

AUSTRALIAN

RESEARCH

INDEPENDENT INVESTMENT RESEARCH

Marenica Energy Limited (ASX: MEY)

April 2019

WHO IS IIR?

Independent Investment Research, "IIR", is an independent investment research house based in Australia and the United States. IIR specialises in the analysis of high quality commissioned research for Brokers, Family Offices and Fund Managers. IIR distributes its research in Asia, United States and the Americas. IIR does not participate in any corporate or capital raising activity and therefore it does not have any inherent bias that may result from research that is linked to any corporate/ capital raising activity.

IIR was established in 2004 under Aegis Equities Research Group of companies to provide investment research to a select group of retail and wholesale clients. Since March 2010, IIR (the Aegis Equities business was sold to Morningstar) has operated independently from Aegis by former Aegis senior executives/shareholders to provide clients with unparalleled research that covers listed and unlisted managed investments, listed companies, structured products, and IPOs.

IIR takes great pride in the quality and independence of our analysis, underpinned by high caliber staff and a transparent, proven and rigorous research methodology.

INDEPENDENCE OF RESEARCH ANALYSTS

Research analysts are not directly supervised by personnel from other areas of the Firm whose interests or functions may conflict with those of the research analysts. The evaluation and appraisal of research analysts for purposes of career advancement, remuneration and promotion is structured so that non-research personnel do not exert inappropriate influence over analysts.

Supervision and reporting lines: Analysts who publish research reports are supervised by, and report to, Research Management. Research analysts do not report to, and are not supervised by, any sales personnel nor do they have dealings with Sales personnel

Evaluation and remuneration: The remuneration of research analysts is determined on the basis of a number of factors, including quality, accuracy and value of research, productivity, experience, individual reputation, and evaluations by investor clients.

INDEPENDENCE – ACTIVITIES OF ANALYSTS

IIR restricts research analysts from performing roles that could prejudice, or appear to prejudice, the independence of their research.

Pitches: Research analysts are not permitted to participate in sales pitches for corporate mandates on behalf of a Broker and are not permitted to prepare or review materials for those pitches. Pitch materials by investor clients may not contain the promise of research coverage by IIR.

No promotion of issuers' transactions: Research analysts may not be involved in promotional or marketing activities of an issuer of a relevant investment that would reasonably be construed as representing the issuer. For this reason, analysts are not permitted to attend "road show" presentations by issuers that are corporate clients of the Firm relating to offerings of securities or any other investment banking transaction from that our clients may undertake from time to time. Analysts may, however, observe road shows remotely, without asking questions, by video link or telephone in order to help ensure that they have access to the same information as their investor clients.

Widely-attended conferences: Analysts are permitted to attend and speak at widely-attended conferences at which our firm has been invited to present our views. These widely-attended conferences may include investor presentations by corporate clients of the Firm.

Other permitted activities: Analysts may be consulted by Firm sales personnel on matters such as market and industry trends, conditions and developments and the structuring, pricing and expected market reception of securities offerings or other market operations. Analysts may also carry out preliminary due diligence and vetting of issuers that may be prospective research clients of ours.

INDUCEMENTS AND INAPPROPRIATE INFLUENCES

IIR prohibits research analysts from soliciting or receiving any inducement in respect of their publication of research and restricts certain communications between research analysts and personnel from other business areas within the Firm including management, which might be perceived to result in inappropriate influence on analysts' views.

Remuneration and other benefits: IIR procedures prohibit analysts from accepting any remuneration or other benefit from an issuer or any other party in respect of the publication of research and from offering or accepting any inducement (including the selective disclosure by an issuer of material information not generally available) for the publication of favourable research. These restrictions do not preclude the acceptance of reasonable hospitality in accordance with the Firm's general policies on entertainment, gifts and corporate hospitality.

DISCLAIMER

This publication has been prepared by Independent Investment Research (Aust) Pty Limited trading as Independent Investment Research ("IIR") (ABN 11 152 172 079), an corporate authorised representative of Australian Financial Services Licensee (AFSL no. 410381). IIR has been commissioned to prepare this independent research report (the "Report") and will receive fees for its preparation. Each company specified in the Report (the "Participants") has provided IIR with information about its current activities. While the information contained in this publication has been prepared with all reasonable care from sources that IIR believes are reliable, no responsibility or liability is accepted by IIR for any errors, omissions or misstatements however caused. In the event that updated or additional information is issued by the "Participants", subsequent to this publication, IIR is under no obligation to provide further research unless commissioned to do so. Any opinions, forecasts or recommendations reflects the judgment and assumptions of IIR as at the date of publication and may change without notice. IIR and each Participant in the Report, their officers, agents and employees exclude all liability whatsoever, in negligence or otherwise, for any loss or damage relating to this document to the full extent permitted by law. This publication is not and should not be construed as, an offer to sell or the solicitation of an offer to purchase or subscribe for any investment. Any opinion contained in the Report is unsolicited general information only. Neither IIR nor the Participants are aware that any recipient intends to rely on this Report or of the manner in which a recipient intends to use it. In preparing our information, it is not possible to take into consideration the investment objectives, financial situation or particular needs of any individual recipient. Investors should obtain individual financial advice from their investment advisor to determine whether opinions or recommendations (if any) contained in this publication are appropriate to their investment objectives, financial situation or particular needs before acting on such opinions or recommendations. This report is intended for the residents of Australia. It is not intended for any person(s) who is resident of any other country. This document does not constitute an offer of services in jurisdictions where IIR or its affiliates do not have the necessary licenses. IIR and/or the Participant, their officers, employees or its related bodies corporate may, from time to time hold positions in any securities included in this Report and may buy or sell such securities or engage in other transactions involving such securities. IIR and the Participant, their directors and associates declare that from time to time they may hold interests in and/or earn brokerage, fees or other benefits from the securities mentioned in this publication.

IIR, its officers, employees and its related bodies corporate have not and will not receive, whether directly or indirectly, any commission, fee, benefit or advantage, whether pecuniary or otherwise in connection with making any statements and/or recommendation (if any), contained in this Report. IIR discloses that from time to time it or its officers, employees and related bodies corporate may have an interest in the securities, directly or indirectly, which are the subject of these statements and/or recommendations (if any) and may buy or sell securities in the companies mentioned in this publication; may affect transactions which may not be consistent with the statements and/or recommendations (if any) in this publication; may have directorships in the companies mentioned in this publication; and/or may perform paid services for the companies that are the subject of such statements and/or recommendations (if any).

However, under no circumstances has IIR been influenced, either directly or indirectly, in making any statements and/or recommendations (if any) contained in this Report. The information contained in this publication must be read in conjunction with the Legal Notice that can be located at <http://www.independentresearch.com.au/Public/Disclaimer.aspx>.

THIS IS A COMMISSIONED RESEARCH REPORT.

The research process includes the following protocols to ensure independence is maintained at all times:

- 1) The research process has complete editorial independence from the company and this included in the contract with the company;
- 2) Our analyst has independence from the firm's management, as in, management/ sales team cannot influence the research in any way;
- 3) Our research does not provide a recommendation, in that, we do not provide a "Buy, Sell or Hold" on any stocks. This is left to the Adviser who knows their client and the individual portfolio of the client.
- 4) Our research process for valuation is usually more conservative than what is adopted in Broking firms in general sense. Our firm has a conservative bias on assumptions provided by management as compared to Broking firms.
- 5) All research mandates are settled upfront so as to remove any influence on ultimate report conclusion;
- 6) All staff are not allowed to trade in any stock or accept stock options before, during and after (for a period of 6 weeks) the research process.

