**Cautionary Statement: ETANGO-8 PROJECT SCOPING STUDY**

The Scoping Study referred to in this ASX release has been undertaken for the purpose of initial evaluation of a potential 8Mtpa development of the Etango uranium deposit, owned by Bannerman Resources Limited (**Bannerman**). It is a preliminary technical and economic study of the potential viability of a smaller initial-scale configuration of the Etango Project, which has previously been the subject of Definitive Feasibility Study at a larger 20Mtpa development scale. The Scoping Study outcomes, production target and forecast financial information referred to in this release are based on low accuracy level technical and economic assessments that are insufficient to support estimation of Ore Reserves. While each of the modifying factors was considered and applied, there is no certainty of eventual conversion to Ore Reserves or that the production target itself will be realised. Further exploration and evaluation work and appropriate studies are required before Bannerman will be in a position to estimate any Ore Reserves or to provide any assurance of an economic development case. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

Of the Mineral Resources scheduled for extraction in the Scoping Study production plan, approximately 13.7% are classified as Measured, 83.9% as Indicated and 2.4% as Inferred. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised. Inferred Resources comprise less than 2.2% of the production schedule in the first year of operation and an average of less than 2.1% over the first three years of operation. Bannerman confirms that the financial viability of the Etango Project is not dependent on the inclusion of Inferred Resources in the production schedule.

The Mineral Resources underpinning the production target in the Scoping Study have been prepared by a competent person in accordance with the requirements of the JORC Code (2012). The Competent Person's Statement is found in Appendix A of this ASX release. For full details of the Mineral Resources estimate, please refer to Bannerman ASX release dated 11 November 2015, *Outstanding DFS Optimisation Study Results*. Bannerman confirms that it is not aware of any new information or data that materially affects the information included in that release. All material assumptions and technical parameters underpinning the estimates in that ASX release continue to apply and have not materially changed.

This release contains a series of forward-looking statements. Generally, the words "expect," "potential", "intend," "estimate," "will" and similar expressions identify forward-looking statements. By their very nature forward-looking statements are subject to known and unknown risks and uncertainties that may cause our actual results, performance or achievements, to differ materially from those expressed or implied in any of our forward-looking statements, which are not guarantees of future performance. Statements in this release regarding Bannerman's business or proposed business, which are not historical facts, are forward-looking statements that involve risks and uncertainties, such as Mineral Resource estimates, market prices of metals, capital and operating costs, changes in project parameters as plans continue to be evaluated, continued availability of capital and financing and general economic, market or business conditions, and statements that describe Bannerman's future plans, objectives or goals, including words to the effect that Bannerman or management expects a stated condition or result to occur. Forward-looking statements are necessarily based on estimates and assumptions that, while considered reasonable by Bannerman, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies. Since forward-looking statements address future events and conditions, by their very nature, they involve inherent risks and uncertainties. Actual results in each case could differ materially from those currently anticipated in such statements. Investors are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date they are made.

Bannerman has concluded that it has a reasonable basis for providing these forward-looking statements and the forecast financial information included in this ASX release. This includes a reasonable basis to expect that it will be able to fund the development of the Etango Project upon successful delivery of key development milestones and when required. The detailed reasons for these conclusions are outlined throughout this ASX release (including Section 16) and in Appendix B. While Bannerman considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.

To achieve the range of outcomes indicated in the Scoping Study, pre-production funding in excess of A$250M will likely be required. There is no certainty that Bannerman will be able to source that amount of funding when required. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Bannerman's shares. It is also possible that Bannerman could pursue other value realisation strategies such as a sale, partial sale or joint venture of the Etango Project. These could materially reduce Bannerman's proportionate ownership of the Etango Project.

No Ore Reserve has been declared. This ASX release has been prepared in compliance with the current JORC Code (2012) and the ASX Listing Rules. All material assumptions, including sufficient progression of all JORC modifying factors, on which the production target and forecast financial information are based have been included in this ASX release.

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**ASX Announcement**
**5 August 2020**

# ETANGO-8 PROJECT SCOPING STUDY

Bannerman Resources Limited (ASX:BMN, OTCQB:BNNLF, NSX:BMN) (**Bannerman** or **the Company**) is pleased to advise of the completion of a Scoping Study for an 8Mtpa development of its flagship Etango Uranium Project in Namibia (**Etango-8 Project**).

## KEY OUTCOMES

- **Primary outcome of recent scaling evaluation work on Etango; provides an alternate, streamlined development model to the 20Mtpa development assessed to DFS level in 2015**
- **Demonstrates the strong technical and economic viability of conventional open pit mining and heap leach processing of the world class Etango deposit at 8Mtpa throughput**
- **Life-of-mine (LOM) production of 51.1 Mlbs $U_3O_8$ (48.5 – 53.7 Mlbs) with annual average production of 3.5 Mlbs $U_3O_8$ (3.4 – 3.7 Mlbs)**
- **Forecast pre-production capital expenditure of US$254M (US$241 – 267M), delivering an attractive upfront capital intensity of approx. US$71/lb average annual $U_3O_8$ production**
- **Life-of-mine of approx. 14 years (114.1 Mt plant feed at 232 ppm $U_3O_8$)**
- **Average final product cash operating cost (ex-royalties) of US$37/lb $U_3O_8$ (US$36 – 39/lb)**
- **Attractive projected economics at forecast US$65/lb $U_3O_8$ realised price:**
  - **Ungeared, real, post-tax NPV8% of US$212M (US$201 – 223M)**
  - **Post-tax internal rate of return (IRR) of 21.2% (20.1 – 22.3%) and payback of 3.6 years**
  - **Forecast net project cashflow (post-capex, post-tax) of US$604M (US$574 – 634M)**
- **Further upside potential from:**
  - **Future life extension and/or scale-up expansion**
  - **Additional processing efficiency and cost opportunities**
- **Vast body of previous technical work enables fast-tracking of feasibility studies; all resource drilling, geotechnical, metallurgical and environmental work already complete**
- **Heap leach process route has also been comprehensively de-risked via operation of the Etango Heap Leach Demonstration Plant**
- **Bannerman Board has approved commencement of a Pre-Feasibility Study (PFS) with completion targeted for Q2 2021**
- **Long-term scalability of Etango Project (up to 20Mtpa) confirmed by previous definitive level studies; provides strong optionality and leverage to upside-case uranium market**

**Commenting on the Etango-8 Scoping Study results, Bannerman Chief Executive Officer, Brandon Munro, said:**

*"Last year we commenced a review of various project scaling opportunities that might exist for the Etango Project. This Etango-8 Scoping Study represents the successful culmination of that work.*

*"Developing the world-class Etango Project at an initial 8Mtpa throughput offers significant advantages. It sharply reduces the upfront capital and funding hurdle compared to that associated with the original 20Mtpa Etango development evaluated in the DFS in 2012, and the DFS Optimisation Study in 2015. It also enables us to predominantly mine shallower, higher-grade ore, which significantly reduces stripping and lifts the average feed grade to the processing facility. The combined result is that the upfront capital intensity of the Etango Project per pound of annual production capacity has fallen materially whilst maintaining robust project economics.*

*"The Etango-8 Project is expected to deliver over 3.5Mlbs $U_3O_8$ per annum over an initial operating life of more than 14 years. This may be a reduced scale compared with the original Etango, but it is still a world-class uranium project and amongst the largest development projects in the sector. With a post-tax IRR north of 20%, the Etango-8 Project delivers attractive projected investment returns on a lower initial capital, funding and development risk profile.*

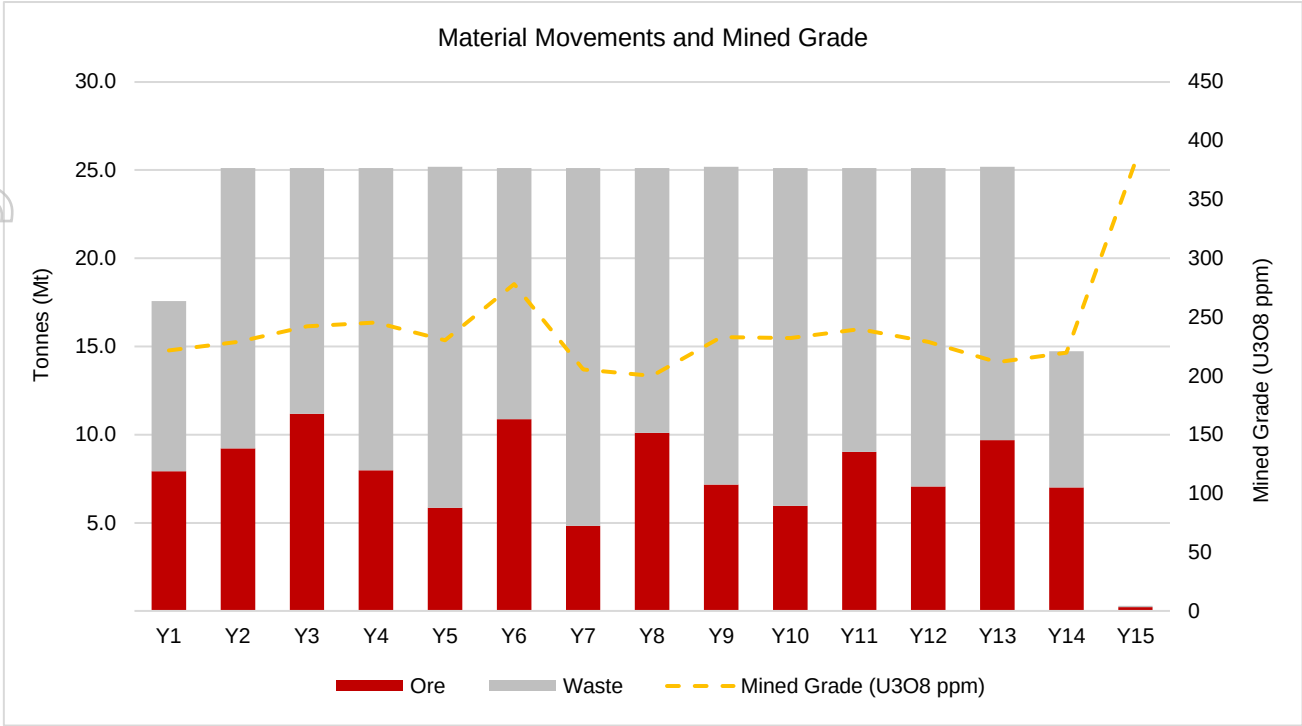
*"Importantly, while the Etango-8 Project provides a reduced scale of production entry, it does so without removing the option of subsequent expansion, including to the originally envisaged 20Mtpa Etango scale. In short, the scalability of the world class Etango resource remains robust even with a more modular approach to development of the project.*

*"We are now proceeding to undertake a PFS on the Etango-8 Project. This process will benefit significantly from the fact that the Etango Project has already been the subject of a definitive level of feasibility study, at a larger scale, in recent years. As a result, we are targeting completion of a comprehensive PFS in Q2 2021."*

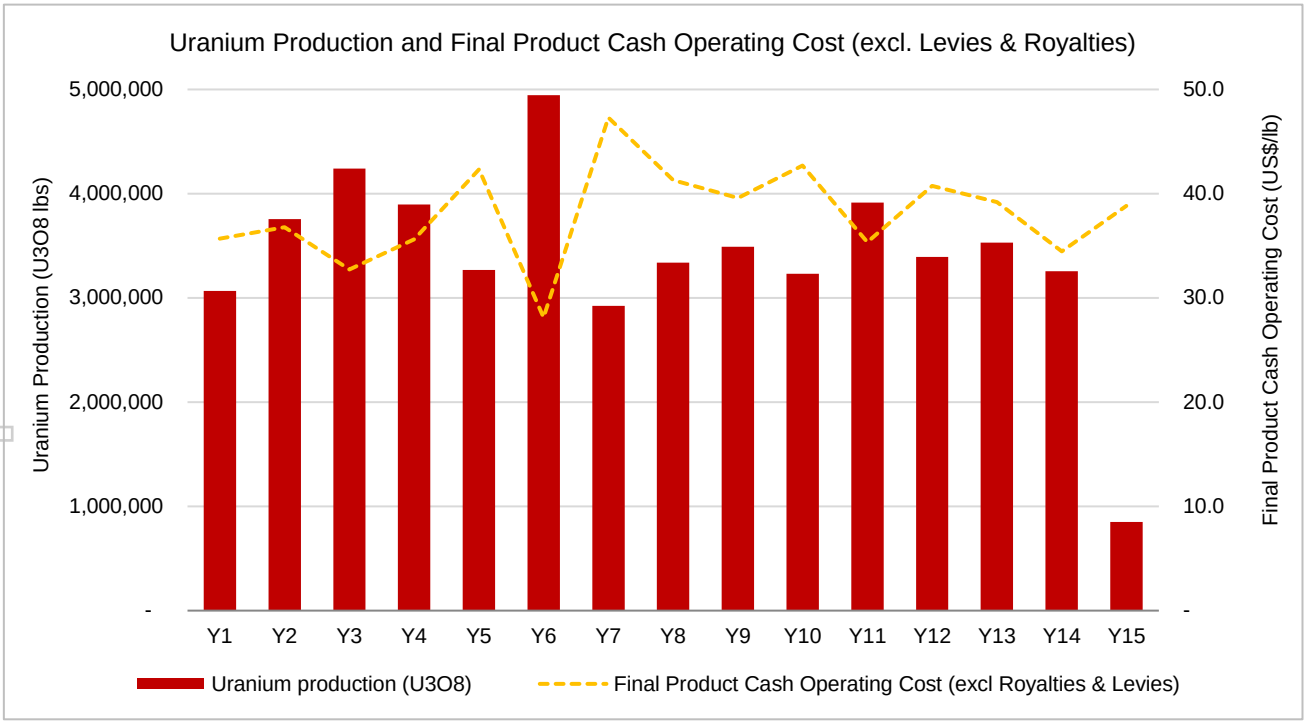
## Etango-8 Project: Key Physical Parameters (100% basis)

| Key physical parameters | Unit | Total / LOM | Annual average |
|---|---|---|---|
| **Operations** | | | |
| Construction period | months | 24 | NA |
| Initial production life | years | 14.4 | NA |
| **Mining** | | | |
| Ore mined | Mt | 114.1 | 7.9 |
| Strip ratio | x | 1.93 | 1.93 |
| Waste mined | Mt | 220.0 | 15.3 |
| **Processing** | | | |
| Ore processed | Mt | 114.1 | 7.9 |
| Average uranium head grade | ppm U3O8 | 232 | 232 |
| Forecast uranium recovery | % | 87.8% | 87.8% |
| **Output** | | | |
| **Uranium production** | **Mlbs U3O8** | **48.5 – 53.7** | **3.4 – 3.7** |

## *Forecast mine schedule for Etango-8 Project*




## *Forecast LOM production and final product cash operating cost (ex-royalties) for Etango-8 Project*



# Etango-8 Project: Key Economic Outcomes (100% basis)

| Key financial outcomes | Unit | | Total |
|---|---|---|---|
| **Price inputs** | | | |
| LOM average uranium price | US$/lb $U_3O_8$ | - | 65 |
| US$/N$ | N$ | - | 16 |
| **Valuation, returns and key ratios** | | **Range** | **Mid point** |
| **NPV8% (post-tax, real basis, ungeared)** | **US$M** | **201 - 223** | **212** |
| NPV8% (pre-tax, real basis, ungeared) | US$M | 354 - 392 | 373 |
| **IRR (post-tax, real basis, ungeared)** | **%** | **20.1 - 22.2** | **21.2** |
| IRR (pre-tax, real basis, ungeared) | % | 25.5 - 28.1 | 26.8 |
| **Payback period (post-tax, from first production)** | **years** | **3.4 - 3.8** | **3.6** |
| Payback period (pre-tax, from first production) | years | 3.2 - 3.6 | 3.4 |
| Pre-tax NPV / Pre-production capex | x | 1.4 - 1.5 | 1.5 |
| Pre-production capital intensity | US$/lb $U_3O_8$ pa capacity | 67 - 75 | 71 |
| **Cashflow summary** | | **Range** | **Mid point** |
| **Sales revenue (gross)** | **US$M** | **3,154 - 3,486** | **3,320** |
| Mining opex | US$M | (813 - 899) | (856) |
| Processing opex | US$M | (816 - 902) | (859) |
| G&A opex | US$M | (134 - 150) | (143) |
| Product transport, port, freight, conversion | US$M | (53 - 59) | (56) |
| Royalties and export levies | US$M | (139 - 153) | (146) |
| **Project operating surplus** | **US$M** | **1,197 - 1,323** | **1,260** |
| Pre-production capital expenditure | US$M | (241 - 267) | (254) |
| LOM sustaining capital expenditure | US$M | (29 - 33) | (31) |
| **Project net cashflow (pre-tax)** | **US$M** | **926 - 1,024** | **975** |
| Tax paid | US$M | (352 - 390) | (371) |
| **Project net cashflow (post-tax)** | **US$M** | **574 - 634** | **604** |
| **Unit cash operating costs** | | **Range** | **Mid Point** |
| Mining | US$/t material mined | - | 2.56 |
| Mining | US$/lb $U_3O_8$ | - | 16.8 |
| Processing | US$/t ore | - | 7.53 |
| Processing | US$/lb $U_3O_8$ | - | 16.8 |
| G&A | US$/lb $U_3O_8$ | - | 2.8 |
| Product transport, port, freight, conversion | US$/lb $U_3O_8$ | - | 1.1 |
| **Total cash operating cost (ex-royalties/levies)** | **US$/lb $U_3O_8$** | **35.5 - 39.3** | **37.4** |
| Royalties and export levies | US$/lb $U_3O_8$ | 2.8 - 3.0 | 2.9 |
| Total cash operating cost | US$/lb $U_3O_8$ | 38.3 - 42.3 | 40.3 |
| **All-in-sustaining-cost (AISC)** | **US$/lb $U_3O_8$** | **38.9 - 42.9** | **40.9** |

**This ASX release was authorised on behalf of the Bannerman Board by:**

Brandon Munro, Chief Executive Officer

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## ABOUT BANNERMAN

Bannerman Resources Limited (**Bannerman**) is an Australian and Namibian listed uranium development company. Its flagship asset is the world-class Etango Uranium Project located in the Erongo Region of Namibia (**Etango**).

Etango has benefited from extensive exploration and feasibility activity over the past 15 years. The Etango tenements possess a globally large-scale uranium mineral resource* of 271 Mlbs $U_3O_8$ (14.4 Mlbs Measured, 150.2 Mlbs Indicated and 106.1 Mlbs Inferred) inclusive of the Ondjamba and Hyena satellite deposits. A 20Mtpa development at Etango was the subject of a Definitive Feasibility Study (**DFS**) completed in 2012 and a DFS Optimisation Study completed in 2015. Bannerman has also constructed and operated a Heap Leach Demonstration Plant at Etango, which has heavily de-risked the acid leach process to be utilised on the Etango material.

