

**30 OCTOBER 2018** 

#### TIRIS DEFINITIVE FEASIBILITY STUDY PROGRESSING WELL

## OVERALL PROJECT ENGINEERING COMMISSIONED INCLUDING LEACH PLANT

#### URANIUM OFFTAKE AND FINANCING DISCUSSIONS UNDERWAY

**Aura Energy Limited (AEE; ASX, AURA; AIM)** is pleased to advise that the Tiris Definitive Feasibility Study (DFS) is progressing well with all major work targeted for completion by year end. The DFS is in full progress on a number of fronts, following a period of constrained activity due to previous weakness in the uranium price.

The Tiris Uranium Project (100%) is a near-term development project with production expected in 2020. It has a 17 million pounds  $U_3O_8$  resource in the Measured and Indicated category (see Annexure 1 and 2) US\$45 million capital cost and US\$19.40/lb operating cost from the 2014 Tiris Scoping Study (see Note 1).

The major recent DFS activities are;

- Completion of a major bulk sampling exercise in the Sahara Desert site
- Significant metallurgical test work initiated in both Australia and South Africa
- Development of the final process flowsheet
- Mincore Engineering engaged as overall Project Engineer
- Simulus Engineering engaged for Leach Plant Engineering
- Adelaide Control Engineering (ACE) engaged for U<sub>3</sub>O<sub>8</sub> recovery and packaging
- Optimisation of the water usage given the project location
- Geophysical study for water sourcing close to site to reduce costs
- Establishment of vanadium as a potential project product
- Aust Govt Innovation Connections grant awarded for program with ANSTO Minerals



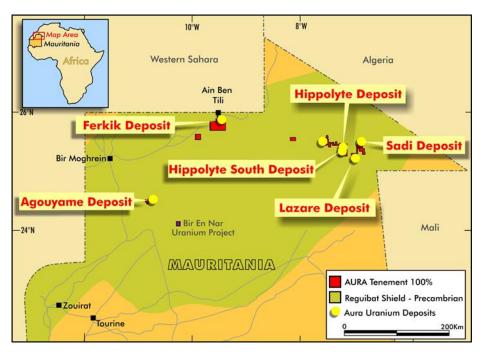


Figure 1. Location of Aura's Tiris Uranium Resources

The Tiris Uranium Project is Aura's key development project with a production target of 1 million pounds per annum. (On 16 July 2014, the Company released to the market the Tiris Project Scoping Study based a production rate of 1 million pounds per annum. Since that date, the Company has continued to advance the Tiris Project with resource drilling, metallurgical test work and engineering studies. The Company is undertaking the DFS based on this production rate; however, the Company is unable to state with certainty that this production rate will be achieved. The Company wishes to confirm that all the material assumptions underpinning the production target and the forecast financial information derived from the production target in the initial public report continue to apply and have not materially changed.)

#### **Process development**

The development of the Tiris process flow sheet has been significantly progressed for the DFS.

Ore from the Tiris Uranium Resource has favourable processing characteristics, including:

- Free digging calcrete ore with no need for crushing or grinding. Only rotary scrubbing required to liberate uranium bearing carnotite
- Carnotite is very fine grained and well liberated, allowing significant upgrade to be achieved by screening at 75µm
- Uranium beneficiation process allows rejection of most of the ore mass as barren waste

The Tiris process flow sheet has been summarised in figure 2.

The process flow sheet includes a modular beneficiation plant, consisting of rotary scrubbing and wet screening. The beneficiated product is dewatered in a thickener and filter, with recovered process water returned to the scrubbing and screening circuit. The



beneficiated product, representing 15% of initial feed mass is leached in an alkaline carbonate leach at 90°C, with total residence time of 12 hours. The uranium-rich leach solution is then recovered by filtration and uranium recovered in an ion exchange circuit. Concentrated uranium is then precipitated as Sodium Di-Uranate (SDU) and then purified and re-precipitated to form the final UO<sub>4</sub> product.

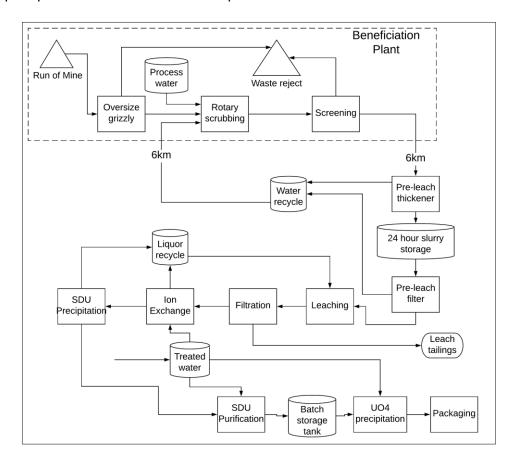


Figure 2. Tiris Uranium Project Process Block Flow Diagram

The Tiris process configuration has been finalised as part of the DFS, with a focus on minimisation of Capital requirements and robust operation.

The process has been updated to locate the beneficiation circuit close to the mining areas, with the configuration allowing it to be transported as mining progresses across the tenements. This will allow waste material, comprising 85% of mined material to be directly deposited in mined areas. Beneficiated product (15% of total mass) will be pumped as a slurry to the central process plant. Each of the process circuits have been designed as modular systems to provide flexibility in commissioning and capability for future production expansion.