For more information regarding our services please refer to our website www.independentresearch.com.au.

Contents

Key Points	1
SWOT Analysis.....	2
Overview.....	3
Strategy and Project Overview	3
Financial Position	4
Erongo Uranium Projects - MEY 75% to 100%	4
Location, Tenure and Infrastructure	4
Geology and Mineralisation	5
The Marenica Uranium Project.....	9
The U-pgrade™ Process.....	10
Upcoming Activities.....	11
Peers	12
Capital Structure	12
Board and Management	12
Background - Uranium Markets.....	14
Generation Capacity	14
Uranium Demand and Supply.....	15
Sales and Pricing	17
Where to From Here?.....	18
Appendix 1 - Uranium Explorers and Developers Peer Comparison	19



Note: This report is based on information provided by the company as at April 15, 2019.

Investment Profile	
Share Price as at April 12, 2019	A\$0.11
12 month L/H (\$)	\$0.072/0.145
Issued Capital	
Ordinary Shares	73.21 m
Unlisted Options	23.51 m
Performance Rights	0.20 m
Fully Diluted	96.92 m
Market Capitalisation - Undiluted	A\$8.05 m
Cash - March 31, 2019	A\$1.07 m

Board and Management	
Mr Andrew Bantock: Non-Executive Chairman	
Mr Murray Hill: CEO and Managing Director	
Mr Nelson Chen: Non-Executive Director	
Mr Shane McBride: CFO/Company Secretary	

Major Shareholders	
Hanlong Resources Limited	15.89%
Retzos Executive Pty Ltd	7.38%
Citicorp Nominees Pty Ltd	5.93%
Directors	5.61%
Top 20	58.17%
Number of Shareholders	1,736



Mark Gordon - Senior Analyst

The investment opinion in this report is current as at the date of publication. Investors and advisers should be aware that over time the circumstances of the issuer and/or product may change which may affect our investment opinion.

IMPROVING SENTIMENT FOR URANIUM

Marenica Energy Limited ("Marenica" or "the Company") has taken an anti-cyclical approach in building a portfolio of tenements prospective for uranium in the Erongo region of Central Namibia, a world class uranium province. In addition to the 75% owned Marenica Uranium Deposit, the Company has an additional 3,889 km² of granted tenements and applications - grant of all would make Marenica the largest holder of uranium exploration ground in Namibia.

The target mineralisation style is calcrete-hosted uranium within palaeochannels, similar to that at Paladin's (ASX: PDN) nearby Tier 1 127 Mlb U₃O₈ Langer Heinrich deposit. Other nearby deposits include those of Deep Yellow (ASX: DYL), with recent drilling at the Tumas 1 East system intersecting mineralisation in palaeochannels adjacent to and immediately downstream from the tenement boundary with Marenica's recently granted EPL6987.

The target mineralisation style has been chosen so as any deposits found would potentially be able to be processed using the Company developed, patented and 100% owned **U-pgrade™** concentration process. Testwork on calcrete hosted uranium mineralisation has shown that this has the potential to recover +80% of the uranium into a very high grade concentrate with <5% of the mass, removing the majority of the acid consuming calcrete.

Successful application of the process could significantly change the economics of processing these ore types - a Scoping Study on the Marenica deposit highlighted operating and capital cost cuts of ~50%; using third party leaching and refining facilities could result in further 25% cuts to capex and some opex cuts. This should also lead to the deposit size required to justify a start up to be reduced accordingly.

Such an opportunity could arise in EPL6987, with an Exploration Target of 20 Mlbs to 60 Mlbs at between 300 ppm and 500 ppm U₃O₈ being estimated from the results of historic drilling. The Company anticipates that this Exploration Target could be converted with drilling to a Resource sufficient to meet these reduced deposit size parameters.

The Company has recently commenced exploration, including electromagnetic ("EM") surveying and a 60 hole drilling programme over a 11 km long by 2 km wide palaeochannel target within the 100% owned Mile 72 tenement; this is to be followed by, on receipt of environmental permitting, work on EPL6987, and thus should lead to steady news flow.

The Company is also looking at **U-pgrade™** licencing opportunities, with generally positive results being received from testwork of mineralisation from other similar deposits in Namibia and Australia.

Marenica is in an ideal position to take advantage of improving uranium prices and improving market sentiment - spot prices are now in the order of US\$30/lb U₃O₈, having recovered over 50% since the late 2016 low of US\$18/lb. Many commentators see prices continuing to recover strongly, potentially to over the estimated incentive price to fund and develop new production of US\$60/lb to US\$70/lb, given supply now going into deficit and a large number of nuclear reactors planned or under construction.

KEY POINTS

- ◆ **Highly prospective tenements:** Applications and tenements are considered highly prospective for calcrete-hosted uranium mineralisation in a globally significant uranium province - this prospectivity is supported by historic work as well as the results of activities on nearby tenements.
- ◆ **Disruptive technology:** Should the **U-pgrade™** process prove to be successful commercially, it could, with the estimated savings in costs, prove to be a disruptive treatment technology, and make otherwise uncommercial deposits commercial and lead to a lower start-up incentive price.
- ◆ **Proven mining destination:** Namibia has a well developed mining industry, which provided 47% of the country's total export income in 2017 and contributed 12% of GDP - this is supported by a transparent and tested legal framework, with an update to the Mining Act due in coming months.
- ◆ **Infrastructure rich:** Namibia has well developed transport and utility infrastructure.
- ◆ **Strong management and committed personnel:** Company personnel have extensive relevant experience as well as shareholdings in the Company, thus aligning their interests with other shareholders.
- ◆ **Geared to exploration success:** With an EV of ~A\$7 million and a tight capital structure the Company is well geared to any exploration success.

SWOT ANALYSIS

Strengths

- ◆ **Highly prospective tenements:** This is supported by the regional geology and mineralisation, and the results of historic and current activities, with this historic exploration also leading to the EPL6987 Exploration Target.
- ◆ **Cheap exploration:** Given the generally shallow depth of the palaeochannels, exploration for the calcrete-hosted (and similar) deposits is usually very cost effective, with relatively low cost geophysical and drilling programmes being able to rapidly test large areas.
- ◆ **Anti-cyclical move:** In moving against the cycle, the Company has been able to acquire/apply for tenements that otherwise may not have been available.
- ◆ **Proven mining destination:** Namibia is a major global producer of uranium and diamonds. The Government's recognition of the importance of the industry and the need for foreign investment has recently been demonstrated by the scrapping of the requirement that previously disadvantaged Namibians hold 25% of businesses (including mining operations under the National Equitable Economic Empowerment Framework ("NEEEF") Bill. The rationale behind the Government's decision is that similar systems have not worked in other jurisdictions, in deterring direct foreign investment, and concentrating wealth in the hands of just a small part of the groups that these schemes were designed to benefit.
- ◆ **Good infrastructure, relatively accessible:** The Erongo region is readily accessible by highways and formed roads, contains Namibia's only deep water port at Walvis Bay, and is relatively well served by grid power infrastructure.
- ◆ **Personnel:** The Company personnel have extensive experience, including in metallurgy and Namibia; in addition they hold significant shareholdings thus aligning interests with those of other shareholders.
- ◆ **U-pgrade™:** Although yet to be proven commercially, the results of test work to date show that the patented concentration process has the potential to be a game changer in calcrete uranium processing.

