## **AXG Mining Ltd**

(ASX: AXC)

## **ASX Announcement**

19 November 2014



## **INDEPENDENT VALUATION OF EL63/1547**

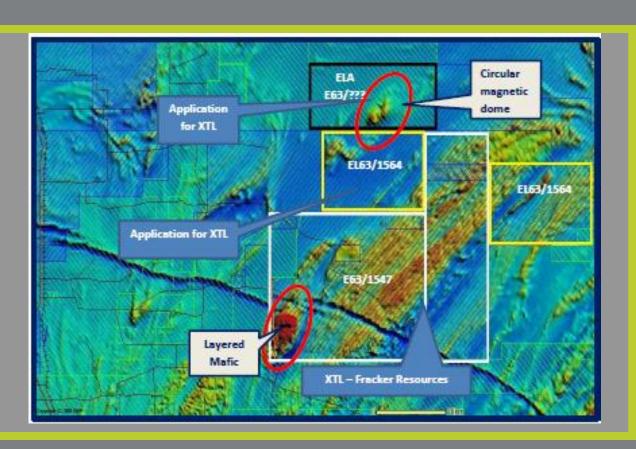
On 2 April 2014, AXG Mining Ltd (ASX: AXC) ("AXG Mining" or "the Company") lodged an Appendix 3B to seek the quotation of 35,714,285 fully paid ordinary shares ("Shares") following the exercise of its option over tenement EL63/1547. 26,600,385 Shares were issued under ASX Listing Rule 7.1 and 9,113,900 Shares were issued under ASX Listing Rule 7.1A, together referred to as ("the Securities"). The Securities were issued for non-cash consideration.

Pursuant to ASX Listing Rule 7.1A.3, the Company hereby encloses the independent valuation of EL63/1547.

The 15 day VWAP for the period 13 March 2014 to 2 April 2014 was \$0.005 (75%: \$0.00375). Based on the attached independent valuation of \$391,717, the Shares were issued at a deemed price of \$0.011 per Share.

For and on behalf of the Board

Mr Robert Downey
Chairman



## **INDEPENDENT VALUATION**

PREPARED ON BEHALF OF

AXG MINING LIMITED

**14 November 2014** 

Ву

Simon Mitchell, MAUSIMM, AICD

This report has been commissioned from and prepared by **Simon Mitchell** for the exclusive use of **AXG Mining Ltd**. Each statement or opinion in this report is provided in response to a specific request from **AXG Mining Ltd** to provide that statement or opinion. Each such statement or opinion is made by **Simon Mitchell** in good faith and in the belief that it is not false or misleading. Each statement or opinion contained within this report is based on information and data supplied by **AXG Mining Ltd** to **Simon Mitchell**, or otherwise obtained from public searches conducted by **Simon Mitchell** or the purposes of this report.

# Mr Simon Mitchell

MAusIMM, AICD

PO Box 156 Norton Summit SA 5163 AUSTRALIA

TEL +61-8-8132-5600

Email: thefourems@bigpond.com

14<sup>th</sup> November 2014

The Directors
AXG Mining Limited
11 Anvil Way
WELSHPOOL WA 6106
AUSTRALIA

Dear Sirs,

## Independent Valuation of EL 63/1547

## 1.0 BACKGROUND

At the request of AXG Mining Limited ("AXG Mining" or "the Company"), I have been engaged to complete an Independent Valuation of EL63/1547 in the name of Fraka Investments Pty Ltd ("Fraka Investments") held on trust for AXG Mining, for the purposes of compliance with ASX Listing Rule 7.1 A (4) relating to issues of securities for non cash consideration.

On 6<sup>th</sup> March 2013, **AXG Mining** executed an option to acquire 100% of two exploration licenses and one exploration license application covering over 800 square kilometres in the Albany Fraser-Range province from XTL Energy International Limited ("**XTL**"), a Perth based unlisted Public company engaged in mineral exploration. On 6<sup>th</sup> March 2014, the Company announced that it had exercised the option to acquire EL63/1547 ("the Project", the Tenement" or "the Mt Ridley Project") via the issue of a total of 35,714,285 fully paid ordinary shares ("Shares") in the capital of **AXG Mining** at a deemed issue price of 1.40 cents per Share.

This Independent Valuation will be provided to the directors of AXG Mining and released to ASX.

For the specific purpose of this valuation, site visits were not carried out on the Mt Ridley Project. However, I have examined various experts' reports, ASX releases and technical information provided by **AXG Mining** in formulating an opinion. Furthermore I have interviewed key staff and technical personnel in regard to much of the material and where necessary independently verified the data referred to in this report.

**AXG Mining** has advised me that there have been no material developments on its projects on which to form an opinion over and above that presented in the technical information provided since the exercise of the option in March of this year. On this basis, a field visit was not considered warranted. I am satisfied that **AXG Mining** has disclosed all material information pertaining to its mineral assets. A draft version of this report was provided to the directors of **AXG Mining** for comment in respect of omission and factual accuracy.

I have not independently verified the ownership and legal standing of the mineral tenements of **AXG Mining** that are the subject of this valuation and are not qualified to make legal representations in this regard. Rather I have relied upon documents and information provided by **AXG Mining** in particular a tenement report by McMahon Mining Title Services Pty Ltd (Annexure A). With reference to this Tenement report, I understand that the tenement is in good standing.

Furthermore, I have not attempted to establish the legal status of the tenements within each project, Native Title or potential environmental and land access restrictions.

My opinion of the valuation of the assets of **AXG Mining** is relevant as at the 14<sup>th</sup> November 2014 using the methodologies described in this report.

This report was prepared by Simon Mitchell (Consulting Geologist) in accordance with the Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Experts Reports ("the VALMIN Code 2005") and in particular paragraph 26 and 67 of the Valmin Code 2005. In addition the Report complies with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves - the JORC Code 2012 ("JORC Code").

Neither myself nor those involved in the preparation of this report have any material interest in any of the companies or mineral assets considered in this report that could be reasonably regarded as being capable of affecting their independence. I am remunerated for this report by way of a professional fee determined according to a standard schedule of rates that is not contingent on the outcome of this report.

Yours faithfully,

 $Simon\ Mitchell,\ {\tt SEG}, {\tt AICD}, {\tt MAUSIMM}$ 

Minde

**CONSULTING GEOLOGIST** 

# **Table of Contents**

1.0 BACKGROUND	II
2.0 LIST OF FIGURES	II
3.0 LIST OF TABLES	II
4.0 SUMMARY	
5.0 TRANSACTION AND BACKGROUND	
5.1 INTRODUCTION	
6.0 MINING ASSETS	
6.1 Mt Ridley Project	
6.1.1 Location and Access	
6.1.2 Climate and Physiography	
6.1.4 Exploration History	
6.1.5. Exploration Potential	
7.0 BASIS OF EVALUATION	
8.1 FAIR MARKET VALUE OF MINERAL ASSETS	
8.2 METHODS OF VALUING MINERAL ASSETS IN THE EXPLORATION STAGE	
8.2.1 Kilburn Method	
8.3 METHODS OF VALUING MINERAL RESOURCES AND ORE RESERVES	
8.3.1 Discount Cash Flow Analysis	
8.3.2 Comparable Market Transactions	
9.0 VALUATION	
9.1 Mt Ridley Project Valuation	15
9.1.1 Comparable Market Values	
9.1.2 Base Acquisition Cost	16
9.1.3 Kilburn Method	
9.1.4 Comparable Transactions	
9.2 Mt Ridley Project Valuation Summary	
9.2.1 Risk Assessment	20
10.0 INDEPENDENCE AND DISCLOSURE OF INTERESTS	21
11.0 QUALIFICATIONS	21
12.0 COMPETENT PERSONS STATEMENT	21
13.0 DISCLAIMERS AND CONSENTS	21
ANNEXURE A- MCMAHON MINING TITLE SERVICES	23
ANNEXURE B- SOURCES OF INFORMATION	29
ANNEXURE C-GLOSSARY	

## 2.0 LIST OF FIGURES

FIGURE 6.1: Mt RIDLEY PROJECT VALUATION	
FIGURE 6.2: Mt RIDLEY PROJECT INTERPRETED GEOLOGY	
FIGURE 6.3: REGIONAL GSWA 1:500, 000 OUTCROP GEOLOGY WITH MT RIDLEY	
TENEMENTS (RED) AND MINERAL OCCURRENCES (BLACK TRIANGLES)	
FIGURE 6.4: TMI MAGNETIC (MULTI CLIENT) WITH MT RIDLEY TENEMENTS (BLACK LINES)	
FIGURE 6.5: E63/1547 GRAVITY MODEL WITH INTERPRETED GRAVITY HIGH AND POSSIBLE LAYERED MAFIC UNIT	
FIGURE 6.6: E63/1547 SHOWING LOCATION OF VTEM SURVEY	
FIGURE 6.7: E63/1547 ASTER SATELLITE IMAGE SHOWING RESPONSE FOR KAOLIN INDEX	
FIGURE 9.1: ENTERPRISE VALUE PER SQUARE KILOMETRE	
3.0 LIST OF TABLES	
TABLE 4.1 AXG MINING's EL 63/1547 VALUATION SUMMARY	
TABLE 8.1 KILBURN METHOD	
TABLE 8.2 FUNDAMENTAL VS MARKET VALUE	
TABLE 8.3 ADJUSTED MARKET CAPITALISATION vs ENTERPRISE VALUE	
TABLE 8.4 NET ASSET VALUE	
TABLE 8.5 COMPARABLE PROJECT PARAMTER v MARKET VALUATION RATIO or COMPARABLE PROJECT	
TABLE 9.1ASX LISTED ALBANY-FRASER RANGE EXPLORERS	
TABLE 9.2 IMPLIED VALUATIONS FOR EL 63/1547 BASED ON ENTERPRISE VALUE PER SQUARE KM	
TABLE 9.3 IMPLIED VALUATIONS FOR EL 63/1547 BASED ON EXPLORERS FOCUSSED ON SOUTHERN ALBANY-FRASER	
RANGE EXPLORATION BASED ON ENTERPRISE VALUE PER SQUARE KILOMETRE	
TABLE 9.4 BASE ACQUISITION COST ASSUMPTIONS FOR EL63/1547	
TABLE 9.5 BASE ACQUISITION COST SUMMARY FOR EL63/1547	
TABLE 9.6 PROSPECTIVITY CALCULATIONS FOR EL63/1547	
TABLE 9.7 TECHNICAL VALUATION FOR EL63/1547	
TABLE 9.8 TABLE OF CONSIDERATION PAID FOR SELECTED ACQUISITIONS OF ALBANY FRASER RANGE EXPLORATION	
LICENSES FROM 2012 TO 2014 REPSRESENTED AS DOLLAR VALUE OF CONSIDERATION PER SQUARE KILOMETRE	
TABLE 9.9 IMPLIED VALUE OF EL63/1547 BASED ON COMPARABLE TRANSACTIONS OF PEER COMPANIES IN THE ALBANY-	
FRASER RANGE PROVINCE OVER 2012-2014	
TABLE 9.91 MT RIDLEY PROJECT VALUATION SUMMARY	

## 4.0 SUMMARY

I have completed a valuation of the Mt Ridley Project based on Comparable Market Transactions, Base Acquisition Cost and the Kilburn Method.