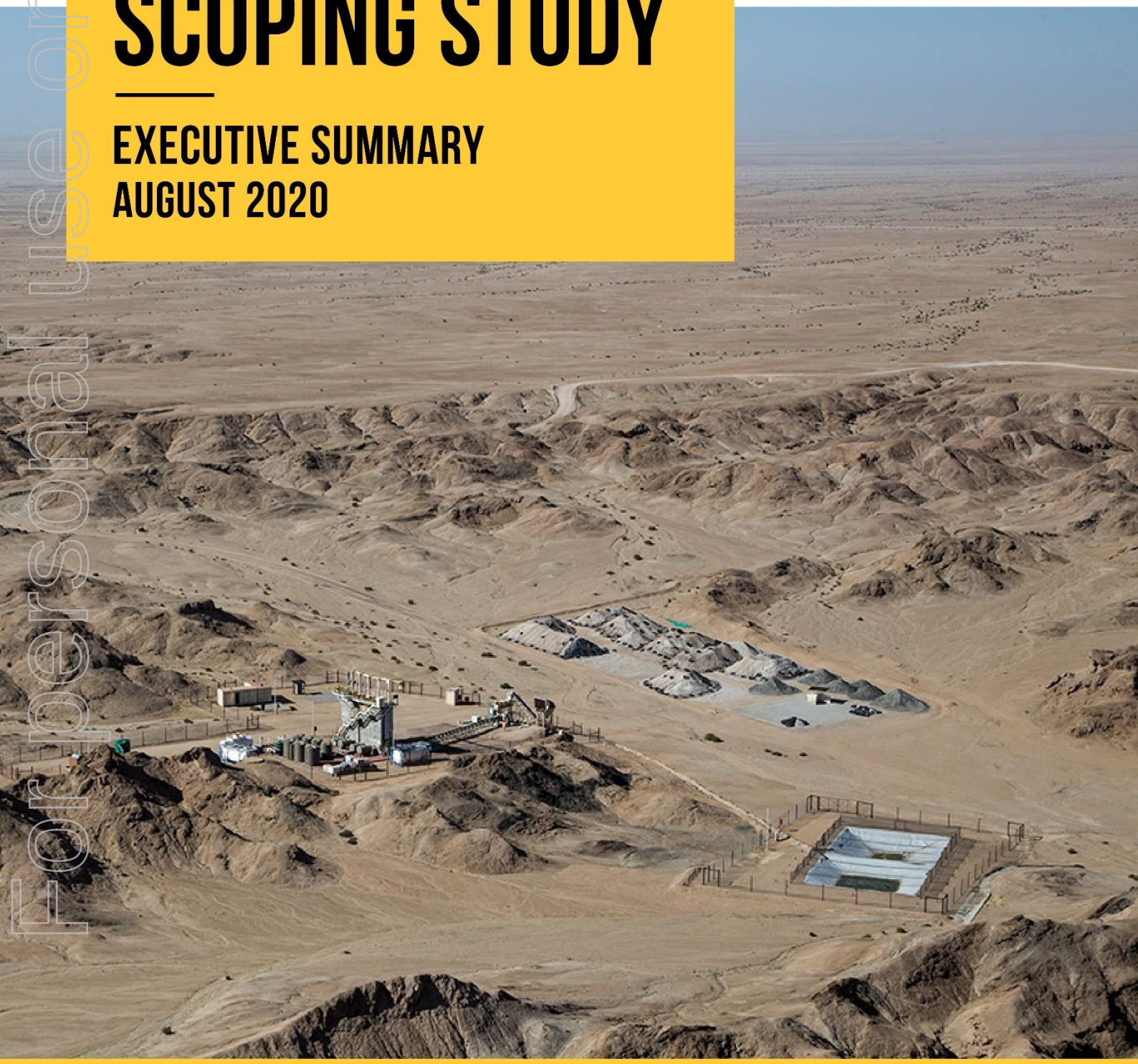
In August 2020, Bannerman completed a Scoping Study on an 8Mtpa development of Etango (**Etango-8 Project**). The Scoping Study has demonstrated that this accelerated, streamlined project is strongly amenable to development – both technically and economically. A Pre-Feasibility Study on the Etango-8 Project is underway with targeted completion during 2Q 2021.

* For full details of the Mineral Resources estimate, please refer to Bannerman ASX release dated 11 November 2015, *Outstanding DFS Optimisation Study Results*. Bannerman confirms that it is not aware of any new information or data that materially affects the information included in that release. All material assumptions and technical parameters underpinning the estimates in that ASX release continue to apply and have not materially changed.

BANNERMAN RESOURCES

# ETANGO-8 PROJECT SCOPING STUDY

## EXECUTIVE SUMMARY
## AUGUST 2020



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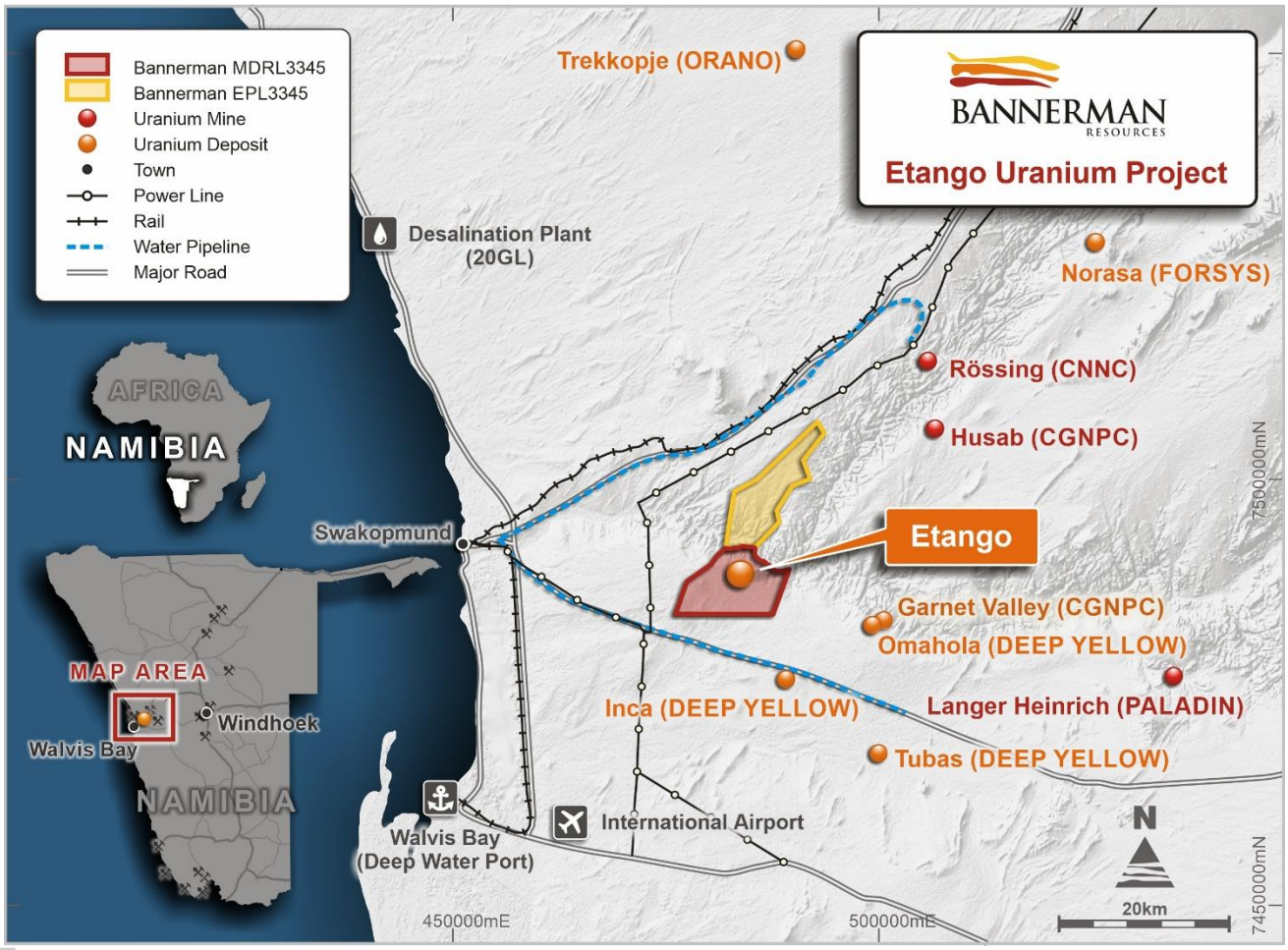
# 1. Project overview and study introduction

The Etango Uranium Project (**Etango Project**) is located in the Erongo Region of Namibia, approximately 30 kilometres to the east-south-east of Swakopmund. It is positioned within a highly established uranium mining jurisdiction, where the mining and export of uranium via the Walvis Bay deep-sea port facility has been ongoing for over 40 years. The Etango Project is owned by Bannerman Resources Limited, through its 95% owned subsidiary Bannerman Mining Resources Namibia (Pty) Ltd.

Figure 1 shows the location of the Etango Project in relation to surrounding uranium mines and projects, and the towns of Swakopmund and Walvis Bay.

***Figure 1: Location of the Etango Project***




Planned development of the Etango Project involves bulk open pit mining of a large, relatively homogenous uranium deposit followed by crushing, acid heap leaching, Ion Exchange (**IX**) with Nano Filtration (**NF**), and uranium recovery into yellowcake product ($U_3O_8$).

In April 2012, Bannerman Mining Resources Namibia (Pty) Ltd (**Bannerman**) completed a Definitive Feasibility Study (**DFS 2012**) for the Etango Project. The DFS was based on a 20Mtpa mine and heap leach process throughput. Mine planning, engineering design and capital and operating cost estimation was undertaken to an accuracy of ±15%.

In March 2015, Bannerman commissioned an industrial scale plant to demonstrate the heap leach configuration and assumptions. The results of the trials demonstrated strong support for the DFS 2012 metallurgical parameters.

In November 2015, Bannerman completed a DFS Optimisation Study (**OS 2015**). The OS 2015 saw a pre-production capital cost estimate of US$793M for average life-of-mine (**LOM**) production of 7.2 Mlbs $U_3O_8$ per annum at a LOM average C1 cash cost of US$38/lb.

In 2019, Bannerman commenced an evaluation of various project scaling and scope opportunities under a range of potential development parameters and market conditions. Indicative outcomes of this work highlighted strong potential for a scaled-down initial development of the Etango Project. As a result, Bannerman commenced work on a Scoping Study into such a development.

This Scoping Study provides an early stage assessment of the technical and commercial viability for development of the Etango Project at an 8Mtpa throughput rate (**Etango-8 Project**). Importantly, much of this Scoping Study evaluation is heavily informed by the detailed study work undertaken across all relevant disciplines as part of the DFS 2012 and OS 2015. This Scoping Study development also, critically, maintains the real option of modular expansion, up to potentially the 20Mtpa scale envisaged by the DFS 2012 and OS 2015.

## 2. Study team

The Scoping Study team was led and managed by Bannerman personnel.

Key external contributors and consultants involved in the preparation of the Scoping Study included:

| | |
|---|---|
| **Qubeka Mining Consultants** | Geology review, pit inventory estimates, mine planning and financial analysis |
| **DRA-SENET** | Process plant design and related infrastructure, plant capital cost estimate |
| **A. Speiser Environmental Consultants** | Environmental and social impacts and management |
| **Genis Business Consulting** | External infrastructure |
| **Nuclear Fuel Associates LLC** | Uranium marketing and advisory |
| **Fivemark Partners** | Commercial and strategic advisory |

## 3. Tenement status

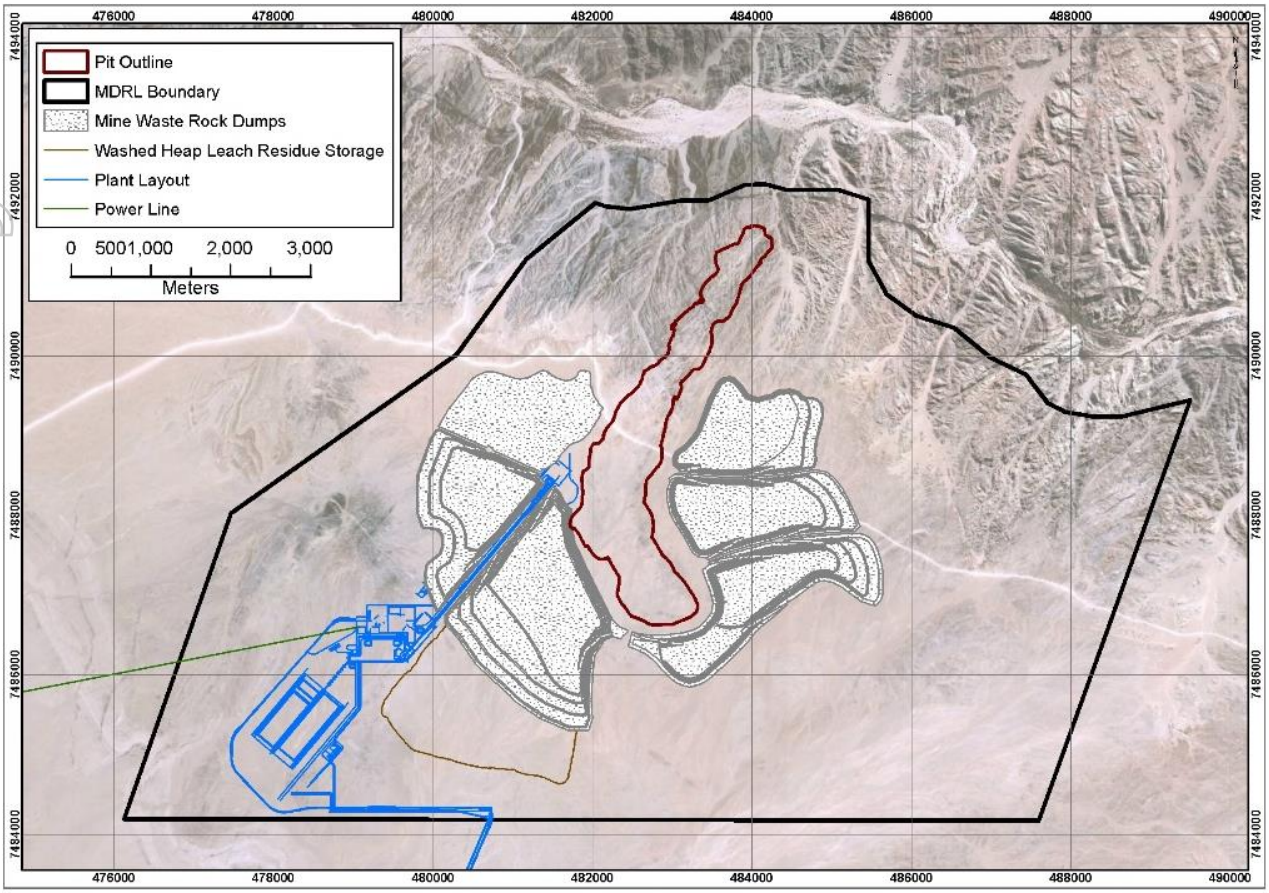
The Etango Project is located on Mineral Deposit Retention Licence 3345 (**MDRL 3345**), which is owned by the Namibian company, Bannerman Mining Resources (Namibia) (Pty) Ltd (**Bannerman**).

Australian Securities Exchange listed Bannerman Resources Limited owns 95% of Bannerman with the residual 5% owned by the One Economy Foundation, a Namibian not-for-profit organisation.

MDRL 3345 provides strong and exclusive rights to tenure and the right (without obligation) to continue with exploration or development work. It has a five-year extendable term and was granted on 7 August 2017, with an initial expiry date of 6 August 2022. The licence covers an area of 7,295 hectares.

Figure 2 below shows the boundary of MDRL 3345.

*Figure 2: MDRL 3345 boundary with planned Etango development (DFS 2012)*




Bannerman's Exclusive Prospecting Licence 3345 (**EPL 3345**) is adjacent to MDRL 3345 (as shown in Figure 1) and expires in April 2021.

# 4. Geology and Mineral Resource estimate

## 4.1 Local geology

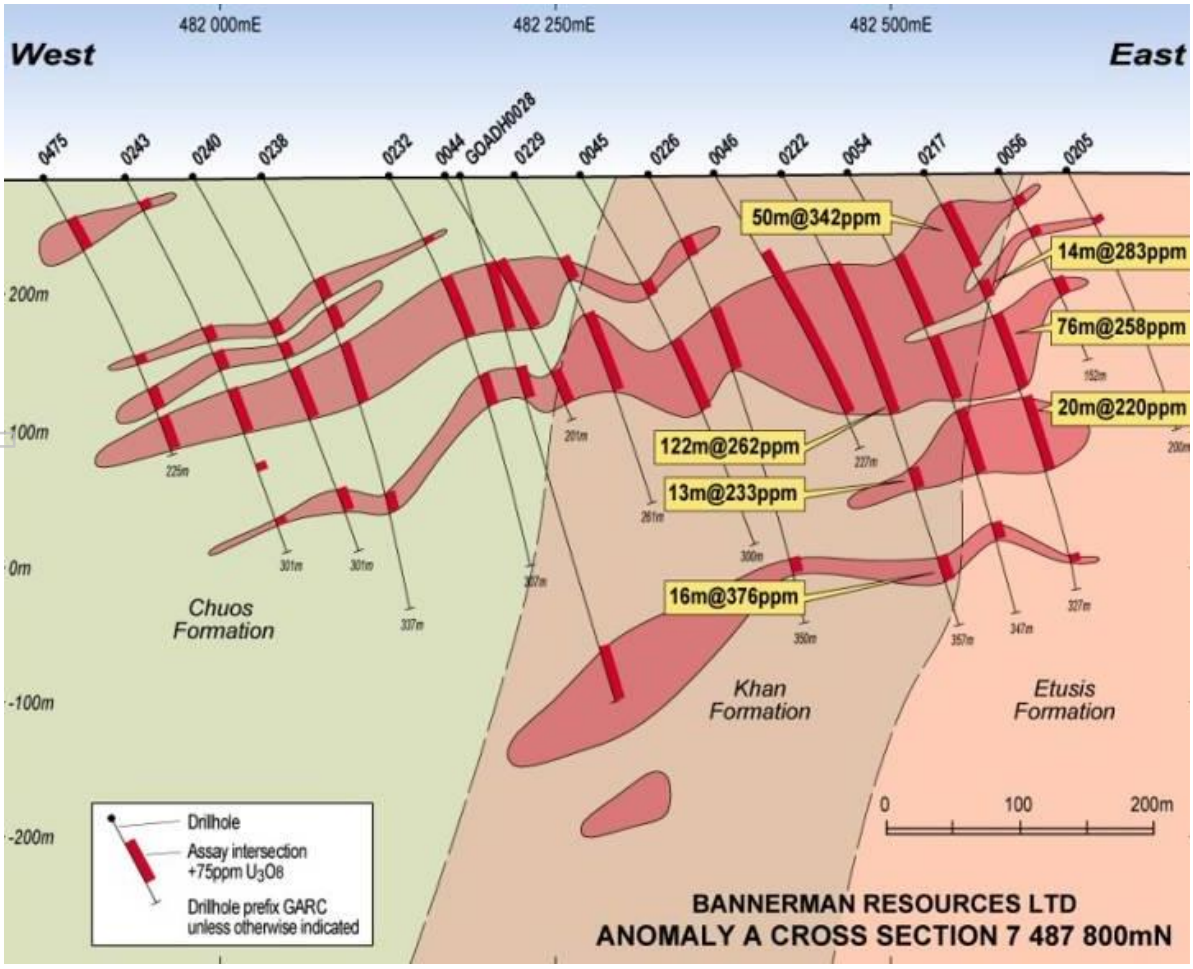
Uranium mineralisation at the Etango Project is predominantly hosted by a stacked sequence of leucogranitic bodies (generally referred to as alaskite) that have intruded the host Damara Sequence of metasedimentary rocks on the western flank of the Palmenhorst Dome. The main mineralised bodies are associated with the Khan Formation and the lower part of the Chuos Formation (as shown in Figure 3) but also occur within 400 metres of the contact between the Etusis and Khan Formations (Mouillac et al, 1986). Uranium mineralisation at Etango is defined within an approximately +5km long zone trending south-east to north-east that dips moderately (30° to 50°) to the west (see Figure 4).

The dominant primary uranium mineral at Etango is uraninite ($UO_2$), with minor primary uranothorite ($(Th,U)SiO_4$) as well as some uranium in solid solution in thorite ($ThO_2$). Minor uranium is also present in the minerals monazite, xenotime and zircon, either as minute inclusions or in crystal lattice substitution. Secondary uranium-bearing minerals observed include coffinite and betauraniphane (both uranium silicate minerals).

