Updated Mineral Resource, Burnakura Project, Western Australia, Australia NI 43-101 Technical Report

Report Prepared for

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12	Data Verification	David Slater	
13	Mineral Processing and Metallurgical Testing	David Slater	
14	Mineral Resource Estimates	David Slater	
15	Mineral Reserve Estimates	N/A	
16	Mining Methods	N/A	
17	Recovery Methods	N/A	
18	Project Infrastructure	N/A	
19	Market Studies and Contracts	N/A	
20	Environmental Studies, Permitting and Social, or Community Impact	N/A	
21	Capital and Operating Costs	N/A	
22	Economic Analysis	N/A	
23	Adjacent Properties	N/A	
24	Other Relevant Data and Information	David Slater	
25	Interpretation and Conclusions	David Slater	
26	Recommendations	David Slater	
27	References	David Slater	

List of Abbreviations

Units of measurement used in this report conform to the SI system unless otherwise stated. All currency in this report is Australian dollars (\$AUD) unless otherwise noted.

Frequently listed acronyms, abbreviations and units of measure are listed in the table below.

Frequ	iently li	isted a	acronyms	, abbreviations	and	units	of measur	e
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Abbreviation	Meaning
2D	two dimensional
3D	three dimensional
AAS	atomic absorption spectroscopy
AHA	Aboriginal Heritage Act
ALS	ALS Minerals
Amdel	Amdel Limited Mineral Services Laboratory
ANA	Alliance and New Alliance
ANFO	ammonium nitrate-fuel oil
ASL	above sea level
ATCF	after tax cash flow
Au	gold
AuEq	gold equivalent
AUD	Australian dollar
BAppSc	Bachelor of Applied Science
BCom	Bachelor of Commerce
BD	bulk density
BEng	Bachelor of Engineering
BIF	Banded Iron Formation
BSc	Bachelor of Science
BTZ	Burnakura Thrust Zone
Cambrian	Cambrian Mining Limited
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIP	carbon-in-pulp
CRF	cemented rock fill
DMIRS	Department of Mines, Industry Regulation and Safety
DMP	Department of Mines and Petroleum
dmt	dry metric tonne
DTM	digital terrain model
EM	electromagnetic
EPA	Environmental Protection Agency
FAusIMM	Fellow of The Australasian Institute of Mining and Metallurgy
Ga	billion years
GDip	Graduate Diploma
GEF	Gold and Exploration Finance Company of Australia
GPS	global positioning system
GST	goods and services tax
g/t	grams per tonne
На	hectare
HBr	hydrobromic acid
HCI	hydrochloric acid

Abbreviation	Meaning
HR	hydraulic radius
ICP – AES	inductively couple plasma atomic emission spectroscopy
ID ²	inverse distance squared
ID ³	inverse distance cubed
IP	induced polarisation
IRR	internal rate of return
ILUA	Indigenous Land Use Agreement
ITR	Independent Technical Report
JORC Code	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves of 2012, as prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy and Australian Institute of Geoscientists and Minerals Council of Australia
kg	kilogram
kL	kilolitre
km	kilometre
koz	kilo ounces
kt	kilotonne
ktpa	kilotonnes per annum
ktpm	kilotonnes per month
kV	kilovolt
kVA	kilovolt ampere
kW	kilowatt
kWh	kilowatt hour
L	litres
LHD	load-haul-dump
LOM	life of mine
L/s	litres per second
Μ	million
Ма	million years
MAusIMM(CP)	Chartered Professional Member of The Australasian Institute of Mining & Metallurgy
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mH	metres high
Mining Act	Mining Act 1978 (WA)
ML	million litres
mm	millimetres
MMI	mobile metal ion
MMY	Monument Mining Limited
Monument	Monument Murchison Pty Ltd
Moz	million ounces
mRL	metres reduced level
Mtpa	million tonnes per annum
m ³	cubic metres
m³/s	cubic metre per second
m³/s/KW	cubic metre per second per kilowatt
MVA	megawatt ampere
mW	metres wide

Abbreviation	Meaning
MW	megawatt
NI 43-101	National Instrument 43-101
NNTT	National Native Title
NOA	North of Alliance
NPV	net present value
NTA	Native Title Act 1993 (Cth)
ОК	Ordinary Kriging
OH & S	Occupational Health and Safety
ozs	ounces
PEA	Preliminary Economic Assessment
PhD	Doctor of Philosophy
PMP	Project Management Plan
PoW	Program of Work
QA/QC	quality assurance/quality control
QP	Qualified Person
RAR	return air raise
RC	reverse circulation
RO	reverse osmosis
ROM	run-of-mine
RPD	relative paired difference
SAA	recent shallow alluvial aquifer
SD	standard deviation
SRK	SRK Consulting (Australasia) Pty Ltd
t	tonnes
tpa	tonnes per annum
t/mth	tonnes per month
TSF	tailings storage facility
TSX	Toronto Stock Exchange
UCS	unconfined compressive strength
USD	US dollars
V	Volt
WA	Western Australia

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1 Executive Summary

1.1 **Property Description and Ownership**

Monument Mining Limited (TSX-V: MMY and FSE: D7Q1) (MMY) is a mining and exploration company based in Vancouver, British Columbia, with an existing operation in Malaysia. In 2014, it acquired the Burnakura and Gabanintha properties from Kentor Gold (subsidiary of KGL Resource Ltd), and Tuckanarra from Phosphate Australia later that year. All properties are located in the Murchison region of Western Australia.

The Burnakura Project will be the major focus for MMY in Western Australia. MMY has completed a Mineral Resource update as stated in this report and is looking to shortly conduct a Preliminary Economic Assessment (PEA) of the Burnakura property. The Mineral Resources update was completed by independent external consultants, SRK Consulting (Australasia) Pty Ltd (SRK). SRK has been commissioned by MMY to prepare an Independent Technical Report (ITR) on the Burnakura Project.

The Burnakura property consists of several deposits, all with pre-existing open pit mining being carried out. In the North of Alliance 2 deposit, an underground mining has also been carried out. The deposits that are the focus of this report are:

- Alliance and New Alliance (ANA)
- North of Alliance 1 to 8 (NOA)
- Federal City
- Authaal.

The Burnakura site also contains a non-operational processing plant (previously capable of processing up to 0.3 Mt per annum), mining camp and office block complex.

Access to the Burnakura Property area is approximately 765 km north-northeast of Perth via the sealed Great Northern Highway and then via numerous unsealed private and shire-maintained roads.

1.2 **Geology and Mineralisation**

The Burnakura gold project covers an area on the eastern margin of the Archean Meekatharra-Wydgee greenstone belt within the north-eastern Murchison Domain of the Yilgarn Craton. The Murchison Domain forms part of the Youanmi Terrane. Limited geochronology shows that most greenstones and granitic rocks of the Murchison Domain were deposited or emplaced between 3.0 Ga and 2.6 Ga.

The majority of the Burnakura gold project covers Archaean basement rocks assigned to the 2815--2805 Ma basal Norrie Group of the Murchison Supergroup covering the eastern margin of the Meekatharra-Wydgee greenstone belt.

The Burnakura gold deposits are situated along a northeast trending splay (Burnakura Shear Zone) that parallels and is linked to the north-northeast trending regional scale Mt Magnet fault. The Mt Magnet fault is the major east bounding structure to the 'Meekatharra structural zone', a major regional, northeast-trending shear dominated zone, about 50 to 60 km wide, incorporating the Meekatharra area. The Meekatharra structural zone is dominated by north- and northeast-trending folds and shears, including refolded folds with approximately coplanar fold axes. Many of the folds are truncated by shears or faults, and the structural zone is interpreted as a major zone of shear-related deformation.

Gold mineralisation is thought to have extended for at least 30 Ma from 2,660 to 2,630 Ma during predominantly strike-slip D4 shearing. Significantly, the peak of granitic magmatism at 2,660 Ma is coincident with the onset of major gold mineralisation, suggesting a cogenetic relationship through magma- and heat-driven remobilisation of mineralisation originally hosted by older volcanic rocks. Gold deposition has been precisely dated at 2,639±4 Ma in the South Emu deposit at the Reedy mining centre, some 20 km southwest of Burnakura.

The Burnakura Thrust Zone (BTZ) gold mineralisation is typical of a brittle to semi-ductile shear zone forming semi-continuous dilational veins. A mineralised horizon may extend >100 m, but the thickness and the tenor of mineralisation within these horizons is highly variable and discontinuous. The thickness may vary by $\pm 100\%$ on the 5–10 m scale.

The NOA mineralisation is associated with the NOA fault and NOA splays. The mineralisation is dominated by steep dipping quartz (±minor sulphides) veins orientated parallel to the foliation of the fault zone. Minor sulphides are present and little alteration of the host lithology is also observed. The gold mineralisation is low grade (i.e. <1.5 g/t) and sporadic, but within the BTZ, moderate grades have been recorded ranging from ~3 to 4 g/t.

The ANA and Federal City prospects, the rheological contrast between the banded iron formations (BIFs) and the tuffs have likely played an important role as an additional geological control to create a favourable environment for veining and gold mineralisation.

1.3 Project Status

The Burnakura Property area and surrounding environs have a long gold mining history with underground operations commencing in 1897 at Alliance and Federal City areas. The existing processing facility on site operated between 2005 and 2013 in conjunction with concurrent open pit and underground mining; however, modern mining with processing off-site was completed between 1989 and 1997.

Drilling within the Burnakura gold project has been undertaken by numerous mining and exploration companies since 1987 though to 2017. A total of 378,393 m of drilling has been completed, of which MMY has completed 48,644 m, representing 13% of the total database. Sample preparation and analytical techniques are considered by SRK to be globally appropriate and as such, the data is appropriate to be used in Mineral Resource estimation studies. SRK notes that significant QAQC verification work has been completed.

1.4 Mineral Resource Estimates

The Mineral Resource estimates for the project is reported in accordance with National Instrument 43-101 and has been estimated using the Canadian Institute of Mining, Metallurgy and Petroleum ('CIM') 'Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines' (2014). The Mineral Resource estimates are classified as Indicated and Inferred as defined by the CIM. Numbers displayed in Tables E-1 to E-5 are affected by rounding. Reporting cutoffs have been determined on the basis of the broad economics of the mining style proposed (Underground Mining 3 g/t Au (NOA 7--8) Open Pit Mining 0.5 g/t Au (NOA1-6;ANA,Authaal,Federal City)).

 Table E-1:
 NOA 1–6 Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)
Indicated	0.5	1,030	2.1	68
Inferred	0.5	609	2.3	44

Table E-2:	NOA7–8 Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	∟ower cut-off (Au g/t) Tonnes (Kt)		Metal (koz Au)	
Indicated	3.0	776	4.6	114	
Inferred	3.0	35	3.9	4	

Table E-3:ANA Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)
Indicated	0.5	2,141	1.6	107
Inferred	0.5	92	1.5	4

Table E-4: Authaal Mineral Resource estimate

Resource category	Lower cut-off	Tonnes	Grade	Metal
	(Au g/t)	(Kt)	(Au g/t)	(koz Au)
Inferred	0.5	556	1.4	25

Table E-5: Federal City Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)
Indicated	0.5	96	1.3	4
Inferred	0.5	259	1.3	11

1.5 Mineral Processing and Metallurgical Testing

The existing mill at Burnakura produced around 58 koz of gold in concentrate, using a combination of gravity and flotation.

The mineralisation defined in the Mineral Resources reported is thought to have similar metallurgical characteristics to previously mined ore in contiguous geological areas; however, some differences are noted at depth and there are also changes in local geology. These areas require further investigation by collection of appropriate representative samples and completion of subsequent testwork.

Further metallurgical testwork is planned as part of an ongoing development plan for the project, including investigations into heap leach processing. SRK notes that further testwork is currently being completed by MMY to assist in refining recoveries and developing the optimal metallurgical flowsheet.

1.6 **Conclusions and Recommendations**

SRK has completed updates of the Mineral Resource Estimates suitable for input into Preliminary Economic Analysis studies that are to be completed by MMY. The basis of the Mineral Resource Estimates were an updated geological interpretations and review of all available data for the project over its 20-year plus history.

The update of the Mineral Resources will also allow for refined targeting of proposed drilling programs to extend and infill the mineralisation to achieve a higher confidence and enlarged Mineral Resource in the future.

The review of the available metallurgical data and its relationship with the mineralisation will allow better targeting of resources to define a refined data collection outcome.

SRK considers that this study report will assist in progressing the project in a refined manner.

Current focus of exploration includes:

- Further definition and extension the NOA mineralisation
- Collection of additional metallurgical data
- Definition and extension of shallow oxide gold occurrences on the Burnakura leases.

Other recommended work programs to enhance future resource modelling include:

- Further studies of the structural setting and timing of the mineralisation which may lead to deeper exploration targeting
- Gold characterisation
- Lithogeochemistry studies to improve understanding of the mineralising geology and alteration types
- Metallurgical characterisation studies to assess variability of mineralisation for mineral processing.

2 Introduction

2.1 Introduction

Monument Mining Limited (TSX-V: MMY and FSE: D7Q1) (MMY) is a mining and exploration company based in Vancouver, British Columbia, with an existing operation in Malaysia. In 2014, it acquired the Burnakura and Gabanintha properties from Kentor Gold (subsidiary of KGL Resource Ltd), and Tuckanarra from Phosphate Australia later that year. All properties are located in the Murchison region of Western Australia as shown in Figure 2-1.



Figure 2-1: Monument Mining Limited – Murchison Operations location

The Burnakura Project will be the major focus for MMY in Western Australia. MMY has completed a Mineral Resource update as stated in this report, and is looking to shortly conduct a Preliminary Economic Assessment (PEA) of the Burnakura property.

The Mineral Resources update was completed by independent external consultants SRK (Australasia) Pty Ltd (SRK), with SRK qualified personnel providing the necessary signatories.

The Burnakura property consists of several deposits, all with pre-existing open pit mining being carried out. In the North of Alliance 2 deposit, an underground mining has also been carried out. The deposits that are the focus of this report are:

- Alliance and New Alliance (ANA)
- North of Alliance 1 to 8 (NOA)
- Federal City
- Authaal.

Several other deposits with previously mined open pits also exist with future geological resource potential with additional data collection which include:

- Banderol
- Lewis
- Reward.

The Burnakura site also contains a non-operational processing plant (previously capable of processing up to 0.3 Mt per annum), mining camp and office block complex. Figure 2-2 shows the various deposits, processing plant and camp locations at Burnakura.



Figure 2-2: MMY Burnakura – deposit locations

2.2 Scope of Work

SRK has been commissioned by MMY to prepare an Independent Technical Report (ITR) on the Burnakura Project in the state of Western Australia (the Project), to provide a disclosure of the updated Mineral Resources. The scope of work as determined by MMY's senior corporate management required SRK to complete the Mineral Resource estimates based on updated geological interpretations. The report also includes an update on the metallurgical testwork completed.

2.3 Basis of technical report

This report is based on information collected by the authors during site visits and on additional information provided by MMY throughout the course of the authors' discussions and technical reviews. Other information was obtained from non-published past producer reports, internal technical memorandums and other public domain sources.

2.4 Work program

The work program included collation and review of all geological resource aspects and update of the Mineral Resource models with additional review of the completed metallurgical testwork. This was then compiled in an Independent Technical Report (ITR). The ITR complies with disclosure and reporting requirements set forth in the Canadian Securities Administrators National instrument NI43-101, Companion Policy 43-101CP and Form NI43-101F1 and the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Code (2014).

2.5 Site visit

David Slater, the principal author of the ITR and SRK's Principal Resource Geologist, visited the Burnakura Project on between 7 and 9 March 2018 to assess it for available data and data collection protocols.

2.6 **Sources of information**

MMY supplied all sources of information that were validated by SRK. This information included all data, reports and discussions with MMY staff.

In addition to the site visit undertaken to the Project by Mr Slater, the authors of the ITR have relied extensively on information provided by MMY, discussions with MMY and studies completed by other independent consulting and engineering groups. MMY technical staff also supplied digital and hard copy data for the Project. A full listing of the principal sources of information is included in Section 27 and a summary is provided below.

The principal sources of information used to compile the ITR are:

- Various drill hole database in Microsoft Access and Excel format containing collar location, downhole survey, assay and geology data (Source: MMY).
- A 3-dimensional model of the topography and previous workings (Source: MMY).
- Various 3-dimensional models of the geology and mineralisation as interpreted by MMY (Source: MMY).
- Representative drill hole cross-sections containing all relevant exploration, geological and mining data (Source: MMY).
- Various Reports (as referenced in Section 27).

SRK has made all reasonable enquiries to establish the completeness and authenticity of the information provided and identified. A final draft of the ITR was provided to MMY, along with a written request to identify any material errors or omissions. MMY has responded to this request in writing, with clarifications that have been incorporated into the final ITR.

2.7 Qualifications and Experience

SRK is an international mining consulting firm specialising in the areas of geology, mining and geotechnical engineering, metallurgy, hydrogeology, hydrology, tailings disposal, environmental science and social and physical infrastructure.

The Qualified Persons (as defined in NI 43-101) for the purpose of the ITR are:

• Mr David Slater, a full-time employee of SRK.

The ITR and Resource Estimation was completed by David Slater, SRK's Principal Resource Consultant, and the principal author of this report. Mr Slater is a professional geologist with over 25 years' experience in exploration geology, mining geology and geostatistical modelling and estimation of Mineral Resources. He is a Chartered Professional Member of the Australian Institute of Mining and Metallurgy (MAusIMM (CP)), and a Member of the Australian Institute of Geosciences (MAIG) and has the appropriate relevant qualifications, experience and independence as defined in NI 43-101. Mr Slater visited the Project between 7 and 9 March 2018.

Mr Slater has the appropriate relevant qualifications, experience and independence to be considered a Qualified Person as defined in NI 43-101.

2.8 Independence

SRK is a highly respected Australian-based international consulting firm specialising in the areas of exploration, geology, mining, metallurgy, geotechnical engineering, hydrogeology, hydrology, tailings disposal, environmental science and social and physical infrastructure.

Neither SRK, nor the authors of this report, has or have previously had any material interest in MMY or its related entities or interests. SRK's relationship with MMY is solely professional as between client and independent consultant. This ITR is prepared in return for fees based upon agreed commercial rates, and the payment of these fees is not contingent on the results of the ITR.

