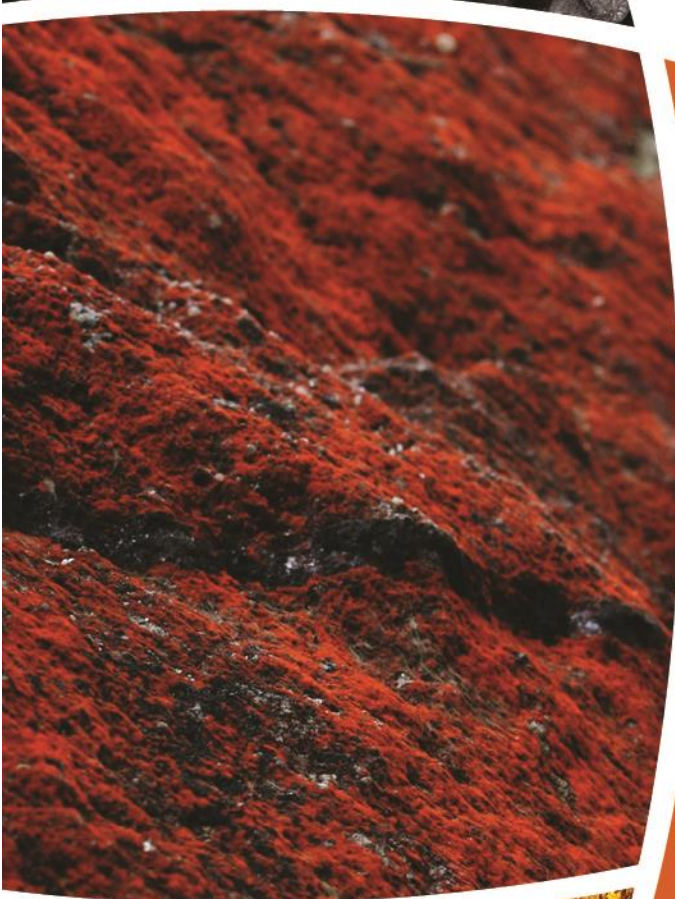




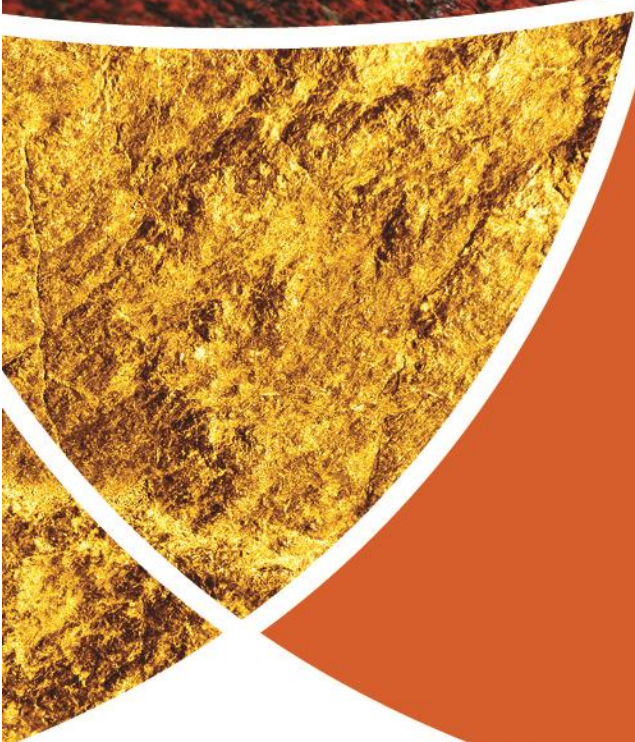
**CSA Global**  
Mining Industry Consultants



## Mineral Resource Estimate

### Malawiri Uranium Project

Northern Territory



CSA Global Report N° R449.2017  
18 December 2017

[www.csaglobal.com](http://www.csaglobal.com)

## Report prepared for

Client Name	Energy Metals Limited
Project Name/Job Code	EMEMRE08
Contact Name	Wayne Taylor
Contact Title	Exploration Manager
Office Address	Level 2, 28 Kings Park Road, West Perth

## Report issued by

CSA Global Office	Perth, Western Australia. Level 2, 3 Ord Street, West Perth, WA 6005, Australia
Division	Resources

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## Author and Reviewer Signatures

Coordinating Author	Maxim Seredkin PhD (Geology), FAusIMM, MAIG	Signature:	Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.
Principal Peer Reviewer	Dmitry Pertel MSc (Geology), AIG, GAA	Signature:	Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.
Peer Reviewer	David Williams B. Sc. (Hons), MAIG	Signature:	Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.
CSA Global Authorisation	Aaron Meakin Manager – Resources	Signature:	Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication. Electronic signature not for duplication.

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This Report was prepared exclusively for Energy Metals Limited (“the Client”) by CSA Global Pty Ltd (“CSA Global”). The quality of information, conclusions, and estimates contained in this Report are consistent with the level of the work carried out by CSA Global to date on the assignment, in accordance with the assignment specification agreed between CSA Global and the Client.

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# Executive Summary

Energy Metals Limited (EME or “the Client”) commissioned CSA Global Pty Ltd (CSA Global) to prepare a Mineral Resource estimate (MRE) for the Malawiri Uranium Project (“the Project”), located in the Northern Territory, Australia.

The Project, located on Exploration Licence in Retention (ELR) 41, belongs to a joint venture between EME – 52.1% and Northern Territory Uranium Pty Ltd (NTU) – 47.9%. EME is the operator of the joint venture.

The Project is located 220 km northwest of Alice Springs. The Project area is located within the Ngalia Basin which contains numerous sandstone-hosted uranium deposits.

Historically, the Project was explored by AGIP and Central Pacific Minerals NL (CPM) between 1979 and 1982. The interests of CPM in the Project were purchased by EME in 2005 and included CPM’s exploration data archive as well as historical drill core material. Exploration recommenced in 2014 following the grant of ELR41. Authority Certificate C2014/116 covering ELR41 was issued to EME by the Aboriginal Areas Protection Authority (AAPA) on 29 August 2014, permitting drilling works to be conducted at the Project.

The Project area is situated in the eastern Neoproterozoic to Palaeozoic sedimentary Ngalia Basin, immediately to the north of the Stuart Bluff Range, which comprises tilted basal Vaughan Springs Quartzite. Malawiri is the western, along-strike extension of the larger Minerva prospect which has an identical uranium mineralisation style. Malawiri stratigraphy ranges from steeply dipping sub-vertical to slightly overturned. Uranium mineralisation is hosted in the Devonian-Carboniferous Mount Eclipse Sandstone under approximately 80–100 m of Cenozoic cover. Uranium mineralisation is largely controlled by redox zonation and sedimentary facies and occurs as stacked tabular ore lodes.

The MRE has been reported in accordance with the JORC Code<sup>1</sup> and it is therefore suitable for public release. The MRE is reported by the classification given in Table 1. The Mineral Resource is reported above a U<sub>3</sub>O<sub>8</sub> cut-off grade of 100 ppm.

Table 1: MRE by JORC classification as at 1 December 2017

JORC Classification	Volume ('000 m <sup>3</sup> )	Tonnes (kt)	Bulk density (t/m <sup>3</sup> )	U <sub>3</sub> O <sub>8</sub> (ppm)	U <sub>3</sub> O <sub>8</sub> (t)	U <sub>3</sub> O <sub>8</sub> (Mlb)	U (%)	U (t)
Inferred	172.0	421	2.45	1,288	542	1.20	0.109	460

Malawiri is a relatively higher-grade deposit and an extension of the adjoining, larger Minerva deposit, and it may be possible for both deposits to be developed simultaneously. A total of 25 holes define the Malawiri Uranium Project for 5,550 m of drilling. Gamma logging adjusted by a Radioactive Equilibrium Factor to account for radiochemical disequilibrium was used for the Mineral Resource estimation. The Radioactive Equilibrium Factor was estimated based on 102 closed can assays<sup>2</sup>.

A block model was developed to constrain the uranium mineralised bodies. Parent cell sizes of 2 mE x 0.125 mN x 2 mRL, were adopted without sub-celling due to use of a flattening procedure for geostatistical analysis and grade interpolation. Samples of 0.5 m length were used to interpolate U<sub>3</sub>O<sub>8</sub> grades into the block model. Block grades were validated both visually and statistically. All modelling was completed using Micromine 2013 software.

<sup>1</sup> Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves – the JORC Code (2012 Edition). Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC). Effective 20 December 2012 and mandatory from 1 December 2013.

<sup>2</sup> According to this method, a powdered sample is put into a special container. The container is sealed hermetically. Using a special gamma-unit, which measures integral activity, the sample is subjected to gamma-activity measurement. The sample is then stored for 15 days and measured again. Observed growth of activity is associated with radon accumulation. Knowing the accumulation time (from the moment of sealing the container) radium concentration in the sample is calculated based on radon accumulation tables.



A bulk density of 2.45 t/m<sup>3</sup> was assigned based on measurements taken from core samples.

The Mineral Resource has been classified based on the guidelines specified in the JORC Code (2012). The classification category is based upon an assessment of the geological understanding of the deposit, geological and mineralisation continuity, drillhole spacing, quality assurance/quality control (QAQC) results, search and interpolation parameters. The Mineral Resource estimate is classified as Inferred.

CSA Global recommends the following actions are completed to support the ongoing exploration and evaluation effort at the Malawiri Uranium Project:

- Completion of a scoping-level study for the combined Malawiri and Minerva projects.
- If the scoping study is positive, infill drilling (30 x 10–15 m) for the estimation of Indicated Mineral Resources is recommended.
- QAQC procedures must meet industry standards for both assays and gamma logging. In addition, equilibrium between radon and radium should be defined by further investigations using closed can assays and combined gamma and PFN (prompt fission neutron) probe downhole logging. QAQC for assays must include blanks, certified standard materials (standards, or CRMs), field and laboratory duplicates. QAQC for gamma logging must include repeat gamma logging for at least 10–15% of drillholes. Also, the use of a standard drillhole for routine calibration checks of the gamma logging probe is good practice.

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# 1 Introduction

## 1.1 Terms of Reference

Energy Metals Limited (EME or “the Client”) commissioned CSA Global Pty Ltd (CSA Global) to prepare a Mineral Resource estimate (MRE) for the Malawiri Uranium Project (“the Project”), located in the Northern Territory, Australia.

The Project, located on Exploration Licence in Retention (ELR) 41, is a joint venture exploration between the Energy Metals Limited – 52.1% and Northern Territory Uranium Pty Ltd (NTU) – 47.9%. EME is the operator of the joint venture.

The deliverables under the scope of work included:

- Review of initial data and the quality assurance/quality control (QAQC) report provided by EME
- Review and update of the interpretation and wireframes provided by EME
- Statistical and geostatistical analysis, block modelling, Mineral Resource estimation
- Preparation of Mineral Resource sections of the report and compilation of JORC Table 1 Section 3.

## 1.2 JORC Code Compliance

The MRE for the Malawiri Uranium Project is reported in accordance with the JORC Code<sup>3</sup>.

## 1.3 Sources of Information and Reliance on Other Experts

CSA Global has completed the scope of work largely based on information provided by EME. CSA Global has supplemented this information where necessary with other publicly available information.

CSA Global has made all reasonable endeavours to confirm the authenticity and completeness of the technical data on which this report is based; however, CSA Global cannot guarantee the authenticity or completeness of such third-party information.

The report author is not qualified to comment on any legal, environmental, political, or other issues relating to the status of the tenements, or for any marketing and mining considerations related to the economic viability of the Malawiri Uranium Project.

CSA Global was provided with the information to complete the scope of work listed below:

- Meetings and discussions with technical staff from EME
- Database of initial data including gamma logging, lithology logging, closed can assays and bulk density tests
- Reports relating to geology and geophysics for the Malawiri deposit
- Interpretation strings and wireframes in Micromine format for the deposit
- QAQC report plus JORC Code Table 1 (Sections 1 and 2) for the deposit.

## 1.4 Prior Association and Independence

Neither CSA Global, nor the authors of this report, has or has had previously, any material interest in the EME deposit or the mineral properties in which EME has an interest. CSA Global’s relationship with EME is solely one of professional association between client and independent consultant.

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<sup>3</sup> Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves – the JORC Code (2012 Edition). Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC). Effective 20 December 2012 and mandatory from 1 December 2013.

CSA Global is an independent geological and mining consultancy. This report is prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is not contingent on the results of this report.

No member or employee of CSA Global is, or is intended to be, a director, officer, or other direct employee of EME.

## **1.5 Company and Author Summary**

### **1.5.1 CSA Global**

This report has been prepared by CSA Global, a privately-owned consulting company that has been operating from Perth, Western Australia for 30 years.

CSA Global provides multi-disciplinary services to clients in the global resources industry. CSA Global's services include project generation, exploration, resource estimation, project evaluation, development studies, mining operations assistance, and corporate consulting such as valuations and independent technical reports. CSA Global has worked for major clients globally and many junior resource companies. CSA Global personnel have been involved in the preparation of independent reports for listed companies in most international mining jurisdictions.

### **1.5.2 Authors**

The principal author of this report is Dr Maxim Seredkin, CSA Global Principal Resource Geologist. Peer review of this report was completed by David Williams, Principal Resource Geologist.

Dr Maxim Seredkin has 20 years' experience in the mining industry, including 12 years in the uranium industry. He worked for seven years in one of the leading uranium mining companies, ARMZ Uranium Holding Company, as Director of Geology and Subsoil Use from 2005 to 2012. Later he prepared independent technical reports at CSA Global for different uranium deposits worldwide.

## **1.6 Competent Person Statement**

The information in this report that relates to Mineral Resources is based on information compiled by CSA Global Consultant, Dr Maxim Seredkin. He is a full-time employee of CSA Global and is a Fellow of the Australasian Institute of Mining and Metallurgy and Member of the Australian Institute of Geoscientists. Dr Maxim Seredkin has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). He consents to the disclosure of information in this report in the form and context in which it appears.

## 2 Project and Exploration History

### 2.1 Project Location and Access

The Malawiri Uranium Project is located in the eastern Ngalia Basin, about 33 km northwest of Tilmouth Well roadhouse (with regional airstrip) and approximately 220 km from Alice Springs (234 km from Alice Springs national airport) on the sealed Tanami Highway (Figure 1, Figure 2). Access from the Tanami Highway to the Project area is via unsealed station tracks. The Project is navigable by two-wheel drive vehicles, but four-wheel drive is recommended.

The Project area is located on the Napperby pastoral lease and falls within the NAPPERBY 1:250K map sheet<sup>4</sup>.

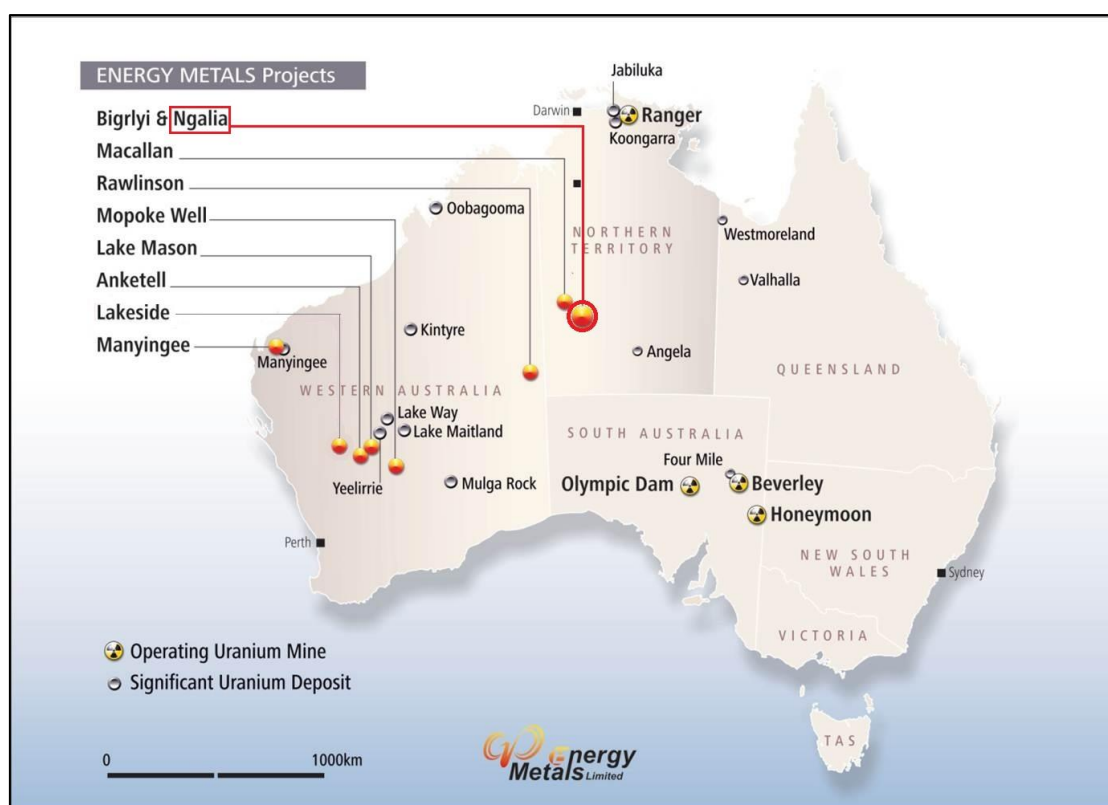


Figure 1: Location of the Ngalia Basin

<sup>4</sup> All coordinates in this application are given in metres in GDA 94, MGA Zone 53

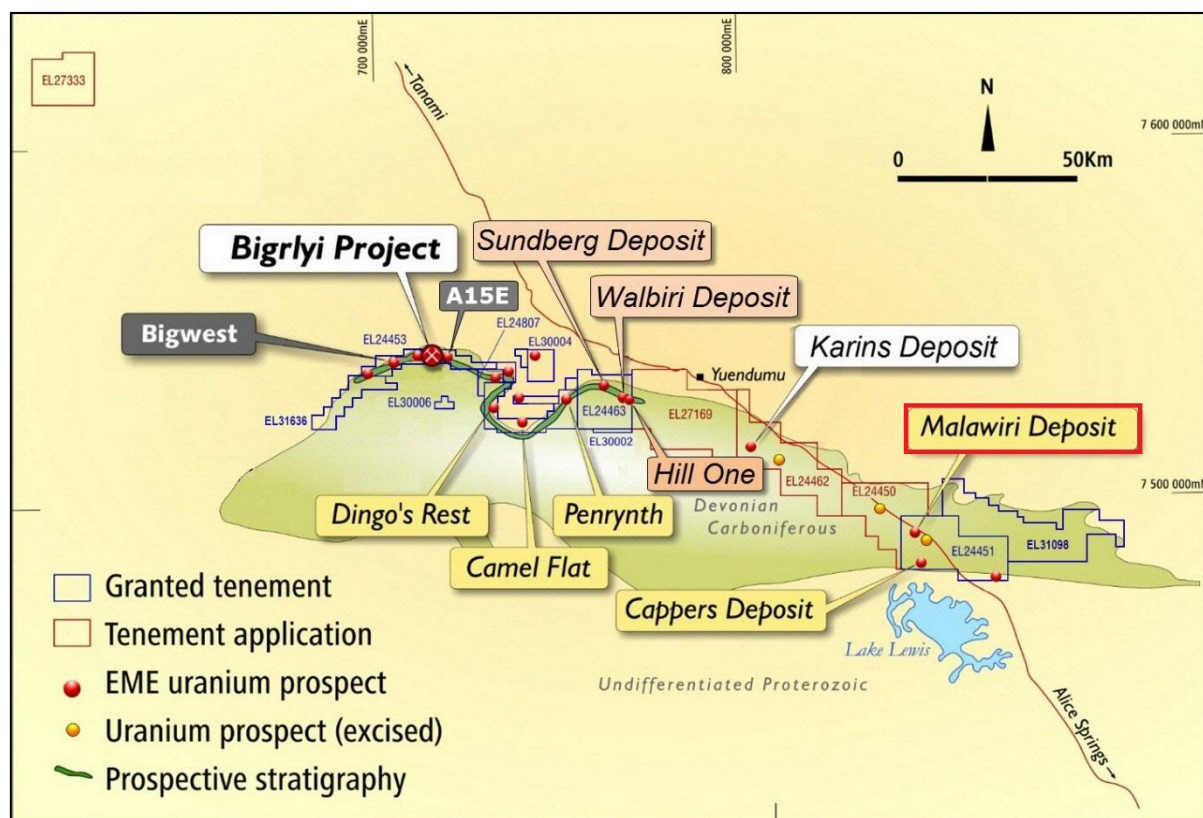


Figure 2: Location of the Malawiri Project within the Ngalia Basin with known uranium deposits and prospects shown

## 2.2 Infrastructure

The Project is located on the Napperby pastoral lease. The nearest settlements are Tilmouth Well roadhouse (located 33 km to the southeast) and the township of Yuendumu (located 90 km to the northwest).

The nearest main road is the sealed Tanami Highway; the Project area is located 1.5 km from the highway and is accessible by unsealed station tracks. Witchetty Bore is located 2 km to the northeast of the Project area. The Amadeus to Darwin gas pipeline is located 65 km to the southeast.

Alice Springs, a small city with a population of approximately 28,000 people and a regional airport, is located 220 km to the southeast of the Project area. Alice Springs is located on the trans-Australia Darwin to Adelaide railway line.

Other major, advanced stage resource projects in the area are the Nolans rare-earth element phosphorus-uranium project (Arafura Resources Ltd) and the Mount Peake vanadium-titanium-iron project (TNG Limited), located 95 km east and 150 km northeast of the Malawiri Project, respectively. The undeveloped Napperby uranium deposit, a surficial style of uranium deposit owned by Core Exploration Ltd, is located 40 km to the southeast.

## 2.3 Climate and Physiography

The Project area is a flat, featureless sand-plain consisting of spinifex grassland with sparse scrub and tree cover comprising mainly acacias (mulga).

In the Project area, temperatures can vary by up to 20°C during the day and rainfall can vary quite dramatically from year-to-year. In summer, the average maximum temperature is in the mid-30s, whereas



in winter the average minimum temperature is 5.5°C, with several nights below freezing every year. The elevation of the Project area is about 570 m, which contributes to the cold nights in winter.

The annual average rainfall is 285.9 mm; however, annual precipitation is erratic, varying year-to-year between 200 mm and 740 mm. The climate is classified as semi-arid to desert due to high evapo-transpiration.

## 2.4 Tenure

Granted joint venture tenement ELR41 (Table 2, Figure 3) covers the Malawiri deposit which is a joint venture between EME (52.1%) and NTU (47.9%). EME is the operator of the joint venture. ELR applications 27 to 32 adjoin ELR41 and are owned 100% by NTU; they largely cover the adjacent Minerva prospect, however a small proportion of the Malawiri deposit extends on to ELR28 which is located immediately to the south of ELR41. The ELRs are embedded within surrounding EL24451, which is part of EME's 100% owned Ngalia Regional Project (Figure 3).