Weaknesses

- ◆ **Uranium market:** Although signs, including the market being in deficit, point to a recovery in prices in the medium term (potentially to the incentive price for new operations of ~US\$60/lb U₃O₈ to US\$70/lb U₃O₈), the uranium market is still relatively weak which is weighing on investor sentiment - on the other hand this does present an opportunity for anti-cyclical investment and to benefit from expected improvement in sentiment and prices.
- ◆ **Relatively low value commodity:** With the exception of some of the unconformity related deposits, uranium deposits generally have a low in ground value per tonne of ore, and hence are sensitive to changes in prices and costs - this is a factor that successful adoption of **U-pgrade™** would somewhat mitigate.

Opportunities

- ◆ **Exploration success:** This is the key opportunity with junior explorers - the Company's ground selection process has been targeted at maximising exploration success.
- ◆ **Acquisition:** Marenica is also looking at growth through project acquisition.
- ◆ **U-pgrade™ licencing:** There is the option to licence the technology on other calcrete or similar deposits.
- ◆ **U-pgrade™ versatility:** The Company is also looking at applying the process to other styles of mineralisation and minerals.

Threats

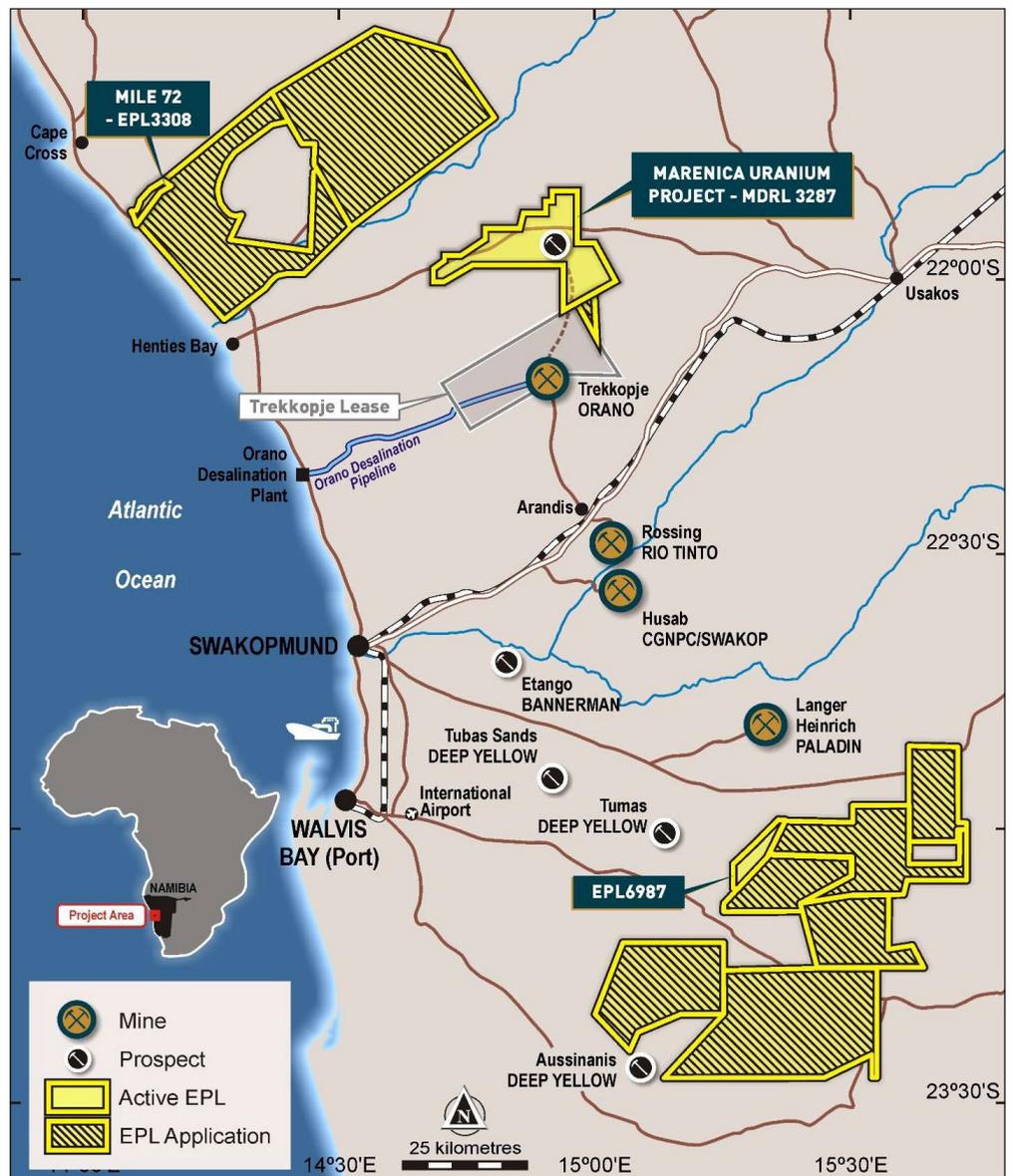
- ◆ **Tenement grant:** The Company is still awaiting grant of the majority of tenements, some of which were applied for early in 2018 - also an issue is that some applications are located within the Namib-Naukluft National Park; mitigating this is that exploration and mining activities are currently operating within the park, however with additional statutory requirements required for permitting. Further mitigating this risk is the recent grant of EPL6987, which is located within the park.
- ◆ **Lack of exploration success:** This goes without saying with junior explorers, however Marenica's ground selection process has partially mitigated this threat.
- ◆ **Metallurgical:** Although lab testwork has demonstrated that **U-pgrade™** can work, like most metallurgical processes, performance will depend upon characteristics of particular deposits, thus requiring optimisation, or else with the process not being suitable.
- ◆ **Markets and short term funding:** These are perennial threats for junior resources companies, and include the effects of the stock and metals markets on the ability to fund juniors.

OVERVIEW

STRATEGY AND PROJECT OVERVIEW

- ◆ Marenica's key strategy is to build and explore a portfolio of exploration tenements that are prospective for calcrete-hosted uranium mineralisation in the Erongo region of Central Namibia - the region is one of the pre-eminent global uranium provinces.
- ◆ In doing so it has targeted areas containing palaeochannels that drain bedrock granites, the source of the uranium in the known calcrete deposits - these areas have had very little modern exploration, however that which has been completed has highlighted the prospectivity.
- ◆ A consideration in the target mineralisation style is the potential to use the patented, wholly-owned **U-pgrade™** beneficiation process should a viable deposit be discovered - this was developed by Marenica to find an economically viable way to treat mineralisation at the Marenica deposit, with results of a Scoping Study completed in 2017 showing the potential to cut capital and operating costs by over 50%, and, if third party leaching of the concentrate is used, cut capex by a further 25%.
- ◆ Marenica is also investigating licencing opportunities for **U-pgrade™**, undertaking testwork on samples from other similar deposits in Namibia and Australia, for which the results of work to date have been largely positive.

