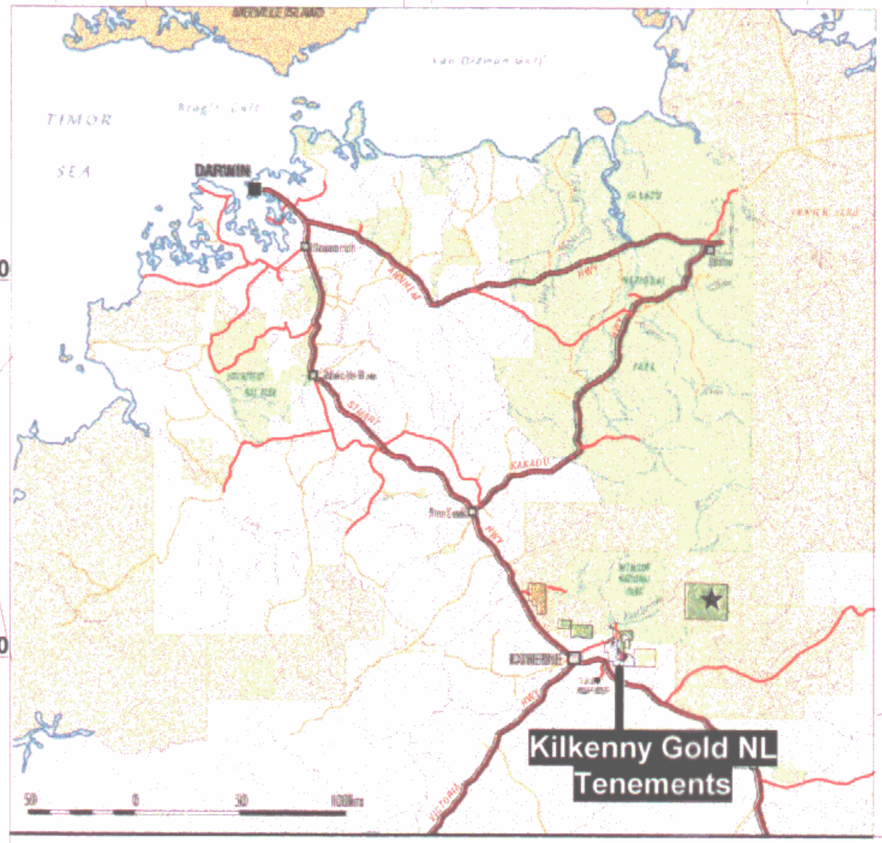
Off-track access is generally reasonable except for areas not covered by Kombolgie Formation or limestone units of the Daly Basin sediments (refer Figure 2). Areas of black soil and several well-incised stream channels severely limit access during the wet season. Due to seasonal thick vegetation regrowth access can be difficult in some areas for a month or so after the wet.

SEL9927

216000 mE
218000 mE
220000 mE
222000 mE
224000 mE
226000 mE
228000 mE
8404000 mN
840200
840000
8398000 mN
8402000 mN
8400000 mN

MCN4348

MCN4152
MCN4151
MCN4150
MCN4146
MCN4142
MCN4149
MCN4145
MCN4141
MCN4140
MCN4139
MCN4134
MCN4148
MCN4144
MCN4143
MCN4138
MCN4135
MCN4225
MCN4147
MCN4143
MCN4137
MCN4136
MCN4145
MCN4144
MCN4224
MCN4218
MCN4219
MCN4220
MCN4221
MCN4222
MCN4223



Stuart Hwy

KILKENNY GOLD N.L.

Tenement Location Plan

Date: 18/9/1999
Author: MG
Office: Katherine NT
Drawing:
Scale: 1:50000
Projection: AMG Zone 53 (AGD 84)

0 0.5 1 2
kilometres

2.0 GEOLOGY

The Maud Creek area is situated in the extreme south-eastern part of the Pine Creek Geosyncline, which comprises a 14 kilometre thick sequence of Lower Proterozoic sediments, interbedded volcanics and mafic sills. This sequence was regionally metamorphosed during the 1870 to 1780 ma. period. During this period, granitoid plutons were emplaced and overlapped with the development of two unconformably bound felsic volcanic sequences. These volcanic rocks are petrographically very similar to a sub-volcanic granite which outcrops to the north of the Maud Creek area.

Rock units of the Maud Creek area comprise of the Tollis Formation, Maud Dolerite, Edith River Volcanics, Antrim Plateau Volcanics and sediments of the Daly Basin (Kruse et al, 1994).

The Tollis Formation unconformably overlies the Burrell Creek Formation and is typified by thin to thick beds of alternating greywacke and mudstone, tuff and minor conglomerate, altered mafic to intermediate volcanic rocks and banded ironstone.

The Maud Dolerite intrudes the Tollis Formation and outcrops as irregular bodies up to 200m metres in width.

Felsic volcanics of the Edith River Group, which unconformably overlie both the Tollis Formation and the Maud Dolerite, are in turn unconformably overlain by the fluvial sediments of the Kombolgie Formation.

Gold mineralisation, as seen at the Main Zone Deposit (Gold Creek), is a result of multiple gold and gangue mineral deposition within a wide, steep southerly plunging dilational structure developed between overlying mafic volcanics and a footwall sedimentary package of the Tollis Formation. Gold occurs as both free gold and as refractory gold in arsenopyrite. Common gangue minerals are quartz, pyrite and arsenopyrite with minor graphite. Surrounding alteration assemblages variously consist of silica, chlorite, sericite, carbonate, fuchsite and haematite.

3.0 PREVIOUS EXPLORATION

The Maud Creek Goldfield was discovered about 1890 and a battery was set up. However, the field was virtually abandoned by 1891. The field re-opened between 1932 and 1934, but due to treatment difficulties, most likely caused by the fine particle size of the gold and the high sulphide content of the ore, only a small amount of gold was recovered.

Approximately 400 tonnes of ore was produced from some 20 shallow shafts and potholes, with an average of about 30-45 g/t Au. Shafts of 6 to 12 metres deep, with drives of 15 to 30 metres in length were common. The gold occurred in quartz-haematite lodes varying from a few centimetres to a metre in width, trending north-easterly and north-westerly.

Between 1966 and 1973 several companies explored the area for copper and uranium. Drilling of siliceous and gossanous breccias intersected low, albeit anomalous, concentrations of copper and molybdenum and numerous pyrite zones. However, the potential for gold was not evaluated.

C.S.R. was granted several exploration licences covering the Maud Creek Goldfield and adjacent areas during 1985 and 1986. C.S.R.'s objective was to explore for Kalgoorlie-style gold deposits in the basic volcanics. Placer purchased all of C.S.R.'s Australian mineral assets in August 1988 and continued exploration of the project until 1992.

Work completed in the 1993/94 year is detailed in Berthlesen and Goulevitch (1994), which also includes work on the contained MCN's 4218 - 4224. Initial exploration consisted of grid establishment and reconnaissance RAB drilling.

Exploration completed during the 1994/95 year (including MCN's 4218-4224) is outlined in Goulevitch (1995). RAB drilling was carried out to test structures identified from aeromagnetic data collected by CSR Limited in 1985. This drilling programme was not completed due to heavy rains.

Management of exploration programmes changed from Norminco to Kalmet Resources for the 1995/6 year. The aeromagnetic data collected in 1985 by CSR Limited was reassessed, with the aim of identifying N-S trending structures similar to the structure hosting the Main Zone deposit (Forbes, 1996).

Stephenson (1992) and Forbes (1993) give a thorough review of previous exploration.

Kalmet and Kilkenny Gold carried out extensive work on this group of MCN's during the 1997 and 1998 field seasons. This work included:

- Surveying and gridding
- Detailed aeromagnetic and radiometric survey
- Aerial photography
- Geological mapping
- Soil sampling
- Stream sediment sampling
- RC drilling
- Diamond drilling
- Resource/ Reserve estimations
- Metallurgy test work
- Pre feasibility work
- EIS documentation
- Feasibility study

4.0 EXPLORATION COMPLETED

4.1 Geologists Australia Maud Creek –Geological Interpretation Main Zone and Chessman Areas

Geologists Australia was commissioned by Kilkenny Gold to examine the Maud Creek Deposit using all available exploration data and undertake imaging of the aerial magnetics to indicate the relationship of the gold mineralisation to suggested ore controls. This work could help in future exploration of the surrounding area.

Various structures and controls of different styles of mineralisation were noted in the area and numerous exploration targets have been defined.

A copy of the report is attached as Appendix 1.

4.2 Geological Mapping

Kilkenny's tenement package was re-mapped early in 1999, once the area was accessible after the wet season. The updated interpreted local geology map is shown in Figure 2.

Proterozoic limestone (Tollis Formation) has been mapped adjacent to the sediment - mafic tuff contacts in the Chessman area. The siliceous ridges along the contacts in the Chessman area may be due to silicification of the limestone at the Lower Proterozoic – Middle Proterozoic unconformity or present day surface.

A large anticline has been mapped just off the MCN's on EL9541, which Kilkenny Gold has under application. The EL under application contains a portion of national park but the area referred to above is west of Maud Creek and not located in the national park. The anticline is cut by a NW trending fault and areas of quartz stockwork are present. This area should be looked at in the future for potential mineralisation.

4.3 Water Monitoring

Baseline water monitoring of drainages (when accessible) around the Main Zone ore body was carried out on a monthly basis. Results are tabulated in Appendix 2 and a location diagram is shown in Figure 3.

4.4 Oxide Pit Design

Signet Engineering Pty Ltd was commissioned by Kilkenny Gold to design an oxide pit and mining schedule for the Maud Creek project based on the possibility of toll treating the oxide ore at a nearby plant. A total reserve of 151,400 tonnes @ 5.02 g/t Au was estimated within the pit design. A copy of the Signet Engineering Pty Ltd report can be found in Appendix 3 and the pit design is shown in Figure 4.

218000 mE
220000 mE
222000 mE
224000 mE
226000 mE
228000 mE
230000 mE
8406000 mN
8404000 mN
8402000 mN

RECENT TO CRETACEOUS

Cz/Kp Silts/ Sands fine white sandstone

unconfomity

CAMBRIAN

TINDALL LIMESTONE

Cmt, Massive grey crystaline Limestone with some silt bands
Thin fine to coarse grained sandstone "Jindara" at base of Limestone

unconfomity

ANTRIM PLATEAU VOLCANICS

Cla, Versicular basalt some sandstone bands

Cz/sil, silisious sanasstone at base of basalt

unconfomity

MCOLE PROTEROZOIC

KOMBOLGIE FORMATION

Phk, Poorly sorted sandstone pebbly and clayey

unconfomity

PROTEROZOIC

YEURALBA GRANITE

Pgy, Medium to coarse- grained equigranular biotite muscovite leucogranite

EARLY PROTEROZOIC

CULLEN BATHOLITH

Pgoe, light grey coarse porphyritic biotite leucogranite

Pgod, Tennysons Leucogranite, Pink porphyritic biotite leucogranite

Pgcy, Cullen Batholith, Light grey coarse porphyritic biotite leucogranite

Pgcz, Bludells Monzonite , Grey - green medium equigranular biotite-hornblende-quartzs monzonite

EDITH RIVER GROUP

Plum Tree Volcanics,
Pep, Massive to poorly layered red to reddish - brown ignimbrite,
Massive white-purple banded rhyolite, some tuff and sandy sediments

Pel, Phillips Creek Sandstone, Labrie and tuffacious poorly sorted sandstone

GRACE CREEK GRANITE

Pegc, Porphyritic pink- grey- green fine to medium -grained hornblende- biotite granite

Pegd, Porphritic and xenocrystic , grey pink fine granite

Pdm3, fine grained biotite rich intrusive dykes, magnetic
may be later (Mid to late Proterozoic)

Pdm1, Medium grained felic rich granidiorite

Pdm2, medium grained mafic rich grainodiorite

Pdm4, undifferentiated intrusive ?? to be classified

Pbt, Undifferentiated, interbedded greywacke, siltstone, pale green argillite,
minor cherty tuff

TOLLIS FORMATION

Pbt/Sisu Fine grained laminated siltstone/greywacke

Pbt/Lim Calcareous Tuff (Limestone in places) around Sediment/ Mafic Tuff contact

Pbt/Tbm, Mafic Tuff, green- grey medium to coarse grained lithic tuff
with clasts ranging from 1 mm to 20 cm

unconfomity

BURRELL CREEK FORMATION

Pfb, fine to coarse grey to green-grey greywacke

Interpreted faults

Silisification and hydaulic breccias

KILKENNY GOLD N.L.

Maud Creek Project
Interpreted Geology

figure 2

Date: 18/8/1999
Author: MG
Office: Katherine NT
Drawing:
Scale: 1:50000
Projection: AMG Zone 53 (AGD 84)

0 0.5 1 2
kilometres

223000 mE
223500 mE
224000 mE
224500 mE
225000 mE
225500 mE
226000 mE
226500 mE

8403500 mN
8403000 mN
8402500 mN
8402000 mN
8401500 mN
8401000 mN
8400500 mN
8400000 mN
8399500 mN
8399000 mN

Maud Creek

11
8
10
9
5
13
1

Proposed Pit

KILKENNY GOLD N.L.

Water Sample
Location Plan

figure 3

Date: 18/6/1999
Author: MG
Office: Katherine NT
Drawing:
Scale: 1:20000
Projection: AMG Zone 53 (AGD 84)

0 200 400 800
metres

4.5 Albion^{R} Process Metallurgical Testwork

Samples where submitted to MIM to test the Albion^{R} process on Maud Creek sulphide ore. This test work indicated that good recoveries are obtainable using the Albion^{R} process.

4.6 Feasibility

The Maud Creek feasibility study and environmental sciences, heritage and aboriginal artefacts field surveys related to MLN 1978 (under application) were completed in the first half of the calender year.

5.0 EXPENDITURE

A total of $308,327 was spent on the reported MCN's for the 1999 field season. A break down of the expenditure follows in table 1.

Item	expence
salaries/wages	$ 107,000.00
consultants	$ 3,000.00
vehicle costs	$ 925.00
travel & accom.	$ 990.00
general expenses	$ 315.40
software maint	$ 4,346.00
consumables	$ 133.00
field/camp supplies	$ 129.00
freight	$ 48.00
tenement admin	$ 1,445.00
feasibility study	$ 125,865.00
environment mon.	$ 3,309.00
EIS	$ 20,605.00
Admin Costs	$ 40,216.56
Total	**$ 308,326.96**

Table 1: 1999 Expenditure

6.0 PROPOSED 2000 WORK PROGRAM

The year 2000 work program for the MCN's has yet to be finalised and may depend on the prevailing market conditions.