Table 2: Corner coordinates of the ELR41 tenure

Coordinates in GDA 94, MGA Zone 53			
Ppoints	East	North	RL
1	231,532.7	7,491,182.3	568.3
2	231,514.7	7,492,182.1	570.1
3	229,514.2	7,492,147.3	568.8
4	229,532.1	7,491,147.0	567.5

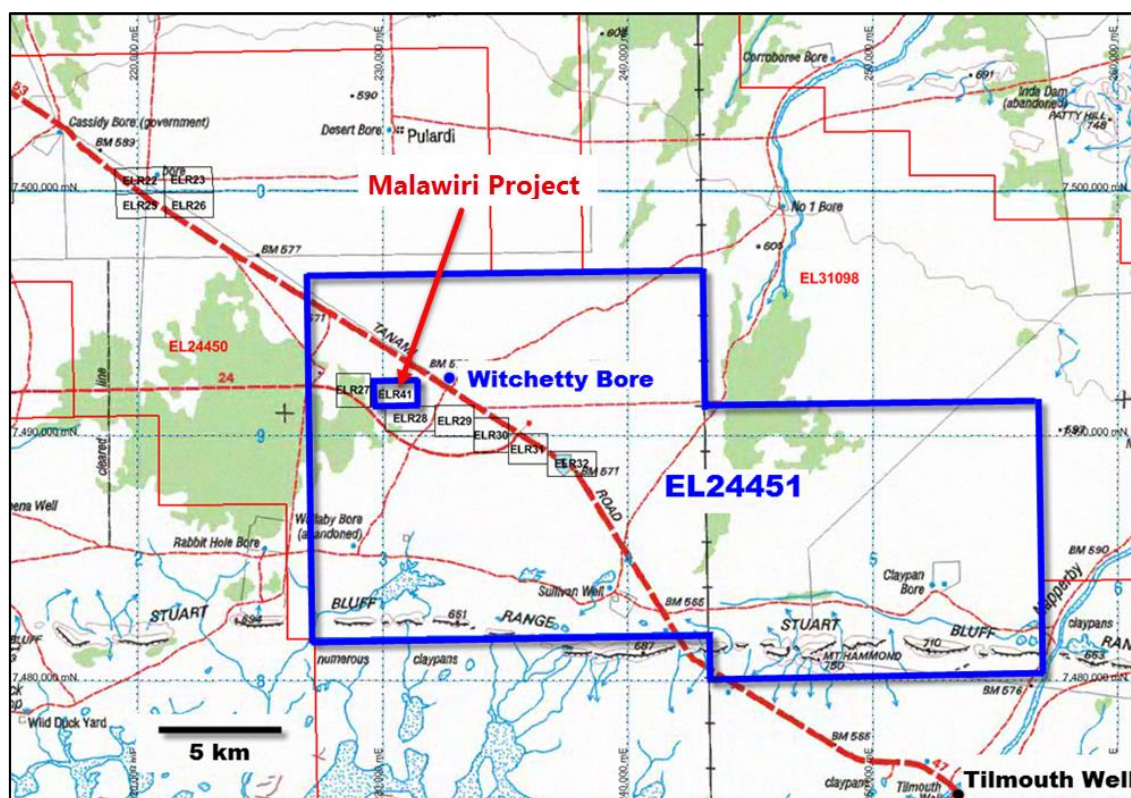


Figure 3: Location of EME's tenures (blue rectangles)

A Native Title Claim covering the Napperby pastoral lease on which the Malawiri deposit is located, was granted by consent on 2 July 2013. The Alherramp Ilwerr Mamp Arrangkey Tywerl Aboriginal Corporation is the relevant Registered Native Title Body Corporate and holds the native title interests of the traditional owners.

Following consultations between the traditional owners and the NT Aboriginal Area Protection Authority (AAPA) in 2014, it was determined that there are no sacred site restrictions for access to the Project area for drilling works. Authority Certificate C2014/116 covering ELR41 and parts of EL24451 (Mineral Exploration) was issued by the AAPA on 29 August 2014.

ERL41 is located on the northern margin of the Lake Lewis Site of Conservation Significance (SOCS Site No. 54).

At the time of reporting there are no known impediments which could affect an application for a licence to operate in the area.

## 2.5 Project History

Early regional geological and geophysical activities over EL24451 are listed in Table 3. The Napperby 1:250K map-sheet geology and explanatory notes were updated by the Bureau of Mineral Resources (BMR) in 1982, and remains the current geological description.

The blind Minerva deposit was discovered by AGIP in 1978 as a result of an intensive campaign of broad-spaced, regional stratigraphic drilling beginning in 1977 (CR1979-0068). The discovery hole was YR93 in which up to 690 ppm  $eU_3O_8$  was recorded over the interval 118–127 m in Mount Eclipse Sandstone. Minerva is currently excised from EL24451 (owned by NTU). In 1979, the Minerva prospect and surrounding regional area was intensively explored with 89 new holes drilled for 17,507 m and downhole geophysical logging of 23,650 m (Figure 4). A gravity survey was later undertaken over the eastern portion of the tenement. Figure 5 shows the distribution of historic exploration drillholes.

Central Pacific Minerals NL (CPM) held large tenure across the Ngalia region in the 1970 and 1980s. In 1972, CPM carried out a reconnaissance track etch program and identified a number of radon (soil gas) anomalies. Initially radon cups were spaced 500 m apart along lines 1 km apart. The survey was confined to an area covering the projection of what was then considered to be a favorable horizon, which lay to the north of Witchetty Bore (north of the eventual Malawiri prospect). One stratigraphic hole GCRD1 was drilled 700 m north of Minerva and 1.2 km northeast of Malawiri to 219.15 m and intersected a highly fractured quartz sandstone which was tentatively assigned to the Vaughan Springs Quartzite. The Malawiri prospect was not drilled until 1980 after the discovery of the Minerva deposit located along strike.

The Malawiri prospect was discovered by CPM in 1980 (Fidler, 1980, 1981); it lies within granted ELR41. Exploration was carried out in the Malawiri area between 1979 and 1982 by CPM and comprised a total of 22 pre-collared percussion diamond holes totalling 4,529 m (Fordyce, 1982a; Fidler, 1983).

Mineralisation at both Malawiri and Minerva is usually present in multiple narrow (1–5 m) intervals as uraninite/coffinite with accompanying pyrite and hematite, which are hosted in a redox-mottled transitional facies of arkosic sandstone and lesser conglomerate and siltstone/shale associated with a west-northwest striking fault zone.

Three geophysical lines were surveyed in 1980 for microgravity and total field magnetics; the lines were 2 km long and 500 m apart with stations at 100 m intervals. The results indicated the Mount Eclipse Sandstone was probably present at depth, and basement highs were interpreted just to the north of ELR41. Three rotary and diamond drillholes were drilled in 1980 to test the hypothesis of buried prospective Mount Eclipse Sandstone, all three holes (GCRD2 to GCRD4) intersected significant uranium mineralisation in a red and white mottled arkose. The prospect was named “Malawiri” (Fidler, 1980). Drilling continued in 1981 with a temporary camp established by AGIP and camp water bore (GCRH5). A total of 14 exploration holes (GCRD6 to GCRD19) totalling 3,151.8 m were drilled to test extensions of the mineralisation along strike and down dip (Fordyce, 1982b).

The final year of exploration at Malawiri occurred in 1982 for three additional holes totalling 729.4 m (GCRD20 to GCRD22). GCRD20 was a large step out to the west and intersected the desired lithology but no uranium mineralisation. GCRD21 and GCRD22 were drilled on existing panels and extended mineralisation down dip and up dip respectively. At the end of 1982, 22 holes totalling 4,529.1 m had been drilled at the Malawiri prospect. The prospect was thereafter abandoned due to the poor uranium price. Whilst the grades found were regarded as economic, the situation required a more favourable uranium price to offset a likely difficult mining situation. No meaningful estimate of the size of mineralisation was made at the time as sections were not complete nor the structure/stratigraphy known with certainty.

Exploration drilling programs by CPM and AGIP were terminated in 1982 (Fidler, 1983).

Table 3: Previous significant exploration in the Minerva Malawiri project area

Period	Description
1965–1970	Regional reconnaissance geological and geophysical surveys by BMR. Stratigraphic drilling in the eastern Ngalia Basin including holes Napperby 2 and 4 within or near the Project area (BMR Record 1970/46).
1970–1972	Ngalia Basin gravity surveys by Magellan Petroleum, track etch surveys by CPM.
1977–1978	Minerva deposit discovered by AGIP using geological mapping, ground radiometrics, resistivity, ground water analysis exploration techniques followed by stratigraphic drill programs. 48 holes drilled in 1977 with follow-up drilling in 1978 of 74 holes.
1979–1980	89 holes drilled at Minerva in 1979. A vertical stratigraphic hole (GCRD1) was drilled 500 m south of Witchetty Bore drilled intercepting VSQ. In 1980, three geophysical lines 2 km long and 500 m apart west of GCRD1 were surveyed for microgravity and magnetic intensity at 100 m spacing. Intervals along those lines suggested MES is present at depth.
1980–1982	Malawiri prospect discovered in 1980 in a joint venture between CPM, Urangesellschaft GmbH and AGIP. 21 pre-collared diamond core holes drill-tested steeply-dipping, undercover Mount Eclipse Sandstone. In 1981, Magellan Petroleum conducted seismic survey lines (NIO81) to the west of the Project area on ELA24450.
1985	BMR seismic survey line BMR85-1A from Ngalia Basin to Macdonnell Ranges (Goleby <i>et al.</i> , 1988, Aust. J. Earth Sci. 35, 275–294).



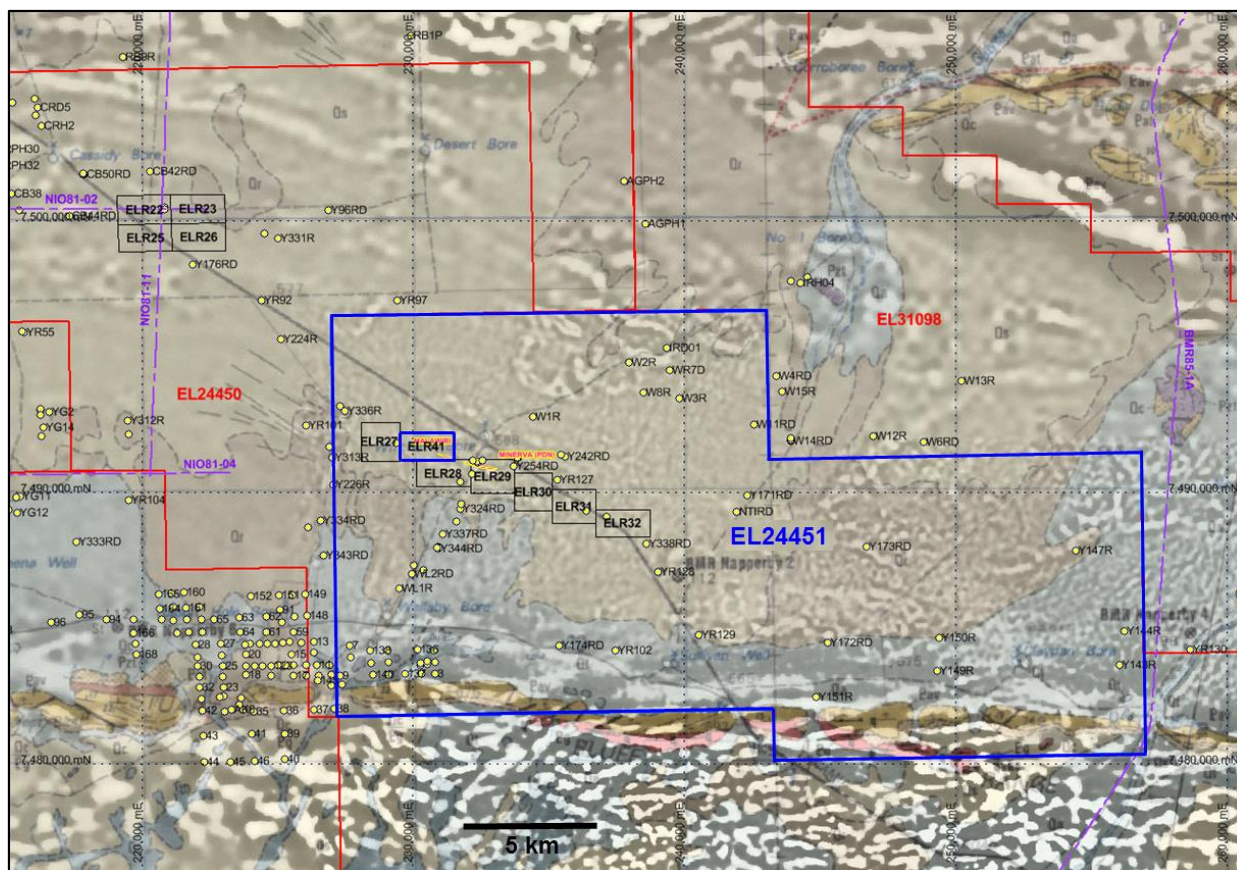


Figure 4: Previous exploration within the project area (open file); underlay imagery: combined 1:250K Napperby geology with regional merged deep-filtered magnetic image; ELs in red, Project area in blue, ELRAs in black, Malawiri-Minerva mineralisation outline shown (see Figure 5 below for expanded view), NT Strike historic drillhole locations shown as yellow dots, BMR85-1A (western tenement boundary) and NIO81-11, 02, 04 seismic lines in purple dot/dash.

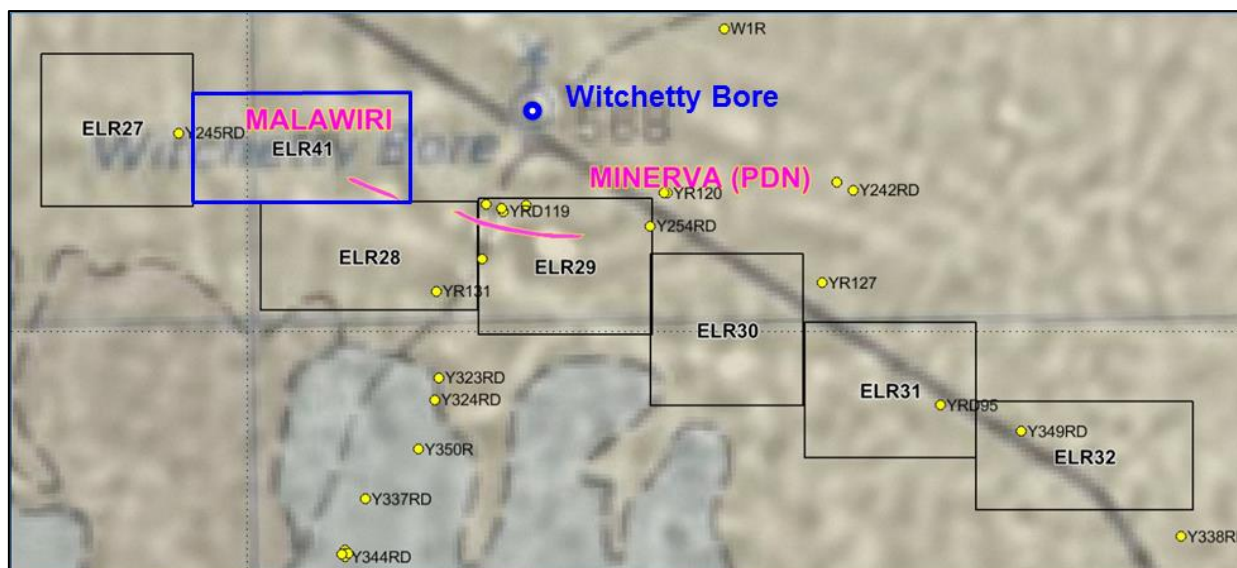


Figure 5: Expanded view of Figure 4 showing location of the Malawiri and Minerva prospects and mineralisation trace (in pink) together with historic regional stratigraphic drillholes (yellow dots)

## **2.6 Previous Mineral Resource Estimates**

No previous MREs have been undertaken for the Project.

## **2.7 Mining Status**

No mining production has been recorded from the Project.



## 3 Geological Setting and Mineralisation

### 3.1 Regional Geology

The Ngalia Basin is a Neoproterozoic to Palaeozoic age sedimentary basin of 12,600 km<sup>2</sup> size that was originally a component of the much larger Centralian Basin (Figure 6). The basin was structurally isolated from the adjacent Amadeus and Georgina Basins by intraplate orogenic activity over the period 560–300 Ma. In the Ngalia Basin, uplift associated with the Alice Springs Orogeny (ASO) led to deposition of the fluvial, late Devonian to mid Carboniferous Mount Eclipse Sandstone. The basin was subsequently shortened and deformed during the latter part of the ASO. The Mount Eclipse Sandstone is unconformably overlain by the Cenozoic Whitcherry and Mount Wedge Basins (Figure 6), which comprise a sequence of poorly consolidated claystone, silty sand, and minor gravel and lignite deposits.

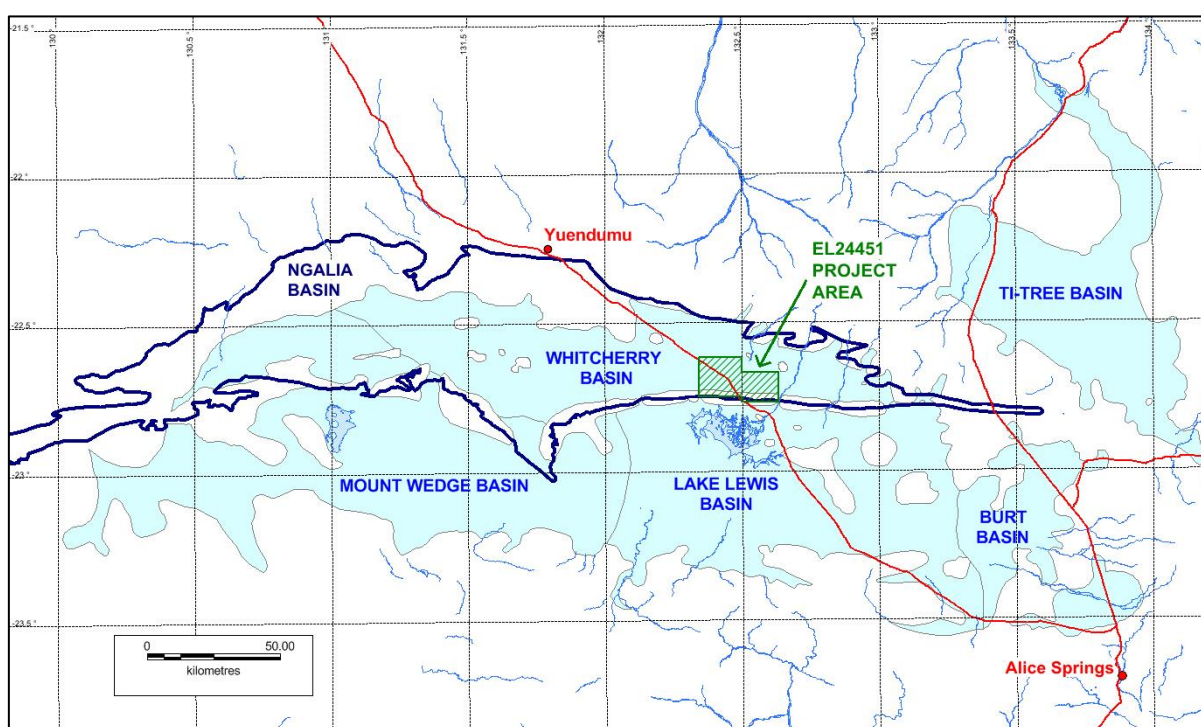


Figure 6: Project area in relation to the Ngalia Basin (dark blue outline) and overlying Cenozoic basins (light blue)

### 3.2 Local (Property) Geology

The Project area is situated in the eastern Ngalia Basin, immediately to the north of the Stuart Bluff Range which comprises tilted basal Vaughan Springs Quartzite (VSQ) and underlying granite, and marks the southern edge of the Ngalia Basin (Figure 6). The remainder of the area is covered by recent alluvial deposits; however, minor outcrops of Carboniferous Mount Eclipse Sandstone are known to the northeast, outside ELR41.

Thick Cenozoic cover sequences of alluvium and fluvial sediments unconformably overlie Carboniferous (Mount Eclipse) to Neoproterozoic age rocks (Mount Doreen Formation and VSQ) to a depth of 70–100 m. The unconformity is believed to have a “saw tooth” geometry with the base of the Cenozoic marked by lateritic sand and ferricrete which immediately overlies a silcrete capping developed on Mt Eclipse Sandstone. The orientation of the underlying Mount Eclipse Sandstone ranges from moderate to steeply dipping or vertical and overturned in some places. Rock types consists of an immature sequence of interbedded, medium to very coarse grained, lithic arkose, conglomerate, siltstone and shale overlain by

a more mature sequence of medium-grained sandstone and interbedded shale. Carbonate cementation is common but non-pervasive within the mineralised zones. Detrital micas are abundant in all rock types, particularly in the finer grained sandstones often occurring as dark, layered interbeds.

Based on magnetic imagery the Ngalia stratigraphy in ELR41 and the surrounding EL24451 is interpreted to be deformed with tight folding consisting of multiple synclinal, anticlinal and domal structures, west-northwest oriented faulting and probable stratigraphic repeats.

Malawiri is the western, along-strike extension of the larger Minerva prospect (100% NTU) (Figure 5, Figure 7) which has an identical uranium mineralisation style.

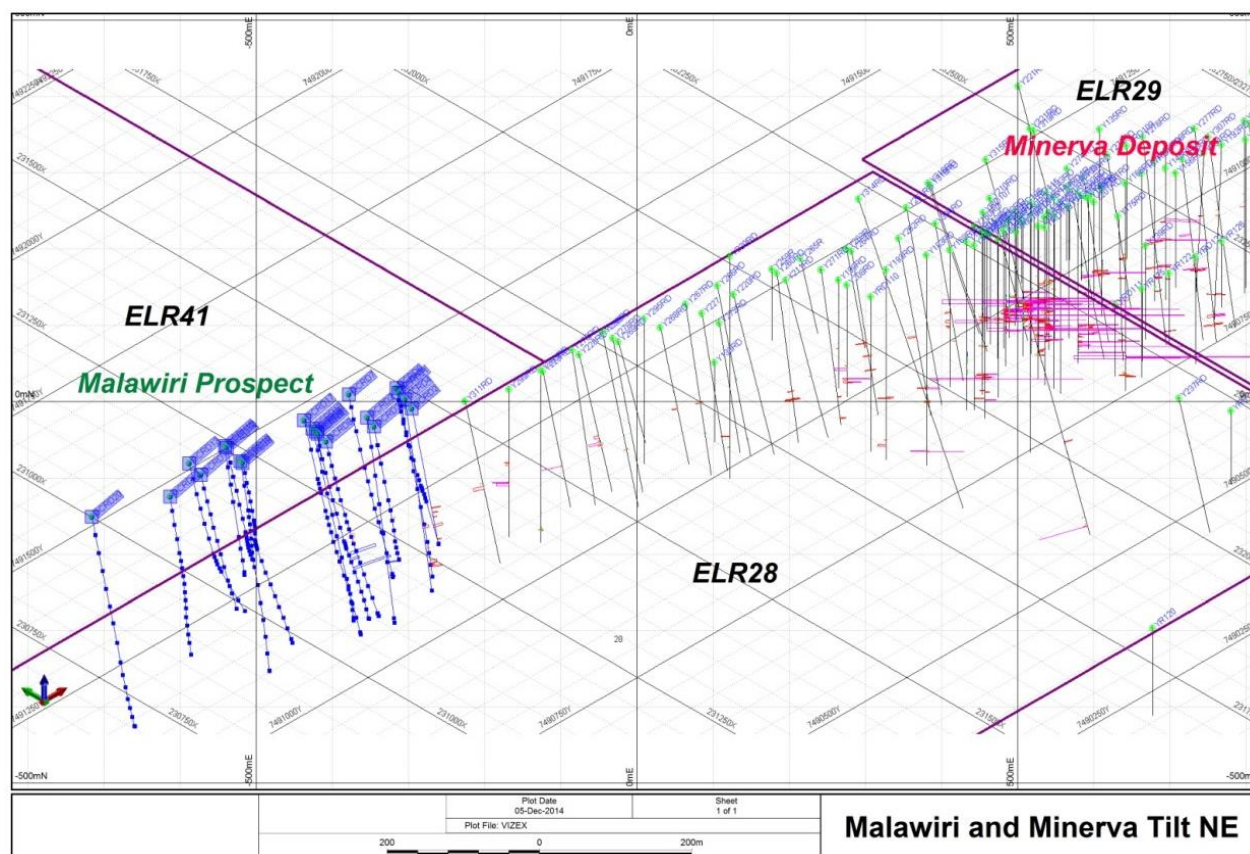


Figure 7: Malawiri and Minerva deposits oblique view from southwest to northeast. Malawiri deposit drillholes within ELR41 highlighted in blue. Uranium mineralisation is shown as histograms on drillhole traces.

Malawiri and Minerva are both blind prospects covered by Cenozoic sediments. The Mount Eclipse Sandstone is thinner in the eastern part of the Ngalia Basin compared to the Bigirlyi area and is unconformably underlain by the VSQ (Figure 8). At its base the Mount Eclipse Sandstone is generally reduced and pyrite-bearing but the mineralisation at Malawiri-Minerva tends to be associated with an oxidative hematitic overprint.

Malawiri stratigraphic relationships are shown in Figure 8; the Mount Eclipse Sandstone beds range from steeply dipping sub-vertical (dipping north at 70–85°) to slightly overturned with younging direction to the south (Figure 9). The Mount Eclipse Sandstone consists of immature, very coarse to pebbly arkose and arkosic sandstone sequences capped by silty and muddy shales, interbeds of fine-to-medium grained biotite-rich sandstones are common.