#### **Engineering**

DFS engineering design has commenced and initial contracts for engineering of process circuits have been issued. Aura's focus for engineering design has been on utilisation of modular systems to improve efficiency in design, installation and commissioning.

Key process circuits and design criteria have been defined with separate experienced engineering consultants focusing on each. These include:



- Modular beneficiation circuit
- Modular leaching, ion exchange and uranium precipitation circuits
- Modular uranium purification and packaging circuit

The DFS engineering contract for the Modular Beneficiation Circuit, along with responsibility for integration of modular systems and site infrastructure has been awarded to Mincore Engineering, Melbourne, with completion expected Q1, 2019. Mincore is an experienced engineering firm specialising in design of small scale, innovative process circuits for a range of commodities.

The DFS engineering contract for design of the leaching, ion exchange and uranium precipitation and purification circuits has been awarded to Simulus Engineers, a Perth-based engineering firm specialising in design and optimisation of hydrometallurgical circuits. These circuits will utilise a pre-commissioned modular design to allow for more efficient installation and commissioning.

#### Metallurgical test work

A program of trenching was undertaken for the Lazare North and Lazare South Resources in April 2018. The focus of this program was to collect representative samples, from which Bulk metallurgical composites have been prepared and shipped to laboratories for detailed test work. The program was developed to provide an understanding of the variability of key process parameters including uranium and sulphur upgrade factors. In addition, the program was designed to provide inputs to define geometallurgical processing domains and develop predictive models for key processing parameters.

Collection of samples from trenching, rather than drilling, was undertaken to maintain sample integrity, allow for sufficient sample mass to be collected and provide information on mining requirements for the material.

A total of 11 trenches were completed, with 8 positioned in the Lazare South resource and 3 positioned in the Lazare North resource.



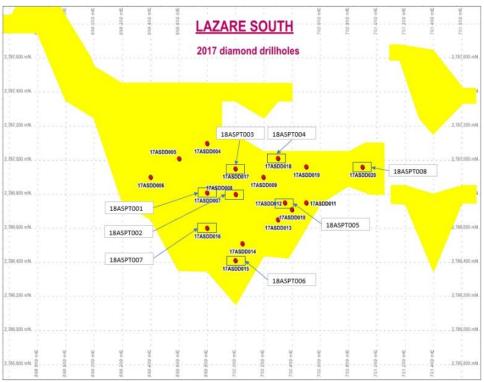


Figure 3. Locations for trenches in Lazare South resource



Figure 4. Locations for trenches in Lazare North resource

Trenches were dug to a depth of 4m with an excavator, demonstrating the free digging nature of the Tiris ore body.





Sampling was undertaken by channel sampling at intervals of 0.5m from surface to 4m. This resulted in 88 interval samples, 64 from Lazare South and 24 from Lazare North, for a total of approximately 5 tonnes of material.







Interval samples were further processed at Aura's laboratory in Nouakchott, Mauritania. All samples were scrubbed and screened at  $75\mu m$  and  $150\mu m$  to determine uranium recovery and upgrade factor, along with rejection of reagent consuming minerals to the beneficiated product. The analysis was performed on all interval samples to provide a model for variability in beneficiation behaviour.







Figure 5. Nouakchott scrubbing and screening laboratory

Results of geometallurgical scrubbing and screening tests were used to define 3 domains based on metallurgical response for use in the DFS test work. Bulk composite samples of between 1,500kg and 2,000kg were prepared for use in the test work programs.

Mintek Laboratories have been retained to undertake test work on the representative bulk composite samples for design of the rotary scrubber and screening beneficiation circuit, using Derrick Stack Sizer screens. Bulk samples are currently in transit from Nouakchott, Mauritania to Johannesburg, South Africa.

ANSTO Minerals has been retained to undertake feasibility study test work for design of the leaching, ion exchange and uranium purification circuits.

The program will focus on:

- Optimisation of leaching parameters, with focus on opportunities to reduce reagent requirements
- Design parameters for the ion exchange circuit
- Optimisation of uranium precipitation and purification circuits to reduce overall reagent requirements

Through this program, characterisation of the solid/liquid separation behaviour of beneficiated product and leach residue will be examined by Rheological Consulting Services. Representative composite samples for the program with ANSTO Minerals have been sent to Australia and are currently in preparation.

#### **Innovation support**

We are pleased to announce that Aura Energy has been awarded an Australian Government Innovation Connections grant of AUD\$50,000 to support the test work program with ANSTO Minerals

This grant is to facilitate Research projects in collaboration with a Publicly Funded Research Organisation (PFRO), in this case ANSTO Minerals, to develop a new idea with commercial



potential. It will assist Aura in development of the fast alkaline leach process to be used in the Tiris Process.

#### **Vanadium Process Flowsheet Option**

Technical investigations during the DFS have indicated the potential for the recovery of vanadium from the Tiris Uranium Project process streams. Aura has conducted preliminary evaluation of the feasibility of vanadium recovery from solution.