The valuation of the Tenement is set out in Table 4.1 below.

VALUATION SUMMARY									
Methodology	Low	High	Preferred						
	(A\$m)	(A\$m)	(A\$m)						
Comparable Market Transactions	\$491,112	\$1,966,304	\$883,003						
Base Acquisition Cost	\$72,675	\$182,875	\$127,775						
Kilburn Method	\$65,408	\$263,340	\$164,374						
TOTALS	\$209,732	\$804,173	\$391,717						

Table 4.1 AXG Mining's EL 63/1547 valuation summary

I consider that the range of valuations is \$209,732 to \$804,173 for Mt Ridley (Table 4.1). The preferred valuation of the Tenement is \$391,717. The broad range of values reflects the subjective nature of the valuation methodologies employed, particularly when applied to greenfields exploration projects.

## 5.0 TRANSACTION and BACKGROUND

## 5.1 Introduction

**AXG Mining** approached me to undertake an Independent Valuation ("the Report") comprising a valuation of certain mining assets **Fraka Investments** (held on trust for **XTL**) namely the Mt Ridley Project in the Albany Fraser-Range Province of Western Australia.

On 6 March 2013, **AXG Mining** executed an option to acquire 100% of three exploration licenses covering over 800 square kilometres in the Albany Fraser Range province from **XTL**, a Perth based unlisted Public company engaged in mineral exploration. On 6<sup>th</sup> March 2014, the Company announced that it had executed the option to acquire EL63/1547 via the issue of a total of 35,714,285 Shares in the capital of **AXG Mining** at a deemed price of 1.40 cents per Share.

## 5.2 Terms of the Option Agreement

On 5<sup>th</sup> March 2013, **AXG** announced that it had executed an option to acquire a 100% interest in EL63/1547 (Mt Ridley), EL63/1564 (Mt Ridley E-W) and EL63/1617 (Mt Ridley N) – see **AXG Mining** ASX Announcement 5/3/2013. The option period commences for 12 months from the date of the respective tenements EL63/1547 (granted 13<sup>th</sup> February 2013), EL63/1564 (granted 31 July 2013) and EL63/1617 (granted 23<sup>rd</sup> September 2014) respectively. The option(s) could be extended for a further 6 months (on any tenement) from the date of expiry. In the case of issuing Shares, the deemed price will be a 5-day volume weighted average share price ("VWAP") prior to the expiration of the respective option (s).

The consideration payable on exercise of the Options in **AXG** Shares is set out as follows:

EL63/1547: 71.43 million Shares;

EL63/1564: 33.33 million Shares, &

o **EL63/1617:** 33.33 million Shares.

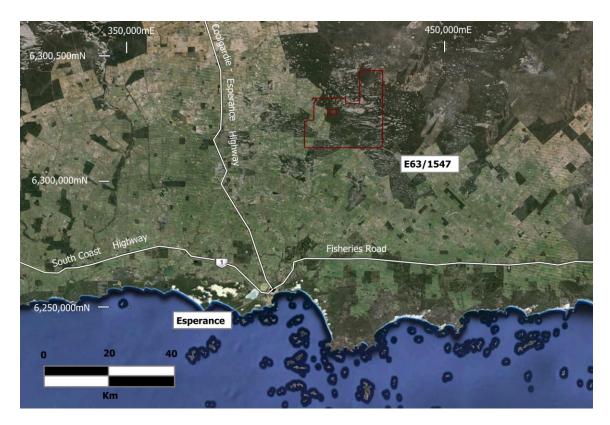
The Shares are to be issued at a deemed issue price of 1.4 cents per **AXG** Share. The Shares are to be issued within 60 days from exercise of the Option. The Option can be exercised over any/all of the tenements at any time 12 months from the date of grant. The issue of Shares is subject to shareholder approval.

## 6.0 MINING ASSETS

## 6.1 Mt Ridley Project

#### 6.1.1 Location and Access

The Mt Ridley Project (Figure 6.1) straddles the edge of the Archaean Yilgarn craton and the Proterozoic Albany-Fraser belt. The northern part of the tenement is situated approximately 75 kilometres south-west of Norseman in southern Western Australia. Access to the Fraser Range Road is either from the Eyre Highway (Norseman side) or the Circle Valley road (Esperance side).



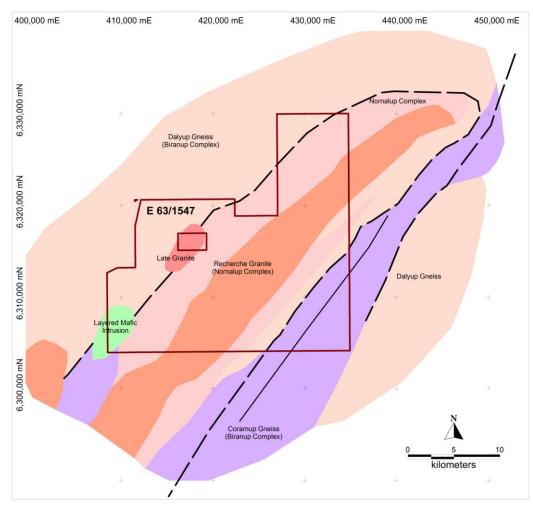
**Figure 6.1:** Mt Ridley Project location. (source: **Geonomics**, 4<sup>th</sup> September 2014).

## 6.1.2 Climate and Physiography

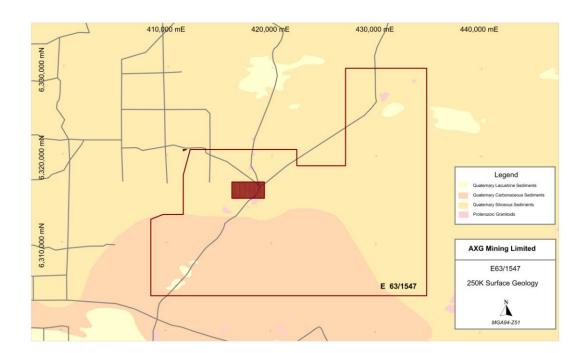
Much of the area is dominated by thick eucalypt (canopy) and teatree (understorey) forests. The topography consists of low undulating hills where high areas are typically coincident with calcrete. In the southern extremities, Banksia covered sand dunes are more common. Salt pans and lakes are ubiquitous.

## 6.1.3 Geology and Mineralisation

The project area occurs in Proterozoic granite-gneiss terrane of the Albany-Fraser Range Province (Figure 6.2). Moderately to strongly deformed Recherche Granite trends north-east through the tenement bounded to the north-west and south-east by the Dalyup and Coramup granitic gneisses. A detailed bedrock geology interpretation of the area was completed by Broken Hill Company Proprietary Limited ("BHP") in 1999/2000 (Stephens, 2000) and is shown in Figure 6.2. Outcropping granite occurs at Mt Ridley, Sheoak Hill and in the eastern parts of E63/1108 with the remaining surface geology comprising Quaternary alluvial and colluvial sediments of the Eucla Basin (Figure 6.3).



**Figure 6.2:** Mt Ridley Project interpreted geology. (source: **BHP Minerals**, Open File Data, 2000).



**Figure 6.3:** Regional GSWA 1:500, 000 outcrop geology with Mt Ridley tenements (red) and mineral occurrences (black triangles). (*source:* **GSWA**, Open File Data, 2000).

Drilling completed by **BHP** in 2000-2001 shows the Quaternary deposits are up to approximately 20 metres thick and overlie weathered (saprolite) basement. Lignitic Tertiary deposits were also intersected in paleochannels overlying the basement and extend up to approximately 50 metres thick (Stephens et al., 2001).

#### **Aeromagnetic Surveys**

Government airborne regional magnetics, gravity and radiometric surveys have been completed over this area in the period between 1980 and 1998 as an extension of the Norseman goldfields. Detailed, Ground Magnetic, Helicopter or Low-Level Airborne Magnetic and/or Induced Polarization Surveys were conducted by private, larger mining companies on specific claim areas. Most of this latter data is not available to the public.

Interpretation of regional (GSWA database) airborne magnetometer data has allowed closer definition of regional structures passing through or near tenements and assisted with the generation of targets for gold and nickel exploration.

A north-east trending magnetic unit (Figure 6.4) is interpreted as the Recherche Granite. Non- to weakly magnetic areas (particularly in the north-west delineated in the higher resolution data) characterise the Dalyup Gneiss. A strongly magnetic, ovoid anomaly in the south-west of the tenement is prominent and has been interpreted by **BHP** as a layered mafic intrusive. Several west-north-west trending dykes are also clearly present in the south-west of the tenement. The interpretation completed and reported by **BHP** is considered a good interpretation of the bedrock geology.

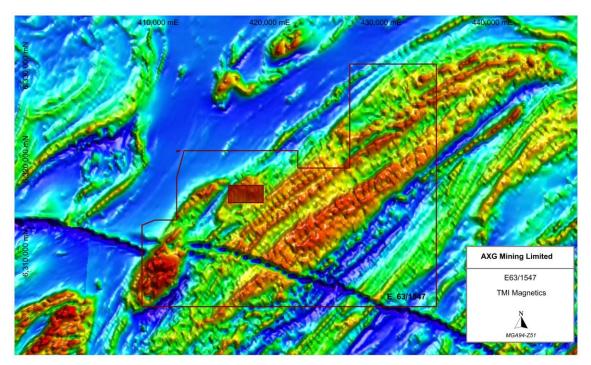
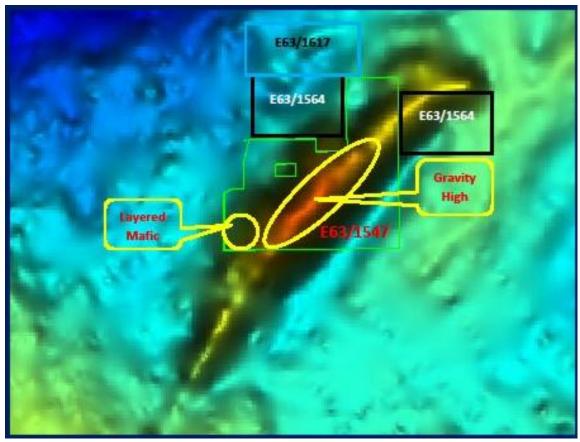


Figure 6.4: TMI Magnetics (multi client) with Mt Ridley tenements (black lines). (source: GSWA, Open File Data, 2000).

#### **Gravity Surveys**

Gravity plots also indicate that a strong gravity high is found across the tenement situated immediately east of and parallel to the interpreted layered mafic unit. The gravity high appears to have a low magnetic response. At this stage it is unsure what this relates to. See Figure 6.5.