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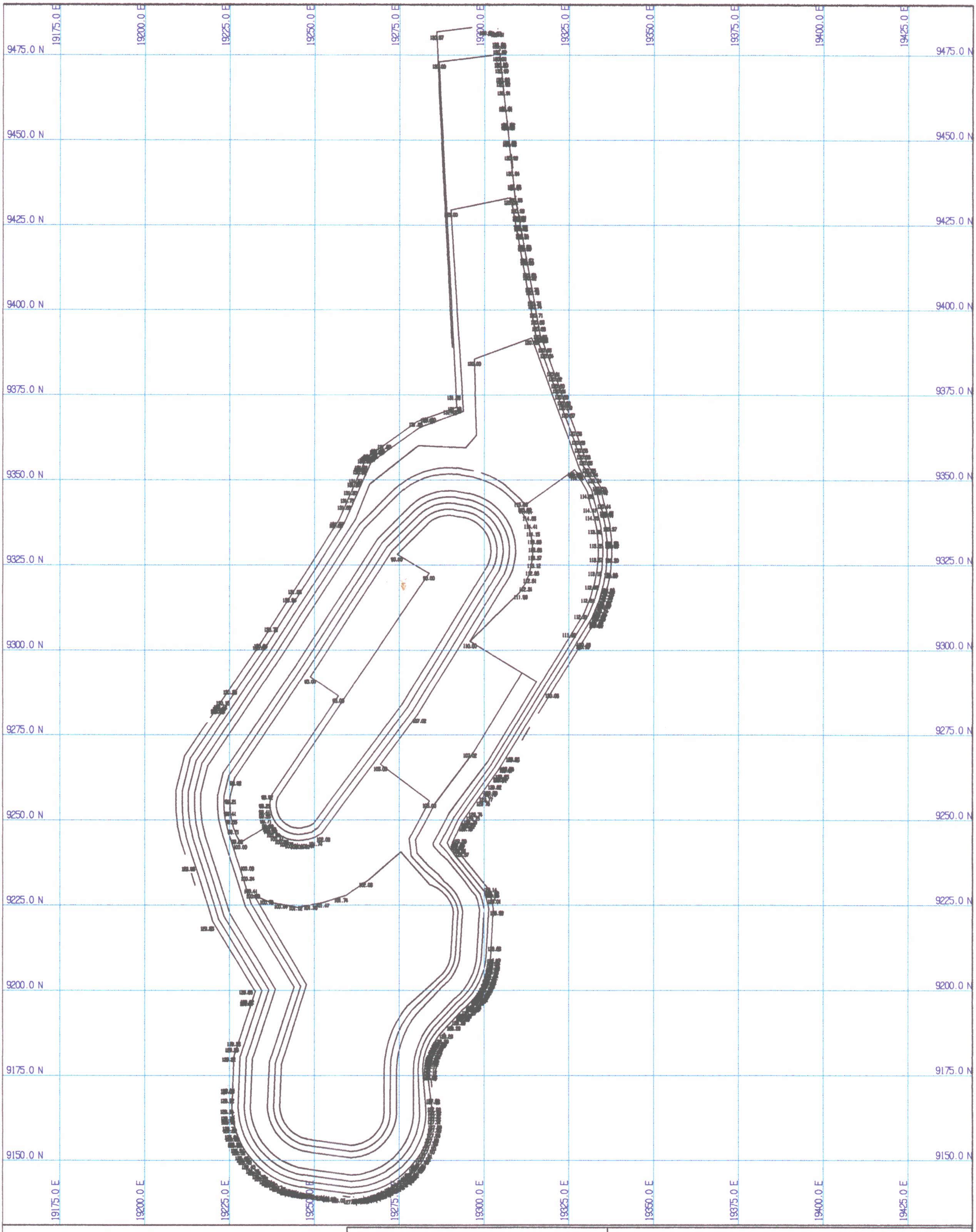

Kilkenny Gold NL
Katherine Office
P.O. Box 2325
Katherine, NT
Australia 0851

UNITS : METRES DATE: 99/08/18 TIME: 12:07:59

Plan View
Oxide Pit Design
Pit 7
figure 4

Software by Geocom Software International

Appendix 1

Geologist Australia, Geological Interpretation Main Zone and Chessman's Areas

Circulation
Tony Brennan ✓
Mike Glasson
Kilkenny Gold N.L.-Perth
Geologists Australia

Geologists Australia

Kilkenny Gold N.L.

Geological Interpretation Main Zone and Chessman's Areas

Report 4

6th February1999

Compiled by:

Bill D. Hill

Consultant Geologist

The conclusions and recommendations expressed in this report represent the opinions of the author based on the data available to him. The opinions and recommendations provided from this information are in response to a request from the client and no liability is accepted for commercial decisions or actions resulting from them.

Executive Summary

Kilkenny Gold N. L. are seeking additional resources within the Katherine region to supplement the Maud Creek ore body resource base and provide an expanded mine life to the operation. Exploration drilling is planned to recommence in May 1999. Prior to this date sufficient work needs to be undertaken to identify the higher priority exploration targets and indicate the exploration work required to complete this assessment.

Geologists Australia (GA), as part of a review of the Maud Creek exploration data, was requested to undertake an interpretation of the area south of Main Zone using the magnetic image plans from GA Report 5th January 1999. This new work was aimed at a better understanding of the tuff/sediment contact and to help in exploration targeting. A comparative geological assessment of the mine leases was also required to identify areas of resource potential.

During a recent site visit it was noted that there is an absence of interpreted cross-sections for the exploration areas (GA Report 30th December 1998). This absence appears to be due to a lack of understanding of the mine lease geology and has reduced the capacity of GA to apply the enhanced magnetic images and to provide detailed local scale geological interpretations.

This study has been able to provide geological maps for both the Main Zone and Chessman Areas. Targeting plans and explanatory schematic diagrams have also been prepared to demonstrate geological trends, facilitate the exploration effort and assist with prioritising of the mine lease exploration.

The stratigraphic relationship of the Maud Dolerite and tuff/agglomerate horizons has been demonstrated to be continuous stratabound units within the Tollis Formation sediments. As such, it is interpreted that there is potential for additional ore zones along strike both to the north and south at the intersection with favourable structures.

It is recommended that a return site visit be undertaken to revise the geological interpretations as well as to undertake detailed geological mapping of the prospective ground between Main Zone-Maud Dolerite-O'Sheas area.

Enhanced magnetic images of the Chessman's Prospect area would aid in identifying local ore control structures and assist with exploration targeting.

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Photographs

Figure 1. Maud Dolerite workings adjoining Maud Creek

Figure 2. O'Sheas shallow workings

Figure 3. Chessman Prospect outcropping mineralised zone

Figure 4. Kombolgie Formation slate quarry

Figure 5. O'Sheas - lode line

Figure 6. Battery Lode

1. Background and Brief

1.1 Background and nature of the Brief

Kilkenny Gold N. L. are seeking additional resources within the Katherine region to supplement the Maud Creek orebody resource base and provide an expanded mine life to the operation. Exploration drilling is planned to recommence in May 1999. Prior to this date sufficient work needs to be undertaken to identify the higher priority exploration targets and indicate the exploration work required to complete this assessment.

Initial work undertaken by GA concentrated on a very focused review of the Maud Creek deposit ore controls together with detailed interpretations of the local structures. These geological features were then to be applied to an overall interpretation of the mine lease geology. To assist this work a brief site visit was undertaken to examine the mine lease geology, review the exploration data and undertake discussions with Mark Glassock the Katherine Senior Geologist.

The absence of a set of fully interpreted cross-sections for the exploration areas was noted and has reduced the capacity of GA to produce local scale detailed geological interpretations for the poorly outcropping and concealed areas.

GA was subsequently requested to undertake a geological interpretation of the area south of Main Zone with an aim to a better understand the tuff/sediment contact and to identify areas of ore potential around the mine area. This work would use the previous enhanced magnetic imaging plans within GA Report 5th January 1999.

1.2 Project Team

Bill Hill, Consultant Geologist from Geologists Australia (GA), undertook the work.

1.3 Report Preparation

The following is a brief report summarising work undertaken, together with observations, recommendations and conclusions obtained.

Discussions were held with Mike Glasson to communicate progress, aid in data acquisition and focus effort.

1.4 Grid Convention

Mike Glasson requested that all plans be drawn using the AMG Zone 53 (AGD 84) grid to standardise all output. It is noted that Kilkenny Gold personnel refer to this grid as "AMG".

224000 mE
225000 mE
226000 mE
227000 mE
228000 mE
229000 mE

8402000 mN
8401000 mN
8400000 mN
8399000 mN
8398000 mN

LEGEND

Tertiary(?)

- *Dykes - syenite composition - narrow, magnetic*

Cambrian - Ordovician

- *Limestone - minor in south-west*
- *Quartzite sandstone - thin overlying basalt soil*
- *Dark soil - overlying areas of basalt*

Proterozoic

Kombolgie Fm.

- *Quartzite sandstone and pebble conglomerate*

Tollis Formation

- *Sediments - siltstone and sandstones mine footwall sequence*
- *Sediments - siltstone and sandstone similar to mine footwall sediments*
- *Sediments - mafic composition*
- *Sediments - undifferentiated felsic rich*
- *Lithic Tuffs and Agglomerate hanging wall equivalents*
- *Mafics - undifferentiated (possibly dolerite)*

Maud Dolerite

- *Felsic rich top*
- *Mafic rich base*
- *Dolerite - undifferentiated*

- *Faults and Shear zones, based upon magnetics*
- *Major lineations - shears or veining, based upon magnetics*
- *Creeks and drainage*
- *Major access tracks*

GEOLOGISTS AUSTRALIA

	KILKENNY GOLD NL
Date 29/1/1999	Maud Creek Project
Author Bill D. Hill	Geological Interpretation
Office (08) 9454 4012	
Drawing	
Scale 1:30000	Projection: AMG Zone 53 (AGD 84)

0 250 500 1000
metres

The use of AGD 84 conforms to the grid supplied with the UTS aerial magnetics and radiometric data.

2. Work Program and Objectives.

2.1 *Original Proposal.*

The work proposal was to undertake an interpretation of the Curlies and Kittens areas south of Main Zone to possibly identify the tuff/sediment contact and to decide if more work was required for this target area.

Additionally it was requested that GA take part in exploration data assessment and target generation discussions with Mark Glassock and Mike Glasson in Perth commencing 9th February 1999. Mark was requested to prepare a set of interpreted cross-sections of the recent exploration drilling for this review.

2.2 Revised Work Proposal

The absence of a factual geological base from the interpreted cross-sections necessitated a change. It was considered better to demonstrate the mine lease geological trends and apply these broader features to a better understanding of Curlies and Kittens and adjoining areas.

This new work would also aid target generation and exploration prioritising as well as assist in the proposed exploration review.

2.3 Location and Access

The Maud Creek Project tenements are located 20 kilometres east of the town of Katherine N.T.

The southern access is via the all-weather Alice Springs bitumen road to Maud Creek Station and hence via 10 kilometres of graded farm tracks. The northern access to Chessman is via the all-weather bitumen Katherine Gorge access road and hence 2 kilometres of graded bush track.

Throughout the leases there is a broad network of graded farm tracks.

Access within the wet season is restricted due to soft black soils and creek washouts.

2.4 Previous Exploration

The Maud Creek Goldfield was discovered about 1890 but abandoned by 1891.

The field re-opened between 1932 and 1934. However there were treatment difficulties due to the presence of arsenic and the need to roast the sulphide ore. Approximately 400 tonnes were produced from narrow quartz-hematite lodes from some 20 shallow shafts at an average grade of 30-45 g/t.

The area was explored for uranium and copper between 1966 and 1973 with some drilling of several siliceous zones.

CSR was granted several exploration licences covering the Maud Creek Goldfield and adjacent areas during 1985 and 1986, undertaking bulk stream sediment sampling. The work located anomalous gold west of the Maud Creek Goldfield. CSR was said to be exploring for Kalgoorlie-style dolerite hosted deposits.

Placer purchased the CSR tenements in 1987, subsequently locating the current ore deposit through rock chip sampling. Placer continued exploration of the project area until 1992 undertaking approximately 20 diamond and 20 percussion drill holes into the Maud Creek gold prospect.

Kalmet Resources, through Resource Services Group, continued the exploration, metallurgical testing, and mine feasibility studies over Maud Creek Main Zone. They undertook 287 reverse circulation holes for 28,156m and 33 diamond holes for 2379metres, to the end of 1996.

Kilkenny acquired the project in October 1997 and has continued exploration of the ore body at depth and south along strike. Recent additional work was undertaken within the Maud Dolerite to the east, Runways, O'Sheas, Curlies, Kittens, and Roo Plains as well as at the Chessman's prospects to the north-west.

3. Previous Mapping Work

The Maud Creek Project area has been included on several geological maps: -

a) Placer Exploration and CSR undertook outcrop-mapping programs for Chessman's, Maud Dolerite, O'Sheas, Battery Lode and the northern contact areas. No interpreted geological maps appear to have been produced.
b) Kalmet concentrated their exploration effort around Gold Creek. A set of outcrop plans as well as an interpreted geological map was produced for the immediate mine area.
c) The current mine lease area is included as part of the NT Government regional geological mapping for the Pine Creek Inlier. Although on a very large scale, this mapping is probably the best geological interpretation for the region.
d) SRK were requested by Kilkenny to prepare a geological interpretation for the entire leases based upon the Kalmet close spaced aerial magnetics and radiometrics. The supplied interpretations indicate extensive dolerite intrusions and tight fold structures within the sediments. The SRK work does not appear to have been field checked.
e) The Kilkenny site geologists prepared preliminary geological interpretations during the 1998 drilling season. This work appears to have used interpretations from a satellite image complimented with some field observations.

The aim of this report is to record the revised interpreted site geology and to identify areas of exploration potential. These interpretations will probably require site checking especially to the south around the various partially concealed tuff/sediment contact areas.

4.0 Work Undertaken by Geologist Australia (GA)

4.1 Introduction

The initial work effort undertaken by GA was a review of structures visible within the aerial magnetic data around the immediate mine area. This work aimed at establishing the relationship of the mineralisation to the observed structures and to identify potential ore controls for extrapolation elsewhere within the mine leases.

This work included reviewing the current resource model, geochemical and drill hole databases and previous SRK structural interpretations.

Based upon this assessment and a subsequent site visit it was concluded that there was a poor understanding of the mine lease geology that needed to be resolved prior to undertaking further resource targeting and exploration.

The following geological interpretation has been essentially based upon GA's data assessment and field observations. This work is preliminary and will require a further site inspection for updating and refinement, especially with respect to areas outlined within this report

4.2 Work Undertaken

The following is a broad outline of work undertaken by GA in preparing the attached geological interpretations for the Main Zone and Chessman Areas: -

4.2.1 Main Zone – Gold Creek Deposit Area

1. Preparation of a revised 1:3000 scale enhanced magnetic image covering the Main Zone area. This plan was photographically reduced and a 1:6000 composite plan prepared using the four 1:3000 comparative magnetic contoured images. This plan then formed the base for the structural and intrusive geology interpretations.

2. The radiometrics for the 1:6000 sheet area were selected, contoured and printed. These plans were photographically enlarged to provide additional base plans for the geological interpretations.

3. The aerial photography from Barkley Minerals NL Maud Creek Run 3 dated 13 June 1993 was also examined. The original contact prints were stereoscopically reviewed as were the electronic photographic images prepared by AireSearch Mapping. Several photo-lineament working plans were produced.

4. Upon completion of geological interpretations the various plans were then digitised and merged to produce the supplied large size A0 plans for Main Zone.

4.2.2 Chessman's Prospect Area

1 The Chessman's magnetic data was electronically gridded and imaged to provide a base for the interpretation of structures, dyking and broader geology. It is noted that there is an absence of enhanced magnetic images for Chessman's Area.

2 The Chessman's radiometrics were then prepared similar to Main Zone; however, the data was electronically imaged for interpretation and computer based digitising.

3 Electronic copies of all plans were prepared.

4 Plots of these files were produced at a commercial plan copy bureau. The electronic plot files for these plans have been made available to Kilkenny Gold NL. These files are suited to the Katherine Office HP 750C Design Jet plotter.

Note:- A4 sized copies of both Main Zone and the Chessman area maps are included within the body of this report.