Vanadium occurs with uranium in carnotite, the host mineral for uranium in the Tiris Project, as potassium uranium vanadate ( $K_2(UO_2)_2(VO_4)_2 \cdot 3H_2O$ ). Vanadium hosted with carnotite is leached alongside uranium in the Tiris extraction circuit.

The Tiris project value, which is driven by low operating and development capital costs, would benefit further with vanadium recovery which is considered technically achievable.

The vanadium price has risen approximately 500% over the past 3 years and was recently quoted at US\$33.10 per lb<sup>1</sup>, benefitting from significant structural shifts in the Chinese steel industry where, in some cases, legislation has driven a three-fold increase in vanadium use.

#### Water

Optimisation of the process flow sheet has resulted in reduction in process water requirements by 60% from scoping study estimates.

An initial survey of local water sources has been completed and water analyses are currently underway. Geophysical study for location of major water drilling targets has been commenced.

Aura is confident that adequate water for the process will be available within a reasonable distance of the process plant.

#### Schedule

The DFS is currently on schedule for completion at year end 2018 with full release in Q1 2019.

#### Offtake and Financing Discussions

Aura has commenced discussions for both offtake of the uranium product from Tiris and also financing requirements for project construction.

Offtake discussions have been underway for some time whilst the finance discussions remain at a preliminary stage and involve international and Government agencies.

<sup>&</sup>lt;sup>1</sup> Source: www.vanadiumprice.com vanadium pentoxide flake 98% price, China



"The progression of the Tiris Uranium Project DFS is pleasing, following an extended hiatus during the period of lower uranium prices. In the current environment of rising prices, the Tiris Project with its low capital and operating costs remains currently as one of the world's most compelling uranium development projects".

"The current rise in the uranium price is encouraging and the Tiris Uranium Project is expected to be in production in 2020 (subject to financing and permitting) moving Aura to producer status", Mr Peter Reeve, Aura's Executive Chairman, said.

#### For further information please contact:

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#### Note 1

The Scoping Study was released to the market on 16 July 2014 and the capital and operating costs reflected costs at that time with a relative low level of confidence. The Company is presently undertaking a Definitive Feasibility Study which will update these estimates in terms of current market prices for both capital and operating costs and therefore, increase the level of confidence in estimates. The Company wishes to confirm that all the material assumptions underpinning the production target and the forecast financial information derived from the production target in the initial public report continue to apply and have not materially changed.

#### **Competent Persons**

The Competent Person for matters relating to metallurgy is Dr Will Goodall. The information in the report to which this statement is attached that relates to ore beneficiation and extraction is based on information compiled by Dr Will Goodall. Dr Goodall has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking. This qualifies Dr Goodall as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Goodall is an independent consultant to Aura Energy. Dr Goodall is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM) and consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The Competent Person for drill hole data is Mr Neil Clifford. The information in the report to which this statement is attached that relates to the resource is based on information compiled by Mr Neil Clifford. Mr Clifford has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking. This qualifies Mr Clifford as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Clifford is an independent consultant to Aura Energy. Mr Clifford is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Clifford consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

### ANNEXURE 1 MINERAL RESOURCES

Cut-off U3O8 ppm	Class	Tonnes (Mt)	U <sub>3</sub> O <sub>8</sub> ppm	U3O8 (Mlb)
	Measured	10.2	236	5.3
	Indicated	24.5	217	11.7
100	Total M+I	34.7	223	17.0
	Inferred	57.5	273	34.7
	GrandTotal	92.2	254	51.8
	Measured	4.5	351	3.5
	Indicated	9.5	337	7.0
200	Total M+I	14.0	342	10.5
	Inferred	36.8	342	27.8
	GrandTotal	50.8	343	38.4
	Measured	2.1	474	2.2
300	Indicated	4.0	466	4.1
	Total M+I	6.1	469	6.3
	Inferred	18.4	440	17.9
	GrandTotal	24.2	450	24.1