Two major marker units were identified – a cobble sized basal conglomerate unit and an upper pebble to cobble sized conglomerate (Figure 9); both units are dominantly matrix supported with a very coarse-grained immature arkosic matrix. Mineralisation is bound by these two units across 70–95 m width.

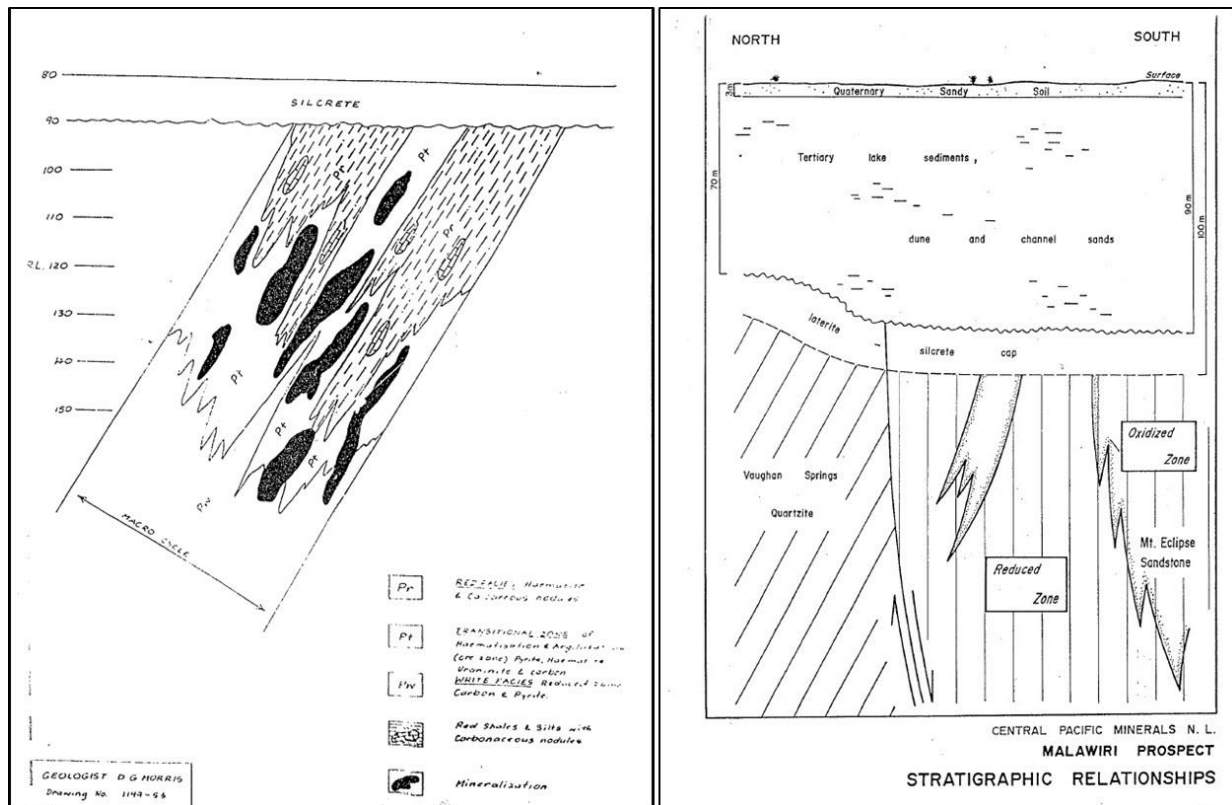


Figure 8: Stratigraphic relationships and mineralisation styles at Malawiri-Minerva (from Fidler, 1983)



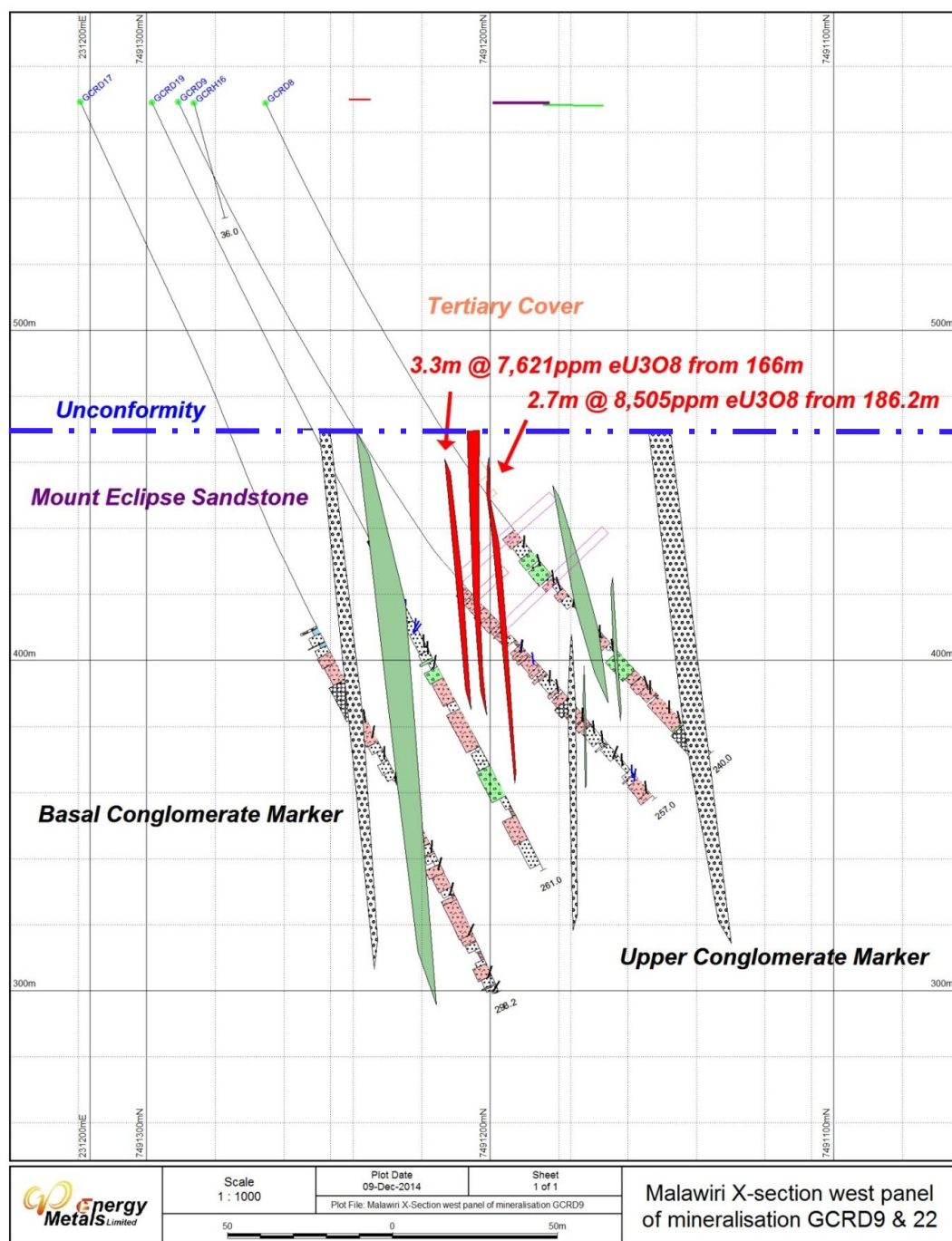


Figure 9: Mineralisation and marker units show steep southerly (i.e. slightly overturned) dips

Source: Jordan et al., 2015

### 3.3 Uranium Mineralisation

Uranium mineralisation of the Malawiri prospect occurs in the Devonian-Carboniferous Mount Eclipse Sandstone proximal to an interpreted basement high of VSQ to the north (Figure 8). Uranium mineralisation is largely controlled by redox zonation and sedimentary facies and occurs as stacked tabular ore lodes (at least three to four) and overall displays high grades  $>1,000$  ppm  $eU_3O_8$  over widths of 1–10 m. Mineralisation is largely hosted in reduced to partially oxidised coarse to very coarse (sometimes pebbly) arkose and arkosic sandstones. A common characteristic, which differs from other deposits in the Ngalia Basin, is that uranium mineralisation is closely associated with late hematite

(oxidative) overprinting. The hematite-rich mineralised zones are often high in carbonate. Not all mineralised zones were sampled by CPM; the reasons for this remain unknown.

No obvious structural controls on mineralisation, e.g. faulting, shearing or folding (other than soft sediment deformation) was observed. Thin carbonate veinlets (rare) occur as two distinct phases; the first a strongly deformed set and a late set sometimes with uranium (visible secondary carnotite) indicating late stage remobilisation. The veins become rare moving westward away from the mineralisation and may be linked to the carbonate within mineralised zones.



*Figure 10: Mineralisation occurring at a redox margin as blebs of uraninite with uranium grades locally >1% U-ppm by Niton portable x-ray fluorescence. Mineralisation is hosted in a pebbly arkose with disseminated hematite throughout the arkose giving a red rock alteration appearance with patches of darker burgundy red. Secondary oxidation of uranium minerals to carnotite (yellow) is evident.*

Uranium mineralisation typically occurs between grain-to-grain contacts of K feldspar and quartz and as replacement of pyrite along cleavage planes in biotite and chlorite (Figure 11; Schmid, 2015). Petrographic studies indicate mineralised zones were exposed to oxidising fluids after uranium precipitation, effectively causing K-feldspar dissolution, removal of uranium and precipitation of hematite. Uranium is only preserved in patches where detrital grain contacts were not exposed to fluids (Figure 11) and where uranium was protected within low permeable micas and clays (Figure 12).



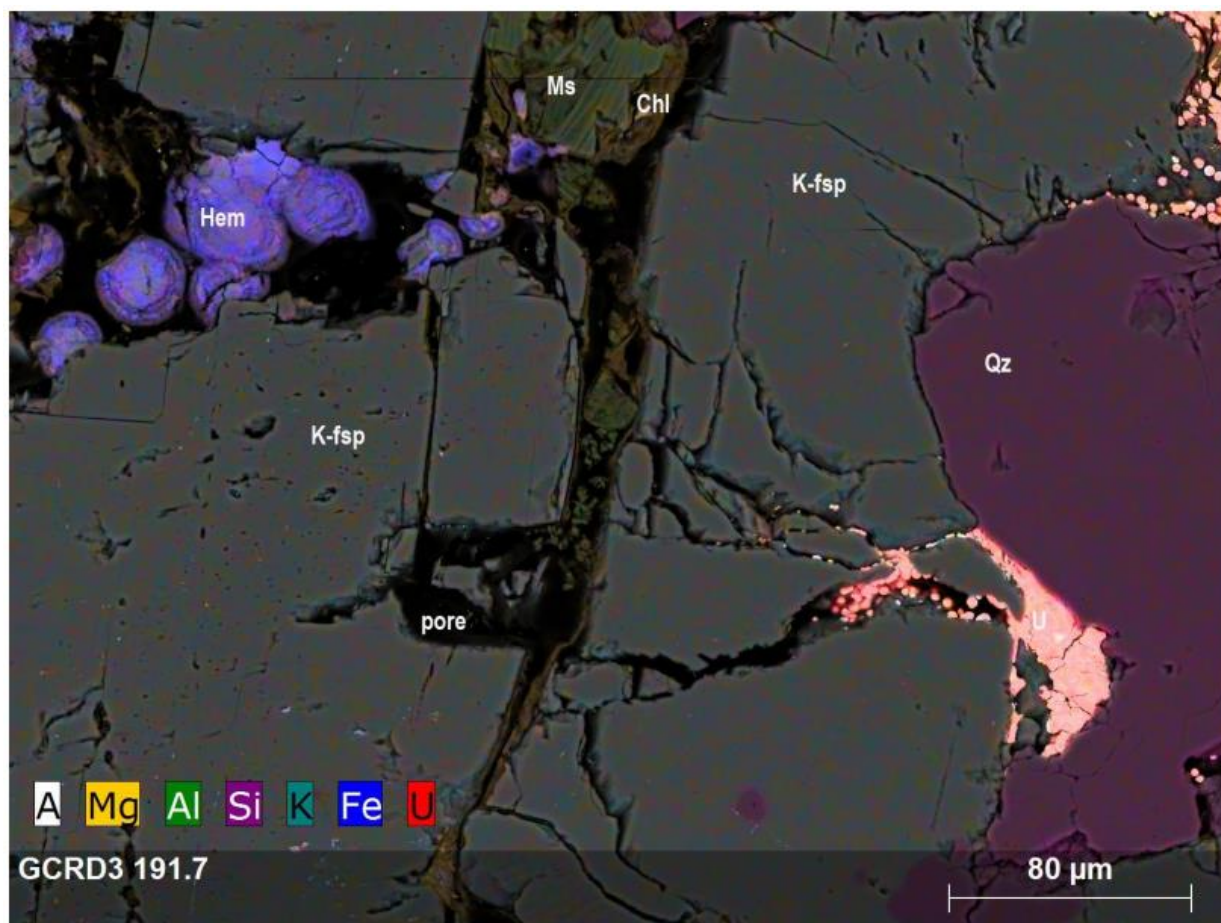


Figure 11: FEG-SEM element map and micrograph showing uranium minerals between detrital K-feldspar and quartz and hematite spherules in open pore space due to K-feldspar dissolution in GCRD3

Source: Schmid, 2015

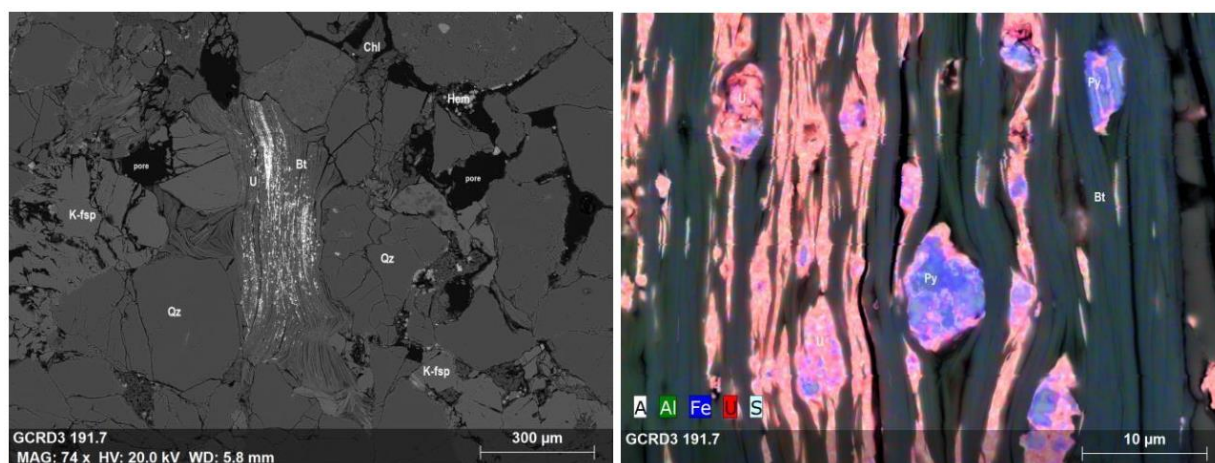


Figure 12: FEG-SEM micrograph showing uranium within a biotite grain surrounded by hematite coating detrital grains in a porous sandstone (left image), FEG-SEM element map and micrograph showing uranium replacing pyrite within biotite lamellae (right image) in GCRD3

Source: Schmid, 2015

## 4 Sampling Techniques and Data

This section addresses the requirements for the JORC Code Table 1 Section 1. This information is summarised in [Appendix 1](#) of this report.

### 4.1 Data Collection Cut-off Date

The Mineral Resource block model was prepared using all drilling data available as at mid-October 2017 as supplied by EME.

### 4.2 Data Spacing, Distribution and Orientation in relation to Geological Structure

In general, Bigrlyi-style (tabular stratiform sandstone-hosted) uranium mineralisation, of which Malawiri is an example, exhibit no significant structural control. Mineralisation is controlled by physical and chemical characteristics of the host rock such as permeability and redox state and is influenced by primary depositional and sedimentological features. In the case of Malawiri, a late oxidative overprint has affected the distribution of mineralisation.

The deposit occurs in steeply dipping beds that strike approximately 100° to 110° and was sampled by drillholes with azimuth 190° to 200° and inclination -45° to -75°. The downhole gamma probe data was subsequently corrected for mineralised zone boundary effects by deconvolution. There is therefore no bias of sampling related to orientation of the mineralised zones.

### 4.3 Drilling Techniques

No extensive drilling programs have been undertaken at Malawiri-Minerva since 1982. EME recommenced uranium exploration activities in 2014 and in 2015-16 developed a new geological model for the area.

In August 2016, EME drilled one rotary mud/diamond core hole at the Malawiri deposit (MARD004) in conjunction with the NT Government's CORE collaborative funding scheme. The results from drillhole MARD004 confirmed previously known mineralisation lenses but, due to deeper drilling, a new high-grade lens, comprising 8.1 m at 0.18% eU<sub>3</sub>O<sub>8</sub>, including 2.0 m of 0.62% eU<sub>3</sub>O<sub>8</sub>, was identified (refer to EME:ASX announcement of 27 September 2016 and Fordyce *et al.*, 2016).

Rotary mud (RM) and diamond drilling (DD) methods were used by CPM with north-northeast to south-southwest oriented drill lines on 60–120 m spacing and closer 30 m spacing within the primary mineralised zones, between the years 1979 and 1982. The programs primarily consisted of RM pre-collars to approximately 150 m depth (depth of unconformity) with BQ and/or NQ DD tails. Three pure RM holes were drilled from surface to target depth, one of which included a water bore. RM drilling used blade and tri-cone roller bits. Holes were cased with 100–150 mm PVC as well as NQ and/or NW casing to pre-collar depths. NQ, BW and BQ casing was run >150 m depths. No orientation marks were observed on historical core and geotechnical features were logged and recorded by CPM.

Modern drilling by EME used the RM method to the unconformity followed by NQ2 DD coring. RM pre-collar was drilled with 4 3/4" roller bits, 3 7/8" PCD bits and cased off with HQ casing. NQ2 DD tails were drilled to target depth. All DD cores were orientated using a NQ2 orientation tool set.

Drill spoil and core recovery is not relevant to the sampling method used (i.e. downhole gamma logging). However, pre-collar RM drill cuttings were collected by a timed interval method factoring in mud density and viscosity, annulus size and up-hole velocity of the fluids from depth. It should be noted that the RM drilling method does not necessarily provide an accurate sample due to loss of fines and potential for up-hole contamination.

Core sampling recoveries in the DD tails were determined by comparison of recovered core to the run drilled and this information was recorded on the geological logging sheets. CPM recorded core recoveries of >94% whilst EME's modern drill core recoveries were 100%.

To achieve maximum core recoveries, CPM and EME both cased off the pre-collars to avoid collapse of the overlying unconsolidated Cenozoic units.

No relationship exists between sample recovery and grade due to the type of sampling method applied (i.e. downhole gamma logging).

Table 4 list the drilling statistics at Malawiri.

*Table 4: List of drillholes in the Malawiri Project*

Site ID	Depth (m)	Drill Rig	Date	Company	Type	Bit size
GCRD1	219.15	ROTAMEC 1300/FOXMOBILE BL40	08/1979	CPM	PR/DD	5 5/8/BQ
GCRD2	188.40	ROTAMEC 1300/FOXMOBILE BL40	08/1980	CPM	PR/DD	NQ/BQ
GCRD3	284.20	ROTAMEC 1300/FOXMOBILE BL40	09/1980	CPM	PR/DD	NQ/BQ
GCRD4	263.30	ROTAMEC 1300/FOXMOBILE BL40	09/1980	CPM	PR/DD	NQ/BQ
GCRH5	88.00	SCHRAM 685 ROTADRIL	03/1981	CPM	PR	>125MM
GCRD6	216.80	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	04/1981	CPM	PR/DD	5 5/8/BQ
GCRD7	250.70	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	04/1981	CPM	PR/DD	5 5/8/BQ
GCRD8	240.00	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	04/1981	CPM	PR/DD	5 5/8/NQ
GCRD9	257.00	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	04/1981	CPM	PR/DD	5 5/8/NQ
GCRD10	255.00	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	05/1981	CPM	PR/DD	5 5/8/NQ/BQ
GCRD11	183.00	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	05/1981	CPM	PR/DD	5 5/8/BQ
GCRD12	219.00	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	05/1981	CPM	PR/DD	5 5/8/BQ
GCRD13	211.50	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	06/1981	CPM	PR/DD	5 5/8/BQ
GCRD14	156.80	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	06/1981	CPM	PR/DD	5 5/8/NQ
GCRH15	184.00	SCHRAM 685 ROTADRIL	06/1981	CPM	PR	5 5/8
GCRH16	36.00	SCHRAM 685 ROTADRIL	06/1981	CPM	PR	5 5/8
GCRD17	298.20	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	06/1981	CPM	PR/DD	5 5/8/NQ/BQ
GCRD18	294.80	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	06/1981	CPM	PR/DD	5 5/8/NQ/BQ
GCRD19	261.00	SCHRAM 685 ROTADRIL/FOXMOBILE BL40	06/1981	CPM	PR/DD	5 5/8/NQ
GCRD20	292.80	WARMAN UNIVERSAL 1000	05/1982	CPM	PR/DD	?/NQ
GCRD21	255.00	WARMAN UNIVERSAL 1000	05/1982	CPM	PR/DD	?/NQ
GCRD22	181.60	WARMAN UNIVERSAL 1000	05/1982	CPM	PR/DD	?/NQ
MARD004	240.20	LF90/RIG 20	08/2016	EME	RM/DD	HQ/NQ2
Y299RD	236.60		1981	AGIP		
Y311RD	237.00		1981	AGIP		

#### 4.4 Topo-Geodetic Survey

Historical hole collar locations were determined using three independent datasets. The primary dataset comprised CPM's original exploration drillhole plans, which were scanned at high resolution and carefully geo-referenced to allow extraction of MGA hole coordinates. Drill collars locations were compared with drill sites identifiable from Google Earth imagery, with the same drill sites converted from CPM's original local coordinate grid. Agreement between the three data-sets was found to be excellent and historic drillhole locations were accurately identified.

After initial identification EME technicians surveyed all historical drillholes at the deposit as well as the ELR corner boundary pegs using an Altus APS-3 RTK base receiver and rover (RTK DGPS). The precision quoted by Altus is +/-0.6 cm in the horizontal (x-y) plane and +/-1 cm in the vertical (z) plane. A local base

station was established at a Survey Control Point via the AUSPOS system. Elevations are derived AHD heights computed using the AUSGeoid09. The centre of each drill collar was measured.

Hole MARD004 drill collar from August 2016 was located by handheld GPS with an accuracy of +/-4 m in the horizontal plane.

The coordinates are located in UTM coordinates using the MGA94 grid (Zone 53) and GDA94 datum.

All holes were drilled sub-vertically between -45° and -75° inclination with downhole deviation surveys undertaken in the diamond tails at 30 m to 50 m intervals. Dip and azimuth measurements were attained using a Pajari single shot tool or occasionally by acid etch. Surveys of the 2016 drillholes were conducted using a Pathfinder multi-shot tool at 50 m intervals. A magnetic declination of 005° north-northwest was applied to azimuths to convert to Grid North for modelling.

Topographic control was provided by a digital terrain model (DTM) generated from radiometric and magnetic helicopter survey data flown in 2014. Because the ground is flat and the deposit is buried at an unconformity below 80 m to 100 m of cover sequences, the surface topography has no significant effect on deposit modelling.

## 4.5 Gamma Logging

The primary sampling instrument at Malawiri was the downhole gamma tool (or “probe”) which was used to obtain a total gamma count reading down each drillhole.

Original analogue gamma log data was digitised at 10 cm intervals downhole and converted to standard format LAS files followed by calculation of equivalent  $U_3O_8$  ( $eU_3O_8$ ) grades.

The total count gamma logging method used here is a common method used to estimate uranium grade where the radiation contribution from thorium and potassium is small (as is the case for sandstone-hosted deposits of the Bigirlyi-type considered here). Gamma radiation is measured from a volume surrounding the drillhole that has a radius of approximately 35 cm. Therefore, the gamma probe samples a much larger volume than drill spoil or drill core samples recovered from a drillhole of normal diameter. Gamma logging is considered to provide a more representative sample of the mineralised body and is preferred over geochemical assays of drill samples for the purposes of Mineral Resource estimation.