218000 mE
219000 mE
220000 mE
221000 mE
222000 mE
223000 mE
224000 mE

8407000 mN
8406000 mN
8405000 mN
8404000 mN
8403000 mN

No Data - off lease

Road to Katherine

Dorothy Creek Fault

No Data - off lease

Maud Creek

Carpentaria Fault

LEGEND

Tertiary(?)

Dykes - syenite composition - narrow, magnetic

Cambrian - Ordovician

Quartzite sandstone - thin, overlying basalt soil

Dark soil - overlying areas of basalt

Proterozoic

Konibolgo Fm

Quartzite sandstone and pebble conglomerate

Edith River Volcanics

Rhyolitic crystal and lithic tuffs

Tollis Formation

Sediments - undifferentiated siltstones and sandstones

Lithic Tuffs and Agglomerate hanging wall equivalents

Fault brecciated sediments - siltstone and sandstones adjoining agglomerates and lithic tuffs

Intrusives

Dolerite volcanic plugs associated with basalt

Dolerite - undifferentiated

Chessman Prospect

Silicification bands and hydraulic breccias

Faults and Shear zones, based upon magnetics

Lineations - shears or veining, based upon magnetics

Creeks and drainage

Major access tracks

Historical drill holes with anomalous gold, arsenic and antimony assays, compiled from Pancontinental Gold NL and Kilkenny Gold NL records

GEOLOGISTS AUSTRALIA

KILKENNY GOLD NL

Maud Creek Project

Chessman Prospect

Geological Interpretation

Date 5/2/98

Author: Bill D. Hill

Office: (08) 145 4012

Drawing

Scale 1:30000

Projection: AMG Zone 53 (AGD 84)

0 250 500 1000

metres

5. Maud Creek Project - Geological Overview

The Maud Creek area is situated in the south-eastern end of the Pine Creek Inlier, which comprises a thick sequence of Lower Proterozoic sediments, interbedded volcanics and mafic sills locally called the Tollis Formation.

Granitoid plutons were emplaced 1870-1780ma. The Tollis Formation is overlapped to the north by the felsic Edith River Volcanics. The Antrim Plateau Basalts of Ordovician-Cambrian age cover the southern Maud Creek area. These basalts have then in part been covered by Ordovician-Cambrian limestone.

Intruding through the entire sequence is a very extensive network of thin Tertiary (?) syenite composition dykes.

5.1 Geology

5.1.1 Limestone

Outcrop of the Ordovician-Cambrian aged limestone is very limited within the Main Zone (MZ) map sheet. The typically light grey limestone occurs with a slightly elevated relief in the south-western corner of the sheet.

Water bores, drill logs and drill cuttings indicate that the limestone contains several fine-grained shale and siltstone bands. Structural contouring of the lower contact from these logs indicates that the limestone subcrops around the Curlies water bore and thickens to the south below and towards the RAAF base.

Several small limestone (?) outcrops of less than 5 square metres were noted throughout the MZ area. The relationship of these minor possible calcrete-limestone areas to the main limestone to the south was not established.

It is noted that the radiometrics overlying and adjoining the limestone are relatively high on the Uranium channel count.

Underlying the limestone is the Antrim Plateau Basalt.

5.1.2 Antrim Plateau Basalt

The Antrim Plateau Basalt is of Cambrian age and covers the southern half of the mine leases.

The basalt consists of very dark vesicular groundmass. Surface expression of subcropping basalt occurs as soft dark brown soil. Overlying these areas especially south-west of Gold Creek are numerous outcrops of a thin quartzite arenite band.

Both the basalt soil and quartz arenite areas have been identified on the accompanying geological plans due to their contrasting Total Count and Potassium radiometic responses. The sediment band is only 20-30 centimetres thick but observed to have considerable lateral extent. The sediment has a pronounced high on the total radiometric count.

Exploration drilling indicates that the lower unconformity contact between the basalt with the underlying Tollis Formation sediments locally is flat lying. On a larger scale, using data from the water bore drill logs, the basalt appears to mirror the overlying limestone and thicken to the south-west.

The unconformity, as well as an exposure of fresh basalt, was observed within the area north of Main Zone adjoining the Chessman's Prospect access track. Underlying the basalt is a thin quartz pebble conglomerate band. This hard conglomerate band is very prominent north-west of the Main Zone sediment tuff contact.

It is noted that the collar height for the shallow RC and RAB exploration drill holes are estimates and as such it is currently not possible to structure contour the basalt/Tollis contact to locate palaeodrainage channels. GPS co-ordinates have been applied to the drill collar northing and easting

5.1.3 Kombolgie Formation.

The Kombolgie Formation forms the elevated plateau and prominent gorges as seen east of Katherine.

The observed Kombolgie Formation consist of gently dipping waterlain coarse grained quartzite arenites dipping at 10-45 degrees to the north-east with minor pebble conglomerates towards the base. Below this conglomerate is a poorly outcropping siltstone. This siltstone was noted only within a small quarry east of Battery Lode near O'Sheas set up by the earlier miners to recover slate slabs.

Intersecting the Kombolgie Formation plateau areas are numerous thin dykes and minor fault structures. Both the Kombolgie sediments and accompany dyking are very prominent on the aerial photography.

The Kombolgie Formation overlies both the Edith River Volcanics and Tollis Formation along the north eastern lease boundary immediately east of the O'Sheas Lode and north along the eastern edge of Maud Creek.

5.1.4 Edith River Volcanics

The Edith River Volcanics were noted to occur north of the Chessman's Prospect area between Maud Creek and the Katherine Gorge Road.

The Edith River Volcanics consist of a thick sequence of feldspathic crystal tuffs having rare clear quartz phenocrysts to 5mm. Minor lithics as well as flattened fiamme were also noted within this very weathered and poorly outcropping unit

The southern extent of the Edith River Volcanics was not observed due to access difficulties through Chessman's. The radiometrics for this area are partially concealed by recent sediments within the Maud Creek drainage.

South of the Maud Creek-Katherine Gorge access road bridge the Edith River rhyolite porphyry volcanics were observed to unconformably overlie sediments of the Tollis Formation with a steep north-easterly dip.

5.1.5 Tollis Formation

The Early Proterozoic age Tollis Formation underlies the Antrim Basalt, Edith River Volcanics and Kombolgie Formation and forms the host stratigraphy for the gold mineralisation at Gold Creek (Main Zone) and at the Chessman's Prospect.

The Tollis Formation consists of a sequence of steeply dipping fine-grained sandstone and siltstone bands, 1 to 30 centimetres thick, averaging 15 centimetres together with minor lithic tuffs and course grained agglomerates. Intruding this sequence are three large dolerite sills including the Maud Dolerite.

5.1.5.1 Sediments

Although the Tollis Formation has been divided into several units on the map sheets the actual difference between the units appears to be minor. The radiometrics suggest more mafic sediment hosting the O'Sheas quartz mineralisation as well as its faulted continuation south along the eastern edge of the Maud Dolerite.

No sedimentary structures or casts were noted indicative of a shallow marine environment and as such the Tollis Formation sediments are probably part of the regional deep-water turbidite sequence observed at both Pine Creek and Halls Creek in WA.

Observations in the field indicated that the identification of the finer grained lithic tuffs and sediments is often very difficult in hand specimen. It is necessary to observe the more massive tuffaceous units compared to the bedded sediments.

The mine sequence footwall sediments consist of well-bedded immature volcanic sediments probably derived from the same source as the hanging wall tuffs

Examination of the eastern Maud Dolerite/sediment contact near Placer drill hole SP002 indicated a non-faulted contact between the Maud Dolerite and adjoining foliated sediments. This area consists of both a strike ridge as well as broad creek drainage. It is interpreted that these sediments are equivalent to the O'Sheas host

215000 mE
220000 mE
225000 mE
230000 mE
235000 mE

8405000 mN
8400000 mN
8395000 mN

Tuff
Tuff
Chessman
Maud
Dolerite
Tuff
Sediments
Main Zone
Fault
Maud
Dolerite
Dolerite
Tuff

GEOLOGISTS AUSTRALIA

KILKENNY GOLD NL

Maud Creek Project

Schematic Tollis Fm. Geology

Date 5/2/1999
Author Bill D. Hill
Office 9454 4012
Drawing
Scale 1:10000
Projection AMG Zone 53 (AGD 84)

0 1 2 4
kilometres

rocks offset by a NW trending dextral fault. The O'Sheas mineralisation may extend south across Maud Creek but offset to the south-east.

5.1.5.2 Lithic Tuff-Agglomerate

Two bands of lithic tuffs and agglomerates are noted at both Main Zone as well as the Chessman's area.

The sediment/tuff contact may be sharp, suggesting a fault displacement as at Main Zone or gradational as at Chessman where the sediments and tuff appear to interfinger away from the contact area. The actual contact at Chessman's is marked by the presence of a 25centimetre wide quartz vein as well as a thin silicification band.

At Main Zone the hanging wall tuff consists of lithic and fiamme fragments to 2mm within a fine-grained mafic ground mass. These tuffs are locally sericitic bleached along the contact within the ore horizon. Elsewhere, the tuffs are dark to apple green due to the presence of chlorite.

Course grained agglomerate was noted east of the O'Sheas workings with lithic and volcanic fragments to 15 centimetres. This is a very wide unit with the eastern edge obscured by Kombolgie sediments as well as by lack of outcrop. Recent sediments within Maud Creek conceal the southern agglomerate contact.

A similar wide coarse-grained agglomerate was noted south of Chessman's west of the mapped dolerite plug.

It is interpreted, based upon a brief examination of the Kittens area complimented with the radiometrics that the O'Sheas agglomerates/tuff horizon extends south through part of the Kittens project area and below the Antrim Plateau Basalt

The examinations of the tuff and agglomerate zones adjoining Chessman region indicate that these units are also laterally extensive.

Two other possible tuff/agglomerate zones are noted in the radiometrics near Chessman. These have been included on the attached plans for site review labelled "Area 2" and "Area3".

"Area 2" appears to be related to later dyking with minimal sediment cover. "Area 3" however, may be related to a drainage effect and as such is of lesser interest.

5.1.5.3 Sediments - undifferentiated

These undifferentiated sediments occur as a broad zone of foliated siltstones, fine-grained sandstones and shales in the eastern area of Main Zone sheet as well as covering most of the Chessman's Sheet.

Bedding within the eastern sediments is steeply dipping and striking north-south. Examination of outcrops adjoining the thin dolerite indicated several deformation events. However, the differences in banding confirm that this deformation has been regional with no local tight folding contrary to the SRK plans.

At Chessman's there is a gradual change in orientation of the sediments east of the tuff and silica horizons suggesting either a regional fold or alignment with the Carpentaria Fault

5.1.5.4 Internal Structures

Minor local tight fold structures were noted within the Tollis Formation sediments north-west of Chessman's along the Katherine Gorge road adjoining the intersection of the Dorothy Creek Fault. This intersection appears to have created an area of tight steeply plunging folds.

Elsewhere the sediments between the two tuff-agglomerate horizons at Chessman's, based upon the field mapping and radiometrics, indicate a zone of stacked faulted sediments having an overall S-C fabric structure. This may indicate that either one or both of the adjacent tuff horizons are in fact a regional fault structure. This fault interpretation is further enhanced by the general change in strike of the sediments either side of these tuff-agglomerates. The western Tollis sediments appear to strike 340 while the eastern sediments trend to strike between 010 to 040.

5.1.5.5 Radiometrics

The sediments are radiometrically positive compared to the adjoining lithic tuffs providing a prominent contrast. This contrast may be observed both at Chessman's and Main Zone especially along the northern lease boundary. South of Main Zone the sediment/tuff contact is obscured in part by basalt cover and recent drainage sediments.

The radiometrics indicate several small outcrops of footwall sediments east between the hanging wall tuff and the Maud Dolerite. These sediments could be of significance with the Main Zone ore located on the nearby sediment-tuff contact. This area will benefit from the proposed review of the cross-sections as well as further site inspection.

5.1.6 Maud Dolerite

The Maud Dolerite has historically been of interest due to the numerous quartz veins containing both copper and gold mineralisation. CSR explored the area for dolerite hosted gold bearing quartz veins similar to the Golden Mile Dolerite.

During the site visit several brief traverses were undertaken across the Maud Dolerite. This work indicated the dolerite is differentiated with at least three phases, felsic top, mafic rich base and several later fine to medium grained dolerite dykes. No

granophyric zones were observed that could host quartz vein stockwork mineralisation. The area adjoining the recent Chlorite Hill drilling was especially examined.

The zonation within the Maud Dolerite may also be observed within the radiometrics as well as the processed magnetics. However the later is significantly concealed by the cross-cutting highly magnetic Tertiary (?) dyking.

The eastern half of the Maud Dolerite consists of a medium to course grained feldspar rich mafic with ophitic texture. The western half of the Maud Dolerite consists of a coarse grained more mafic gabbroic unit and of possible norite composition.

Throughout the Maud Dolerite it is noted that deformation is minimal except adjoining the narrow shear zones. These shears are marked by bleached contacts and the development of 1 to 2 centimetre thick chlorite-magnetite vein selvages.

To confirm the Maud Dolerite layering a prominent NE trending quartz vein was traced through the Maud Dolerite west towards Gold Creek. During this traverse north south striking fine to medium grained dolerite dykes were noted within the centre of the intrusive as well as on the western boundary. These dykes ranged between 1 to 5 metres thick having a strike of at least 5 to 20 metres. No other dolerite dykes were noted during two other traverses. However, a small dolerite plug noted south of Chessman's is of similar appearance and grain size to the Maud Dolerite dyking.

The Maud Dolerite is very uniform in grain size along strike indicating that its lateral extent is larger that the current area exposed. Examination of the Mt. Gates leases to the north west indicated similar stratigraphy with a dolerite of similar appearance and grain size to the Maud Dolerite.

5.1.7 Dolerite – undifferentiated

Two other dolerite like intrusions were noted east of the Maud Dolerite.

The central dolerite outcrops within a small exposure along the banks of Maud Creek as well as adjoining the Runways exploration drilling. Although this unit is of similar medium grain size to the Maud Dolerite it does not appear to be differentiated. The dolerite appears to be more mafic than the Maud Dolerite.

Local NE trending and quartz-carbonate alteration of the dolerite appears to have assisted in weathering and in the location of Maud Creek.

In the far east of the Main Zone map sheet is located another dolerite intrusive. This unit is very prominent on aerial photography due to the contrast between the dark sediments and the bleached dolerite. The intrusive appears to have been displaced by a series of NE trending shears.

The dolerite intrusive occurs as stratigraphically continuous intrusive and not as a series of irregular patches as indicated on the SRK plans. However, within the

southern Chessman's area a small dolerite plug was noted with very limited extent. The grain size is fine-medium grained. This plug is also visible on the magnetics.

The dolerites like all the previous stratigraphy are intruded by the very magnetic narrow Tertiary (?) dykes.

5.1.8 Dyking – syenite

An extensive network of dark grey-brown narrow dykes of syenite composition has intruded the entire stratigraphy. The observed dykes all consist of a very fine-grained syenite with feldspar megacrysts to 5mm and minor magnetite.

These dykes, although poorly outcropping have obvious lateral extent observable within the Kombolgie Formation sediments east of the mine area.

Outcropping dykes observed within the Main Zone sheet were observed in Gold Creek, east of the agglomerate within a small creek off Maud Creek, east of Runways and on the access track to Kittens adjoining the Eastern Maud Dolerite contact.

The width of the dykes were generally less that 3 to 5 metres however the magnetically prominent dyke near Main Zone outcrops across strike for a width of 100 metres.