Specific sections of the ITR that the Qualified Persons are responsible for are provided in Table 2-1 and are repeated in the attached Qualified Persons certificates.

 Table 2-1:
 Burnakura Project – Responsibility of Qualified Persons

Qualified Person	Association	Responsibility	Co-Responsibility
David Slater	MAusIMM(CP), MAIG	All sections	1

3 Reliance on Experts

SRK and the authors of this report are not qualified to provide extensive comment on legal issues, including status of tenure, mining concessions, water rights and surface rights associated with the Project referred to in the ITR. Assessment of these aspects has relied heavily on information provided by MMY. The ITR has been prepared on the understanding that the property is, or will be, lawfully accessible for evaluation, development, mining and processing. Mineral title and ownership details are provided in Section 4 of the ITR.

The Qualified Person is not an expert in land, legal, environmental, permitting and related matters and has therefore relied upon, and is satisfied, by the fact that there is a reasonable basis for this reliance based on the information provided by company management regarding mineral rights, surface rights and permitting in Section 4 of the ITR.

Unless otherwise stated, all maps and figures have been sourced and prepared by MMY.

4 **Property Description and Location**

4.1 Location

The Burnakura property area is located at latitude 27° 03' 48" S, longitude 118° 25' 47"E, and is approximately 600 km north-northeast of Perth, Western Australia, and covers an area of ~144.1 km³. It is situated in the Murchison Mineral Field within the Mid-West region of Western Australia, and comprises a number of historical workings, non-operational open pits, a closed NOA 2 underground mine, mining tenements, historical gold resources, the Burnakura gold plant, mine infrastructure and accommodation village (Burnakura Property). The Burnakura gold operation is currently on care and maintenance, with only exploration operations and environmental monitoring being undertaken. The Burnakura Property was granted a mining tenement holding.

4.2 Land tenure

The Burnakura Property mining tenements were purchased by Monument Murchison Pty Ltd (a fully owned subsidiary of MMY) (Monument) on 21 February, 2014. The Burnakura Property mining tenements and associated infrastructure were acquired from Jinka Minerals Limited, Kentor Minerals (WA) and KGL Resources Limited as part of the Murchison Gold Project acquisition (see Monument Press Release #14-2014, 25 February 2014).

As of 26 February 2017, the Burnakura Property mining tenements comprise six granted mining leases; five granted prospecting licences and three granted exploration licences that cover a combined area of approximately 114 km².

Mining tenements are currently held in the name of Monument Murchison Pty Ltd. It is understood that Monument holds 100% beneficial mineral rights over all mining tenements. The total annual expenditure commitment for the Burnakura Property mining tenements is \$604,840. The Burnakura Property mining tenement details are presented in Table 4-1.

Group annual reporting status (Department of Minerals and Petroleum Ref: C21/2005) was previously granted by the Geological Survey of Western Australia (GSWA) for M51/116, M51/117, M51/177, M51/178, M51/252 and M51/478 on 22 March 2005. Prospecting licences P51/2793-2797 were granted group reporting status on 16 January 2014. Exploration licences E51/1618, E51/1553 and E51/1562 were granted group reporting on 31 July 2015. Exploration licences E51/1687 were granted group reporting on 30th December 2016.

The Burnakura Property mining tenements are located on the Culculli pastoral lease (3114/455). The extreme northern portion of mining lease M51/116 is located over the Polelle pastoral lease (3114/550). The main northern access road is partially covered by miscellaneous licences L51/78 and L51/79 held by GMK Exploration Pty Ltd.

The mining tenements are covered by the Yugunga-Nya People Native Title Claim (WC1999/046). The corresponding Yugunga-Nya People and Sandfire Indigenous Land Use Agreement (ILUA) also cover this area.

4.3 Underlying agreements

The current underlying agreements are as follows:

1. The Burnakura mining tenements are wholly within land the subject of the Yugunga-Nya People Native Title Claim (WC 1999/046), registered in the Federal Court of Australia.

- The eastern portion of exploration licence E 51/1562 is the subject of the Wutha People Native Title Claim (WC 1999/010), registered in the Federal Court of Australia. The area of this portion totals 6.59 km² (658.92 Ha) is overlapping with the Yugunga-Naya Claim as described in (1).
- With the exception of the eastern portion of exploration licence E 51/1562 covered by the Wutha claim as described in (2), the Burnakura mining tenements are wholly covered by the Yugunga-Nya People and Sandfire ILUA, registered with the National Native Title Tribunal (NNTT) on 21 September 2012.
- 4. The Burnakura Mining leases were granted prior to 1 January 1994 and the commencement of the *Native Title Act* 1993 (Cth). The mining leases constitute valid 'past acts' (sections 14 and 19 of the Act and Section 5 of the *Titles (Validation) and Native Title (Effect of Past Acts) Act* 1995 (WA)); hence, they are valid against native title. However, validation of past acts does not constitute extinguishment of native title, and it is still possible for native title to exist for the mining leases.
- 5. The Burnakura prospecting licences and exploration licences were granted subsequent to the enactment of the *Native Title Act* 1993 (Cth) via the expedited procedure, and hence are subject to native title. The author of this section of the report has not reviewed any heritage agreements.
- 6. There are two sites registered in accordance with the *Aboriginal Heritage Act* 1972 (WA) on the Department of Indigenous Affairs Register with direct relation to the ANA deposits at Burnakura. Site P07597 relates to Artefacts/ Scatter that covers parts of M51/116 and M51/177, including the NOA 1 and NOA 2 open pits and waste dump, and the NOA 4 and NAO 6 in-pit tails storage facility. Site P03587 relates to a mythological site associated with Cullculli Hill and in part covers the western boundary of exploration licence E51/1553.

4.4 Royalties

A royalty agreement is in place with Royal Gold Inc., which was formerly with Barrick Gold Australia Limited (previously named Homestake Gold Australia Limited), in which a royalty is payable after the production of 300,000 ozs of gold from an area that was formerly the subject of a joint venture between Metana Minerals and Homestake Gold Australia Limited. No royalties have been paid so far; however, continued mining and milling at the Burnakura Property is likely to trigger the clause of a royalty payment of 1.5% on a net smelter return of up to 75,000 ozs/ annum Au, and a 2.5% net smelter return for production in excess of 75,000 ozs/ annum Au (Mapleson et al., 2015).

Gold royalties are due to the State of Western Australia (WA) at a rate of 2.5% of the 'royalty value' of the gold metal produced after the first 2,500 ozs of gold metal produced during the financial year ('royalty value' refers to the product of the total gold metal produced during the month and the average gold spot price) (Harvey et al., 2007).

Silver royalties are due to the State of WA at a rate of 2.5% of the realised value. Company tax in Australia is charged a rate of 30% of profits. Payroll tax is charged by the State of WA at a rate of 5.5% to companies, where annual wages and salaries exceed \$750,000. A diesel fuel rebate is available at \$0.38 per litre for mining activities (Mapleson et al., 2015).

4.5 **Permits and authorisation**

4.5.1 Exploration and Mining Legislative Framework

West Australian Mining Act

Section 9 of the *West Australian Mining Act* 1978 ('*Mining Act*') states, 'Except in the case of land alienated in fee simple before the 1st January 1899 (in which case minerals other than gold, silver and precious metals are the property of the owner), all minerals are the property of the Crown.' Where the

minerals are the property of the Crown, a mining title must be obtained from the Department of Mines, Industry Regulation and Safety (DMIRS), formerly Department of Mines and Petroleum (DMP), before any mining operations may be undertaken. For the purposes of the *Mining Act*, Western Australia is divided into various mineral fields, some further divided into districts. The Burnakura Property's licences fall within the Murchison mineral field.

The mining tenements available under the *Mining Act* are as follows:

- Prospecting Licences (Sections 40–56)
- Special Prospecting Licences for Gold (Sections 56A, 70 and 85B)
- Exploration Licences (Sections 57–69E)
- Retention Licences (Sections 70A–70M)
- Mining Leases (Sections 700–85A)
- General Purpose Leases (Sections 86–90)
- Miscellaneous Licences (Sections 91–94).

The basic provisions of each type of Burnakura mining tenement are summarised in Table 4-1 and further described below:

Prospecting licences

For Prospecting licences, the following applies:

- The maximum area for a prospecting licence is 200 Ha.
- Prospecting licences must be marked out.
- Application is made to the Mining Registrar of the relevant Mineral Field.
- An application fee and rental is payable.
- There is no limit to the number of licences a person or company may hold, but a security (or bond) is required in respect of each licence.
- The term of a prospecting licence is 4 years, with the provision to extend for one further 4-year period.
- The holder of a prospecting licence may, in accordance with the licence conditions, extract or disturb up to 500 t of material from the ground, including overburden, and the Minister may approve extraction of larger tonnages.

Exploration licences

On 28 June 1991, a graticular boundary (or block) system was introduced for exploration licences as follows:

- The minimum size of an exploration licence is one block, and the maximum size is 70 blocks, except in areas not designated as mineralised areas, where the maximum size is 200 blocks
- An exploration licence is not physically marked out
- Application is made at any Mining Registrar's Office, or lodged electronically via the DMIRS, Mineral Titles Online system.

Table 4-1 shows the charges applicable.

Licence type	Maximum area	Term (years)	Fees		Minimum annual expenditure
			Application	Rent	
Prospecting Licence	200 Ha	4 years – renewable for 1 period of 4 years (for licences applied for after 10 February 2006)	\$323.00	\$2.60 per Ha or part thereof, min. \$26.00	\$40.00 per Ha, min. \$2,000
Exploration Licence (Graticular)	70–200 blocks (outside known mineralised areas)	5 years – may extend for 2 periods of up to 2 years and further periods of 1 year for licences applied for prior to 10 February 2006. On or after this date term is 5 years – may extend for one period of 5 years and by a further period or periods of 2 years	\$1,362.00 (\$340.00 if for 1 block only)	Years 1–3 \$134.00 per block (\$322.00 if for only 1 block) Years 4 and 5 – \$208.00 Years 6 and 7 – \$283.00 Year 8 – \$535.00	Yeas 1–3: \$1,000 per block, with: • Min. \$10,000 for 1 block • Min. \$15,000 for 2–5 blocks • Min. \$20,000 for 6–20 blocks. Years 4–5: \$1500 per block, with • Min. \$10,000 for 1 block • Min. \$20,000 for 2-5 blocks • Min. \$30,000 for 6–20 block. Years 6–7: \$2,000 per block, with: • Min. \$15,000 for 1 block • Min. \$30,000 for 2–5 blocks • Min. \$30,000 for 2–5 blocks • Min. \$50,000 for 6–25 blocks • Min. \$50,000 for 6–25 blocks Year 8 onwards: \$3,000 per block, with • Min. \$20,000 for 1 block • Min. \$50,000 for 1 block • Min. \$50,000 for 1 block • Min. \$50,000 for 2–5 blocks Year 8 onwards: \$3,000 per block, with • Min. \$50,000 for 1 block • Min. \$50,000 for 2–5 blocks • Min. \$50,000 for 2–5 blocks
Mining Lease	N/A	21 years renewable	\$476.00	\$17.60 per Ha or part thereof	\$100 per Ha. Min. \$5,000 if 5 Ha or less; otherwise, \$10.000

Table 4-1: Burnakura mining tenement fees and charges (effective 1 July 2017)

An application fee and rental is payable as follows:

- There is no limit to the number of licences a person or company may hold, but a security (\$5,000) is required in respect of each licence.
- The term of an exploration licence applied for after 10 February 2006 is five years.

The Minister may extend the term of an exploration licence if grounds for extension exist as follows:

- By one period of five years; and
- By a further period of two years.
- For all exploration licences applied for and granted after 10 February 2006, the holder of an exploration licence is obliged to surrender 40% of the number of blocks subject to the licence within 5 years of the date of grant. The minister may defer this requirement by a period of one year if grounds for an extension exist.
- The holder of an exploration licence may, in accordance with the licence conditions, extract or disturb up to 1,000 t of material from the ground, including overburden, and the Minister may approve extraction of larger tonnages.
- Exploration licences are subject to a prescribed minimum annual expenditure commitment enforced by the Department of Mines, Industry Regulation and Safety (DMIRS). This requirement applies to granted licences only, and the labour cost of the licence holders' own work on the licence (contract equivalent) may be treated as expenditure.
- The holder of an exploration licence must lodge a Form 5 Operations Report detailing the annual expenditure on a mining tenement to the Department of Mines and Petroleum.

Table 4-2 lists the Mining Tenement details and their expenditure schedule. Figure 4-1 describes tenement locations.



Figure 4-1: MMY Burnakura – tenement locations

Lease	Registered holder	Legal units	Legal area	Area (km²)*	Application date	Grant date	Expiry date	Annual expenditure commitment (AUD)	Annual rental (AUD)	Registered Native Title Claim
M 51/116	Monument Murchison Pty Ltd	На	1000	10.00	23/12/1986	13/10/1987	12/10/2029	\$100,000.00	\$18,700.00	Yugunga-Nya
M 51/117	Monument Murchison Pty Ltd	На	639.2	6.39	23/12/1986	29/10/1987	28/10/2029	\$64,000.00	\$11,698.00	Yugunga-Nya
M 51/177	Monument Murchison Pty Ltd	На	842.2	8.42	9/10/1987	22/03/1988	29/03/2030	\$84,300.00	\$15,764.10	Yugunga-Nya
M 51/178	Monument Murchison Pty Ltd	На	725.7	7.26	9/10/1987	22/03/1988	28/03/2030	\$72,600.00	\$13,576.20	Yugunga-Nya
M 51/252	Monument Murchison Pty Ltd	На	755.1	7.55	29/04/1988	6/12/1988	15/12/2030	\$75,600.00	\$14,137.20	Yugunga-Nya
M 51/478	Monument Murchison Pty Ltd	На	790	7.90	21/05/1993	10/08/1993	9/08/2035	\$79,000.00	\$15,016.10	Yugunga-Nya
P 51/2793	Monument Murchison Pty Ltd	На	195.834	1.96	29/06/2012	7/01/2014	6/01/2022	\$7,840.00	\$539.00	Yugunga-Nya
P 51/2794	Monument Murchison Pty Ltd	На	199.602	2.00	29/06/2012	7/01/2014	6/01/2022	\$8,000.00	\$550.00	Yugunga-Nya
P 51/2795	Monument Murchison Pty Ltd	На	199.014	1.99	29/06/2012	7/01/2014	6/01/2022	\$8,000.00	\$550.00	Yugunga-Nya
P 51/2796	Monument Murchison Pty Ltd	На	174.59	1.75	29/06/2012	7/01/2014	6/01/2022	\$7,000.00	\$481.25	Yugunga-Nya
P 51/2797	Monument Murchison Pty Ltd	На	179.739	1.80	29/06/2012	7/01/2014	6/01/2019	\$7,200.00	\$495.00	Yugunga-Nya
E 51/1687	Monument Murchison Pty Ltd	-Blocks	4	10.66	03/03/2012	03/03/2016	26/10/2021	\$30,000.00	\$880.00	Yugunga-Nya
E 51/1553	Monument Murchison Pty Ltd	BL.	8	13.26	03/12/2012	08/07/2014	07/07/2019	\$20,000.00	\$1760.00	Yugunga-Nya
E 51/1562	Monument Murchison Pty Ltd	BL.	13	32.46	20/05/2014	19/05/2019	19/05/2019	\$20,000.00	\$3,900.00	Yugunga-Nya & Wutha
E 51/1618	Monument Murchison Pty Ltd	BL.	4	10.66	01/07/2015	30/06/2020	30/06/2020	\$15,000.00	\$880.00	Yugunga-Nya & Wutha
Total				144.10				\$604,480.00	\$99,916.85	

Table 4-2: Burnakura Property Mining Tenement Schedule

Mining leases

For mining leases, the following applies:

- The maximum area for a mining lease applied for before 10 February 2006 is 1,000 Ha.
- After this date, the size applied for relates to an identified orebody, as well as an area for infrastructure requirements.
- Mining leases must be marked out.
- Application is made to the Mining Registrar of the relevant Mineral Field.
- An application fee and rental is payable.
- Pursuant to Section 74(1)(ca) of the *Mining Act*, an application for a mining lease shall be accompanied by a mining proposal OR a statement in accordance with Subsection (1a) and a Mineralisation report that has been prepared by a Qualified Person. The statement under Subsection (1a) shall set out information regarding the mining operation likely to be carried out including:
 - When mining is likely to commence
 - The most likely method of mining
 - The location and area of land that is likely to be required for the operation of the plant, machinery and equipment and for the other activities associated with those mining operations
 - There is no limit to the number of mining leases a person or company may hold
 - The term of a mining lease is 21 years and may be renewed for further terms
 - The lessee of a mining lease may work and mine the land, take and remove minerals and undertake all things necessary to effectually carry out mining operations in, on or under the land, subject to conditions of title.

The mining proposal for the Burnakura operation was submitted in December 2016 and approved in February 2017 (refer APM 2016 'Revised Mining Proposal Monument Murchison Gold Project Burnakura Operations' prepared for Monument by Animal Plant Mineral Pty Ltd December 2016; a subsequent letter of approval is contained in Appendix 1 DMP February 2017 'Approval for Mining Proposal – Monument Murchison Gold Project Burnakura Pit Cut-Backs and Heap Leach Facility on M 51/116, M 51/117, M 51/177 and M 51/252 Registration ID: 61054').

Mining operation

Under the *Mines Safety and Inspection Act* 1994, a mining operator must have an approved project management plan (PMP) in place before any construction or mining operations commence. This plan must be submitted via the online system of the DMIRS.

As at February 2018, the Monument operation has a PMP lodged on the DMIRS online Safety Regulation System (SRS) system. This PMP covers both construction refurbishment of the processing plant, and the mining operation is awaiting the final mining and processing plan update prior to final approval.

Other legislation covering the safe operation of the mining operations in WA and administered under the DMIRS are:

- Mines Safety and Inspection Act 1994
- Mines Safety and Inspection Regulations 1995
- Mines Safety and Inspection Levy Regulations 2010
- Various dangerous goods safety legislation including:

- Dangerous Goods Safety Act 2004
- Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007
- Dangerous Goods Safety (Road, Rail Transport of Non-Explosives) Regulations 2007
- Dangerous Goods Safety (Explosives) Regulations 2007.