# ANNEXURE 2 JORC Code 2012 Table 1 Appendix 5A ASX Listing Rules 2018 Tiris Resource Estimate

### Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>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 down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>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 (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul> <li>The data on which this resource estimate is based is from 4 field sampling programs:</li> <li>An air-core (AC) drilling program in 2010/11 with grade estimation by chemical analysis of drill samples</li> <li>An AC drilling program in 2012 with grade estimation by chemical analysis of drill samples</li> <li>An AC drilling program in 2017 with grade estimation by downhole gamma logging A diamond drilling (DD) program with grade estimation by both chemical analysis of core and by downhole gamma logging, for validation purposes.</li> <li>The 2011/12 drilling was the basis of 2 previous Resource Estimation exercises (ASX release: announcement 14 July 2011 "First Uranium Resource in Mauritania – 50 million pounds", &amp; ASX release: 16 July 2014 "Reguibat Uranium Project Scoping Study Complete). The 2018 resource estimation exercise has been aimed at upgrading a substantial portion of Inferred Resource to a higher resource category.</li> <li>The 2011/12 drillhole spacing was predominantly 100m x 200m. A portion of the 2012 drilling was at a spacing of 50m x 100m drilled to define Indicated Resources. The 2017 drilling was predominantly at a spacing of 50m x 50m to define Measured Resources.</li> <li>AC drill cuttings were riffle split on site to extract approx. 2 kg samples for assay for the downhole intervals 0 to 0.5m, 0.5 to 1.0m, 1 to 2m, &amp; thereafter in 1m intervals to end of hole.</li> <li>Down hole gamma logging in 2017 was by 2 down-hole Auslog gamma sondes operated by Poseidon Geophysics (Pty) Ltd based in Gaborone Botswana using 3 geophysicists employed by Poseidon geophysics</li> <li>The 2 sondes were sent to the Department of Environment, Water &amp; Natural Resources, Adelaide South Australia for calibration prior to the survey</li> </ul>
Drilling techniques	<ul> <li>Drill type (eg core, reverse circulation, openhole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).</li> </ul>	<ul> <li>AC drilling in all programs was conducted by Wallis         Drilling of Perth WA using a Mantis drillrig and NQ         size bit (outer diameter 75.7 mm). AC drilling         Diamond drilling (DD) was carried out by Capital         Drilling Mauritanie SARL utilising triple tube PQ         coring (122.6 mm outer diameter bit, 85 mm         diameter core). In 2017 1484 vertical drillholes         were gamma logged of which 1428 were AC         drillholes and 56 were cored diamond drillholes.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the</li> </ul>	<ul> <li>In 2011/12 AC drilling the total drill return for each sample interval was bagged and weighed to an accuracy of approximately 0.25 kg to estimate sample recovery.</li> </ul>

Criteria	JORC Code explanation	Commentary
	samples.  • 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.	<ul> <li>Efforts were made to minimise dust loss, eg in most holes the first metre was drilled without applying compressed air, and thereafter minimum air necessary to lift the sample was applied.</li> <li>No relationship between estimated recovery and uranium grade was observed.</li> <li>In view of the ultrafine grain size of the uranium mineral carnotite, even where high recoveries were recorded, it is possible that some carnotite was lost in dust emitted from the drillrig cyclone resulting in underestimation of uranium grade.</li> <li>2017 AC drillholes were not physically sampled.</li> <li>All drillcore was transported in covered core trays to Nouakchott for geological logging, density determination, and core cutting.</li> <li>Drillcore lengths were measured to an accuracy of c. 1 cm immediately on removal from the core barrel to determine &amp; record core recovery.</li> <li>Given the ultra-fine grained nature of the carnotite mineralisation, loss of uranium is likely in any core runs recording less than 100% recovery, and even where 100% recovery is recorded it is possible some loss of carnotite may have occurred.</li> </ul>
Logging	<ul> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>In 2011/12 AC drilling each sample interval was geologically logged by an onsite geologist and drill logs were uploaded to Aura's database managed by Reflex Hub in Perth. A sample of sieved &amp; washed chips for each sample interval was retained in chip trays for reference.</li> <li>In 2017 AC drilling only the bottom hole sample was geologically logged, and a sample retained in chip trays.</li> <li>Drillcore was photographed, geologically logged and logs were recorded on Aura's logging template and uploaded to Aura's database managed by Reflex Hub in Perth. 385 density measurements (which included 25 duplicate determinations) were taken on drillcore by ALS Laboratories in Nouakchott under the supervision of Aura's geologist.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>2011/12 AC drill samples were riffle split on site to provide a minimum 2 kg sample for assay and a duplicate split for reference and possible umpire analysis.</li> <li>Duplicates, blanks, and standards were inserted in the assay sample stream at regular intervals as detailed in the next section.</li> <li>Drillcore was cut in half longitudinally by diamond saw by ALS Laboratories after marking up by, and under the supervision of, an Aura geologist.</li> <li>For each half-metre of core half-core was bagged for assay</li> <li>Given the fine-grained nature of the uranium minerals these sample sizes are appropriate</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model,</li> </ul>	2011/12 AC drill samples were submitted to Stewart Laboratories sample preparation facility near Zouerate in Mauritania (In 2012 Stewart Laboratories became part of ALS Laboratories). Samples were crushed by jaw crusher to -12mm and 1kg was riffle split for pulverising to +85% passing 75 microns. An c. 100g split was bagged and sent to Stewart Laboratories in Ireland for analysis by pressed pellet XRF. Previous