Figure 1: Tenement location map



Source: Marenica

FINANCIAL POSITION

- ◆ As of March 31, 2019 the Company had A\$1.065 million in cash and no debt.
- ◆ Over the twelve months to March 31, 2018 the Company spent A\$0.158 million on exploration and evaluation and A\$0.966 million on administration and staff.
- ◆ The relatively low proportion of costs being spent on exploration activities was due to these being concentrated on low cost (but comprehensive) data reviews and some ground checking as part of the Exclusive Prospecting Licence ("EPL") application process (with most tenements yet to be granted); however field work has now accelerated with the recent commencement of drilling at Mile 72 and the grant of EPL6987.
- ◆ During CY2019 the Company raised A\$2.239 million from two A\$0.10/share placements.

ERONGO URANIUM PROJECTS - MEY 75% TO 100%

LOCATION, TENURE AND INFRASTRUCTURE

- ◆ The Company's tenements are located in the Erongo Region of central Namibia (Figure 1), with tenements shown in Figures 1 and 3, and detailed in Table 1.
- ◆ The applications and granted tenements have a total area of 4,201 km², and are located in a proven uranium producing region - most tenements have been pegged by Marenica (with 5% of most being held by a BEE partner); Mile 72 was purchased from Metals Australia Limited (ASX:MLS) in May 2018 for A\$30,000 cash and a 1% gross production royalty, and 90% of EPLA 6663 has been acquired from a Namibian.

Table 1: Tenement schedule

Tenement schedule						
Number	Name	Company	Interest	Area (km ²)	Application/Grant Date	Expiry Date
MDRL 3287	Marenica	Marenica Minerals (Pty) Ltd	75%	321	7/12/2016	6/12/2021
EPL 3308*	Mile 72	Metals Namibia (Pty) Ltd	100%	20	19/5/2015	17/5/2018
EPL 6987	Koppies	Manmar Investments One Eight Two (Pty) Ltd	95%	49	19/3/2019	18/3/2022
EPLA 6663		Ignatious Hinky Theodore	90%	379	5/04/2017	N/A
EPLA 6988	650 West	Manmar Investments One Eight Two (Pty) Ltd	95%	379	10/01/2018	N/A
EPLA 7278	Hirabeb	Marenica Ventures (Pty) Ltd	95%	730	14/08/2018	N/A
EPLA 7279	Ganab	Marenica Ventures (Pty) Ltd	95%	199	14/08/2018	N/A
EPLA 7368	Trekkopje East	Marenica Ventures (Pty) Ltd	95%	17	31/10/2018	N/A
EPLA 7435	Skilderkop	Marenica Ventures (Pty) Ltd	95%	190	6/12/2018	N/A
EPLA 7436	Amichab	Marenica Ventures (Pty) Ltd	95%	251	6/12/2018	N/A
EPLA 7507	Autseib	Marenica Ventures (Pty) Ltd	95%	688	22/01/2019	N/A
EPLA 7508	Capri	Marenica Ventures (Pty) Ltd	95%	987	22/01/2019	N/A

Source: Marenica, <http://portals.flexicadastre.com/Namibia>, extracted March 18, 2019, * EPL3308 is pending renewal

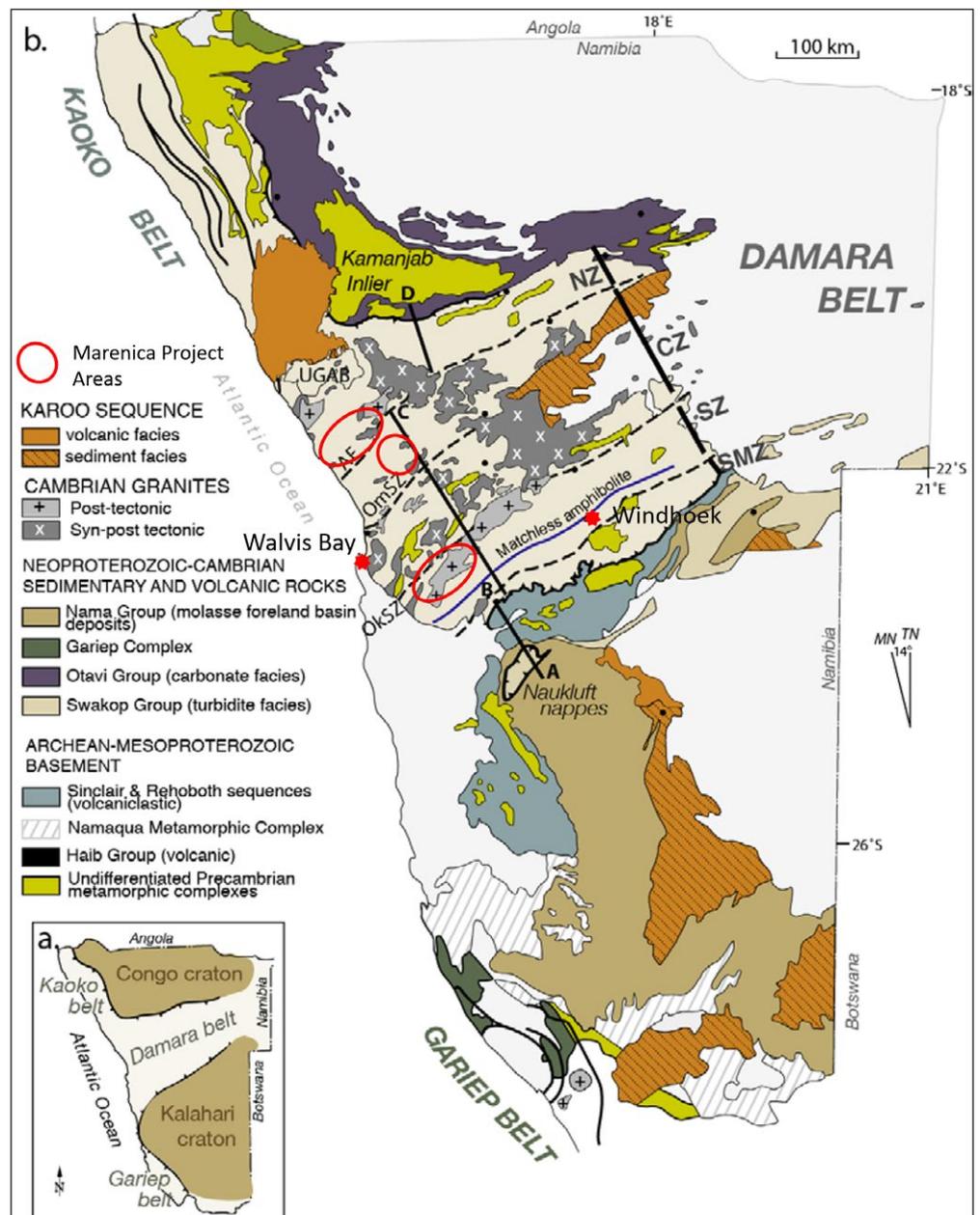
- ◆ The tenements are generally readily accessible from a number of tarred and formed roads connecting the Windhoek region to the coast, with major coastal towns including Walvis Bay (which contains Namibia's only deep water port) and Swakopmund nearby.
- ◆ Water supply is scarce, with a main source being the Orano (previously Areva) desalination plant on the coast ~30 km north of Swakopmund (Figure 1) that commenced operations in 2010 - this 20 MMm³ per annum plant was originally set up to supply Orano's Trekkopje operation (which only operated the mini and midi plants for two years, with the maxi plant being put on C & M before construction was completed), with this also supplying the Rossing, Husab and Langer Heinrich mines - water supply is managed and controlled through NamWater, a parastatal organisation.
- ◆ Regional towns and mines source electricity from the Namibian grid - Swakopmund, Walvis Bay and Henties Bay are connected to the grid by 220 kVA lines, with spurs off this feeding some of the mining operations; emergency peaking power requirements are met by two diesel powered generators at Walvis Bay.
- ◆ Namibia sources some 70% of its annual ~4 TWh per year power requirements from other Southern African countries, mainly South Africa and Zimbabwe, with local generation including from the 330 MW Ruacana hydro-electric power station on the Kunene River in Northern Namibia, and the aging 120 MW coal powered Van Eck power station in Windhoek.