It should be noted that as of December 2017, the WA government is developing a revised Work and Health and Safety Bill that will replace the *Occupational Safety and Health Act* 1984, *Mines Safety and Inspection Act* 1994, which will both in effect govern safety management at the Burnakura operation once it is in full operation.

4.5.2 Native Title Act

In 1992, the High Court of Australia determined in *Mabo* v *Queensland* (No. 2) that the common law of Australia recognised certain proprietary rights and interests of Aboriginal and Torres Strait Islander people in relation to their traditional lands and waters. In response to the Mabo decision, the *Native Title Act* 1993 (Cth) was enacted. 'Native tile' is recognised where persons claiming to hold that title can establish they have maintained a continuous connection with the land in accordance with traditional laws and customs since settlement and where those rights have not been lawfully extinguished.

The *Native Title Act* 1993 (Cth) (NTA) codifies much of the common law in relation to native title. The doing of acts after 23 December 1996 that may affect native title (known as 'future acts'), including the grant of mining tenements, are validated subject to certain procedural rights afforded to persons claiming to hold native title and whose claim has passed a 'registration test' administered by the NNTT (which assesses the claim against certain baseline requirements).

4.5.3 Effect of Native Title on mining tenements

In Western Australia, the State processes applications for exploration licences under the 'expedited procedure' of the NTA, subject to the applicant for the exploration licences first giving the State satisfactory evidence that it has offered to enter into, or is already party to, an appropriate Aboriginal heritage agreement.

Where a mining tenement is advertised under the expedited procedure, those persons having a registered native title claim (or any persons who may become persons having a registered native title claim) may object to the application of that procedure within four months of the relevant advertisement date.

If an objection is received, the National Native Title Tribunal (NNTT) must determine whether or not the expedited procedure should apply to the relevant application for the mining tenement. In doing so, the NNTT must consider whether or not the grant of that tenement:

- Is likely to interfere directly with the carrying on of the community or social activities of any holders of native title or persons having a registered native title claim
- Is likely to interfere with areas or sites of particular significance to any holders of native title or persons having a registered native title claim
- Is likely to, or will create, rights whose exercise is likely to involve major disturbance to the land the subject of the licence.

If the NNTT determines that the expedited procedure should apply to the application, the State may proceed to grant the application. If the NNTT determines that the expedited procedure should not apply to the application, the 'right to negotiate' process in the NTA will apply to the application, whereby

the applicant for the tenement, any holders of native title and registered native title claim groups over the relevant land and the State are obliged to negotiate in good faith for a minimum of six months.

4.5.4 Aboriginal Heritage Act

The Aboriginal Heritage Act 1972 (WA) (AHA) and the Aboriginal and Torres Strait Islander Heritage *Protection Act* 1984 (Cth) protect places and objects that are of significance to Aboriginal and Torres Strait Islander people in accordance with their traditional laws and customs (Aboriginal Sites). The AHA provides that it is an offence for a person to damage or in any way alter an Aboriginal Site.

Compliance with the AHA is an express condition of all mining tenements in WA. Accordingly, commission of an offence under the AHA may mean that the exploration licence is vulnerable to an order for forfeiture. The Department of Indigenous Affairs maintains a Register of sites that have been registered under the AHA. The Register does not purport to be comprehensive. Sites and objects of significance to Aboriginal persons are protected by the Act whether or not those sites are registered under the AHA. MMY may need to engage with Aboriginal persons with appropriate traditional knowledge of the land the subject of the exploration licence applications to ensure that any proposed works will not interfere with any Aboriginal sites that are not recorded in the Register.

4.5.5 Permitting and Approvals

Mining tenements are subject to various conditions under the *Mining Act*. These include standard conditions for the protection of the environment and conditions that relate to the protection of certain third-party interests in land (particularly reserves). The Burnakura Property mining tenements are subject to compliance with these conditions.

Prior to a mining company or prospector conducting any ground-disturbing activities with mechanised equipment in Western Australia, they are required by the *Mining Act* (sections 46, 63 and 82) to complete and submit a Program of Work (PoW) application to the DMIRS' Environment Division. The PoW for is used to detail:

- Exploration work to be undertaken
- Total area proposed to be disturbed (Ha)
- Land tenure
- Existing environment
- Environmental management
- Rehabilitation practices to be used.

Once approved, the PoW becomes a legally binding document which is often imposed as a tenement condition. Any alterations or expansion of the approved activities requires a new PoW application to be lodged and approved. Approved PoWs are valid for a period of 12 months unless an extension is granted. It is expected that rehabilitation activities under a PoW is completed within six months from the date the ground-disturbing activity occurs.

In addition to a number of standard environmental conditions attached to mining tenements, there are normally a number of environmental conditions attached to the approval of a PoW.

The DMIRS may require an Unconditional Performance Bond to be lodged as financial security for higher risk exploration programmes that involve significant ground disturbance (e.g. cut and fill activities). Generally, bonding is based on a standard dollar amount per hectare of disturbance but may also involve an additional rate to account for rehabilitation costs.

The Minerals Environment Branch of the Environment Division administers aspects of the *Mining Act* and Mining Regulations 181 relating to the activities of the mining industry by undertaking the

In addition, other legislation that may be applicable to the environmental regulation of mining activities (including exploration) includes:

- Environmental Protection Act 1986 (WA)
- Conservation and Land Management Act 1984 (WA)
- Wildlife Conservation Act 1950 (WA)
- Rights in Water and Irrigation Act 1914 (WA)
- Environmental Protection and Biodiversity Conservation Act 1999 (Cth)
- Contaminated Site Act 2003.

SRK could not determine any reasons or factors that would prevent the right or ability of MMY to conduct future exploration programs, over the areas covered by the granted mining tenements.

Mining leases M51/116 and M51/177 were subject to an ethnographic and archaeological survey conducted during 1996 (Macintyre, et al 1996). There were no ethnographic sites of Aboriginal significance located within the proposed boundaries of the NOA 2, NOA 4, NOA 6, and NOA 7/ 8 open pits, haul roads and waste dumps. The survey identified one archaeological site, FS 1, which consists of a creek line artefact scatter. The site is considered of moderate significance, and if disturbance of the site is required, permission under Section 18 of the *Aboriginal Heritage Act* 1972–1980 (WA) must be obtained. It was concluded that the significance of this site is reduced due to disturbance caused by cyclic flooding that results in movement of the artefacts.

Eight archaeological sites and two combined ethnographic–archaeological sites had been previously identified within a 20-kilometre radius of the NOA mine workings. It was recommended that all granite domes, outcrops and breakaways be avoided unless a thorough archaeological study of such areas has been conducted (Macintyre, et al 1996). Recommended that prior to any future development outside those areas surveyed further archaeological surveys should be undertaken (Animal Plant Mineral Pty Ltd, 2013).

The author of this section of the report has not reviewed any of the Aboriginal heritage agreements that relate to the Burnakura exploration and prospecting licences, but understands them to be in good standing.

The Aboriginal Heritage Agreements entered into with the Yamatji Marlpa Aboriginal Corporation as agent for the Yugunga Nya Claim Group provides:

- For the expeditious grant and validity of the tenements without objections by the claimant group
- The grant of the tenements is not likely to interfere directly with the community life of the claimant group, is not likely to cause damage, disturbance or interference to areas or sites or particular significance to the claimant group and is not likely to involve major disturbance to any land or waters in the claim areas
- That all work done to the tenements is in compliance with the provisions of the *Aboriginal Heritage Act* 1972 (WA) and the *Aboriginal and Torres Strait Islander Heritage Act* 1984 (Cth) the requirement for the tenement holder to undertake heritage surveys for the purposes of locating Aboriginal sites and areas of significance in case of undertaking exploration activities in certain circumstances
- Key permits and licences to conduct mining operations at the site, as listed in Table 4-3.

Monument has a licence to take water, granted by the Minister under Section 5C of the *Rights in Water and Irrigation Act* 1914. The licence permits Monument to extract up to 600,000 kL per annum from M51/116, M51/117, M51/252 and M51/177.

 Table 4-3:
 Key licences and permits required for mining operations

Licence/ permit	Licence No.	Expiry date
Groundwater Licence E51/116 & 117	GWL 74516(II)	25/07/2025
Environmental Licence to Operate a Processing Plant	L7972/2004/4	23/09/2028
Dangerous goods storage licence (Combustible Liquids)	DGS020039	20/10/2021
Dangerous Goods Storage Licence (Poisons)	DGS020313	17/10/2006
Explosives Storage Licence	ETS000462	15/01/2007
Prescribed Premises Licence		
Works Approval Licence		

Source: Mapleson et al., 2015

Extensions are still to be granted to the Dangerous Goods Storage licences and the Explosives Storage Licence. It should be a formality to reapply for these licences to allow mining and processing to recommence, but contingencies with respect to these aspects should be considered in advance.

4.6 Environmental considerations

In purchasing the Burnakura Property, Monument has inherited environmental liabilities associated with mining activities undertaken by previous owners. In addition, current exploration activities represent disturbances that will be required to be rehabilitated in accordance with tenement conditions.

Areas of disturbance for the Burnakura mining tenements are registered with the DMIRS (Environment Division). Details of areas of disturbances recorded on the DMIRS's Environmental Assessment and Regulatory System (EARS) are listed in Table 4-4 by tenement. The current total approved footprint for the Burnakura mining leases is 225.95 Ha.

Tenement	Activity	Area approved (Ha)	Area of disturbance (Ha)
M51/116	Exploration Activities	5.90	5.90
	Open Pits (NOA7/8, Alliance, New Alliance)	8.10	5.10
	Waste Dumps (NOA2, Alliance)	19.20	12.70
	Stockpiles (New Alliance)	5.90	5.90
	Mill Infrastructure & Buildings	8.50	8.50
	Pipelines	0.60	0.60
	Access Roads	5.70	5.70
	Sub-Total	53.90	44.40
M51/117	Exploration Activities	4.40	4.40
	Open Pits (Alliance, Authaal North, Lewis)	10.90	8.50
	Waste Dumps (Federal City, Authaal, Lewis/ Reward)	17.70	16.10
	Tailings Storage Facility (Reward Pit)	2.00	2.00
	Haul Roads	3.00	3.00
	Stockpiles	1.65	1.65
	Laydown Areas	14.50	9.70
	Access Roads	0.60	0.60
	Sub-total	54.75	45.95
M51/177	Exploration Activities	1.00	1.00
	Open Pits (NOA 7/8))	4.20	4.20
	Waste Dumps (NOA2, NOA 7/8)	25.40	2.00
	Haul Roads	1.55	1.55
	Laydown Areas (NOA7/8)	2.20	2.20
	Access Roads	2.10	2.10
	Sub-Total	36.45	13.05
M51/178	Exploration Activities	1.00	1.00
	Open Pits (Banderol)	5.10	0.00
	Waste Dumps (Banderol)	12.80	5.10
	Haul Roads (Banderol)	2.55	2.55
	Laydown Areas (Banderol))	1.30	0.00
	Explosives Magazine	1.20	1.20
	Sub-Total	23.95	9.85
M51/252	Mine Camp	2.50	2.50
	Sub-total	2.50	2.50
Total		171.55	115.75

 Table 4-4:
 Areas of environmental disturbance

The NOA 4 and NOA 6 open pits were utilised for tailings storage during previous milling operations conducted by Tectonic Resources NL. These were backfilled, capped and rehabilitated between 2006 and 2009 previous owners (Tectonic Resources NL and ATW Gold Corp). Tectonic Resources NL was granted approval to utilise the Lewis and Reward open pits, located 3 km southwest of the Burnakura gold plant for future tailings storage. Subsequently, ATW Gold Corp utilised the Lewis and Reward pits to dispose of tailings from milling of the NOA 2 underground mine between 2007 and 2009.

Upon purchasing the Burnakura Property, Kentor Gold utilised both the Reward and Lewis pits for tailings disposal during milling of material mined from the Lewis, Reward and Alliance open pit cut backs. The Reward open pit is currently estimated to be at 80% capacity while the Lewis pit no longer contains any tailings. Final storage capacity of both open pits will depend on consolidation rates of the current and future tailings. Subsequent to the completion of mining by Kentor Gold, the Lewis and Reward pits were bunded and perimeter fencing was erected around the Reward pit.

MMY staff annually review the environmental bonds and the areas of disturbance as quoted in Table 4-4.
5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

Mapleson et al., 2015's description for the accessibility, climate, local resources, infrastructure and physiography is largely unchanged and is listed in the following sections with minor updates by SRK as required.

5.1 Access

Access to the Burnakura Property area is approximately 765 km north-northeast of Perth via the sealed Great Northern Highway and then via numerous unsealed private and shire-maintained roads. Access from the north is via the Nannine-Polelle Shire Road that departs Great Northern Highway about 29 km south of Meekatharra, then via the private haul road to the Burnakura gold processing plant, a total distance of about 26 km. The haul road is in good condition and allows access in all weather conditions except for some of the very highest rainfall events.

Alternatively, the project area may be accessed from the south through the Tuckanarra mining centre on the Great Northern Highway (approximately 38 km north of Cue) via the Culculli or Reedy road east to the Reedy Mining Centre, then via an old haul road to the Burnakura gold plant, a total distance of about 48 km.

Access by four-wheel drive vehicle within the project area is via various mine infrastructure roads, previous exploration tracks and pastoral tracks (Figure 5-1).



Figure 5-1: Burnakura Property Access

5.2 Climate and physiography

The project area falls within a semi-desert Mediterranean climatic regime with mild winters and hot summers with most rain falling in the cooler months of April–September, although cyclonic systems can cause heavy falls in the summer months. Rainfall is highly variable but averages between 200--250 mm per annum and a maximum mean monthly rainfall of 56 mm in February. Temperature ranges from a winter mean of 16° C to a summer mean of 38° C in the general region, although summer maxima in excess of 40° C are common. Evaporation rates are high with an annual average of 3,563 mm. Mining and exploration operations may be undertaken all year round, however may be interrupted by heavy or prolonged rainfall.

The Burnakura Property area is located within the Murchison bioregion, being characterised by low hills and mesas separated by flat colluvium and alluvial plains. Within the project area, topography is gently undulating, ranging between about 500 and 520 m ASL. Vegetation is typically composed of low mulga woodland (Acacia aneura) on broad flat colluvium plains and tree steppes of Eucalyptus and Triodia on sandy plains. As a result of historical mining activities, some of the project area has been denuded of mulga. The principal soil type is shallow earthy loam, colluvium and alluvium sheet wash overlying red-brown hardpan (Wiluna Hardpan). Shallow stony loams occur on hills and red earth sands on sand plains.

The project area lies within the upper Murchison River catchment on the eastern flank of Lake Annean. Locally, the drainage trends are to the west and north into Lake Annean. The catchment area for the intermittent creek line that runs past the NOA underground mine in the northern portion of the project area is large, extending some 9.3 km to the south.

High rainfall events in the catchment area that led to flooding of the unnamed ephemeral creek that flows in a north-easterly direction passing between the NOA 1 and NOA 2 open pits previously resulted in breaching of the pit bund walls and flooding of the pits and underground mine in 2005 (Harvey et al, 2008).

Tectonic Resources NL developed a revised surface water management scheme that addressed these issues in terms of safety for personnel in the case of flood level events similar to that experienced in the past. Contingencies implemented after the flood event included the raising of the bund wall on the perimeter of the NOA 2 pit to 2 m while maintaining the bund wall of the NOA 1 pit at a height of 1 m.

Harvey et al. (2008) were of the opinion that a flood event as experienced in the past would result in failure of the bund wall option to create a diversion upstream within the catchment of the creek. Discussions during a 2007 site visit revealed that the earthworks required would be minor to divert the stream into a neighbouring yet isolated catchment (Harvey et al., 2008). No declared rare flora or any scheduled fauna have been identified over the Burnakura Property area (Woolard, 2008).

5.3 Local resources and infrastructure

The majority of the Burnakura Property area lies within the municipal Shire of Cue (population 298; ABS 2013). The northern portion of the project (mining lease M51/116) lies within the Shire of Meekatharra (population 1,521; ABS 2013). The local economy in the region is dominated by gold, copper, nickel and iron ore mining operations and pastoral stations (cattle and sheep). Mining operations are supported by a predominantly fly-in-fly-out (FIFO) workforce.

Project infrastructure includes a 260,000 TPA CIL gold processing plant, diesel powered generators and a fuel storage facility, laboratory, workshops, administration offices, and a serviceable 118-person accommodation village. This infrastructure is currently used to support all exploration activities over the mining tenements. The majority of the Burnakura Property mine infrastructure is located on mining lease M51/116. The mine accommodation village is located on mining lease M51/252.

The project is serviced by the town of Meekatharra located approximately 55 km to the north by road. Meekatharra is serviced by regular road freight and commercial passenger air services from Perth.

Groundwater up to 600,000 kL per annum is authorised for abstraction under Groundwater Well Licence. Process plant water sources include the NOA1' NOA7/8 and New Alliance open pits. Potable water is obtained using a reverse osmosis plant with the source water from a bore adjacent to the accommodation village.

6 History

Mapleson et al. 2015's description of site history is largely unchanged and is listed in the following sections with minor updates as completed by SRK.

6.1 **Prior ownership**

The Burnakura Property area and surrounding environs have a long gold mining history with underground operations commencing in 1897 at Alliance and Federal City areas. The first discovery of gold in the district was made to the northwest at Nannine in 1890, prompting a gold rush in the area. In 1897, gold was discovered at Monument's Gabanintha Property located 20 km to the northeast. Gold at Reedy located about 45km to the west southwest of Burnakura was discovered in 1899.

Since 1982, a total of seven mining companies have undertaken mineral exploration and gold mining operations over the Burnakura Property prior to being acquired by Monument in late February 2014.

Metana Minerals NL originally pegged a large area of ground including part of the Burnakura Property as part of their Reedy Project. Subsequent to a merger with Gold Mines of Australia (GMA) and other entities in 1994, open pit mining and exploration of the Burnakura property continued until 1997 (Tectonic Resources NL, 2006). Metana Minerals NL (Metana) and later GMA undertook substantial open pit mining in the period between 1989 and 1987.

Following acquisition from the GMA administrators in 1988, St Barbara Mines Ltd (SBM) removed significant tonnage of previously stockpiled material between 2000 and 2003 that was treated at their Bluebird Mill (now Yaloginda) south of Meekatharra (Woolard, 2008). In late August 2003, SBM entered into a joint venture with Coronet Resources Ltd, whereby Coronet could earn up to 70% in the Burnakura project by spending \$2M.