Criteria	JORC Code explanation	Commentary
	reading times, calibrations factors applied and their derivation, etc.  Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	analysis comparing different analytical methods (XRF, ICP, DNC) had indicated that XRF is an accurate method on this material, if an x-ray band is selected for measurement that is not affected by the presence of strontium, and this was done. This method will measure total uranium.  • Bagged ½ core was prepared by ALS Laboratories Nouakchott by Method Prep 22 (Crush to 70% less than 6mm, pulverize entire sample to better than 85% passing 75 microns). An c. 100g sample of pulp was split off using mini-riffle splitter, placed in sample envelope and forwarded by air to ALS in Ireland for uranium analysis by ALS Method U-MS62 (U by ICP-MS after 4 acid digestion). 4 acid digestion provides near total extraction.
		<ul> <li>Downhole gamma logging was performed by 2 down-hole Auslog gamma sondes comprising:</li> <li>DLS5 Winch Controller</li> <li>W600-1 12V Portable Winch</li> </ul>
		A075 Natural Gamma Tool
		<ul> <li>Logging procedures involved:</li> <li>Drill holes were gamma logged as soon as possible after drilling to avoid radon build-up.</li> </ul>
		<ul> <li>Each borehole logged in both directions to verify consistency</li> <li>Logging speed: 2 metres per minute</li> </ul>
		Sampling interval: 1 cm
		<ul> <li>At least one hole was re-logged after each</li> </ul>
		20 holes as a repeatability check.
		<ul> <li>A reference hole was established and relogged every 2 days as a check on</li> </ul>
		consistency  Gamma logging procedures &
		interpretation were supervised by consultant David Wilson who qualifies as a
		Competent Person in these matters.
		<ul> <li>QAQC procedures for the 2011/12 AC drilling</li> </ul>
		comprised, on average: Field duplicates assays: 1 in every 12
		samples ■ Blanks: 1 in every 31 samples
		<ul> <li>Umpire assays: 1 in every 11 samples</li> </ul>
		Umpire analysis was carried on 427 sample
		intervals. For each of these the original pressed pellet XRF sample assayed by
		Stewart Labs was re-assayed by ICP by
		Stewart Labs and also by XRF by ALS Labs and by ICP by ALS.
		<ul> <li>Certified Reference material: 1 in every 129 samples</li> </ul>
		<ul><li>Total QAQC samples: 1 in every 5 samples</li></ul>
		Accuracy & precision were within acceptable limits.
Verification of	The verification of significant intersections by	Approximately 2,275 drillholes were used in this
sampling and	either independent or alternative company personnel.	Resource Estimate. In 1484 of these U grades was determined by downhole gamma logging, and in the
assaying	<ul> <li>The use of twinned holes.</li> </ul>	remainder U grade was determined by chemical
	<ul> <li>Documentation of primary data, data entry</li> </ul>	assay. This provides verification of average grades.
	procedures, data verification, data storage	57 diamond drillholes were both gamma logged and
	(physical and electronic) protocols.	chemically assayed for validation purposes.
	<ul> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>To test for radioactive disequilibrium 204 samples were sent to either Australian Nuclear Science and</li> </ul>
		Technology Organisation (ANSTO) in Australia or the
		Activation Laboratories (Actlabs) in Canada for

Criteria	JORC Code explanation	Commentary
		equilibrium determinations. Results were compiled and interpreted by D Wilson of 3D Exploration who concluded that a factor of 1.29 needs to be applied to all raw gamma grades to provide the correct U grade. Diamond drillcore assaying confirmed the appropriateness of this factor.  • All drillhole data recorded was uploaded to Aura's online database managed by Reflex Hub. Analyses were forwarded directly from the laboratories to Reflex Hub for incorporation in the database.
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>2011/12 drillhole collars were surveyed by handheld GPS with reported accuracy of +/- 3 metres.</li> <li>All 2017 drillhole collars were surveyed by differential surveying conducted by IRC-Magma to an accuracy of +/- 20 cm in all dimensions.</li> <li>The grid projection used is UTM WGS84 Zone 29N</li> <li>An independent check on topography was provided by satellite data provided by PhotoSat of Vancouver to an accuracy of +/- 20 cm confirming the quality and adequacy of topographic control.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>Drillholes were spaced in different programs at 50m x 50m, 50m x 100m, 100m x 100m or 100m x 200m.</li> <li>In most cases Measured Resources are based on 50m x 50m spaced drillholes, Indicated Resources are based on 100m x 100m spaced holes, and Inferred Resources on !00m x 200m spaced holes.</li> <li>Downhole gamma data was composited into 0.5m intervals.</li> <li>Three 100m x 100m areas were drilled at 12.5m spacing in both N-S &amp; E-W directions for geostatistical purposes and to examine variability. Variography constructed by the resource consultants confirmed that the drill spacings are appropriate for the Resource classifications. Resource classification was done by the independent resource consultants with no input from Aura.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	Three 100m x 100m squares were drilled at 12.5m hole spacing in both N-S and E-W directions to investigate grade anisotropy. This indicated a weak NW-SE trend to the mineralisation. The drilling pattern employed is considered appropriate for the mineralisation orientation.
Sample security	The measures taken to ensure sample security.	<ul> <li>Sample collection was supervised by geologists.</li> <li>Samples were transported as soon as practicable to independent sample preparation facilities.</li> <li>Approx.65% of drillholes were assayed by downhole gamma logging and for these sample security is not relevant.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Resource estimation in 2012 was conducted by Coffey Mining. This was independently reviewed and confirmed by Wardell Armstrong International in 2016. The 2018 resource estimate has been carried out by independent consulting group H&S Consultants Pty Ltd. All of these consulting groups have reviewed and endorsed the sampling, grade estimation and QAQC procedures.

# Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>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.</li> <li>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.</li> </ul>	<ul> <li>The Resource Estimates are based on drilling conducted on 5 mineral exploration permits held 100% by Aura Energy: 562B4 Oum Ferkik, 563B4 Oued El Foule Est, 564B4 Ain Sder, 2365B4 Oued El Foule Sud and 2366B4 Agouyame. Exploitation Permit applications by Tiris Ressources SA, a 100% subsidiary of Aura Energy are current over portions of 3 of these exploration permits. Aura is in the process of divesting 10% of Tiris Ressources SA to the Mauritanian Government as required by the Mining Act.</li> <li>Aura has completed an Environmental and Social Impact Assessment which concluded there are no known issues arising from native title, historical sites, environmental or third-party matters which are likely to materially affect exploitation.</li> </ul>
Exploration done by other parties	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul> <li>Aura is unaware of any prior exploration on these areas.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>The mineralisation is of the calcrete uranium style.         It occurs within Proterozoic rocks of the Reguibat         Craton. The mineralisation is developed within near         surface altered and weathered granites or and         within shallow colluvium lying on granite or adjacent         metasediments.     </li> </ul>
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:         <ul> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>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.</li> </ul>	Specific drillhole data is not relevant to the reporting     of this resource estimation
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	Data aggregation methods are summarised in the Resource Estimate report by H&S Consultants which this table accompanies.
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul> <li>All drillholes on which the resource estimate is based were vertical and approximately perpendicular to the thickness of the mineralisation.</li> </ul>

Criteria	JORC Code explanation	Commentary
Diagrams	<ul> <li>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 drill hole collar locations and appropriate sectional views.</li> </ul>	Refer to the ASX announcement which this table accompanies.
Balanced reporting	<ul> <li>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.</li> </ul>	•
Other substantive exploration data	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.	Metallurgical testwork is ongoing. Information on processing has been reported in ASX announcement: 16 July 2014 "Reguibat Uranium Project Scoping Study Complete.
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Refer to the ASX announcement which this table accompanies.

# Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in the preceding section also apply to this section)

Criteria	JORC Code explanation	Commentary
Database integrity	<ul> <li>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.</li> <li>Data validation procedures used.</li> </ul>	Aura's database was managed by the independent organisation Reflex Hub, based in Perth.  H&SC conducted data validation checks such as comparing assay certificates to database records and a variety of checks for internal inconsistencies such as overlapping intervals, records beyond end of hole depth, unassayed intervals and unrealistic drill hole data.
Site visits	<ul> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	H&SC has not visited the Tiris East deposits due to time and budget constraints. H&SC basis its view of the geological setting and mineralisation on drill hole data, discussions with Aura geologists and on information in technical reports. Representatives of Coffey Mining and Wardell Armstrong International conducted site visits in Aril 2012 and May 2016 respectively.
Geological interpretation	<ul> <li>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> </ul>	The uranium mineralisation generally forms shallow horizontal tabular bodies ranging in thickness from 1 to 12 m hosted in weathered granite and granitic sediments. Differentiation of the weathered granite from granitic sediments is unreliable from AC sample returns. A purely geological model of the Tiris deposits has not been produced.
	<ul> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting continuity both of grade and geology.</li> </ul>	H&SC created a surface representing the base of the estimates in order to limit the extrapolation of grades into volumes that had no data. This is important at Tiris East as there is a general decrease in uranium grades with depth. This surface nominally represents the top of the less-weathered granite, where AC drilling could penetrate no further. The base surface was produced using the locations of the end of the deepest assay from each drill hole. Where drill holes were very close, within around 15 m, the shallower point was removed. The base surface also honoured mapped surface outcrops.
		At the time that the estimates were completed, no topographic survey data were available. The vast majority of the 2017 drill collar locations were surveyed using a Differential Global Positioning System (DGPS). H&SC used the locations of all drill hole collars that had been located with the DGPS to create a wireframe representing the topographic surface. The elevations of all drill holes that had been located using a handheld GPS were then derived from this topographic surface.
		The proportion of the block between the topographic and base surfaces were assigned to the block model and used to weight the reported estimates.
		The interpretation of the mineralisation as flat lying tabular bodies is undisputed. The lateral extents of the mineralisation are poorly defined and additional drilling around the edges of the deposits may indicate that mineralisation is more limited than currently interpreted. Alternative interpretations of the geology are very unlikely to significantly impact estimated resources.
		The continuity of both grade and geology are affected by the extent of weathering of the granitic host. The continuity does not appear to be affected by faulting.
Dimensions	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.	The Mineral Resources reported here occur in four separate areas (Hippolyte North, Hippolyte South, Lazare North and Lazare South) within a SE trending rectangle around 40 km north-south and 12 km eastwest. All mineralisation forms flat lying tabular bodies ranging in thickness from 1 to 12 m.
		The Mineral Resources at Hippolyte North at a cut-off of 100 ppm U3O8 occur in an area 6 km east-west and 5.5 km north-south. This region is comprised of several separate areas that range in plan dimensions from 500