It is noted that an area of wider dyking adjoins Main Zone and may in part reflect the general dilation through the local area. Elsewhere to the east the very prominent ridge and wide dyke east of Runways could similarly reflect dilation in this local area. The area of special interest adjoins the main NE and NW trend intersections.

The syenite dyking has neither been veined nor deformed and appears to be part of a very late regional extension event.

Within the Chessman's area these magnetically prominent dykes were observed on the access track as well as within recent RC drill cuttings. The presence of dark mica minerals at Chessman's as selvage or within these dykes may indicate either potassium alteration or a lamprophyric source.

The very magnetically prominent dyking has considerably influenced past exploration effort. It is noted that CSR initially undertook local mine lease magnetic imaging studies. Kalmet, through Resource Services Group, undertook further studies, Kilkenny requested SRK to review the mine lease geology using the close spaced aerial magnetics and radiometrics. In all studies the prominent, narrow, very magnetic dyking has considerably influenced the geological interpretations. The various orientations for this dyking, oblique to stratigraphy, has further complicated their interpretation.

Based upon the magnetic imaging undertaken by GA it is suggested that the dyking is related to a regional fault located south of the lease area.

215000 mE
220000 mE
225000 mE
230000 mE
235000 mE

8405000 mN

8400000 mN

8395000 mN

Chessman

Basalt

Basalt

Fault

Dyking - Schematic only

Main Zone

Dyke along fault

Fault

Basalt

GEOLOGISTS AUSTRALIA

KILKENNY GOLD NL

Maud Creek Project

Schematic Dyking Geology

Date 5/2/1999

Author Brad C. Hill

Office 9464 4012

Drawing

Scale 1:100000

Projection AMG Zone 53 (AGD 84)

0 1 2 4

kilometres

It is noted that the dykes or magnetic events underlie areas of the basalt. This would imply an intrusive feeding zone, however the Ordovician-Cambrian age is in conflict with this interpretation.

5.1.9 Silica Ridges and Breccias

The Main Zone ore deposit at Gold Creek occurs within a quartz silica breccia located on a tuff-sediment contact. The Chessman's Prospect gold mineralisation is also associated with silicification and quartz veining. Areas of silica development associated with tuff/sediment contacts are as such a significant exploration target. Additionally, the earlier CSR plans indicated initial rock chip sampling above the Gold Creek Main Zone having background values of 0.005ppm.

The outer contact at Chessman's between the tuff-agglomerates and adjoining sediments is marked by a narrow silicification bands. The site inspection indicated that the silica ridges are associated with the sediment/tuff contacts as well as with local faulting within the tuff. Hydraulic brecciation of these silicified zones is minor.

Silicification zones are of 0.2 to 5 metre width with a strike extent from less than 20 metres to over 500 metres. The main Chessman Silica ridge has only had limited drill tested essentially in the south. Elsewhere only two of the other silicified ridges appear to have been drilled.

Examination of a "breccia ridge" adjoining the Katherine Gorge access road indicated two subparallel 1.5m wide vertical siliceous agglomerates trending 110 degrees. Adjoining one of these was a 20cm wide chemical silica sediment consisting of 10-15mm wide bands of silica and magnetite.

It is suggested that these silica zones formed due to focussing of fluid flow at the lithologically contrasting contacts and as such may be ideal hosts for gold mineralisation.

6. Structure

6.1 Main Zone

Only very prominent structures have been included. These structures occur as part of a fractal set and as such the number of visible structures is dependent upon the scale of observation.

Included is a series of prominent NW trending faults and shear zones. It is noted that several of the observed shallow copper workings occur along these trends. The NW trend through Maud Creek is of special interest appearing to offset the Maud Dolerite and the O'Sheas stratigraphy north block to the west.

Reviewing the distribution of NE trending structures indicates a reduction in the number and change in orientation of these structures south of Main Zone.

Several of the major lineations have also been included. These lineations conform to observations within GA report dated 9th November 1998.

6.2 Chessman's Prospect

Due to the absence of enhanced magnetic images for Chessman's Area, and to aid the geological interpretations, the unenhanced magnetic data was electronically gridded and imaged. This work provided a base for the interpretation of main structures, dyking and broader geological interpretations.

Only the broader structures and lineations were identified and shown on the enclosed plan. This work indicated that the Chessman area has been significantly offset by the Carpentaria and Dorothy Creek Faults and related subsets.

A program of air photograph lineament identification was undertaken for the area immediately east of Chessman. This indicated that each of the silica breccia zones is probably bounded by weak NE trending structures. These structures could not be observed within the coarse interim magnetic images.

Several of the identified Chessman Area NW trending lineations appear to correlate with similar structures observed within the Main Zone area.

7. Exploration Targeting

7.1 Main Zone

The geological map compilation and interpretation for the Main Zone map sheet has identified nine areas of interest.

The areas of main interest include the southern extent of the hanging wall tuff and footwall sediment contact as well as the southern extension to the O'Sheas quartz lode.

Other areas of interest are related to sediment-tuff contacts, intersecting NE and NW structures, fault offsets and intersections as well as possible dilation zones.

In several areas the radiometrics indicate conflicting geology especially in areas immediately adjoining the basalt soils or in areas covered by recent sediments. It is recommended that a program of field site checking be undertaken.

It is suggested that a compilation of the recent drilling results and historical workings at the Maud Dolerite Chlorite Hill area may assist in the identification of additional near surface resources. It is expected that the total ore resource potential for the Chlorite Hill area is low, however there may be sufficient resources available to supplement the initial Maud open cut operations. It is proposed that this data will be reviewed in Perth with Mark Glassock.

7.2 Chessman's Prospect Area

An interpretation of the Chessman's geology was undertaken to assist with the understanding of the overall mine leases and to assist with prioritising of the exploration targeting. The site visit indicated a poor understanding of the Chessman geology and located a significant number of untested silica zones along the two prominent tuff-agglomerate/sediment contacts.

Reviewing the recent drilling results at site indicated that the central Chessman area has not been properly evaluated and that there may be resource potential immediately along strike.

The attached targeting plan divides the Chessman area into Areas 1, 2 and 3. These later two areas are minor tuff bands within the sediments or are related to other extraneous sediment cover sources such as drainage (Area 3) or dyke debris (Area2) Both areas should site checked. Area 2 is near an anomalous stream sediment sample site.

Area 1 includes the two tuff/sediment contacts with associated silica zones as well as two areas labelled "Priority 1" and "Priority 2".

224000 mE
225000 mE
226000 mE
227000 mE
228000 mE
229000 mE
230000 mE
231000 mE

8402000 mN
8401000 mN
8400000 mN
8399000 mN
8398000 mN

Area 8
Maud Dolerite
Area 3
O'Sheas
Area 4
Main Zone
Area 2
Area 7
Area 9
Area 5
Area 1
Area 6

GEOLOGISTS AUSTRALIA

KILKENNY GOLD NL

Maud Creek Project

Main Zone

Exploration Target Areas

Drawn: 2/1999

Author: Bill D. Hill

Office: 9454 4212

Drawing:

Scale: 1:30000 Projection: AMG Zone 53 (AGD 84)

0 250 500 1000

metres

The Area "Priority 1" includes the current Chessman's drilling extending north and to the eastern silica zone. The Dorothy Creek faulting and subparallel structures appear to have played an important part in offsetting the main Chessman mineralisation. It is recommended that all data within this area especially adjoining the Dorothy Creek NW trending structures be reviewed.

The Area "Priority 2" refers to a fault offset in the eastern silica zone by the east-west trending Carpentaria Fault. This area has both anomalous stream geochemistry as well as anomalous broad spaced soil geochemistry.

218000 mE
219000 mE
220000 mE
221000 mE
222000 mE
223000 mE
224000 mE
225000 mE

8407000 mN
8406000 mN
8405000 mN
8404000 mN
8403000 mN

No Data - off lease

Road to Katherine

Priority 1

Chessman

Area 3

Area 1

Priority 2

Area 2

GEOLOGISTS AUSTRALIA	
	KILKENNY GOLD NL
Date 5/2/1999	Maud Creek Project
Author: Bill D. Hill	Chessman Prospect
Office: (08) 9454 4012	Exploration Targets
Drawing	
Scale 1:30000	Projection: AMG Zone 53 (AGD 84)

0 250 500 1000
metres

8. Recommendations and Conclusions.

Geologists Australia has been able to prepare geological interpretation plans for the area surrounding the Gold Creek and Maud Dolerite as well as a geological interpretation for the Chessman's Region.

These plans have identified that the Tollis Formation stratigraphy essentially strikes north south and consists of well defined layered stratigraphy including the prospective tuff-agglomerate/sediment contact zones as well as the Maud Dolerite.

This stratigraphy continues north below the Kombolgie Formation and south below the Basalt and Limestone.

Based on this above work the geological mapping has identified several areas of exploration interest adjoining the eastern and western boundaries of the Maud Dolerite. The main NW structural trend along Maud Creek appears to have displaced the stratigraphy and possibly the O'Sheas mineralisation. An area of structural complexity and of major dilation has also been identified for review.

At Chessman's the under explored silica ridges along the tuff-agglomerate/sediments contacts have been highlighted as priority exploration targets. The area adjoining both Dorothy Creek and Carpentaria Faults appears to have unexplored potential.

It is recommended that a program of detailed geological mapping be undertaken to review and edit the observations made during this study. It is considered probable that additional ore resources may be established by assimilation of the recent drilling data with the observed Maud Dolerite workings.

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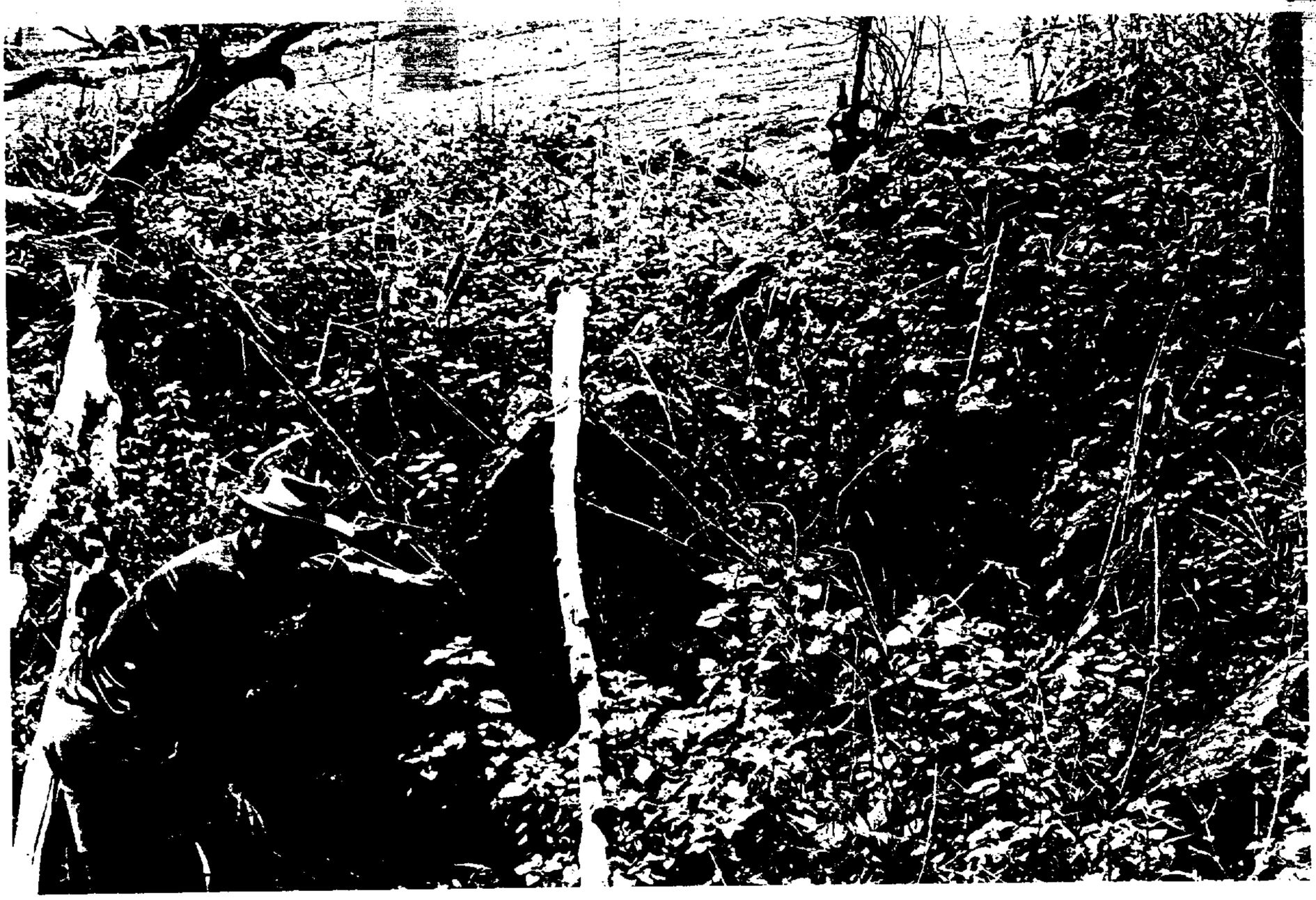

Figure 1 - Maud Dolerite workings adjoining Maud Creek. Mark Glassock indicating the northern easterly dipping quartz lode. View south-east.

Figure 2 – Typical of the many shallow workings along O'Sheas quartz lode. View north

Figure 3. – Chessman's Prospect. Mike Glasson indicating the gold bearing quartz vein and zone of silicification exposed in drill pad. Chlorite rich lithic tuff drill cuttings behind Mark Glassock. View south-east.

Figure 4 – Small slate quarry below the Kombolgie Formation sediments near Battery Lode. View north-east.

Figure 5. – Typical exposure along the O'Sheas Lode line.
View south-west.

Figure 6 – Battery Lode north of O'Sheas.
View west.