GEOLOGY AND MINERALISATION

Regional Geology

- ◆ The Erongo region is largely located over units of the Late Proterozoic to Early Paleozoic Damaran Orogen, with significant areas of the basement rocks being covered by surficial cover, masking the underlying geology - the Damaran Orogen is located between the Kaapvaal (Kalahari) Craton to the south and Congo Craton to the north (Figure 2).
- ◆ Figure 2 also highlights the proximity of Marenica's project areas to granites, which are the source of the uranium.
- ◆ The recent cover is an important factor in exploration, with, in addition to masking geology, it can mask the radiometric signature of any underlying uranium mineralisation, with radiometrics being a widely used exploration tool for uranium.

Figure 2: Geological map of Namibia showing the general location of Marenica's projects



Source: Adapted from Foster, D.A. and Goscombe, B.D. Continental Growth and Recycling in Convergent Orogens with Large Turbidite Fans on Oceanic Crust. *Geosciences* 2013, 3(3), 354-388. Refer to Figure 1 for detailed project location maps.

- ◆ The Damaran age rocks were originally deposited in a rift to proto-oceanic setting in response to the break up of the continent of Rodonia - deposition commenced with the basal Nabis Formation at ~870 Ma, and ended some 280 My later with sedimentation of the Karibib and Kuiseb Formations from 663 Ma to 590 Ma.

- ◆ The main precursor lithologies to the metamorphic rocks seen today are largely turbiditic sediments in the central part of the belt, and platform carbonates on the basin margin to the north.
- ◆ The Damaran Orogeny is part of the broader Pan African Orogeny, and saw rapid compression with the closing of the basin from 550 Ma to 510 Ma, with peak metamorphism at 530 Ma - this resulted in intense deformation and metamorphism up to amphibolite grade.
- ◆ The Damaran Orogeny also saw the intrusion of vast volumes of syn and syn to post tectonic granites (Figure 2), which are the source of the uranium in the region - the latest post-tectonic granites have been dated at ~470 Ma.

Regional Uranium Mineralisation

- ◆ Uranium mineralisation in the region includes two main types, primary mineralisation hosted in felsic (alaskite) granitoids, and secondary surficial mineralisation - a list of deposits is presented in Table 2, with selected deposits shown on Figures 1 and 3.

Table 2: Namibian uranium deposits

Namibian uranium deposits								
Company	Project	Deposit	Style	Total Tonnes (Mt)	Grade (ppm)	Cont. U (Mlbs)	Cont. U (Tonnes)	Status
Bannerman	Etango	Global	Alaskite	540.2	191	226.8	103,000	DFS
Rio Tinto	Rossing ¹	SJ	Alaskite	72.0	390	61.9	28,100	Operating
Deep Yellow	Reptile	Alaskite Global	Alaskite	48.7	420	45.1	20,400	Resource
Deep Yellow	Reptile ²	Calcrete Global	Calcrete	162.3	343	104.2	47,300	PFS
Forsys	Norasa	Global	Alaskite	291.0	197	126.1	57,200	DFS
Marenica	Marenica	Global	Calcrete	298.9	93	61.1	27,700	Scoping
Orano	Trekkopje ³	Trekkopje	Calcrete	340.0	76	57.3	26,000	C & M
Paladin/CNUC	Langer Heinrich ⁴	Global	Calcrete	124.8	461	126.7	57,500	C & M
Swakop Uranium	Husab	Global	Alaskite	366.5	453	365.6	165,900	Operating
				Total		1,152.0	533,100	

Source: Various, company reports, rounding errors may occur

1: These are current Resources - Rossing has reportedly produced over 112,000 t of U₃O₈ since 1976.

2: These include the Tubas Sand deposit, which is aeolian sand hosted mineralisation.

3: The Trekkopje Resource was downgraded in 2011 from ~45,200 t U₃O₈ due to differences between electronic assays from downhole logging and subsequent chemical assays.

4: The owners are investigating the feasibility of restarting Langer Heinrich

Primary Alaskite Hosted Mineralisation

- ◆ The primary mineralisation is hosted in alaskite intrusive bodies; the majority of the recognised alaskite-hosted deposits are located in a close to north-south trend termed "alaskite alley", controlled by the Welwitschia Lineament, crosscutting the NE trend of the Damara Belt.
- ◆ Alaskites are leucogranites, largely comprised of quartz alkali feldspars, and interpreted as having been derived from the melting of pelitic sediments; given the felsic nature they will commonly become enriched with any incompatible elements that may be present in the source rocks, which in the Erongo region includes uranium.
- ◆ The main uranium mineral is uraninite (UO₂), however betafite (U(Nb,Ti)₂O₆(OH)) is also recognised in places.

Secondary Mineralisation

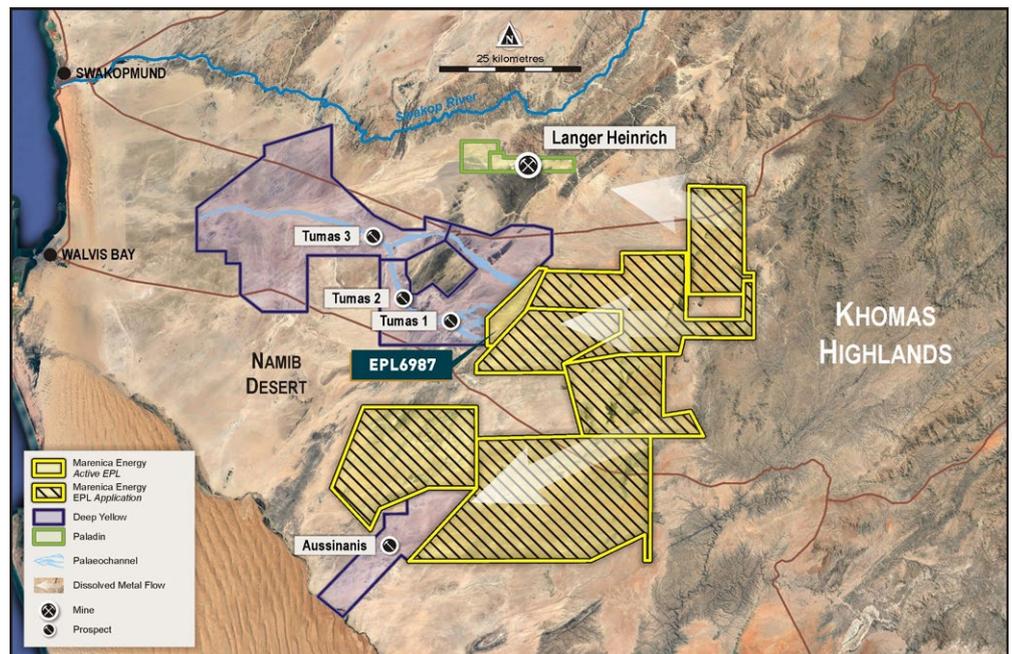
- ◆ The dominant style of secondary mineralisation in Namibia is calcrete hosted within palaeochannels; in addition Deep Yellow's Tubas Sand deposit is hosted within aeolian sands.
- ◆ These deposits have formed from Tertiary to Recent times, with the primary mineral carnotite (K₂(UO₂)₂(VO₄)₂·3H₂O) generally forming coatings and aggregates in fractures and around grains in the calcrete (or any other reducing medium).