Estimates of uranium concentration determined from gamma ray measurements are based on the initial assumption that the uranium is in secular equilibrium with its daughter products (radionuclides), which are the principal gamma ray emitters along the U-series decay chain. If uranium is in disequilibrium as a result of the redistribution (depletion or enhancement) of uranium relative to its daughter radionuclides, then the true uranium concentration in the holes logged using the gamma probe will differ from that reported by gamma measurements. For the present resource estimation work at Malawiri an analysis of historical closed can measurements indicates that a disequilibrium correction (known as the Radioactive Equilibrium Factor or REF) is necessary, as discussed in the following.

The gamma tools used for downhole gamma ray measurements were calibrated and operated by geophysical contractors Geoex Pty Ltd of South Australia during the period 1980–1982. Calibration information including k-factors and deadtime corrections and hole information including hole diameter, casing depths/type and fluid levels/type were recorded for each hole. The accuracy and reproducibility of the probe data were monitored using two on-site standard radioactive sources (a low-level and a high-level source) and the monitoring data was included on each paper log and deemed satisfactory.

Historic drillholes were logged with two different gamma ray tools depending on grade. The initial run was undertaken with the L1 or lithology gamma probe which employed a sensitive 4 x 1-inch NaI detector crystal. Intervals of significant mineralisation (off-scale on the L1 probe) were re-probed with the O1 or “ore” gamma probe which employed the less sensitive 1 x ¾ inch NaI detector crystal.



Eight of the 22 drillholes were logged with a neutron probe for the purposes of downhole stratigraphic comparison. This data has not been digitised or used for the purposes of Mineral Resource estimation.

The counts per second (cps) downhole gamma data were recorded on paper charts with an analogue pen recorder; for some holes the cps data was also recorded in digital printout form for the O1 probe and CPM determined  $eU_3O_8$  values using a polynomial calibration equation. This data however was not used for the present Mineral Resource estimation work, instead the original paper logs were scanned, digitised and re-processed.

Logging parameters including the time constant, logging speed and chart scale were recorded. Both L1 and O1 paper logs were digitised by EME's geophysical contractor and converted into digital standard-format LAS files.

LAS file data were converted to  $eU_3O_8$  ppm using the specified probe calibration factors and taking into account drillhole size, fluid levels and other parameters. The  $eU_3O_8$  data was filtered (deconvolved) to correct for smearing of the gamma signal at mineralised interfaces so that true grades and thicknesses more closely reproduce actual grade. The  $eU_3O_8$  grades were calculated by consultant geophysicist, Mr Evgeny Sirotenko, under the supervision of CSA Global using the well-established methodology of Khaikovich and Shashkin, widely tested and upheld in the evaluation of uranium deposits in the USSR and later in Kazakhstan and Russia.

Modern downhole gamma measurements on hole MARD004 were performed with a 33 mm Auslog probe, serial number S937. The probe was calibrated at the Adelaide test pits, South Australia. The calibration data were evaluated by consultant geophysicist, Mr David Wilson of 3D Exploration Pty Ltd, and judged to be satisfactory.

The MARD004 downhole gamma log was recorded by EME staff using Auslog equipment and software, and employing standard, documented procedures. Hole information including hole diameter, casing depths and type, and fluid levels were recorded. The gamma log was output as a standard-format LAS file, which was processed to yield  $eU_3O_8$  values by Mr David Wilson.

Processing of 2016 holes includes total count gamma logs to provide  $eU_3O_8$  using historic calibration data and  $eU_3O_8$  using the latest calibration data. The Malawiri gamma logs recalculated with the new data show there is a slight decrease at the higher grades, which is expected.

#### 4.6 Sampling and Assaying

For historical holes core was originally split into samples of half core for assay work. Half core was quartered for duplicate checks. Historically, CPM assayed for uranium as well as V, Cu, Cr and Au. The uranium assay data were not used for the Mineral Resource estimation work because they are not considered sufficiently robust nor representative in comparison with the gamma logging measurements.

Historical closed can assay data undertaken by AMDEL on 96 samples was used to evaluate uranium series disequilibrium and determine the REF (i.e. the disequilibrium correction).

For modern hole MARD004, mineralised intervals were sampled at 0.4 m spacing and assayed for a complete range of elements at ALS laboratories. Standard EME and laboratory QAQC procedures were applied. Interval matched uranium assay data was used to confirm the REF but these data were not used directly for Mineral Resource estimation purposes.

Although gamma log derived  $eU_3O_8$  values are preferred for the purposes of Mineral Resource estimation, chemical assay results provide a check on  $eU_3O_8$  values as well as assist with constraints on potential uranium series disequilibrium. Some discussion on submission and chemical assay results, for uranium only, is provided below. It should be noted, however, that chemical assay results from drill core material and gamma logging intervals represent different sampling volumes and there is no expectation that there



will be a direct match between  $U_3O_8$  and  $eU_3O_8$ , particularly in orebodies where uranium is distributed inhomogeneously as is the case with Malawiri.

CPM submitted a total of 96 samples to AMDEL for chemical assay and uranium-series radiochemical disequilibrium (“closed-can”) determinations from four drillholes. An additional three samples were repeats and three had second splits. Sample sizes were primarily 0.5 m or 1.0 m length half-core. For the closed can radiochemical disequilibrium study U and Th were determined by x-ray fluorescence (XRF). AMDEL inserted a series of laboratory blanks and standards as part of their internal QAQC regime at a rate of one standard per 15 routine samples.

In 2015 and 2017, EME submitted a total of 56 samples (including resamples of historical core and core from hole MARD004) to ALS and Genalysis Laboratories for chemical assay (48 elements), Hylog, Pb isotope ratio analysis and bulk density determinations. The primary methods of analysis were four acid digest ICP-MS (ME-MS61) and XRF. Sample sizes for MARD004 were primarily 0.4 m length half-core; and for the historical holes 0.5 m quarter-core samples.

Niton portable XRF (pXRF) measurements were obtained using EME’s Thermo Scientific Niton XL3t XRF Analyser operated by qualified field technicians and geologists. The Niton pXRF detector was calibrated before use and XRF standard EMST22 containing 1,121 U-ppm was the first sample for every hole, and was then inserted regularly every 20 samples as per the EME QAQC procedure. A total of 27 standards were measured. Batteries were regularly rotated and noted which was in use for each measurement recorded.

Samples were selected across mineralised zones identified by historic gamma equivalents and by RadEye detection for mineralised zones not previously sampled by CPM. A total of 411 Niton pXRF measurements were taken across five diamond holes at 0.2 m intervals across mineralised zones to a distance 0.6 m to 1 m either side of mineralisation. Certain minerals were also locally targeted, particularly uraniferous minerals.

Zinc is often anomalous in mineralised zones, with 249 out of 500 pXRF measurements recording Zn values above 100 ppm, and with 12 readings recording more than 1% and maximum of 7% Zn. Controls on the elevated Zn levels remains unknown; low levels of sulphur suggest sphalerite is not the Zn-bearing mineral. Further work is required to understand the distribution of Zn in the Malawiri deposit.

Compared to the Bigirlyi deposit, vanadium is usually of significantly lower grade, generally <250 ppm V in mineralised intervals. Other occasionally anomalous elements identified include Cr, As and Cu. CPM also reported a number of anomalous Au assays.

## 4.7 Geological Logging

RM drill cuttings were logged at the time of drilling by CPM geologists and the hard copy lithological logs were converted to digital format by EME geologists using EME’s standard codes.

Seventeen historical DD core holes were re-logged by EME geologists for lithology, colour, grain size, stratigraphic unit, oxidation state, alteration, cementation, weathering and other features; data was recorded digitally, and core was photographed. Additionally, core was logged for structure using a goniometer to obtain alpha/beta measurements, dip and dip direction of varying structure types where possible. The coded data was verified according to EME’s standard logging look-up tables. The re-logs were found to be in good agreement with previous logging records, which provided confidence in the quality of original CPM logging.

Scintillometer and Niton pXRF measurements were undertaken on historical and modern core at 20 cm intervals through mineralised zones to confirm the width of mineralisation.

EME geologists logged the modern RM cuttings and drill core from hole MARD004 using in-house lithological and structural templates. In addition, core was photographed and mineralised intervals were

later scanned by the Hylog method to determine spectral mineralogy. Scintillometer measurements were undertaken over mineralised zones to confirm the width of mineralisation. The coded data was verified according to EME's standard logging look-up tables.

One hundred percent of relevant intersections have been logged.

All holes were structurally logged for alpha angles using an appropriate goniometer for the associated core size. Bedding to core axis measurements were taken at regular (10 m to 30 m) intervals downhole from coarse grained K-feldspar-rich bands/beds in arkoses, sandstone beds, finely laminated micaceous siltstones and shale. Typical bedding to core axis measurements ranged from 5° to 75° but averaged 32° across 162 measurements from the 17 historic drillholes. The large variation is probably due to cross bedding, but the stratigraphy is sometimes overturned or is irregularly dipping. Soft sediment deformation and cross bedding indicates a younging direction. Vein sets were measured and show steeper angles to the core axis averaging 50° and ranging from 15° to 70°. Veins are calcite, gypsum or both. Minor carbonate and gypsum veins sets were measured (rarely with uranium). In one instance a late undeformed vein of calcite/gypsum/uraniferous mineral was observed indicating late remobilisation of uranium within the mineralised package. Carbonate veining seems to be associated with mineralised drill panels and could envelope the mineralisation as a thin wiry series of veinlets; carbonate is also associated with the mineralised system and often is strongest within the hematite alteration zone.

#### **4.8 Bulk Density**

Measurements of bulk density of Malawiri historical core (179 samples) were undertaken by EME in-house using the Archimedes method. Measurements of bulk density for mineralised core from modern drillhole MARD004 (38 samples) were undertaken by ALS Laboratories, Perth.

Bulk density testing was carried out on both mineralised and un-mineralised drill core. The dataset comprises 146 in-house bulk density measurements of historical core from 16 holes and 38 bulk density measurements of mineralised core from hole MARD004 undertaken by ALS laboratories, Perth. The main rock types found at Malawiri are pebble conglomerate, arkose, arkosic sandstone and shale, all of which may be mineralised.

Density estimates were obtained using the Archimedes method. For the in-house measurements the balance was calibrated using two standard weights. Hairspray was used to seal the exterior to account for natural porosity (voids) when necessary.

Average bulk densities are as follows: pebble conglomerate: 2.48 +/- 0.07; arkose: 2.42 +/- 0.06; mineralised arkose: 2.45 +/- 0.06; arkosic sandstone 2.44 +/- 0.06; shale: 2.52 +/- 0.06 (1sd) t/m<sup>3</sup>.

Bulk density is further discussed in Section 8.1.

#### **4.9 Audits and Reviews**

CSA Global validated all initial gamma logging data as well as closed can assays.

The drillholes used were considered acceptable for reporting an MRE under the JORC Code.

#### **4.10 Site and Laboratory Inspections**

No site or laboratory visits were conducted by CSA Global.

## 5 Quality Assurance and Quality Control

QAQC has been completed by EME with verification by CSA Global.

### 5.1 QAQC for Assaying – Standards, Blanks and Duplicates for Assays

A large amount of chemical assay work for  $U_3O_8$  was undertaken by CPM for comparative purposes. Historically, field standards and blanks were not inserted at the time, however, the laboratories used certified referenced materials (CRMs, or standards) as part of their internal procedures. The original NATA Certificates in relation to the historical samples have been sighted and the results validated. One or two samples produced questionable results; these were re-analysed.

As mentioned above, EME has conducted sampling of new drill core and re-sampling of historical core. EME's QAQC procedure ensures a blank, standard or duplicate is inserted. The ratio of field standards and blanks applied within the batches was one blank, standard or duplicate in every 11 routine samples.

Evaluation of the EMST22 and EMST23 field standards are as follows: Analysis of the two EMST23 standards fell within 1 standard deviation ( $\sigma$ ) of the expected value. Of the four EMST22 standards submitted; 1 fell within  $1\sigma$ , 1 within  $2\sigma$  and 2  $>2\sigma$ . EME's QAQC acceptable criteria for standards are deemed to have failed if they return a result more than  $\pm 2\sigma$  from the expected value. The performance of results suggests two from four standards failed. As a result of this, EME has requested the laboratory re-assay work. Results are pending at time of writing; however, gamma logging is the primary source used for this Mineral Resource estimation therefore the outcome does not have any significant bearing on the model.

Evaluation of the three field blanks submitted are as follows: Two were below uranium detection limits (15 ppm) and one failed. EME's QAQC procedure specifies that if a blank fails, then a request to the laboratory is made to re-assay the blank and four pulps either side, however in this case a re-assay was not requested.

Laboratory QAQC procedures were applied to the assay batches. Eight laboratory standards were analysed. Due to EME requesting assays for a full suite of 24 elements on these batches the laboratory CRMs used were primarily for common elements found in base metals and gold deposits. The 3–4 ppm nominal uranium concentration in the CRM is considered too low to correlate well with elevated uranium material so in essence they are an additional laboratory blank. All assayed CRM results for uranium were less than detection limits.

For laboratory duplicates, absolute relative difference (ARD) comparisons shows that 100% of duplicate samples pass EME's QAQC criteria. Results are presented by scatter and mean difference plots in Figure 13, Figure 14, and Figure 15. For grades  $>100$  ppm  $U_3O_8$  the reproducibility is very good for both methods at both laboratories. The data shows no obvious bias on assessment of the Mean Difference Plot and no results fall outside the 10% HRD (half relative distance) windows, therefore the indication of precision is high, however the lack of data (five duplicates) precludes meaningful assessment.

Based on the dataset of five samples, the results are considered as acceptable in meeting EME's "acceptable criteria" of at least 90% pass (within 20% ARD). Considering gamma  $eU_3O_8$  values were used for the Mineral Resource estimation, geochemical assay results are considered non-applicable.

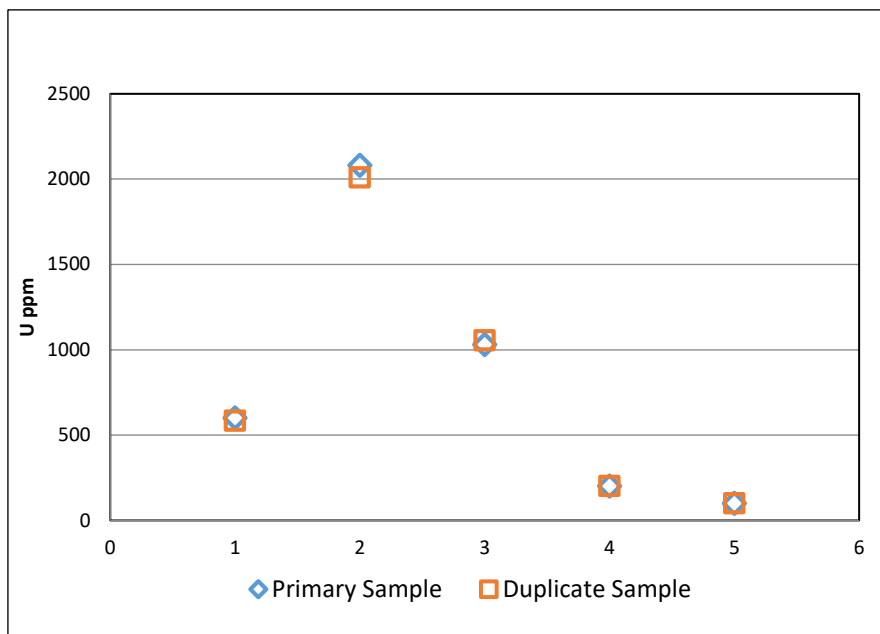


Figure 13: Duplicates plotted for comparison at the Malawiri deposit

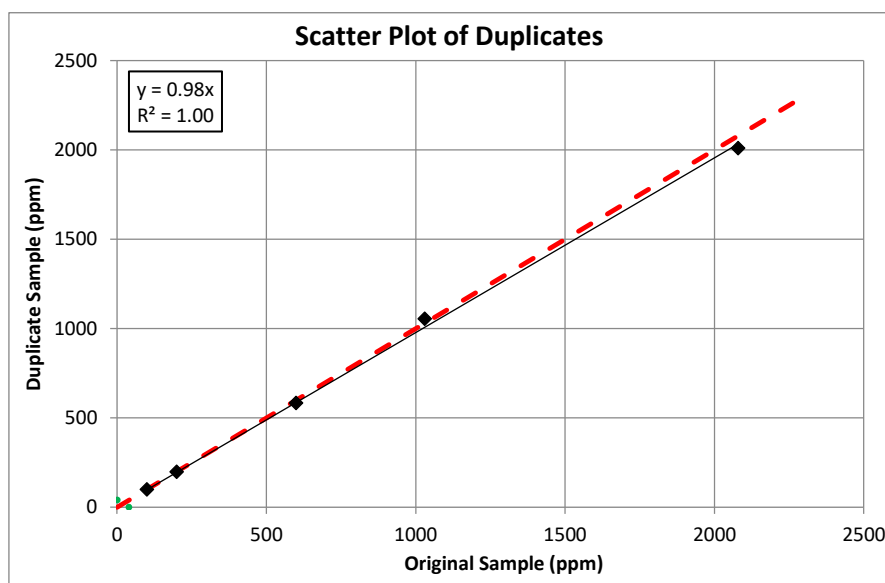


Figure 14: Scatterplot of duplicates at the Malawiri deposit

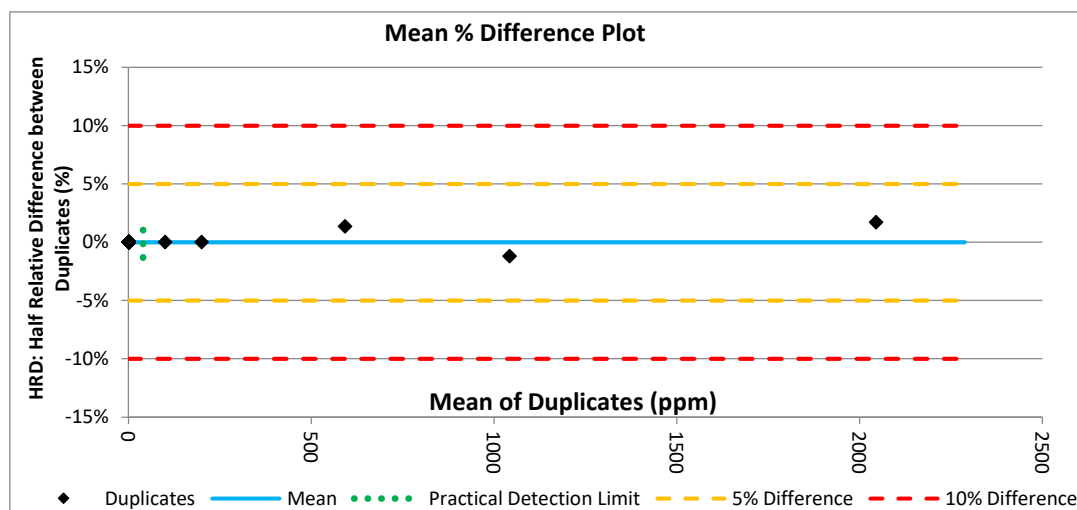


Figure 15: Mean % difference plot of duplicates at Malawiri

## 5.2 QAQC for Gamma Logging

Historical analogue gamma log data was digitised at 10 cm intervals downhole and converted to standard format LAS files followed by calculation of  $eU_3O_8$  grades (E. Sirotenko, consultant geophysicist).

Grade-composites for the CPM's intervals based on 500 ppm  $eU_3O_8$  cut off, calculated from the Sirotenko reprocessed  $eU_3O_8$  data, were compared with historical grade composite data determined by CPM in the 1980s from their in-house calibration of the gamma log data using their "Malawiri Equation" (Table 5).

Table 5: Comparison CPM and EME interpretation of gamma logging

CPM Grade Composites 500 ppm cut-off						EME (Sirotenko) Grade Composites equivalent to CPM's intervals						Difference (EME vs CPM)
Hole	From	To	Length	$eU_3O_8$ (ppm)	GT	Hole	From	To	Length	$eU_3O_8$ (ppm)	GT	
GCRD2	138.1	139.1	1.0	2,437	2,437	GCRD2	138.1	139.1	1.0	2,247	2,247	-7.8%
GCRD2	144.4	145.3	0.9	1,349	1,214	GCRD2	144.4	145.3	0.9	1,426	1,283	5.7%
GCRD2	150.8	151.3	0.5	1,069	535	GCRD2	150.8	151.3	0.5	1,200	600	12.3%
GCRD2	181.3	182.3	1.0	1,062	1,062	GCRD2	181.3	182.3	1.0	1,325	1,325	24.8%
GCRD3	191.5	193.3	1.8	1,210	2,178	GCRD3	191.5	193.3	1.8	1,114	2,005	-7.9%
GCRD3	199.8	200.9	1.1	2,996	3,296	GCRD3	199.8	200.9	1.1	2,380	2,618	-20.6%
GCRD3	219.3	221.7	2.4	1,689	4,054	GCRD3	219.3	221.7	2.4	1,431	3,434	-15.3%
GCRD4	173.3	177.3	4.0	1,541	6,164	GCRD4	173.3	177.3	4.0	1,415	5,660	-8.2%
GCRD4	203.2	205.0	1.8	870	1,566	GCRD4	203.2	205.0	1.8	660	1,188	-24.1%
GCRD6	190.4	193.6	3.2	2,496	7,987	GCRD6	190.4	193.6	3.2	2,259	7,229	-9.5%
GCRD8	126.6	131.9	5.3	858	4,547	GCRD8	126.6	131.9	5.3	984	5,215	14.7%
GCRD8	136.3	138.0	1.7	522	887	GCRD8	136.3	138.0	1.7	695	1,182	33.1%
GCRD9	166.0	169.3	3.3	7,621	25,149	GCRD9	166.0	169.3	3.3	10,717	35,366	40.6%
GCRD9	174.2	176.7	2.5	2,489	6,223	GCRD9	174.2	176.7	2.5	2,024	5,060	-18.7%
GCRD9	186.2	188.9	2.7	8,505	22,964	GCRD9	186.2	188.9	2.7	4,467	12,061	-47.5%
GCRD21	231.7	235.6	3.9	1,751	6,829	GCRD21	231.7	235.6	3.9	1,345	5,246	-23.2%
GCRD21	236.1	237.5	1.4	1,100	1,540	GCRD21	236.1	237.5	1.4	885	1,239	-19.5%
GCRD21	239.1	239.3	0.2	846	169	GCRD21	239.1	239.3	0.2	618	124	-27.0%
GCRD21	239.5	241.2	1.7	2,852	4,848	GCRD21	239.5	241.2	1.7	1,929	3,279	-32.4%
<b>Total</b>			<b>40.4</b>	<b>2,566</b>	<b>103,649</b>	<b>Total</b>			<b>40.4</b>	<b>2,385</b>	<b>96,360</b>	<b>-7.0%</b>



Results of the comparison show the Sirotenko grade-composite estimates (with background factor applied or “BK”) are on average 7.0% less than the historical CPM  $eU_3O_8$  calculations. The difference is small and most probably relates to lack of a deconvolution correction by CPM.

Deconvolved  $eU_3O_8$  values determined by Sirotenko from one diamond drillhole (GCRD9) were cross-checked by third party consulting geophysicist, David Wilson, of 3D Exploration Pty Ltd (Table 6). The comparison shows that grade-thickness (contained metal) is almost the same with a difference of less than +/-3.5 % of Sirotenko’s deconvolved gamma log  $eU_3O_8$  values compared with Wilson’s deconvolved gamma log  $eU_3O_8$  values.

Table 6: Comparison of the deconvolved LAS file  $eU_3O_8$  data for diamond drillhole GCRD9 at the Malawiri deposit – E. Sirotenko (with and without BK factor applied) versus D. Wilson values

Intervals			Sirotenko CSA Global			David Wilson 3D Exploration Pty Ltd			
Hole ID	From	To	$eU_3O_8$ (ppm)	Length (m)	GT	$eU_3O_8$ (ppm)	Length (m)	GT	Difference (%)
<b>BK factor applied</b>									
GCRD9	164.9	170.6	6,176	5.7	35,203	6,187	5.7	35,265	0.2
GCRD9	172.8	177.2	1,185	4.4	5,241	1,224	4.4	5,385	2.7
GCRD9	179.5	181.3	152	1.8	273	156	1.8	280	2.5
GCRD9	183.2	189.2	2,104	6.0	12,624	2,118	6.0	12,708	0.6
				<b>Total</b>	<b>53,341</b>		<b>Total</b>	<b>53,638</b>	<b>0.6</b>
<b>Without BK factor applied</b>									
GCRD9	164.9	170.6	6,206	5.7	35,374	6,187	5.7	35,265	-0.3
GCRD9	172.8	177.2	1,184	4.4	5,209	1,224	4.4	5,385	3.3
GCRD9	179.5	181.3	151	1.8	272	156	1.8	280	2.9
GCRD9	183.2	189.2	2,103	6.0	12,618	2,118	6.0	12,708	0.7
				<b>Total</b>	<b>53,473</b>		<b>Total</b>	<b>53,638</b>	<b>0.3</b>

### 5.3 QAQC for In-house Bulk Density Measurements

Laboratory certified weights of 500 g and 1,000 g size were used to calibrate the weighing scales before bulk density measurements were undertaken each day. In addition, EME ensured the bulk density of each of the weights was measured at least once per hole as check on accuracy.