Approximately 90% of logged mineralised intervals (>50 ppm $U_3O_8$) at the Etango Project occur within alaskite (Alaskite Dominant (**AD**)), however not all of the alaskite is mineralised, with only about 60% mineralised in total. Minor uranium mineralisation is also found in the metasedimentary sequences (Alaskite Sub-Dominant (**ASD**)) close to the alaskite contacts, almost certainly from metasomatic alteration and in minor thin alaskite stringers within the metasediments.

*Figure 3: Outcrop of uranium-bearing alaskite*


*Figure 4: Selected cross section of Etango mineralisation*

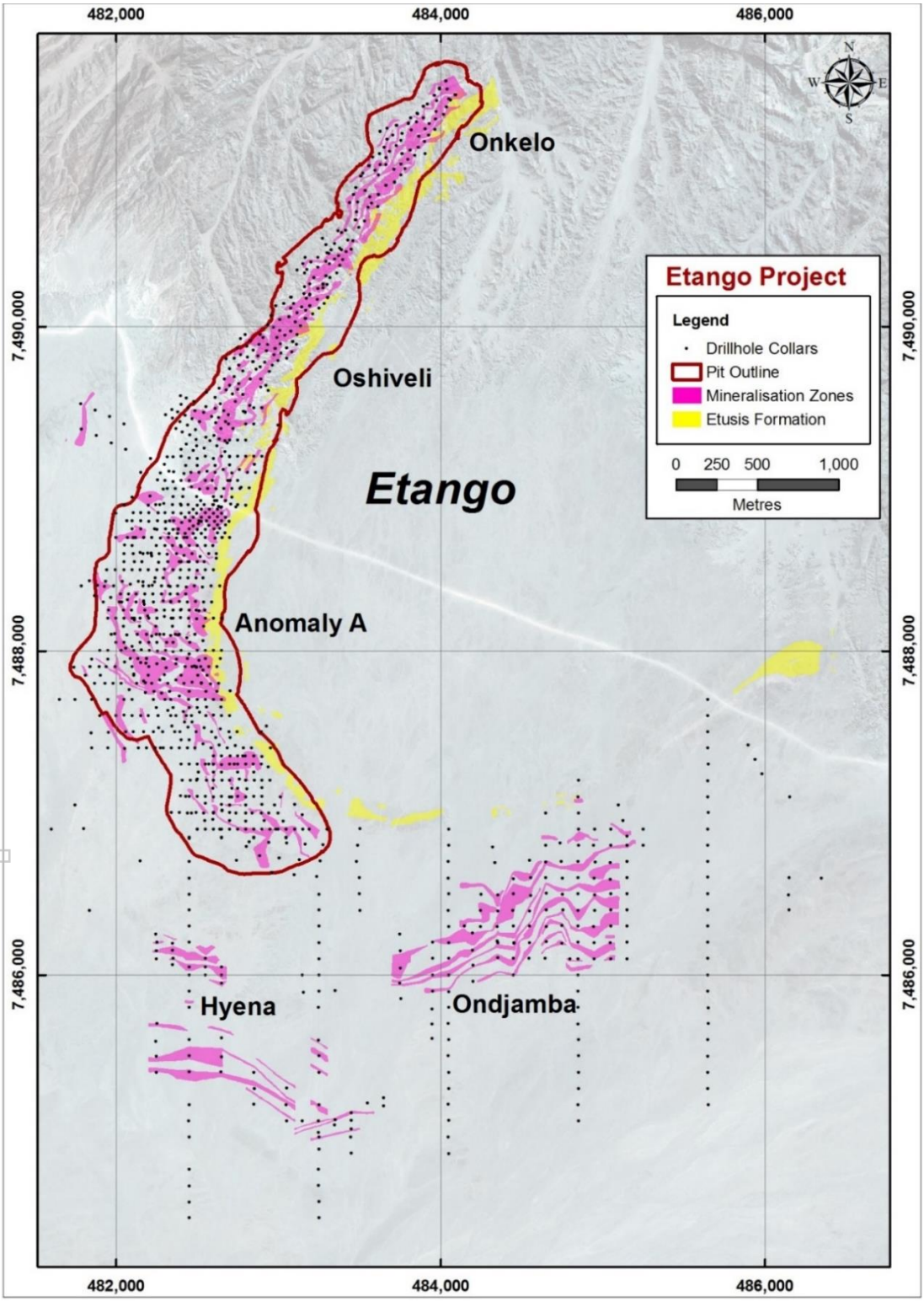


## 4.2 Mineral Resource

During 2015, and as part of the OS 2015, Bannerman completed an update of the Mineral Resource for the Etango Project, as released to the ASX on 11 November 2015 (**2015 Etango Mineral Resource**). This included review of the previously reported DFS 2012 Mineral Resource model (completed in October 2010 by Coffey Mining) and several in-house resource estimates generated using Ordinary Kriging and Multiple Indicator Kriging techniques.

The 2015 Etango Mineral Resource estimate was used for this Scoping Study.

***Figure 5: Plan view of drill holes used in the 2015 Etango Mineral Resource estimate***



The Etango drill hole database compiled by Bannerman consists of 939 drill holes for 239,032 metres. The database can be further broken down into diamond drilling (105 holes) and reverse circulation drilling (834 holes). A plan view of the drill hole locations is presented in Figure 5.

The Etango block model was created with the parent block dimensions of 25 m E by 25 m N by 8 m RL, which were selected on the basis of the average drill spacing across the deposit. The block model was sub-celled down to 6.25 m E by 12.5 m N by 4 m RL (the Selective Mining Unit (**SMU**) size) to ensure adequate volume resolution of the mineralised domains.

Grade estimation for Etango was completed using Ordinary Krigging within the defined indicator mineralisation shells for all mineralisation domains. Grade estimation for the AD mineralisation was carried out using Isatis by International Resource Solutions Pty Ltd (**IRS**), and for the ASD mineralisation using Datamine Studio 3 by Optiro. In order to calculate the recoverable resources for Etango, Uniform Conditioning was applied (in Isatis for the AD mineralisation, and using an Optiro in-house software package in Datamine Studio 3 for the ASD mineralisation).

The 2015 Etango Mineral Resource estimate, as reported, is presented in Table 1.

***Table 1: 2015 Etango Mineral Resource estimate***

| Etango Project Mineral Resource Estimate (2015) | | | |
|---|---|---|---|
| **Resource Category** | **Tonnes (Mt)** | **Grade ($U_3O_8$ ppm)** | **Contained $U_3O_8$ (Mlb)** |
| **Reported at a cut-off grade of 55 ppm $U_3O_8$, constrained within the resource pit shell** | | | |
| Measured | 33.7 | 194 | 14.4 |
| Indicated | 362 | 188 | 150.2 |
| Inferred | 144.5 | 196 | 62.5 |
| **Total** | **540** | **191** | **227** |

The Mineral Resource has been classified into Measured, Indicated and Inferred categories on the basis of geological and grade continuity, drillhole spacing and estimation quality. The Measured category was applied to blocks which were informed either in pass one or two, where the drill spacing as 25m x 25m x50m, and where the slope of regression statistic was generally greater than 0.9. The Indicated category was applied to blocks estimated in the first or second pass, where the drill spacing was nominally 50m x 50m or 100m x 100m, where the grade tenor was moderately consistent and where the slope of regression was between 0.3 and 0.9. Any material which did not meet the criteria for Measured or Indicated was allocated to the Inferred category, apart from extrapolated or laterally-extensive mineralisation which was set to potential using a number of “unclassify” solids.

The 2015 Etango Mineral Resource estimate, initiated by IRS and completed by Optiro with the assistance of Bannerman, closely reflects the proposed grade control and mining approach, which is gamma probing of relatively widely spaced blastholes supplemented by a truck scanning station. This approach has been shown to be highly effective at two of the world’s major open pit uranium deposits (Rössing in Namibia and Ranger in Australia).

The use of a recoverable resource post-processing technique reflects best practice for uranium mineralisation and closely matches the recovery from a truck scanning operation as planned at Etango. No further drilling was done since reporting the updated Mineral Resource estimate on 11 November 2015 and the underlying assumptions remain valid.

This Scoping Study adopts a mill-limiting cut-off grade of 100ppm $U_3O_8$ to determine the economic limits of the pit.

For full details of the 2015 Etango Mineral Resource estimate, please refer to Bannerman ASX release dated 11 November 2015, *Outstanding DFS Optimisation Study Results*. Bannerman confirms that it is not aware of any new information or data that materially affects the information included in that release.

All material assumptions and technical parameters underpinning the resource estimate continue to apply and have not materially changed.

# 5. Mining studies

## 5.1 Pit optimisation

The Scoping Study pit optimisations were carried out by Qubeka Mining Consultants (**Qubeka**) using the Whittle Four-X (**Whittle**) pit optimisation software. The Whittle software package, utilising the Lerchs Grossman algorithm, is considered to be leading practice and is widely used in the mining industry for open pit optimisation.

By inspection of the incremental pit shells and resultant financial metrics, the ultimate pit shell and the mining sequence is determined, which in turn guides individual stage or pushback designs. These intermediate mining stages allow the pit to be developed in a practical and incremental manner, while at the same time targeting the highest value ore, and deferring waste stripping.

Table 2 lists the parameters used for the pit optimisation work and the analysis of the optimisation results.

***Table 2: Key pit optimisation inputs***

| Item | Unit | Parameter |
|---|---|---|
| Mill throughput | Mtpa | 8 |
| Uranium price | US$/lb | 65 |
| Royalty | % | 3 |
| Export levy | % | 0.25 |
| Royalty (3rd Party) | % | 1.17 |
| Transport, shipping, marketing and sales | US$/lb | 1.10 |
| Processing costs | US$/t ore | 7.53 |
| Average mining cost (contractor only) | US$/t material | 2.48 |
| Total owner's cost | US$/t ore | 1.21 |
| Processing overall recovery | % | 87.80 |
| Mining dilution | % | 0 (dilution in model)[1] |
| Mining recovery | % | 100 (recovery in model)[1] |
| Overall pit wall slope angle | degrees | 43 - 48 |

1: The process of creating the grade shells used for estimating the panel grades of the resource model incorporated dilution into the grade shells by applying a below economic cut-off grade and relatively low probability of 0.4. As a haul truck load will effectively be the SMU of the grade control process by employing radiometric truck scanning, dilution and mining loss has been incorporated by the larger block size.

## 5.2 Mining method and schedule

Under the Scoping Study parameters, the Etango deposit is planned to be mined as a conventional truck and shovel open pit operation via contract mining. Annual throughput is 8Mtpa ROM ore feed to the processing plant at a LOM average stripping ratio of 1.93.

Radiometric truck scanning (discrimination) will be employed as the definitive grade control process, as is common practice in large scale open pit uranium mines in Australia and Namibia. This means that the SMU in the mining process will be a single truck load.

The mine schedule employs a variable cut-off grade approach to maximise Net Present Value (**NPV**). In accordance with this approach, the cut-off grade is flexed during the mine schedule to maximise metal production as early as possible.

The mine plan and schedule support average annual production of 3.55Mlb $U_3O_8$ over an initial mine life of 14.4 years. A summary of the mine schedule and LOM production profile are presented in Table 3.

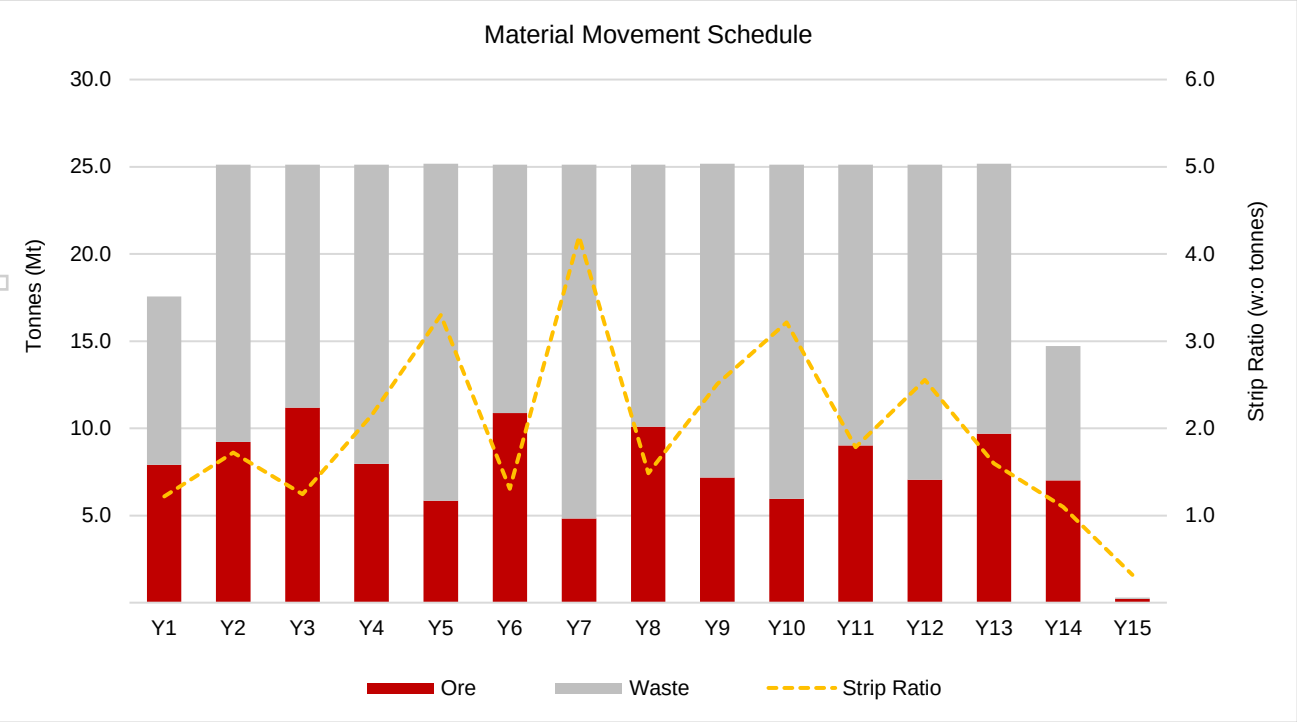
***Table 3: Mine schedule and production targets***

| Mining | | Total | Yr. 1 | Yr. 2 | Yr. 3 | Yr. 4 | Yr. 5 | Yr.6 | Yr. 7 | Yr. 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ore | Mt | **114.11** | 7.92 | 9.23 | 11.19 | 7.97 | 5.86 | 10.88 | 4.83 | 10.10 |
| Waste | Mt | **220.0** | 9.65 | 15.88 | 13.92 | 17.14 | 19.32 | 14.23 | 20.28 | 15.02 |
| Total Mined | Mt | **334.1** | 17.57 | 25.11 | 25.11 | 25.11 | 25.18 | 25.11 | 25.11 | 25.11 |
| Grade | ppm | **232** | 222 | 229 | 242 | 245 | 230 | 278 | 206 | 200 |
| Strip Ratio | Ratio | **1.93** | 1.22 | 1.72 | 1.24 | 2.15 | 3.30 | 1.31 | 4.20 | 1.49 |
| Metal $U_3O_8$ | Mlbs | **51.08** | 3.06 | 3.76 | 4.24 | 3.89 | 3.27 | 4.94 | 2.92 | 3.34 |

| Mining | | Yr. 9 | Yr. 10 | Yr. 11 | Yr. 12 | Yr. 13 | Yr.14 | Yr. 15 |
|---|---|---|---|---|---|---|---|---|
| Ore | Mt | 7.17 | 5.96 | 9.02 | 7.06 | 9.69 | 7.02 | 0.23 |
| Waste | Mt | 18.01 | 19.15 | 16.10 | 18.05 | 15.49 | 7.71 | 0.07 |
| Total Mined | Mt | 25.18 | 25.11 | 25.11 | 25.11 | 25.18 | 14.73 | 0.30 |
| Grade | ppm | 233 | 232 | 240 | 229 | 212 | 220 | 382 |
| Strip Ratio | Ratio | 2.51 | 3.21 | 1.79 | 2.56 | 1.60 | 1.10 | 0.32 |
| Metal U3O8 | Mlbs | 3.49 | 3.23 | 3.91 | 3.39 | 3.53 | 3.26 | 0.85 |

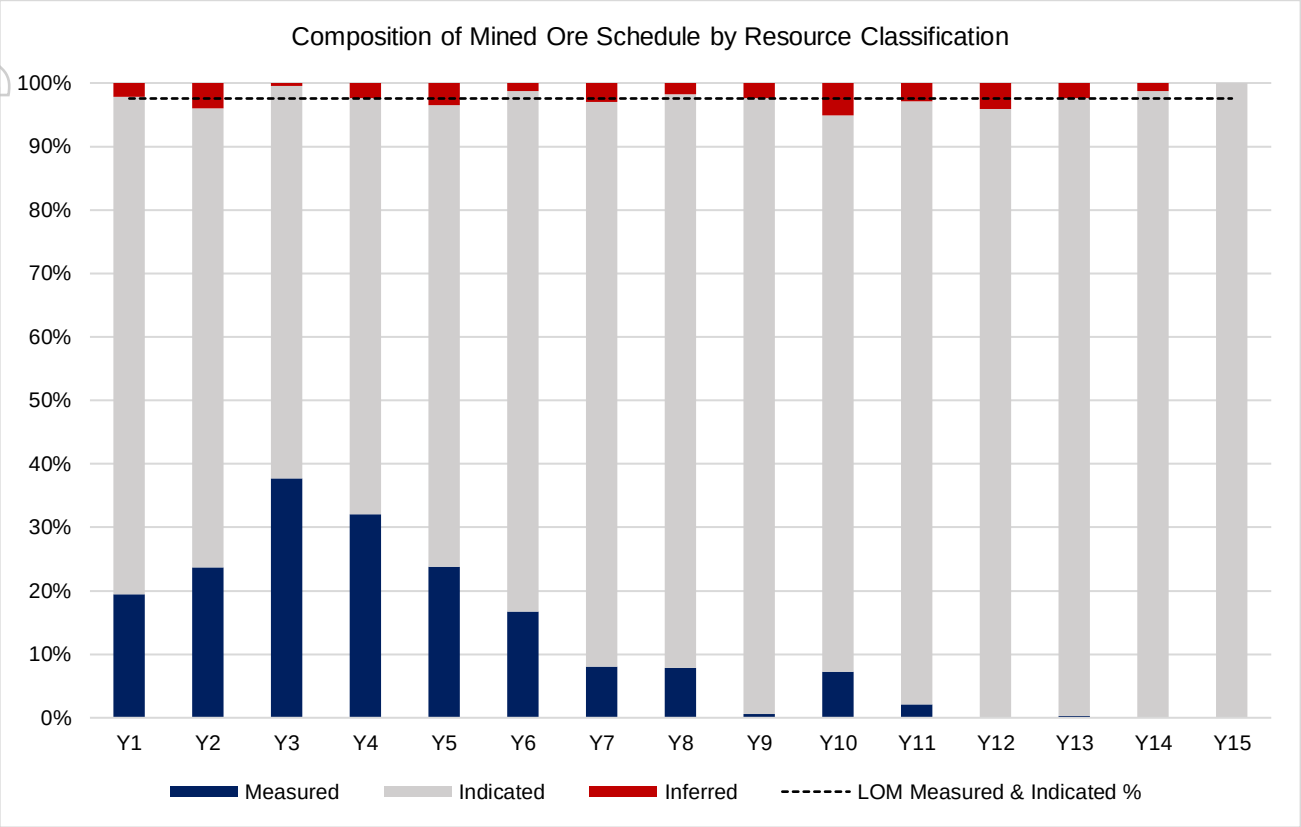
Respective material movements and average annual mine grades are presented in Figure 6. An initial ramp-up period of 12 months has been incorporated for the processing plant to attain nameplate capacity of 8Mtpa. A strategic ROM ore stockpile will be used to manage tonnage and grade of the ore feed to the processing plant.