In July 2003, Extract Resources Ltd (Extract) entered into a Joint Venture with St Barbara to explore and develop the NOA 2 deposit, later buying St Barbara's remaining interest in the project in 2004. In the same year, Extract and Tectonic Resources NL (Tectonic) entered into a joint venture (the Burnakura JV), whereby Tectonic subsequently acquired a 30% interest in the Burnakura mining tenements and a 50% interest in the NOA 2 mine. Tectonic acted as managers of the Burnakura JV and operated the NOA 2 mine between 2005 and 2007. The present Burnakura gold plant was commissioned by Tectonic in in November 2005.

ATW Gold Corp (TSX-V: ATW) acquired the Burnakura property in late December 2007 and resumed mining of the NOA 2 underground mine in March 2009. The mine was subsequently placed on care and maintenance in November 2009. Jinka Minerals Ltd (Jinka Minerals) acquired the property from ATW in June 2010, and Kentor Gold Ltd (Kentor Gold) acquired the Burnakura Property subsequent to a friendly acquisition of Jinka Minerals. Kentor Gold recommenced mining operations of the NOA 2 underground and a number of historical open pits in August 2012. Kentor Gold also took up additional ground (current exploration and prospecting licences). Production ceased in late April 2013, when the operation was placed in care and maintenance. Monument acquired all of Kentor Gold's interests in the project on 21 February 2014 (see Monument's press release #14-2014, dated 25 February 2014).

6.1.1 Production history

According to de la Hunty (1970), the major historical production from Burnakura from 1898–1916 amounted to 42,545 t for 32,231 ozs at an average grade of 26 g/t Au (Table 6-1). The majority of this production was from the New Alliance, Alliance and Federal City underground workings. This is supported by the figures compiled by Tectonic (Armstrong, 2006).

Production prior to the commissioning of the Burnakura gold processing plant in 2005 from the 13 producing pits and two underground operations amounted to 1.8 Mt at 3.7 g/t Au for a total of 216,000 ozs Au (Harvey et al., 2008). All mine production prior to the commissioning of the Burnakura gold plant by Tectonic in 2005 was processed at the Reedy gold plant up to 1997 and later the Bluebird gold plant at Meekatharra.

Between 1989–1997, Metana Minerals and later GMA trucked ore from a total of open pits to their Reedy gold processing plant. Subsequent operators St Barbara trucked low grade material stockpiled by GMA to their Bluebird gold plant at Meekatharra (Table 6-1).

Area	Tonnes (t)	Grade (g/t Au)	Au Rec (oz)
1898–1916 (Historic)			
Alliance & New Alliance	17,600	41.2	23,000
Federal City	21,450	15.5	10,700
Subtotal	39,050	27.0	33,700
1989–1997 (Metana/ GMA)			
Alliance	20,000	3.0	1,900
New Alliance	250,000	3.5	28,100
Lewis	77,000	2.5	6,200
Authaal	71,100	5.7	13,000
Authaal North	75,800	2.9	7,100
Banderol	300,000	2.9	28,000
Federal City	30,400	1.3	1,200
NOA 1 Laterite	168,250	3.0	16,050
NOA 1	84,750	2.5	6,750
NOA 2	218,450	3.7	25,650
NOA 4 & 6	19,100	2.2	1,300
NOA 7 & 8	441,600	3.3	47,300
Sub Total	1,756,450	3.0	182,550
Total	1,795,500	3.7	216,250

 Table 6-1:
 Burnakura gold production pre-2005 (Armstrong, 2006)

Recent production history since the Burnakura plant commissioning being shown in Table 6-2. SRK notes that there are periods in 2008, 2010 and 2011 that the processing plant was idle.

Year	Tonnes (t)	Grade (g/t Au)	Au Rec (oz)	Company
2005	17,773	1.3	716	Tectonic*
2006	132,164	6.8	28,648	Tectonic*
2007	33,644	6.4	6,906	Tectonic*
2008	-	-	-	-
2009	85,519	5.6	14,700	ATW Gold Corp*
2010	-	-	-	-
2011	-	-	-	-
2012	91,365	1.5	3,840	Kentor Gold+
2013	49,700	2.48	3,561	Kentor Gold+

Table 6-2: Burnakura gold production 2005–201

Source: * Mapleson et al., 2015; + MLM Drilling 2013, updated by MMY

6.2 Historical mineral resources

For the Burnakura Property, Mineral Resources were completed according to NI 43-101 for the Alliance and New Alliance (ANA) deposit in 2015 by Mapleson et al., 2015 with the grade tonnage in Table 6-3. This Mineral Resource is considered historic, as it has been updated by SRK in 2018 on the basis of additional data collection and interpretation discussed in this report.

Table 6-3:ANA Historical Mineral Resource 2015

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)
Indicated	0.5	1,880	1.6	98
Inferred	0.5	100	1.5	4

Source: Mapleson, et al, 2015.

Numerous historical Mineral Resources are recorded in the Project Area but have not been completed to appropriate reportable standards and Section 2.4 of the Instrument, and as such, are not discussed by SRK.

7 Geological Setting and Mineralisation

7.1 Regional Geology

The Burnakura gold project covers an area on the eastern margin of the Archean Meekatharra-Wydgee greenstone belt within the north-eastern Murchison Domain of the Yilgarn Craton (Van Kranendonk and Ivanic, 2009). The Murchison Domain forms part of the Youanmi Terrane. Limited geochronology shows that most greenstones and granitic rocks of the Murchison Domain were deposited or emplaced between 3.0 Ga and 2.6 Ga.

Recent (2017) re-mapping at 100,000 scale, geochemistry and geochronology undertaken as part of the Geological Survey of Western Australia's (GSWA) regional mapping program has resulted in the development of a new lithostratigraphic scheme of the Murchison Domain. The regional geology of the Burnakura Property area within this new framework is presented in Figure 7-1.



Figure 7-1: Interpreted bedrock geology for Cue Meekatharra area of the Murchison Domain

Note: PS-Polelle Syncline.

Source: Van Kranendonk and Ivanic, 2009

The majority of greenstones within the Meekatharra-Wydgee belt have been stratigraphically placed within the Polelle Group and the Norrie Group of the Murchison Supergroup (Van Kranendonk et al., 2013). The Polelle Group conformably overlies the basal Norrie Group and contains tholeiitic basalt, komatiitic basalt, komatiite and thin interflow felsic volcaniclastic sedimentary rocks of the basal Meekatharra Formation, andesitic to rhyolitic volcanic and volcaniclastic rocks of the conformably overlying Greensleeves Formation, and conformably overlying banded iron formation (BIF) and felsic volcaniclastic rocks of the upper Wilgie Mia Formation. The basal Norrie group comprises a thick succession of pillowed and massive tholeiitic basalts of the Murrouli Basalt and conformably overlying

felsic volcaniclastics with interbedded BIF and felsic volcanic rocks of the Yaloginda Formation, seen at Figure 7-2.



Figure 7-2: Stratigraphy of the north-eastern Murchison Domain after Van Kranendonk and Ivanic (2009)

The main structural deformation events are described by Watkins & Hickmann (1990) with five deformational events recorded in the Murchison Domain. Horizontal tectonic movement during the D1 event involved recumbent folding and thrusting as well as the intrusion of the monzogranite along the Polelle Group. The D2 phase of deformation produced tight, upright folds with east-trending fold axes including the Polelle Syncline (Van Kranendonk, 2008). This event deformed the entire Murchison Supergroup including the pegmatite banded gneiss and the pre-D1 recrystallised monzogranite.

An overprinting of a more intense D3 event is represented by tight isoclinal upright folds with NNE to NNW trending fold axes that developed in response to east-west compression. A strong penetrative foliation (S3) formed during D3 is well-preserved and defines the dominant fabric throughout the Murchison Domain.

Development of large-scale D4 shear zones formed in response to a progressive increase in strain through the D3 event associated with an approximate east-west compression. These developed an extensive NW-SE to NE-SW, trending an anastomosing shear zone system with a dominant NNE trend characterised by dextral, crustal scale structures with many extending greater than 100 km and up to 1 km wide (Watkins and Hickman, 1990). The north to NNW trending structures are typically not as extensive and accommodated variable displacement trajectories, including sinistral (Watkins and Hickman, 1990).

Peak regional metamorphism was contemporaneous with D4 constrained between D3 folding and the emplacement of post folding granitoids at 2941 Ma (Watkins and Hickman, 1990). The majority of D4 deformation occurred under greenschist facies conditions.

Post-folding granitoids are contemporaneous with D4 and were probably localised by these structures. The final event (D5) of east to SE trending shear zones and faults occurred in the north-western part of the Murchison Domain.

7.2 Local Geology

The majority of the Burnakura gold project covers Archaean basement rocks assigned to the 2815--2805 Ma basal Norrie Group of the Murchison Supergroup, covering the eastern margin of the Meekatharra-Wydgee greenstone belt. The Norrie group comprises a thick succession of pillowed and massive tholeiitic basalts of the Murrouli Basalt, and conformably overlying felsic volcaniclastics with interbedded BIF and felsic volcanic rocks of the Yaloginda Formation (Van Kranendonk et al, 2013). On the southeastern limb of the Pollele Syncline a Ti-rich, Al-depleted komatiite and komatiitic volaniclastic rocks occur as part of the Norrie Group (Van Kranendonk et al, 2013).





Note: Meekatharra-Wydgee greenstone belt and Mt Magnet Fault Source: Spaggiari, 2006

The Burnakura gold deposits are situated along a northeast trending splay (Burnakura Shear Zone) that parallels and is linked to the north-northeast trending regional scale Mt Magnet fault. The Mt Magnet fault is the major east bounding structure to the 'Meekatharra structural zone', a major regional, northeast-trending shear dominated zone, about 50 to 60 km wide, incorporating the Meekatharra area and extending through the Cue region as far south as Mount Magnet (Spaggiari,

2006), as shown in Figure 7-3. The Meekatharra structural zone is dominated by north- and northeasttrending folds and shears, including refolded folds with approximately coplanar fold axes. Many of the folds are truncated by shears or faults, and the structural zone is interpreted as a major zone of shearrelated deformation.

A regional scale structural interpretation of the Burnakura and Gabanintha areas was completed in 2012 by Warwick Crowe for Kentor Gold. The interpretation further advanced the structural interpretations completed by Roger Marjoribanks on the NOA and Alliance deposits for Tectonic Resources between 2004–2006.

Burnakura Gold deposits have formed within a number of distinct lithostructural settings, all of which are considered to have developed in a regional dextral deformational setting (Crowe, 2012).

A regolith of extensive sheet wash cover largely obscures weathered Archaean basement rocks that host the Burnakura gold project. Sheet wash cover is variable in thickness over the Burnakura area from a few metres up to more than 20 m. Weathering generally persists to a depth of around 40 m (coinciding with the regional water table), although preferential oxidation along mineralised basement structures persists to far greater depths.



Figure 7-4: Burnakura gold project area with deposit locations on aerial photograph

Source: Crowe 2012

7.2.1 NOA deposits

The NOA deposits (also known as North of Alliance) are comprised of the NOA 1 to 8 deposits numbered south to north as shown in Figure 7-4. The main deposits are NOA 2 and NOA 7, with underground operations undertaken at NOA 2 and major open pit mining on NOA 7. The NOA deposits are located in a flat sheet wash area and underlain by acid to intermediate volcanic rocks and associated sediments within mafic and ultramafic intrusives and volcanics. Five of the six known gold concentrations in this area (NOA 2, 4, 6, 7 and 8) are co-linear within a northerly trending dilationary structure that splays northwards from the Burnakura Fault and which have been traced over a distance of 1600 m.

The NOA 1 deposit is offset some 200 m to the east along a different but related structure. The ore zones are identified by quartz stockwork veining that is bound by silica altered wall rocks.

The NOA 2 gold mineralisation lies within a regional thrust zone called Burnakura Thrust Zone (BTZ) that strikes north-south and dips at 30°–60° to the east. The thrust zone is a regional structure, and elements of the structure are present in all the deposits of the NOA-Alliance line. The thrust zone cuts through a dolerite sill which is interpreted as having intruded along a sequence of felsic pyroclastics flows and associated sedimentary rock sequences (refer Figure 7-5). The BTZ is the dominant feature of the NOA 2 deposit, constraining and controlling the economic gold mineralisation defined at depth. The highly deformed package of rocks contained within the BTZ is locally known as the mine sequence. The original lithologies are dominated by altered mafic with minor fine grained felsic rocks.



Figure 7-5: NOA 2 Pit interpreted geology

Source: Marjoribanks, 2005.

The NOA 4 & 6 deposits are within the BTZ have variable dips and widths. It may also split into more than one branch. The immediate host rocks to the mineralised shear zone are also variable within dolerite, silty sediments and felsic volcanic units (Marjoribanks, 2005, Figure 7-6).



Figure 7-6: Interpreted geology of NOA 4 & 6 open pits

Source: Marjoribanks, 2006.

NOA 7 and 8 are the northernmost pit and contain a mineralised zone over a strike length of 560 m. The zones strike 40° and dips 50° to the east. Pit depth is down to 61 m. Mineralisation is open along strike to the north and south as well as open down dip. The structural setting for the gold mineralisation is interpreted to be similar to that of the NOA 2 deposit, in that the mineralisation appears to be confined to the BTZ. The host lithologies are predominantly sedimentary and felsic volcanoclastic units. The footwall of the mineralised zones changes from felsic volcanoclastics below NOA 7 in the south, to an ultramafic lithology in the north below NOA 8.

7.2.2 Alliance and New Alliance (ANA) deposits

The geology within the Alliance open pit consists of a low grade meta-volcano-sedimentary succession comprising an interlayered sequence of felsic volcanics and banded iron formation (BIF). The pit is

located along a moderate (\sim 40°) east dipping, north-south trending eastern limb of a fold. The hinge zone of this fold is exposed in the north face of the pit.

Previous mapping by Marjoribanks (2004) identified three BIF horizons within the sequence with the two lower units associated with quartz veining and associated gold mineralization (Figure 7-7). Subsequent mapping undertaken by Crowe (2012) in the pit provides a modified geological interpretation. The main difference is that the later model interprets two BIF horizons (a lower and upper) as opposed to three proposed by Marjoribanks (2004).

The BIF units are each around 1–3m thick and are spaced around 15–20 m apart. The BIF comprises strongly bedded hematite and chert layers. The chert layers are commonly a distinct bright-red jasperlite. The top surface of each BIF horizon is markedly planar and defined by a strong foliation. This contrasts with the lower surface of the BIF units that are typically strongly folded. Axial planes of folds flatten and rotate into parallelism with the top surface of the BIF. This is explained as the result of shearing along the top surface of each BIF. Shearing was initiated at the same time as the folding and was located along this contact by the extreme ductility contrast between the BIF and enclosing rocks.

Bedding strikes north to northeast and dips east at 25° to 50° . Bedding is folded at all scales by a set of open to moderately tight, sinistral folds that plunge NNE at around 30° . A well-developed, penetrative, axial-plane cleavage to these folds can be identified in almost all rocks in the pit. The cleavage strikes NNE and dips at 75° –80° to the ESE.

An intrusive mafic unit is present along the upper benches of the west wall. This unit is a massive redbrown-purple coloured rock being oxidised. Minor steep dipping, east trending, 50–100cm thick felsic dykes intrude the felsic volcanics and BIF on the west central wall of the pit.

There are a series of steep, south dipping faults that trend east–west, with local subsidiary splays trending northeast–southwest. The distribution and geometry of the BIF units on either side of this fault zone are consistent with a predominant normal dip-slip displacement and possibly a small component of dextral accommodation. The changing orientation of BIF A unit in the south as it transects the western pit wall suggests the anticline axis is proximal to the southern western pit wall (Figure 7-7). This is also supported by the apparent increasing limb separation between BIF's A and B in the northern section of the pit indicative of a thickening hinge zone (Figure 7-7).



Figure 7-7: Alliance pit mapping

Source: Crowe, 2012.

The structural data collected by Crowe (2012) through the Alliance Pit define a coherent fold structure across the late faulting. These data are consistent with a shallow plunging north trending normal to inclined fold. The limited foliation data suggests the axial plane is near vertical and trend north–south, defining a normal plunging fold. However, this is inconsistent with the northeast plunging fold axis which is well defined by the distribution of the BIF bedding data. A more optimal axial plane orientation maybe more inclined and trend NNE-SSW, Figure 7-7.

Gold mineralisation at Alliance is associated with north-trending, shallow east dipping (25–50°) zones of thin quartz veining. The veins are conformable with bedding, and usually occur along, or proximal to, the upper and lower contacts of the BIF units. It is postulated that the location of gold mineralisation was directed by the extreme ductility contrast between the BIF units and surrounding tuffaceous sediments.

The following description of Alliance ore is provided by Marjoribanks (2004), and refers to remnant quartz veining of Lode 2 observed in the southern pit wall: 'The vein is composed of massive white quartz up to 1 m thick. In places, the quartz is brecciated and has been re-cemented with later silica. A laminar banding defined by pale grey- dark grey quartz is also present. The upper 50–100 cm of

BIF adjacent to the main vein is cut by numerous, irregular thin quartz veinlets. Abundant limonite, as blebs and zones with box-work after pyrite, is associated with these veinlets, and indicates sulphidation of the iron formation from fluids derived from the vein fractures.'

At New Alliance, the NNE-striking BIF horizons dip at 35–45° to the east and are hosted by felsic volcanoclastics and pillow basalts. The New Alliance pit is 375 m long with a maximum depth of 85 m at its northern end. Gold mineralisation at Alliance and New Alliance has been defined over a 1,150 m strike length.

7.2.3 Federal City

At Federal City, gold mineralisation is associated with quartz veining at or near the contact between an ultramafic and a basaltic unit. The ore structure strikes northwest and dips to the northeast at 30--40°. Low grade mineralisation appears to exist below the pit floor and is open at depth. The Banderol deposit is located in a sequence of talc-carbonate altered ultramafic rocks which are in turn overprinted by potassic alteration with associated quartz veining. The orebody strikes in a north–south direction and dips at 30° to the east. Mineralisation appears to be open along strike to the north (Harvey et al, 2008).