**Figure 6.0-5:** E63/1547 Gravity model with interpreted gravity high and possible layered mafic unit. (*source:* **GSWA**, Open File Data, 2000).

#### **VTEM** survey

A helicopter-borne VTEM *max* survey has been completed by Geotech Airborne Pty Ltd ("**Geotech Airborne**") in the SW portion of the tenement over the interpreted layered mafic unit. This involved 38 lines of average 4 kilometre length orthogonal to a baseline oriented north-east and 9 kilometres long. A total of approximately 183 line kilometres was covered.

Optimum terrain clearances for the helicopter and instrumentation during normal survey flying are:

- Helicopter 90 meters
- EM sensor 35 meters
- Magnetic sensor 75 meters

Normal helicopter airspeed is approximately 100 km/hr, but this may vary according to terrain. With a data-recording rate of 10 points per second, geophysical measurements are acquired approximately every 3-4 meters along the survey line.

Interpretation of the results and identification of follow-up targets by **Southern Geoscience Consultants** is currently still in progress. The location of this survey is shown on Figure 6.6 below.

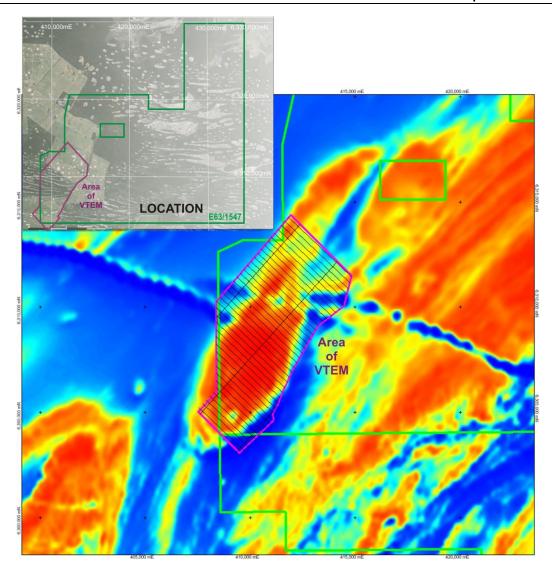


Figure 6.0-6: E63/1547 showing location of VTEM survey (source: Geotech Airborne, 2013).

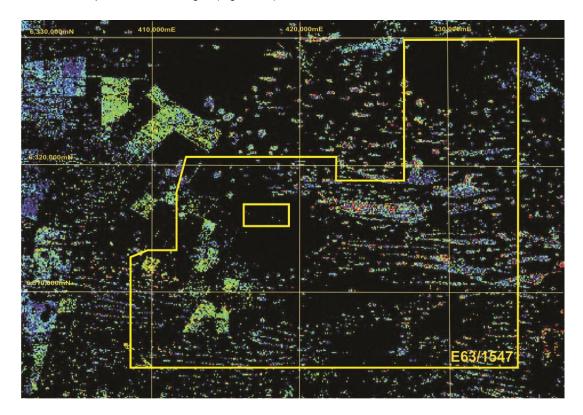
#### **Satellite Interpretation**

The landscape on E63/1547 is mostly flat-lying and part of a playa lake, sand plain geomorphology with drainage in playa lakes aligned east-west. Some lakes have sand ridges and aeolian drifts around them. Alluvium may have a thickness up to 100 metres on some of the drainage lines and lakes, but elsewhere is generally shallow and comprises sheet wash silts, clays and sands. Areas between drainages are covered in thin soils with ironstone and quartz float and some areas of sub-crop where rocks are exposed or form low rises. Generally vegetation on the plains areas is sparse salt-tolerant scrub. The vegetation in the elevations above 200m RL is open malee and acacia scrub, dominated by malee with minor understory vegetation of grasses. Soil cover is generally thin (up to 2 metres) between the alluvial areas.

Scene coverage of the district from the Landsat ETM-7 and other satellite data (eg Aster) has been analysed and used for interpretation of geology, regolith and structural lineations. The high albedo reflectance of sericite or kaolin-bearing clays is normally highlighted on the ETM-7 image and is interpreted to correspond with hydrothermal or metamorphic alteration in the host rocks. Likewise, areas of iron-rich material in the form of laterites or ferruginous weathering zones show up on all the satellite images. Rock outcrops, sub-crops and disturbed areas produce discrete patterns and can be easily identified. The nature, extent and flow direction of alluvium-filled drainages can also be mapped from the satellite image. An accurate picture of recent, transported materials as well as older, more evenly distributed colluvium and regolith zones can also be obtained.

Interpretations for the tenement clearly show the areas of colluvium, lacustrine and alluvium deposition as well as remnant pediments and residual areas. This area generally has approximately 90% colluvium/alluvium/playa cover, which is generally shallow (10 to 50 metres), and should be amenable to

RAB sampling programs. There tends to be a concentration of some minerals in the playa lake basins and these show up on the Aster images (Figure 6.7).



**Figure 6.7:** E63/1547 Aster Satellite image showing response for kaolin index (*source*: **Geotech Airborne**, 2013).

## 6.1.4 Exploration History

BHP identified the area within and to the north of E63/1108 as prospective for Broken Hill Type (BHT) Zn-Pb- Ag mineralisation and subsequently acquired six tenements on which they completed work from 1999-2001. Their work comprised a detailed review of all historical work in the area, a bedrock geology interpretation from open-file geophysics, geology and geochronology (Figure 6.4), target identification, calcrete sampling and a drill program (Stephens 2000, Stephens et al. 2001). They were targeting magnetic highs within the weakly magnetic Dalyup Gneiss. Calcrete sampling identified a gold anomaly in the north-east of their area also within the Dalyup Gneiss. Follow-up drilling did not intersect any significant mineralisation but anomalous levels of Zn and Pb were associated with the contact of the Dalyup Gneiss and Recherche Granite, although BHT mineralisation is generally stratiform and not necessarily associated with major structures/contacts. Drilling of the calcrete gold anomaly did not intersect any gold anomalism, however BHP did not consider the anomaly fully tested and recommended further calcrete sampling to better delineate a bedrock source for further drilling.

Whilst the Zn-Pb anomalism was weak, **BHP** still considered the targets prospective, however efforts to engage a joint venture partner to continue the project failed and the tenements were relinquished.

Pan Australian Resources Limited ("Pan Australian") conducted similar work in the late 90s over their tenements to the immediate north of E63/1108 also targeting Proterozoic sediment-hosted BHT-style mineralisation (Robinson, 1998).

#### 6.1.5. Exploration Potential

The interpreted layered mafic intrusion in the south-west is a possible target for base metal (Cu, Ni, V, Cr), platinoids and/or magnetite mineralisation. Ground reconnaissance work should be completed to assess its nature and further potential. Again common geochemical methods such as rock chip and soil sampling would be a preliminary start. Areas undercover with tertiary profiles may need to be aircore drilled to assess prospectivity.

Based on the open-file reports reviewed, the Dalyup Gneiss sequence, which occurs within the tenement, is prospective for Broken Hill style mineralisation with anomalous Zn-Pb values detected at the Dalyup Gneiss-Recherche Granite contact. More detailed magnetic data should better delineate the target sequence in the areas covered by regional surveys only and identify possible magnetic targets. BHT mineralisation should also have a positive density contrast with the host rock and therefore gravity surveying could be a useful exploration tool for direct target delineation. Current gravity coverage over the area is limited to regional 10 kilometre x 10 kilometre stations and a single detailed traverse over the Recherche Granite.

The Dalyup Gneiss may also be prospective for gold mineralisation based on the nearby calcrete gold anomaly delineated by **BHP**. The presence of several major north-east trending structures identified in the aero-magnetics and interpreted by **BHP** should also be considered more favourable target areas. More work can be completed in the area to further investigate these target areas. This would include:

- Rock Chip sampling and detailed geochemical analysis to assess any similarity to known BHT style deposits (these types of deposits have very distinctive alteration envelopes such as hydrothermal garnets).
- Soil sampling of favourable *in situ* regolith in the hope of identifying favourable anomalism and therefore walk up drill targets

## 7.0 BASIS OF EVALUATION

In preparing this report, I have considered the relevant ASIC regulatory guidelines in particular RG 111 that relates to the content of experts reports.

## 8.0 VALUATION METHODOLOGIES

#### 8.1 Fair Market Value of Mineral Assets

Mineral assets are defined in the VALMIN Code as all property including, but not limited to real property, mining and exploration tenements held or acquired in connection with the exploration, the development of and the production from those tenements together with all plant, equipment and infrastructure owned or acquired for the development, extraction and processing of minerals in connection with those tenements.

The VALMIN Code defines the value, that is fair market value, of a mineral asset as the estimated amount of money or the cash equivalent of some other consideration for which, in the opinion of the Expert or Specialist reached in accordance with the provisions of the VALMIN Code, the mineral asset should change hands on the valuation date between a willing buyer and a willing seller in an arm's length transaction, wherein each party has acted knowledgeably, prudently and without compulsion.

Therefore the valuation expert is assumed to have the knowledge and experience necessary to establish a realistic value for a mineral asset. The real value of a tenement can only be established in an open market situation, where an informed public is able to bid for an asset. The most open and public valuation of mineral assets occur when they are sold to the public through a public share offering by a company wishing to become a public listed resource company, or by a company raising additional finance. In this instance, the public is given a free hand to make the decision, whether to buy or not buy shares at the issue price, and once the shares of the company are listed, the market sets a price.

It is well known to most valuation experts that where mineral tenement valuation is concerned there really are two distinct markets operating in Australia. Almost without exception, the values achieved for mineral assets sold through public flotation are higher than where values are established through, say, the cash sale by a liquidator, or the sale by a small prospector to a large company neighbour, or through joint venture arrangements.

It is my opinion, that in all these circumstances the terms of sale generally do not meet the criteria laid out in the VALMIN Code for fair market value (ie. transaction between a willing buyer, willing seller in an arm's length transaction, wherein each party had acted knowledgeably, prudently and without compulsion). Invariably one of the parties is a less than enthusiastic participant and it can't be said that the purchase or sale is without an element of compulsion.

It is my opinion that the fair market value of mineral assets should be valued by the Expert on the assumption that they are traded by vending them into a public float. Generally this will mean that the vendor is issued escrow shares (escrow period is usually two years). Importantly, this is a true cash sale situation, since the purchaser of the tenements (the public) is always expected to pay cash.

The VALMIN Code notes that the value of a mineral asset usually consists of two components, the underlying or Technical Value and the Market component which is a premium relating to market, strategic or other considerations which, depending on circumstances at the time, can be either positive, negative or zero. When the Technical and Market components of value are added together the resulting value is referred to as the Market Value.

The value of mineral assets is time and circumstance specific. The asset value and the market premium (or discount) changes, sometimes significantly, as overall market conditions, commodity prices, exchange rates, political and country risk change. Other factors that can influence the valuation of a specific asset include the size of the company's interest, whether it has sound management and the professional competence of the asset's management. All these issues can influence the market's perception of a mineral asset over and above its technical value.