Appendix 2

Water monitoring data

site	wgsn(84/53)	wgse(84/53)	description
SW1	8400148	225080	
SW2	8400672	224394	
SW3	8400823	224746	
SW4	8402001	225415	
SW5	8402174	225621	
SW6	8402066	224546	
SW7	8402703	224665	
SW8	8403189	225259	peg on southern bank of large pond approx 150m west of track. If flowing take at track
SW9	8402460	226080	peg in the open on west bank, about 15m east of the east fork of gold creek
SW10	8402606	225977	peg on west side of small tree
SW11	8403697	224989	peg on high eaast bank
SW12	8400823	224935	
SW13	8401623	225788	peg 10m south of track on west side of creekbank. Soil sample a further 10 south of peg

LOCATION

sample	date	Ph Kilkenny	Eh Kilkenny	Comments
SW9	13/12/98	7.6	70	flowing clear water
SW10	13/12/98	6.9	80	flowing clear water
SW11	13/12/98	7.9	100	flowing clear water
SW1	17/12/98	6.7	200	dirty water in pond full of tadpoles
SW8	17/12/98	7.3	130	dirty cloudy water in pool
SW13	17/12/98	7.4	130	dirty cloudy water in pool

sample	date	Ph Kilkenny	Eh Kilkenny	Comments
SW1	14/01/99	8.8	160	muddy pool
SW8	14/01/99	8.6	370	flowing muddy
SW9	14/01/99	9.3	30	flowing muddy
SW10	14/01/99	8.9	90	flowing muddy
SW11	14/01/99	9.6	90	flowing muddy
SW13	14/01/99	8.6	340	flowing muddy

sample	date	Ph Kilkenny	Eh Kilkenny	Comments
SW01	11/03/99	7.3	770	slow flow muddy
SW05	12/03/99	8.3	130	cloud muddy pool
SW08	13/03/99	8.2	1060	flowing muddy water
SW09	14/03/99	7.9	60	slow flow muddy
SW10	15/03/99	8.1	310	flowing muddy water
SW11	16/03/99	8.1	90	flowing muddy water
SW13	17/03/99	8.6	980	slow flow muddy

sample	date	Comments
SW01	12/04/99	slow flowing murky
SW05	13/04/99	pool murky trickle flow
SW08	14/04/99	slow flowing clear
SW09	15/04/99	slow flowing murky small fish
SW10	16/04/99	slow flowing murky small fish
SW11	17/04/99	slow flowing murky small fish
SW13	18/04/99	slow flowing clear

sample	date	Comments
SW01	17/05/99	very slow flow murky
SW08	17/05/99	slow flow clear algee
SW09	17/05/99	clear slow flow
SW10	17/05/99	clear slow flow
SW11	17/05/99	slow clear lots of livebait
SW13	17/05/99	slow flow murky from buffalo

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Kilkenny Gold N.L.
PO Box 2325
KATHERINE NT 0851

Chemnorth Pty Ltd
ACN 073 547 207
3407 Export Drive
Berrimah NT 0828
Ph 08 8947 0510
Fax 08 8947 0520

REPORT CODE	**DW02075**
Report Date	4 01 99
Samples Received	19 11 98
Number of Samples	7
Reference	
Project	
Cost Code	

Report Distribution;

Mark Glassock

Fax 8972 3427
email: kalmet@nt-tech.com.au

Sample Details:

Water samples. 14 bottles received for 7 samples.

Report Details:

Comments:

National Association of Testing Authorities, Australia

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Authorisation:

Fiona Dunbar-Smith

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Report Code: **DW02075**

Methodology:

Analysis			Analytical Method	Digest	Technique	Accuracy Precision	Detection Limit	Data Units
Cl	Chloride (Titration)		CL2		CA	ACC=15%	5	mg/L
N-NO3	Total Oxidised Nitrogen (NO2+NO3)		NA1		SA	ACC=15%	0.05	mg/L
Al	Aluminium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
As	Arsenic	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
Ba	Barium	filterable	W100M		ICPMS	ACC=10%	0.02	µg/L
Be	Beryllium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
Bi	Bismuth	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Ca	Calcium	filterable	W100I		ICPOES	ACC=10%	100	µg/L
Cd	Cadmium	filterable	W100M		ICPMS	ACC=10%	0.02	µg/L
Co	Cobalt	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Cr	Chromium	filterable	W100M		ICPMS	ACC=10%	0.1	µg/L
Cu	Copper	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Fe	Iron	filterable	W100M		ICPMS	ACC=10%	20	µg/L
K	Potassium	filterable	W100I		ICPOES	ACC=10%	100	µg/L
Mg	Magnesium	filterable	W100I		ICPOES	ACC=10%	100	µg/L
Mn	Manganese	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Mo	Molybdenum	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Na	Sodium	filterable	W100I		ICPOES	ACC=10%	100	µg/L
Ni	Nickel	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Pb	Lead	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Sb	Antimony	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Se	Selenium	filterable	W100M		ICPMS	ACC=10%	0.2	µg/L
Si	Silicon	filterable	W100I		ICPOES	ACC=10%	100	µg/L
S-SO4	Sulfur as Sulf	filterable	W100I		ICPOES	ACC=10%	100	µg/L
Tl	Thallium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
U	Uranium	filterable	W100M		ICPMS	ACC=10%	0.001	µg/L
V	Vanadium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
Zn	Zinc	filterable	W100M		ICPMS	ACC=15%	0.1	µg/L

REPORT CODE: DW02075

Element:		Cl	N-NO3	Al	As	Ba	Be	Bi	Ca
Sample ID	Units:	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	taken								
SW9	13/12/98	7	<0.05	129.60	1.13	13.03	<0.05	<0.01	2900
SW10	13/12/98	5	0.03	126.00	1.18	12.73	<0.05	<0.01	3060
SW11	13/12/98	10	0.22	90.40	1.21	15.09	<0.05	<0.01	4100
SW1	17/12/98	5	0.04	271.50	0.81	15.46	<0.05	0.02	14900
SW8	17/12/98	<5	0.18	274.40	0.66	16.81	<0.05	0.02	8200
SW13	17/12/98	<5	0.38	80.64	1.08	8.81	<0.05	0.02	7300
CENTRE PIVOT BORE		16	0.42	1.14	0.75	5.04	<0.05	<0.01	91800

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Element:		Cd	Co	Cr	Cu	Fe	K	Mg	Mn
Sample ID	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SW9	13/12/98	0.02	0.16	0.5	1.00	535	2500	3000	2.82
SW10	13/12/98	<0.02	0.15	0.5	0.71	528	2600	3100	2.63
SW11	13/12/98	<0.02	0.14	0.5	1.03	334	3000	3900	3.17
SW1	17/12/98	<0.02	1.57	0.7	6.72	230	5000	7800	160.10
SW8	17/12/98	<0.02	0.30	0.9	2.74	212	3200	5300	2.42
SW13	17/12/98	<0.02	0.20	0.9	2.51	67	2400	6100	0.97
CENTRE PIVOT BORE		0.15	0.18	11.6	1.26	<20	2100	50100	1.24

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	Element:	Mo	Na	Ni	Pb	Sb	Se	Si	S-SO4
Sample ID	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SW9	13/12/98	0.05	4300	0.63	0.42	0.06	<0.2	8400	100
SW10	13/12/98	0.06	4400	0.65	0.34	0.06	<0.2	8400	100
SW11	13/12/98	0.09	4700	0.77	0.40	0.06	<0.2	8400	100
SW1	17/12/98	0.18	4900	1.06	1.21	0.04	0.2	5500	800
SW8	17/12/98	0.08	2200	0.69	0.17	0.04	0.2	3100	400
SW13	17/12/98	0.20	6600	0.99	0.10	0.17	<0.2	3000	1000
CENTRE PIVOT BORE		0.07	6200	<0.01	1.30	<0.01	0.4	13700	900

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Sample ID	Element:	Tl	U	V	Zn	ph	Eh	Comments
	Units:	µg/L	µg/L	µg/L	µg/L			
SW9	13/12/98	0.006	0.028	2.86	1.6	7.6	70	flowing clear
SW10	13/12/98	0.006	0.030	2.96	3.7	6.9	80	"
SW11	13/12/98	0.005	0.030	2.92	14.0	7.9	106	"
SW1	17/12/98	0.019	0.078	4.50	7.7	7.3	200	dirty water in pool
SW8	17/12/98	0.008	0.046	7.33	1.7	7.3	130	dirty water in pool
SW13	17/12/98	0.005	0.060	6.44	2.3	7.4	130	
CENTRE PIVOT BORE		0.031	0.482	2.39	54.2	~~Clear~~ 6.7		Clear

tadpoles

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Kilkenny Gold N.L.
PO Box 2325
KATHERINE NT 0851

Chemnorth Pty Ltd
ACN 073 547 207
3407 Export Drive
Berrimah NT 0828
Ph 08 8947 0510
Fax 08 8947 0520

REPORT CODE	**DW02118**
Report Date	8 02 99
Samples Received	19 01 99
Number of Samples	6
Reference	
Project	
Cost Code	

Report Distribution;

Mark Glassock

Fax 8972 3427
email: kalmet@nt-tech.com.au

Sample Details:

Water samples. 14 bottles received for 7 samples.

Report Details:

Comments:

SWI for filterable metals was analysed from General Parameters bottle as no Trace Metals bottle was submitted.

Authorisation:

Fiona Dunbar-Smith

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Report Code: DW02118

Methodology:

Analysis		Analytical Method	Digest	Technique	Accuracy Precision	Detection Limit	Data Units
Cl	Chloride (Titration)	CL2		CA	ACC=15%	5	mg L
N-NO3	Total Oxidised Nitrogen (NO2+NO3)	NA1		SA	ACC=15%	0.05	mg L
Al	Aluminium filterable	W100M		ICPMS	ACC=10%	0.05	µg L
As	Arsenic filterable	W100M		ICPMS	ACC=10%	0.05	µg L
Ba	Barium filterable	W100M		ICPMS	ACC=10%	0.02	µg L
Be	Beryllium filterable	W100M		ICPMS	ACC=10%	0.05	µg L
Bi	Bismuth filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Ca	Calcium filterable	W100I		ICPOES	ACC=10%	0.1	mg L
Cd	Cadmium filterable	W100M		ICPMS	ACC=10%	0.02	µg L
Co	Cobalt filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Cr	Chromium filterable	W100M		ICPMS	ACC=10%	0.1	µg L
Cu	Copper filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Fe	Iron filterable	W100M		ICPMS	ACC=10%	20	µg L
K	Potassium filterable	W100I		ICPOES	ACC=10%	0.1	mg L
Mg	Magnesium filterable	W100I		ICPOES	ACC=10%	0.1	mg L
Mn	Manganese filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Mo	Molybdenu filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Na	Sodium filterable	W100I		ICPOES	ACC=10%	100	µg L
Ni	Nickel filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Pb	Lead filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Sb	Antimony filterable	W100M		ICPMS	ACC=10%	0.01	µg L
Se	Selenium filterable	W100M		ICPMS	ACC=10%	0.2	µg L
Si	Silicon filterable	W100I		ICPOES	ACC=10%	0.1	mg L
S-SO4	Sulfur as S filterable	W100I		ICPOES	ACC=10%	0.1	mg L
Tl	Thallium filterable	W100M		ICPMS	ACC=10%	0.05	µg L
U	Uranium filterable	W100M		ICPMS	ACC=10%	0.001	µg L
V	Vanadium filterable	W100M		ICPMS	ACC=10%	0.05	µg L
Zn	Zinc filterable	W100M		ICPMS	ACC=15%	0.1	µg L

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REPORT CODE: DW02118

Element:		Cl	N-NO3	Al	As	Ba	Be	Bi	Ca
Sample ID	Units:	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
SW1	13/12/98	<5	0.08	150.57	0.31	6.17	< 0.05	< 0.01	8.7
SW8	13/12/98	8	< 0.05	90.93	2.04	45.06	< 0.05	< 0.01	20.1
SW9	13/12/98	<5	< 0.05	98.28	0.24	6.27	< 0.05	< 0.01	1.1
SW10	17/12/98	5	0.05	106.37	0.28	6.25	0.05	0.01	1.2
SW11	17/12/98	6	< 0.05	94.14	0.28	6.71	< 0.05	< 0.01	1.5
SW13	17/12/98	5	< 0.05	48.20	1.53	20.58	0.05	< 0.01	18.1

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Element:		Cd	Co	Cr	Cu	Fe	K	Mg	Mn
Units:		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L
Sample ID									
SW1	13/12/98	<0.02	0.12	1.2	2.58	128	2.9	4.9	0.25
SW8	13/12/98	<0.02	0.55	1.6	1.96	74	5.4	24.0	9.96
SW9	13/12/98	<0.02	0.07	<0.1	0.93	86	1.0	1.4	1.59
SW10	17/12/98	0.02	0.07	0.1	4.31	95	1.2	1.4	1.23
SW11	17/12/98	<0.02	0.08	0.2	1.53	87	1.2	1.6	1.00
SW13	17/12/98	<0.02	0.27	1.3	1.97	44	3.8	23.0	0.41

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REPORT CODE: DW02118

Element:		Mo	Na	Ni	Pb	Sb	Se	Si	S-SO4
Units:		µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Sample ID									
SW1	13/12/98	0.20	11.8	0.56	0.09	<0.01	0.5	3.5	0.9
SW8	13/12/98	0.09	15.7	0.87	0.29	0.03	0.2	9.3	1.4
SW9	13/12/98	<0.05	1.8	0.46	0.21	<0.01	<0.2	4.2	<0.1
SW10	17/12/98	<0.05	2.0	0.66	0.31	<0.01	0.2	4.3	0.1
SW11	17/12/98	<0.05	2.0	0.70	0.15	<0.01	0.2	4.1	<0.1
SW13	17/12/98	0.10	14.3	0.78	0.03	0.08	0.2	6.3	0.9

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REPORT CODE: DW02118

Element:		Tl	U	V	Zn
Units:		µg/L	µg/L	µg/L	µg/L
Sample ID					
SW1	13/12/98	0.005	0.107	4.85	3.2
SW8	13/12/98	0.013	1.022	14.54	1.4
SW9	13/12/98	0.005	0.028	0.76	2.6
SW10	17/12/98	0.005	0.050	0.83	2.3
SW11	17/12/98	<0.005	0.031	0.86	2.5
SW13	17/12/98	0.007	0.710	14.56	0.6

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Kilkenny Gold N.L.
PO Box 2325
KATHERINE NT 0851

Chemnorth Pty Ltd
ACN 073 547 207
3407 Export Drive
Berrimah NT 0828
Ph 08 8947 0510
Fax 08 8947 0520

REPORT CODE	**DW02222**
Report Date	26/03/99
Samples Received	12/03/99
Number of Samples	7
Reference	
Project	
Cost Code	

Report Distribution;

Mark Glassock

Fax 8972 3427
email: kalmet@nt-tech.com.au

Sample Details:

Water samples. 14 bottles received for 7 samples.