Standard Certified densities: Std-500 = 7.77 g/cm<sup>3</sup>, Std-1000 = 7.86 g/cm<sup>3</sup>.

Measurement of Std-500 yielded an average value of 7.804 +/- 0.026 (1sd) g/cm<sup>3</sup> (n=16).

Measurement of Std-1000 yielded an average value of 7.879 +/- 0.010 (1sd) g/cm<sup>3</sup> (n=17).

Both results are within 2  $\sigma$  of the certified values and are deemed to be satisfactory.

### 5.4 Results of QAQC

Confidence levels of key criteria for QAQC are provided in **Error! Reference source not found..**

Table 7: Confidence levels of key criteria for QAQC

Items	Discussion	Confidence
Drilling techniques	Standard industry methods of rotary percussion and diamond drilling were used from 1980 to 1982. RM and DD were used in 2016.	High
Drill sample recovery	Drill sample recovery is well documented in historical geological logging. The diamond drillholes re-logged by EME validated excellent, with near 100% recoveries. Not applicable to the resource estimate given that chemical assays were not utilised.	High
Sampling techniques and sample preparation	Current sample collection is to industry standard. Sample preparation was carried out at AMDEL laboratories in South Australia for historic analysis and ALS laboratories in Western Australia in the modern era. Applicable to the resource estimate only in that this data was used to evaluate the REF correction.	Moderate
Quality of assay data for close can	Standard assay methods and NATA registered laboratories were used for both modern and historical assay work. Applicable to the resource estimate only in that this data was used to evaluate the REF correction.	High
Assay accuracy and precision	No field standards, duplicates or blanks were inserted for historic assay. For modern analysis the QAQC ratio of one standard, duplicate or blank has been inserted every 12 routine samples. Several cross checks at ALS labs were carried out, agreement overall was moderate to good. Applicable to the resource estimate only in that this data was used to evaluate the REF correction.	Moderate-Low, not critical for resource estimation which is based on gamma logging
Accuracy and precision of gamma logging	Gamma probes used in the 1980s were calibrated by geophysical contractors, Georex Pty Ltd. Calibration information including k-factors and dead time corrections and hole information including hole diameter and fluid levels/type were recorded for each hole. The accuracy and reproducibility of the probe data were monitored using two on-site standard radioactive sources (a low-level and a high-level source) and the monitoring data was included on each paper log. All historic paper logs were scanned, converted into digital format and reprocessed to produce new grade estimates. The process was verified by a third party geophysical contractor who compared re-scanned historic and modern gamma logging processes and results are accurate, precise and repeatable. In modern drilling, EME has calibrated gamma probes at the Adelaide test pits consecutively since 2009. The comparison mentioned above confirms continuity between historic and modern processing results.	High
Assay bias	Not applicable to the resource estimate given that chemical assays were not utilised.	Not applicable
Verification of sampling and assaying	Not applicable to the resource estimate given that chemical assays were not utilised.	Not applicable
Location of sampling points	Hole collar and ERL boundary peg locations were determined using an Altus APS-3 RTK base receiver and rover (RTK DGPS). The precision quoted by Altus is 0.6 cm in the horizontal plane and 1 cm in the vertical plane. A local base station was established at a Survey Control Point via the AUSPOS system. Elevations are derived AHD heights computed using the AUSGeoid09. The centre of the drill collar was measured.	High
Downhole surveys	All holes were drilled sub vertically between -45° and -75° inclination with downhole deviation surveys undertaken in the diamond tails at 30 m to 50 m intervals. Dip and azimuth measurements were attained using a Pajari single-shot tool or occasionally by acid etch. Surveys of modern drillholes were conducted using a Pathfinder multi-shot tool at 50 m intervals.	Moderate-High
Data density and distribution	The drill spacing is considered adequate for the type of deposit, style of mineralisation and resource classification applied.	Moderate
Audits and reviews	No audits or reviews have been completed.	Not applicable at current stage
Database integrity	Data was entered from original sources and stored in a Geobank Database.	High
Geological interpretation	The mineralisation constraints are considered appropriate for the type and grade of mineralisation.	High
Bulk density determinations	EME has a comprehensive dataset from the deposit. Bulk density measurements of historic drill core were acquired using the Archimedes method. The specific gravity determinations of modern drill core were undertaken by ALS laboratories.	High

## 6 Geological Modelling

### 6.1 Software

Geological modelling was completed using Micromine 2013 (14.0.6.933) software.

### 6.2 Geological Exploration Database

The statistical information contained in the database is summarised in Table 8. Based on the data review there is no significant difference in the quality of data collected over time.

Table 8: Summary information from the database used for modelling

Category	Total
Drillholes	25
Total metres	5,550.05
Survey measurements	106
Gamma log primary measurements (10 cm)	50,289
Mineralised intervals based on gamma-logging	36
Closed can samples including repeats	102
Intervals with lithology data	671
Samples with measured bulk density	217

### 6.3 Definition of Mineralised Intervals

Geophysical data is the primary information source used for the estimation of uranium Mineral Resources. From these data, it is then possible to determine:

- Mineralised intervals (based on gamma log data) with exclusion of radium (Ra) halos.
- Conversion of radium grade to uranium grade accounting for mineralised rock radiochemical disequilibrium ( $U_3O_8/eU_3O_8$  = radioactive equilibrium factor or REF).

#### 6.3.1 Estimation Radioactive Equilibrium between Radium and Uranium (REF definition)

Estimation of  $REF = U_3O_8 / eU_3O_8$  for ranges of  $eU_3O_8$  grades is shown in the Table 9 and Figure 16.

Table 9: Estimation of REF

Range $eU_3O_8$	Mean $eU_3O_8$	Summary $GTeU_3O_8$	Summary $GTU_3O_8$	REF ( $U_3O_8/eU_3O_8$ ) %
0 - 50	17	700	1,025	146
50 - 100	63	630	542	86
100 - 250	171	2,390	2,048	86
250 - 500	369	2,950	3,200	108
500 - 1,000	773	4,640	6,400	138
1,000 - 1,500	1,238	9,900	11,600	117
>1,500	3,175	31,750	40,700	128
100 - 250	171	2,390	2,048	86
250 - 500	369	2,950	3,200	108
>250	1,929	46,290	58,700	127

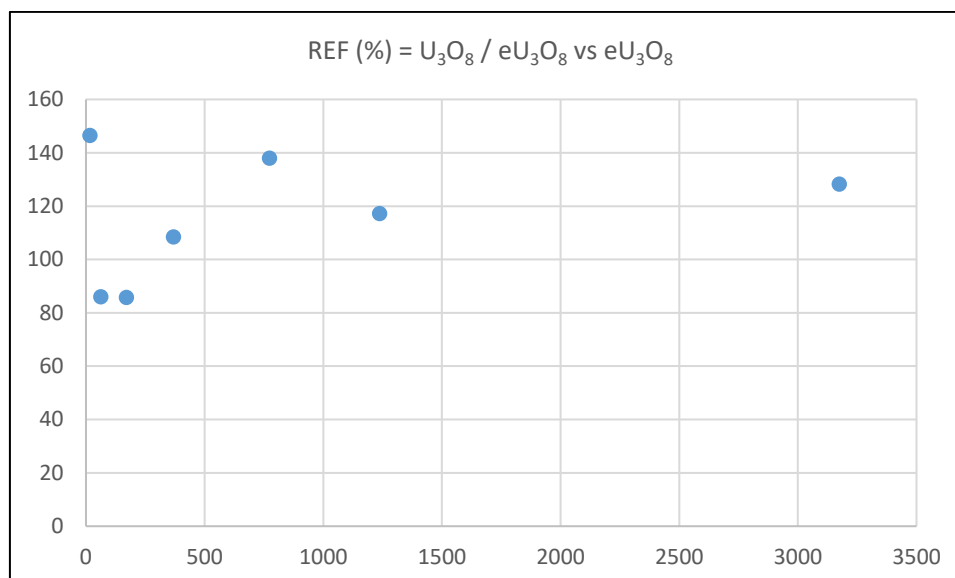


Figure 16: REF for different eU<sub>3</sub>O<sub>8</sub> grades

Radium halos were excluded by using a cut-off grade for definition of mineralised intervals U<sub>3</sub>O<sub>8</sub> = 100 ppm or eU<sub>3</sub>O<sub>8</sub> = 116 ppm (U<sub>3</sub>O<sub>8</sub> 100 ppm / REF 0.86).

Mineralised intervals were calculated using the following parameters:

- Cut-off grade eU<sub>3</sub>O<sub>8</sub> = 116 ppm
- Minimum thickness of mineralised interval is 0.3 m
- Maximum internal waste is 0.3 m
- Minimum grade of eU<sub>3</sub>O<sub>8</sub> in mineralised intervals is 116 ppm or grade-thickness 34.8.

A correction for REF = U<sub>3</sub>O<sub>8</sub>/eU<sub>3</sub>O<sub>8</sub> was introduced to calculate 0.5 m composite intervals (see Section 7.2) inside mineralised intervals using the following formulas (Table 9):

- eU<sub>3</sub>O<sub>8</sub> from 116 to 250 ppm: U<sub>3</sub>O<sub>8</sub> = eU<sub>3</sub>O<sub>8</sub> \* 0.86
- eU<sub>3</sub>O<sub>8</sub> from 116 to 250 ppm: U<sub>3</sub>O<sub>8</sub> = eU<sub>3</sub>O<sub>8</sub> \* 1.08
- eU<sub>3</sub>O<sub>8</sub> from 116 to 250 ppm: U<sub>3</sub>O<sub>8</sub> = eU<sub>3</sub>O<sub>8</sub> \* 1.27.

### 6.3.2 Corrections for Thorium and Potassium

The average correction to eU<sub>3</sub>O<sub>8</sub> to account for Thorium and Potassium is 1.3 ppm eU<sub>3</sub>O<sub>8</sub>.

### 6.3.3 Radioactive Equilibrium between Radium and Radon

A correction for radon removal was not applied by EME but is recommended for further Mineral Resource estimations because this factor may influence the final result. This may lead to increasing U<sub>3</sub>O<sub>8</sub> grades by up to 10–15% for mineralisation below ground water level, or an unpredictable decrease in U<sub>3</sub>O<sub>8</sub> grades for dry mineralisation.

## 6.4 Geological Interpretation and Wireframing

Interpretation of stratigraphy and mineralisation was done as follows:

- Interpretation boundaries between domains in overburden units using stratigraphy logging: CZ (Cenozoic sediments), CS (Cenozoic silcrete) and PZP (kaolinised sandstone zone) units.
- Interpretation of mineralisation using: mineralised intervals, redox logging and structural elements.



DTMs were created for the surfaces between the CZ and CS units; CS and PZP units and PZP unit and the Mount Eclipse Sandstone domain (Figure 17).

Solid wireframe models were created from strings defining the mineralised envelopes and then these were cut by the surface (DTM) between the PZP unit and the Mount Eclipse Sandstone domain (Figure 18).

The total volume of the mineralised zones is 179,799 m<sup>3</sup>.

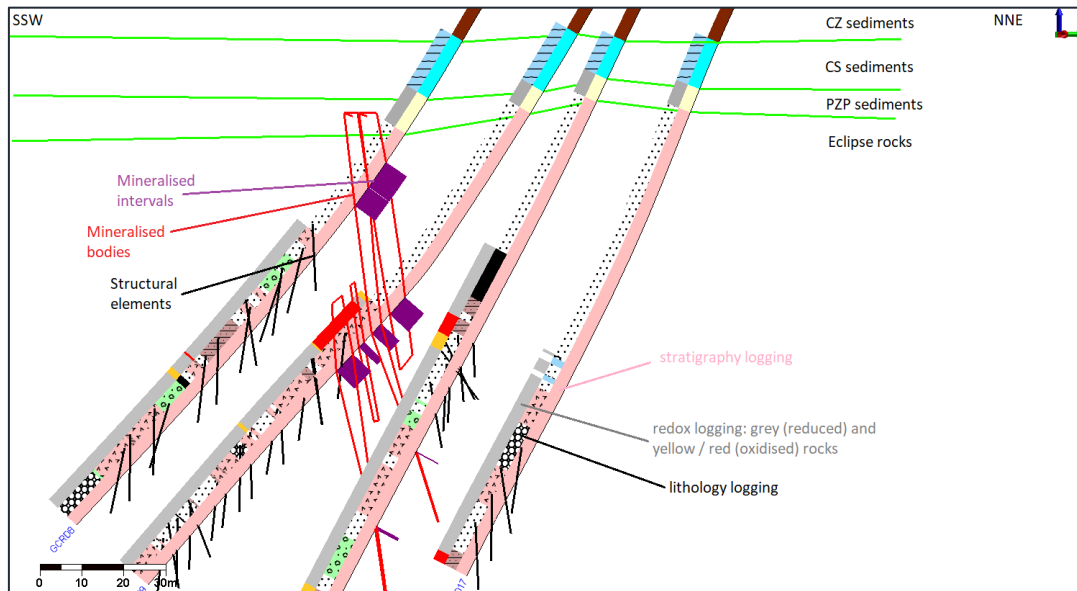


Figure 17: Interpretation of stratigraphy (overburden sediments/units) and mineralised bodies

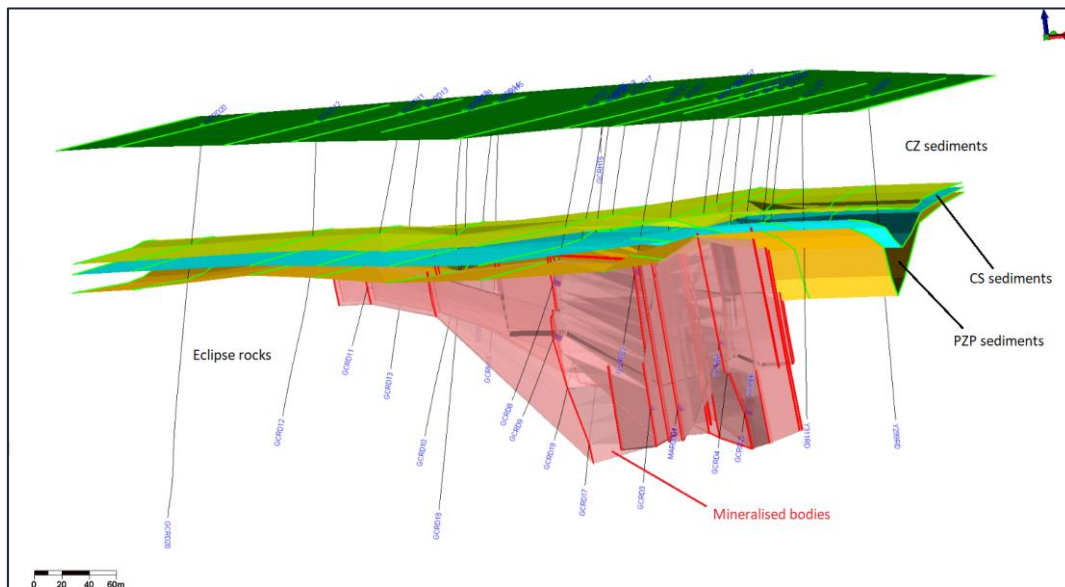


Figure 18: Wireframe model created for overburden sediments/units and mineralised bodies

## 7 Statistical and Geostatistical Analysis

### 7.1 Summary

Before undertaking the MRE, statistical assessment of the data was completed to understand how the estimate should be accomplished. Exploration sample data were statistically reviewed, and variograms were calculated to determine spatial continuity.

Statistical analysis was carried out using Micromine software.

### 7.2 Compositing

Sample compositing is a standard procedure for statistical and geostatistical analyses. The Malawiri deposit data has been composited over the width of the mineralisation.

Analysis of the distribution of mineralised interval thicknesses shows that the most common sample thickness is 0.5 m (Figure 19). The maximum thickness is 12.6 m and the average value is 3.2 m. Therefore, the chosen composite length is 0.5 m.

REF corrections were applied to the 0.5 m composite intervals according to formulae described in Section 6.3.1.

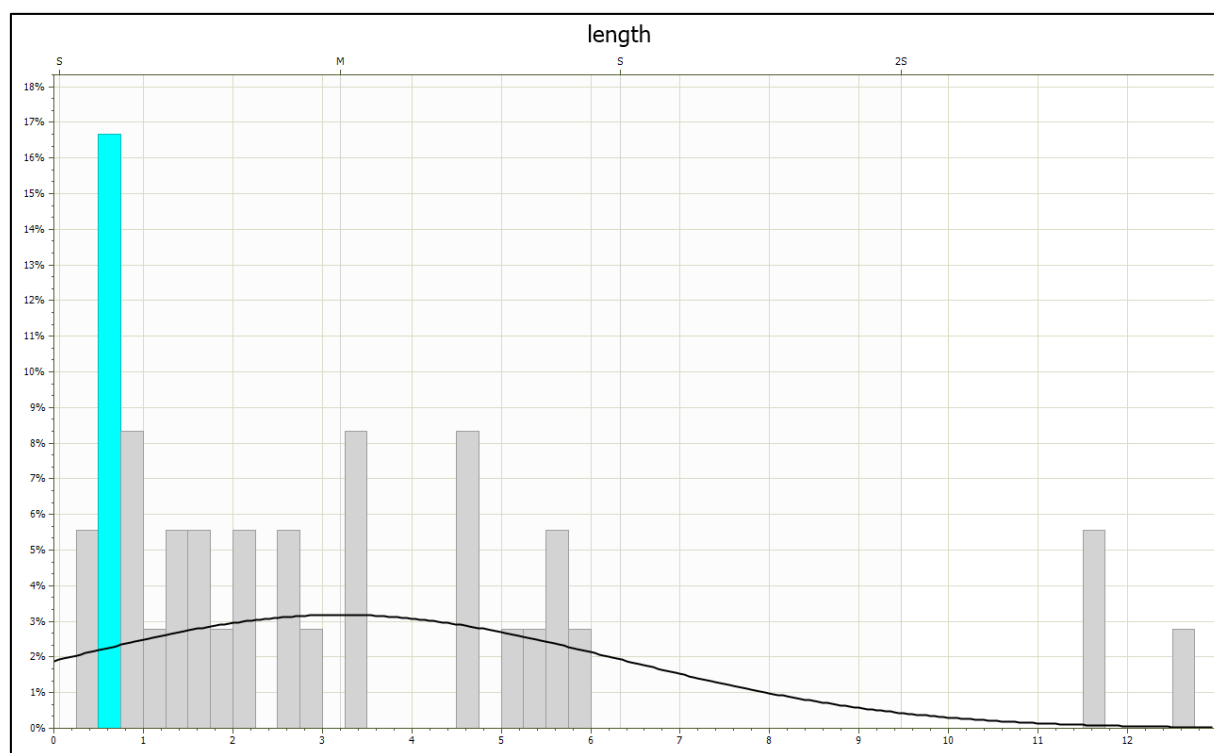


Figure 19: Distribution of thicknesses of mineralised bodies

### 7.3 Classical Statistical Analysis

Classical statistical analysis of uranium grades is used to determine population characteristics, to assess how many sample populations exist in the dataset and to evaluate top cutting of grade values for commercial components.

The distribution of uranium grades in 0.5 m composites of mineralised intervals consists of several populations (Figure 20), and multiple indicator kriging (MIK) is considered the most appropriate method

for grade interpolation. Due to the use of MIK for interpolation, a top-cut grade was not applied to honour deposit geology.

Statistical parameters of the mineralisation are shown in **Error! Reference source not found..**

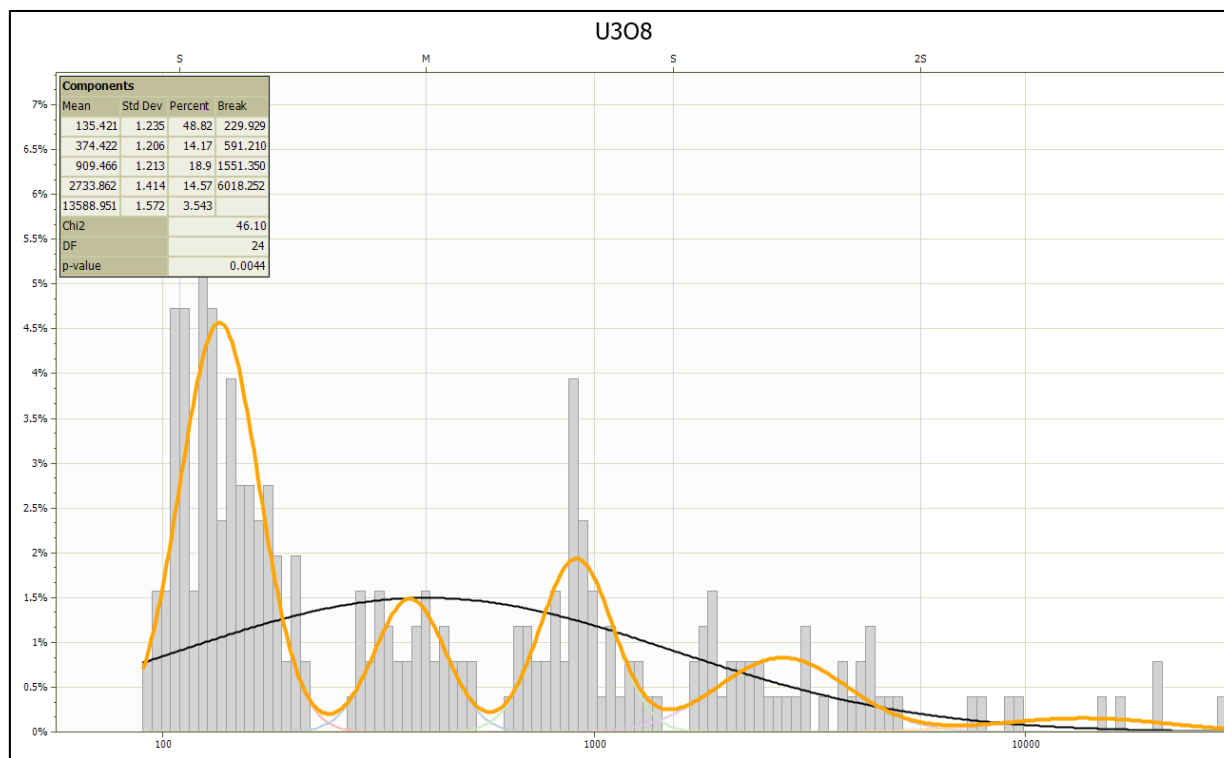


Figure 20: Distribution of uranium in 0.5 m composites in mineralised intervals

Table 10: Uranium grade distribution statistical parameters (composites 0.5 m)

No. of samples	Minimum (U <sub>3</sub> O <sub>8</sub> ppm)	Maximum (U <sub>3</sub> O <sub>8</sub> ppm)	Average (U <sub>3</sub> O <sub>8</sub> ppm)	Coefficient of variation	Median (U <sub>3</sub> O <sub>8</sub> ppm)	Variance	Standard deviation
254	91	29,108	1,255	2.486	285	9,714,294	3,117

## 7.4 Transformation of Coordinates and Unfolding (Flattening)

CSA Global elected to transform the model and samples by flattening. The data were transformed around the X axis (North converted to coordinate Z, East converted to coordinate X, RL converted to coordinate Y) and then each mineralised model was flattened to a central line before geostatistical analysis and grade interpolation. The flattening was required for accurate grade interpolation in the mineralised bodies due to the very high variability of uranium grades and existing zonation, i.e. rich mineralisation in the central lenses and weak mineralisation on the flanks of lenses. The data flattening principle is demonstrated in Figure 21.