## 8.2 Methods of Valuing Mineral Assets in the Exploration Stage

When valuing an exploration or mining property the Expert is really attempting to arrive at a value that reflects the potential of the property to yield a mineable ore reserve and which is, at the same time, in line with what the property will be judged to be worth when assessed by the market. Arriving at the value estimate by way of a desktop study is notoriously difficult because there are no hard and fast rules and no single industry-accepted approach.

It is obvious that on such a matter, based entirely on professional judgement, where the judgement reflects the valuation Expert's previous geological experience, local knowledge of the area, knowledge of the market and so on, that no two valuers are likely to have identical opinions on the merits of a particular property and therefore, their assessments of value are likely to differ - sometimes markedly.

The most commonly employed methods of exploration asset valuation are:

- Multiple of exploration expenditure method (exploration based) also known as the premium or discount on costs method or the appraised value method;
- Joint venture terms method (expenditure based);
- Yardstick Method (asset based), for example using rule of thumb for JORC resources;
- Geoscience rating methods such as the Kilburn method (potential based); and
- Comparable market value method (real estate based).

It is possible to identify positive and negative aspects of each of these methods. It is notable that most valuers have a single favoured method of valuation for which they are prepared to provide a spirited defence and, at the same time present arguments for why other methods should be disregarded. The reality is that it is easy to find fault with all methods since there is a large element of subjectivity involved in arriving at a value of a tenement no matter which method is selected. It is obvious that the Expert valuer must be cognisant of actual transactions taking place in the industry in general to ensure that the value estimates are realistic.

In my opinion a geologist charged with the preparation of a tenement valuation must give consideration to a range of technical issues as well as make a judgement about the "market". Key technical issues that need to be taken into account include:

- Geological setting of the property;
- Results of exploration activities on the tenement;
- Evidence of mineralisation on adjacent properties; and
- Proximity to existing production facilities of the property.

In addition to these technical issues the valuation Expert has to take particular note of the market's demand for the type of property being valued. Obviously this depends upon professional judgement. As a rule, adjustment of the technical value by a market factor must be applied most judiciously. It is my view that an adjustment of the technical value of a mineral tenement should only be made if the technical and market values are obviously out of phase with each other.

It is my opinion that the current market in Australia may pay a premium over the technical value for high quality mineral assets (ie. assets that hold defined resources that are likely to be mined profitably in the short-term or projects that are believed to have the potential to develop into mining operations in the short term even though no resources have been defined). On the other hand exploration tenements that have no defined attributes apart from interesting geology or a "good address" may well trade at a discount to technical value. Deciding upon the level of discount or premium is entirely a matter of the Experts professional judgement. This judgement must of course take account of the commodity potential of the tenement. Currently in Australia for example, a tenement may have an elevated value for its gold, base metals, nickel and iron ore potential. There are of course numerous factors that affect the value such as proximity to an established processing facility and the size of the land holding.

#### 8.2.1 Kilburn Method

It is my view that the Kilburn method provides one appropriate technical valuation method of the exploration potential of mineral properties on which there are no JORC compliant resources (Table 8.1).

Kilburn was a Canadian mining engineer who was concerned about the haphazard way in which exploration tenements were valued and proposed an approach which essentially requires the valuer to justify the key aspects of the valuation process. The valuer must specify the key aspects of the valuation process and must specify and rank aspects which enhance or downgrade the intrinsic value of each property. The intrinsic value is the base acquisition cost ("BAC") which is the average cost incurred to acquire a base unit area of mineral tenement and to meet all statutory expenditure commitments for a period of 12 months. Different practitioners use slightly differing approaches to calculate the BAC.

The successful application of this method depends on the selection of appropriate multipliers that reflect the tenement prospectivity. There is, furthermore, the expectation that the outcome reflects the market's perception of value. I am philosophically attracted to the Kilburn type of approach because it at least makes an attempt to implement a system that is systematic and defendable. It endeavours to take account of the key factors that can be reasonably considered to impact on the exploration potential. The keystone of the method is the BAC which provides a standard base from which to commence a valuation. The acquisition and holding costs of a tenement for 1 year provides a reasonable, and importantly, consistent starting point. Presumably when a tenement (EL, MLN or MCN) is pegged for the first time by an explorer the tenement has been judged to be worth at least the acquisition and holding cost.

Some argue that on occasions it is expedient to convert say an EL to a MLN or MCN for strategic rather than exploration success reasons and hence it is unreasonable to value such a MLN or MCN starting at a relatively high BAC compared to that of an EL. In our opinion the multiplier factors will take care of this issue and will value the tenement appropriately.

Kilbur	n Rating Criteria			
Rating	Off Property Factor	On property factor	Anomaly factor	Geological factor
0.1				Generally Unfavourable lithology
0.2				Generally Unfavourable lithology & structures
0.3				
0.4				Generally favourable lithology & structures (10-20%)
0.5			Extensive previous exploration with poor results	Alluvium covered generally favourable lithology (50%)
0.6				
0.7				
0.8				Generally favourable lithology (50%)
0.9				(,
1	No known mineralisation	No known mineralisation	No targets outlined	Generally favourable lithology (70%)
1.5	Minor workings	minor workings		Generally favourable lithology
2	Several old workings	Several old workings	Several well defined	Generally favourable lithology with structures Generally favourable lithology with
2.5	Abundant workings	Abundant workings	targets	structures
3			Several significant sub economic intersections	along strike of a major mine
	Abundant		Abundant	
	workings/mines, significant historical		workings/mines with significant historical	
3.5	production		production	
4				
4.5				
3.5	Abundant workings/mines with significant	Major mine with significant	Several significant ore grade correlatable	
10	historical production Along strike from world class mine (s)	historical production	intersections	

Table 8.1 Kilburn Method (source: Kilburn, JC, 1990).

It has also been argued that the Kilburn method is a valuation-by-numbers approach. In our opinion the strength of the method is that it reveals to the public, in the most open way possible, just how a tenement's value was arrived at. It is anything but misleading for the public and is indeed the only approach that lays out, for all to see, the subjective judgements made by the valuation Expert.

## 8.2.2 Comparable Market Transactions

Comparable methods allow the value estimated for a mining project to be benchmarked against mining project values established in the market. Comparable methods therefore are a tool for ensuring value estimates are congruent with what the market would actually pay. The comparable transaction method uses the transaction price of comparable properties to establish a value for the subject property.

Determinative factors of the value an exploration property:

- Potential for the existence and discovery of an economic deposit
- Geological attributes: ore grade (high or low) depends of the amount of impurities in the
  ore. Separation of impurities gives rise to higher cost. A low grade ore will mean more
  material has to be processed to produce a tonne of metal versus a higher grade ore.
- Mineralization, exploration results and targets, neighbouring properties
- Infrastructure: a fully developed infrastructure will benefit mines through cheaper and more efficient transport links, water supply, energy supply etc.
- Area and location of an exploration property: exploration properties in established mining areas often have a premium value because of the higher perceived potential for discovery of a mineral deposit, and because of developed infrastructure. Ore bodies located in remote areas, such as some Chilean copper mines high in the Andes, or deep underground, such as some South African gold mines, will have higher unit costs due to the difficulties of extraction. However, this can normally be compensated by other beneficial factors such as a high ore grade and / or valuable by-products.
- Existing permits

## Challenges:

There are a limited number of transactions for mineral properties

- There are no true comparables in the mining industry. Each property is unique with respect to key factors such as geology, mineralization, costs and stage of exploration.
- Effective date of valuation is important (value of a property will vary widely from day to day, week to week and year to year because of the volatility of mineral price).
- Therefore, especially for purposes of litigation, it is necessary to establish a date on which to value the asset.
- Subjective judgment is needed to identify similar properties any given time. It should be
  noted again that exploration is cyclical, and in periods of low metal prices there is often
  no market, or a market at a very low price.
- Comparable transactions are indispensable for valuing speculative and exploration properties, where there is not enough information to perform a reasonable fundamental NPV analysis. This method can provide a benchmark for development and producing properties when calculating the fundamental value of the asset. Comparable transactions also take into account the market factor for reserve and other risk.

To allow market values to be compared among projects, they are generally expressed (or normalized) as ratios of the form:

## Market value / Fundamental project parameter

Table 8.2 summarizes the terminology typically used to distinguish between fundamental and market value, and between project and corporate value.

	Fundamental Value	Market Value			
Project Value	Net Present Value	Adjusted Market Capitalisation (AMC) or			
	(NPV)	Enterprise Value (EV) or			
		Asset Transaction Price			
Corporate Value	Net Present Value	Market Capitalisation or			
		Corporate Transaction Price			

**Table 8.2** Fundamental vs Market Value (source: **Baurens**, 2010).

The market value of a mining company's project(s) (AMC or EV) (Table 8.3) is estimated from the market value of the company (market capitalization) that holds the project(s) is calculated in the following manner:

#### +Company Market Capitalisation:

- -Working Capital
- -Value of other investments
- +/-Value of hedge book
- +Liabilities
- (+Capital to production)
- = Implied market value of mining projects (AMC or EV)

**Table 8.3** Adjusted market capitalisation vs Enterprise Value (source: **Baurens**, 2010).

The principle is that in addition to value the projects held by a mining company, the market also takes into account things such as working capital, debt, hedge book value and other investments when deciding what to pay for a share in a company. When taking these considerations into account the market value have to be adjusted according to the table above. After the adjustment, the value of the mining project itself is isolated from the other assets and liabilities undertaken by the company.

A company's net asset value (NAV) is calculated from the estimated aggregate net present values (NPV's) of the company's projects, by essentially the reverse back in comparison to the AMC (Table 8.4):

#### Aggregate Net Present Value of a Company's Projects:

- +Working Capital
- +value of other investments
- +Value of hedge book
- -Liabilities
- = Net asset value of the Company (NAV)

Table 8.4 Net Asset Value (source: Baurens, 2010).

Now it is possible to compare the implied market value of a company's mining projects (AMC or EV) to the estimated fundamental value (NPV) of its projects. A valuation indicates whether the estimated fundamental values are above or below the values that would likely be realized in the market.

Similarly, by comparing a company's market value (market capitalization) to its estimated fundamental value (NAV), an analyst can calculate the premium or discount the market is paying to a particular fundamental value (NAV) estimate.

Table 8.4 shows some examples of comparable project parameters and market valuation ratios of a comparable project.

Comparable Project Parameter	Market Valuation Ratio or comparable project
Geological Resources	AMC/oz resources
Mineable Reserve	AMC/oz reserve
Operating Cash Flow (=EBITDA)	AMC: Operating cash flow or EBITDA
Cash Flow after Capital (=EBIT)	AMC: EBIT
Net Cash Flow (=Earnings)	AMC: NCF or earnings
Net Present Value	AMC: NPV

**Table 8.5** Comparable Project Parameter v Market Valuation Ratio or Comparable Project (source: **Baurens**, 2010).

As the table moves down, more information of the project is taken into account, including all information in the upper parameters. The AMC / NPV ratio includes all the quantifiable information about a project comparables to derive a single ratio for market to fundamental value.