- ◆ Three things are required to form secondary deposits:
 - A source,
 - A transport mechanism; and,
 - A secondary mineral depositional mechanism.
- ◆ In the Damaran Orogen, the source of the mineralisation is interpreted as being the late and post orogenic granites, which are naturally elevated in uranium; these necessarily don't need to be the already upgraded alaskites that host the primary mineralisation.
- ◆ The transport mechanism is through the weathering of the granite and transport of dissolved uranium ions and complexes by groundwater - this naturally follows the largely sand filled palaeochannels.
- ◆ Deposition is through the reduction of the oxidised uranium bearing groundwaters - one such mechanism may be through the groundwater, which will be flowing near the base of the channel, hitting a constriction forcing the surface to rise, and coming into contact with the reducing calcrete layer(s).

Prospectivity of Marenica's Applications and Tenements

- ◆ Invoking the mineralisation model for secondary deposits above, we consider Marenica's holdings very prospective for calcrete hosted mineralisation, which has been shown at Marenica (discussed later), Mile 72, and more recently in EPL6987.
- ◆ Figure 3 shows the location of Marenica's southern group of tenements and applications and the relationship to known palaeochannels, identified mineralisation and potential fluid flow paths - as shown in Figure 2 all areas pegged by Marenica are located over and/or downstream from large areas of the Damara granites, and thus there is a ready source for uranium.

Figure 3: Southern Erongo tenements and infrastructure

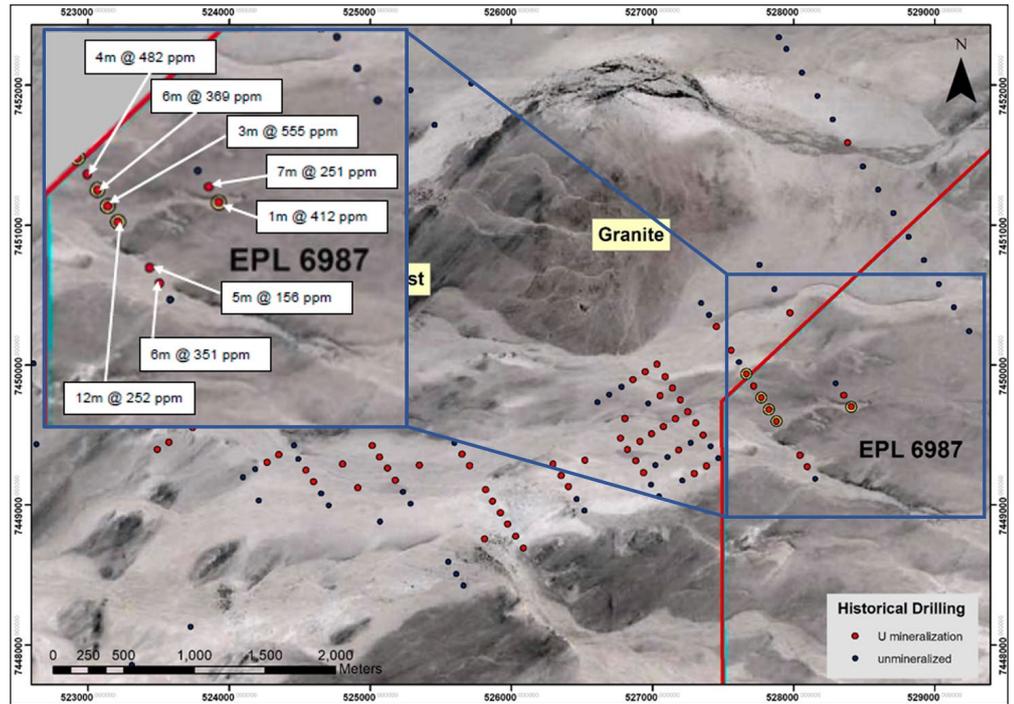


Source: Marenica

- ◆ Areas for pegging were chosen following up a review of exploration data from work carried out by General Mining Union Corporation ("General Mining") in the 1970s - the Company has reported that the work by General Mining, which initially included ground based scintillometer and radon cup surveying, identified a number of areas that required follow up - these areas are in the upper parts of the palaeochannels hosting Deep Yellow's Tumas and Aussinanis deposits.
- ◆ Results of drilling by General Mining are shown in Figure 4 - the focus of activities however then moved to Langer Heinrich, following its discovery in 1973, resulting in a number of other targets not being followed up.
- ◆ Drilling returned some very good thicknesses and grades over an area of 800 m x 1,000 m in EPL6987, including 3 m @ 555 ppm U_3O_8 , 12 m @ 252 ppm U_3O_8 and 6 m @ 369 ppm U_3O_8 .

- ◆ The Company has used these results to estimate an Exploration Target of 20 Mlbs to 60 Mlbs at between 300 ppm and 500 ppm U_3O_8 - the Company is of the view that this could result in a Resource of sufficient size to justify development, should it be amenable to **U-grade™** processing.

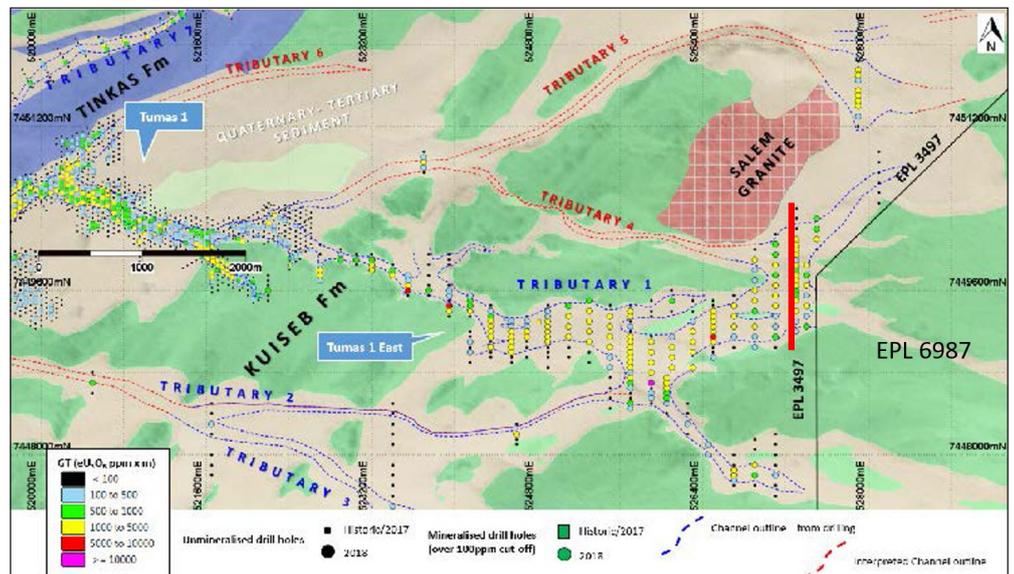
Figure 4: General Mining drilling results within current EPL 6987