Report Details:

Comments:

National Association of Testing Authorities, Australia

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Authorisation:

Fiona Dunbar-Smith

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Report Code: DW02222

Methodology:

Analysis			Method	Digest	Analytical Technique	Accuracy / Precision	Detection Limit	Data	Units
PH	pH		PH1		EA	ACC= 0.1	0.1		units
Cl	Chloride (Titration)		CL2		CA	ACC=15%	5		mg/L
N-NO3	Total Oxidised Nitrogen (NO2+NO3)		NA1		SA	ACC=15%	0.05		mg/L
Al	Aluminium	filterable	W100M		ICPMS	ACC=10%	0.05		µg/L
As	Arsenic	filterable	W100M		ICPMS	ACC=10%	0.05		µg/L
Ba	Barium	filterable	W100M		ICPMS	ACC=10%	0.02		µg/L
Be	Beryllium	filterable	W100M		ICPMS	ACC=10%	0.05		µg/L
Bi	Bismuth	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Ca	Calcium	filterable	W100I		ICPOES	ACC=10%	0.1		mg/L
Cd	Cadmium	filterable	W100M		ICPMS	ACC=10%	0.02		µg/L
Co	Cobalt	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Cr	Chromium	filterable	W100M		ICPMS	ACC=10%	0.1		µg/L
Cu	Copper	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Fe	Iron	filterable	W100M		ICPMS	ACC=10%	20		µg/L
K	Potassium	filterable	W100I		ICPOES	ACC=10%	0.1		mg/L
Mg	Magnesium	filterable	W100I		ICPOES	ACC=10%	0.1		mg/L
Mn	Manganese	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Mo	Molybdenum	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Na	Sodium	filterable	W100I		ICPOES	ACC=10%	0.1		mg/L
Ni	Nickel	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Pb	Lead	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Sb	Antimony	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
Se	Selenium	filterable	W100M		ICPMS	ACC=10%	0.2		µg/L
Si	Silicon	filterable	W100I		ICPOES	ACC=10%	0.1		mg/L
S-SO4	Sulfur as Sulfate	filterable	W100I		ICPOES	ACC=10%	0.1		mg/L
Tl	Thallium	filterable	W100M		ICPMS	ACC=10%	0.01		µg/L
U	Uranium	filterable	W100M		ICPMS	ACC=10%	0.001		µg/L
V	Vanadium	filterable	W100M		ICPMS	ACC=10%	0.05		µg/L
Zn	Zinc	filterable	W100M		ICPMS	ACC=15%	0.1		µg/L

REPORT CO DW02222

Element:	pH	Cl	N-NO3	Al	As	Ba	Be	Bi
Method	PH1	Cl2	NA1	W100M	W100M	W100M	W100M	W100M
Units	units	mg L	mg L	µg L	µg L	µg l	µg L	µg l
Sample ID								
SW01	8.2	25	0.09	10.45	0.68	29.01	0.05	0.01
SW03	7.7	<5	0.14	229.40	1.05	10.03	0.05	0.01
SW08	8.4	19	0.07	7.00	5.73	89.23	0.05	0.01
SW09	7.6	<5	0.09	129.50	0.38	13.18	<0.05	<0.01
SW10	8.3	5	0.09	226.60	1.07	25.29	<0.05	<0.01
SW11	7.6	5	0.07	136.60	0.50	15.70	<0.05	<0.01
SW13	8.0	18	0.06	4.81	4.50	70.77	<0.05	<0.01

taken 10-3-99

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REPORT CO DW02222

Element:	Ca	Cd	Co	Cr	Cu	Fe	K	Mg
Method	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I
Units	mg l	µg l	µg l	µg l	µg l	µg l	mg l	mg l
Sample ID								
SW01	67.3	0.07	3.8	0.5	1.65	20	5.3	[illegible]
SW03	8.3	0.11	1.2	0.3	1.51	178	3.2	11
SW08	48.6	0.05	6.7	0.3	1.08	20	3.7	[illegible]
SW09	2.8	0.11	0.6	0.1	0.60	160	0.9	3.8
SW10	14.8	0.05	1.6	0.2	0.70	200	1.6	21.1
SW11	4.3	0.05	0.6	0.1	0.67	159	1.1	[illegible]
SW13	61.5	0.05	5.8	0.4	1.20	20	3.3	81.9

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REPORT CO DW02222

Element:	Mn	Mo	Na	Ni	Pb	Sb	Se	Si
Method	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100I
Units	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Sample ID								
SW01	34.41	0.08	24.2	0.74	0.07	0.03	0.3	8.2
SW03	1.55	0.05	5.0	2.37	1.18	0.08	0.2	5.1
SW08	8.78	0.11	42.7	0.51	0.13	0.04	0.3	18.1
SW09	5.74	0.03	3.1	0.78	0.29	0.01	0.2	5.7
SW10	5.62	0.05	7.8	0.66	0.18	0.04	0.2	8.3
SW11	2.92	0.03	3.8	0.62	0.22	0.02	0.2	5.9
SW13	37.05	0.13	23.5	1.01	0.11	0.15	0.2	17.9

ENVIRONMENTAL CHEMISTRY

REPORT CO DW02222

Element:	SO4-S	Tl	U	V	Zn
Method	W100I	W100M	W100M	W100M	W100M
Units	mg/L	µg/L	µg/L	µg/L	µg/L
Sample ID					
SW01	1.1	0.03	1.841	6.81	3.0
SW03	0.8	0.01	0.068	3.06	12.5
SW08	1.6	0.02	1.656	27.28	1.4
SW09	<0.1	<0.01	0.069	1.04	3.2
SW10	0.7	0.01	0.441	5.10	2.1
SW11	<0.1	<0.01	0.082	1.53	1.6
SW13	1.9	0.03	1.151	19.65	3.4

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KILKENNY GOLD N.L.
PO Box 2325
KATHERINE NT 0851

Chemnorth Pty Ltd
ACN 073 547 207
3407 Export Drive
Berrimah NT 0828
Ph 08 8947 0510
Fax 08 8947 0520

REPORT CODE	**DW02299**
Report Date	5/05/09
Samples Received	21/04/09
Number of Samples	
Reference	060 - 24128
Project	
Cost Code	

Report Distribution;
Mark Glassock

Fax 8972 3427
email: kalmet@nt-tech.com.au

Sample Details:

Water samples. 14 bottles received for 7 samples.

Report Details:

Comments:

National Association of Testing Authorities, Australia

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Authorisation:

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Report Code: DW02299

Methodology:

Analysis			Method	Digest	Technique	Accuracy / Precision	Detection Limit	Data Units
PH	pH		PH1		EA	ACC± 0.1	0.1	units
Cl	Chloride (Titration)		CL2		CA	ACC±15%	5	mg/L
N-NO3	Total Oxidised Nitrogen (NO2 + NO3)		NA1		SA	ACC±15%	0.05	mg/L
Al	Aluminium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
As	Arsenic	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
Ba	Barium	filterable	W100M		ICPMS	ACC±10%	0.02	µg/L
Be	Beryllium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
Bi	Bismuth	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Ca	Calcium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Cd	Cadmium	filterable	W100M		ICPMS	ACC±10%	0.02	µg/L
Co	Cobalt	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Cr	Chromium	filterable	W100M		ICPMS	ACC±10%	0.1	µg/L
Cu	Copper	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Fe	Iron	filterable	W100M		ICPMS	ACC±10%	20	µg/L
K	Potassium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Mg	Magnesium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Mn	Manganese	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Mo	Molybdenum	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Na	Sodium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Ni	Nickel	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Pb	Lead	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Sb	Antimony	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Se	Selenium	filterable	W100M		ICPMS	ACC±10%	0.2	µg/L
Si	Silicon	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
S-SO4	Sulfur as Sulfate	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Tl	Thallium	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
U	Uranium	filterable	W100M		ICPMS	ACC±10%	0.001	µg/L
V	Vanadium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
Zn	Zinc	filterable	W100M		ICPMS	ACC±15%	0.1	µg/L

[redacted]PORT CODE: DW02299

Element:	pH	Cl	N-NO3	Al	As	Ba	Be	Bi
Method	PH1	Cl2	NA1	W100M	W100M	W100M	W100M	W100M
Units	units	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample ID								
SW01	7.8	5	0.07	15.62	0.75	35.41	[illegible]	<0.01
SW05	8.2	6	0.05	1.62	3.02	41.95	<0.05	<0.01
SW08	8.2	14	0.05	1.52	5.80	99.30	<0.05	<0.01
SW09	7.7	5	0.05	85.23	0.60	21.35	<0.05	<0.01
SW10	7.9	<5	0.05	97.60	0.95	25.55	<0.05	<0.01
SW11	7.8	5	0.05	114.00	0.74	24.90	<0.05	<0.01
SW13	7.9	12	0.05	11.17	3.81	71.06	<0.05	<0.01

taken 15-4-99

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[redacted]

REPORT CODE: DW02299

Element:	Ca	Cd	Co	Cr	Cu	Fe	K	Mg
Method	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I
Units	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Sample ID								
SW01	76.6	<0.02	0.17	3.2	1.06	<20	5.1	47.0
SW05	62.0	<0.02	0.12	3.4	0.36	<20	3.0	51.3
SW08	49.8	0.06	0.26	4.7	0.59	<20	3.6	94.0
SW09	6.3	0.02	0.10	0.5	0.50	195	1.5	8.9
SW10	11.6	<0.02	0.14	0.8	0.58	192	1.6	17.2
SW11	9.4	0.02	0.10	0.8	0.44	195	1.7	13.7
SW13	65.1	0.04	0.14	5.0	0.50	<20	3.1	84.3

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REPORT CODE: DW02299

Element:	Mn	Mo	Na	Ni	Pb	Sb	Se	Si
Method	WT00M	WT00M	WT00I	WT00M	WT00M	WT00M	WT00M	WT60I
Units	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Sample ID								
SW01	2.54	0.12	31.2	0.25	0.09	0.04	0.3	9.9
SW05	3.17	0.09	11.2	0.43	0.12	0.15	0.3	13.6
SW08	14.65	0.09	44.2	0.18	0.11	0.05	0.4	22.7
SW09	11.82	0.08	5.7	0.53	0.15	0.02	<0.2	7.8
SW10	14.31	0.09	7.6	0.51	0.24	0.03	<0.2	9.0
SW11	6.61	0.08	6.9	0.48	0.11	0.03	<0.2	8.3
SW13	7.70	0.11	21.6	0.39	0.10	0.13	<0.2	20.0

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REPORT CODE: DW02299

Element:	SO4-S	Tl	U	V	Zn
Method	W100I	W100M	W100M	W100M	W100M
Units	mg l.	µg l.	µg l	µg l.	µg l.
Sample ID					
SW01	<0.1	0.03	1.964	4.59	0.1
SW05	0.8	<0.01	0.727	5.17	0.1
SW08	1.2	0.02	1.808	21.43	<0.1
SW09	<0.1	<0.01	0.118	1.43	0.4
SW10	0.3	<0.01	0.287	3.13	0.3
SW11	0.2	<0.01	0.234	2.32	0.4
SW13	1.6	0.03	1.307	18.49	<0.1

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KILKENNY GOLD N.L.
PO Box 2325
KATHERINE NT 0851

Chemnorth Pty Ltd
ACN 073 547 207
3407 Export Drive
Berrimah NT 0828
Ph 08 8947 0510
Fax 08 8947 0520

REPORT CODE	**DW02368**
Report Date	2/06/09
Samples Received	25/05/09
Number of Samples	
Reference	[illegible]
Project	
Cost Code	

Report Distribution:

Mark Glassock
Phone 8971 2677
Fax 8972 3427
email: kalmet@nt-tech.com.au

Sample Details:

Water samples, 6 bottles received for 3 samples.

Report Details:

Comments:

National Association of Testing Authorities, Australia

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Report Code: DW02368

Methodology:

Analysis			Analytical Method	Digest	Technique	Accuracy / Precision	Detection Limit	Data Units
PH	pH		PH1		EA	ACC=0.1	0.1	units
Cl	Chloride (Titration)		CL2		CA	ACC=15%	5	mg/L
N-NO3	Total Oxidised Nitrogen (NO2+NO3)		NA1		SA	ACC=15%	0.05	mg/L
TDS	Total Dissolved Solids		TDS1		GRAV	ACC=15%	5	mg/L
Al	Aluminium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
As	Arsenic	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
Ba	Barium	filterable	W100M		ICPMS	ACC=10%	0.02	µg/L
Be	Beryllium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
Bi	Bismuth	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Ca	Calcium	filterable	W100I		ICPOES	ACC=10%	0.1	mg/L
Cd	Cadmium	filterable	W100M		ICPMS	ACC=10%	0.02	µg/L
Co	Cobalt	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Cr	Chromium	filterable	W100M		ICPMS	ACC=10%	0.1	µg/L
Cu	Copper	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Fe	Iron	filterable	W100M		ICPMS	ACC=10%	20	µg/L
K	Potassium	filterable	W100I		ICPOES	ACC=10%	0.1	mg/L
Mg	Magnesium	filterable	W100I		ICPOES	ACC=10%	0.1	mg/L
Mn	Manganese	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Mo	Molybdenum	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Na	Sodium	filterable	W100I		ICPOES	ACC=10%	0.1	mg/L
Ni	Nickel	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Pb	Lead	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Sb	Antimony	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
Se	Selenium	filterable	W100M		ICPMS	ACC=10%	0.2	µg/L
Si	Silicon	filterable	W100I		ICPOES	ACC=10%	0.1	mg/L
S-SO4	Sulfur as Sulfate	filterable	W100I		ICPOES	ACC=10%	0.1	mg/L
Tl	Thallium	filterable	W100M		ICPMS	ACC=10%	0.01	µg/L
U	Uranium	filterable	W100M		ICPMS	ACC=10%	0.001	µg/L
V	Vanadium	filterable	W100M		ICPMS	ACC=10%	0.05	µg/L
Zn	Zinc	filterable	W100M		ICPMS	ACC=15%	0.1	µg/L

REPORT CODE: DW02368

Element:	pH	Cl	N-NO3	TDS	Al	As	Ba	Be
Method	PH1	Cl2	NA1	TDS1	W100M	W100M	W100M	W100M
Units	units	mg/L	mg/L	mg/l	µg/l	µg/L	µg/l	µg/L
Sample ID								
WB3 1	7.1	26	0.51	538	0.93	8.69	182.10	<0.05
WB3 2	7.1	26	0.45	538	1.32	15.65	215.70	<0.05
WB3 3	7.1	26	0.34	538	0.88	21.09	234.50	<0.05

taken 22-Aug-19

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REPORT CODE: DW02368

Element:	Mg	Mn	Mo	Na	Ni	Pb	Sb	Se
Method	W100I	W100M	W100M	W100I	W100M	W100M	W100M	W100M
Units	mg/l	µg/l	µg/l	mg/l	µg/l	µg/l	µg/l	µg/L
Sample ID								
WB3/1	76.4	67.68	0.51	25.8	1.98	0.07	0	0.5
WB3/2	76.5	66.12	0.55	24.9	2.24	0.06	0.89	0.5
WB3/3	77.5	68.00	0.58	25.1	1.65	0.01	0.95	0.5

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REPORT CODE: DW02368

Element:	Si	SO4-S	Tl	U	V	Zn
Method	WT00I	WT00I	WT00M	WT00M	WT00M	WT00M
Units	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
Lab ID						
WB3-1	4.4	<	0.01	1.504	<	5.9
WB3-2	21.4	6.9	0.01	1.266	0.35	7.2
WB3-3	21.4	6.4	0.01	1.315	0.34	5.5

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KILKENNY GOLD N.L.
PO Box 2325
KATHERINE NT 0851

Chemnorth Pty Ltd
ACN 073 547 207
3407 Export Drive
Berrimah NT 0828
Ph 08 8947 0510
Fax 08 8947 0520

REPORT CODE	**DW02369**
Report Date	2/06/99
Samples Received	25/05/99
Number of Samples	6
Reference	24130
Project	
Cost Code	

Report Distribution;

Mark Glassock
Phone 8971 2677
Fax 8972 3427
email: kalmet@nt-tech.com.au

Sample Details:

Water samples, 12 bottles received for 6 samples.