***Figure 6: Life-of-mine profile for waste and ore material movements***



Critically, the Scoping Study mine schedule still delivers real optionality for potential future phases of expansion, including right up to the 20Mtpa production rate and scheduled pit pushbacks envisaged by the OS 2015.

***Figure 7: Etango-8 Project mine schedule by resource classification***

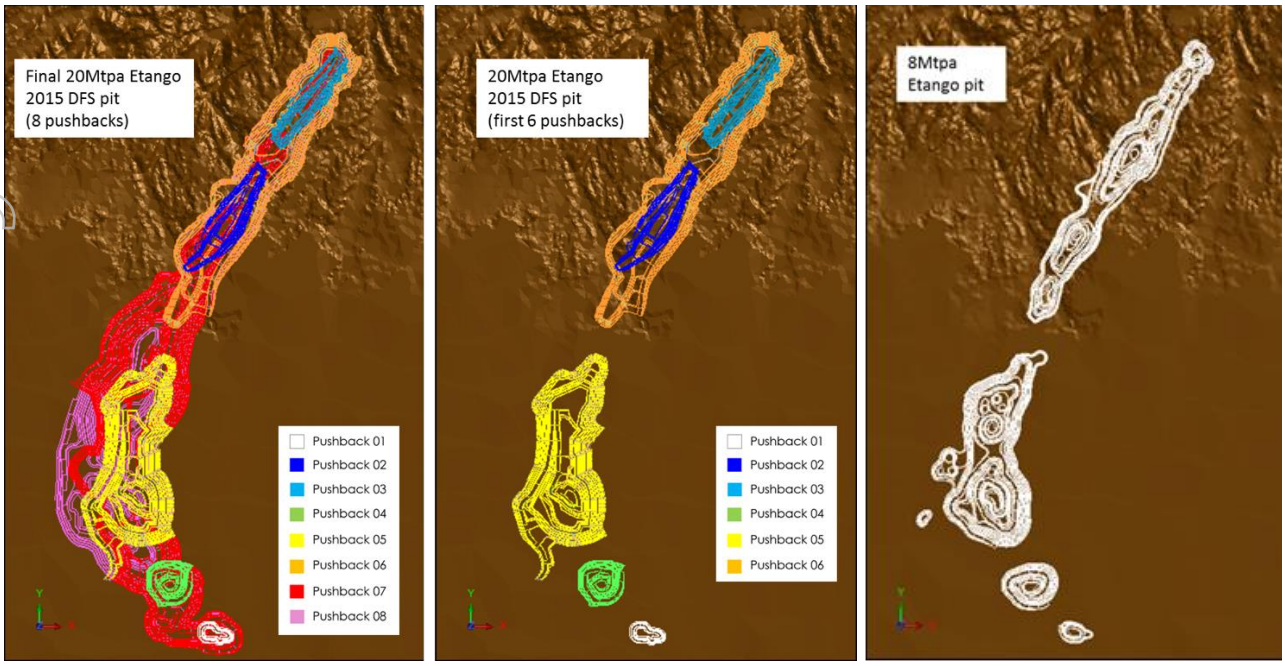



Of the Mineral Resources scheduled for extraction in the Scoping Study production plan, approximately 13.7% are classified as Measured, 83.9% as Indicated and 2.4% as Inferred (see Figure 7). There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised. Inferred Resources comprise less than 2.2% of the production schedule in the first year of operation and an average of less than 2.1% over the first three years of operation. Bannerman confirms that the financial viability of the Etango Project is not dependent on the inclusion of Inferred Resources in the production schedule.

Figure 8 provides the comparison between the final 20Mtpa Etango pit as defined in the OS 2015, the first 6 pushbacks of the 20Mtpa Etango pit from the OS 2015, as well as the final pit design for the Etango-8 Scoping Study pit.

The contractor mining fleet is planned to consist of approximately 20 – 24 haul trucks (100 tonne class) and 4 – 5 excavators (200 tonne class), with associated support equipment.

*Figure 8: Comparison between the 20Mtpa (OS 2015) and Etango-8 Scoping Study pit outlines*




## 5.3 Geotechnical

As part of the DFS 2012, Coffey Mining completed the geotechnical assessment for the proposed Etango open pit in October 2011. The results of this work were:

- The geotechnical data from which the geotechnical domains have been derived is based primarily on geotechnical logging of drill core and surface structural mapping;
- A total of 26 geotechnical drill holes were drilled from the Anomaly A, Oshivelo and Onkelo deposits (see Figure 5) to collect rock quality and structural data;
- The fault planes generally dip at shallow to moderate planes towards the west and are interpreted to daylight on both the southeast and northeast walls;
- Two types of geological contacts have been identified on the Etango deposit, namely the:
  - Alaskite – meta-sediment contact; and the
  - Meta-sediment – lithology contacts (Chuos / Khan / Etusis)
- Kinematic analysis was undertaken where three modes of failure were examined for each of the sectors, and a slope configuration calculated based upon the selected bench height; and
- Inter-ramp stability was also assessed using probabilistic techniques.

In general, the geotechnical investigations demonstrated that the fresh rock mass conditions are good and will allow for steep slopes to be excavated. On the smaller bench scale, there is potential to develop wedge or planar failures in areas due to the intersection of joints and batters. However, the calculated factors of safety have highlighted that these should not present a significant issue. The risk associated with these types of failures can be mitigated by maintaining good blasting practices and batter slopes.

The recommended pit slope designs developed for the Etango Project are summarised in Table 4 below.

*Table 4: Recommended pit slope designs*

| Etango Uranium Project – Etango Slope Design | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Domain** | **Design Sector** | **Weathering** | **BFA (°)** | **BW (m)** | **BH (m)** | **IRSA (°)** | **IRSH/Decouple (m)** | **OSH (m)** | **OSA (°)** |
| North/South | All Slopes | Weathered | 55 | 6 | 12 | 39.8 | 20 | 380 | 50.5 |
| | | Fresh | 70 | 9.5 | 24 | 52.8 | 120 | | |

Legend:

| | | | | | |
|---|---|---|---|---|---|
| BFA | - | Batter Face Angle | IRSH | - | Inter-Ramp Slope Height |
| BW | - | Berm Width | OSH | - | Overall Slope Height |
| BH | - | Batter Height | OSA | - | Overall Slope Angle |
| IRSA | - | Inter-Ramp Slope Angle | | | |

The bench height study in the DFS 2012 resulted in the adoption of 12m benches mined in 3 – 4m flitches to minimise ore loss and dilution. This Scoping Study maintains this approach. The loading equipment, consisting of 200 tonne excavators, is suitable for this design. The design also allows for progression to larger equipment in the event of expanded production rates in the future.

## 5.4 Hydrogeological

Aquaterra undertook a detailed assessment of hydrogeological conditions and requirements for depressurising (dewatering) the pit walls as part of the DFS 2012. The conclusions from this work remain equally applicable to this Scoping Study.

It was determined that the relevant hydrogeological units are generally low hydraulic conductivity basement rocks. It was concluded that there will be limited natural drainage to the pit face, thus little lowering of piezometric heads in the rocks behind the pit wall and elevated values may persist at, below and behind the pit walls over the life of the mine.

Modelling demonstrated that the steepest gradients in predicted heads will develop immediately under the base of the deepest part of the pit over the mine life. Additionally, a seepage face is predicted to develop on both pit walls and lie 100 to 200 metres above the base of the final pit depth at the end of mining.

The modelling assisted in identifying those areas where pressures will be high and where potential additional depressurisation might be required. However, in general, groundwater is not expected to present a significant issue for mining activities.

# 6. Processing

## 6.1 Metallurgical testwork

Bannerman has performed various metallurgical testwork programs both at ALS Ammtech in Perth, Australia, and Bureau Veritas in Swakopmund, Namibia. The construction of the Heap Leach Demonstration Plant at the Etango Project in 2014 has also demonstrated, at a significantly larger scale, the robustness of the assumptions used in the DFS 2012 and OS 2015 for the design of a commercial heap leach operation.

Testwork has included comminution, heap leach column and crib testwork, acid consumption variability testwork, Solvent Extraction (**SX**), Ion Exchange (**IX**) and Nano-Filtration (**NF**) testwork. Results of the testwork have been reported continuously as they became available.

The critical process design parameters used in this Scoping Study include:

- Heap leach crush size $P_{80}$ 5.3 mm
- Leach duration 30 - 32 days

- $U_3O_8$ recovery 87.8%
- Acid consumption 16.8 kg/t
- Heap leach pad height 5 m
- Heap irrigation rate 12.6 L/m$^2$/h

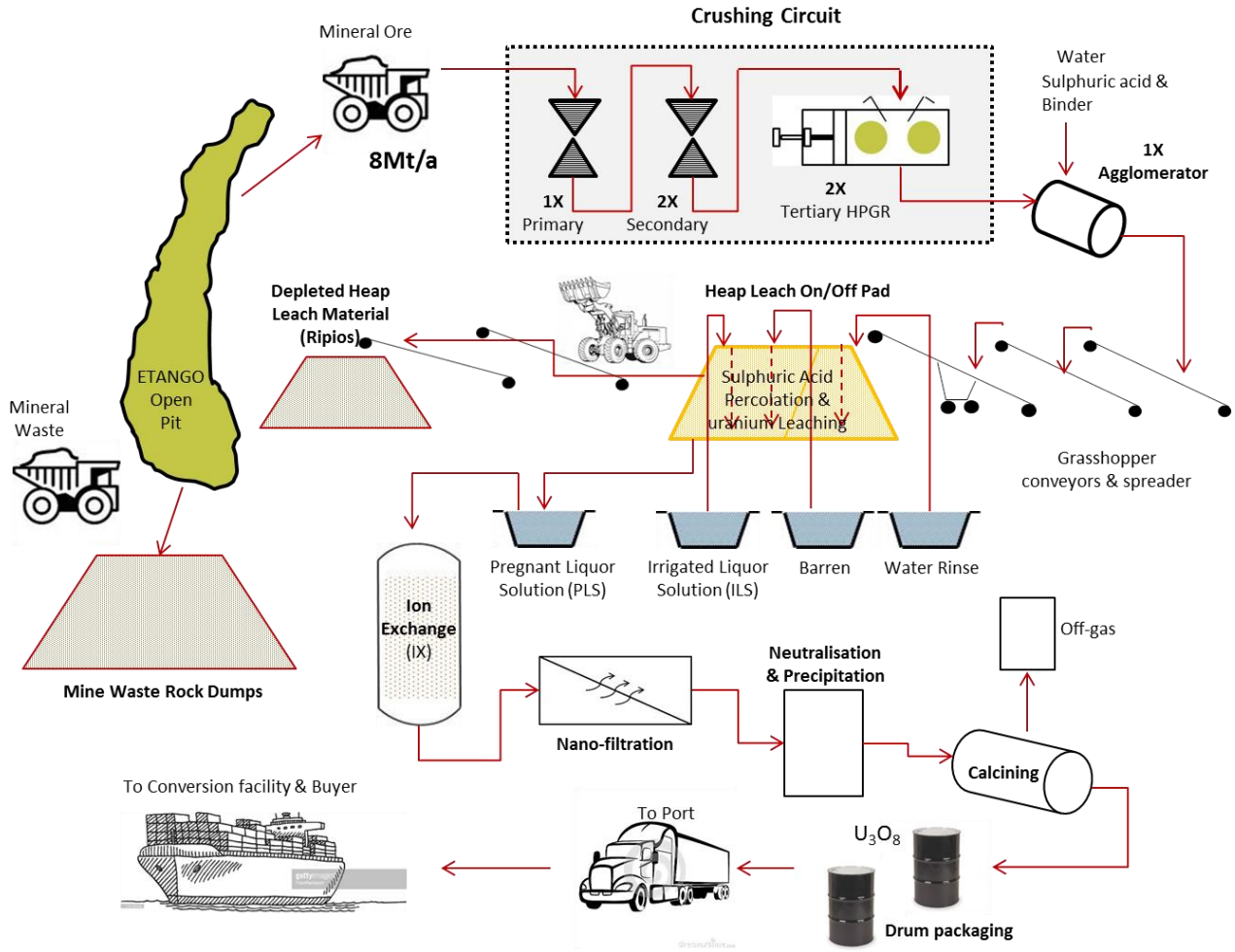
## 6.2 Process flowsheet

ROM ore is delivered to a gyratory primary crusher, followed by two secondary cone crushers and two tertiary HPGR (high pressure grinding roll) units to produce the target $P_{80}$ product size of 5.3mm.

The crushed ore is conveyed to a fine ore surge bin and then fed to a single agglomerating drum. Water, sulphuric acid and binder agent are added, and the agglomerated ore is transferred to the heap leach stacking system. Grasshopper conveyors, stacker feed conveyor and a radial stacker will stack the ore to a height of 5m.

Ore is stacked in modules, where each module represents one day of stacking. Intermediate leach solution produces Pregnant Leach Solution (**PLS**) which is pumped to IX columns for the recovery of uranium, and the barren solution is recirculated to the heap to build up uranium tenor. Once the heap is depleted of uranium, it is drained, rinsed and drained again, drippers are then removed, and the exhausted heap reclaimed. Figure 9 shows the basic Etango process flow sheet.

***Figure 9: Basic Etango-8 Project process flow sheet***

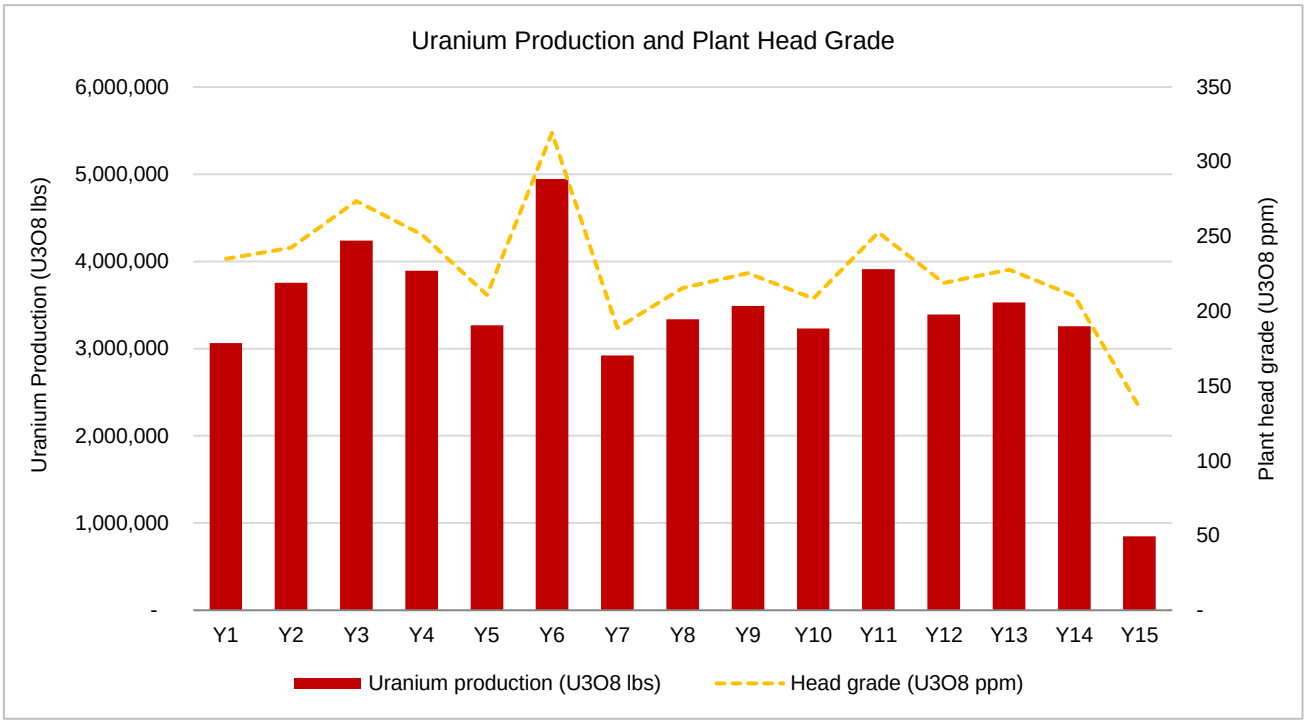


Following the IX process, the uranium bearing solution proceeds through Nano-Filtration (NF), precipitation and drying/calcining. Filling, lidding, washing and weighing of the product transportation drums is largely automated. The drums are conveyed through an airlock into the packing module under negative pressure.

The Membrane Study Testwork completed early in 2020 successfully confirmed that substantial economic and operational advantages can be obtained with an optimised flowsheet consisting of an IX process followed by NF. The details of the testwork were reported on the ASX on 9 April 2020. Over 80% acid recovery from the concentrated eluate stream of the IX plant is achieved while also obtaining the required uranium upgrade for the precipitation process. The design of the NF plant has already been completed to definitive level and is suitable for the 8Mtpa scale.

Forecast average LOM $U_3O_8$ production is 3.55Mlb per annum, with a peak in Year 6 of 4.95Mlb. Figure 10 depicts the forecast LOM production profile.

***Figure 10: Forecast LOM head grade profile and $U_3O_8$ production volumes***




## 6.3 Processing assumptions

This Scoping Study utilises an overall uranium recovery of 87.80% based on the extensive testwork done with columns (2m, 4m, 5m and 7m) and cribs (2m x 2m x 5m), as well as applying appropriate scale-up factors to simulate reduced performance on a commercial heap.

Following extensive acid consumption testwork with columns and cribs, combined with the acid recovery process via nano-filtration, and applying scale-up factors, a relatively conservative overall sulphuric acid consumption of 16.8 kg/t is assumed. There exists clear potential for this estimate to be further optimised.

As per the flow sheet, triuranium octoxide ($U_3O_8$) is the final product that will be drummed and shipped.

## 6.4 Plant location

The site layout is shown in Figure 11 and remains at the same location as in the OS 2015. The selected location is driven largely by the typical economic imperative to restrict waste and ore haulage distances.