Source: Adapted from Marenica

- ◆ Recent drilling by Deep Yellow at the Tumas 1 East deposit supports the potential of the Marenica tenement and applications - this has intersected mineralisation in the palaeochannel just 100m west of the boundary of EPL6987 (Figure 5), with this drilling being used in a recent Resource upgrade.
- ◆ Although the strongest mineralisation intersected by Deep Yellow was in section 526500 mE, some one km west of the tenement boundary, the second closest line, 527300 mE still returned very encouraging results over a channel width of 600 m, with grades averaging ~ 180 ppm eU_3O_8 and thicknesses averaging ~8 m.
- ◆ It is to be noted that the areas covered by Deep Yellow's recent drilling had no surface radiometric signature, with the exception of a few small hot-spots due to the cover.
- ◆ The Deep Yellow results would also appear to support the results of the General Mining drilling, thus giving comfort to the drilling within EPL6987.

Figure 5: Deep Yellow drilling and palaeochannels



Source: Deep Yellow release, November 28, 2018 - Red line is section 527300 mE, immediately to the west of EPL6987

THE MARENICA URANIUM PROJECT

History and Previous Work

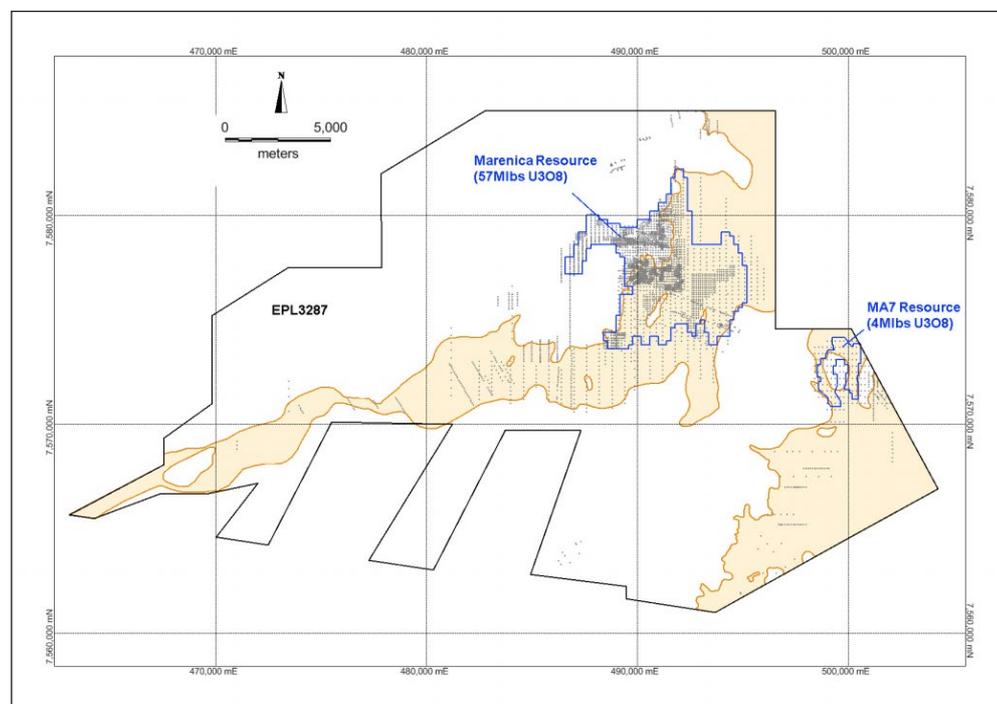
- ◆ Marenica (then West Australian Metals) entered into a JV on the Project with a Namibian local partner in 2006, with an expenditure of N\$1.5 million required to earn 80%, and the junior partner being free carried to a decision to mine; subsequent to this the Company's BEE partner purchased a 5% stake in the Project, with the purchase consideration to be recouped from production revenue.
- ◆ Reconnaissance drilling by General Mining in the 1970s returned encouraging results, however as mentioned earlier, the focus soon moved to Langer Heinrich.
- ◆ This drilling was reported to have intersected two distinct styles of mineralisation; typical calcrete-hosted mineralisation in the palaeochannel and secondary mineralisation hosted in weathered bedrock schists and granites.
- ◆ Work by Marenica from 2007 to 2011 concentrated on Resource drilling, which resulted, following upgrades, in the Mineral Resource Estimate ("MRE") as presented in Table 3, and with a deposit plan and section shown in Figures 6 and 7.

Table 3: Marenica JORC 2012 compliant MRE

Marenica JORC 2012 compliant MRE			
Class	Tonnes (Mt)	U ₃ O ₈ (%)	U ₃ O ₈ (Mlbs)
Marenica			
Indicated	26.5	110	6.4
Inferred	249.6	92	50.9
Total Indicated + Inferred	276.1	94	57.3
MA7			
Indicated	22.8	81	4
Total MA7	22.8	81	4
Total Indicated + Inferred	298.9	93	61.3

Source: Marenica

Figure 6: Marenica deposit plan

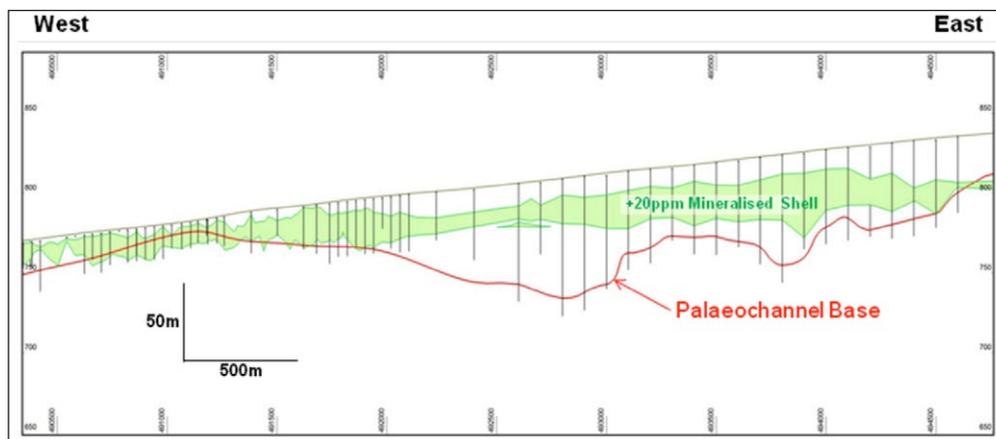


Source: Marenica - note parts of the tenement have subsequently been relinquished

- ◆ This work resulted in a Scoping Study that was completed in 2010 that proposed an alkali heap leach process; the conclusion however was that the Project would not be viable using this route.
- ◆ It was this result that led to a decision to look at alternative processing routes, and this provided the start of testwork that would ultimately lead to the development of the **U-pgrade™** process.

- ◆ The **U-grade™** process was used in an updated Scoping Study in 2017, that envisaged a low mining cost (due to a low strip ratio and soft digging) operation, that could be developed within three years of the commencement of a PFS.
- ◆ As the Resource is largely Inferred, ASIC requirements preclude public release of the operational and financial results of the Scoping Study.