Equity Value / Current Resources ratio is also one of the widely used ratios. If two companies would have approximately the same Current Resources but different Equity Value, logically the ratio of the company with higher Equity Value would have higher Equity Value / Current Resources ratio. But the advantage would have the company with lower ratio.

Implementing market comparable analysis involves a number of challenges, for example in selecting valid comparables, and in estimating the market value of comparable projects from the companies that own those projects.

## 8.3 Methods of Valuing Mineral Resources and Ore Reserves

#### 8.3.1 Discount Cash Flow Analysis

Where resources and/or ore reserves have been defined our approach is to excise them from the mineral property and to value them separately on a value per resource tonne basis or on the basis of a discounted cashflow ("DCF"). The value of the exploration potential of the remainder of the property can then be assessed. Where appropriate, discounts are applied to the estimated contained metal to represent uncertainty in the information.

## 8.3.2 Comparable Market Transactions

Once a resource has been assessed for mining by considering revenues and operating costs the economically viable component of the resource becomes the ore reserve. When this is scheduled for mining and all capital costs are considered, the net present value ("NPV") of the project is established by discounting future annual cash flows using an appropriate discount rate. The resulting "classical" NPV has numerous deficiencies which are linked to the fact that the method assumes a static approach to investment decision making which is obviously not the case. Nevertheless the NPV represents the only practical approach to valuing a proposed or on-going mining operation.

When only a resource has been outlined and its economic viability has still to be established (ie. there is no ore reserve) then typically a "rule of thumb" approach is usually applied. This means allocating a dollar value to the resource tonnes in the ground.

The quality of the resource tonnes and therefore value is a factor of:

- the grade of the resource;
- the proximity to infrastructure such as an existing mill, roads, power, water, skilled work force, equipment, etc;
- likely operating and capital costs;
- the amount of pre strip (for open pits) or development (for underground mines) necessary;
- the likely ore to waste ratio (for open pits); and
- the overall confidence in the resource.

## 9.0 VALUATION

## 9.1 Mt Ridley Project Valuation

Taking into consideration the greenfields nature of the Mt Ridley Project, I consider that the Comparable Market Values, Kilburn Method, Base Acquisition Cost and Comparable Market Transactions are the most applicable valuation methodologies.

## 9.1.1 Comparable Market Values

Company	Ticker	Shares	Share		Attrib	Area	%	Enter	prise
		(m)	Pric	e:e	Enterprise	km²	Holding	Value	
					Value (m)			Km²	
Classic Minerals Ltd	CLZ	160.40	\$	0.06	\$2.6	84	100%	\$	31,238
Matsa Resources Ltd	MAT	144.10	\$	0.225	\$7.9	450	100%	\$	17,606
Boadicea Resources Ltd	BOA	45.80	\$	0.18	\$1.8	123	100%	\$	14,992
Enterprise Metals Ltd	ENT	239.00	\$	0.045	\$4.5	593	100%	\$	7,512
Buxton Resources Ltd	BUX	54.50	\$	0.25	\$9.1	1,844	100%	\$	4,948
Segue Resources Ltd	SEG	1258.40	\$	0.009	\$9.7	3,520	60%	\$	4,605
Windward Resources Ltd	WIN	84.20	\$	0.285	\$17.1	9,100	70%	\$	2,684
Orion Gold NL	ORN	200.10	\$	0.059	\$6.1	4,210	100%	\$	1,450
RAM Resources Ltd	RMR	331.97	\$	0.009	\$1.0	850	100%	\$	1,162
Rumble Resources Ltd	RTR	79.00	\$	0.037	\$0.8	796	100%	\$	1,034
AusQuest Ltd	AQD	297.50	\$	0.012	\$0.6	450	100%	\$	1,267

Table 9.1: ASX Listed Albany-Fraser Range explorers.

Figure 9.1 and Table 9.1 sets out the Enterprise Value for various early-stage Albany Fraser-Range explorers based on an Enterprise Value per square kilometre methodology. The Enterprise Value of each company has been adjusted to reflect the cash, debt and other exploration assets in an attempt to isolate the implied value of the Fraser Range exploration licenses. Sirius Resources NL ("SIR") was excluded from our study due to the advanced status of the Nova-Bollinger Project (Pre-Production). Based on a range of Enterprise Values per square kilometre as set out in Table 9.1 and Figure 9.1, I can therefore estimate a range of implied valuations for EL 63/1547.

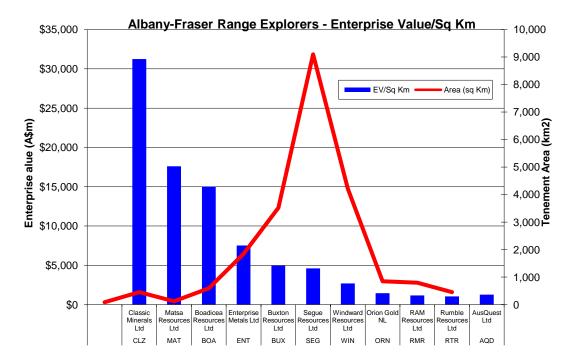


Figure 9.1: Enterprise Value per square kilometre for selected ASX listed Albany-Fraser Range explorers.

	EV/sq Km	EL63/1547
Low	\$1,267	\$601,667
Median	\$4,777	\$2,268,934
High	\$31,238	\$14,838,095

**Table 9.2** Implied valuations for EL 63/1547 based on Enterprise Value per square kilometre.

Table 9.2 sets out the low, median and high values based on the data set out in Table 9.1 and Figure 9.1 above. The data is somewhat skewed by the metrics for **Classic Minerals Limited** (ASX: **CLZ**) at an Enterprise Value of approximately \$31,000 per square kilometre.

	EV/sq Km	EL63/1547
Low	\$ 1,034	\$491,112
Median	\$ 1,859	\$883,003
High	\$ 4,140	\$1,966,304

**Table 9.3** Implied valuations for EL 63/1547 based on explorers focussed on southern Albany-Fraser Range exploration based on Enterprise Value per square kilometre.

If we focus on explorers south of Nova Bollinger (Sirius Resources NL, ASX: SIR), namely Windward Resources, Enterprise Metals, Rumble Resources and Ausquest we find that Enterprise Values per square kilometre are considerable lower (Table 9.3) with a median Enterprise Value per square kilometre of \$1,859 which translates to an implied value of approximately \$883,000 for EL63/1547.

## 9.1.2 Base Acquisition Cost

This represents the exploration cost for the current period of the tenements. Based on the following parameters (also summarised in Table 9.4):

- The historical base acquisition cost for the tenement is between \$300-\$325 per square kilometre.
- Examination of the geology, magnetics, gravity and electromagnetic data together with previous exploration activity would indicate that between 30-35% of the tenement area is prospective, and
- The tenement is granted with a factor of 1.0 applied
- Inflation at approximately 2.0% per annum

TENURE									
Project	Tenement	Equity	Size	Base Acqu	isition Cost	Base Acqui	sition Cost	Inflation	Grant
	No		(Km²)	Low	High	Low	High	2013-14	Factor
Mt Ridley	EL63/147	100%	475	\$300	\$325	70%	75%	2%	1.00

Table 9.4 Base acquisition cost assumptions for EL63/1547.

The historical base acquisition cost for the Tenement is therefore summarised as follow:

BASE ACQUISITION COST VALUATION								
Project Low High Preferred								
	(A\$m)	(A\$m)	(A\$m)					
Mt Ridley	\$101,745	\$249,375	\$175,560					

Table 9.5 Base acquisition cost summary for EL63/1547.

#### 9.1.3 Kilburn Method

This includes consideration of:

- The interpreted layered mafic intrusion in the south-west is a possible target for base metal (Cu, Ni, V, Cr), platinoids and/or magnetite mineralisation.
- The Dalyup Gneiss sequence on the tenement is prospective for Broken Hill Style mineralisation with anomalous Zn-Pb values detected at the Dalyup Gneiss-Recherche Granite contact.
- The Dalyup Gneiss may also be prospective for gold mineralisation based on the nearby calcrete gold anomaly delineated by BHP.
- The presence of several major north-east trending structures identified in the aeromagnetics and interpreted by BHP should also be considered more favourable target areas.

Assessments in each category are based on a set scale (see paragraph 8.2.1 of this Report) and are multiplied to arrive at a Prospectivity Index.

PROSPECTIVITY									
Project Off Site		On	Site	Anomaly		Geology			
-	Low	High	Low	High	Low	High	Low	High	
Mt Ridley	1.00	1.00	1.00	1.20	1.00	1.20	0.90	1.00	

Table 9.6 Prospectivity calculations for EL63/1547.

The Technical Value is estimated by multiplying the Base Project Value (calculated from the area, base acquisition cost, inflation, equity, prospective area and grant factor) by the Prospectivity Index (calculated from the Geoscientific Rating) as set out in Table 9.7.

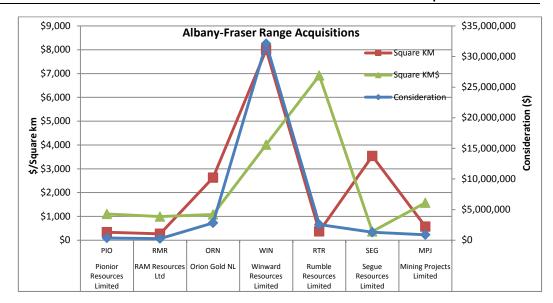
TECHNICAL VALUATION							
Project	Low	High	Preferred				
	(A\$m)	(A\$m)	(A\$m)				
Mt Ridley	\$91,571	\$359,100	\$225,335				

Table 9.7 Technical valuation for EL63/1547.

## 9.1.4 Comparable Transactions

Date	Company	Code	Consideration (\$)	km²	\$/ km <sup>2</sup>
9/10/2012	Pioneer Resources Limited	PIO	\$372,500	338	\$1,102
29/10/2012	RAM Resources Ltd	RMR	\$268,750	271	\$992
22/03/2013	Orion Gold NL	ORN	\$2,835,714	2,628	\$1,079
24/06/2013	Windward Resources Limited	WIN	\$32,100,000	8,000	\$4,013
5/07/2013	Rumble Resources Limited	RTR	\$2,560,000	370	\$6,919
9/10/2013	Segue Resources Limited	SEG	\$1,300,000	3,538	\$367
26/03/2014	Mining Projects Limited	MPJ	\$900,000	572	\$1,573

**Table 9.8** Table of consideration paid for selected acquisitions of Albany-Fraser Range exploration licenses from 2012 to 2014 represented as dollar value of consideration per km<sup>2</sup>.



**Figure 9.2**: Graph of consideration paid for selected acquisitions of Albany- Fraser Range exploration licenses from 2012 to 2014 represented as dollar value of consideration per square kilometre.