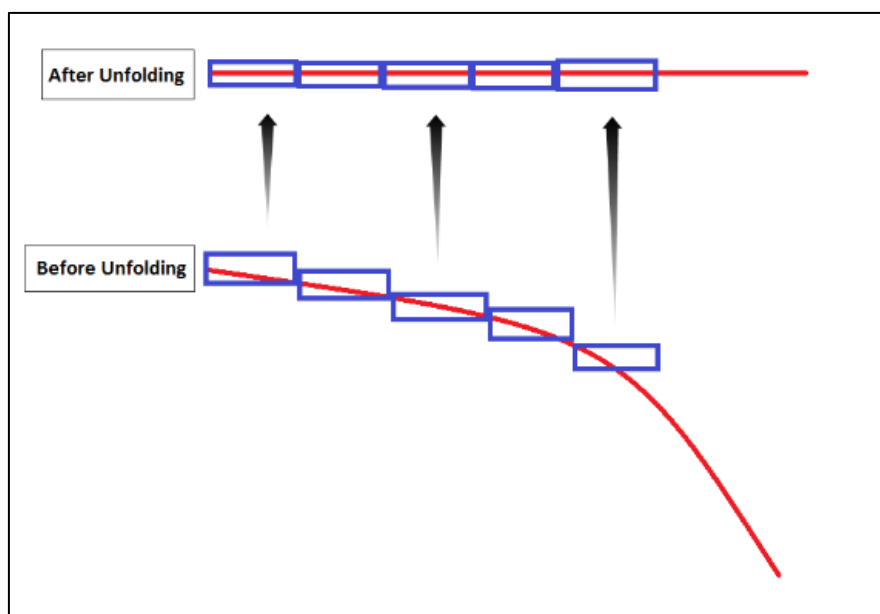


Figure 21: The principal of flattening

## 7.5 Geostatistical Analysis

Geostatistical analysis was carried out to meet the following objectives:

- To determine the presence of directional anisotropy of the mineralisation. This can be estimated by studying directional semi-variograms. Directional anisotropy is present if semi-variograms reach a total sill at different distances in different directions.
- To estimate spatial continuity of uranium grades along the main directions of anisotropy. Uranium grades can be more reliably estimated if search distances are less than the ranges of semi-variograms (i.e. the distance at which semi-variograms reach total sill or the distance within which an element has autocorrelation). Correspondingly, the estimate cannot be reliable if the search radius for grade interpolation is greater than the variogram range. When variograms reach the sill, there is no correlation between pairs of samples.
- To obtain semi-variogram parameters (nugget effect, sill and range) which are subsequently used for grade interpolation.

Indicator semi-variograms were created based on initial combined mineralised intervals (**Error! Reference source not found.**, Figure 22). Directions of the axes for the semi-variograms were selected based on geological data.

Table 11: Semi-variogram parameters of the transformed and flattened model and samples of the Malawiri deposit (composites 0.5 m)

Direction	Azimuth	Plunge	Indicator (U ppm)	Nugget effect	Sill	Range (m), model
The first (along dipping)	90°	0°	285	0.0308	0.2357	44, exponential
The second (along strike)	180°	0°				20, exponential
The third (across bodies)	180°	90°				12, exponential



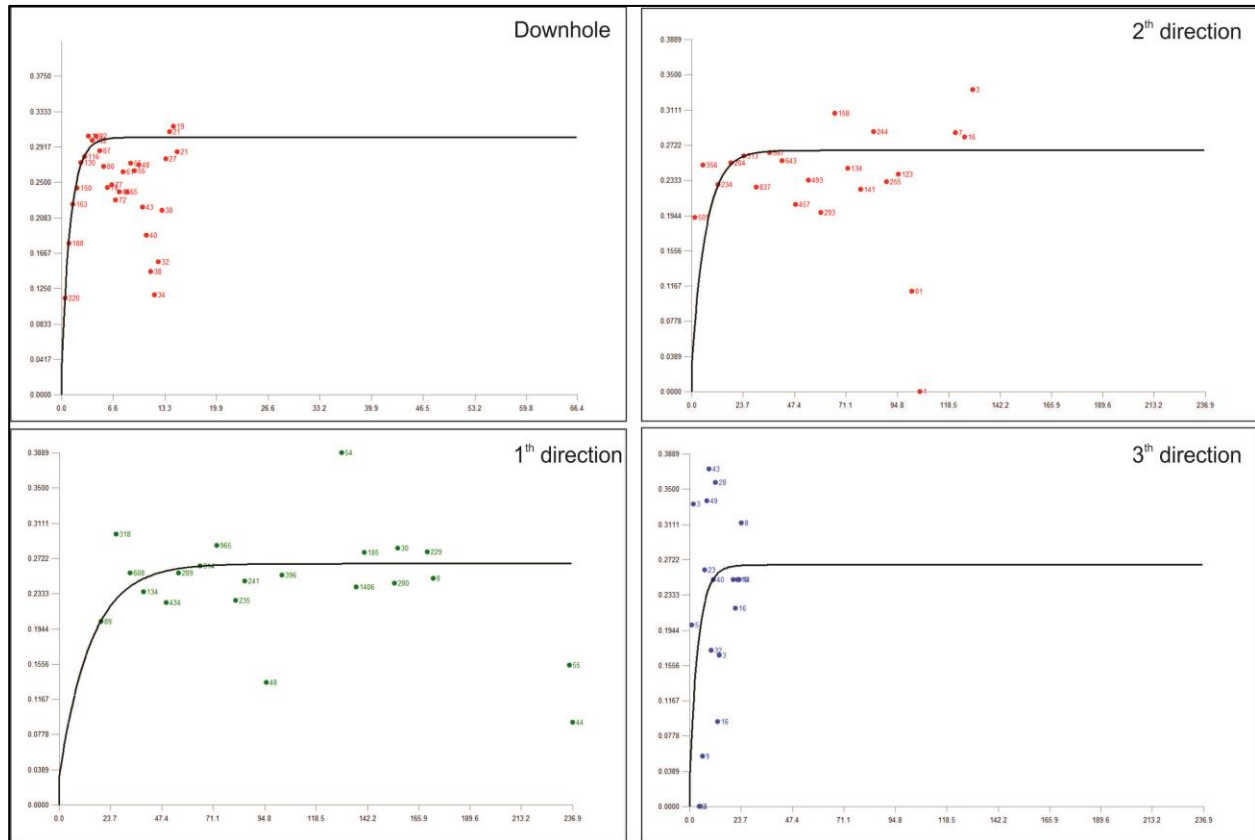


Figure 22: Semi-variograms for the Malawiri Project

## 8 Bulk Density

### 8.1 Methodology

Measurements of bulk density from Malawiri historical and modern core samples were undertaken by EME using the Archimedes method. The distribution of bulk density is shown in Figure 23. The minimum bulk density is 2.29 t/m<sup>3</sup>, maximum 2.65 t/m<sup>3</sup>, average 2.45 t/m<sup>3</sup>. The most common (mode) bulk density is 2.45 t/m<sup>3</sup>.

As a result, the bulk density of 2.45 t/m<sup>3</sup> was chosen for the MRE.

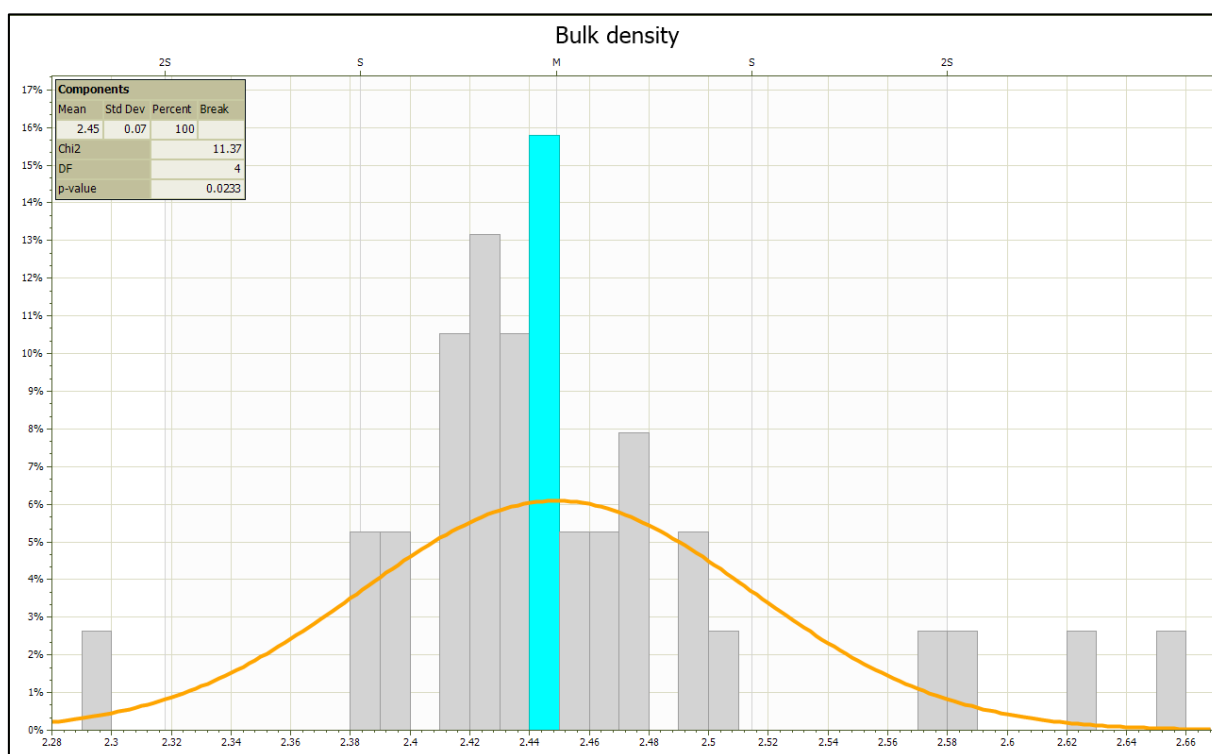


Figure 23: Distribution of bulk density in core samples

## 9 Metallurgy

No metallurgical investigations have been carried out for the Malawiri deposit to date.

## 10 Block Modelling

### 10.1 Software

Block modelling was undertaken using Micromine software.

### 10.2 Block Modelling

The dimensions of the parent block were set to 2 x 0.125 x 2 m without sub-blocking. These dimensions were chosen for accuracy in estimation of grade distribution and zonation for the flattening model (Table 12).

Table 12: Malawiri uranium block model parameters

Axis	Dimensions (m)		Block size (m)	Maximum no. of sub-blocks	No. of parent blocks
	Minimum	Maximum			
Easting	230,960	231,400	2	-	221
Northing	7,491,100	7,491,300	0.125	-	1,601
RL	300	500	2	-	101

The model and table of composite samples were coded by wireframe names (total of eight lenses) for separate flattening and grade interpolation.

### 10.3 Estimation of Grades (Interpolation)

Interpolation of grades into the block model was carried out as follows:

- U<sub>3</sub>O<sub>8</sub> grades were interpolated into the block models using the MIK method by a series of iterations. Ranges of uranium grades for MIK are shown in the Table 13; search and estimation parameters are summarised in the Table 14.

The block model with U<sub>3</sub>O<sub>8</sub> distribution is shown in Figure 24. The block model was transformed back to original space following completion of grade interpolation.

Table 13: Ranges of uranium grades for MIK

Range of grades (ppm)	No. of samples		GT (U m*ppm)		Grade estimate
80 – 130	24	9%	1,044	1%	Mean
130 – 150	35	14%	2,205	2%	Mean
150 – 180	32	13%	2,445	2%	Mean
180 – 230	27	11%	2,510	2%	Mean
230 – 290	14	5%	1,631	1%	Mean
290 – 590	38	15%	7,807	6%	Mean
590 – 800	28	11%	9,874	8%	Mean
800 – 1,550	20	8%	11,637	9%	Mean
1,550 – 2,000	10	4%	8,841	7%	Mean
2,000 – 3,300	12	5%	15,622	12%	Mean
3,300 – 6,000	7	3%	13,862	11%	Mean
6,000 – 12,000	4	2%	16,491	13%	Mean
>12,000	4	2%	33,915	27%	Median
<b>Total</b>	<b>255</b>	<b>100%</b>	<b>127,886</b>	<b>100%</b>	

Table 14: Grade interpolation parameters

Runs	Search radius	Coefficient to search radius	Minimum no. of points	Maximum no. of points	Minimum no. of drillholes
1	5 x 5 x 1	1	1	20	1
2	35 x 35 x 1	0.667	3	20	2
3	70 x 70 x 1	0.667	3	20	2
4	70 x 70 x 1	1	3	20	2
5	140 x 140 x 2	1	1	20	1
6	210 x 210 x 3	2	1	20	1
7	280 x 280 x 4	3	1	20	1
8	350 x 350 x 5	4	1	20	1
9	700 x 700 x 10	5	1	20	1

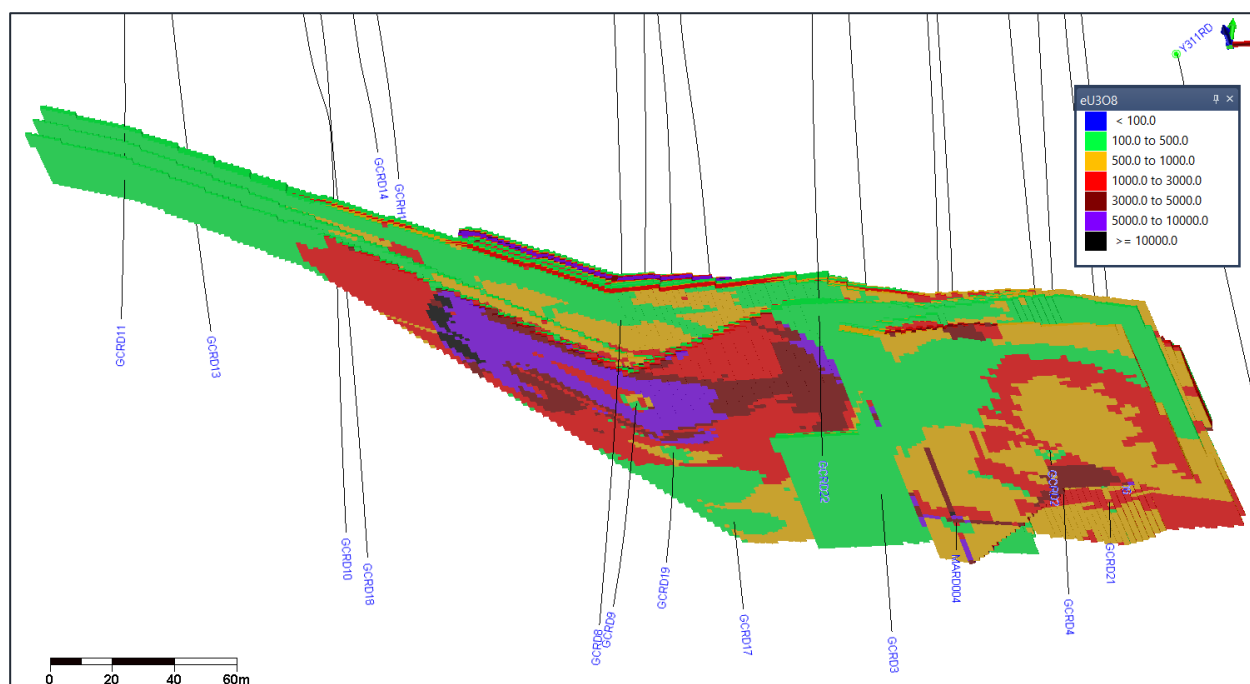


Figure 24: Distribution of  $U_3O_8$  in the Malawiri deposit block model

## 10.4 Model Validation

### 10.4.1 Visual Validation

The completed model for the deposit was checked visually. Estimated block grades are of similar grade to the drill sample grades, as presented in Figure 25.



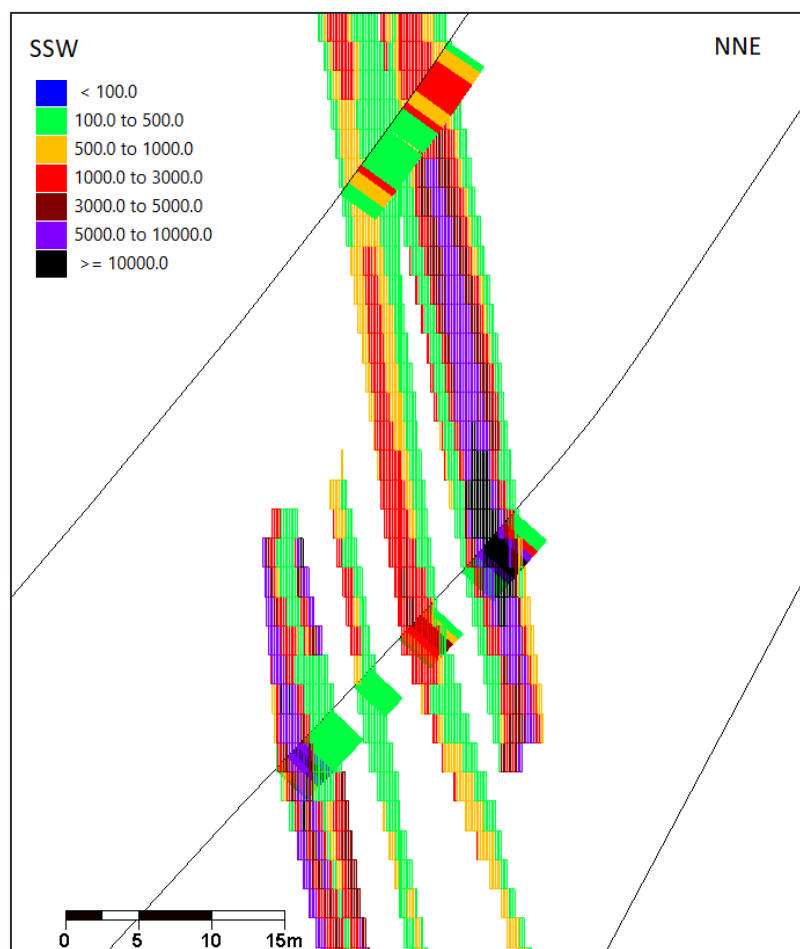


Figure 25: Visual validation of the distribution of  $U_3O_8$  in the Malawiri deposit block model

#### 10.4.2 Alternative Interpolation Methods

The alternative interpolation method Inverse Distance Weighted Squared (IDW2) was used, with estimates made both with and without a top cut applied (**Error! Reference source not found.**). There was a difference of less than 6% for Mineral Resources of the Malawiri deposit between MIK and IDW2 with a top cut applied and 20–23% without a top cut applied. Grades and uranium tonnage estimated by MIK lay between the values estimated by IDW2 with and without a top cut applied.

#### 10.4.3 Comparison with Composites

The completed model was checked by comparing the block grades with combined length of composites and grades, for a series of sections along the easterly direction (Figure 26). Results of this swath plot show the estimated block grades honour the distribution of the sample grades.

Table 15: Comparison of models based on MIK and IDW2 with and without top cuts applied (for different U<sub>3</sub>O<sub>8</sub> cut-off grades)

Cut-off U <sub>3</sub> O <sub>8</sub> ppm	MIK			IDW2			IDW2 vs. MIK (rel.%)		
	K tonnage	U <sub>3</sub> O <sub>8</sub> ppm	U <sub>3</sub> O <sub>8</sub> t	K tonnage	U <sub>3</sub> O <sub>8</sub> ppm	U <sub>3</sub> O <sub>8</sub> t	K tonnage	U <sub>3</sub> O <sub>8</sub> ppm	U <sub>3</sub> O <sub>8</sub> t
<b>MIK vs IDW2 with top cut applied (10,000 ppm)</b>									
0	440.6	1,281	565	440.6	1,215	535	0.00%	-5.16%	-5.16%
100	440.6	1,281	565	440.0	1,217	535	-0.13%	-5.04%	-5.17%
200	371.1	1,495	555	355.9	1,471	524	-4.09%	-1.57%	-5.59%
300	324.1	1,676	543	308.9	1,657	512	-4.70%	-1.14%	-5.79%
400	286.8	1,848	530	279.8	1,793	502	-2.47%	-2.99%	-5.38%
500	250.7	2,051	514	255.6	1,921	491	1.97%	-6.34%	-4.49%
<b>MIK vs IDW2 without top cut</b>									
0	440.6	1,281	565	440.6	1,544	680	0.00%	20.48%	20.48%
100	440.6	1,281	565	440.0	1,546	680	-0.13%	20.62%	20.47%
200	371.1	1,495	555	355.9	1,878	668	-4.08%	25.63%	20.50%
300	324.1	1,676	543	309.0	2,124	657	-4.66%	26.76%	20.86%
400	286.8	1,848	530	280.0	2,309	647	-2.38%	24.90%	21.93%
500	250.7	2,051	514	255.9	2,484	636	2.09%	21.15%	23.68%

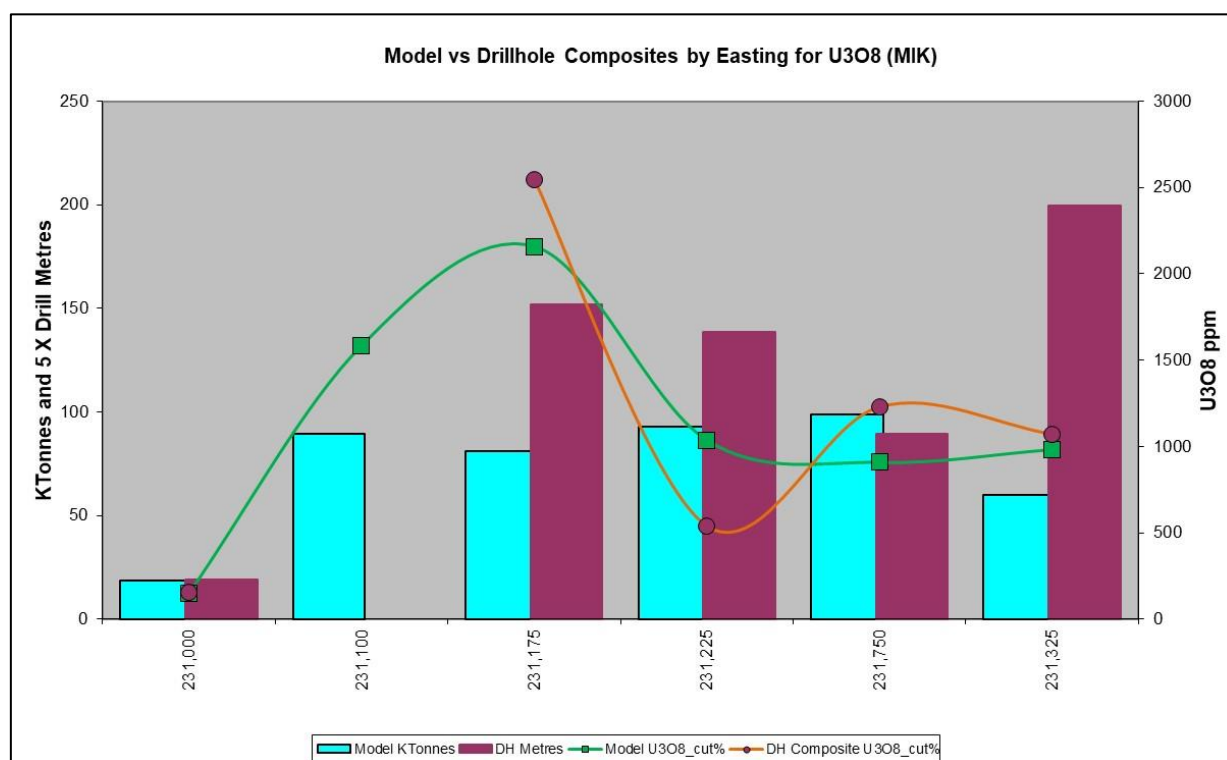


Figure 26: Comparison composites and block estimates by MIK for the Malawiri deposit

# 11 Mineral Resource Reporting

## 11.1 Reasonable Prospects Hurdle

Clause 20 of the JORC Code (2012) requires that all reports of Mineral Resources must have reasonable prospects for eventual economic extraction, regardless of the classification of the resource.

The Competent Person deems that there are reasonable prospects for eventual economic extraction on the following basis:

- Malawiri is extension of the larger Minerva deposit, and there is potential for the two deposits to be developed together.
- Malawiri is a relatively higher-grade deposit, average grades are 1,300 ppm to 2,000 ppm for different  $U_3O_8$  cut off values.