7.2.4 Authaal

Gold mineralisation at the Authaal and Authaal North pits occur along a northeast-southwest trending direction and dip towards the west. Mineralisation is hosted by oxidised mafic and ultramafic rocks with associated quartz veining. At Authaal North, quartz veining does not appear to be an indicator of gold mineralisation. Mineralisation occurs below the pits, although it appears to be erratic in extent. A second structural feature is evident in the pit wall striking to the west (Harvey et al, 2008).

7.3 **Gold mineralisation**

Known gold deposits within the Murchison Domain appear to be particularly abundant and spatially located within the Meekatharra structural zone. According to Van Kranendonk et al. (2013), field mapping and geochronology undertaken as part of the Geological Survey of WA's Murchison regional mapping program indicates that D4 structures formed at or soon after emplacement of 2660 Ma granites and continued during gold mineralisation.

Gold mineralisation is thought to have extended for at least 30 Ma from 2,660 to 2,630 Ma during predominantly strike-slip D4 shearing. Significantly, the peak of granitic magmatism at 2,660 Ma is coincident with the onset of major gold mineralisation, suggesting a cogenetic relationship through magma- and heat-driven remobilisation of mineralization originally hosted by older volcanic rocks. Gold deposition has been precisely dated at 2,639±4 Ma in the South Emu deposit at the Reedy mining centre, ~20 kilometres southwest of Burnakura.

The BTZ mineralisation is typical of a brittle to semi-ductile shear zone forming semi-continuous dilational veins. A mineralised horizon may extend >100 m, but the thickness and the tenor of mineralisation within these horizons is highly variable and discontinuous. The thickness may vary by $\pm 100\%$ on the 5–10 m scale (Marjoribanks, 2005 & 2006).

The NOA mineralisation is associated with the NOA fault and NOA splays. The mineralisation is dominated by steep dipping quartz (±minor sulphides) veins orientated parallel to the foliation of the fault zone. Minor sulphides are present and little alteration of the host lithology is also observed. The gold mineralisation is low grade (i.e. <1.5 g/t) and sporadic, but within the BTZ moderate grades have been recorded ranging from ~3 to 4 g/t.

The ANA prospects, the rheological contrast between the BIFs and the tuffs, have likely played an important role as an additional geological control to create a favourable environment for veining and gold mineralisation.

8 Deposit Types

Based on classification from Watson and Hickman (1990), there are three main types of epigenetic gold deposit which can be recognised in the Murchison Domain:

- Basalt-hosted and, less commonly, dolerite-hosted quartz vein deposits
- Ultramafic schist-hosted, and less commonly mafic schist-hosted, shear zone deposits
- BIF-hosted and chert-hosted deposits.

These epigenetic gold deposits have been described by Groves et al (1993) as mesothermal or orogenic shear hosted gold deposits.

Additionally in the Burnakura gold project area, lateritic-hosted gold is found at Tuckabianna and Reedy. Laterite-hosted gold deposits occur within 1 km of Archaean epigenetic deposits. Lateral transport of gold has been minimal and some of the deposits are partly residual. Gold enrichment zones in laterite profiles are largely the result of precipitation at water-table redox barriers (Watson and Hickman, 1990).

8.1 Mesothermal/ orogenic shear hosted gold deposits

Mesothermal (or orogenic) gold deposits worldwide, irrespective of age, have a number of common features. They are normally formed in convergent-margin settings, under compressive or transpressional stress regimes, from deep (metamorphic) low-salinty $H_2O-CO_2+/-CH_4$ ore fluids that move into zones of structural permeability within volcanic (e.g. greenstone) or sedimentary (e.g. slate) belts (Yeats and Vanderhor, 1998).

In Archaean greenstone belts, there is a crustal continuum of mesothermal lode-gold deposits which formed under conditions ranging from about 180°C at 2-5 km depth to >650°C and >15 km depth (Groves, 1993, Yeats and Vanderhor, 1998, Groves et al 1993). They are a coherent genetic group on the basis of:

- 1. A metal association of Au>Ag, associated with As+/-Te+/-Sb+/-W+/-B, and low Cu, Zb Zn
- 2. Deposition from a consistently low salinity, near neutral H₂O-CO₂+/-CH₄ ore fluid
- 3. Consistent wallrock alteration envelopes involving addition of CO2, S, K and other LILE
- 4. Their extensive vertical extent, with only cryptic vertical alteration zonation but marked lateral alteration zonation
- 5. Their strong structural control.



Figure 8-1: Schematic representation of crustal environments of hydrothermal gold deposits in terms of depth of formation and structural setting within a convergent plate margin

Source: Groves et al, 1993

Lode gold deposits are generally high-grade, thin, vein and fault-hosted. They are primarily made up of quartz veins also known as lodes or reefs, which contain either native gold or gold sulfides and tellurides. Lode-gold deposits are intimately associated with orogeny and other plate collision events within their geologic history, as shown in Figure 8-1 and Figure 8-2.



Figure 8-2: Schematic of orogenic gold mineralisation in viable structural styles, host rocks and metamorphic settings

Source: Yeats and Vanderhor, 1998

8.2 Laterite-hosted gold deposits

The Archaean cratons of WA have been subjected to prolonged weathering, resulting in the development of a complex regolith. In-situ weathering of basement rocks produces a weathering profile typified from bottom to top by saprock, saprolite, clay and/ or mottled clay zones, and ferruginous duricrusts.



Figure 8-3: Lateritic gold deposit (Callion, WA) showing gold dispersion and enrichment Source: Butt, 1998 Source: Butt, 1998

The characteristics of laterite gold deposits are shown in Figure 8-3 and summarised by Butt (1998) as the following:

- Flat-lying zone of enrichment, contiguous with the ferruginous and mottled zones of the laterite profile
- Mostly at the surface or buried by shallow (<20m) sediments
- Commonly thin (2–10m)
- Characterised by ferruginous pisolitic gravels, nodules and duricrust
- Fine-grained Au of high fineness (Ag <0.5%) and some residual primary Au
- Particles of coarse Au may be present as primary nuggets and inclusions in vein quartz and pisoliths, and as secondary crystals developed with Fe oxide segregations.

Widespread multi-element geochemical anomalies (Au+/- As+/-Sb+/-W) in the lateritic residuum are often an important exploration vector, often being much larger (100–400 times broader) than the primary source. They are formed by dilute groundwater in the vadose zone, gold probably mobilised by organically derived ligands and precipitated by dilution, reduction by Fe²⁺ oxidation (Butt, 1998).

9 Exploration

9.1 Aerial photography

Fugro Spatial Solutions Pty Ltd (Fugro) of Perth was commissioned to complete a fixed wing aerial photography survey. The survey was flown on 17 September 2014. The survey covered the main Burnakura mining leases (M51/116, M51/117, M51/177, M51/ 178, M51/252, M51/478), as well as the main gazetted access roads and private haul roads (L51/78, L51/79 and L51/81) a total area of 59 km².

The survey and all associated data were registered with the DMP (Registration No. 70979) on the MAGIX airborne geophysical index (MAGIX ID. 4190). Ortho-imagery and SGM products were delivered by Fugro in various digital file formats including ECW, MapInfo TAB, CSV. Derived datasets included digital imagery at 12 cm pixel resolution and a DEM gridded at 5m x/y.

9.2 Geophysical data

UTS Geophysics undertook an airborne geophysical survey for magnetics, radiometrics and digital elevation in 2008. The survey was conducted with 40 m line spacing and covered an area of 162 km² encompassing the Burnakura mine leases.

Fugro Airborne Surveys completed an airborne geophysical survey for magnetics, radiometrics and digital elevation in 2004. The survey was conducted with 400 m line spacing and covered an area of 55,400 km² for Geoscience Australia, covering the Cue and Kirkalocka areas.

SkyTEM Australia conducted an aerial electromagnetic survey for the Department of Water WA with 4000 m line spacing in 2015.

All geophysical data are available from the DMP website for download as required.

9.3 Structural Interpretations

Several structural interpretations have been completed within the Burnakura gold project by different consultants with the use of the GSWA geophysical datasets and included site visits to specific sites. Interpretations have been conducted by Crowe (2012) (Figure 9-1), Marjoribanks (2004, 2005, 2006) (Figure 7-5, Figure 7-6) and Baxter (1993). Results from the structural interpretations have been included in the mineralisation domaining at the prospects.



Figure 9-1: Regional structural interpretation of the Burnakura project area utilising GSWA geophysical data

Source: Crowe, 2012

10 Drilling

Drilling within the Burnakura gold project has been undertaken by numerous mining and exploration companies since 1987 though to 2017. All data utilised within this review has been taken from the Monument supplied Microsoft Access database, MurchisonExport_8Dec2016.mdb (Master database) and burnakura_2014019.mdb (Authaal database). The Authaal database was used only for the Authaal resource estimation as this was compiled for previous estimates.

Within the Master database, the main companies which have completed drilling are ATW Venture Group, Kentor Gold, Gold Mines of Australia and Monument. Drilling completed by Tectonic Resources, Homestake, Metana and St Barbara Mines Ltd has not been attributed within the Drill Hole collar table of the database supplied. Within the Authaal database, drilling has been completed from 1990–2012 with companies identified as Kentor Gold, Metana and Gold Mines of Australia.

In the Master database, there are several tables as a compilation of all drilling information within the Burnakura, Gabanintha and Tuckanarra projects. Drill hole information on collar location, down hole survey, geology, mineralisation, core recovery, assays, QA/QC and structural data have been collated from historical databases and original logs by Monument and previous operators of the project.

A summary of the drill holes used from the Master database for Alliance, New Alliance, NOA 1–8, and Federal City is indicated in Table 10-1 and Table 10-2.

Company	Hole type	Depth drilled (m)	No. of holes	Average depth (m)
Monument	RC	46,847.5	531	88
	DDH	1,797.13	20	89
Other	RC	123,821.1	1,866	65
	DDH	35,349.05	236	149
	Other	170,579.09	8,479	20
Total		378,393	11,132	

 Table 10-1:
 Global summary of drilling from the Master database

Note: 'Other' hole types include aircore (AC), rotary airblast (RAB), underground sludge holes, underground face samples, grade control and blast holes. These holes have not been utilised within the resource estimation process except to assist in mineralisation domain definition.

RC sampling was completed using reputable drilling contractors with industry standard drilling equipment for the time, containing appropriately sized compressors suitable for keeping drill holes clean and dry at appropriate depths. Sample splitting techniques are appropriately completed using three tier riffle and cone type splitters with globally appropriate sample recoveries recorded.

DDH was also completed using reputable drilling contractors with industry standard drilling equipment with globally appropriate recoveries recorded for the core size used.

Deposit	Company	Hole type	Depth drilled (m)	No. of holes	Drilled metres (%)
NOA 1-8	Monument	RC	19,841	180	34.6
		DDH	312.03	3	0.5
	Other	RC	5,843	704	10.2
		DDH	31,389.8	184	54.7
Alliance New Alliance	Monument	RC	18,194	206	32.4
		DDH	1,116.6	11	2.0
	Other	RC	34,673.1	632	61.7
		DDH	2,241	26	4.0
Federal City	Monument	RC	8,812.5	145	51.4
		DDH	368.5	6	2.1
	Other	RC	7,815	165	45.6
		DDH	150	2	0.9
Authaal	Monument	RC	-	-	-
		DDH	-	_	
	Other	RC	22,025	374	93.4
		DDH	1,567.5	24	6.6

Table 10-2:	Summary	of RC ar	nd DDH c	drillina fo	r each d	eposit fr	om the l	Master	database
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Downhole survey methods recorded from ~2012 onwards within the database has included camera, gyro (various configurations), compass, Reflex and Pathfinder. Historical down hole surveys have not been recorded within the database or has been assumed from planned hole information.

Drill hole collars have been located in the original coordinate system and have been transformed to MGA94 Zone 50. Several deposits/ pits have had historical local coordinate systems that have been transformed to MGA94 Zone 50 by previous operators. All recent Monument drilling is located using a handheld GPS and then resurveyed using an RTKDGPS in MGA94 Zone 50 UTM format.

Drilling information for the Authaal database has been compiled into tables including collar, survey, geology and assay. Drill hole location is in MGA94 Zone 50 coordinates with down hole survey methods were not recorded within the database. Table 10-3 shows a summary of the drill hole type for RC and DDH utilised in the resource estimate.

Deposit	Company	Hole type	Depth drilled (m)	No. of holes	Drilled metres (%)
Authaal	Metana	RC	22,448	381	91.5
		DDH	496	10	2.0
	Kentor Gold	RC	120	4	0.5
		DDH	-	-	-
	GMA	RC	640	5	2.6
		DDH	-	-	-
	Other	RC	-	-	-
		DDH	836	10	3.4
	Total		24,540	410	-

Table 10-3:Authaal database summary of drilling type

11 Sampling Preparation, Analyses and Security

For the Burnakura Gold Project encompassing the NOA, ANA, Federal City and Authaal deposits there have been various exploration companies that have collected data and that have been utilised in the geological models and resource estimation by SRK. The different methods employed in sample preparation and analyses are summarised and discussed below.

Monument provided SRK with a Microsoft access database, MurchisonExport_8Dec2016.mbd, that included numerous other deposits and prospects not included in this review such as Lewis, Gabanintha, and Tuckanarra. For the Authaal drilling information the Microsoft access database, burnakura_2014019.mdb was supplied to SRK.

11.1 Sample Preparation and Analytical Techniques

11.1.1 Homestake and Metana (1987–1989)

Homestake's drilling was conducted as part of a joint venture with Metana and samples were routinely assayed at Metana's Perth laboratory. Samples were reportedly generally split to 250–300 grams for pulverisation and analysis, with the exception of quartz-rich samples identified as coming from main ore zones, which were entirely pulverised. Assaying was generally by aqua-regia digest with every tenth sample and samples reporting aqua-regia gold grades above approximately 1.0 g/t repeated by one more fire assays.

Homestake's hard copy sampling records include QA/QC information such as standards, field duplicates, blanks and repeat assays. This data is not present in the database supplied and was not reviewed.

11.1.2 Gold Mines of Australia (GMA) (1991–1998)

Reverse Calculation (RC) samples were collected over metre intervals and commonly composited to 4 m with a scoop for initial assaying. Mineralised composites were predominantly re-assayed over metre intervals. Diamond core was halved with a diamond saw and generally sampled over 0.5 or 1.0 m intervals with shorter samples at geological contacts.

For initial program, 1991–1995, GMA's drilling, samples were assayed at GMA's laboratory in Perth. After oven drying, RC samples were split to 500 g before pulverisation in a ring mill with a 25 g aliquot analysed by aqua-regia digestion. Samples reporting gold grades of greater than 2.0 g/t were repeated by 50 g fire-assaying of a second coarse reject split. Diamond core samples were dried, jaw crushed and pulverised in entirety before analysis by 50 g fire assay.

Samples from 1996–1998 were analysed at either Genalysis or Analabs in Perth. At both laboratories, RC samples were dried and pulverised and a 30 g aliquot of pulverised sample was digested in aquaregia, the solution taken up in a ketone solvent and aspirated into a flame atomic absorption spectrophotometer. The level of detection for gold by this method was 0.01 ppm for Genalysis and 0.02 ppm for Analabs.

Coarse rejects from RC samples that returned gold values greater than 1.0 ppm, and all core samples were pulverised and a 50 g aliquot of pulverised sample was subject to fire assay by lead collection. This was then analysed for gold by solvent extraction and flame atomic absorption spectrophotometry. The level of detection for gold by this method was 0.01 ppm for both Analabs and Genalysis.

11.1.3 St Barbara Mines Ltd (2000–2001)

RC drill samples from the St Barbara drilling campaigns were submitted predominantly to Australian Laboratory Services (ALS) in Wangara. Some samples from the earliest drilling by St Barbara were submitted to Amdel Laboratories in Wangara.

Samples were pulverised and a 30 g aliquot of pulverised sample was subject to fire assay by lead collection and then analysed for gold by solvent extraction and flame atomic absorption spectrophotometry. The level of detection for gold by this method was 0.01 ppm for both Amdel and ALS.

Resamples of GMA diamond core collected by St Barbara were submitted to Amdel and analysed by the same method. A total of 342 diamond core samples were submitted.

Most of the pulps and rejects from the RC drilling and core resampling by St Barbara have suffered deterioration as a result of exposure to weather on-site, and unprotected storage. The pulps and rejects from RC drilling completed during the most recent campaign in 2002 are stored at ALS in Wangara.

11.1.4 Tectonic Resources NL (2002–2006)

Tectonic surface RC drilling samples were assayed at SGS in Welshpool. Samples were pulverised and a 50 g aliquot of pulverised sample was subject to fire assay by lead collection and then analysed for gold by solvent extraction and flame atomic absorption spectrophotometry. The level of detection for gold by this method was 0.01 ppm.

Underground sampling data (sludge and channel sampling) was assayed at SGS Mount Magnet using 50 g fire assay, identical as Tectonic RC drilling assay methodology, from June 2005 through to March 2006.

During underground mining of NOA 2 (2002–2006), an onsite laboratory was established with nearly all underground samples assayed using an aqua-regia digest, with assay of a 25 g charge on a Spectra 50 AAS machine.

11.1.5 ATW Venture Corp (2008)

ATW used Genalysis Laboratory Services of Maddington, WA to assay for gold samples generated from its RC drilling program. Samples were dried, pulverised to $<75\mu$ for 85% and then a 50 g aliquot was taken for fire assay with an atomic absorption spectrophotometry (AAS) finish. Detection limit was 0.01 ppm gold.

11.1.6 Kentor Gold (2011–2012)

Kentor Gold samples were submitted to ALS in Perth. The samples were prepared by pulverising the entire sample to 85% passing 75µm or better for sample up to 3 kg. Analysis for gold was by fire assay on a nominal 30 g sample aliquot with an AAS finish and detection limit range of 0.01g/t to 100g/t Au.

11.1.7 Monument Mining Limited (2014–2017)

All RC samples have been analysed by SGS mineral laboratory in Perth for routine Au analysis. Sample preparation by SGS comprised sorting and reconciliation, weighing, oven drying to 115° C, pulverising to nominal 90% passing -75μ m with an LM-5 employing a Cr-steel bowl and then rotary splitting of an approximate 200 g analytical pulp. The unsplit bulk wet samples were oven dried to 105° C and riffle split down to <3.5 kg prior to undergoing pulverising. Barren quartz flushes of the LM-5 pulveriser was performed at the start and end of each batch of samples.