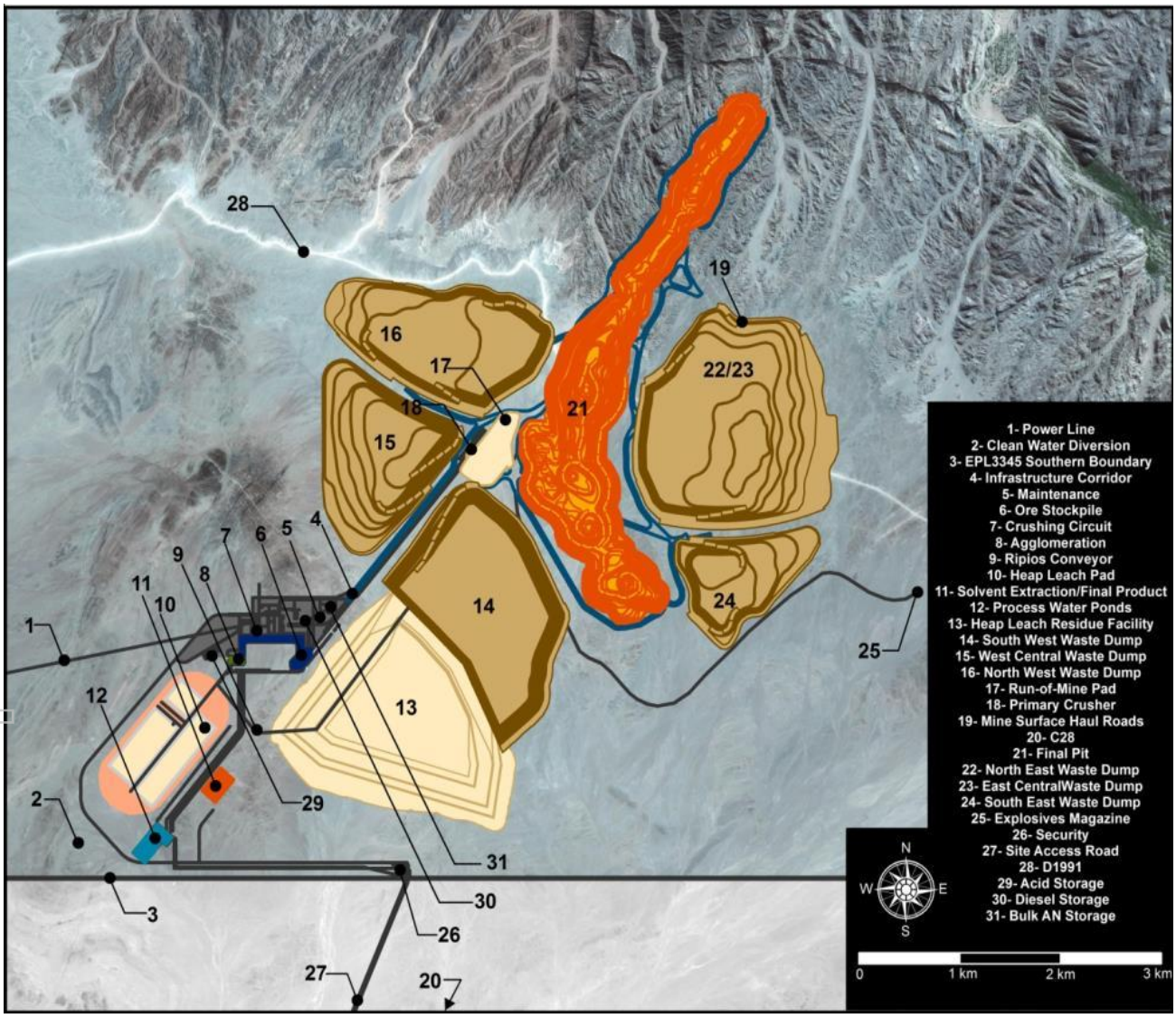
The waste rock dumps are sited adjacent to the open pit and are situated as far as possible to the south of the Swakop river catchment. Dump design and location have been informed by the need to limit height to minimise visual impact, and to avoid sterilisation of uranium prospects to the south.

The primary crusher is located adjacent to the open pit (to minimise ore haulage) and is linked to the process plant by a 3 km overland conveyor passing through the waste dump areas. The plant and infrastructure are located away from any sensitive environmental and archaeological zones. The current location also reduces the visual impact from both the C28 road to the south, the D1991 and the Moon Landscape tourist lookout to the north.

The heap leach pads are located southwest of the main plant to suit the topography of the site and minimise earthworks. The chosen location is in a valley, gently sloping in a general south-westerly direction. The collection ponds for the heap are located at the lower end of the heap to allow drainage by gravity.

The heap leach residue facility is located at the southern extremity of the waste rock dumps, adjacent to the heap leach pad.

***Figure 11: Site layout (OS 2015)***



# 7. Infrastructure

## 7.1 On-site infrastructure

This Scoping Study includes the following on-site facilities to support both the mining and processing operations:

- Primary security gate, gate house and security fencing;
- Diesel storage tank and fuelling facilities;
- Operations and maintenance site offices;
- Processing plant maintenance workshops;
- On-site acid storage tanks with sufficient storage for 28 days usage;
- Warehouse and reagent storage facilities;
- Administration offices and emergency response facilities as well as change houses, laundry and sanitary facilities;
- Sewage treatment plant;
- On-site fresh water tanks;
- Compressed air services;
- Process, raw, fire and fresh water services; and
- Electrical reticulation and communications.

## 7.2 Heap leach residue

As part of the DFS 2012, a net percolation study and basal seepage analysis was undertaken, using rainfall and other climate data from a nearby site to develop a simulated 18 year climate model for the Etango Project. The basal seepage model was run over an 80-year period. The results of this work indicated:

- Percolation rates within the heap leach residue (ripios) dump are low (<7 mm/a).
- Seepage from the ripios dump will be high for the initial layer, due to the water content within the ripios. However, seepage will decrease significantly after placement of the basal layer.
- Rainfall has minimal percolation into the ripios dump, due to high evaporation rates and a salt crust forming on the surface.

Based on ripios geochemical characterisation and seepage studies, Bannerman elected to proceed with an unlined ripios dump.

The ripios dump design will include the following infrastructure:

- Construction of a ramp using crushed gneiss left over from the heap leach drainage pad construction.
- Construction of internal stormwater V-drains and delineation bunds to direct stormwater run-off from the ripios dump to a localised collection pond. These drains will be constructed outside the ripios dump toe.
- Construction of external seepage and stormwater management systems.

No geotechnical investigation has been carried out over the ripios dump location. Prior to detailed design, a full geotechnical investigation will be carried out to determine soil strata and foundation conditions below the ripios dump.

## 7.3 Power

Power is to be provided by Nampower, the national power utility company of Namibia. Since the OS 2015, Nampower has significantly upgraded the power supply and distribution capacity to cater for the now-operating Husab Mine and the increased power usage of the port facilities at Walvis Bay. The power infrastructure is within 30km of the Etango Project.

Power for the Etango Project site is to be sourced from the 220 kV national grid through Nampower's Kuiseb substation, which has recently been upgraded to 132 kV. Nampower proposes a 29 km, 132 kV transmission line from the Kuiseb substation to the Etango Project site where a 132/33 kV switchyard, transformer(s) and indoor Etango substation will be installed. The transformer size will be reviewed during detailed engineering as the load list is finalised.

## 7.4 Water

Water will be sourced from NamWater and is set to be supplied from its sources to the Base Reservoir in Swakopmund. The Etango water infrastructure consists of a pipeline and pumping system to transport the water to the Etango Project site, and terminal water storage system on site. The route of the pipeline is to follow the route as provided for in the Environmental Clearance Certificate.

The water supply system is still to be optimised for diameter of pipe and configuration of pump stations. The Base Pump Station to be situated adjacent to the NamWater Base Reservoir site in Swakopmund, and a Booster Pump Station, if required, should be sited to minimise cost of power supply to these stations.

The terminal storage is also to be optimised in regard to siting and capacity. The proposed position of the storage is preferably on higher ground. Capacity is expected to provide for storage of at least four days consumption to allow for upstream supply interruptions.

Although the DFS 2012 had proposed "Pioneer Style" tanks, this Scoping Study proposes consideration of geomembrane plastic lined storage dams. This could be combined with the construction of the process retention dams, which will also be plastic lined earth dams.

## 7.5 Roads

The C28 road from Swakopmund passes a few kilometres to the south of the Etango Project. Construction of a spur road to the mine site is planned, parallel to the power line and water pipeline services route. Figure 12 depicts all existing infrastructure routes and the proposed Etango Project power, water and road connections. The D1984 is currently being upgraded to a sealed double highway with a safe fly-over onto the C28. This will provide a safe route for the transportation of sulphuric acid and other reagents from the Walvis Bay port to site, as well as trucking of the final product for shipment from Walvis Bay.

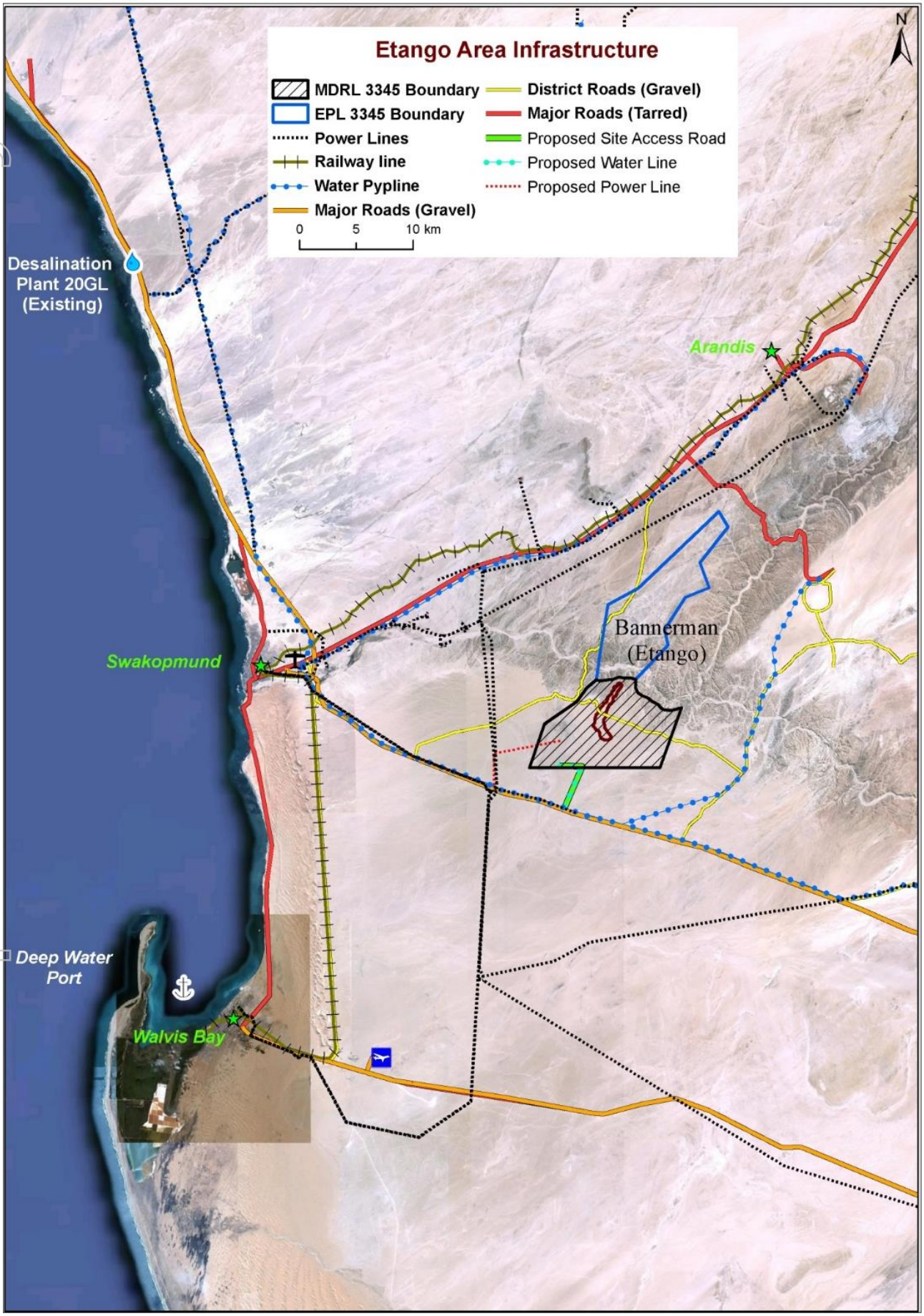
## 7.6 Port infrastructure

The Port of Walvis Bay is a highly established uranium export facility. Walvis Bay has been handling Class 7 cargo for over 40 years both from Namibia and neighbouring countries such as Malawi. Specific areas within the controlled port environment have been designated for Class 7 cargo, which Bannerman would also be using.

Regular container services operate from Walvis Bay to Europe, Asia and the United States. Bannerman plans to utilise the services of an experienced local Namibian shipping agent. Consistent with standard practice, Bannerman expects to pay for all shipping and transport of $U_3O_8$ to the conversion facility, and then for the weighing, sampling and assaying at the converter.

The key reagent for the Etango process, sulphuric acid, is to be imported in bulk to the Walvis Bay port. One storage tank has been allowed for as part of dedicated port facilities. The transport of bulk concentrated sulphuric acid (98% w/w) from the port to Etango Project site is via bulk tanker trucks. There it is transferred to acid storage tanks on site, which are designed to provide sufficient storage for 28 days usage in mild steel tanks.

*Figure 12: External infrastructure corridor to Etango*



## 8. Environmental and social

Bannerman received its Environmental Clearance in March 2010 for the Etango Project. The Environmental Clearance was based on the Environmental and Social Impact Assessment (**ESIA**) and Environmental and Social Management Plan (**ESMP**), which were developed by A. Speiser Environmental Consultants cc (ASEC) with a team of 14 specialists. The ESIA and ESMP were subjected to external peer reviewed by the Southern African Institute for Environmental Assessments.

The Environmental Clearance for the location and design of infrastructure ancillary to the Etango Project (including the access road, water pipeline and power lines) was granted by the Ministry of Environment and Tourism in July 2011.

A revised ESIA, reflecting the project detailed in the DFS 2012, was prepared by ASEC and Environmental Resource Management (ERM) and submitted in April 2012, with the Environmental Clearance granted in July 2012 valid for three years. This has subsequently been renewed on two further occasions and is currently valid until October 2021. Environmental Clearance for linear infrastructure was granted in February 2013 (valid for three years) – it has also been renewed twice and is currently valid until June 2022.

The 2012 ESIA processes saw extensive public consultations for the larger Etango Project. The Etango-8 Project is essentially a smaller version of the larger project and thus focus groups with key stakeholders will be held once the Project moves to the next feasibility stage, with subsequent input included in the Environmental Clearance renewal.

Baseline monitoring of groundwater and air quality started in 2008 and has continued over subsequent years.

Bannerman has a core value to build enduring and mutually beneficial relationships with its neighbouring communities in Namibia. It has invested in Namibia since 2006 and in this time has contributed substantially to the communities in which it operates. Selected initiatives include:

- Early Learner Assistance Program – over 3,000 pre-primary learners in remote communities have received assistance via this program with school clothing and basic necessities.
- Bannerman pioneered cooperation with the Hospitality Association of Namibia and Coastal Tourism Association of Namibia and has supported the tourism sector in numerous ways and in 2019 Bannerman's Managing Director, Werner Ewald, received the accolade of 'Tourism Personality of the Year'.
- Erongo Development Foundation – Bannerman has been an active member of the Erongo Development Foundation for many years; an organisation supporting the development of poor communities within the Erongo Region where the Etango Project is located.

## 9. Operating costs

Contributors to the operating cost estimate were as follows:

| | |
|---|---|
| Mine operating costs | Qubeka Mining Consultants & Bannerman |
| Plant and site infrastructure | DRA-SENET & Bannerman |
| External infrastructure | Genis Business Consulting & Bannerman |
| Owner's (G&A) costs | Bannerman |
| Acid costs | Bannerman |

Table 5 provides a breakdown of key individual components of forecast LOM and unit final product cash operating cost.

*Table 5: Life-of-mine final product cash operating costs (ex-royalties/levies)*

| Description | LOM US$M | US$/t ore | US$/lb | % |
|---|---|---|---|---|
| Mining - Contractor | 829 | 7.3 | 16.2 | 43% |
| Maintenance & consumables | 190 | 1.7 | 3.7 | 10% |
| Power | 172 | 1.5 | 3.4 | 9% |
| Sulphuric acid | 168 | 1.5 | 3.3 | 9% |
| Reagents (not including acid) | 127 | 1.1 | 2.5 | 7% |
| Raw Water | 94 | 0.8 | 1.8 | 5% |
| General & Admin expenses | 83 | 0.7 | 1.6 | 4% |
| Corporate & Owner's Labour | 59 | 0.5 | 1.2 | 3% |
| Labour - Plant Operations | 50 | 0.4 | 1.0 | 3% |
| Labour - Plant Maintenance | 37 | 0.3 | 0.7 | 2% |
| Mining - Owner's cost | 27 | 0.2 | 0.5 | 1% |
| Miscellaneous | 17 | 0.1 | 0.3 | 1% |
| Product transport, port, conversion | 56 | 0.5 | 1.1 | 3% |
| **Total (ex-royalties/levies)** | **1,908** | **16.7** | **37.4** | **100%** |

The projected final product cash operating cost (ex royalties and levies) totals US$37.4/lb $U_3O_8$ produced.

## 9.1 Mining

This Scoping Study proposes a contract mining operation. This includes drilling, blasting, loading and hauling of ore and waste. The OS 2015 mining cost estimate was US$1.69/t material mined and was based on an owner mining operation. This Scoping Study utilises a forecast unit mining cost of US$2.48/t material mined (US$2.56/t inclusive of minor owners' costs). This is based on a bottom-up contract mining cost model built by Qubeka and also benchmarked against contractor operations with similar sized equipment operating elsewhere in Namibia and South Africa.

## 9.2 Acid and other reagents

Sulphuric acid consumption remains a major operating cost driver for the Etango-8 Project. As noted in Section 6, extensive acid consumption testwork has been performed on the Etango ore (and previously released to the ASX as part of the DFS 2012 and OS 2015).

The larger scale test work at Bannerman's Heap Leach Demonstration Plant is viewed as providing the most appropriate indication of what average acid consumption should be expected for a commercial heap operation. Average acid consumption of 14.7kg/t was achieved at the Heap Leach Demonstration Plant.

Taking into account appropriate scale-up factors, and acid consumption downstream in the process flowsheet, a final acid consumption value of 16.8kg/t has been utilised for this Scoping Study. As noted earlier, this estimate retains significant potential for further optimisation.

The forecast price of sulphuric acid (delivered to Walvis Bay) is US$75/t, with an additional US$13/t transport cost for delivery to the Etango Project site.

The consumption of other reagents is based on the mass balance and design criteria. Updated quotes from vendors were obtained for the unit costs of each reagent, including sulphuric acid.

## 9.3 Maintenance and consumables

The abrasion index of the Etango ore, and in particular the metasediments, is towards the higher end of the scale. As with the OS 2015, this Scoping Study cost estimates allow for generally higher levels of maintenance input and consumables replacement to adequately reflect this.

## 9.4 Water and power

As per the OS 2015, the water demand per tonne of ore processed remains at 0.216 $m^3$/t, which equates to an annual water demand of approximately 1.8 $Mm^3$. This equates to a daily requirement of 5,000 $m^3$/day, and therefore an equivalent demand of 250 $m^3$/hr calculated over 20 hours per day to provide for maintenance downtimes.

The water tariff of US$3.5/$m^3$ used in this Scoping Study is based on discussions between Bannerman and NamWater. It reflects the estimated cost of desalination and water transport operating and maintenance costs included in the delivery to site.

Absorbed power was determined by applying a load factor supplied by vendors to the installed load. Where the absorbed power was not supplied by the vendors, an assumed factor was used.

The utility power cost assumed is US$0.0129 per kWh, which is the blended energy cost based on Nampower's Time of Use tariff schedule for customers taking energy directly from Nampower. This includes all fixed charges, capacity charges and energy charges.

## 9.5 Labour costs

The personnel schedule was developed by DRA-SENET with input from Bannerman. It is structured to fulfil all requirements for technical, supervisory, operating and maintenance personnel, in order to run and maintain the mine and process operations in a safe, efficient and cost-effective manner.

## 9.6 General and administration expenses

These expenses include provisions for National Parks and road maintenance, insurance, government fees, environmental monitoring, training, catering and community work.

# 10. Capital costs

Forecast pre-production capital expenditure to develop the Etango Project as reflected in this Scoping Study is estimated at US$254M. The breakdown of this estimate is provided in Table 6.

The pre-production capital cost estimate was developed to achieve an accuracy level of ±30%.

The main pre-production capital expenditure items include the processing plant infrastructure and equipment costs, pre-production owners' costs, EPCM and accuracy provision, and the external infrastructure costs which include the water and power supply, road access and port infrastructure.