Report Details:

Comments:

National Association of Testing Authorities, Australia

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Authorisation:

Fiona Dunbar-Smith

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Report Code: DW02369

Methodology:

Analysis			Analytical Method	Digest	Technique	Accuracy / Precision	Detection Limit	Data Units
PH	pH		PH1		EA	ACC±0.1	0.1	units
Cl	Chloride (Titration)		CL2		CA	ACC±15%	5	mg/L
N-NO3	Total Oxidised Nitrogen (NO2+NO3)		NA1		SA	ACC±15%	0.05	mg/L
Al	Aluminium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
As	Arsenic	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
Ba	Barium	filterable	W100M		ICPMS	ACC±10%	0.02	µg/L
Be	Beryllium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
Bi	Bismuth	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Ca	Calcium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Cd	Cadmium	filterable	W100M		ICPMS	ACC±10%	0.02	µg/L
Co	Cobalt	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Cr	Chromium	filterable	W100M		ICPMS	ACC±10%	0.1	µg/L
Cu	Copper	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Fe	Iron	filterable	W100M		ICPMS	ACC±10%	20	µg/L
K	Potassium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Mg	Magnesium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Mn	Manganese	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Mo	Molybdenum	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Na	Sodium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Ni	Nickel	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Pb	Lead	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Sb	Antimony	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
Se	Selenium	filterable	W100M		ICPMS	ACC±10%	0.2	µg/L
Si	Silicon	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
S-SO4	Sulfur as Sulfate	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L
Tl	Thallium	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L
U	Uranium	filterable	W100M		ICPMS	ACC±10%	0.001	µg/L
V	Vanadium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L
Zn	Zinc	filterable	W100M		ICPMS	ACC±15%	0.1	µg/L

REPORT CODE: DW02369

Element:	pH	Cl	N-NO3	Al	As	Ba	Be	Bi
Method	PH1	Cl2	NA1	W100M	W100M	W100M	W100M	W100M
Units	units	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Sample ID								
SW01		[illegible]	[illegible]	0.10	[illegible]	2.92	[illegible]	0.09
SW08		8.1	16	0.05	1.66	8.55	99.40	<0.05	0.03
SW09		[illegible]8	6	0.05	9.79	1.34	30.82	<0.05	0.04
SW10		7.8	5	0.05	8.96	1.26	30.73	<0.05	0.04
SW11		8.0	7	0.05	7.25	1.21	37.47	<0.05	0.04
SW13		[illegible]9	11	0.05	2.10	4.23	74.07	<0.05	0.02

taken

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REPORT CODE: DW02369

Element:	Ca	Cd	Co	Cr	Cu	Fe	K	Mg
Method	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I
Units	mg/l	µg/l	µg/L	µg/l	µg/L	µg/l	mg/l	mg/L
Sample ID								
SW01	66.6	0.02	1.36	1.7	5.24	30	12.6	73.8
SW08	37.2	0.03	0.28	11.2	1.32	<20	3.8	92.1
SW09	13.4	0.03	0.19	2.1	0.96	248	1.6	21.2
SW10	13.6	<0.02	0.17	2.0	0.49	238	1.5	21.3
SW11	18.7	<0.02	0.20	2.9	0.51	161	1.9	28.9
SW13	58.2	0.04	0.42	10.8	0.84	<20	3.7	89.5

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REPORT CODE: DW02369

Element:	Mn	Mo	Na	Ni	Pb	Sb	Se	Si
Method Code	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100I
Units	µg/l	µg/l	mg/l	µg/l	µg/L	µg/L	µg/l	mg/L
Sample ID								
SW01	18.71	[illegible]	48.9	[illegible]	[illegible]	0.08	[illegible]	13.9
SW08	7.40	0.16	43.4	1.02	0.05	0.04	0.3	24.3
SW09	40.49	0.12	10.4	1.16	0.17	0.03	<0.2	10.3
SW10	35.67	0.12	10.2	0.81	0.08	0.02	<0.2	10.3
SW11	48.00	0.12	11.5	1.21	0.11	0.03	<0.2	11.2
SW13	40.07	0.15	19.2	1.50	0.13	0.08	0.2	21.6

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REPORT CODE: DW02369

Element:	SO4-S	Tl	U	V	Zn
Type:	W100I	W100M	W100M	W100M	W100M
Units:	mg/l	µg/l	µg/l	µg/l	µg/l
SW01	1.2	[illegible]	4.155	[illegible]	[illegible]
SW08	1.2	0.02	1.622	23.88	5.1
SW09	0.3	<0.01	0.214	1.12	5.9
SW10	0.3	<0.01	0.215	1.23	2.5
SW11	0.4	<0.01	0.337	2.40	2.3
SW13	1.8	0.02	1.075	20.27	4.3

CHEMNORTH

Methodology:

Analysis			Analytical Method	Digest	Technique	Accuracy / Precision	Detection Limit	Data Units		
Cl	Chloride (Titration)		CL2		CA	ACC±15%	5	mg/L		
N-NO3	Total Oxidised Nitrogen (NO2+NO3)		NA1		SA	ACC±15%	0.05	mg/L		
Al	Aluminium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L	**Al**	**0.05**
As	Arsenic	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L	**As**	**0.05**
Ba	Barium	filterable	W100M		ICPMS	ACC±10%	0.02	µg/L	**Ba**	**0.02**
Be	Beryllium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L	**Be**	**0.05**
Bi	Bismuth	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Bi**	**0.01**
Ca	Calcium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L		
Cd	Cadmium	filterable	W100M		ICPMS	ACC±10%	0.02	µg/L	**Cd**	**0.02**
Co	Cobalt	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Co**	**0.01**
Cr	Chromium	filterable	W100M		ICPMS	ACC±10%	0.1	µg/L	**Cr**	**0.1**
Cu	Copper	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Cu**	**0.01**
Fe	Iron	filterable	W100M		ICPMS	ACC±10%	20	µg/L	**Fe**	**20**
K	Potassium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L		
Mg	Magnesium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L		
Mn	Manganese	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Mn**	**0.01**
Mo	Molybdenum	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L	**Mo**	**0.01**
Na	Sodium	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L		
Ni	Nickel	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Ni**	**0.01**
Pb	Lead	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Pb**	**0.01**
Sb	Antimony	filterable	W100M		ICPMS	ACC±10%	0.01	µg/L	**Sb**	**0.01**
Se	Selenium	filterable	W100M		ICPMS	ACC±10%	0.2	µg/L	**Se**	**0.2**
Si	Silicon	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L		
S-SO4	Sulfur as Sulfate	filterable	W100I		ICPOES	ACC±10%	0.1	mg/L		
Tl	Thallium	filterable	W100M		ICPMS	ACC±10%	0.005	µg/L	**Tl**	**0.05**
U	Uranium	filterable	W100M		ICPMS	ACC±10%	0.001	µg/L	**U**	**0.001**
V	Vanadium	filterable	W100M		ICPMS	ACC±10%	0.05	µg/L	**V**	**0.05**
Zn	Zinc	filterable	W100M		ICPMS	ACC±15%	0.1	µg/L	**Zn**	**0.1**

Job Number:	DW02075				Report Date : 4/01/99														
Reference:	MAUD CREEK PROJECT				Receive Date : 19/12/98														
Client:	KILENV				Sample Preparation Location : DARWIN														
Sample Type:	WATERS																		
Method Code:			W100M	W100M	W100M	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I	W100M	W100M	W100I	W100M	W100M
Technique:			ICPMS	ICPMS	ICPMS	ICPMS	ICPMS	ICPOES	ICPMS	ICPMS	ICPMS	ICPMS	ICPMS	ICPOES	ICPOES	ICPMS	ICPMS	ICPOES	ICPMS	ICPMS
Element:			Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	Pb
Detection Limit:			0.05	0.05	0.02	0.05	0.01	0.1	0.02	0.01	0.1	0.01	20	0.1	0.1	0.01	0.05	0.1	0.01	0.01
Units:	DATE		ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	mg/L	ug/L	ug/L
Sample ID																				
SW9	13/12/98	3	129.60	1.13	13.03	<0.05	<0.01	2.9	0.02	0.16	0.5	1.00	535	2.5	3.0	2.82	0.05	4.3	0.63	0.42
SW10	13/12/98	4	126.00	1.18	12.73	<0.05	<0.01	3.0	<0.02	0.15	0.5	0.71	528	2.6	3.1	2.63	0.06	4.4	0.65	0.34
SW11	13/12/98	5	90.40	1.21	15.09	<0.05	<0.01	4.1	<0.02	0.14	0.5	1.03	334	3.0	3.9	3.17	0.09	4.7	0.77	0.40
SW1	17/12/98	1	271.50	0.81	15.46	<0.05	0.02	14.9	<0.02	1.57	0.1	6.72	230	5.0	7.8	160.10	0.18	4.9	1.06	1.21
SW8	17/12/98	2	274.40	0.66	16.81	<0.05	0.02	8.2	<0.02	0.30	0.1	2.74	212	3.2	5.3	2.42	0.08	2.2	0.69	0.17
SW13	17/12/98	6	80.64	1.08	8.81	<0.05	0.02	7.3	<0.02	0.20	0.1	2.51	67	2.4	6.1	0.97	0.20	6.6	0.99	0.10
CENTRE PIVOT BORE	17/12/98		1.14	0.75	5.04	<0.05	<0.01	91.8	0.15	0.18	11.6	1.26	<20	2	50.10	1.24	0.07	6	<0.01	1.30

Job Number:													
Reference:													
Client:													
Sample Type:													
Method Code:	W100I	W100M	W100M	W100I	W100M	W100M	W100M	W100M	CL2	MA1 Ph		Eh	Comments
Technique:	ICPOES	ICPMS	ICPMS	ICPOES	ICPMS	ICPMS	ICPMS	ICPMS	CA	SA Kilkenny		Kilkenny	
Element:	SO4	Sb	Se	Si	Tl	U	V	Zn	Cl	N-N03			
Detection Limit:	0.1	0.01	0.2	0.1	0.005	0.001	0.05	0.1	5	0.05			
Units:	mg/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L			
Sample ID													
SW9	<0.1	0.06	<0.2	8.4	0.006	0.028	2.86	1.6	7	<0.05	7.6	70	flowing clear water
SW10	<0.1	0.06	<0.2	8.4	0.006	0.030	2.96	3.7	5	0.03	6.9	80	flowing clear water
SW11	<0.1	0.06	<0.2	8.4	0.005	0.030	2.92	14.0	10	0.22	7.9	100	flowing clear water
SW1	0.8	0.04	<0.2	5.5	0.019	0.078	4.50	7.7	5	0.04	6.7	200	dirty water in pond full of tadpoles
SW8	0.4	0.04	0.2	3.1	0.008	0.046	7.33	1.7	<5	0.18	7.3	130	dirty cloudy water in pool
SW13	1.0	0.17	<0.2	3.0	0.005	0.060	6.44	2.3	<5	0.38	7.4	130	dirty cloudy water in pool
CENTRE PIVOT BORE	1	<0.01	0.400	14	0.031	0.48	2.4	54.2	16	0.42	6.7	890	clear

Job Number:	DW02118					Report Date :	8/02/99	3/02/99													
Reference:	MAUD CREEK PROJECT					Receive Date :	19/01/99														
Client:	KILENV				Sample Preparation Location :		DARWIN														
Sample Type:	WATERS																				
Method Code:				W100M	W100M	W100M	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I	W100M	W100M	W100I	W100M	W100M	W100I	W100M
Technique:				ICPMS	ICPMS	ICPMS	ICPMS	ICPMS	ICPOES	ICPMS	ICPMS	ICPMS	ICPMS	ICPMS	ICPOES	ICPOES	ICPMS	ICPMS	ICPOES	ICPMS	ICPMS	ICPOES	ICPMS
Element:				Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	Pb	SO4	Sb
Detection Limit:				0.05	0.05	0.02	0.05	0.01	0.1	0.02	0.01	0.1	0.01	20	0.1	0.1	0.01	0.05	0.1	0.01	0.01	0.1	0.01
Units:		DATE		ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L	mg/L	ug/L	ug/L	mg/L	ug/L
Sample ID																							
	SW1	14/01/99	1	150.57	0.31	6.17	<0.05	<0.01	8.7	<0.02	0.12	1.2	2.58	128	2.9	4.9	0.25	0.20	11.8	0.56	0.09	0.9	<0.01
	SW8	14/01/99	2	90.93	2.04	45.06	<0.05	<0.01	20.1	<0.02	0.55	1.6	1.96	74	5.4	24.0	9.96	0.09	15.7	0.87	0.29	1.4	0.03
	SW9	14/01/99	3	98.28	0.24	6.27	<0.05	<0.01	1.1	<0.02	0.07	<0.1	0.93	86	1.0	1.4	1.59	<0.05	1.8	0.46	0.21	<0.1	<0.01
	SW10	14/01/99	4	106.37	0.28	6.25	<0.05	<0.01	1.2	<0.02	0.07	0.1	4.31	95	1.2	1.4	1.23	<0.05	2.0	0.66	0.31	<0.1	<0.01
	SW11	14/01/99	5	94.14	0.28	6.71	<0.05	<0.01	1.5	<0.02	0.08	0.2	1.53	87	1.2	1.6	1.00	<0.05	2.0	0.70	0.15	<0.1	<0.01
	SW13	14/01/99	6	48.20	1.53	20.58	<0.05	<0.01	18.1	<0.02	0.27	1.3	1.97	44	3.8	23.0	0.41	0.10	14.3	0.78	0.03	0.9	0.08

Job Number:								
Reference:								
Client:								
Sample Type:								
Method Code:	W100M	W100I	W100M	W100M	W100M	W100M	CL2	MA3
Technique:	ICPMS	ICPOES	ICPMS	ICPMS	ICPMS	ICPMS	CA	SA
Element:	Se	Si	Tl	U	V	Zn	Cl	N-N03
Detection Limit:	0.2	0.1	0.005	0.001	0.05	0.1	5	0.05
Units:	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L
Sample ID								
SW1	0.5	3.5	<0.005	0.107	4.85	3.2	<5	0.08
SW8	0.2	9.3	0.013	1.022	14.54	1.4	8	<0.05
SW9	<0.2	4.2	<0.005	0.028	0.76	2.6	<5	<0.05
SW10	<0.2	4.3	<0.005	0.050	0.83	2.3	<5	<0.05
SW11	<0.2	4.1	<0.005	0.031	0.86	2.5	6	<0.05
SW13	0.2	6.3	0.007	0.710	14.56	0.6	5	<0.05

REPORT COD

	Mn	Mo	Na	Ni	Pb	Sb	Se	Si	SO4-S	Tl	U	V	Zn				
	W100M µg/L	W100M µg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	Ph Kilkenny	Eh Kilkenny	Comments	PH2 chemnorth.
Sample ID																	
SW01	34.41	0.08	24.2	0.74	0.07	0.03	0.3	8.2	1.1	0.03	1.841	6.81	3.0	7.3	770	slow flow muddy	8.3
SW03	1.55	0.05	5.0	2.37	1.18	0.08	<0.2	5.1	0.8	<0.01	0.068	3.06	12.5	8.3	130	cloud muddy pool	7.6
SW08	8.78	0.11	42.7	0.51	0.13	0.04	0.3	18.4	1.6	0.02	1.656	27.28	1.4	8.2	1060	flowing muddy water	8.3
SW09	5.74	0.03	3.1	0.78	0.29	0.01	<0.2	5.7	<0.1	<0.01	0.069	1.04	3.2	7.9	60	slow flow muddy	7.5
SW10	5.62	0.05	7.8	0.66	0.18	0.04	<0.2	8.3	0.7	0.01	0.441	5.10	2.1	8.1	310	flowing muddy water	8.2
SW11	2.92	0.03	3.8	0.62	0.22	0.02	<0.2	5.9	<0.1	<0.01	0.082	1.53	1.6	8.1	90	flowing muddy water	7.7
SW13	37.05	0.13	23.5	1.01	0.11	0.15	0.2	17.9	1.9	0.03	1.151	19.65	3.4	8.6	980	slow flow muddy	8.1

REPORT COD DW02222

Element:	pH	Cl	N-NO3	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg
Method	PH1	Cl2	NA1	W100M	W100M	W100M	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I
Units	units	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Sample ID																
SW01	8.2	25	0.09	10.45	0.68	29.01	<0.05	0.01	67.3	0.07	3.8	0.5	1.65	<20	5.3	37.4
SW03	7.7	<5	0.14	229.40	1.05	10.03	<0.05	0.01	8.3	0.11	1.2	0.3	1.51	178	3.2	4.1
SW08	8.4	19	0.07	7.00	5.73	89.23	<0.05	0.01	48.6	0.05	6.7	0.3	1.08	<20	3.7	79.3
SW09	7.6	<5	0.09	129.50	0.38	13.18	<0.05	<0.01	2.8	0.11	0.6	0.1	0.60	160	0.9	3.8
SW10	8.3	5	0.09	226.60	1.07	25.29	<0.05	<0.01	14.8	0.05	1.6	0.2	0.70	200	1.6	21.1
SW11	7.6	<5	0.07	136.60	0.50	15.70	<0.05	<0.01	4.3	0.05	0.6	0.1	0.67	159	1.1	5.8
SW13	8.0	18	0.06	4.81	4.50	70.77	<0.05	<0.01	61.5	0.05	5.8	0.4	1.20	<20	3.3	81.9