## 11.2 Mineral Resource Classification Discussion

### 11.2.1 Differentiation of Resources into Areas of the Deposit

The block model was generated both inside and outside the ELR41 tenure area limits. A vertical wireframe based on the ELR41 boundary was created to slice the deposit model at the limit of the licensed area; mineralisation located south of the boundary was excluded (Figure 27). The MRE reported here is contained within ELR41.

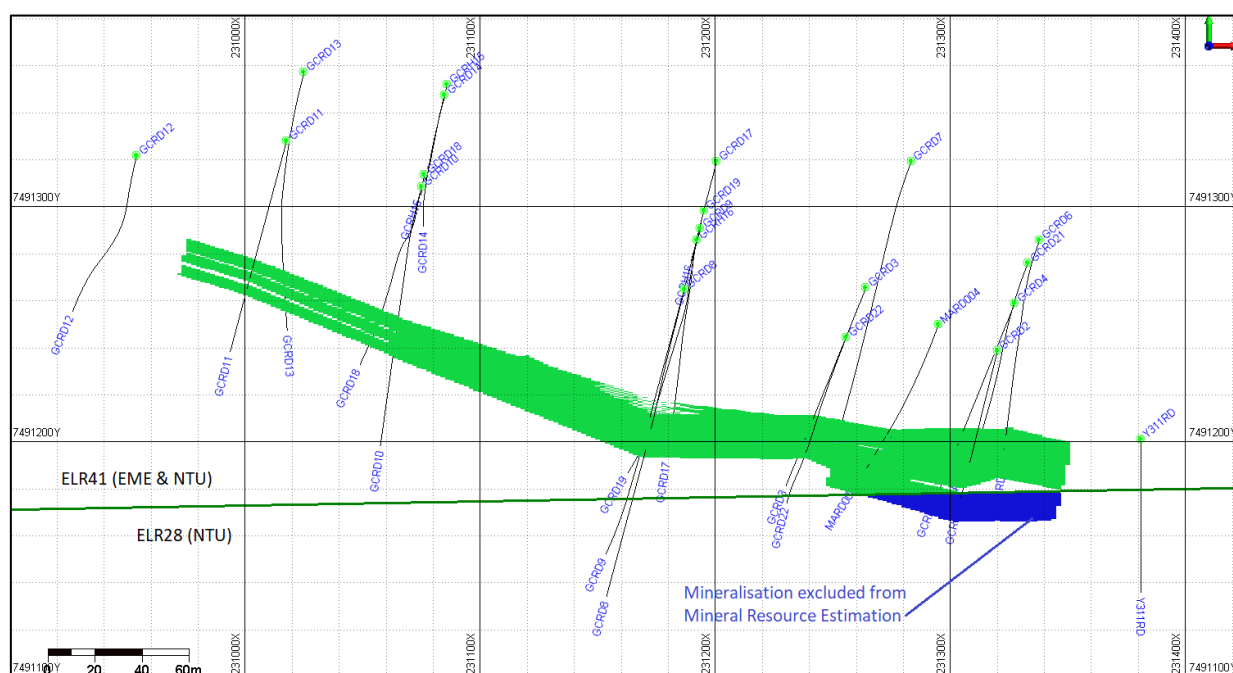


Figure 27: Mineralisation on ELR28 has been excluded from the Mineral Resource estimation

### 11.2.2 Classification of Mineral Resources

CSA Global considered several factors in the classification of the Mineral Resource:

- Drill spacing and the impact of semi-variogram models on the grade interpolation. The exploration grid at Malawiri is between 60 m<sup>5</sup> to 120 m and 20 m to 40 m approximately, more than the ranges

<sup>5</sup> One drillhole is located between drill sections on the distance 30 m

of semi-variograms (**Error! Reference source not found.**). This suggests the deposit has not been adequately drilled to sample the mineralisation at short and long variogram ranges.

- Continuity of mineralised bodies. The Competent Person believes the sample spacing is adequate to imply but not verify the geological continuity.
- QAQC analysis and reliability of initial data exploration grid density and sufficiency for operational planning.
- Radioactive Equilibrium between Radium and Radon has not been defined.
- The Competent Person has not undertaken any site or laboratory visits. Whilst not mandatory under the JORC Code, a site visit is highly recommended to allow the Competent Person to assess the geology, drilling and sampling procedures and general location and accessibility of the Project.

The Mineral Resource is classified as Inferred in light of the above considerations.

### 11.3 Grade-tonnage Graphics

The grade-tonnage graphics are shown in the Figure 28. A cut-off grade of 100 ppm  $U_3O_8$  is considered the most appropriate (in line with other MREs in the region) for the reporting of the MRE.

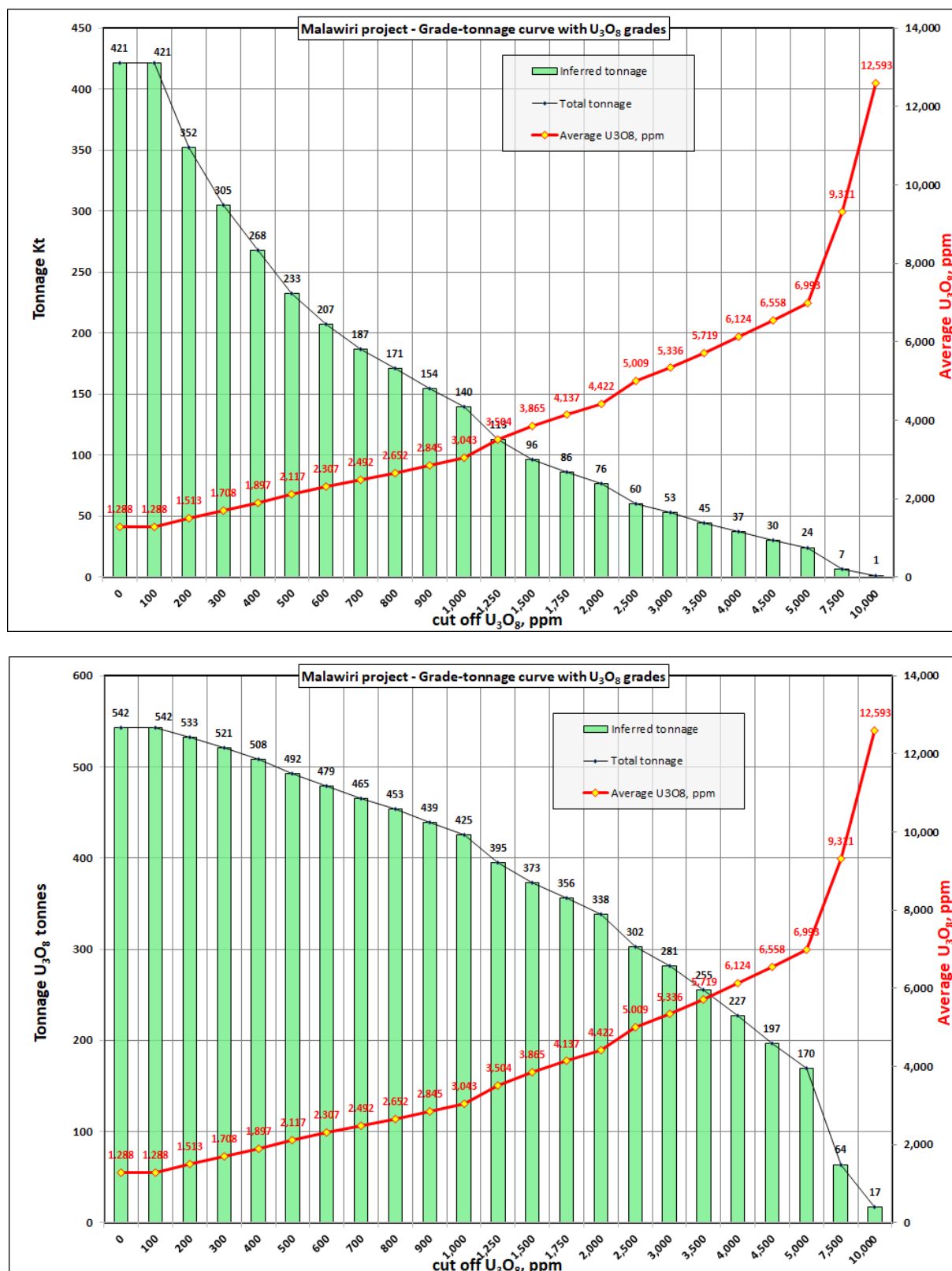


Figure 28: Grade-tonnage graphics for the Malawiri deposit; top – deposit tonnage, bottom – contained U<sub>3</sub>O<sub>8</sub>.



## 11.4 Mineral Resources Estimate

Table 16 shows the current estimate of the Mineral Resources for the Malawiri deposit as at 1 December 2017.

*Table 16: Estimate of Mineral Resources for the Malawiri deposit as at 1 December 2017*

Category	Volume ('000 m <sup>3</sup> )	Kilo-tonnes	Bulk density (t/m <sup>3</sup> )	U <sub>3</sub> O <sub>8</sub> (ppm)	U <sub>3</sub> O <sub>8</sub> (t)	U <sub>3</sub> O <sub>8</sub> (Mlb)	U (%)	U (t)
Inferred	172.0	421.3	2.45	1,288	542	1.20	0.109	460

*\* U<sub>3</sub>O<sub>8</sub> cut-off grade 100 ppm.*

## 11.5 Audits and Reviews

Internal audits were completed by CSA Global which verified the technical inputs, methodology, parameters and results of the estimate. No external audit of the MRE has been undertaken.

## 12 Conclusions and Recommendations

### 12.1 Conclusions

CSA Global has completed an initial MRE for the Malawiri Uranium Project in the Northern Territory, Australia.

The interpretation of geological, exploration and mineralisation results have been undertaken by experienced and competent personnel. QAQC data has been collected and evaluated. CSA Global considers that the data used to compile this MRE is of an acceptable quality and can support the Mineral Resource.

Malawiri is a small uranium deposit with a relatively higher average uranium grade, however, the tenor of mineralisation shows a variable distribution. The MRE comprises 421 kt @ 1,288 U<sub>3</sub>O<sub>8</sub> for 1.20 Mlb U<sub>3</sub>O<sub>8</sub>. The Malawiri deposit may be considered for future development with the adjacent Minerva deposit.

### 12.2 Recommendations

CSA Global recommends the following actions are completed to support the ongoing exploration and evaluation effort at the Malawiri Uranium Project:

- Completion of a scoping-level study for the combined Malawiri and Minerva projects.
- If the scoping study is positive, infill drilling (30 m x 10 m) for the estimation of Indicated Mineral Resources is recommended.
- QAQC procedures must meet industry standards for both assays and gamma logging. In addition, equilibrium between radon and radium should be defined by further investigations using closed can assays and combined gamma and prompt fission neutron (PFN) probe downhole logging. QAQC for assays must include blanks, standards (CRMs), field and laboratory duplicates. QAQC for gamma logging must include repeat gamma logging for at least 10–15% of drillholes. Also, the use of a standard drillhole for routine calibration checks of the gamma logging probe is good practice.

## 13 References

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- Schmid, S. (2015) Uranium occurrences characterisation in the Ngalia Basin, NT, CSIRO Report EP:151655.

## 14 Competent Person Sign-off

I, Maxim Seredkin, do hereby certify:

1. That I am a Principal Resource Geologist with CSA Global Pty Ltd at its head office at Level 2, 3 Ord Street, West Perth, WA 6005, Australia.
2. This certificate applies to the technical report titled “Technical Report (Mineral Resource Estimation) Malawiri Uranium Project, Northern Territory”, 28 October 2017.
3. That I am a professional geologist having graduated with a BSc (Geology), 1997, from the Moscow State University, Russia and a PhD from the Moscow State University, Russia, majoring in petrology and volcanology in 2001.
4. I am a Fellow of the Australasian Institute of Mining and Metallurgy and Member of the Australian Institute of Geoscientists.
5. I have worked as a geologist for a total of twenty years since my graduation from university including seven years in uranium mining industry and five years as independent consultant with report preparation for different styles of uranium deposits over the World.
6. I have not visited the subject property.
7. I have read the definition of “competent person” set out in JORC 2012 and certify that, by reason of my education, affiliation with a professional association (as defined in JORC 2012) and past relevant work experience, I am a “competent person” for the purposes of JORC 2012.
8. I am responsible for the all Sections of the Technical Report.
9. I am independent of the Malawiri uranium project and EME as described in the JORC Code (2012).
10. I have been involved to the estimation of mineralised intervals and Mineral Resources of the Malawiri Project since 2015.
11. I have not had prior involvement with the property.
12. I have read the JORC Code (2012) and this report has been prepared in compliance with the JORC Code (2012).
13. That as of date of effective date of this report to the best of my knowledge, information and belief, this report contains all scientific and technical information that is required to be disclosed to make the report not misleading.

Dated this 18<sup>th</sup> day of December 2017

Dr Maxim Seredkin

Principal Resource Geologist

CSA Global Pty Ltd

# Appendix 1: JORC Table 1

## JORC Table 1 Section 1 – Key Classification Criteria

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<p><i>Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.</i></p> <p><i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></p> <p><i>Aspects of the determination of mineralisation that are Material to the Public Report. In cases where ‘industry standard’ work has been done this would be relatively simple (e.g. ‘reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay’). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information</i></p>	<p>The primary sampling instrument at the Malawiri was the downhole gamma tool (or “probe”) which was used to obtain a total gamma count reading down each drillhole. Drilling was by rotary mud (RM) and diamond core (DD) drilling methods with north-northeast to south-southwest oriented drill lines on 60–120 m spacing and closer 30 m spacing within the primary mineralised zones. Drillholes were sub-vertical (due to unconsolidated overburden and unconformity at 100 m depth) to optimally intersect steeply-dipping mineralisation. Original analogue gamma log data was digitised at 10 cm intervals downhole and converted to standard format LAS files followed by calculation of equivalent <math>U_3O_8</math> (<math>eU_3O_8</math>) grades (see below for further information on gamma log processing procedures).</p> <p>The total count gamma logging method used here is a common method used to estimate uranium grade where the radiation contribution from thorium and potassium is small (as is the case for sandstone-hosted deposits of the Bigirlyi-type considered here). Gamma radiation is measured from a volume surrounding the drillhole that has a radius of approximately 35 cm. Therefore, the gamma probe samples a much larger volume than drill spoil or drill core samples recovered from a drillhole of normal diameter; gamma logging is considered to provide a more representative sample of the mineralised body and is preferred over geochemical assay of drill samples for resource estimation purposes.</p> <p>Estimates of uranium concentration determined from gamma ray measurements are based on the initial assumption that the uranium is in secular equilibrium with its daughter products (radionuclides), which are the principal gamma ray emitters along the U-series decay chain. If uranium is in disequilibrium as a result of the redistribution (depletion or enhancement) of uranium relative to its daughter radionuclides, then the true uranium concentration in the holes logged using the gamma probe will differ from that reported by gamma measurements. For the present resource estimation work at Malawiri an analysis of historical closed can measurements indicates that a disequilibrium correction (known as the Radioactive Equilibrium Factor or REF) is necessary (see below).</p>
<b>Drilling techniques</b>	<p><i>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).</i></p>	<p>RM and DD methods were used by Central Pacific Minerals (CPM) between the years 1979 and 1982. The programs primarily consisted of RM pre-collars to approximately 150 m depth (unconformity) with BQ and/or NQ DD tails. Three pure RM holes were drilled from surface to target depth one of which included a water bore. RM drilling used blade and tri-cone roller bits. Holes were cased with 100–150 mm PVC as well as NQ and or NW casing to pre-collar depths. NQ, BW and BQ casing was run &gt;150 m depths. No orientation marks were observed on historical core, however, geotechnical features were logged and recorded by CPM.</p> <p>Modern drilling by EME used the RM method to the unconformity followed by NQ2 DD coring. RM pre-collar was drilled with 4 3/4” roller bits, 3 7/8” PCD bits and cased off with HQ casing. NQ2 DD tails were drilled to target depth. All DD cores were orientated using a NQ2 orientation tool set.</p>



Criteria	JORC Code explanation	Commentary
<b>Drill sample recovery</b>	<p><i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></p> <p><i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></p> <p><i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i></p>	<p>Drill spoil and core recovery is not relevant to the sampling method used (i.e. downhole gamma logging). However, pre-collar RM drill cuttings were collected by a timed interval method factoring in mud density and viscosity, annulus size and up-hole velocity of the fluids from depth. It should be noted that the RM drilling method does not necessarily provide an accurate sample due to loss of fines and potential for up-hole contamination.</p> <p>Core sampling recoveries in the DD tails were determined by comparison of recovered core to the run drilled and this information was recorded on the geological logging sheets. CPM recorded core recoveries of &gt;94% whilst EME's modern drill core recoveries were 100%.</p> <p>To achieve maximum core recoveries CPM and EME both cased off the pre-collars to avoid collapse of the overlying unconsolidated Cenozoic units.</p> <p>No relationship exists between sample recovery and grade due to the type of sampling method applied (i.e. downhole gamma logging).</p>
<b>Logging</b>	<p><i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i></p> <p><i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</i></p> <p><i>The total length and percentage of the relevant intersections logged.</i></p>	<p>RM drill cuttings were logged at the time of drilling by CPM geologists and the hard copy lithological logs were converted to digital format by EME geologists using EME's standard codes.</p> <p>17 historical DD core holes were re-logged by EME geologists for lithology, colour, grain-size, stratigraphic unit, oxidation state, alteration, cementation, weathering and other features; data was recorded digitally and core was photographed. Additionally, core was logged for structure using a goniometer to obtain alpha/beta measurements, dip and dip direction of varying structure types where possible. The coded data was verified according to EME's standard logging look-up tables. The re-logs were found to be in good agreement with previous logging records, which provided confidence in the quality of original CPM logging.</p> <p>Scintillometer and Niton portable XRF measurements were undertaken on historical and modern core at 20 cm intervals through mineralised zones to confirm the width of mineralisation.</p> <p>EME geologists logged the modern RM cuttings and drill core from hole MARD004 using in-house lithological and structural templates. In addition, core was photographed and mineralised intervals were later scanned by the hylog method to determine spectral mineralogy. Scintillometer measurements were undertaken over mineralised zones to confirm the width of mineralisation. The coded data was verified according to EME's standard logging look-up tables</p> <p>100% of relevant intersections have been logged.</p>
<b>Subsampling techniques and sample preparation</b>	<p><i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></p> <p><i>If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.</i></p> <p><i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></p> <p><i>Quality control procedures adopted for all subsampling stages to maximise representivity of samples.</i></p> <p><i>Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.</i></p>	<p>For historical holes core was originally split into samples of half core for assay work. Half core was quartered for duplicate checks. Historically, CPM assayed for uranium as well as V, Cu, Cr and Au. The uranium assay data were not used for the resource estimation work as they are not considered sufficiently robust nor representative in comparison with the gamma logging measurements.</p> <p>Historical closed can assay data undertaken by AMDEL on 96 samples was used to evaluate uranium series disequilibrium and determine the REF (i.e. the disequilibrium correction).</p> <p>For modern hole MARD004, mineralised intervals were sampled at 0.4 m spacing and assayed for a complete range of elements at ALS laboratories. Standard EME and laboratory QAQC procedures were applied. Interval matched uranium assay data was used to confirm the REF but this data was not used directly for Mineral Resource estimation purposes</p>

Criteria	JORC Code explanation	Commentary
	<i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i>	
<b>Quality of assay data and laboratory tests</b>	<p><i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></p> <p><i>For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i></p> <p><i>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</i></p>	<p>The gamma tools used for downhole gamma ray measurements were calibrated and operated by geophysical contractors Geoex Pty Ltd of South Australia during the period 1980–1982. Calibration information including k-factors and deadtime corrections and hole information including hole diameter, casing depths/type and fluid levels/type were recorded for each hole. The accuracy and reproducibility of the probe data were monitored using two on-site standard radioactive sources (a low-level and a high-level source) and the monitoring data was included on each paper log and deemed satisfactory.</p> <p>Historic drillholes were logged with two different gamma ray tools depending on grade. The initial run was undertaken with the L1 or lithology gamma probe which employed a sensitive 4 x 1-inch NaI detector crystal. Intervals of significant mineralisation (off-scale on the L1 probe) were re-probed with the O1 or “ore” gamma probe which employed the less sensitive 1 x ¾ inch NaI detector crystal. Eight of the 22 drillholes were logged with a neutron probe for the purposes of downhole stratigraphic comparison. This data has not been digitised or used for resource estimation purposes.</p> <p>The counts per second (cps) downhole gamma data were recorded on paper charts with an analogue pen recorder; for some holes the cps data was also recorded in digital printout form for the O1 probe and CPM determined eU<sub>3</sub>O<sub>8</sub> values using a polynomial calibration equation. This data however was not used for the present resource estimation work, instead the original paper logs were scanned, digitised and re-processed.</p> <p>Logging parameters including the time constant, logging speed and chart scale were recorded. Both L1 and O1 paper logs were digitised by EME’s geophysical contractor and converted into digital standard-format LAS files.</p> <p>LAS file data were converted to equivalent U<sub>3</sub>O<sub>8</sub> values (eU<sub>3</sub>O<sub>8</sub> in ppm) using the specified probe calibration factors and taking into account drillhole size, fluid levels and other parameters. The eU<sub>3</sub>O<sub>8</sub> data was filtered (deconvolved) to correct for smearing of the gamma signal at mineralised interfaces so that true grades and thicknesses more closely reproduce actual grade. The eU<sub>3</sub>O<sub>8</sub> grades were calculated by consultant geophysicist Mr Evgeny Sirotenko under the supervision of Dr Maxim Seredkin using the well-established methodology of Khaikovich and Shashkin, widely tested and upheld in the evaluation of uranium deposits in Kazakhstan and the former USSR.</p> <p>Modern downhole gamma measurements on hole MARD004 were performed with a 33 mm Auslog probe, serial number S937. The probe was calibrated at the Adelaide test pits, South Australia. The calibration data were evaluated by consultant geophysicist, Mr David Wilson of 3D Exploration Pty Ltd, and judged to be satisfactory.</p> <p>The MARD004 downhole gamma log was recorded by EME staff using Auslog equipment and software, and employing standard, documented procedures. Hole information including hole diameter, casing depths and type, and fluid levels were recorded. The gamma log was output as a standard-format LAS file, which was processed to yield eU<sub>3</sub>O<sub>8</sub> values by consultant geophysicist, Mr David Wilson of 3D Exploration Pty Ltd.</p>