***Table 6: Pre-production capital cost***

| Description | US$'000 | % |
|---|---|---|
| Direct Processing Plant capital | 131,875 | 52% |
| External & Internal Infrastructure | 34,023 | 13% |
| Accuracy provision | 31,460 | 12% |
| Pre-production owners & EPCM | 17,754 | 7% |
| Mining - owner's cost | 11,206 | 4% |
| Owners direct cost | 11,473 | 5% |
| Temporary Services, Construction Camp | 9,752 | 4% |
| Commissioning, operational & insurance spares | 6,802 | 3% |
| **Total** | **254,344** | **100%** |

Total sustaining capital across the 15-year LOM is projected at US$31M (approximately US$0.27/t ore). This is based on forecast sustaining activities, particularly for the port infrastructure and progressive rehabilitation.

# 11. Financial analysis

The financial estimates for the Etango Project as reflected in this Scoping Study were developed by Qubeka, DRA-SENET, Genis Business Consulting and Bannerman using a discounted cash flow model. The modelling assumes contract mining while the rest of the operation is owner-operated.

The intended estimation accuracy of this Scoping Study is ± 30%.

## 11.1 Basis of estimates

The financial estimates were prepared under the following assumptions:

- A real discount rate of 8% was used for discounted cash flow modelling;
- Costs are quoted in real US dollar 2020 terms;
- Cash flow periods are expressed annually in calendar years;
- Uranium sales revenue is assumed to be realised approximately 4 months after production;
- All financial assessments have been undertaken on a 100% project ownership basis (noting that Bannerman's attributable interest in the Etango Project is 95%);
- All costs are stated exclusive of VAT;
- Namibian Government royalties (3%) and export levy (0.25%) have been applied to gross revenue while external party royalties (1.17%) have been applied to pre-tax cash flow and Namibian corporate tax (37.5%) has been applied to pre-tax post-royalty cash flow;
- A Namibian inflation rate of 5.4% p.a. is assumed solely for the purposes of calculating forecast depreciation and taxation schedules; and
- Quantities stated are metric (SI units), excepting the final product which is converted to pounds (lbs).

## 11.2 Uranium market outlook and product marketing

The uranium market has been characterised by over-supply and a resultant bear market cycle that commenced with the nuclear accident at Fukushima-Daiichi nuclear power plant in 2011 and a rapid reduction of demand for nuclear fuel in Japan, Germany and elsewhere. After several years of oversupply in which consumers and intermediaries built substantial inventories, the uranium market returned to structural balance in 2018 and is currently experiencing significant structural deficits.

Whilst demand for nuclear fuel has recovered to pre-2011 levels, the pricing response to these deficits has been muted by the draw-down of excess inventory. The uranium spot price bottomed in 2017 and has experienced modest recovery since then, trading at levels last seen in 2016. In 2020, supply disruption

caused by COVID-19 mine closures exacerbated the deficit causing the draw-down of inventories to historically normal levels.

Most market commentators expect uranium long term contract prices to substantially and sustainably increase to their assumed long-term price forecast or beyond in the next 24-48 months due to a number of factors, including:

(a) A substantial proportion of global uranium production is uneconomic at current prices;

(b) Uranium demand is projected to grow steadily to 2040 and beyond, in particular in the growth markets of China, India and Russia;

(c) Uranium supply is expected to undergo significant depletion over the next decade, despite the capacity for care and maintenance mines to return to production, as several large uranium mines will be exhausted of ore and secondary supply reduces; and

(d) Under-investment in uranium exploration and development over the last decade coupled with onerous political, environmental and social approval processes has resulted in an inadequate development pipeline that requires prices in excess of the assumed long term contract price to incentivise sufficient replacement of depleted production.

Consistent with industry practice, Bannerman plans to obtain a diversified portfolio of long-term supply contracts with a blend of fixed-term escalated prices and market price mechanisms, subject to floor prices. Prior to commencement of construction, a sufficient proportion of production is expected to be contracted with high-quality counterparties to enable conventional financing of the project, potentially in combination with off-take related financing.

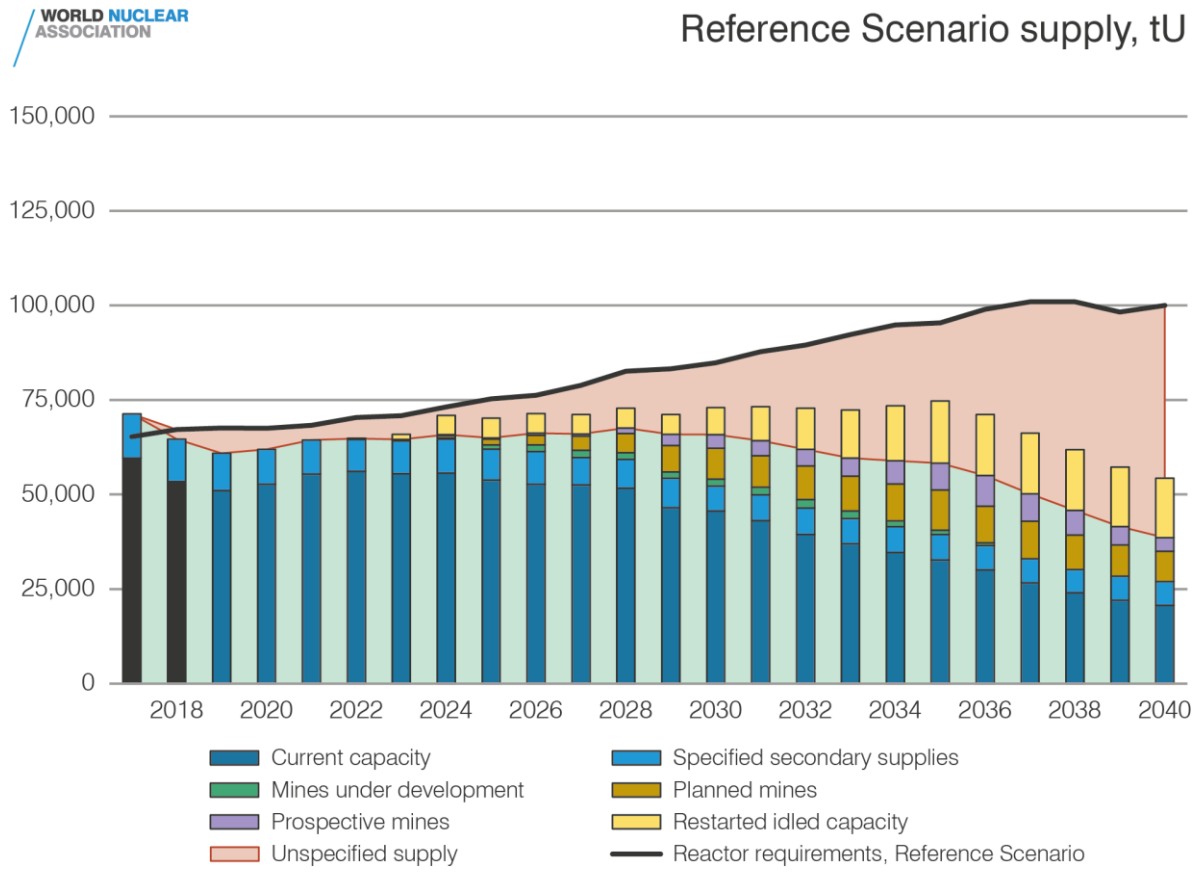
Bannerman has pursued an active marketing strategy since 2016, resulting in a substantial profile in the nuclear power industry and membership of the World Nuclear Association, World Nuclear Fuel Cycle, World Nuclear Fuel Market and Namibian Uranium Association. Implementation of this strategy commenced with the engagement in 2016 of Nuclear Fuel Associates as Strategic Uranium Marketing Consultants and notably benefitted from Bannerman Resources Limited's Chief Executive Officer, Brandon Munro, being appointed in 2018 as Co-Chair of the World Nuclear Association's Nuclear Fuel Report uranium demand working group.

The realised LOM uranium price forecast adopted for this Scoping Study is US$65/lb $U_3O_8$. This compares with the price estimate utilised for the OS 2015 of US$75/lb. The LOM price assumption for this Scoping Study was estimated as follows:

- The 2024 uranium spot price forecast data was sourced from Consensus Economics (15 June 2020). The 2024 estimate represented the longest-dated single year estimate in the Consensus Economics forecast uranium data set. There were 8 estimates comprising this 2024 forecast price data ranging from US$33.50/lb to US$60.00/lb. The average estimate was US$47.10/lb and the median estimate was US$47.64/lb.
- Price series for historical spot and term uranium prices were then sourced from www.cameco.com (a data set which Cameco has assembled based on price data published by the two leading uranium industry price index providers, TradeTech and Ux Consulting). The market premium of term-to-spot uranium prices was then calculated on a monthly basis for the past 10 years (July 2010 to June 2020). The monthly average of this premium ranged from as low as -2% to as high as +89% over this 10-year period. The 10-year historical average premium was 32.5% and the 5-year average was 34.4%.
- The current Reference Scenario from the World Nuclear Association's (WNA) Nuclear Fuel Report 2019 was then evaluated alongside this historical premia data. The WNA baseline case highlights a rapid divergence (into significant deficit) between forecast nuclear reactor requirements and expected global uranium supply from 2024 (see Figure 13). These conditions suggest that, for

sufficient new supply incentivisation reasons, and all other things being equal, term prices are likely to trade at a premium to spot that is at least equal to, and potentially significantly higher, than historical average levels over the past 5 and 10 years. For this reason, the term-to-spot price premium selected for utilisation was 35-40% (a level slightly higher than the 5 and 10-year historical average premia).

***Figure 13: World Nuclear Association Uranium Supply-Demand (Reference Scenario)***




- To arrive at an estimate of final realised uranium price under Bannerman's expected uranium marketing approach, the mid point of the selected term-to-spot market price premium (37.5%) was then applied to the average 2024 forecast uranium spot price (US$47.10/lb) to arrive at the Scoping Study LOM realised uranium price input of approximately US$65/lb.

## 11.3 Economic analysis

Forecast key financial metrics for the development of the Etango Project as reflected in this Scoping Study are summarised in Table 7.

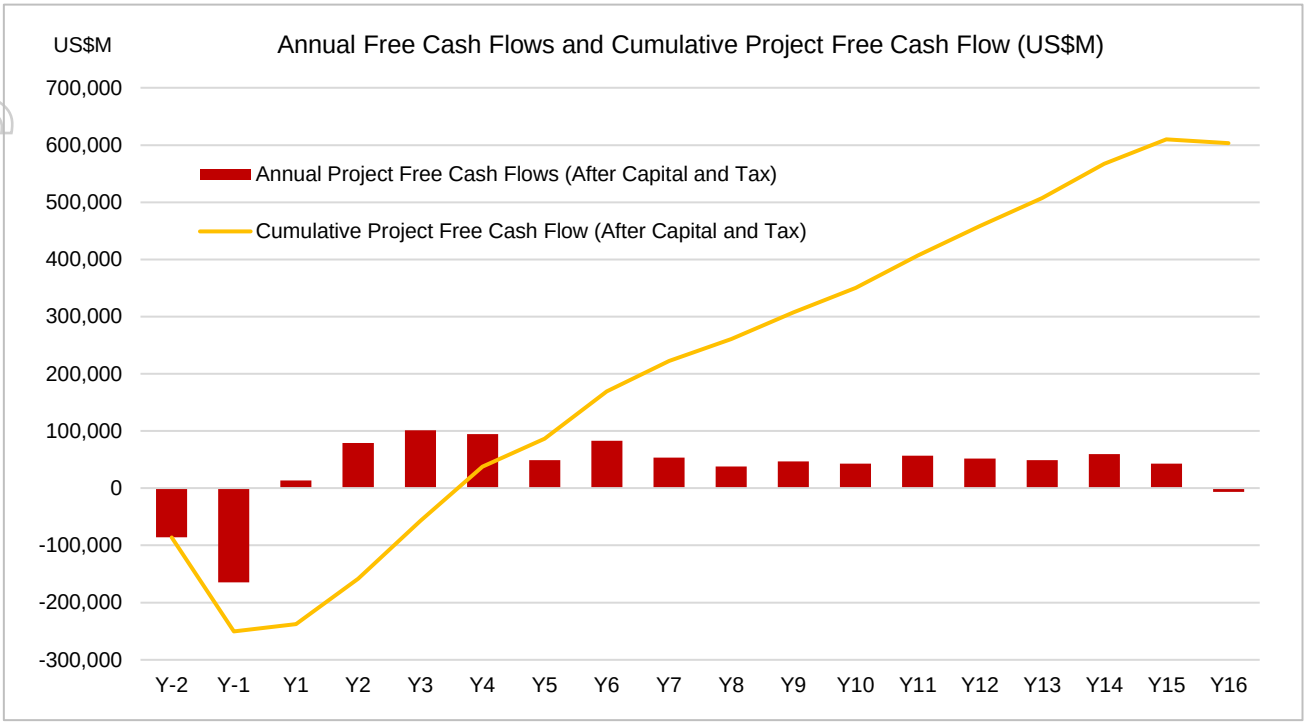
*Table 7: Key financial metrics (100% basis)*

| Key financial outcomes | Unit | | Total |
|---|---|---|---|
| **Price inputs** | | | |
| LOM average uranium price | US$/lb U3O8 | - | 65 |
| US$/N$ | N$ | - | 16 |
| **Valuation, returns and key ratios** | | **Range** | **Mid point** |
| **NPV8% (post-tax, real basis, ungeared)** | **US$M** | **201 - 223** | **212** |
| NPV8% (pre-tax, real basis, ungeared) | US$M | 354 - 392 | 373 |
| **IRR (post-tax, real basis, ungeared)** | **%** | **20.1 - 22.2** | **21.2** |
| IRR (pre-tax, real basis, ungeared) | % | 25.5 - 28.1 | 26.8 |
| **Payback period (post-tax, from first production)** | **years** | **3.4 - 3.8** | **3.6** |
| Payback period (pre-tax, from first production) | years | 3.2 - 3.6 | 3.4 |
| Pre-tax NPV / Pre-production capex | x | 1.4 - 1.5 | 1.5 |
| Pre-production capital intensity | US$/lb U3O8 pa capacity | 67 - 75 | 71 |
| **Cashflow summary** | | **Range** | **Mid point** |
| **Sales revenue (gross)** | **US$M** | **3,154 - 3,486** | **3,320** |
| Mining opex | US$M | (813 - 899) | (856) |
| Processing opex | US$M | (816 - 902) | (859) |
| G&A opex | US$M | (134 - 150) | (143) |
| Product transport, port, freight, conversion | US$M | (53 - 59) | (56) |
| Royalties and export levies | US$M | (139 - 153) | (146) |
| **Project operating surplus** | **US$M** | **1,197 - 1,323** | **1,260** |
| Pre-production capital expenditure | US$M | (241 - 267) | (254) |
| LOM sustaining capital expenditure | US$M | (29 - 33) | (31) |
| **Project net cashflow (pre-tax)** | **US$M** | **926 - 1,024** | **975** |
| Tax paid | US$M | (352 - 390) | (371) |
| **Project net cashflow (post-tax)** | **US$M** | **574 - 634** | **604** |
| **Unit cash operating costs** | | **Range** | **Mid Point** |
| Mining | US$/t material mined | - | 2.56 |
| Mining | US$/lb U3O8 | - | 16.8 |
| Processing | US$/t ore | - | 7.53 |
| Processing | US$/lb U3O8 | - | 16.8 |
| G&A | US$/lb U3O8 | - | 2.8 |
| Product transport, port, freight, conversion | US$/lb U3O8 | - | 1.1 |
| **Total cash operating cost (ex royalties, levies)** | **US$/lb U3O8** | **35.5 - 39.3** | **37.4** |
| Royalties and export levies | US$/lb U3O8 | 2.8 - 3.0 | 2.9 |
| Total cash operating cost | US$/lb U3O8 | 38.3 - 42.3 | 40.3 |
| **All-in-sustaining-cost (AISC)** | **US$/lb U3O8** | **38.9 - 42.9** | **40.9** |

Forecast pre-production capital intensity for the Etango-8 Project is highly attractive at approximately US$71 per lb of average annual production capacity.

The projected LOM cashflow is shown in Figure 14. The Etango-8 Project is expected to achieve a post-tax payback in approximately 3.6 years from first production.

***Figure 14: Forecast LOM net cashflows***




## 12. Sensitivity analysis

The financial sensitivity analyses undertaken on the Etango-8 Project examined variations in each of the following parameters:

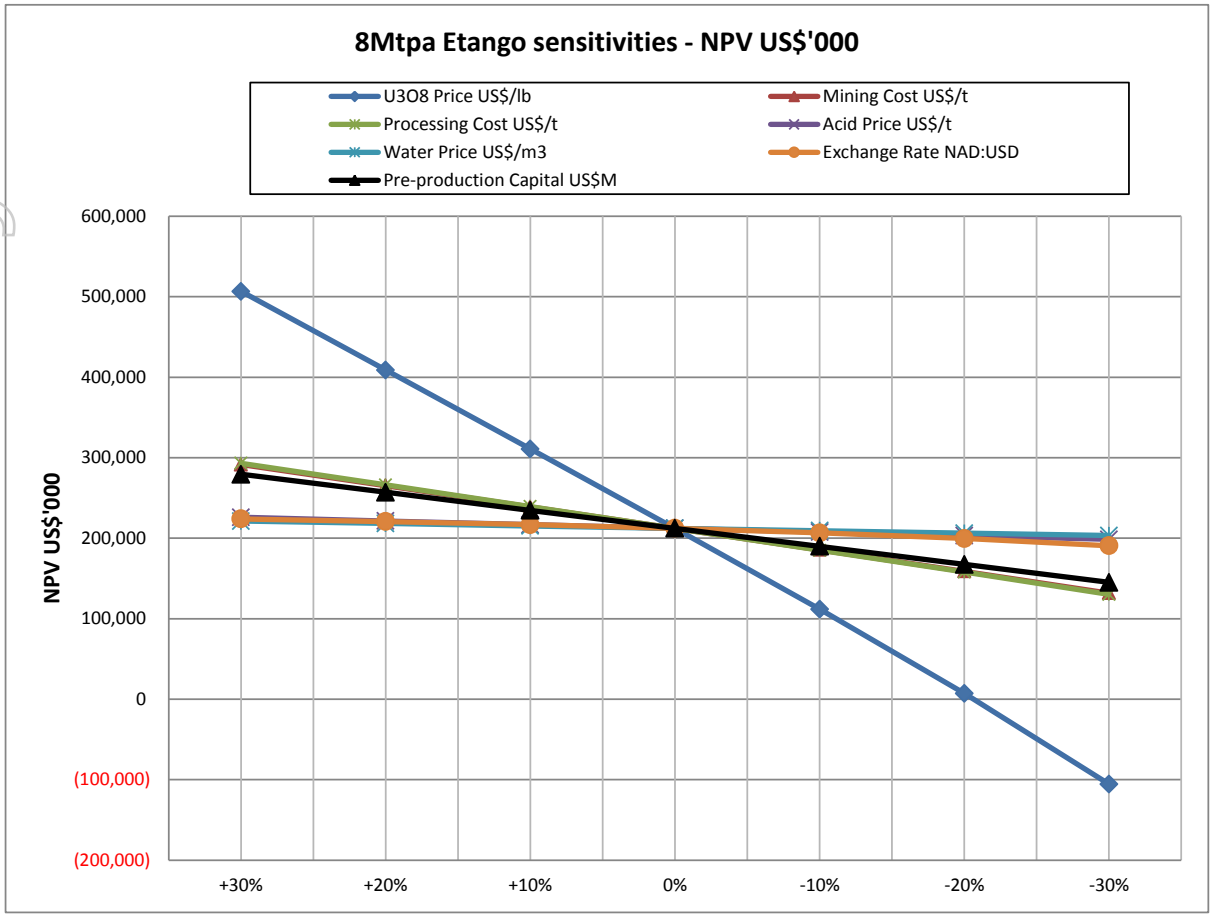
- $U_3O_8$ price;
- Pre-production capital costs;
- Processing costs;
- Mining costs;
- Sulphuric acid price;
- Raw water price; and
- Exchange rate fluctuations.