	IOBC Code explanation	
Criteria	JORC Code explanation	Commentary
		m to 1.1 km wide and 500 m to 2.2 km long. The upper limit of the mineralisation occurs at surface and the reported resources reach a maximum depth of 11 m below surface.
		The Mineral Resources at Hippolyte South at a cut-off of 100 ppm U3O8 occur in an area 5.6 km east-west and 5.4 km north-south. This region is comprised of three isolated areas each with a north-south length of around 1.3 km and an east-west length that ranges 400 m to 1.1 km. The upper limit of the mineralisation occurs at surface and the reported resources reach a maximum depth of six metres below surface
		The Mineral Resources at Lazare North at a cut-off of 100 ppm U3O8 occur in an area 4.5 km east-west and 2.4 km north-south. This region is comprised of three isolated areas. The smallest of these areas has an east-west length of 900 m and a north-south length of 550 m. The largest area has an east-west length of 2.2 km m and a north-south length of 1.8 km. The upper limit of the mineralisation occurs at surface and the reported resources reach a maximum depth of 12 m below surface.
		The Mineral Resources at Lazare South at a cut-off of 100 ppm U3O8 occur in an irregular shape with an east-west length of 5.5 km and a north-south length of 2.7 km. The largest area has an east-west length of 2.2 km m and a north-south length of 1.8 km. The upper limit of the mineralisation occurs at surface and the reported resources reach a maximum depth of 10 m below surface.
Estimation and modelling techniques	<ul> <li>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, maximum distance of extrapolation from data points.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of by-products.</li> <li>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining units.</li> <li>Any assumptions about correlation between variables.</li> <li>Description of how the geological interpretation was used to control the resource estimates.</li> <li>Discussion of basis for using or not using grade cutting or capping.</li> <li>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</li> </ul>	The uranium concentrations were estimated by recoverable Multiple Indicator Kriging (MIK) using the GS3 geostatistical software. The uranium grades at the Tiris East deposits exhibit a positively skewed distribution and therefore show reasonable sensitivity to a small number of high grades. MIK is considered an appropriate estimation method for the uranium grade distribution at the Tiris East deposits because it specifically accounts for the changing spatial continuity at different grades through a set of indicators variograms at a range of grade thresholds. It also reduces the need to use the practice of top cutting.  All drill hole intervals were composited to 0.5 m for estimation. The following number of half metre composites were used to estimate the deposits:  • Hippolyte North: 9,920 • Hippolyte South: 1,078 • Lazare North: 1,585 • Lazare South: 6,743  Top-cut values were chosen by assessing the high-end distribution of the grade population within each zone and selecting the value at which the distribution became erratic. Only one composite in Lazar North was top-cut. This interval had a U <sub>3</sub> O <sub>8</sub> grade of 7,937 ppm and was cut to 3,200 ppm.  The four deposits were subdivided into a total of seventeen Subzones for estimation. Conditional statistics were produced for each of the Subzones. All class grades used for estimation of the mineralised domains were derived from the class mean grades.  Only U <sub>3</sub> O <sub>8</sub> was estimated. No assumptions were made regarding the correlation of uranium with any other variable. No deleterious elements or other non-grade variables of economic significance were estimated.
		less-weathered granite was used to limit the extrapolation of grades into volumes that had no data

No assumptions were made regarding the recovery of by-products. To H&SC's knowledge uranium is the only

Criteria	JORC Code explanation	Commentary
		element present in economically significant concentrations.
		The Recoverable MIK technique employed by H&SC in this case requires a set of 14 variogram models, one for each of the fourteen grade bins used. A set of variogram models were created for Subzones of the Hippolyte North, Lazare North and Lazare South deposits. These variogram models were applied to Subzones that did not have sufficient data to generate reliable models.
		The Hippolyte North, Lazar North and Lazar South deposits have areas that have been drilled on a 50x50 m grid whereas the Hippolyte South areas have been drilled on a 100x100 m grid. Separate block models were created for Hippolyte North, Lazar North, Lazar South and for each of the three Zones in Hippolyte South. Nominal downhole sampling interval is 0.5 m. Drill hole grade data were composited to 0.5 m intervals. The block dimensions were 50 x 50 m in plan view and 1 m vertically. The plan dimensions were chosen as it is the nominal drill hole spacing (preferable for MIK estimation). The vertical dimension was chosen to reflect the anisotropy of the mineralisation and the downhole data spacing.
		The minimum selective mining unit size is assumed to be 10x10x0.5 m.
		A three-pass search strategy was used to estimate the $\rm U_3O_8$ grades at each of the deposits. Each pass required a minimum number of samples with data from a minimum number of octants of the search ellipse to be populated. Discretisation was set to $10x10x0.5$ m. The search criteria are shown below. The short first axis of the search ellipse is vertical.
		<ol> <li>1. 5x60x60m search, 16-48 samples, minimum 4 octants</li> <li>2. 1.5x150x150m search, 16-48 samples, minimum 4 octants</li> <li>3. 2.4x240x240m search, 16-48 samples, minimum 4 octants</li> <li>The maximum distance of extrapolation of the reported estimates from drill hole data points is limited to 220 m.</li> </ol>
		The Hippolyte North and Lazar North deposits were estimated by Mr. Mapeto of Coffey Mining in 2011. Lazar South was estimated by Mr. Mapeto in 2012. H&SC has access to these block models and considers that the current Mineral Resource Estimate takes appropriate account of these models. Significant additional drilling has occurred since these estimates were produced so the volume and confidence category have increased. Reasonably large differences exist between the current and previous estimates due to differences in estimation methodologies.
		No check estimates were produced.
		No mining has occurred on the Tiris East deposits so mine production data were unavailable for comparison.
		The final H&SC block model was reviewed visually by H&SC and Aura and it was concluded that the block model fairly represents the grades observed in the drill holes. H&SC also validated the block model statistically using histograms, boxplots scatter plots and summary statistics.
Moisture	<ul> <li>Whether the tonnages are estimated dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>	
Cut-off parameters	<ul> <li>The basis of the adopted cut-off grad or quality parameters applied.</li> </ul>	A cut-off of 100 ppm U <sub>3</sub> O <sub>8</sub> cut off is used to report the resources as it is assumed that ore can be economically mined at this grade in an open pit scenario. This cut-off is considered to be relatively low compared to operating uranium mines, but metallurgical test work indicates that a significant upgrade in uranium and decrease in