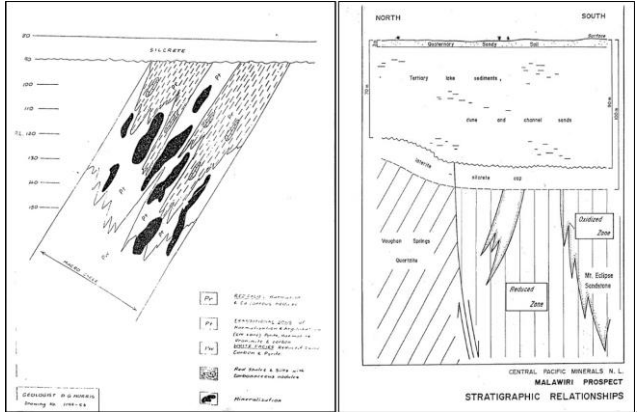
Criteria	JORC Code explanation	Commentary
<b>Verification of sampling and assaying</b>	<p><i>The verification of significant intersections by either independent or alternative company personnel.</i></p> <p><i>The use of twinned holes.</i></p> <p><i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></p> <p><i>Discuss any adjustment to assay data.</i></p>	<p>A LAS file from one historical hole with significant uranium intersections was independently reprocessed by consultant geophysicist Mr David Wilson of 3D Exploration Pty Ltd. Comparison of eU<sub>3</sub>O<sub>8</sub> grade composites between the Wilson and Sirotenko datasets indicates that agreement is within 1% which is deemed more than satisfactory.</p> <p>No twinned holes are available from the historical dataset. However, hole MARD004 was sited between two lines of historical drillholes spaced 65 m apart and provides confirmation of the continuity and grade of historically defined mineralised zones.</p> <p>Historical data including paper gamma logs, assay certificates and lithological logs were stored in archive boxes in EME's library. The data is a complete record of CPM's exploration works conducted from 1979 to 1983.</p> <p>Historically, CPM undertook "closed can" eU<sub>3</sub>O<sub>8</sub> and uranium assay measurements at The Australian Mineral Development Laboratories (AMDEL), Adelaide, on 96 core samples (plus additional repeats) in order to investigate potential uranium series disequilibrium in the prospect. An evaluation of this data, combined with check data from interval-matched assay and eU<sub>3</sub>O<sub>8</sub> values from hole MARD004, indicates mineralised zones are affected by radium mobility and REF corrections are deemed necessary. Relative to eU<sub>3</sub>O<sub>8</sub> grade the following REF corrections have been determined: 50-250 ppm – 0.86, 250-500 ppm – 1.08, &gt;500 ppm – 1.27. The correction results in an increase in U<sub>3</sub>O<sub>8</sub> grade relative to the eU<sub>3</sub>O<sub>8</sub> measurements for all mineralisation &gt;250ppm eU<sub>3</sub>O<sub>8</sub>.</p> <p>The eU<sub>3</sub>O<sub>8</sub> assay data was deconvolved and corrected for radiochemical disequilibrium by application of a REF value as discussed above.</p>
<b>Location of data points</b>	<p><i>Accuracy and quality of surveys used to locate drillholes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</i></p> <p><i>Specification of the grid system used.</i></p> <p><i>Quality and adequacy of topographic control.</i></p>	<p>Historical hole collar locations were determined using three independent datasets. The primary dataset comprised CPM's original exploration drillhole plans, which were scanned at high resolution and carefully geo-referenced to allow extraction of MGA hole coordinates. Drill collars locations were compared with drill sites identifiable from Google Earth imagery, with the same drill sites converted from CPM's original local coordinate grid. Agreement between the three datasets was found to be excellent and historic drillhole locations were accurately identified.</p> <p>After initial identification Energy Metals technicians surveyed all drillholes at the deposit as well as the ERL corner boundary pegs using an Altus APS-3 RTK base receiver and rover (RTK DGPS). The precision quoted by Altus is 0.6 cm in the horizontal plane and 1 cm in the vertical plane. A local base station was established at a Survey Control Point via the AUSPOS system. Elevations are derived AHD heights computed using the AUSGeoid09. The centre of the drill collar was measured.</p> <p>The coordinates are located on the MGA94 grid, Zone 53 using the GDA94 datum (refer Annexure 2).</p> <p>All holes were drilled sub vertically between -45° and -75° inclination with downhole deviation surveys undertaken in the diamond tails at 30 m to 50 m intervals. Dip and azimuth measurements were attained using a Pajari single-shot tool or occasionally by acid etch. Surveys of modern drillholes were conducted using a Pathfinder multi-shot tool at 50 m intervals. Magnetic declination is 005° north-northwest and this value was applied to azimuths to convert to Grid North for modelling.</p>

Criteria	JORC Code explanation	Commentary
		Topographic control was provided by a digital terrain model (DTM) generated from radiometric and magnetic helicopter survey data flown in 2014. Since surface relief is subdued and the deposit is buried at an unconformity below 80–100 m of cover sequences, the topography has a negligible effect on the deposit modelling.
<b>Data spacing and distribution</b>	<p><i>Data spacing for reporting of Exploration Results.</i></p> <p><i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i></p> <p><i>Whether sample compositing has been applied.</i></p>	<p>The Malawiri deposit was drilled on NNE (010-020°) panels spaced at 60–120 m. Within strongly mineralised zones infill drilling was conducted on 30 m spaced panels with 10–20 m step-outs (due to sub vertical body) to test down dip continuity.</p> <p>EME and CSA Global consider the spacing sufficient to establish continuity of geology and grade for the purposes of estimation of an Inferred Mineral Resource.</p> <p>Historical downhole gamma logs were digitised at 10 cm intervals and were composited for resource reporting purposes.</p>
<b>Orientation of data in relation to geological structure</b>	<p><i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></p> <p><i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</i></p>	<p>In general, Bigirlyi-style (tabular stratiform sandstone-hosted) uranium mineralisation, of which Malawiri is an example, exhibit no significant structural control. Mineralisation is controlled by physical and chemical characteristics of the host rock such as permeability and redox state and is influenced by primary depositional and sedimentological features. In the case of Malawiri a late oxidative overprint has affected the distribution of mineralisation.</p> <p>The deposit occurs in steeply dipping beds and was sampled by sub-vertical drillholes. The downhole gamma probe data was subsequently corrected for mineralised zone boundary effects by deconvolution. There is therefore no bias of sampling related to orientation of the mineralised zones.</p>
<b>Sample security</b>	<i>The measures taken to ensure sample security.</i>	All information used based on historical data
<b>Audits or reviews</b>	<i>The results of any audits or reviews of sampling techniques and data.</i>	A review of gamma-ray logging reprocessing procedure was undertaken by a third-party consultant. The aim was to check if there was a difference between modern and reprocessed historical gamma-ray log results using the different processing techniques. The results are in agreement with less than 1% difference in the outcomes providing a high level of confidence in the data.

## JORC 2012 Table 1 Section 2 – Key Classification Criteria

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<p><i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</i></p> <p><i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i></p> <p><i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i></p>	<p>Granted joint venture tenement ELR41 covers the Malawiri deposit which is a joint venture between EME (52.1%) and Northern Territory Uranium Pty Ltd (NTU: 47.9%). EME is the operator of the joint venture. ELR applications 27 to 32 adjoin ELR41 and are owned 100% by NTU; they largely cover the adjacent Minerva prospect, however a small proportion of the Malawiri resource extends on to ELR28 which is located immediately to the south of ELR41. The ELRs are embedded within surrounding EL24451 which is part of EME's 100% owned Ngalia Regional Project.</p> <p>A Native Title Claim covering the Napperby pastoral lease on which the Malawiri deposit is located, was granted by consent on 2 July 2013. The Alherramp Ilwerr Mamp Arrangkey Tywerl Aboriginal Corporation is the relevant Registered Native Title Body Corporate and holds the native title interests of the traditional owners.</p> <p>ELR41 is covered by AAPA Authority Certificate C2014/116 issued on 29 August 2014. No significant heritage or sacred site issues were identified on ELR41.</p> <p>ELR41 is located on the northern margin of the Lake Lewis Site of Conservation Significance (SOCS Site No. 54).</p> <p>At the time of reporting there are no known impediments which could affect an application for a licence to operate in the area.</p>
<b>Exploration done by other parties</b>	<i>Acknowledgment and appraisal of exploration by other parties.</i>	Most of the exploration data used for resource estimation purposes is the result of drilling programs undertaken by CPM over the period 1979 to 1982. EME acquired CPM's interest in the Project in 2005 including all historical data and archived drill core.
<b>Geology</b>	<i>Deposit type, geological setting and style of mineralisation.</i>	The Malawiri deposit is a Bigirlyi-style, tabular, stratiform, sub-vertical, sandstone-hosted uranium deposit of Carboniferous age located within the Ngalia Basin in the Northern Territory. The deposit is unconformably overlain by Cenozoic cover sequences of between 80 m and 100 m thickness
<b>Drillhole information</b>	<p><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:</i></p> <ul style="list-style-type: none"> <li><i>Easting and northing of the drillhole collar</i></li> <li><i>Elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar</i></li> <li><i>Dip and azimuth of the hole</i></li> <li><i>Downhole length and interception depth</i></li> <li><i>Hole length.</i></li> </ul> <p><i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i></p>	Refer to Annexure 1. All information relevant to hole MARD004 has previously been reported to the ASX (see announcement of 27 September 2016).



Criteria	JORC Code explanation	Commentary
<b>Data aggregation methods</b>	<p><i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</i></p> <p><i>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</i></p> <p><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></p>	<p>Exploration results, i.e. mineralised intercepts, are reported as equivalent <math>U_3O_8</math> values (<math>eU_3O_8</math>) from processed gamma logs. For reporting purposes (see Annexure 2), significant gamma log intersections have been composited from 10 cm deconvolved <math>eU_3O_8</math> values using the following criteria: a cut-off grade of 100 ppm <math>U_3O_8</math>, a minimum thickness of 0.3 m, a maximum internal dilution of 0.3 m, no external dilution and a grade x thickness value of &gt;100.</p>
<b>Relationship between mineralisation widths and intercept lengths</b>	<p><i>These relationships are particularly important in the reporting of Exploration Results.</i></p> <p><i>If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.</i></p> <p><i>If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g. 'downhole length, true width not known').</i></p>	<p>Based on structural measurements from geological logging of drill core by CPM and EME geologists, sandstone beds hosting mineralisation are steeply dipping (broadly between 70° and 88° degrees) toward the north. All CPM and EME holes have been drilled toward the south at between -65° and -75° and true widths of intersections are within the range 30% to 50% of the reported downhole widths.</p>
<b>Diagrams</b>	<p><i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drillhole collar locations and appropriate sectional views.</i></p>	
<b>Balanced reporting</b>	<p><i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i></p>	<p>All significant results have been reported. Historical results have previously been reported by CPM and are available as open file reports from the NTGS.</p>
<b>Other substantive exploration data</b>	<p><i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i></p>	<p>Bulk density measurements were undertaken on historical and modern core samples (see below for further details).</p> <p>Petrographic work was conducted by the CSIRO in 2015 and has shown a close association between uranium and detrital-origin phyllosilicate minerals including biotite, clays and chlorite. It was found that uranium minerals (uraninite and coffinite) typically occur at the grain-to-grain contacts between K feldspar and quartz and as replacement of pyrite along cleavage planes within biotite and chlorite. Exposure to oxidising fluids after uranium precipitation resulted in K-feldspar dissolution, removal of uranium and precipitation of hematite. Uranium is preserved in patches where detrital grain contacts were not exposed to the late</p>

Criteria	JORC Code explanation	Commentary
		<p>fluids and where uranium was protected within low permeable micas and clays.</p> <p>Measurements of Pb-isotope ratios in mineralised core from MARD004 indicate substantial disturbance of the Pb-U isotopic system likely reflecting mobility and re-distribution of U and Pb on the metre to decimetre scale within the deposit.</p>
<b>Further work</b>	<p><i>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></p> <p><i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></p>	<p>Subject to economic conditions, future exploration activities are proposed to test for extensions of mineralisation along strike to the west and within potential stratigraphic repeats associated with adjacent folded units of the Mount Eclipse Sandstone.</p>

### JORC 2012 Table 1 Section 3 – Key Classification Criteria

Criteria	JORC Code explanation	Commentary
<b>Database integrity</b>	<p><i>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</i></p> <p><i>Data validation procedures used.</i></p>	<p>Historical data used in the Mineral Resource estimate (MRE) was sourced from the original hardcopy. Hardcopy data was converted to digital format and collated, tabulated and verified before being validated upon importation into EME's Geobank database. CSA Global was provided with a validated Micromine database by EME. Relevant tables from the database were exported to Micromine .DAT format for import into Micromine software prior to use in the Mineral Resource estimation.</p> <p>Validation of all imported data included checks for missing, duplicated and/or incorrectly recorded collar locations, survey data, sample data, gamma log data and lithological log data.</p> <p>Original historical gamma logs were reprocessed to yield eU<sub>3</sub>O<sub>8</sub> (ppm) values which correlated well with the historical information stored in EME's archives.</p>
<b>Site visits</b>	<p><i>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</i></p> <p><i>If no site visits have been undertaken, indicate why this is the case.</i></p>	<p>No site visits were undertaken by the Competent Person (Mineral Resource Estimation) or CSA Global staff.</p> <p>CSA Global has relied on EME for all data regarding the deposits, and, considers this reasonable at this early stage of project development.</p>
<b>Geological interpretation</b>	<p><i>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</i></p> <p><i>Nature of the data used and of any assumptions made.</i></p> <p><i>The effect, if any, of alternative interpretations on Mineral Resource estimation.</i></p> <p><i>The use of geology in guiding and controlling Mineral Resource estimation. The factors affecting continuity both of grade and geology.</i></p>	<p>There is a reasonable level of confidence in the geological interpretation of Malawiri. Although steeply dipping, the host sandstone stratigraphy is traceable and continuity between drillholes and sections can be demonstrated. Geological controls such as the dip of the sedimentary units and the identified conglomerate and siltstone marker beds have been used to constrain the extrapolation of mineralisation within stratigraphic bounds.</p> <p>Geological structure and gamma logging have formed the basis for the geological interpretation. REF corrections have been determined and applied as discussed above.</p> <p>Further work may be required to better define the limits of the mineralisation, particularly along strike, but no significant downside changes to the currently interpreted mineralised volume are anticipated.</p> <p>Mineralisation is mainly hosted in partially oxidised coarse to very coarse (sometimes pebbly) arkose and arkosic sandstone. A common characteristic is that uranium mineralisation is closely associated with a late hematitic (oxidative) overprint. The hematitic mineralised zones are often carbonate rich.</p>

Criteria	JORC Code explanation	Commentary																																																												
		<p>Grade continuity is controlled by redox zonation within the partially oxidised sandstones and siltstones.</p> <p>The deposit is hosted along the southern margin of the Ngalia Basin, which is a deformed, elongate intracratonic depression about 300 km long (east-west) and 40 km wide (north-south) on average. This basin is filled with late Proterozoic to Palaeozoic aged sedimentary rocks, predominantly continental-marine arkosic sandstone, and Neoproterozoic glaciogene deposits and quartzite.</p>																																																												
Dimensions	<i>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</i>	<p>Mineralisation is present in a series of multiply stacked lenses that are variably distributed along strike and at depth due to probable epigenetic modification. The dimensions of the Malawiri mineralised domain is approximately 400 m along-strike with an average plan width of 10-15 m and maximum modelled plan width of 35 m. The mineralised interval varies from 0.3 m to 12.6 m, averaging 3.2 m. The model extends from the unconformity surface at approx. 80m depth to 250 m below surface.</p>																																																												
Estimation and modelling techniques	<p><i>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen, include a description of computer software and parameters used</i></p> <p><i>The availability of check estimates, previous estimates and/or mine production records and whether the MRE takes appropriate account of such data.</i></p> <p><i>The assumptions made regarding recovery of by-products.</i></p> <p><i>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</i></p> <p><i>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</i></p> <p><i>Any assumptions behind modelling of selective mining units.</i></p> <p><i>Any assumptions about correlation between variables</i></p> <p><i>Description of how the geological interpretation was used to control the resource estimates.</i></p> <p><i>Discussion of basis for using or not using grade cutting or capping.</i></p> <p><i>The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.</i></p>	<p>Gamma logging has been used for the definition of mineralised intervals and interpretation (wireframing) of mineralisation. The model consists of eight mineralised domains defined by wireframe models.</p> <p>Grade estimation was carried out using the Multiple Indicator Kriging (MIK) method using Micromine 2013 software. Downhole and directional indicator semi-variograms have been used to define the distance of interpolation. A top cut of extreme grade values was not undertaken due to the use of MIK.</p> <p>No previous MREs have been undertaken for the Malawiri deposit.</p> <p>No assumptions have been made regarding recovery of by-products.</p> <p>No other elements were estimated.</p> <p>The block model was constructed using a 2 m E by 0.125 m N by 2 m RL parent block size, without sub-celling for domain volume resolution. The parent cell size was chosen on the basis of the morphology of mineralised lenses and in order to avoid the generation of unrealistically large blocks. The sub-celling size was chosen to maintain the resolution of the mineralised bodies. The sub-cells were optimised in the models where possible to form larger cells.</p> <p>The search ellipse radii were determined from the ranges of semi-variograms: the main direction being along strike of mineralised bodies (range 44 m), the second direction being down dip of mineralised bodies (range 20 m) and the range of the third direction was set at 12 m. Search ellipsoid parameters are in the table.</p> <table><tr><th>Runs</th><th>Search radius</th><th>Coefficient to search radius</th><th>Minimum no. of points</th><th>Maximum no. of points</th><th>Minimum no. of drillholes</th></tr><tr><td>1</td><td>5 x 5 x 1</td><td>1</td><td>1</td><td>20</td><td>1</td></tr><tr><td>2</td><td>35 x 35 x 1</td><td>0.667</td><td>3</td><td>20</td><td>2</td></tr><tr><td>3</td><td>70 x 70 x 1</td><td>0.667</td><td>3</td><td>20</td><td>2</td></tr><tr><td>4</td><td>70 x 70 x 1</td><td>1</td><td>3</td><td>20</td><td>2</td></tr><tr><td>5</td><td>140 x 140 x 2</td><td>1</td><td>1</td><td>20</td><td>1</td></tr><tr><td>6</td><td>210 x 210 x 3</td><td>2</td><td>1</td><td>20</td><td>1</td></tr><tr><td>7</td><td>280 x 280 x 4</td><td>3</td><td>1</td><td>20</td><td>1</td></tr><tr><td>8</td><td>350 x 350 x 5</td><td>4</td><td>1</td><td>20</td><td>1</td></tr><tr><td>9</td><td>700 x 700 x 10</td><td>5</td><td>1</td><td>20</td><td>1</td></tr></table> <p>No selective mining units were assumed in this estimate.</p> <p>Geological boundaries were used to guide the interpretation of mineralised lenses. Specifically, mineralisation is hosted by steeply dipping (approx. 80°) Mount Eclipse Sandstone. Grade envelopes at 100 ppm U<sub>3</sub>O<sub>8</sub> were defined for interpretative purposes.</p> <p>A 100 ppm U<sub>3</sub>O<sub>8</sub> cut-off grade was applied to mineralisation inside envelopes. A top cut has not been applied.</p>	Runs	Search radius	Coefficient to search radius	Minimum no. of points	Maximum no. of points	Minimum no. of drillholes	1	5 x 5 x 1	1	1	20	1	2	35 x 35 x 1	0.667	3	20	2	3	70 x 70 x 1	0.667	3	20	2	4	70 x 70 x 1	1	3	20	2	5	140 x 140 x 2	1	1	20	1	6	210 x 210 x 3	2	1	20	1	7	280 x 280 x 4	3	1	20	1	8	350 x 350 x 5	4	1	20	1	9	700 x 700 x 10	5	1	20	1
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5	140 x 140 x 2	1	1	20	1																																																									
6	210 x 210 x 3	2	1	20	1																																																									
7	280 x 280 x 4	3	1	20	1																																																									
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9	700 x 700 x 10	5	1	20	1																																																									

Criteria	JORC Code explanation	Commentary
		<p>Validation of the block model consisted of a comparison between the block model volume and the wireframed volumes. Grade estimates were validated by visual comparison with the drill data. Grade estimation was verified by IDW2 and with a top cut of 10,000 ppm U<sub>3</sub>O<sub>8</sub> applied to the IDW2 estimate. The block model compared favourably with grade composites for a series of sections in different directions.</p> <p>No reconciliation data is available at this early stage of the Project.</p>
<b>Moisture</b>	<i>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</i>	The tonnages are estimated on a dry basis.
<b>Cut-off parameters</b>	<i>The basis of the adopted cut-off grade(s) or quality parameters applied.</i>	A cut-off grade of 100 ppm U <sub>3</sub> O <sub>8</sub> (116 ppm eU <sub>3</sub> O <sub>8</sub> ) has been used for interpretation and a cut-off grade of 100 ppm U <sub>3</sub> O <sub>8</sub> has been used for resource reporting. Based on CSA Global's experience with this type of deposit, this is considered a reasonable cut-off grade.
<b>Mining factors or assumptions</b>	<i>Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.</i>	At this stage of resource development, it is assumed that mining would be by underground methods due to the depth of mineralisation. Future hydrogeological investigations and leaching tests would be useful in determining whether solution mining may be possible.
<b>Metallurgical factors or assumptions</b>	<i>The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</i>	Metallurgical and hydrological test work is required to determine if the deposit is amenable to solution mining. There is a requirement for a certain level of natural permeability and for mineralisation to occur below the water table if in-situ recovery is to be considered. Hydrological pumping cluster tests would need to be undertaken if the deposit is found to be amenable to in-situ extraction processes.
<b>Environmental factors or assumptions</b>	<i>Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have</i>	No detailed assumptions regarding possible waste and process residue options have been made at this early stage.

Criteria	JORC Code explanation	Commentary
	<i>not been considered, this should be reported with an explanation of the environmental assumptions made.</i>	
<b>Bulk density</b>	<p><i>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</i></p> <p><i>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.</i></p> <p><i>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</i></p>	<p>Bulk density testing was carried out on both mineralised and un-mineralised drill core. The dataset comprises 146 in-house bulk density measurements of historical core from 16 holes and 38 bulk density measurements of mineralised core from hole MARD004 undertaken by ALS laboratories, Perth. The main rock types found at Malawiri are pebble conglomerate, arkose, arkosic sandstone and shale, all of which may be mineralised.</p> <p>Density estimates were obtained using the Archimedes method. For the in-house measurements the balance was calibrated using two standard weights. Hairspray was used to seal the exterior to account for natural porosity (voids) when necessary.</p> <p>Average bulk densities are as follows: pebble conglomerate: 2.48 +/- 0.07; arkose: 2.42 +/- 0.06; mineralised arkose: 2.45 +/- 0.06; arkosic sandstone 2.44 +/- 0.06; shale: 2.52 +/- 0.06 (1sd) t/m<sup>3</sup></p> <p>The average bulk density of mineralised core is 2.45 t/m<sup>3</sup> and this value has been applied to all material in the model.</p>
<b>Classification</b>	<p><i>The basis for the classification of the Mineral Resources into varying confidence categories.</i></p> <p><i>Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</i></p> <p><i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i></p>	<p>CSA Global has considered several factors in the classification of the Mineral Resources such as search ellipse dimensions, geological data and exploration drillhole grids. The Malawiri deposit has been classified as Inferred due to consideration of: exploration grid density; structural disposition of ore bodies relative to host units; variability of mineralised lenses; search ellipse dimensions relative to semi-variogram ranges; and radiochemical disequilibrium.</p> <p>The Inferred classification has taken into account all available geological and sampling information, and the classification level is considered appropriate.</p> <p>The MRE appropriately reflects the views of the Competent Persons.</p>
<b>Audits or reviews</b>	<i>The results of any audits or reviews of MREs.</i>	Internal audits were completed by CSA Global which verified the technical inputs, methodology, parameters and results of the estimate. No external audit of the MRE has been undertaken
<b>Discussion of relative accuracy/ confidence</b>	<p><i>Where appropriate, a statement of the relative accuracy and confidence level in the MRE using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</i></p> <p><i>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</i></p> <p><i>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i></p>	<p>The relative accuracy of the MRE is reflected in the reporting of the Mineral Resource as Inferred as per the guidelines contained in the 2012 JORC Code.</p> <p>The resource statement refers to global estimation of tonnes and grade.</p> <p>No production data is available for comparison.</p>

## Appendix 2: Key File and Field List

The following documentation gives details of key file names associated with the resource modelling detailed in this report.

### Results Files

#### Exploration Database

Malawiri Collars 2017.dat	Collars of all holes
Malawiri DH Surveys 2017.DAT	Survey measurements
Malawiri Structure 2017.DAT	Main structural elements
Malawiri eU3O8 Interp_10cm_Comp_2017.DAT	Initial gamma logging, 10 cm intervals
Malawiri Lithology 2017.DAT	Lithological and stratigraphy logging
close_can.DAT	Close can analyses
SG.DAT	Bulk density in core samples
comp03.DAT	Mineralised intervals ( $eU_3O_8 > 116$ )
comp_05m.DAT	Composite 0.5 m
assays_gamma.DAT	Working file

#### Wireframes and DTMs

ROCK_CSA.tdb\topo	Topographic surface
ROCK_CSA.tdb\CZ-CS BOUNDARY CSA	Surface between CZ and CS sediments
ROCK_CSA.tdb\CS-PZP BOUNDARY CSA	Surface between CS and PZP sediments
ROCK_CSA.tdb\PZP-ECL BOUNDARY CSA	Surface between Eclipse and PZP sediments (bottom of overburden sediments)
MINERALISATION_CSA.tdb\CSA_mineralisation	Wireframes of mineralisation
TENEMENT.tdb\41	Tenure

#### Block Models

MIK.DAT	Block model for plateau 1
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#### Structure of the Block Models

EAST	Coordinate of centre of block/eastern coordinate
NORTH	Coordinate of centre of block/northern coordinate
RL	Coordinate of centre of block/RL coordinate
_EAST	Size of block/eastern
_NORTH	Size of block/northern
_RL	Size of block/RL
BD	Bulk density
WF_name	lithology (0-soil, 1-laterite (ore bearing), 2-underlayer)
U3O8	$U_3O_8$ ppm
RUN_U3O8	Step of interpolation
TEN	Tenement (1-inside, 0-outside)
CLASS	Mineral Resource classification (3 – Inferred)

All files have been saved on the Perth server in the directory: L:\Clients\Files\Energy metals\Malawiri\Final.





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