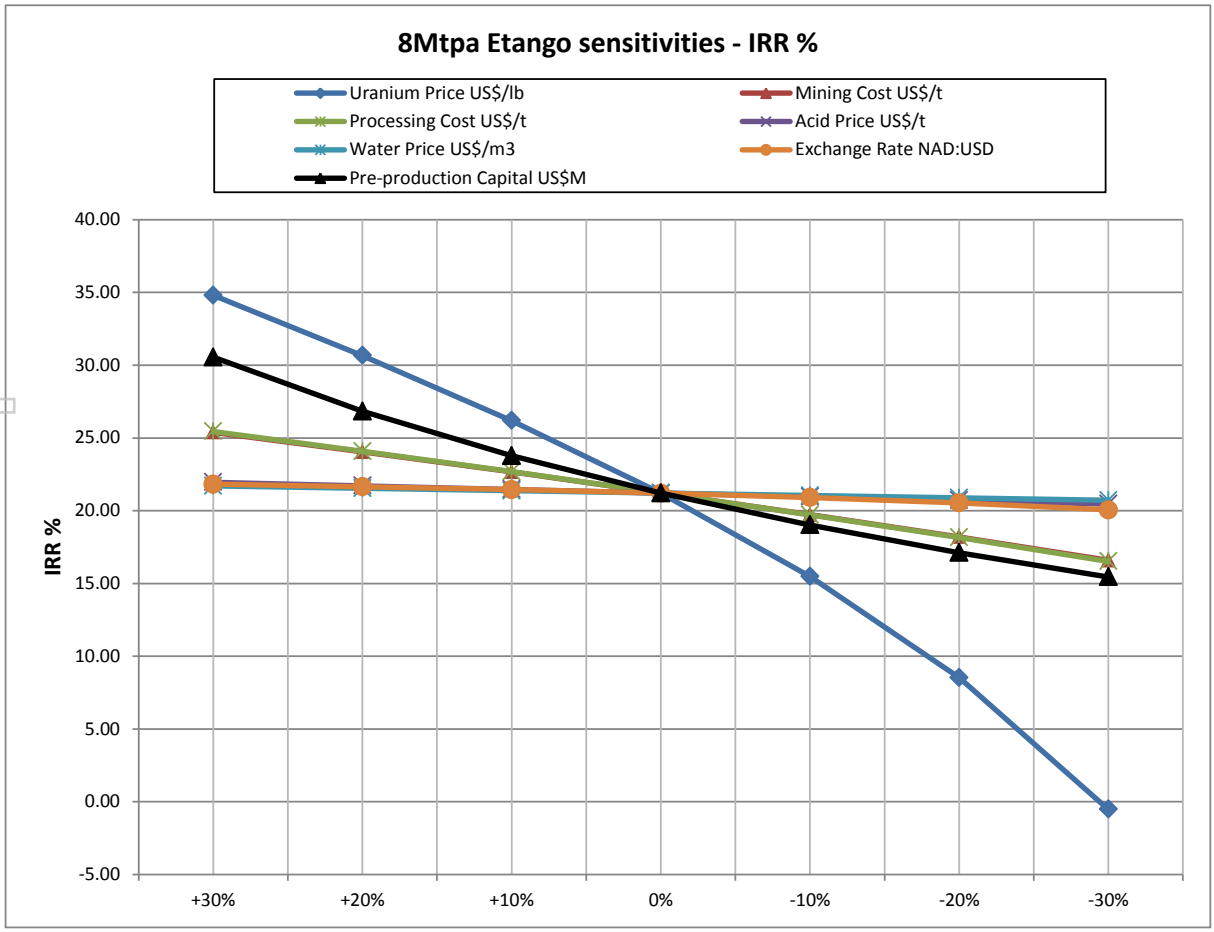
In assessing the sensitivity of the Etango-8 Project economics, each of the above parameters has been varied independently of the others. Accordingly, combined positive or negative variations in any of these parameters will have a more marked effect on the forecast economics of the Etango-8 Project than will the individual variations considered, while variations in opposite directions could naturally have a negating effect on each other.

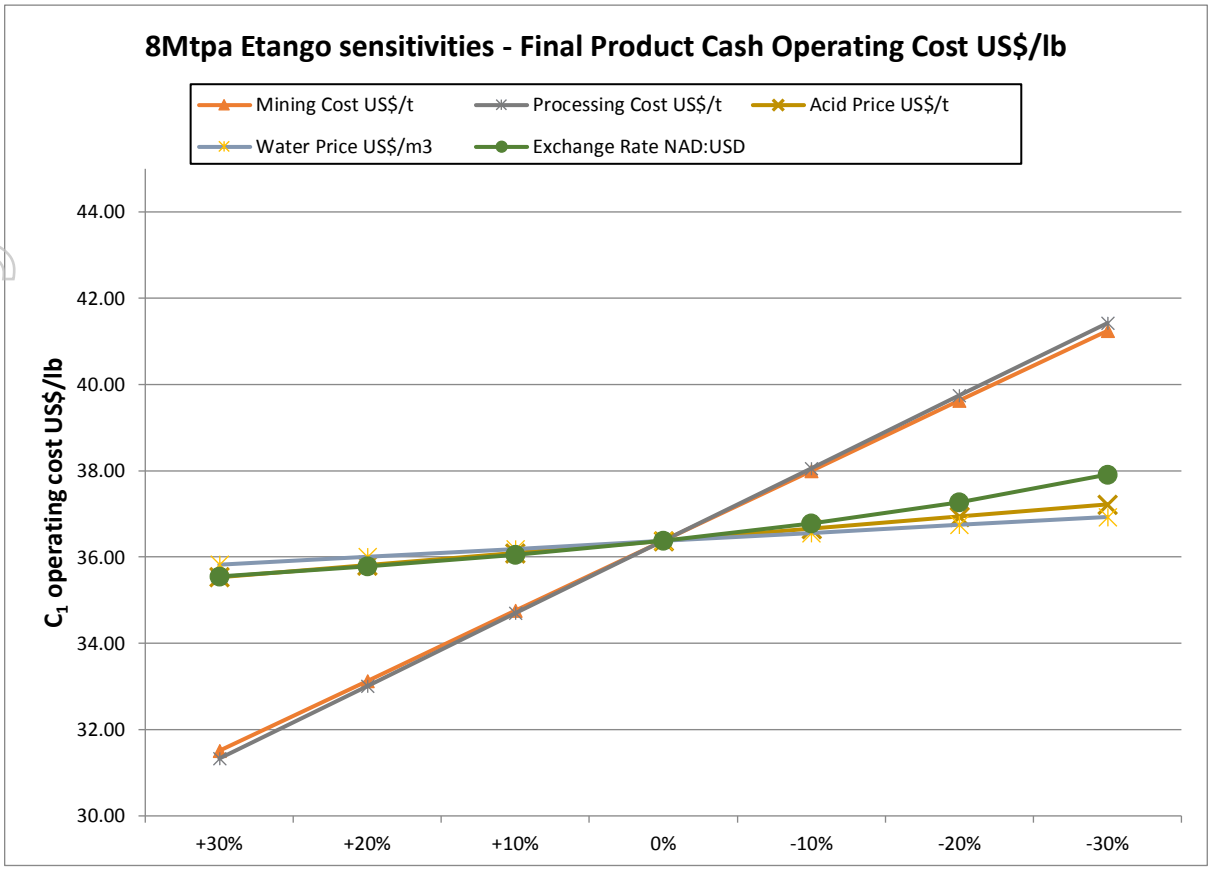
The convention adopted in this analysis is that negative sensitivities are adjustments that reduce project economics or value (for example, increased capital or operating costs) and, correspondingly, positive sensitivities are adjustments that improve project economics and value.

Figure 15 outlines the outcomes of the sensitivity analysis across NPV, IRR and final product cash operating cost (ex-royalties/levies).

*Figure 15: Sensitivity analysis*






## 13. Development schedule

No further exploration drilling is planned for the Etango Project, with approximately 150Mlbs $U_3O_8$ already contained in Measured and Indicated resource classification.

A PFS on the Etango-8 Project is set to commence immediately with targeted completion within 9 – 12 months. During this time, focus group meetings will be held with key stakeholders to provide further input into the Environmental and Social Impact Assessment process for the Etango-8 Project.

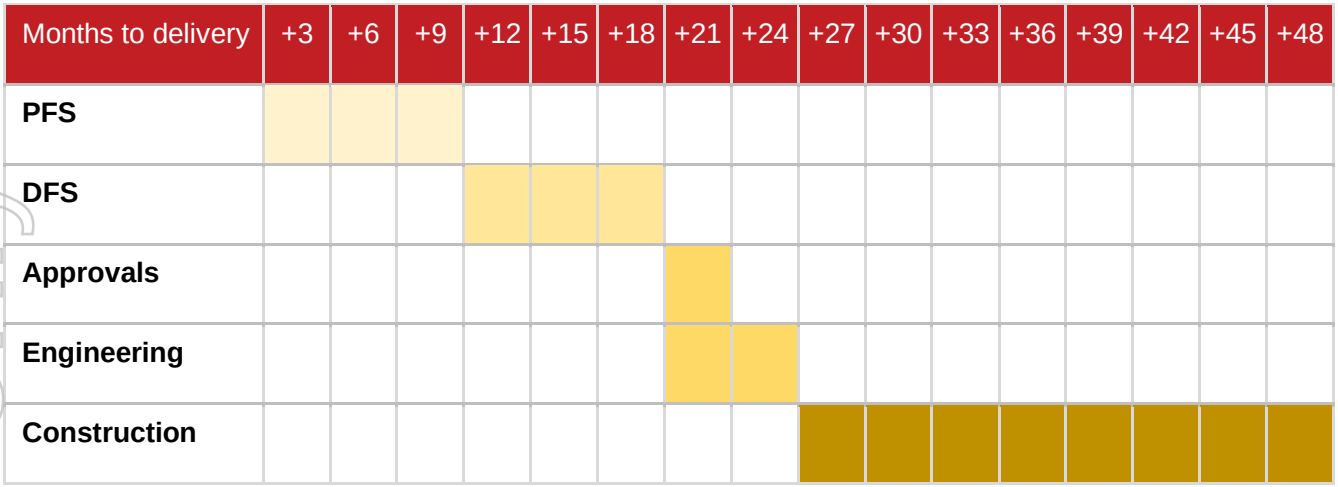
It is estimated that a Definitive Feasibility Study (**DFS**) would take a further 9 – 12 months post completion of the PFS.

Upon completion of a DFS, an application to obtain a Mining Licence (**ML**) could be submitted to the Namibian Ministry of Mines and Energy. As Bannerman already holds a Mineral Deposit Retention Licence (**MDRL**) over the Etango Project area, the conversion of the MDRL to a ML would be expected to be a relatively short process.

Construction of the Etango-8 Project is expected to take between 18 and 24 months.

The targeted project development timeline is provided in Figure 16.

*Figure 16: Etango-8 Project development timeline*




## 14. Project risks

A range of economic, engineering and other technical risks to the Etango-8 Project have been considered. These risks are outlined in Table 8.

*Table 8: Project risks*

| Risk | Description | Risk level | Potential controls |
|---|---|---|---|
| $U_3O_8$ price | Exposure to lower prices for $U_3O_8$ would be a major risk to the Project.<br>(Higher than modelled $U_3O_8$ prices have a significant positive impact on cash operating margins) | High | Bannerman intends to seek a portfolio of offtake contracts with established industry end-users such that specified quantities of future production can be sold at minimum prices consistent with projected/requisite levels. |
| Operating cost over-run | Prices such as sulphuric acid, diesel, electricity and water can be volatile. | High | This risk will be ameliorated by a prudent procurement strategy. |
| Capital cost | The risk of capital cost overruns resulting from a range of factors, primarily sudden and unpredicted increases in equipment, materials or labour capital costs. | Medium | An accuracy provision allowance has been made for variation in “known” costs. |
| Geological interpretation and resource | While the reported Mineral Resources are considered to be robust and conform to JORC code requirements, these remain estimates and, as with all mineral deposits, there are underlying uncertainties relating to interpretation of drill results and the geology, continuity and grade of the mineral deposits. | Medium | The Etango drillhole database consists of 939 drill holes for 239,032 m. The use of a recoverable resource technique, which is considered best practice for uranium mineralisation given the relative ease of selecting mineralisation from waste, has added to the integrity of the 2015 estimate. Furthermore the use of gamma probing of relatively widely spaced blastholes supplemented by a truck scanning station has been shown to be very effective at |

| | | | |
|---|---|---|---|
| | | | two of the world's major open pit uranium deposits. |
| Utility supply | Adequate and timely supply of water and electricity are fundamental to all activities in the construction and operation of the mine. NamPower and NamWater have a track record of supplying these services across the country but the implications of late or reduced supply could be significant to the Project. | Medium | Early construction of water and electricity supply will ensure that utilities are in place before commissioning commences |
| Labour and training | The risk of not being able to identify suitably trained personnel in any of the positions from unskilled to senior management. | Medium | Namibia has a long history of uranium mining and, in consequence, developed a workforce of suitably trained Namibian personnel. Further, Namibia is an attractive destination for expatriate employees. Bannerman has established a strong reputation in Namibia and is well positioned to be an employer of choice. Bannerman will establish training regimes and HR policies and processes that negate the potential risks. |
| Royalties, government levies and taxes | Unexpected changes to royalties, export levy and/or company taxes. | Medium | The Chamber of Mines and the Ministry of Mines & Energy have always been able to work through issues that could affect the attractiveness of Namibia as an investment destination. |
| Permitting | The issues of title to land, permitting, licences, access over public land and possible legal challenges to any of title, right to mine or right to access the licensed mining or EPL areas are all regarded as manageable and a low risk. | Low | There is currently no reason to believe that post submission of a viable financial plan, the necessary permits required to develop the Etango Project will not be obtained in due course. |
| Exchange rate exposure | The perceived risk of exchange rate exposure is considered low by Bannerman due to the fact that the vast majority of capital expenditure is in the SADC countries. | Low | Operating costs are largely pegged to the US$, as is revenue, so foreign exchange variations would have limited impact. |

# 15. Project opportunities

## 15.1 Future expansion

As outlined in Section 5.2, the Etango-8 Project, as reflected in this Scoping Study, is designed to retain the flexibility to expand to larger throughput (up to 20Mtpa) post operations commencing. This would be enabled via subsequent construction of a second processing stream and undertaking of cutbacks 7 and 8 of the OS 2015 20Mtpa pit shells.

In this way, the scalability of the world class Etango deposit, including the potential leveraging of such a large resource base into higher production volumes at higher potential uranium price levels, is not removed by construction of a smaller-scale project initially.

In addition, there are opportunities to extend the initial 14.4 year mine life, either in conjunction with or instead of an expansion to the Project scale. The Etango-8 Project is based on an initial life of mine production of 51.1Mlbs $U_3O_8$, compared with Measured and Indicated Resources of approximately 150Mlbs $U_3O_8$ and additional Inferred Resources at the Etango deposit and potential satellite pits.

### 15.2 Processing efficiency and cost upside

Test work at Bannerman's Heap Leach Demonstration Plant indicates that there is strong potential for further optimisation with respect to utilised estimates for acid consumption, reagent use and uranium recovery. The estimates used for this Scoping Study may be conservative in light of:

- The crib heap leach test work has repeatedly shown that achievable uranium recovery is above 90%; and
- Acid consumption has also been shown to be sub-14kg/t in various column tests.

The same reagent concentrations used in the columns now need to be tested in the cribs to confirm that savings in reagents (acid and other) do not have a deleterious effect on uranium recovery.

## 16. Reasonable basis for funding assumption

To achieve the range of outcomes indicated in this Scoping Study, pre-production funding in excess of US$250M will likely be required.

There is no certainty that Bannerman will be able to source that amount of funding when required. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Bannerman's shares. It is also possible that Bannerman could pursue other value realisation strategies such as a sale, partial sale or joint venture of the Etango Project. This could materially reduce Bannerman's proportionate ownership of the Etango Project.

An assessment of various funding alternatives for the Etango Project has been made based on precedent funding transactions in the uranium and broader metals mining industry.

Bannerman has formed the view that there is a reasonable basis to believe that requisite future funding for development of the Etango Project will be available when required. There are a number of grounds on which this reasonable basis is established:

- Funding for the Etango-8 Project pre-production and initial working capital is not expected to be required until close to or post completion of a Definitive Feasibility Study (DFS) on the Project. Finalisation of a DFS on the Project is not expected before 1H 2022. The majority of market analysts/commentators globally forecast demand, and market prices, for uranium to increase from their current levels over the intervening period.
- Global debt and equity finance for uranium projects remains available, albeit this funding supply is more constrained than in past periods of higher uranium prices. Recent examples of significant funding being made available for progression or construction of such projects globally include:
    - Peninsula Energy Limited (ASX: PEN) raising A$40 million via a fully underwritten entitlement offer in June 2020 to pay down debt and position for a restart of the Lance ISR Project in the United States;
    - Vimy Resources Limited (ASX: VMY) raising A$6 million via a placement in June 2020 for its Alligator River and Mulga Rock Projects in Australia;
    - NexGen Energy Limited (TSX: NXE) raising US$30 million via a placement and convertible debenture issue in May 2020 for its Arrow Project in Canada;
    - Boss Resources Limited (ASX: BOE) raising A$8 million via a placement in March 2018 for its Honeymoon Uranium Project in Australia;

- Berkeley Resources Limited (ASX: BKY) executing a convertible loan funding facility in August 2017 totalling US$65 million for its Salamanca Uranium Project in Spain;
- Deep Yellow raising A$15 million via an entitlement offer in May 2017 for its Tumas Uranium Project in Namibia; and
- Fission Uranium raising US$82 million via a placement in December 2015 for its Triple R Project in Canada.

- The technical and financial parameters detailed in the Scoping Study are robust and economically attractive (US$212M NPV8% (post-tax, ungeared, real basis) and 21.2% IRR). The Etango Project is located in Namibia, a leading uranium mining and export jurisdiction globally. Namibia possesses a well-established and clearly understood legal tenure and project permitting regulation. Release of these Scoping Study fundamentals now provides a platform for Bannerman to advance discussions with potential strategic partners, off-takers, debt providers and equity investors with respect to the Etango-8 Project.
- Bannerman has a current market capitalisation of approximately A$40 million and zero debt. The Company owns 95% of the Etango Project and has an uncomplicated, clean corporate and capital structure. Finally, 100% of the forecast uranium production from the Etango Project remains uncommitted. These are all factors expected to be highly attractive to potential strategic investors, offtake partners and conventional equity investors. These factors also deliver considerable flexibility in engagement with potential debt or quasi-debt providers.
- The Bannerman Board and management team has extensive experience in the global uranium, and broader resources, industry. They have played leading roles previously in the exploration and development, including project financing, of several large and diverse mining projects in Africa and elsewhere. In this regard, key Bannerman personnel have a demonstrated track record of success in identifying, acquiring, defining, funding, developing and operating quality mineral assets of significant scale.
- The Company has a strong track record of raising equity funds as and when required to further the exploration and evaluation of the Etango Project. Bannerman's prior equity raising was a A$8M institutional placement that was successfully undertaken in June 2018.
- Bannerman is targeting total pre-production and working capital funding being comprised of one, some or all of: senior project debt, mezzanine debt, offtake prepayment, sale of a strategic asset interest, equity issuance and/or royalty/stream funding. As noted earlier, total pre-production funding (or equivalent) in excess of US$250M will likely be required. The final mix will depend on general market and mineral industry conditions, specific counterparty appetite and terms, and the Bannerman Board's prevailing views on optimal funding mix and balance sheet configuration.

It should be noted that this funding strategy is subject to change at the Bannerman Board's discretion at any point. It should also be noted that, while the Bannerman Board holds a reasonable basis to believe that funding will be available as required, there is no assurance that the requisite funding for the Etango Project will be secured.