Analysis for Au was by fire assay using a 50 g charge. Fire assaying employed standard fusion of sample with flux and lead collector in a furnace at 1,000°C, followed by cupellation. The prill was digested by aqua-regia and analysed by AAS. Assay results were reported to a 0.01 ppm Au lower detection level.

Monument's diamond core was sent to ALS AMMTEC in Perth for analysis. Drill core was sent whole to the lab and samples cut by ALS with sample preparation completed for assay and reserve for metallurgical testwork. Samples were crushed and pulverised to 80% passing <75um, with the assays reported as shown in Table 11-1.

Element & detection limits	Laboratory code	Method	Finish
Au (0.02 ppm)	Au Fire Assay (50g)	Fired with flux & PbO litharge in refractory crucible @ 1090 °C, cupellation by high temperature furnace @ 990°C – prill digested by aqua-regia	ICP-OES
Ag (2 ppm), As (10 ppm), Cu (2 ppm)	D7 1g–200ml	3-Acid digest (HNO₃, HCI, HClO₄)	ICP-OES
Ag (0.3 ppm)	D10M 1.66–50ml	3-Acid digest (HNO ₃ , HCI, HClO4)	AAS
C-Total (0.03 %) S-Total (0.02 %)	CS 2000	Analysed by Eltra CS2000 Resistance furnace (infrared detection)	CS Analyser
C-Organic (0.03 %)	CS 2000 C org	Dilute HCI digest to remove CO ₃ carbon – residue analysed Eltra CS2000 Resistance furnace (infrared detection)	CS Analyser
S-2 (0.02 %)	Sherritt/ CS 2000	S ⁻² (sulphide) analysed by Sherritt or Eltra CS 2000 carbon-sulphur analyser	CS Analyser
Hg (0.1 ppm), Sb (0.1 ppm), Te (0.2 ppm)	D1 1 g– 100 ml	Low temperature digest to collect volatiles – analysed by ICP-OES	ICP-OES

 Table 11-1:
 ALS AMMTEC sample analysis details for Monument's diamond core

11.2 Sample QAQC/ Precision

The Master database, MurchisonExport_8Dec2016.mdb, provided by Monument has two tables with data for the QA/QC of the drilling results for submitted standard, field duplicates, pulp umpires, and laboratory checks. The tables named DHAssaysQC and StandardsAssays encompass all the projects within the Monument tenement package. The data presented here focuses on the NOA, Alliance, Authaal and Federal City deposits. No QAQC data are recorded within the Authaal database, burnakura_2014019.mdb.

	Total no. of samples (non- QAQC)	Standards	Field duplicates	Blanks	Pulp umpire	Re- splits	Screen fire checks	Laboratory checks
All deposits	172,119	4,072	9,753	1,021	299	218	198	999
NOA	90,696	1,430	7,839	474	205	142	60	814
Alliance- New Alliance	50321	1284	986	172	35		42	1
Authaal	57856	-	-	-	-	-	_	-
Federal City	30829	562	533	150	59	_	68	6

Table 11-2:	Summary table of QAQC samples within the Master database
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Overall, the QAQC completed within the project has been completed to a standard relevant at the time of each drilling program. Apart from Authaal, QAQC samples were submitted for all deposits with a spread of duplicates, standards, pulp umpires and blanks.

11.2.1 Standards

In total, there are 50 different standards that have been used by various companies during exploration and mining phases within the Burnakura gold project. The standards have been used in various phases for AC, RC and DD programs, and for grade control during underground mining of NOA 2. The standards used have a range of grades and providers with the majority of the standards being sourced from Geostats Pty Ltd in Perth, WA. A small number of standards are either in house company or laboratory standards that reference data is not currently available for and thus has not been reviewed by SRK. The current dataset with standards number 4,072 submitted with the majority lying within acceptable tolerances.

Standard name	Expected value Au (g/t)	No. of samples	Standard name	Expected value Au (g/t)	No. of samples
G303-2	4.15	393	G912-7	0.42	286
G305-3	0.72	287	G913-1	0.82	80
G308-1		1	G913-10	7.09	43
G308-3	2.50	1	G914-10	2.57	3
G308-5	13.3	89	GLG907-1	0.01	83
G310-8		25	GLG912-5	224.34 ppb	1
G311-5	1.32	104	OREAS 61e	4.43	1
G397-3		109	OXE113		41
G901-2		1	OXE126		12
G902-7	1.41	205	OXI121		19
G903-6	4.13	174	OXL118		49
G904-1	12.66	102	OXP116		130
G906-8		30	SQ71		2
G907-1		7	6311-5		1
G907-4		79	AUOE-10		43
G909-3		1	AUOL-8		78
G911-10	1.30	150	AUSK-5		66
G912-6	4.08	97	BLANK	0.01	548
BP-13		3	BLANK_ALS		10
			BLANK_SGS		238

Table 11-3	General overview of standards within the database provider
	Scheral over them of Standards within the database provided



Figure 11-1: Standard G902-7 as reported grade and expected value

As an overview, several standards are shown in Figure 11-1 to Figure 11-7 with expected values and returned values for a range of grades from the global database. The standards samples showed generally acceptable behaviour, but there were some samples with grades much lower or higher than expected. This can occur due to sample swaps, incorrect sample numbering and a lack of sampling protocol. A low bias was evident for some of the standards. The blanks showed good results with low bias and only a few spikes in the data that may be from contamination in the laboratory or on site.



Figure 11-2: Standard G912-7 as reported grade and expected value



Figure 11-3: Standard G397-7 as reported grade and expected value



Figure 11-4: Standard G310-8 as reported grade and expected value



Figure 11-5: Standard G305-3 as reported grade and expected value



Figure 11-6: Standard G308-5 as reported grade and expected value



Figure 11-7: Blanks submitted with reported grade

11.2.2 Duplicates

Duplicate samples within the database are field duplicates, re-splits, laboratory checks, screen fire checks and pulp umpire checks. The use of duplicates and check samples within the database allows the Qualified Person to assess the quality and accuracy of the analysis of the sample and assists in the confidence of the resource estimate.

There are a significant number of duplicates for the NOA, Alliance and Federal City deposits which are shown separately in Figure 11-8 to Figure 11-10.

The NOA deposit includes the historical exploration and recent underground mine activity completed by Tectonic Resources. The Q-Q plot indicates a good correlation between the original and duplicate samples, with Pearson and Spearman correlations coefficients of 0.998 and 0.967 respectively. The Ranked Half Absolute Relative Difference (HARD) plot indicates that 67% of the samples have a <20% relative difference.

The Federal City deposit includes the historical exploration samples from RC drilling in 2014–2015. The Q-Q plot indicates a reasonable correlation between the original and duplicate samples, with Pearson and Spearman correlations coefficients of 0.985 and 0.880 respectively. The Ranked Half Absolute Relative Difference (HARD) plot indicates that 77% of the samples have a <20% relative difference.

The ANA deposit includes the historical exploration from RC drilling in 2014–2015. The Q-Q plot indicates a reasonable correlation between the original and duplicate samples with Pearson and Spearman correlations coefficients of 0.991 and 0.792 respectively. The Ranked Half Absolute Relative Difference (HARD) plot indicates that 62% of the samples have a <20% relative difference.



Figure 11-8: NOA field duplicates


Figure 11-9: Federal City field duplicates



Figure 11-10: Alliance-New Alliance field duplicates



Figure 11-11: Sample re-splits from the NOA deposits, 2015 RC drilling



Figure 11-12: NOA and Federal City laboratory checks from 2015 RC sampling



Figure 11-13: Screen fire assay checks from 2014–2016 RC samples



Figure 11-14: Pulp umpire checks from 2014–2015 RC samples

11.3 Sample security

Due to the historical nature of the majority of the drilling data and samples utilised within this study, SRK has reviewed available documentation on the sample security undertaken by previous companies before MMY and that undertaken by MMY.

The chain of custody was appropriate with samples taken using appropriate equipment that was appropriately numbered and documented/ referenced. The sampling was generally overseen by a technician or geologist who was appropriately skilled and trained.

SRK notes the presence of an advanced sample preparation facility on site with appropriate manual handling provisions. Samples submitted to the laboratory were generally appropriately secured in tied plastic bags then placed in drums and pallets that were numbered. Limited lag time is generally noted in the database from sample collection to submission to the laboratory.

SRK considers that the chain of custody is appropriate and that sample security has been appropriately considered by all owners completing data collection.

11.4 Summary of Adequacy of Data Collection Procedures

The Qualified Person considers that on review of all the available data and analysis of the results of interpretation of the data verification in the preceding sections that the data is of sufficient adequacy in the areas of sample preparation, security, and analytical procedures that it can be used in resource estimation studies and that mineral resource classifications can be confidently applied.

12 Data Verification

As part of the validation process, SRK has completed investigation and reviewed quality control data as described in Section 12 which includes:

- Blind standards and blanks
- Field duplicates
- Umpire assay
- Twin Drilling.

The vast majority of the submitted standards reported within the accepted 10% tolerance. Generally, low biases are evident, indicating the assaying for this period of exploration was accurate. The field duplicate comparative dataset shows acceptable repeatability. The Umpire assay comparative dataset also shows acceptable repeatability.

Original material in the form of core, drill chips and assay pulps has been located and viewed by SRK on site for some of the historic drilling during the site visit. Selected mineralisation intervals were reviewed by SRK and elevated grades were seen corresponding to mineralisation and alteration styles typical of elevated Au grade noted in the documentation and also seen in the mined open pit walls.

Additional verification of the drilling data is possible and has been completed based on global reconciliation studies completed using the production data (mining and plant data). Globally, the drill hole data assay data, and the grade estimation tenor, compare favourably with the production grade control data and plant production data when modifying factors such as recovery and ore loss and dilution are applied. This information supports the overall veracity of the drill hole assaying. SRK notes that although this global reconciliation is in broad agreement with grade drill hole tenor, it is limited to the broad location of the mineralisation by deposit and is not completed locally.

The Qualified Person considers that the data verification process completed confirms the global accuracy of the mineralisation tenor and hence confirms the overall tenor of Mineral Resources reported, and confirms confidence when mineral resource classification is applied.

13 Minerals Processing and Metallurgical Testing

The existing mill at Burnakura produced around 58 koz of gold in concentrate using a combination of gravity and flotation, with reported recoveries generally ranging from 60 to 90%. The existing processing plant flowsheet (Figure 13-1) is analogous to the current configuration of the processing plant. SRK notes that some refurbishment would be required to return the processing plant to production; however, this has not been reviewed by SRK due to the current level of study.



Figure 13-1: Existing processing plant configuration flowsheet

The mineralisation defined in the reported Mineral Resources is thought to have similar metallurgical characteristics to previously mined ore in contiguous geological areas; however, some differences are noted at depth and there are also changes in local geology. These areas require further investigation by collection of appropriate representative samples and completion of subsequent testwork.

Further metallurgical testwork is planned as part of an ongoing development plan for the project, including investigations into heap leach processing.

Current test work post 2014 includes the following key reports:

- ALS March 2015 ANA testwork Report Number. A15963
- ALS May 2016 Federal City testwork Report Number A16573
- OMC April 2017 2016/17 Burnakura Metallurgical Testwork Summary Report Number 7794.

The following is a summary of the key findings of the above reports.

The 2015–2017 testwork campaigns on Monument Mining's Burnakura Project targeted NOA1, NOA6, NOA7/8 and ANA to establish:

- Comminution characteristics
- Intermittent Bottle Roll leach tests at coarse crush sizes to establish the likely behaviour in a heap leach
- Tank leaching response at varying grind sizes and carbon in leach (CIL) vs direct leach without carbon (DL).

Comminution testwork results are described in Table 13-1 below with 2017 samples shown in red:

Table 13-1:Comminution testwork results

Die	0.11.1	A 1	011/1	ENAL:	DIAL	00	A I.
Pit	Oxidation	AI	CWI	RWI	BMI	SG	Axb
			kWh/t	kWh/t	kWh/t		
NOA 2	Oxide	0.223	7.6	13.7	16.9	2.45	104
Federal City	Oxide				11.4		
Federal City	Oxide				9.2		
Federal City	Oxide	0.237	2.5	11.3	16.5		
Federal City	Oxide	0.021	2.5	7.1	8.2		
Comp 5, NOA6	Oxide	0.084	-	9.5	12.0		-
Comp 9, ANA	Oxide	-	-	-	18.7		-
Average Oxide		0.141	4.2	10.4	13.3	2.45	104
85 th Percentile		0.231	6.1	12.6	17.1	2.45	104
New Alliance	Transition	0.306	3.8	14.5	17.7	2.66	87
New Alliance	Transition	0.284		16.4	16.9	2.75	69
Alliance	Transition	0.17		16.6	16.6	2.61	94
Alliance	Transition				16.6		
Comp 1, NOA7/8	Transition	-	-	-	18.7		-
Comp 2, NOA7/8	Transition	0.1324	4.7	17.7	19.2		
Comp 6, NOA1	Transition	-	-	-	18.9		
Comp 7, NOA1	Transition	0.0871	8.2	22.2	19.0		44.28
Average Transition		0.196	5.6	17.5	18.0	2.67	74
85 th Percentile		0.293	7.2	19.5	19.0	2.72	55
NOA 2	Fresh	0.188	15.8	25.2	24.0	2.86	28
NOA 7&8	Fresh				21.9		
Comp 3, NOA7/8	Fresh	0.141	-	25.3	23.3		33.8
Comp 4, NOA7/8	Fresh	0.202	6.2	21.9	18.6		37.7
Comp 8, NOA1	Fresh	0.044	-	24.4	21.7		-
Average Fresh		0.144	15.8	24.2	21.9	2.86	33
85 th Percentile		0.196	15.8	25.2	23.6	2.86	30

Leach tank results in Table 13-2 show extraction results for comparison between tank and heap leach. Other than the black shale lithology, results show tank leach recoveries from 73% to 99% and heap leach recoveries from 15 to 80%, which indicate economic extraction is achievable for specific lithologies and processing routes.

				Grade	Tank Leach		Heap Leach	
Location	Coded Weathering	Sample Name	Lithology	g Au/t	Best Test Conditions	Best Test Result % Extraction	Best Test Conditions P ₁₀₀	Best Test Result % Extraction
NOA7/8	trans	COMP 1	felsic unit	0.11	-	-	-	-
NOA7/8	trans	COMP 2	black shale	4.09	75µm – CIL – 24h	70.9	8mm, 240h	2.9
NOA7/8	fresh	COMP 3	black shale	0.64	75µm – CIL – 24h	19.9	8mm, 240h	1.5
NOA7/8	fresh	COMP 4	felsic unit	0.43	75µm – CIL – 24h	80.3	8mm, 240h	15.4
NOA6	oxide	COMP 5	felsic unit	1.31	150µm – DL – 24h	93.1	8mm, 240h	92.3
NOA1	trans	COMP 6	felsic unit	1.59	75µm –DL – 24h	91.5	8mm, 240h	77.5
NOA1	trans	COMP 7	dolerite	2.93	75µm – DL – 24h	98.6	8mm, 240h	68.0
NOA1	fresh	COMP 8	dolerite	0.17	-		-	-
ANA	oxide	COMP 9	BIF/qtz vein	0.64	75µm –DL – 24h	98.6	8mm, 240h	80.2
NOA7/8	oxide	COMP 10	Black shale	1.13	75µm – CIL – 24h	72.5	-	-

Table 13-2	Leach testwork results

Current CIL recoveries that are assigned to each deposit on the basis of the testwork and similar geological characteristics and assuming oxide and transition being ground to 150 um and fresh to 75 um are shown in Table 13-3. SRK notes that this tabulation will be refined with additional data collection and testwork, but is not considered definitive for the project at present.

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	Pr	Proposed Recovery %										
Area	Oxide	Transitional	Fresh									
ANA 1 and 2	95%	94%	90%									
ANA 3 and 4	95%	94%	90%									
Federal City	95%	91%	90%									
NOA 1 and 2	91%	91%	91%									
NOA 4 and 6	93%	92%	87%									
NOA 7 and 8	86%	78%	78%									
Authaal	95%	91%	90%									

Table 13-3Generalised recovery – % results by deposit

Note that in Table 13-3, ANA 1 and 2 are considered the same geologically as ANA 3 and 4. Federal City transitional and fresh are the same geology as NOA1/2. Authaal is considered similar to Federal City. It is also noted from above that the NOA 7/8 material which contains black shales is not amenable to heap leach and recoveries in CIL are considered low.

SRK notes that further testwork is being completed by MMY to assist in refining recoveries and developing the optimal metallurgical flowsheet. SRK however considers that the preliminary testwork described shows the potential for the economic extraction of Au within the appropriate mineralised units.

14 Mineral Resource Estimates

SRK has completed updated Mineral Resource Estimates for the Burnakura Gold Project (the Project). This following is a summary of the estimation process and reported grade tonnages for five deposits within the Project area.

SRK notes that the estimates have been classified and reported by SRK according to CNI 43-101 and CIM guidelines based on review of the QA/QC data and the consideration that the mineral resource conforms within criteria of having 'reasonable prospects for economic extraction' (see detailed discussion in Section 14.6).

14.1 NOA 1–6 Mineral Resource

The updated NOA 1–6 mineralisation model was updated based on additional data from the 2015-2016 drill campaign. This represents a greater geological understanding and acknowledgement of the continuity of the mineralising system seen at NOA1-6 and the proposed open pit bulk mining method. The NOA1-6 deposit was modelled and estimated using the Vulcan software package. Mineral Resource estimates for the NOA 1–6 deposit have been generated by SRK on the basis of exploration data and analytical results available up to 1 March 2018.

14.1.1 Geological Modelling

An implicit geological model of the mineralisation was generated in Leapfrog software based on a nominal 0.3g/t Au and 1 g/t cut-off grade and geological interpretation, which considered quartz veins/ gold lodes systems orientations. The structural setting was considered with six major faults modelled.

Mineralisation wireframes generated for NOA 1–6 were split into 10 major domains, based on the tenor with similar mineralisation styles and orientations as shown in Figure 14-1.

The base of oxidation surface and top of fresh surface were constructed from logged depths in the drill holes; however, the majority of the mineralisation lies in the primary portion of the oxidation profile. The digital terrain model is the general topography covering the entire Burnakura area, termed 'burnakura_110712', based on the July 2012 site survey. Voids from underground workings including development and stopes were validated and applied.