REPORT CODE: DW02299

Element:	pH	Cl	N-NO3	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K
Method	PH1	Cl2	NA1	W100M	W100M	W100M	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100M	W100I
Units	units	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Sample ID															
SW01	7.8	30	0.07	15.62	0.78	35.41	<0.05	<0.01	76.6	<0.02	0.17	3.2	1.08	<20	5.1
SW05	8.2	6	<0.05	1.62	3.02	41.95	<0.05	<0.01	62.0	<0.02	0.12	3.4	0.36	<20	3.0
SW08	8.2	14	<0.05	1.52	5.80	99.30	<0.05	<0.01	49.8	0.06	0.26	4.7	0.59	<20	3.6
SW09	7.7	<5	<0.05	85.23	0.60	21.35	<0.05	<0.01	6.3	0.02	0.10	0.5	0.50	195	1.5
SW10	7.9	<5	<0.05	97.60	0.95	25.55	<0.05	<0.01	11.6	<0.02	0.14	0.8	0.58	192	1.6
SW11	7.8	<5	<0.05	114.00	0.74	24.90	<0.05	<0.01	9.4	0.02	0.10	0.8	0.44	195	1.7
SW13	7.9	12	<0.05	11.17	3.81	71.06	<0.05	<0.01	65.1	0.04	0.14	5.0	0.50	<20	3.1

Ca

REPORT CODE:

Sample ID	Mg	Mn	Mo	Na	Ni	Pb	Sb	Se	Si	SO4-S	Tl	U	V	Zn
	W100I mg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L
SW01	47.0	2.54	0.12	31.2	0.25	0.09	0.04	0.3	9.9	<0.1	0.03	1.954	4.59	<0.1
SW05	51.3	3.17	0.09	11.2	0.43	0.12	0.15	0.3	13.6	0.8	<0.01	0.727	5.17	0.1
SW08	94.0	14.65	0.09	44.2	0.18	0.11	0.05	0.4	22.7	1.2	0.02	1.808	21.43	<0.1
SW09	8.9	11.82	0.08	5.7	0.53	0.15	0.02	<0.2	7.8	<0.1	<0.01	0.118	1.43	0.4
SW10	17.2	14.31	0.09	7.6	0.51	0.24	0.03	<0.2	9.0	0.3	<0.01	0.287	3.13	0.3
SW11	13.7	6.61	0.08	6.9	0.48	0.11	0.03	<0.2	8.3	0.2	<0.01	0.234	2.32	0.4
SW13	84.3	7.70	0.11	21.6	0.39	0.10	0.13	<0.2	20.0	1.6	0.03	1.307	18.49	<0.1
	K	Mg	Na	SO4	Si									

REPORT CODE: DW02369

Element:	pH	Cl	N-NO3	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg
Method	PH1	Cl2	NA1	W100M	W100M	W100M	W100M	W100M	W100I	W100M	W100M	W100M	W100M	W100M	W100I	W100I
Units	units	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Sample ID																
SW01	8.2	37	0.10	3.21	2.92	85.76	<0.05	0.09	66.8	0.02	1.36	11.8	5.24	<20	12.6	73.8
SW08	8.4	16	<0.05	1.66	8.55	99.40	<0.05	0.03	37.2	0.03	0.28	11.2	1.32	<20	3.8	92.1
SW09	7.8	6	<0.05	9.79	1.34	30.82	<0.05	0.04	13.4	0.03	0.19	2.1	0.96	248	1.6	21.2
SW10	7.8	5	<0.05	8.96	1.26	30.73	<0.05	0.04	13.6	<0.02	0.17	2.0	0.49	238	1.5	21.3
SW11	8.0	7	<0.05	7.25	1.21	37.47	<0.05	0.04	18.7	<0.02	0.20	2.9	0.51	161	1.9	28.9
SW13	7.9	11	<0.05	2.10	4.23	74.07	<0.05	0.02	58.2	0.04	0.42	10.8	0.84	<20	3.7	89.5

REPORT CODE:													
	Mn	**Mo**	**Na**	**Ni**	**Pb**	**Sb**	**Se**	**Si**	**SO4-S**	**Tl**	**U**	**V**	**Zn description**
	W100M µg/L	W100M µg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L
Sample ID													
SW01	16.71	0.30	48.9	3.71	0.10	0.08	0.7	13.9	1.2	0.09	4.155	21.75	3.2 very slow flow murky
SW08	7.40	0.16	43.4	1.02	0.05	0.04	0.3	24.3	1.2	0.02	1.622	23.88	5.1 slow flow clear algee
SW09	40.49	0.12	10.4	1.18	0.17	0.03	<0.2	10.3	0.3	<0.01	0.214	1.12	5.9 clear slow flow
SW10	35.67	0.12	10.2	0.81	0.08	0.02	<0.2	10.3	0.3	<0.01	0.215	1.23	2.5 clear slow flow
SW11	48.00	0.12	11.5	1.21	0.11	0.03	<0.2	11.2	0.4	<0.01	0.337	2.40	2.3 slow clear lots of livebait
SW13	40.07	0.15	19.2	1.50	0.13	0.08	0.2	21.6	1.8	0.02	1.075	20.27	4.3 slow flow murky from buffalo

REPORT CODE: DW02368

Element:		pH	Cl	N-NO3	TDS	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	Pb
Sample ID	Method / Units	PH1 units	CI2 mg/L	NA1 mg/L	TDS1 mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100I mg/L	W100M µg/L	W100M µg/L
WB3 1		7.1	28	0.51	532	0.93	8.69	185.10	<0.05	<0.01	73.5	0.02	0.71	10.3	0.22	<20	2.7	76.4	65.68	0.51	25.8	1.98	0.07
WB3 2		7.1	26	0.45	538	1.32	15.65	215.70	<0.05	<0.01	72.8	0.04	0.58	10.1	0.26	<20	1.9	76.5	66.12	0.55	24.9	2.24	0.06
WB3 3		7.1	26	0.34	538	0.88	21.09	234.50	<0.05	<0.01	73.0	<0.02	0.54	10.8	0.21	<20	2.2	77.5	68.00	0.58	25.1	1.65	0.01

maypump

REPORT CODE:									
	Sb	Se	Si	SO4-S	Tl	U	V	Zn	con coments
Sample ID	W100M µg/L	W100M µg/L	W100I mg/L	W100I mg/L	W100M µg/L	W100M µg/L	W100M µg/L	W100M µg/L	
WB3 1	0.76	0.5	21.4	6.1	<0.01	1.304	1.00	5.9	1080 purged for 1 hr
WB3 2	0.89	0.5	21.1	6.0	<0.01	1.260	0.83	7.2	780 plus 15 mins
WB3 3	0.95	0.5	21.4	6.1	<0.01	1.315	0.71	5.5	710 plus10 mins

maypump

Appendix 3

Signet Engineering Pty Ltd. Oxide Pit Report

Oxide R1
May 99

SIGNET

SIGNET ENGINEERING PTY LTD

600 MURRAY STREET
WEST PERTH WA 6005 AUSTRALIA
TEL: (09) 347 7755 FAX: (09) 347 7766
International Codes (61-9) ACN: 009 469 765

94868044

TO:	Kilkenny Gold	FAX No:	~~94868044~~
ATTN:	Rob Rigo	REF:	4710
CC:	Mike Glasson	DATE:	26 May 1999
FROM:	Peter Clark	PROJECT No:	3081
PAGES:	5	FILE:	
SUBJECT:	Leach Option Mine Design		

Note: The information in this facsimile is privileged and confidential and is intended only for the addressee named above. If you are not the intended addressee any dissemination, copying or use of the information in the facsimile is strictly prohibited. If you have received this facsimile in error, please immediately telephone us and return the facsimile to the address on the cover sheet.

Rob

Please find attached the following:

1. Pit Inventory by bench for Design 7
2. Schedule Summary by month
3. Mining Cost Summary by month
4. Waste Dump Plan

The load and haul costs have been taken from HSE tender plus 5 percent added.

Pit Area Surface	20,400sqm
Pit Area Base (90mRL)	1,580sqm
Pit Depth	40m
Waste Dump Area Base	45,685sqm
Waste Dump Vol.	517,500 cum

The design has been Emailed to Mike and Kalmet as requested. Please contact me for additional work or for any questions.

Regards

Peter D Clark
Snr Mining Engineer

TOTAL P.05 26/05/99 15:19 FAX 61 8 9347 7766 SIGNET ENGINEERING

TABLE 1

MAUD CREEK GOLD PROJECT
Minable Resources for Design # 7

BENCH RL From	To	ORE Volume	Tonnes	Grade	Waste Volume	Strip Ratio Vol/Vol
STAGE 1 PIT						
130	125	8254	21507	5.04	86193	10.44
125	120	7521	19618	5.01	78932	10.49
120	115	7425	19428	4.70	68168	9.18
115	110	8477	22358	4.27	58078	6.85
110	105	10754	28583	4.89	35041	3.26
105	100	8936	24346	5.20	27619	3.09
100	95	3564	9796	6.62	11251	3.16
95	90	2068	5688	6.26	8142	3.94
90	85	41	112	6.24	162	3.95
TOTAL		57040	151436	5.02	373586	6.55

Table 2

MAUD CREEK GOLD PROJECT
MINE SCHEDULE SUMMARY - SCHEDULE PIT 7 (Leach Ore Option)
Mining Physicals

Period	Waste	Ore Tonnes	Volume	Grade	Total Volume	Strip Ratio Vol/Vol
Month 1	132,744	45,000	17,256	4.99	150,000	7.69
Month 2	132,912	45,000	17,088	4.52	150,000	7.78
Month 3	63,285	45,000	16,715	5.05	80,000	3.79
Month 4	44,645	16,436	5,981	6.42	50,626	7.46
Total	373,586	151,436	57,040	5.02	430,626	6.55

Suggested Mining Equipment

1 80 - 100t excavator (dig rate of 300BCM/hr)
3 80 tonne rigid bodie dump trucks
1 Grader
1 Water cart
1 D9 Dozer
1 Service Truck

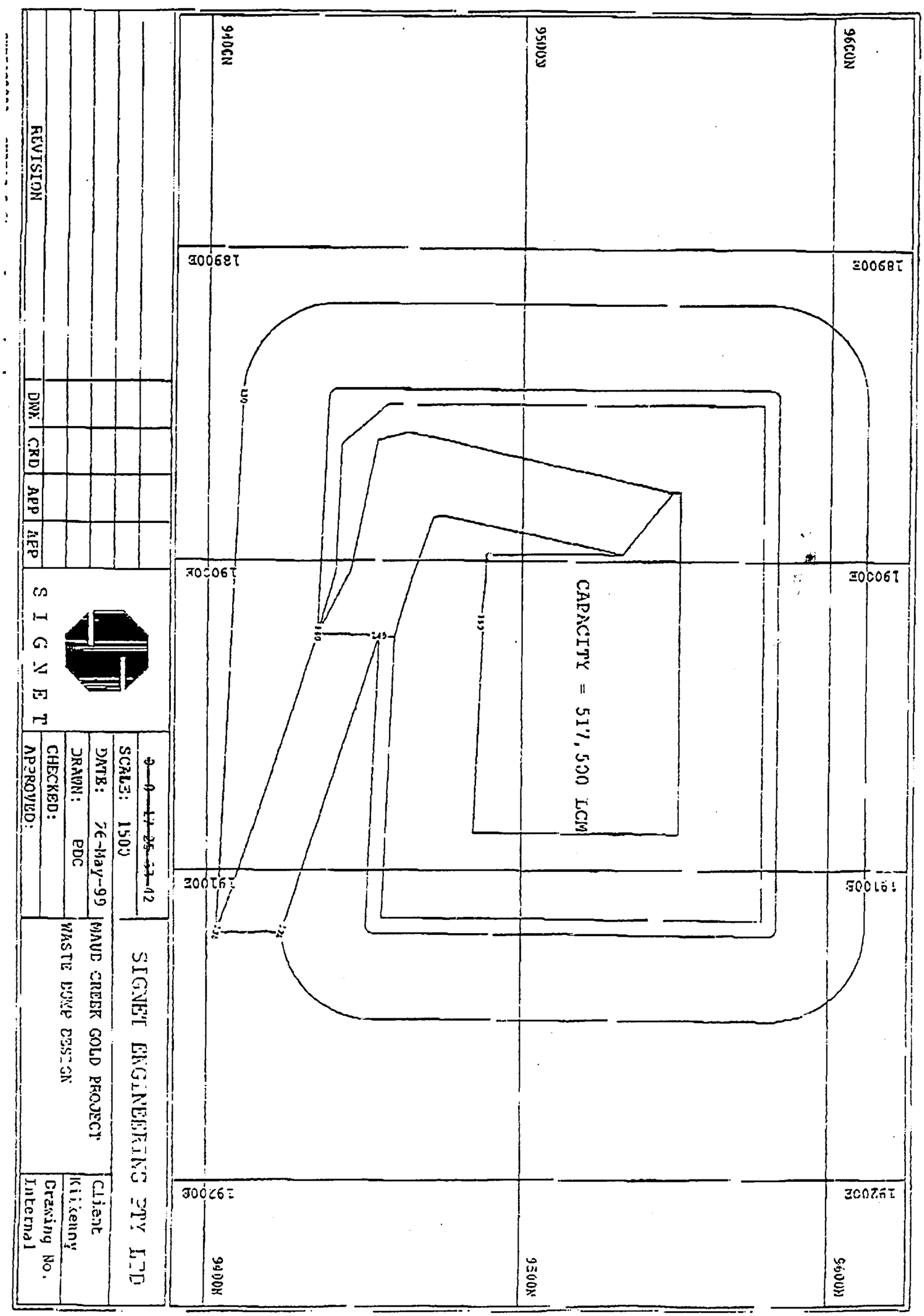
Assumptions

Double Shift for Month 1 & 2
Single Shift for Month 3 & 4
No presplit required
Oxide Drill 7 Blast to 120mRL
Transition Drill & Blast 120 to 90mRL

Table 3

MAUD CREEK GOLD PROJECT
OPERATING COST SUMMARY - SCHEDULE PIT 7 (Leach Ore Option)
Operating Cost Schedule - Howard Spring + 5%

Period	Load & Haul		D&B & Presplit	Total
	Waste	Ore		
Month 1	$ 239,187	$ 31,663	$ 103,081	$ 373,931
Month 2	$ 255,524	$ 34,505	$ 139,009	$ 429,037
Month 3	$ 128,362	$ 35,774	$ 81,200	$ 245,336
Month 4	$ 97,143	$ 13,372	$ 51,386	$ 161,901
Total	$ 720,216	$ 115,314	$ 374,675	$ 1,210,205


9400N
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CAPACITY = 517,500 LCM
REVISION
DWN
CRD
APP
APP
SIGNET
SCALE: 1500
DATE: 26-May-99
DRAWN: BDC
CHECKED:
APPROVED:
SIGNET ENGINEERING PTY LTD
MAUD CREEK GOLD PROJECT
WASTE DUMP DESIGN
Client
Kilkenny
Drawing No.
Internal