COMPARABLE TRANSACTIONS VALUATION						
Project	Low	High	Preferred			
	(A\$m)	(A\$m)	(A\$m)			
Mt Ridley	\$174,534	\$3,286,486	\$1,730,510			

**Table 9.9** Implied value of EL 63/1547 based on comparable transactions of peer companies in the Albany-Fraser Range province over 2012 to 2014

Table 9.9 and Figure 9.2 set out comparable acquisitions of exploration licenses in the Albany-Fraser Range province over 2012 to 2014. It is notable that the implied valuations for EL 63/1547 based on this analysis are considerably higher than the other methods set out in paragraphs 9.1.1 to 9.1.3 are considerably higher and reflect the volatility associated with explorers operating in this region.

Due to the fact that most of these transactions are over 12 months old they are not a reliable method of estimating exploration values in the current climate. On this basis I have discounted this valuation methodology.

## 9.2 Mt Ridley Project Valuation Summary

The results are summarized in Table 9.91:

VALUATION SUMMARY			
Methodology	Low	High	Preferred
	(A\$m)	(A\$m)	(A\$m)
Comparable Market Transactions	\$491,112	\$1,966,304	\$883,003
Base Acquisition Cost	\$72,675	\$182,875	\$127,775
Kilburn Method	\$65,408	\$263,340	\$164,374
Valuation Summary	\$209,732	\$804,173	\$391,717

Table 9.91 Mt Ridley Project valuation summary

Our preferred value for the Mt Ridley Project is an average of the preferred case scenarios for the three valuation methods set out above which provides for a valuation of \$391,717.

#### 9.2.1 Risk Assessment

I have undertaken a high-level Risk Assessment on the Mt Ridley Project as set out below.

 Exploration Risk: Mineral exploration is high risk and there is potential for AXG Mining and follow up resource drilling at the Mt Ridley Project may fail to delineate sufficient Reserves to justify either a toll treat or stand-alone mining operation.

- Metallurgical and Processing Risks: The metallurgy of mineral deposits may present challenging metallurgical issues that may lead to an increase in operating and/or capital costs, or alternatively adversely affect valuations and project economics of the Tenement Project.
- Land Owners: Failure to execute agreements relating to access and mining with the local land owners could impair exploration and/or development at key projects.
- Financial Position: The Company does not currently have the financial reserves to fully
  evaluate all of its exploration projects and is likely to be dependent on raising capital from the
  equity markets in the medium term.
- Infrastructure Risks: Delays in infrastructure (port, roads) have the potential to significant
  delay production plans for the Tenement. Given the proximity to roads and port facilities, I see
  this risk however as low to moderate.
- Peer Underperformance: Underperformance of peer Albany-Fraser Range Explorers and/or Developers has the potential to adversely affect market sentiment and lead to lower valuations for the Tenement.
- Commodity Risks: The Company is primarily exposed to Precious and Base Metals, both of which have been under pressure and could result in lower valuations for the Tenement.
- Market Risks: Further declines in equity markets may continue to put pressure on junior resource companies as investors switch out of "risk" into perceived safe haven investments.

## 10.0 INDEPENDENCE AND DISCLOSURE OF INTERESTS

Prior to accepting this engagement I considered its independence with regard to ASIC RG 111 and RG 112. I determined that I am independent for **AXG Mining**.

I am entitled to receive a fee for the preparation of this Report, based on time costs and disbursements. The fee is payable to me regardless of the outcome of the Transaction. Except for this fee I have not received and will not receive any pecuniary or other benefit, whether direct or indirect in connection with the preparation of this Report.

I do not hold shares or options in **AXG Mining**. No such shares or options have been held at any time over the last two years. I have had no business relationship with **AXG Mining** that would affect the assessment or my impartiality with **AXG Mining**, or their associates.

A draft of this Report was provided to **AXG Mining** and its advisors for their confirmation of the factual accuracy of its contents. No changes were made to the methodologies or conclusions reached in this Report as a result of this review.

**AXG Mining** has indemnified me in respect of any claim arising or in connection with my reliance on information provided by **AXG Mining**.

## 11.0 QUALIFICATIONS

The person responsible for preparing and reviewing this report is Simon Mitchell. Mr Mitchell has qualifications in geology (Bachelor of Science with Honours from the University of Adelaide) and Finance (Graduate Diploma in Applied Finance and Investment from the Securities Institute of Australia) and is a graduate of the Australian Institute of Company Directors (GAICD) and a member of the Australasian Institute of Mining and Metallurgy (AusIMM).

Mr Mitchell has 23 years of resources industry experience in technical and financial roles including 10 years gold exploration and mine development roles for **Normandy NFM**, **RGC**, **Goldfields** and **Aurora Gold** in Australia, South America, Papua New Guinea and Indonesia respectively. Additionally, Mr Mitchell worked for 6 years at the **Commonwealth Bank of Australia**, predominantly in Project Finance, and more than 6 years with **Toro Energy** as General Manager of Business Development building a \$120 million uranium business.

During his tenure at **Toro Energy**, Mr Mitchell was responsible for the raising of more than US\$80 million in capital from investors worldwide and engaging nuclear utilities in South Korea, Japan and China.

## 12.0 COMPETENT PERSONS STATEMENT

The information in this report that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Simon Mitchell, who is a Member of the Australasian Institute of Mining & Metallurgy. Mr Mitchell has sufficient experience relevant to the style of mineralisation and types of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 JORC CODE. Mr Simon Mitchell consents to the inclusion in the Notice of Meeting and Independent Expert Report in the matters based on his information in the form and context in which it appears.

## 13.0 DISCLAIMERS AND CONSENTS

This Report has been prepared at the request of **AXG Mining** for inclusion in the Explanatory Memorandum, which will be enclosed with the Notice of Meeting. **AXG Mining** has engaged me to prepare this Report to consider the Transaction on behalf of **AXG Mining** Shareholders.

I hereby consent to this Report being included in the above Explanatory Memorandum or being made available to **AXG Mining** Shareholders at their request. Apart from such use, neither the whole nor any part of this Report, nor any reference thereto may be included in or with, or attached to any document, circular, resolution, statement or letter without the my prior written consent.

I have not independently verified the information and explanations supplied to me, nor has it conducted anything in the nature of an audit of **AXG Mining**. I do not warrant that my enquiries have revealed all of the matters which an audit or extensive examination might disclose. However, I have no reason to believe that any of the information or explanations so supplied is false or that material information has been withheld.

The statements and opinions included in this Report are given in good faith and in the belief that they are not false, misleading or incomplete.

The terms of this engagement are such that I have no obligation to update this Report for events occurring subsequent to the date of this Report.

Yours sincerely

Simon Mitchell. AICD, MAUSIMM CONSULTING GEOLOGIST

Mind

## ANNEXURE A- McMahon Mining Title Services



# MINING TENEMENT REGISTER SEARCH EXPLORATION LICENCE 63/1547

This Register Search issued pursuant to Section 103F(4) of the Mining Act, 1978 at: 12:56:21 20/10/2014

Ivor Roberts Executive Director Mineral Titles Division Department of Mines and Petroleum

## **Tenement Summary**

Identifier: E 63/1547 District: DUNDAS M.F.

Current Area: 165 BL Status: Live

Mark Out: Received: 20/03/2012 15:35:00

Term Granted: 5 Years Lodging Office: PERTH

Commence: 13/02/2013 Expiry: 12/02/2018

Purpose: Death:

## **Rent Status**

Due for Year End 12/02/2015: PAID IN FULL

**Previous Amount Outstanding: \$0.00** 

Current Due: \$0.00

Rent for Year End 12/02/2016: \$20,146.50

## **Expenditure Status**

Expended Year End 12/02/2014: EXPENDED IN FULL

Current Year (12/02/2015) Commitment: \$165,000.00

#### **OWNERSHIP DETAILS**

## **Current Holders**

Name and Address

FRAKA INVESTMENTS PTY LTD (ACN:122303575)

C/- MCMAHON MINING TITLE SERVICES PTY LTD, PO BOX 592,

MAYLANDS, WA, 6931

Total Shares:

**Holder Changes** 

Dealing Status Date From (Shares) To (Shares)

## **Applicants on Receival**

Name and Address Shares
FRAKA INVESTMENTS PTY LTD 100
C/- MCMAHON MINING TITLE SERVICES PTY LTD, PO BOX 592,
MAYLANDS, WA, 6931 Total Shares: 100

## **DESCRIPTION DETAILS**

## **Description**

			Remaining Blocks				
Туре	Start Date	No. of Blocks	Graticules				
			Million Plan	Primary	Blocks		
Granted	13/02/2013	165	<b>ESPERANCE</b>	1035	dejkoptuyz		
			ESPERANCE	1036	abcfghlmnqrsvwx		
			ESPERANCE	1105	dejkoptuwxyz		
			ESPERANCE	1106	abcdefghjklopqrstuvwxyz		
			ESPERANCE	1107	defghjklmnopqrstuvwxyz		
			ESPERANCE	1108	abcfghlmnqrsvwx		
			ESPERANCE	1177	bcdeghjkmnoprstu		
			ESPERANCE	1178	abcdefghjklmnopqrstu		
			ESPERANCE	1179	abcdefghjklmnopqrstu		
			ESPERANCE	1180	abcfghlmnqrs		
Applied For	20/03/2012	165	ESPERANCE	1035	dejkoptuyz		
			ESPERANCE	1036	abcfghlmnqrsvwx		
			<b>ESPERANCE</b>	1105	dejkoptuwxyz		
			ESPERANCE	1106	abcdefghjklopqrstuvwxyz		
			<b>ESPERANCE</b>	1107	defghjklmnopqrstuvwxyz		
			<b>ESPERANCE</b>	1108	abcfghlmnqrsvwx		
			<b>ESPERANCE</b>	1177	bcdeghjkmnoprstu		
			<b>ESPERANCE</b>	1178	abcdefghjklmnopqrstu		
			ESPERANCE	1179	abcdefghjklmnopgrstu		
			<b>ESPERANCE</b>	1180	abcfghlmnqrs		

Description of Land NOT included in the grant of the Licence.

The grant of this Licence does not include any private land referred to in Section 29(2) of the Mining Act 1978 except that below 30 metres from the natural surface of the land.