Figure 14-1: NOA1-6 Mineralisation domains and drilling plan view

14.1.2 Statistical analysis

Samples within the domains were composited to 2 m down-the-hole lengths. Residual composites \geq 0.5m in length were retained as calculated, while those <0.5m long were removed.

SRK completed removal of high grade material in the mined underground void areas for estimation. Sensitivities showed that the inclusion of this void material considerably overstated the contained metal in the lower grade mineralisation halo.

Grade outliers in the 2 m composites were examined to determine high grade cuts. A variety of differing top cuts was applied on the basis of spatial distribution and probability plots to the 10 domains. Cut and uncut means are included in Table 14-1.

Mineralisation domain	Mean	No.	Standard deviation	Coefficient of variation	Min.	Median	Max.	Top cut (N)	Cut mean
110	4.88	522	8.13	1.67	0.01	2.23	55.9	47 (5)	4.82
120	3.29	283	10.20	3.11	0.01	1.47	157.7	45 (1)	2.89
130	5.34	68	8.42	1.58	0.01	2.26	34.9	12 (7)	3.65
140	2.36	173	5.02	2.13	0.01	0.94	55.4	18 (1)	2.14
150	2.44	298	7.76	3.18	0.01	0.76	81.5	22 (8)	1.89
210	0.66	23	0.52	0.8	0.29	0.51	2.89	-	-
220	4.29	83	4.50	1.05	0.01	3.01	25.1	15 (3)	4.05
230	0.62	140	0.43	0.70	0.005	0.49	2.2	3.5(1)	0.61
310	2.76	64	3.54	1.28	0.35	1.85	26.9	11 (1)	2.52
320	0.77	265	2.34	3.05	0.13	0.52	38.4	2.0 (1)	0.63

Table 14-1: NOA1–6 – Summary of descriptive statistics

14.1.3 Variography

Variography for the study was based on the 2 m composites. Several types of variograms and variogram fans were calculated for the cut grade data, including the traditional variogram, the correlogram and a Gaussian variogram.

The normal scores transformed variogram proved to display reasonable structure and were modelled. The nugget was determined from the close spaced down-the-hole data, with a lag distance of 2 m and an omni-directional search. The ranges were determined from directional variograms with a lag distance of 10 m in the east-west (major), 10 m north-south (semi-major) and 3 m vertical (minor). The variogram model parameters for the major domain 110 (which is similar to the other domains) are detailed in Table 14-2.

 Table 14-2:
 NOA 1–6 – Variogram model parameters, major domain 110

<u>_</u>	F	Rotation		C .	Range 1 (m)			C .	R	ange 2 (r	n)
U ₀	Azimuth	Plunge	Dip		Major	Semi	Minor	62	Major	Semi	Minor
0.48	0	0	-30	0.34	23	23	4	0.18	92	90	15

14.1.4 Block model development

A block model panel size of 5 m E by 10 m N by 5 mRL was selected to best represent the available data, the data characteristics (variability as defined by variography), and the envisaged mining practises (open-cut).

Details of the block model are shown in Table 14-3.

	Extent (m)	Dimensions (m)	Min. subcell dimensions
Х	645400.0 - 646170.0	5	2.5
Y	7009850.0 – 7010920.0	10	5.0
Z	200.0 - 480.0	5	1.0

Table 14-3:	Block model extents -	NOA 1-6

All variables necessary to record the domain coding, resource grade estimates and related estimation statistics, density assignments and resource category assignments were incorporated into the block model.

Bulk density was assigned on the basis of the bulk density database and assumptions for the oxide, transitional and fresh.

- Oxide mineralised 2.19t/m³
- Transitional mineralised 2.4t/m³
- Fresh mineralised 2.7t/m³.

14.1.5 Grade estimation

Grade estimation within the interpreted mineralised envelopes was undertaken by Ordinary Kriging (OK) based on the 2m composite gold data generated for each domain. Kriging parameters were determined from the variography discussed in Section 14.1.3. The sample search parameters have been selected based on detailed neighbourhood testing which allows for optimisation of the estimation plan. Grade was generally interpolated in three passes as follows:

- First pass: Based on a 25 m by 25 m by 5 m (major, semi-major and minor axes respectively), ellipsoid search with a minimum of 6 and maximum of 16 composites
- Second pass: 50 m by 50 m by 10 m sample search using a minimum of 6 and maximum of 16 composites
- Third pass: 150 m by 150 m by 15 m, sample search using a minimum of 4 and maximum of 16 composites.

All domains were interpolated simultaneously, using a block discretisation of 5 m E by 5 m N by 3 mRL. A high-grade limit was placed on the second and third pass for values greater than an upper Au threshold determined for some domains. This limited the sample search to composites below the grade threshold if these higher grade samples were outside a sample search distance of 25 m (major axis), 25 m (semi major axis) and 10 m (minor). This has the effect of limiting smearing effects of isolated high-grade samples. Searches were oriented to be consistent the model variography for each domain.

Validation of the estimate was completed and included both visual and statistical review. The visual comparison was undertaken by comparing the input data, using the composites, against the estimated grades in the model. The statistical review included a comparison of the mean grade of the input composites against the model grade via statistics and swath plots.

Based on the validation, the estimate adequately maps the input data where sufficient data existed, with grade trends reproduced acceptably in the model. However, in the regions of low data density, the estimates appeared to be less robust and an increased level smoothing was noted, although the smoothing was still considered acceptable.

14.1.6 Mineral Resource reporting

The Mineral Resource estimate of the NOA 1–6 deposit has been classified as a combination of Indicated and Inferred Mineral Resources with reference to the guidelines outlined in NI 43-101.

The definitive criteria used for resource classification is based on a combination of the drilling data density, distance to the nearest informing input data and the slope of regression. Drill density is insufficient to classify the smaller domains and mineralised halos as indicated, even where the occasional block estimate is of a reduced quality.

The NOA 1–6 mineralisation area, as estimated by SRK, is summarized in Table 14-4. The model is reported using the general topography covering the entire project area, based on the July 2012 site survey. It is also depleted for underground working voids.

 Table 14-4:
 NOA 1–6 – Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)
Indicated	0.5	1,030	2.1	68
Inferred	0.5	609	2.3	44

14.2 NOA 7–8 Mineral Resource

The updated NOA 7–8 mineralisation model was updated based on the additional data from the 2015-2016 drill campaign. This represents a refined understanding and acknowledgement of the continuity of the mineralising system seen at NOA 7–8 and the proposed underground mining method. The NOA 7–8 deposit was modelled and estimated using the Vulcan software package. Mineral Resource estimates for the NOA 7–8 deposit have been generated by SRK on the basis of exploration data and analytical results available up to 1 March 2018.

14.2.1 Geological modelling

An implicit geological model of the mineralisation was generated by SRK in Leapfrog software based on a nominal 0.3g/t Au and 2.0 g/t cut-off grade and geological interpretation which considered quartz veins/ gold lodes systems orientations. The structural setting was considered with faults modelled.

Mineralisation wireframes generated for NOA 7–8 were split into two major domains, based on the tenor with similar mineralisation styles and orientations as seen in Figure 14-2.

The base of the oxidation surface and the top of the fresh surface were constructed from logged depths in the drill holes; however, the majority of the mineralisation lies in the primary portion of the oxidation profile. The digital terrain model is the general topography covering the entire Burnakura area, termed 'burnakura_110712', based on the July 2012 site survey.



Figure 14-2: NOA7-8 Mineralisation domains and drilling plan view Red HG Green LG

14.2.2 Statistical analysis

Samples within the domains were composited to 1 m down-the-hole lengths. Residual composites \geq 0.5m in length were retained as calculated, while those <0.5m long were removed.

Grade outliers in the 1 m composites were examined to determine high grade cuts. A variety of differing top cuts was applied on the basis of spatial distribution and probability plots to the two domains. Cut and uncut means are included in Table 14-5.

Table 14-5: NOA 7–8 – Summary of descriptive statistics

Mineralization domain	Mean	No.	Standard deviation	Coefficient of variation	Min.	Median	Max.	Top cut (N)	Cut mean
110	4.97	586	6.45	1.630	0.01	3.49	106.0	42 (1)	4.86
120	0.68	1,453	0.55	0.80	0.01	1.47	5.2	2.5 (4)	0.67

14.2.3 Variography

Variography for the study was based on the 1 m composites. Several types of variograms and variogram fans were calculated for the cut grade data, including the traditional variogram, the correlogram and a Gaussian variogram.

The normal scores transformed variogram proved to display reasonable structure and were modelled. The nugget was determined from the close spaced down-the-hole data, with a lag distance of 2 m and an omni-directional search. The ranges were determined from directional variograms with a lag distance of 10 m in the east-west (major), 10 m north-south (semi-major) and a 3 m vertical (minor). The variogram model parameters for the major domain 110 (which is similar to the other domains) are detailed in Table 14-6.

 Table 14-6:
 NOA 7–8 – Variogram model parameters, major domain 110

	R	otation			R	ange 1 (ı	n)		Range 2 (m)			
Co	Azimuth	Plung e	Dip	C 1	Major	Semi	Minor	C2	Major	Semi	Minor	
0.48	0	0	-50	0.35	31	25	5	0.17	97	84	12	

14.2.4 Block model development

A block model panel size of 5 m E by 10 m N by 2 mRL was selected to best represent the available data, the data characteristics (variability as defined by variography), and the envisaged mining practises (open-cut).

Details of the block model are shown in Table 14-7.

Table 14-7: Block Model Extents – NOA7–8

	Extent (m)	Dimensions (m)	Min. Subcell Dimensions		
Х	645300.0 - 645820.0	5	2.5		
Y	7010920 – 7011600.0	10	5.0		
Z	200.0 - 480.0	2	1.0		

All variables necessary to record the domain coding, resource grade estimates and related estimation statistics, density assignments and resource category assignments were incorporated into the block model.

Bulk density was assigned on the basis of the bulk density database and assumptions for the oxide, transitional and fresh.

- Oxide mineralised 2.19t/m³
- Transitional mineralised 2.4t/m³
- Fresh mineralised 2.7t/m³.

14.2.5 Grade estimation

Grade estimation within the interpreted mineralised envelopes was undertaken by OK based on the 1 m composite gold data generated for each domain. Kriging parameters were determined from the variography discussed in Section 14.2.3. The sample search parameters have been selected based on detailed neighbourhood testing which allows for optimisation of the estimation plan. Grade was generally interpolated in three passes as follows:

- First pass: Based on a 25 m by 25 m by 5 m (major, semi-major and minor axes respectively), ellipsoid search with a minimum of 10 and maximum of 20 composites
- Second pass: 50 m by 50 m by 10 m sample search using a, minimum of 10 and maximum of 20 composites
- Third pass: 150 m by 150 m by 15 m, sample search using a minimum of 6 and maximum of 24 composites.

All domains were interpolated simultaneously, using a block discretisation of 5 m E by 5 m N by 3 mRL. A high-grade limit was placed on the second and third pass for values greater than an upper Au threshold determined for some domains. This limited the sample search to composites below the grade threshold if these higher grade samples were outside a sample search distance of 25 m (major axis), 25 m (semi major axis) and 10 m (minor). This has the effect of limiting smearing effects of isolated high-grade samples. Searches were oriented to be consistent the model variography for each domain.

Validation of the estimate was completed and included both visual and statistical review. The visual comparison was undertaken by comparing the input data, using the composites, against the estimated grades in the model. The statistical review included a comparison of the mean grade of the input composites against the model grade via statistics and swath plots.

Based on the validation, the estimate adequately maps the input data where sufficient data existed, with grade trends reproduced acceptably in the model. However, in the regions of low data density, the estimates appeared to be less robust and an increased level smoothing was noted, although the

14.2.6 Mineral Resource reporting

smoothing is still considered acceptable.

The mineral resource estimate of the NOA 7–8 deposit has been classified as a combination of Indicated and Inferred Mineral Resources with reference to the guidelines outlined in NI 43-101.

The definitive criteria used for resource classification is based on a combination of the drilling data density, distance to the nearest informing input data and the slope of regression. Drill density is insufficient to classify the smaller domains and mineralised halos as indicated, even where the occasional block estimate is of a reduced quality.

The NOA 7–8 mineralisation area, as estimated by SRK, is summarised in Table 14-8. The model is reported using the general topography covering the entire project area based on the July 2012 site survey. It is expected that the Mineral Resource will be mined by Underground mining methods and as such a lower grade cutoff of 3.0 g/t Au is applied.

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)	
Indicated	3.0	776	4.6	114	
Inferred	3.0	35	3.9	4	

14.3 ANA Mineral Resource

The updated ANA mineralisation model was updated based on additional data from the Monument 2015 drill campaign. This represents a greater geological understanding and acknowledgement of the continuity of the mineralising system seen at ANA and the proposed open pit bulk mining method. The ANA deposit was modelled and estimated using the Vulcan software package. Mineral Resource estimates for the ANA deposit have been generated by SRK on the basis of exploration data and analytical results available up to 1 March 2018.

14.3.1 Geological modelling

A model of the mineralisation was updated by SRK in Vulcan software based on a nominal 0.3g/t Au and 1 g/t cut-off grade and geological interpretation which considered BIF and quartz veins/ gold lodes systems orientations. The structural setting was considered with major faults considered during modelling.

Mineralisation wireframes generated for ANA were split into 14 major domains, based on the tenor with similar mineralisation styles and orientations.

The base of the oxidation surface and the top of the fresh surface were constructed from logged depths in the drill holes; however, the majority of the mineralisation lies in the primary portion of the oxidation profile. The digital terrain model is the general topography covering the entire Burnakura area, termed 'burnakura_110712', based in the July 2012 site survey.



Figure 14-3: ANA Mineralisation domains and drilling plan view

14.3.2 Statistical analysis

Samples within the domains were composited to 2 m down-the-hole lengths. Residual composites were weighted back to the previous interval.

SRK completed removal of high grade material in the mined underground void areas for estimation. Sensitivities showed that the inclusion of this void material considerably overstated the contained metal in the lower grade mineralisation halo.

Grade outliers in the 2 m composites were examined to determine high-grade cuts. A variety of differing top cuts was applied on the basis of spatial distribution and probability plots to the 10 domains. Cut and uncut means of major domains are included in Table 14-9.

Minerali sation domain	Mean	No.	Standard deviation	Coefficient variation	Min.	Median	Max.	Top cut (N)	Cut mean
400	0.51	266	1.18	2.34	0.005	0.15	12.96	5(4)	0.46
500	0.75	147	1.97	2.59	0.01	0.25	18.85	6(2)	0.62
2000	0.93	26	1.10	1.19	0.01	0.47	5.05	-	-
4001	3.01	177	4.18	1.39	0.005	1.31	29.0	18(2)	2.90
5001	2.14	94	2.94	1.38	0.005	1.20	16.5	-	I
6000	1.22	79	2.99	2.45	0.01	0.44	25.03	10(1)	1.03
7000	1.14	502	1.59	1.38	0.005	0.72	21.4	12	1.11
7001	3.59	24	2.02	0.56	0.981	3.46	8.85	-	_
8000	1.29	74	1.28	0.99	0.012	0.72	6.01	-	-

Table 14-9: ANA – summary of descriptive statistics

14.3.3 Variography

Variography for the study was based on the 2 m composites. Several types of variograms and variogram fans were calculated for the cut grade data, including the traditional variogram, the correlogram and a Gaussian variogram.

The normal scores transformed variogram proved to display reasonable structure and were modelled. The nugget was determined from the close spaced down-the-hole data, with a lag distance of 2 m and an omni-directional search. The ranges were determined from directional variograms with a lag distance of 10 m in the east-west (major), 10 m north-south (semi-major) and 3 m vertical (minor). The variogram model parameters for the major domain 110 (which is similar to the other domains) are detailed in Table 14-10.

Table 14-10:	ANA – variogram model parameters, major domain 4001
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<u> </u>	Rotation		C .	Range 1 (m)		C		Range 2	2 (m)		
C ₀	Azimuth	Plunge	Dip	U 1	Major	Semi	Minor	C ₂	Major	Semi	Minor
0.37	0	0	-30	0.45	230	31	5	0.18	94	71	12

14.3.4 Block model development

A block model panel size of 5 m E by 10 m N by 5mRL was selected to best represent the available data, the data characteristics (variability as defined by variography), and the envisaged mining practises (open-cut).

Details of the block model are shown in Table 14-11.

Table 14-11: ANA – block model extents	Table 14-11:	ANA – block model extents
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	Extent (m)	Dimensions (m)	Min. subcell dimensions
X	645200.0 - 646100.0	5	2.5
Y	7007105.0 - 7008705.0	10	5.0
Z	0.0 - 500.0	5	1.0

All variables necessary to record the domain coding, resource grade estimates and related estimation statistics, density assignments and resource category assignments were incorporated into the block model.

Bulk density was assigned on the basis of the bulk density database and assumptions for the oxide, transitional and fresh mineralised material.

- Oxide mineralised 2.2t/m³
- Transitional mineralised 2.5t/m³
- Fresh mineralised 2.9t/m³.

14.3.5 Grade estimation

Grade estimation within the interpreted mineralised envelopes was undertaken by OK based on the 2 m composite gold data generated for each domain. Kriging parameters were determined from the variography discussed in Section 14.3.3. The sample search parameters have been selected based on detailed neighbourhood testing which allows for optimisation of the estimation plan. Grade was generally interpolated in three passes as follows:

- First pass: Based on a 25 m by 25 m by 5 m (major, semi-major and minor axes respectively), ellipsoid search with a minimum of 6 and maximum of 16 composites.
- Second pass: 50 m by 50 m by 10 m sample search using a, minimum of 6 and maximum of 16 composites.
- Third pass: 150 m by 150 m by 15 m, sample search using a minimum of 4 and maximum of 16 composites.

All domains were interpolated simultaneously, using a block discretisation of 5 m E by 5 m N by 3 mRL. Searches were oriented to be consistent the model variography for each domain.

Validation of the estimate was completed and included both visual and statistical review. The visual comparison was undertaken by comparing the input data, using the composites, against the estimated grades in the model. The statistical review included a comparison of the mean grade of the input composites against the model grade via statistics and swath plots.

Based on the validation, the estimate adequately maps the input data where sufficient data existed, with grade trends reproduced acceptably in the model. However, in the regions of low data density, the estimates appeared to be less robust and an increased level smoothing was noted, although the smoothing is still considered acceptable.