Criteria	JORC Code explanation	Commentary
		sulphates can be achieved by a simple grinding and sieving process.
Mining factors or assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It may not always be possible to make assumptions regarding mining methods and parameters when estimating Mineral Resources. Where no assumptions have been made, this should be reported.	All of the resources reported here have been estimated on the assumption that the deposits will be mined by open-pit.
		Recoverable MIK allows for block support correction to account for the change from sample size support to the size of a mining block. This process requires an assumed grade control drill spacing and the assumed size of the Selective Mining Unit (SMU). The variance adjustment factors were estimated from the U <sub>3</sub> O <sub>8</sub> metal variogram models assuming a minimum SMU of 10x10x0.5 metres (east, north, vertical) with high quality grade control sampling on a 10x10x0.5 metre pattern (east, north, vertical).
		The application of the variance adjustments to the resource estimates is expected to provide estimates of recoverable resources without the need to apply additional mining dilution or mining recovery factors. Internal dilution, that is, within the SMU unit is accounted for. If a larger SMU size or a broader grade control drill pattern is implemented the selectivity assumed in the reported resources may not be realised.
Metallurgical factors or assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It may not always be possible to make assumptions regarding metallurgical treatment processes and parameters when reporting Mineral Resources. Where no assumptions have been made, this should be reported.	The metallurgical test work information supplied to H&SC indicates that the Tiris East deposits are amenable to a process of crushing, screening and an alkaline carbonate leach in order to recover uranium. Bench scale test work indicates that a significant upgrade in uranium and decrease in sulphate concentrations can be achieved through screening.
		No penalty elements identified in work so far  No other assumptions have been made.
Environmental factors or assumptions	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 not been considered this should be reported with an explanation of the environmental assumptions made.	Aura has informed H&SC that an Environmental and Social Impact Assessment has been completed which concluded there are no known issues arising from native title, historical sites, environmental or third-party matters which are likely to materially affect exploitation. H&SC therefore assume that there are no known unusual aspects of the Tiris East deposits that may lead to adverse environmental impacts beyond what is expected from a mining operation.  Waste rock and process residue is expected to be disposed of in the areas surrounding the deposits and processing facility.
Bulk density	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.	Dry bulk density of diamond drill core was measured at the ALS facility in Nouakchott using an immersion method (Archimedes principle) on selected PQ diamond drill core intervals ranging in size from 10 to 30 cm. Competent pieces of drill core were selected on a nominal interval of 50 cm. The samples chosen are believed to be representative of the surrounding rock type. All density samples are wrapped in cling film to avoid water absorption. A total of 304 density measurements have been taken from drill core at the Tiris East deposits with values ranging from 1.55 to 2.66 t/m3.
		Measured density values show that there is a reasonable correlation between density and the depth of the sample. A regression was used to assign densities to each block in the block model based on the depth below surface.

Criteria	JORC Code explanation	Commentary
Classification	<ul> <li>The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>Whether appropriate account has been taken of all relevant factors (i.e., relative confidence in tonnage/grade estimations, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</li> <li>Whether the result appropriately reflects the Competent Person's view of the deposit.</li> </ul>	The classification is based on the search pass used to estimate the block. In order to limit small isolated volumes of different classification (spotted dog) the search passes used to populate each block were locally averaged. Pass one nominally equates to Measured Resources, pass two translates to Indicated Resources and Pass three equates to Inferred Resources.  This scheme is considered by H&SC to take appropriate account of all relevant factors, including the relative confidence in tonnage and grade estimates, confidence in the continuity of geology and metal values, and the quality, quantity and distribution of the data.  The classification appropriately reflects the Competent Person's (Arnold van der Heyden) view of the deposit.
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	This Mineral Resource estimate has been reviewed by Aura personnel. The estimation procedure has also been internally reviewed by H&SC. No material issues were identified as a result of these reviews.  No audits have been completed on the Mineral Resource estimates.
Discussion of relative accuracy/ confidence	<ul> <li>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate 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.</li> <li>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.</li> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	The relative accuracy and confidence level in the Mineral Resource estimates are considered to be in line with the generally accepted accuracy and confidence of the nominated JORC Mineral Resource categories. This has been determined on a qualitative, rather than quantitative, basis. The main factor that affects the relative accuracy and confidence of the Mineral Resource estimate is sample data density due to the reasonably high variability in uranium grades.  The estimates are global although the resources classified as Indicated are suitable for long term mine planning studies. It should be noted that the Indicated Resources are based on broadly spaced data and may be locally inaccurate. Closer spaced drilling is necessary prior to detailed mine planning.