Prospecting Licences 63/1670 and 63/1700

RELATIONSHIPS							
<u>Relationshi</u>	<u>os</u>						
Relationship	Dealing No	Dealing Status	Tenement ID	Tenement Status			
		SURVEY DETAIL	LS				
<u>Survey</u>							
Surveyed Area	Surveyed Date	Surveyor`s Name	Field Book	Instruction Date	Project		
Standard Plan		Diagram					

## **GENERAL DETAILS**

## General

Objection Closing Date: 24/04/2012 Application Fee: \$1,175.00

File Reference : Survey Fee :

Receipt Number: 06-107458

Special Indicator

Special Indicator Start End

## SHIRE DETAILS

Shire

 Shire
 Shire No
 Start
 End
 Area

 ESPERANCE SHIRE
 3290
 20/03/2012
 165.00000 BL

#### **NATIVE TITLE DETAILS**

## **Native Title Referrals**

 Date Referred
 Referral Type
 Procedure
 Current Status

 24/07/2012
 Tenement Application
 Expedited Procedure
 Expedited Procedure : Native

 Title Cleared - Expedited Applies

**Expedited Procedure Details** 

Sec 29 Notification Date: 22/08/2012 Sec 29 Notification Close Date: 22/12/2012

Procedure Outcome: Native Title Cleared - Expedited Applies

Clearance Notification Date : 23/01/2013
Proposed Area to Grant : 165 BL

Centroid Latitude : 33° 17′ 0" S Centroid Longitude : 122° 9′ 30" E

Locality: 59km SE'ly of Salmon Gums

Purposes:

#### **Objections**

**Claims** 

Claim Name: The Esperance Nyungars

NNTT Number: WC1996/064 Federal Court Number: WAD6097/1998

Wholly Within: Yes

Claim Status: Registered

## **Determination Areas**

## **Aboriginal Representative Area Bodies**

Code Region Representative Body
13 Goldfields Goldfields Land Council

## **GRANT DETAILS**

## Recommendation

Recommended for: Grant 24/01/2013

**Grant** 

Granted: 13/02/2013 Holder Notified: 13/02/2013 Licence/Lease issued:

**Term** 

Term: 5 Years From: 13/02/2013 To: 12/02/2018

## **ENDORSEMENTS/CONDITIONS DETAILS**

## **Endorsements and Conditions**

#	ENDORSEMENTS	Start Date	End Date
1	The Licensee's attention is drawn to the provisions of the Aboriginal Heritage Act 1972 and any Regulations thereunder.	13/02/2013	
2	The Licensee's attention is drawn to the Environmental Protection Act 1986 and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004, which provides for the protection of all native vegetation from damage unless prior permission is obtained.	13/02/2013	
3	The land the subject of this Licence affects Rare Flora sites (including Rare Flora Sites 88011, 88012, 88013 and 88030) declared under the Wildlife Conservation Act 1950. The Licensee is advised to contact the Department of Environment and Conservation for information on the management of Declared Rare Flora (or Priority Listed Flora) present within the tenement area.	13/02/2013	
	In respect to Water Resource Management Areas (WRMA) the following endorsements apply:	13/02/2013	
1	The Licensee attention is drawn to the provisions of the:  Waterways Conservation Act, 1976  Rights in Water and Irrigation Act, 1914  Metropolitan Water Supply, Sewerage and Drainage Act, 1909  Country Areas Water Supply Act, 1947  Water Agencies (Powers) Act 1984  Water Resources Legislation Amendment Act 2007	13/02/2013	
)	The rights of ingress to and egress from the mining tenement being at all reasonable times preserved to officers of Department of Water (DoW) for inspection and investigation purposes.	13/02/2013	
6	The storage and disposal of petroleum hydrocarbons, chemicals and potentially hazardous substances being in accordance with the current published version of the DoWs relevant Water Quality Protection Notes and Guidelines for mining and mineral processing.	13/02/2013	
	In respect to Artesian (confined) Aquifers and Wells the following endorsement applies:	13/02/2013	
7	The abstraction of groundwater from an artesian well and the construction, enlargement, deepening or altering of any artesian well is prohibited unless a current licence for these activities has been issued by the DoW.	13/02/2013	
	In respect to Waterways the following endorsement applies:	13/02/2013	
3	<ul> <li>Advice shall be sought from the DoW if proposing any exploration within a defined waterway and within a lateral distance of:</li> <li>50 metres from the outer-most water dependent vegetation of any perennial waterway, and</li> <li>30 metres from the outer-most water dependent vegetation of any seasonal waterway.</li> </ul>	13/02/2013	
#	CONDITIONS	Start Date	End Date
I	All surface holes drilled for the purpose of exploration are to be capped, filled or otherwise made safe immediately after completion.	13/02/2013	
2	All disturbances to the surface of the land made as a result of exploration, including costeans, drill pads, grid lines and access tracks, being backfilled and rehabilitated to the satisfaction of the Environmental Officer, Department of Mines and Petroleum (DMP). Backfilling and rehabilitation being required no later than 6 months after excavation unless otherwise approved in writing by the Environmental Officer, DMP.	13/02/2013	
3	All waste materials, rubbish, plastic sample bags, abandoned equipment and temporary buildings being removed from the mining tenement prior to or at the termination of exploration program.	13/02/2013	

Unless the written approval of the Environmental Officer, DMP is first obtained, the use of

drilling rigs, scrapers, graders, bulldozers, backhoes or other mechanised equipment for surface disturbance or the excavation of costeans is prohibited. Following approval, all topsoil

13/02/2013

being removed ahead of mining operations and separately stockpiled for replacement after backfilling and/or completion of operations.

5 The prior written consent of the Minister responsible for the Mining Act 1978 being obtained before commencing any exploration activities on Government Requirements Reserve 32796 and Use & Benefit Of Aboriginal People Reserve 13486.

13/02/2013

No interference with Geodetic Survey Station SSM-ESPERANCE 19 and mining within 15 metres thereof being confined to below a depth of 15 metres from the natural surface.

13/02/2013

#### **DEALINGS DETAILS**

## **Dealings**

Caveat 450167

Encumbrances

Application to Amend 394240

Lodged: 15:10 28 March 2012

In respect to private land, the tenement applicant is seeking sub surface rights only, therefore section 33(1)(a) of The Mining Act 1978

applies to private land notices.

RECORDED: 15:10 28 March 2012

Extension of Time 394242

Lodged: 15:10 28 March 2012

Type: Advert

RECORDED: 15:10 28 March 2012

Extension of time to advertise application for tenement granted by the Warden and approval received at Norseman on 08 Jun 2012

Lodged: 15:05 03 July 2014 Caveat Type: Absolute Caveat Caveator: AXG MINING LTD

Shares Caveated: 100/100 shares FRAKA INVESTMENTS PTY

LTD

RECORDED: 15:05 03 July 2014

## **BOND DETAILS**

**Bond** Amount **Bond date Bond status** Bond status date Surety

## **RENT DETAILS**

## **Rent Payments**

Туре	Year	Receipt Date	Receipt No	MR Lodged	Amount	Rental Area	Effective Date	Amount Due	Discrepancy
Payment	2015	14/03/2014	06-133708	PE \$1	19,635.00	165 BL	13/02/2013	\$19,635.00	\$0.00
Payment	2014	20/03/2012	06-107458	PE \$1	18,727.50	165 BL	13/02/2013	\$18,727.50	\$0.00

## **EXPENDITURE/EXEMPTION DETAILS**

## **Expenditure/Exemptions**

Year	Minimum	Expenditure	Total	Exemption	Exemption	Exemption	Exemption	Outcome
	Expenditure	Lodged	Expenditure	Amount	Lodged	Number	Status	Date
2015	\$165,000.00							

\$165,000.00 18/02/2014 \$209,678.00

## **Expenditure Details**

Year	Lodged	Exploration Activities	Mining Activities	Aboriginal Survev	Rent/Rates	Admin.	Prospecting	Total Expenditure
2014	18/02/2014	\$153,000.00	\$0.00	,	\$23,678.00	\$33,000.00	\$0.00	\$209,678.00

## COMBINED REPORTING DETAILS

C Number : Reporting Date : Project : Affecting

Period:

## ANNEXURE B- Sources of Information

In making our assessment, I have reviewed relevant published and unpublished information on **AXG Mining** and the relevant associated entities. In addition I have held discussions with the directors and management of **AXG Mining**. Information received and reviewed by me includes, but is not limited to the following:

- 1. Annual Report, Grass Patch project, BHP Minerals. D I Stephens, May 2000
- 2. Annual Report, Grass Patch project, BHP Minerals. D I Stephens, May 2001
- 3. Annual Report, Mt Ridley Project E63/1108, Ridley Resources Ltd April 2009
- 4. Annual Report, Mt Ridley Project E63/1108, Ridley Resources Ltd, C Turnbull, April 2010
- 5. Annual Report. Mt Ridley Project E63/1108 & E63/1109, Ridley Resources Ltd, A Hood, March 2011
- 6. Surrender Report E63/818. Plasia Pty Ltd & Bronzewing Gold Ltd. P Schwann, Feb 2006
- 7. ASX Announcement, AXG Mining Limited, Albany-Fraser Range Airborne EM Interpretation Commences, 19 November 2013.
- 8. ASX Announcement, AXG Mining Limited, AXG exercises option over Fraser Range Project, 6<sup>th</sup> March 2014.
- ASX Announcement, AXG Mining Limited, Completion of tenement acquisition option, 29<sup>th</sup> August 2014.
- 10. ASX Announcement, **AXG Mining Limited**, Exploration Update, 15<sup>th</sup> October 2014.
- 11. AXG Mining Limited, 2012 Annual Report.
- 12. AXG Mining Limited, 2013 Annual Report.
- 13. AXG Mining Limited, Website, October 2014.
- 14. Baurens. S. (2010) Valuations of Metals and Mining Companies.
- 15. Baxter, J.L. and Chisolm, J.M. (1990) Valuation reflections. The AuslMM Bulletin, vol. 3, 1990. pp. 22–26.
- 16. East Norseman Project Final report on Cynate-Terra Firma-Orion and BHP JV. Sept 1995.
- 17. Kilburn, L.C. (1990) Valuation of Mineral Properties which do not Contain Exploitable Reserves, CIM Bulletin, vol. 83, pp. 90–93, August 1990.
- Lawrence, R.D. (1989) Valuation of Mineral Assets: Accountancy or Alchemy? Paper presented at CIM Annual General Meeting, Quebec, 2, May 1989.
- 19. Lawrence, R.D. (17 May 1998) Valuation of Mineral Assets: An Overview. Paper presented as part of a course for the Geological Association of Canada and the Prospectors and Developers Association of Canada.
- Lilford, E.V. (2002) Methodologies in the Valuation of Mineral Rights. Project Report submitted to the Faculty of Engineering, University of the Witwatersrand, Johannesburg.
- 21. Lilford, E.V. Advanced Considerations, Applications and Methodologies in the Valuation of Mineral Properties. Doctoral thesis submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg 2004.
- 22. Roscoe, W.E. (1999) The Valuation of Mineral Properties for Compensation. Presentation to the British Colombia Expropriation Society, Fall Seminar, Vancouver, October 1999.
- 23. Schwab, B. and L Usztig, P (1969). A Comparative Analysis of the Net Present Value and the Benefit-Cost Ratio as Measures of the Economic Desirability of Investments, Journal of Finance, 24 June 1969, pp. 507–511.

## **ANNEXURE C-Glossary**

**A\$** Australian dollars.

Andesite An intermediate volcanic rock composed of andesine and one or more mafic minerals.

Alteration A physical or chemical change to original rock minerals.

Archaean The geologic eon before the Proterozoic Eon, before 2.5 Ga (billion years) ago, or 2,500 Ma (million

years).