14.3.6 Mineral Resource reporting

The Mineral Resource estimate of the ANA deposit has been classified as a combination of Indicated and Inferred Mineral Resources with reference to the guidelines outlined in NI 43-101.

The definitive criteria used for resource classification is based on a combination of the drilling data density, distance to the nearest informing input data and the slope of regression.

The ANA mineralisation area, as estimated by SRK, is summarized in Table 14-12. The model is reported using the general topography covering the entire project area based on the July 2012 site survey and is depleted for previous workings.

 Table 14-12:
 ANA Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)	
Indicated	0.5	2,141	1.6	107	
Inferred	0.5	92	1.5	4	

14.4 Authaal Mineral Resource

The updated Authaal mineralisation model was based on additional pit mapping data from the site visit completed by SRK. SRK notes that no additional drilling has been completed, since Kentor Gold in 2012, by Monument at Authaal. This model represents a refined geological understanding and acknowledgement of the continuity of the mineralising system seen at Authaal and the proposed open pit bulk mining method. The Authaal deposit was modelled and estimated using the Vulcan software package. Mineral Resource estimates for the Authaal deposit have been generated by SRK on the basis of exploration data and analytical results available up to 1 March 2018.

14.4.1 Geological modelling

A model of the mineralisation was updated by SRK in Vulcan software based on a nominal 0.3g/t Au cut-off grade and geological interpretation which considered quartz veins and gold lodes systems orientations. The structural setting was considered with major faults considered during modelling.

Mineralisation wireframes generated for ANA were split into four major domains, based on the tenor with similar mineralisation styles and orientations.

The base of the oxidation surface was constructed from logged depths in the drill holes; however, due to logging variability an assumed depth of 400 mRL was finally used. The digital terrain model is the general topography covering the entire Burnakura area, termed b'urnakura_110712', based on the July 2012 site survey.



Figure 14-4: Authaal Mineralisation domains and drilling plan view

14.4.2 Statistical analysis

Samples within the domains were composited to 2 m down-the-hole lengths. Residual composites were weighted back to the previous interval.

Grade outliers in the 2 m composites were examined to determine high grade cuts. A variety of differing top cuts was applied on the basis of spatial distribution and probability plots to the four major domains. Cut and uncut means of major domains are included in Table 14-13.

Mineralisation domain	Mean	No.	Standard deviation	Coefficient variation	Min.	Median	Max.	Top cut (N)	t mean
110	1.26	2475	4.61	3.66	0.005	0.37	110.0	45(6)	1.19
120	1.77	4432	10.3	5.80	0.005	0.46	575.0	50(14)	1.58
130	0.76	1544	1.21	1.59	0.005	0.41	206.0	10(2)	0.75
140	3.98	5461	57.18	14.4	0.005	0.42	3950.0	50(62)	2.28

Table 14-13: Authaal – summary of descriptive statistics

14.4.3 Variography

Variography for the study was based on the 2 m composites. Several types of variograms and variogram fans were calculated for the cut grade data, including the traditional variogram, the correlogram and a Gaussian variogram.

The normal scores transformed variogram proved to display reasonable structure and were modelled. The nugget was determined from the close spaced down-the-hole data, with a lag distance of 2 m and a directional search. The ranges were determined from directional variograms with a lag distance of 8 m in the east-west (major), 9 m north-south (semi-major) and 3 m vertical (minor). The variogram model parameters for the major domain 140 (which is similar to the other domains) are detailed in Table 14-14.

<u>^</u>	F	Rotation		C .	R	ange 1 (r	n)	C .	Ra	ange 2 (r	n)
C ₀	Azimuth	Plunge	Dip	U 1	Major	Semi	Minor	C ₂	Major	Semi	Minor
0.47	300	0	-40	0.34	23	23	4	0.18	92	90	15

Table 14-14:	Authaal – variogram model paran	neters. maior domain 140
	ramaa vanogram model paran	locoro, major aomam 140

14.4.4 Block model development

A block model panel size of 5 m E by 10 m N by 5 mRL was selected to best represent the available data, the data characteristics (variability as defined by variography), and the envisaged mining practises (open-cut).

Details of the block model are shown in Table 14-15.

Table 14-15:Authaal – block model extents

	Extent (m)	Dimensions (m)	Min. subcell dimensions	
X	644100.0 - 644950.0	5	2.5	
Y	7005900.0 - 7006550.0	10	5.0	
Z	350.0 - 500.0	5	1.0	

All variables necessary to record the domain coding, resource grade estimates and related estimation statistics, density assignments and resource category assignments were incorporated into the block model.

Bulk density was assigned on the basis of the bulk density database for other nearby deposits and assumptions for the oxide and fresh mineralised material:

- Oxide mineralised 2.0t/m³
- Fresh mineralised 2.75t/m³.

14.4.5 Grade estimation

Grade estimation within the interpreted mineralized envelopes was undertaken by OK based on the 2 m composite gold data generated for each domain. Kriging parameters were determined from the variography discussed in Section 14.4.3. The sample search parameters have been selected based on detailed neighbourhood testing which allows for optimisation of the estimation plan. Grade was generally interpolated in three passes as follows:

- First pass: Based on a 25 m by 25 m by 5 m (major, semi-major and minor axes respectively), ellipsoid search with a minimum of 6 and maximum of 16 composites.
- Second pass: 50 m by 50 m by 10 m sample search using a, minimum of 6 and maximum of 16 composites.
- Third pass: 150 m by 150 m by 15 m, sample search using a minimum of 4 and maximum of 16 composites.

All domains were interpolated simultaneously, using a block discretisation of 5 m E by 5 m N by 3 mRL. A high-grade limit was placed on the second and third pass for values greater than an upper Au threshold determined for some domains. This limited the sample search to composites below the grade threshold if these higher grade samples were outside a sample search distance of 25 m (major axis), 25 m (semi major axis) and 5 m (minor). This has the effect of limiting smearing effects of isolated high-grade samples. Searches were oriented to be consistent the model variography for each domain.

Validation of the estimate was completed and included both visual and statistical review. The visual comparison was undertaken by comparing the input data, using the composites, against the estimated grades in the model. The statistical review included a comparison of the mean grade of the input composites against the model grade via statistics and swath plots.

Based on the validation, the estimate adequately maps the input data where sufficient data existed, with grade trends reproduced acceptably in the model. However, in the regions of low data density, the estimates appeared to be less robust and an increased level smoothing was noted, although the smoothing is still considered acceptable.

14.4.6 Mineral Resource reporting

The Mineral Resource estimate of the Authaal deposit has been classified and reported as an Inferred Mineral Resource with reference to the guidelines outlined in NI 43-101 and the CIM code.

The definitive criteria used for resource classification is based on a combination of the drilling data density, distance to the nearest informing input data and the slope of regression. QA/QC data availability also influenced classification.

The Authaal mineralisation area, as estimated by SRK, is summarised in Table 14-16. The model is reported using the general topography covering the entire project area based on the July 2012 site survey and is depleted for previous workings.

Table 14-16: Authaal Mineral Resource estimate

Resource category	Lower cut-off	Tonnes	Grade	Metal
	(Au g/t)	(Kt)	(Au g/t)	(koz Au)
Inferred	0.5	556	1.4	25

14.5 Federal City Mineral Resource

The updated Federal City mineralisation model was based on additional data from the late 2015 drill campaign completed by Monument. This model represents a refined geological understanding and acknowledgement of the continuity of the mineralising system seen at Federal City and the proposed open pit bulk mining method. The Federal City deposit was modelled and estimated using the Vulcan software package. Mineral Resource estimates for Federal City have been generated by SRK on the basis of exploration data and analytical results available up to 1 March 2018.

14.5.1 Geological modelling

A model of the mineralisation was updated by SRK in Vulcan software based on a nominal 0.3g/t Au cut-off grade and internal nominal +1 g/t Au cut-off on internal lodes and the geological interpretation which considered quartz veins/ gold lodes systems orientations. The structural setting was considered with major faults considered during modelling.

Mineralisation wireframes generated for Federal City were split into four major domains, based on the tenor with similar mineralisation styles and orientations.

The base of oxidation surface and top of fresh rock surface was constructed from logged depths in the drill holes. The digital terrain model is the general topography covering the entire Burnakura area, termed 'burnakura_110712', based on the July 2012 site survey.



Figure 14-5: Federal City Mineralisation domains and drilling plan view

14.5.2 Statistical analysis

Samples within the domains were composited to 2 m down-the-hole lengths. Residual composites were weighted back to the previous interval.

Grade outliers in the 2 m composites were examined to determine high-grade cuts. A variety of differing top cuts was applied on the basis of spatial distribution and probability plots to the four major domains. Cut and uncut means of major domains are included in Table 14-17.

Mineralisation domain	Mean	No.	Standard deviation	Coefficient variation	Min.	Median	Max.	Top cut (N)	Cut mean
110	1.23	2096	6.61	4.94	0.005	0.37	113.8	30(13)	0.99
120	1.16	169	4.53	4.06	0.005	0.25	55.1	12(2)	0.86
130	1.82	236	5.31	2.90	0.005	0.26	52.1	25(3)	1.66
140	0.87	119	3.21	3.69	0.005	0.23	24.6	5(3)	0.49

Table 14-17: Federal City – summary of descriptive statistics

14.5.3 Variography

Variography for the study is based on the 2 m composites. Several types of variograms and variogram fans were calculated for the cut grade data, including the traditional variogram, the correlogram and a Gaussian variogram.

The normal scores transformed variogram proved to display reasonable structure and were modelled. The nugget was determined from the close spaced down-the-hole data, with a lag distance of 2 m and a directional search. The ranges were determined from directional variograms with a lag distance of 9 m in the east-west (major), 8 m north-south (semi-major) and 3 m vertical (minor). The variogram model parameters for the major domain 140 (which is similar to the other domains) are detailed in Table 14-18.

C₀	Rotation			C	Range 1 (m)			0	Range 2 (m)		
	Azimuth	Plunge	Dip	U 1	Major	Semi	Minor	U 2	Major	Semi	Minor
0.46	135	0	30	0.41	23	21	4	0.13	93	89	15

 Table 14-18:
 Federal City – variogram model parameters, major domain 110

14.5.4 Block model development

A block model panel size of 5 m E by 10 m N by 5 mRL was selected to best represent the available data, the data characteristics (variability as defined by variography), and the envisaged mining practises (open-cut).

Details of the block model are shown in Table 14-19.

Table 14-19: Federal City – block model extents

	Extent (m)	Dimensions (m)	Min. subcell dimensions	
X	643500.0 - 644150.0	5	2.5	
Y	7005100.0 - 7005950.0	10	5.0	
Z	350.0 - 500.0	5	1.0	

All variables necessary to record the domain coding, resource grade estimates and related estimation statistics, density assignments and resource category assignments were incorporated into the block model.

Bulk density was assigned on the basis of the bulk density database for other nearby deposits and assumptions for the oxide and fresh mineralised material.

- Oxide mineralised 2.0t/m³
- Transitional mineralised 2.4t/m³
- Fresh mineralised 2.75t/m³.

14.5.5 Grade estimation

Grade estimation within the interpreted mineralised envelopes was undertaken by OK based on the 2 m composite gold data generated for each domain. Kriging parameters were determined from the variography discussed in Section 14.5.3. The sample search parameters have been selected based on detailed neighbourhood testing which allows for optimisation of the estimation plan. Grade was generally interpolated in three passes as follows:

- First pass: Based on a 25 m by 25 m by 5 m (major, semi-major and minor axes respectively), ellipsoid search with a minimum of 6 and maximum of 16 composites
- Second pass: 50 m by 50 m by 10 m sample search using a, minimum of 6 and maximum of 16 composites
- Third pass: 150 m by 150 m by 15 m, sample search using a minimum of 4 and maximum of 16 composites.

All domains were interpolated simultaneously, using a block discretisation of 5 m E by 5 m N by 3 mRL. A high-grade limit was placed on the second and third pass for values greater than an upper Au threshold determined for some domains. This limited the sample search to composites below the grade threshold if these higher grade samples were outside a sample search distance of 25 m (major axis), 25 m (semi-major axis) and 5 m (minor). This has the effect of limiting smearing effects of isolated high-grade samples. Searches were oriented to be consistent the model variography for each domain.

Validation of the estimate was completed and included both visual and statistical review. The visual comparison was undertaken by comparing the input data, using the composites, against the estimated grades in the model. The statistical review included a comparison of the mean grade of the input composites against the model grade via statistics and swath plots.

Based on the validation, the estimate adequately maps the input data where sufficient data existed, with grade trends reproduced acceptably in the model. However, in the regions of low data density, the estimates appeared to be less robust and an increased level smoothing was noted, although the smoothing is still considered acceptable.

14.5.6 Mineral Resource reporting

The Mineral Resource estimate of the Federal City deposit has been classified and reported as an Indicated and Inferred Mineral Resource with reference to the guidelines outlined in NI 43-101 and the CIM code.

The definitive criteria used for resource classification is based on a combination of the drilling data density, distance to the nearest informing input data and the slope of regression. QA/QC data availability also influenced classification.

The Federal City mineralisation area, as estimated by SRK, is summarised in Table 14-20. The model is reported using the general topography covering the entire project area based on the July 2012 site survey and is depleted for previous workings.

 Table 14-20:
 Federal City – Mineral Resource estimate

Resource category	Lower cut-off (Au g/t)	Tonnes (Kt)	Grade (Au g/t)	Metal (koz Au)	
Indicated	0.5	96	1.3	4	
Inferred	0.5	259	1.3	11	

14.6 Mineral Resource classification and reasonable prospects for economic extraction discussion

SRK considers there to be no material impediments to the potential economic extraction of the mineral resources, and hence classification of the mineral resources, by any other known environmental, permitting, legal, title, taxation, socio-economic, marketing or political factors other than issues noted and discussed in the relevant sections of this ITR. It is noted that the majority of the mineral resources described in the ITR are the extensions of previously and currently mined open pits and underground workings at the Burnakura Project.

The open pit mineral resources have been reported within broad pit optimisation sensitivities using an inflated gold price and aggressive mining and milling assumptions with an appropriate lower cut-off (0.5 g/t Au), which resulted in reporting grades that are typically economic for the mineralisation style and proposed medium scale open pit bulk mining operation

The underground mineral resources have been reported using an assumed decline development from the base of current and potential open pits within 200 m vertical depth from a portal and an appropriate reporting lower cut-off (3.0 g/t Au) that results in reporting grades that are typically economic for the style of mineralisation and proposed decline development and open stope mining methods.

15 Mineral Reserve Estimates

This is not required as no Mineral Reserves are currently reported; however, evaluation work is currently proceeding.

16 Mining Methods

Future mining methods have yet to be defined. Mining has previously been undertaken by open pit and underground methods.

Mining studies are ongoing.

17 Recovery Methods

Future optimal recovery methods have yet to be defined.

Further Metallurgical sampling and testwork are planned.

18 Project Infrastructure

Future project infrastructure demands have yet to be defined. Current surface infrastructure at Burnakura includes a heavy vehicle workshop, administration building, accommodation camp, core processing sheds and a 0.3Mtpa processing plant.

19 Market Studies and Contracts

Future concentrate or doré types have yet to be defined. The Project has no contractual or offtake sales agreements in place currently for this Project.

20 Environmental Studies, Permitting and Social, or Community Impact

Refer to Section 4.6. As a mineral reserve is not defined, no definitive study is currently in place.

21 Capital and Operating Costs

Future capital or operating costs have yet to be defined.

22 Economic Analysis

No current economic analysis is available for disclosure.

23 Adjacent Properties

No adjacent tenements/ properties have an impact on the Mineral Resources or effect the economic potential of the Burnakura Project, and as such are not discussed.

24 Other Relevant Data and Information

No other relevant data are considered to impact on the Mineral Resources or potential for economic extraction.
25 Interpretation and Conclusions

SRK has completed updates of the Mineral Resource Estimates suitable for input into Preliminary Economic Analysis studies that are to be completed by MMY. The basis of the Mineral Resource Estimates were an updated geological interpretations and review of all available data for the Project over its 20-year history.

The update of the Mineral Resources will also allow for refined targeting of proposed drilling programs to extend and infill the mineralisation to achieve a higher confidence and enlarged Mineral Resource in the future.

The review of the available metallurgical data and its relationship with the mineralisation will allow better targeting of resources to define a refined data collection outcome.

SRK considers that this study report will assist in progressing the Project in a refined manner.

26 Recommendations

The Burnakura Project has been the subject of a number of exploration and resource definition drilling program over the past 20 years. From the review of historic work and recent drilling by Monument, it is apparent that there is an opportunity to extend the mineralisation envelopes and infill the current Inferred classified material to improve and extend the Mineral Resource Estimation confidence.

Current focus of exploration includes:

- Further definition and extension the NOA mineralisation
- Collection of additional metallurgical data
- Definition and extension of shallow oxide gold occurrences on the Burnakura leases.

Other recommended work programs to enhance future resource modelling include:

- Further studies of the structural setting and timing of the mineralisation, which may lead to deeper exploration targeting
- Gold characterisation
- Lithogeochemistry studies to improve understanding of the mineralising geology and alteration types
- Metallurgical characterisation studies to assess variability of mineralisation for mineral processing.

The exploration drilling/ assaying budget for FY18 is ~A\$300,000 and focuses on NOA7-8 Deeps, Alliance Deeps, NOA1-2 Deeps and Structural targeting near Lewis Reward Deeps and also extensions to oxide targets.

The exploration drilling for FY17 focused on extending NOA 78 down plunge, and testing the deeps potential of Alliance. The exploration focus for FY18 is to further delineate the deeps potential at Alliance, and to test for potential repeat structures at the NOA line of mineralisation which is still open at depth.

Monument intends to complete a lithostructural targeting study across all three of its Murchison Projects, including Burnakura, with a budget of approximately A\$40,000. The targeting study will utilise all available geophysical, geochemical and geological datasets. Follow-up work and drill planning will be based on the outcome of this targeting work.

The budget for the metallurgical testwork is ~A\$30,000, and incudes standard testwork and an oresorting trial.

SRK considers that the proposed budget expenditures are in keeping with the continued exploration strategy and are appropriate for the current status of the project.

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Name/Title	Company	
Neil Rauert	Monument Mining Limited	

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