## 17. Conclusions and next steps

This Scoping Study has demonstrated that the Etango-8 Project has strong potential to be a technically robust and highly economic mine development at this scale.

The Bannerman Board has approved progression to a PFS on the Etango-8 Project. Given the breadth of existing study work that exceeds a PFS level of detail, the PFS can be expedited with completion targeted for 2Q 2021.

# APPENDIX A: COMPETENT PERSON'S STATEMENT

The results of the Scoping Study with the technical report titled "Etango-8 Project Scoping Study" dated 5 August 2020 (the "Technical Report") by Bannerman Resources Limited and the Etango Uranium Resources that underpin the production targets are based on, and fairly represent, information and supporting documentation reviewed by Mr Werner Klaus Moeller.

Mr Werner K Moeller is since 2016 a Director and Principal Mining Engineer of Qubeka Mining Consultants CC based in Klein Windhoek, Namibia. Prior to 2016 he was a Director and Principal Mining Engineer of VBKom Consulting Engineers (Pty) Ltd based in Centurion, South Africa. He is Member of the following professional associations:

- South African Institute of Mining and Metallurgy - MSAIMM nr. 704793.
- Australian Institute of Mining and Metallurgy - MAusIMM nr. 329888.
- Canadian Institute of Mining, Metallurgy and Petroleum – MCIM nr. 708163;

Mr Werner K Moeller is a graduate of University of Pretoria, South Africa and hold a Bachelor degree, majoring in Mine Engineering (2001) and an Honours degree, majoring in Industrial Engineering (2002). He is practising as a mining engineer and has practiced his profession continuously since 2002. My relevant experience for the purpose of the Scoping Study review is:

- Operational experience on numerous mines in Africa and Namibia including three years at the Rössing Uranium Mine.
- Mine planning and study experience on a large number of uranium projects, including the Rössing Uranium Mine, Husab Uranium Mine and Forsys Metals Corp's Norasa Project.
- Project manager for numerous feasibility studies all over Africa.

He has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify 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 Werner K Moeller has 18 years' experience in exploration and mining of uranium deposits. He consents to the inclusion of the Scoping Study results disclosed by the Company in the form in which it appears.

Neither Mr Werner K Moeller nor Qubeka Mining Consultants CC have a direct or indirect financial interest in, or association with Bannerman Resources Limited, the properties and tenements reviewed in this statement, apart from standard contractual arrangements for the review of this report and other previous independent consulting work. In reviewing this Scoping Study, Qubeka Mining Consultants CC has been paid a fee for time expended. The present and past arrangements for services rendered to Bannerman Resources Limited do not in any way compromise the independence of Qubeka Mining Consultants CC with respect to this estimate.

# APPENDIX B: REASONABLE BASIS FOR FORWARD-LOOKING STATEMENTS

No Ore Reserve has been declared. This ASX release has been prepared in compliance with the current JORC Code (2012) and the ASX Listing Rules. All material assumptions on which the Scoping Study production target and forecast financial information are based have been included in this release and disclosed in the table below.

**Consideration of Modifying Factors (in the form of Section 4 of the JORC Code (2012) Table 1)**

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Mineral Resource estimate for conversion to Ore Reserves*** | • *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.*<br>• *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.* | • No Ore Reserve has been declared for the Scoping Study.<br>• The 2015 Etango Mineral Resources estimate developed under the guidance of Optiro Pty Ltd remain valid and were used as part of the Scoping Study |
| ***Site visits*** | • *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*<br>• *If no site visits have been undertaken indicate why this is the case.* | • Site visits have been carried out by the competent person, Mr. Werner Moeller. Mr. Moeller has been involved with the Etango Project since 2011. |
| ***Study status*** | • *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*<br>• *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.* | • No Ore Reserve has been declared for the Scoping Study.<br>• A number of studies have been completed on the Etango Project including a Definitive Feasibility Study (DFS) in 2012 and an optimisation Study in 2015.<br>• This is a scoping study and work has been carried out to an appropriate standard for this level of study.<br>• Of the Mineral Resources scheduled for extraction in the Scoping Study production plan, approximately 13.7% are classified as Measured, 83.9% as Indicated and 2.4% as Inferred. Bannerman confirms that the financial viability of the Etango Scoping Project is not dependent on the inclusion of Inferred Resources in the production schedule. |
| ***Cut-off parameters*** | • *The basis of the cut-off grade(s) or quality parameters applied.* | • The mill limiting cut-off grade for the Scoping Study was calculated based on the following economic parameters:<br>○ Processing Cost<br>○ Selling Cost<br>○ G&A costs<br>○ Government Royalty<br>○ $U_3O_8$ price<br>○ Metallurgical Recovery<br>• A mill-limiting cut-off grade of 100ppm $U_3O_8$ was used to determine the economic limits of the pit.<br>• During mine scheduling a variable cut-off grade approach was undertaken whereby the cut-off grade was changed on a period by period basis to enhance the project value. |
| ***Mining factors or assumptions*** | • *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral* | • No Ore Reserve has been declared for the Scoping Study. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).*<br>• *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.*<br>• *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.*<br>• *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).*<br>• *The mining dilution factors used.*<br>• *The mining recovery factors used.*<br>• *Any minimum mining widths used.*<br>• *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.*<br>• *The infrastructure requirements of the selected mining methods.* | • The mineral resource model applied local uniform conditioning (to panels of 25mE x 25mN x 8mRL estimated utilising ordinary kriging) to estimate the grade in an SMU of 6.25mE by 12.5mN by 4mRL which was chosen to represent the selectivity associated with radiometric truck scanning.<br>• No further dilution and mining loss were applied to the model as the SMU (of 6.25mE by 12.5mN by 4mRL) utilised in the model is greater than the proposed mining method selectivity utilising radiometric truck scanning. The ratio of SMU to truck size corresponds well with what neighbouring and other open pit uranium mines that employ this technique as reported in the literature.<br>• Pit optimisations utilising the Lerchs-Grossmann algorithm (with Whittle Four-X) were undertaken to determine the economic limits of the open pit. The optimisation utilised the resource model described in preceding sections of this table, together with cost, revenue and geotechnical inputs. The resultant pit shells were used to develop the pit design with due consideration for the geotechnical, geometric and access constraints. The pit design was used as the basis for production scheduling and economic valuation utilising discounted cash flow methods to confirm economic viability.<br>• Conventional drill, blast, loads & haul open pit operations were assumed consistent with operations in nearby located uranium mines. The mining was modelled based on mining equipment comprising 100 tonne class off-road haul trucks and 200 tonne excavators employed in back-hoe configuration.<br>• Capital and operating cost assumptions were based on contractor mining.<br>• The geotechnical parameters applied during the mine design process was based on a detailed geotechnical study conducted by Coffey mining in 2012 as part of the DFS and which was informed by 26 geotechnical drill holes drilled to collect rock quality and structural data.<br>• The open pit mining configuration is based on 12 meter benches mined in three 4-4.5 meter flitches. |
| ***Metallurgical factors or assumptions*** | • *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.*<br>• *Whether the metallurgical process is well-tested technology or novel in nature.*<br>• *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.*<br>• *Any assumptions or allowances made for* | • The metallurgical process proposed during the 2015 Optimisation Study remains broadly unchanged except for the back-end of the metallurgical process where solvent extraction will be replaced by ion-exchange followed by nano-filtration.<br>• The metallurgical process was determined following extensive metallurgical test work during the previous feasibility studies. The metallurgical process comprise of three stages of crushing, agglomeration, followed by sulfuric acid heap leaching on an |

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| | *deleterious elements.*<br>• *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.*<br>• *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?* | industry standard on/off heap leach pad followed by ion-exchange, nano-filtration and calcination.<br>• The metallurgical test campaigns included:<br>○ Mineralogy analysis utilising SEM/EDS and QEMSCAN<br>○ Comminution characterization including UCS, Bond (Crushing index, Ai test, RWi test, BWi test), JK (DWi, SMC) and dedicated High Pressure Grinding Roll (HPGR) testing.<br>○ Column leach testing including column leach variability testing and diagnostic testing.<br>○ Geotechnical testing of leach residue,<br>○ Ion exchange extraction test work,<br>○ Nano-filtration test work,<br>○ Miscellaneous testing such as chloride analysis<br>• The Heap Leach Demonstration Plant commissioned in 2015 comprising of four large section (2m x 2m x 5m) cribs; each crib allows the leaching of a 30 tonne sample; the results of the test work confirmed that for the Scoping Study the following parameters are applicable:<br>○ Metallurgical Recovery of 87.8%;<br>○ Sulphuric Acid consumption of 16.8 kg/t ore leached.<br>• The Demonstration Plant test work programs have demonstrated the effective removal of impurities from the final product. |
| ***Environmental*** | • *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.* | • The project is located in the Namib-Naukluft National Park and close to tourist attractions, such as the Moon landscape. The current land use is conservation and eco-tourism. It is noted that a number of precedents exist for uranium mining within the Namib-Naukluft National Park, including the Langer Heinrich uranium mine and the Husab uranium mine.<br>• Bannerman lodged an Environmental and Social Impact Assessment (ESIA) with the Namibian Ministry of Environment and Tourism for open pit mining and heap leach processing. Formal Environmental Clearance was received in July 2012 valid for three years. This Environmental Clearance has subsequently been renewed on two further occasions and is currently valid until October 2021.<br>• The project is located in an extremely arid region of the Namib Desert. Rainfall in the Namib Desert is highly variable and unpredictable, varying from 0mm/annum to approximately 100mm/annum.<br>• Hydrological, hydrogeological and geochemical characterisations were conducted by external consultants as part of the DFS in 2012. Geochemical characterization of waste rock indicated that the waste is not potentially acid- |

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| | | forming and that there is no significant elemental enrichment in the leachate.<br>• Natural groundwater within the Bannerman lease area is highly saline with various metalloid levels such as Al, As, B, Ba, Cd, Cr, Fe, Mn, Mo, Pb, Sb, Se, U and V exceeding WHO DWQG (2008). None of the natural ground water sources is fit for domestic, agricultural or livestock use.<br>• Modelling of waste rock seepage is expected to blend in with the natural ground water in a 1:100 (seepage:groundwater) volumetric ratio and will, therefore, have little effect on the quality of the ground water. The groundwater model indicates that seepage will migrate to the open pit; increasing as the pit deepens and the hydraulic gradient steepen. |
| ***Infrastructure*** | • The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed. | • Power for the Etango site will be supplied by NamPower (the national power utility) from the 220 kV national grid through its substation located at Kuiseb. A 29km 132kV transmission line from the Kuiseb substation to the project site where a 132/33kV switchyard, transformer and an approximately 20MVA indoor substation will be installed.<br>• Water will be sourced from NamWater (national water utility) and is set to be supplied from its sources to the Base Reservoir in Swakopmund. The Etango water infrastructure consists of a pipeline and pumping system to transport the water to the Etango Project site, and terminal water storage system on site. The route of the pipeline is to follow the route as provided for in the Environmental Clearance Certificate.<br>• Regional water capacity comprise of 13million m3/annum from regional aquifers and 20million m3/annum from the Orano owned desalination plant.<br>• The C28 gravel road from Swakopmund to Windhoek passes approximately 5km from the project. A 7km unsealed spur road will be constructed to link the existing road to the Etango site.<br>• The Etango project is located in close proximity (73km by road) to Namibia's largest port utilised by neighbouring uranium mines to export their product.<br>• A number of regional towns are located close to the Etango project including Swakopmund and Walvis Bay and represent the regional hubs servicing the Namibian uranium mining industry. |
| ***Costs*** | • *The derivation of, or assumptions made, regarding projected capital costs in the study.*<br>• *The methodology used to estimate operating costs.*<br>• *Allowances made for the content of deleterious elements.* | • Capital costs for the process plant and site infrastructure was estimated by DRA-SENET to an accuracy of ±30%.<br>• Mining costs were based on a bottom-up contract mining cost model built by Qubeka Mining Consultants cc and also benchmarked against contractor operations with similar sized equipment |

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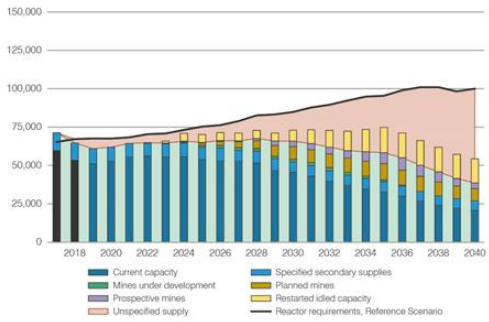
| | • *The source of exchange rates used in the study.*<br>• *Derivation of transportation charges.*<br>• *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.*<br>• *The allowances made for royalties payable, both Government and private.* | operating elsewhere in Namibia and South Africa.<br>• Bannerman determined the operating costs of the process plant using the consumables and utility consumption rates of the DFS with adjustment as appropriate following the extensive test work done in laboratories and at the Heap Leach Demonstration Plant.<br>• Water costs were based on the current water prices charged for desalinated water in the Erongo Region.<br>• Power costs were based on the Nampower rates as per 1 July 2020.<br>• Labour costs were based on a Labour Survey of 2015 escalated to 2020.<br>• The USD:N$ exchange rate assumed in the study is based on the exchange rates prevailing in 2020: 1USD:N$16.00.<br>• The average mining cost over the Life of Mine amounted to USD 2.56/t mined (contractor plus associated owner costs) whilst the average plant processing cost over the Life of Mine was USD 7.53/t processed.<br>• The resultant average unit production cost of uranium oxide (excluding levies & royalties) was USD 37.50/lb $U_3O_8$ over the life of the project. |
| ***Revenue factors*** | • *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.*<br>• *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.* | • The uranium term price of US$65/lb used in the Scoping Study is based on the average Consensus Economics 2024 spot price projections with a market premium of term-to-spot uranium prices of 37.5% being applied.<br>• The head grade and $U_3O_8$ production was derived from the mine schedule. A four month lag was allowed from production revenue to account for the time taken to transport the product to the conversion facilities. The average head grade of the life of mine was 232 ppm $U_3O_8$ |
| ***Market assessment*** | • *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.*<br>• *A customer and competitor analysis along with the identification of likely market windows for the product.*<br>• *Price and volume forecasts and the basis for these forecasts.*<br>• *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.* | • The current Reference Supply Scenario from the World Nuclear Association's Nuclear Fuel Report 2019 highlights a rapid divergence (into significant deficit) between forecast nuclear reactor requirements and expected global uranium supply from 2024. The figure below shows the rapid divergence from 2024:<br>  <br> |

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| | | • Consistent with industry practice, Bannerman plans to obtain a diversified portfolio of long-term supply contracts with a blend of fixed-term escalated prices and market price mechanisms, subject to floor prices. Prior to commencement of construction, a sufficient proportion of production is expected to be contracted with high-quality counterparties to enable conventional financing of the project, potentially in combination with off-take related financing.<br>• Bannerman has pursued an active marketing strategy since 2016, resulting in a substantial profile in the nuclear power industry and membership of the World Nuclear Association, World Nuclear Fuel Cycle, World Nuclear Fuel Market and Namibian Uranium Association. Implementation of this strategy commenced with the engagement in 2016 of Nuclear Fuel Associates as Strategic Uranium Marketing Consultants and notably benefitted from Bannerman Resources Limited's Chief Executive Officer, Brandon Munro, being appointed in 2018 as Co-Chair of the World Nuclear Association's Nuclear Fuel Report uranium demand working group. |
| ***Economic*** | • *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.*<br>• *NPV ranges and sensitivity to variations in the significant assumptions and inputs.* | • Discounted cash flow analysis was undertaken utilising the capital cost, operating cost and revenue parameters. A government tax rate of 37.5% was applied to the model. For the purpose discounted cash flow calculations a discount rate of 8% was utilised. Cash flow calculation was done in 2020 financial terms.<br>• Sensitivity testing was conducted on a range of economic parameters. The project is most sensitive to the uranium price with a cash flow breakeven price (Revenue = Capital Costs + Operating Costs) occurring at ~USD 46/lb $U_3O_8$.<br>• After the Uranium Price the project is most sensitive to changes in Operating cost with Mining Costs and Processing costs being almost equal in weighting. Capital costs are the next most sensitive cost parameter. |
| ***Social*** | • *The status of agreements with key stakeholders and matters leading to social licence to operate.* | • There are no Native Title claims or equivalent over the MDRL 3345 and therefor are no other land holders over the proposed mine site, and as such no land access agreements are required.<br>• Extensive consultation with key stakeholders has been undertaken since 2008.<br>• The Etango Project enjoys local community support and is expected to have a significant positive impact on the Erongo Region and Namibian national economies, including local employment |

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| | | and skill training. |
| ***Other (incl Legal and Governmental)*** | • *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:*<br>• *Any identified material naturally occurring risks.*<br>• *The status of material legal agreements and marketing arrangements.*<br>• *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.* | • The Etango project Mineral Deposit License (MDRL) 3345 is held by the Namibian company Bannerman Mining Resources which manages the project. Bannerman Resources Limited owns 95% of Bannerman Mining Resources. The other 5% is held by the One Economy Foundation, a Namibian not-for-profit organisation.<br>• The Exclusive Prospecting Licence (EPL) 3345 was granted to Bannerman (previously known as Turgi Investments (PTY) Ltd) with effect from 27 April 2006 to explore for Nuclear Fuel. Following an extensive drilling campaign, a Pre-feasibility Study, a Definitive Feasibility Study, an Optimisation Study and the construction of a Heap Leach Demonstration Plant, part of EPL 3345 was converted to a MDRL 3345 which provides strong and exclusive rights to tenure and the right (without obligation) to continue with exploration or development work. The Retention Licence covers an area of 7,295 hectares, which includes the Etango ore body, two satellite deposits at Hyena and Ondjamba and all planned mine infrastructure.<br>• The EPL 3345 is adjacent to the MDRL 3345 and covers an area of 6,323 hectares Bannerman has the right to explore for nuclear fuels, base metals, precious metals and industrial minerals on this licence. |
| ***Classification*** | • *The basis for the classification of the Ore Reserves into varying confidence categories.*<br>• *Whether the result appropriately reflects the Competent Person's view of the deposit.*<br>• *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).* | • No Ore Reserve has been declared for the Scoping Study.<br>• Inferred Resources comprise less than 2.2% of the production schedule in the first year of operation and an average of less than 2.1% over the first three years of operation. Bannerman confirms that the financial viability of the Etango Project is not dependent on the inclusion of Inferred Resources in the production schedule. |
| ***Audits or reviews*** | • *The results of any audits or reviews of Ore Reserve estimates.* | • No Ore Reserve has been declared for the Scoping Study.<br>• No external reviews have been undertaken.<br>• Resource Modelling was completed by International Resource Solutions and reviewed by Optiro Pty Ltd. Optiro also conducted aspects of the resource modelling and classification. Mr. Werner Moeller from Qubeka Mining Consultants cc is the Competent Person for the Mineral Resources. |
| ***Discussion of relative accuracy/ confidence*** | • *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or* | • No Ore Reserve has been declared for the Scoping Study.<br>• The Mineral Resource Estimate has not been subject to rigorous assessment of accuracy and confidence using any numerical or probabilistic approach. Areas |

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| | *geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.*<br>• *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.*<br>• *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.*<br>• *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.* | of potential uncertainty are the detailed morphology of the alaskite bodies and the degree to which the current volume may change upon infill drilling, and the continuity of the ASD zones, which have been assumed to be relatively discontinuous in this estimate. Grade confidence, as defined by grade continuity modelling is believed to be high. Data quality is high as reflected by the QAQC work.<br>• The accuracy and confidence of modifying factors are generally consistent with feasibility level accuracy. The capital cost estimate updates for the fixed plant was done to an accuracy of ±30% which is consistent with a Scoping Study level of accuracy (30% – 50%). |