Arsenopyrite An iron arsenic sulfide (FeAsS). It is a hard (Mohs 5.5-6) metallic, opaque, steel grey to silver white

mineral with a relatively high specific gravity of 6.1. Arsenopyrite also can be associated with significant amounts of gold. Consequently it serves as an indicator of gold bearing reefs. Many arsenopyrite gold ores are refractory, i.e. the gold is not easily liberated from the mineral matrix. Arsenopyrite is found in high temperature hydrothermal veins, in pegmatites, and in areas of contact

metamorphism or metasomatism.

Data Data pertaining to the physical properties of the Earth's crust at or near surface and collected from

an aircraft.

Assay A procedure where the element composition of a rock soil or mineral sample is determined.

Breccia A rock composed of broken fragments of minerals or rock cemented together by a fine-grained

matrix that can be either similar to or different from the composition of the fragments.

Chalcedony A cryptocrystalline form of silica, composed of very fine intergrowths of the minerals quartz and

moganite. These are both silica minerals, but they differ in that quartz has a trigonal crystal structure, while moganite is monoclinic. Chalcedony's standard chemical structure (based on the chemical structure of quartz) is  $SiO_2$  (Silicon Dioxide). Chalcedony has a waxy luster, and may be semitransparent or translucent. It can assume a wide range of colors, but those most commonly

seen are white to gray, grayish-blue or a shade of brown ranging from pale to nearly black.

Calcrete A hardened layer in or on a soil. It is formed on calcareous materials as a result of climatic

fluctuations in arid and semiarid regions.

**Chalcopyrite** CuFeS<sub>2</sub>, a copper ore.

Coal A natural dark brown to black graphite like material used as a fuel, formed from fossilized plants and

consisting of amorphous carbon with various organic and some inorganic compounds.

**Craton** Is an old and stable part of the continental lithosphere.

Dacite Is an igneous, volcanic rock. It has an aphanitic to porphyritic texture and is intermediate in

composition between andesite and rhyolite.

**Density** Mass of material per unit volume.

Deposit A mineralised body which has been physically delineated by sufficient drilling and found to contain

sufficient average grade of metal or metals to warrant further exploration and development

expenditure.

**Diamond drilling**A method of obtaining a cylindrical core of rock by drilling with a diamond impregnated bit.

**Dip**The angle at which a rock stratum or structure is inclined from the horizontal.

**Dykes** A tabular body of intrusive igneous rock, crosscutting the host strata at a high angle.

Facies Characteristic features of rocks such as sedimentary rock type, mineral content, metamorphic

grade, fossil content and bedding characteristics.

Fault zone A wide zone of structural dislocation and faulting.

**Feldspar** A group of rock forming minerals.

Felsic An adjective indicating that a rock contains abundant feldspar and silica.

**Foliated** Banded rocks, usually due to crystal differentiation as a result of metamorphic processes.

Footwall Surface of rock along the fault plane having rock below it.

g/t Grams per tonne.

Gabbro A fine to coarse grained, dark coloured, igneous rock composed mainly of calcic plagioclase, clino-

pyroxene and sometimes olivine.

**Galena** Is the natural mineral form of lead sulphide. It is the most important lead ore mineral.

GeochemicalPertains to the concentration of an element.GeophysicalPertains to the physical properties of a rock mass.

GIS database A system devised to present partial data in a series of compatible and interactive layers.

Gneiss Coarse-grained, banded metamorphic rock.

Granite A common type of intrusive, felsic, igneous rock.

Greenstones Zones of variably metamorphosed mafic to ultramafic volcanic sequences with associated

sedimentary rocks that occur within Archaean and Proterozoic cratons between granite and gneiss bodies. The name comes from the green hue imparted by the colour of the metamorphic minerals

within the mafic rocks. Chlorite, actinolite and other green amphiboles are the typical green

minerals.

Hangingwall The mass of rock above a fault, vein or zone of mineralisation.

A rock that has solidified from molten rock or magma. Igneous

In-situ In the natural or original position.

**Indicated Mineral Resource** An Indicated Mineral Resource is that part of a Mineral Resource for which tonnage, densities,

shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but

are spaced closely enough for continuity to be assumed.

**Inferred Mineral Resource** An Inferred Mineral Resource is that part of a Mineral Resource for which tonnage, grade and

mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings

and drillholes which may be of uncertain quality and reliability.

Intermediate A rock unit which contains a mix of felsic and mafic minerals.

Intrusion/Intrusive A body of igneous rock that invades older rock.

Internal Rate of Return The discount rate often used in capital budgeting that makes the net present value of all cash flows

> from a particular project equal to zero. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project. As such, IRR can be used to rank several prospective projects a firm is considering. Assuming all other factors are equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken

Joint venture A business agreement between two or more commercial entities.

JORC Code 2012 Joint Ore Reserves Committee (of the Australian Institute of Mining and Metallurgy, Australian

Institute of Geoscientists and the Minerals Council of Australia). A code developed by the Australian Joint Ore Reserves Committee which sets minimum standards for public reporting of exploration

results, Mineral Resources and Ore Reserves.

kg/m3 Kilogram per cubic metre.

kg/t Kilograms per tonne, a standard mass unit for demonstrating the concentration of uranium in a rock.

Koz Thousand ounces of gold.

Komatiite Is a type of ultramafic mantle-derived volcanic rock. Komatiites have low silicon, potassium and

aluminium, and high to extremely high magnesium content.

Lava Refers both to molten rock expelled by a volcano during an eruption and the resulting rock after

> solidification and cooling. This molten rock is formed in the interior of some planets, including Earth, and some of their satellites. When first erupted from a volcanic vent, lava is a liquid at temperatures from 700 to 1,200°C (1,292 to 2,192°F). Up to 100,000 times as viscous as water, lava can flow great distances before cooling and solidifying because of its thixotropic and shear thinning

properties.

Lithology A term pertaining to the general characteristics of rocks.

M Millions.

Mafic A dark igneous rock composed dominantly of iron and magnesium minerals (such as basalt).

Magnetometer An instrument which measures the earth's magnetic field intensity.

MW Megawatt.

**MAusIMM** A post-nominal that signifies the holder is Member of the Australian Institute of Mining and

Metallurgy ("AusIMM"). Under the JORC reporting code, a competent person must be at a minimum

a member of the AIG or the AusIMM.

Mafic Mafic is used for silicate minerals, magmas, and rocks which are relatively high in the heavier

> elements. The term is derived from using the MA from magnesium and the FIC from the Latin word for iron. Mafic magmas also are relatively enriched in calcium and sodium. Mafic minerals are usually dark in colour and have relatively high specific gravities (> 3.0). Common rock-forming mafic minerals include olivine, pyroxene, amphibole, biotite mica, and the plagioclase feldspars. Common

mafic rocks include basalt and gabbro.

Mass recovery The percentage of mass recovered after processing.

Metamorphism Process by which changes are brought about to rock in the earth's crust by the agencies of heat,

pressure and chemically active fluids.

Mineralisation A geological concentration minerals or elements of prospective economic interest. Mineral A substance occurring naturally in the earth which may or not be of economic value.

Mineralised zone Any mass of rock in which minerals of potential commercial value may occur.

**Mineral Resource** A mineral inventory that has been classified to meet the JORC code standard.

mRL Metres reduced level, refers to the height of a point relative to a datum surface.

Mt Million Tonnes.

Net Present Value NPV compares the value of a dollar today to the value of that same dollar in the future, taking

inflation and returns into account. If the NPV of a prospective project is positive, it should be accepted. However, if NPV is negative, the project should probably be rejected because cash flows

will also be negative.

**Open pit** A mine working or excavation open to the surface.

Ore Material that contains one or more minerals which can be recovered economically.

Ore Reserve An Ore Reserve that has been classified to meet the JOR code standard.

Orogen A belt of deformed rocks, usually comprising metamorphic and intrusive igneous rocks, mostly

occurring along the collision zone between cratons.

Outcrops Surface expression of underlying rocks.

Outlier A limited area of younger rocks completely surrounded by older rocks.

Payback Period The time required for the cumulative net cash inflows from a project to equal the initial cash outlay.

Percussion drilling Drilling method of where rock is broken by the hammering action of a drill bit.

PGE Also known as PGM are the six platinum group metals, which are ruthenium, rhodium, palladium,

osmium, iridium, and platinum.

**ppb** Parts per billion; a measure of low level concentration.

Proterozoic Geological eon that extended from 2.5 billion to 542 million years ago.

Pyrite FeS<sub>2</sub>A common, pale bronze iron sulphide mineral.

Pyrrhotite FeS A common, pale bronze iron sulphide mineral.

RAB drilling A relatively inexpensive and less accurate drilling technique (compared to RC drilling) involving the

collection of sample returned by compressed air from outside the drill rods.

RC drilling Reverse Circulation drilling, whereby rock chips are recovered by airflow returning inside the drill

rods, rather than outside, thereby returning more reliable samples.

Reserves The portion of a mineral deposit which could be economically extracted or produced at the time of

the Reserve determination. These are classified as either proven, probable or possible Ore

Reserves based on the JORC code.

Resource An occurrence of material of intrinsic economic interest in a form that provides reasonable prospects

for eventual economic extraction. These are classified as Measured, Indicated or Inferred ore

resources based on the JORC code.

**Rock chip sampling**The collection of rock specimens for mineral analysis. **Sandstone**Sedimentary rock comprising predominantly of sand.

Saddle Reef A mineral deposit associated with the crest of an anticlinal fold and following the bedding planes,

usually found in vertical succession, especially the gold-bearing quartz veins of Australia.

**Sedimentary** Rocks formed by the deposition of particles carried by air, water or ice.

Shear Zone A generally linear zone of stress along which deformation has occurred by translation of one part of

a rock body relative to another part.

**Sphalerite** (Zn, Fe) S is a mineral that is the chief ore of zinc.

Spot price Current delivery price of a commodity traded in the spot market.

**Strike** The bearing of a rock formation.

StratiformThe arrangement of mineral deposit in strata or layers.StrikeHorizontal direction or trend of a geological structure.

Supergene Supergene processes or enrichment occur relatively near the surface. Supergene processes include

the predominance of meteoric water circulation with concomitant oxidation and chemical weathering. The descending meteoric waters oxidize the primary (hypogene) sulfide ore minerals and redistribute the metallic ore elements. Supergene enrichment occurs at the base of the oxidized

portion of an ore deposit.

**Sulphide** A type of mineral composed of metal or metals combined with sulphur.

t Tonne.

**Tpa** Tonnes per annum.

**Tenements** Large tracts of land granted under lease to mining companies and prospectors by the government.

Ultramafic Igneous and meta-igneous rocks with very low silica content (less than 45%), generally >18% MgO, high FeO, low potassium, and are composed of usually greater than 90% mafic minerals (dark

coloured, high magnesium and iron content). The Earth's mantle is composed of ultramafic rocks.

**US\$** United States Dollars.

Vein A hydrothermal igneous rock that intrudes other rocks, often containing valuable minerals.

Volcanic A geological term to describe rocks formed from volcanic activity.