Figure 7: Marenica section 7577200 mN



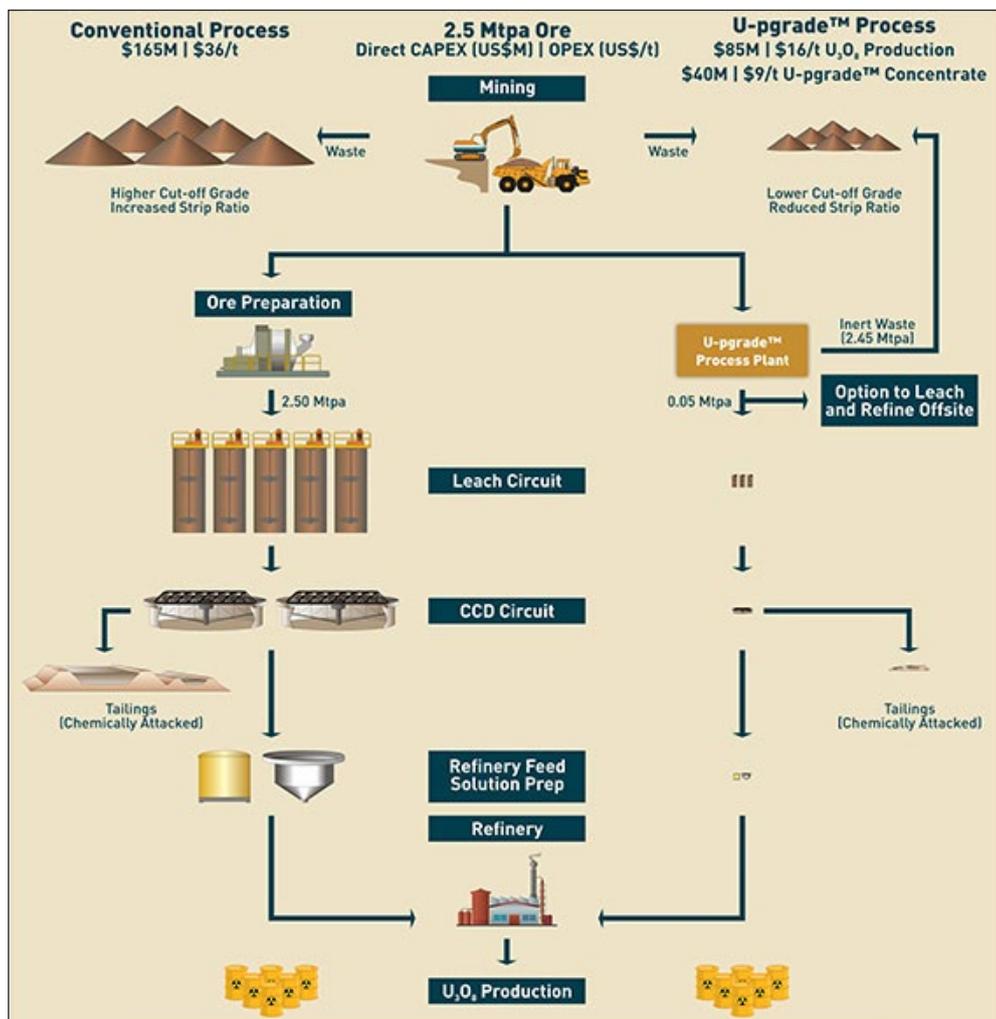
Source: Marenica

THE U-GRADE™ PROCESS

- ◆ **U-grade™** is a wholly owned and patented beneficiation process that has been developed by Marenica, and has been designed to treat and upgrade calcrite-hosted uranium mineralisation.
- ◆ A key issue with this deposit style is that they commonly contain both gypsum and calcite zones - gypsum-bearing material consumes large amounts of alkali reagents, and acid leaching of calcrite mineralisation uses excessive acid.
- ◆ However characteristics of the mineralisation make it amenable to concentration, including the uranium generally being carnotite, which is heavier than calcite and also largely occurs as discrete grains, making it suitable for separation by crushing, scrubbing, screening, cycloning and gravity separation.
- ◆ Testwork, initially on Marenica Project ore samples was very positive, with this confirmed by ongoing testwork and ultimately an updated Scoping Study using the process at the Marenica Project.
- ◆ This Scoping Study work highlighted the following:
 - Recovery of over 76% of the uranium to less than 2% of the mass,
 - This resulted in a 50x upgrade to concentrate grades of ~5,000 ppm U₃O₈; and,
 - Estimated process capital and operating cost savings of over 50%.
- ◆ This has resulted in the potential of a 50x upgrade in grade from ROM ore to concentrate.
- ◆ A comparison between treatment routes and estimated costs is shown in Figure 8.
- ◆ The savings in operating and capital costs result from the requirement to leach significantly less material (i.e. <5% of the total ROM ore) - the Company has stated that operating costs are largely tonnes based (e.g. variable), and thus doubling the mined grade in the ore effectively halves the unit cost per pound of U₃O₈ treated.
- ◆ Another potential cost saving would be off-site leaching of concentrate at existing facilities, which the Company has stated could potentially decrease capital costs by a further 25% with some additional savings in opex.
- ◆ The Company is also of the view that this could reduce the deposit size required to justify a start-up from 30 Mlbs U₃O₈ to 10 Mlbs to 15 Mlbs U₃O₈ - we note that a number of development studies for calcrite operations that we have seen have mining inventories or Reserves ranging between ~30 Mlbs U₃O₈ and 65 Mlbs U₃O₈ - the latter was in the DFS for Langer Heinrich.
- ◆ We have done some high level modelling of these conclusions as to viable deposit sizes based on published operating and capital costs (and expected **U-grade™** costs derived from these), and they appear to be reasonable.

- ◆ We note that operating costs estimated in development studies for proposed calccrete and similar operations average ~US\$28/lb U₃O₈, with the capital intensity ranging from US\$100 to US\$150 per annual pound of U₃O₈ - these operating costs are supported by actual costs at Langer Heinrich, which whilst still operating both mining and processing had cash operating costs in the order of US\$24/lb U₃O₈, which fell to US\$20/lb U₃O₈ when processing stockpiles prior to going on care and maintenance.
- ◆ Marenica has also carried out testwork in association with the operators of other calccrete-hosted uranium projects in the region (as well as Australia), including Paladin (Langer Heinrich), Deep Yellow (Tumas), Orano (Trekkopje) and Toro Energy (Wiluna).

Figure 8: *U-pgrade*TM vs conventional processing



Source: Marenica

- ◆ Results of the application of the process to Langer Heinrich ore have been very positive - laboratory scale testwork was undertaken in late 2017/early 2018, with results indicating the potential to recover ~85% of the U₃O₈ into ~2.5% of the original ROM mass.
- ◆ The association between Deep Yellow and Marenica commenced in 2013, with bulk sampling testwork completed in 2016 leading to very positive results (98% mass reduction with 82% U₃O₈ recovery), with the companies entering into a Technical Licence Agreement ("TLA") in September that year; testwork was terminated in late 2016 with a change of management and strategy at Deep Yellow, with the TLA being formally terminated by Deep Yellow in April 2019.
- ◆ As of the March 2019 Quarterly Report, Marenica indicated that it was still in various stages of discussion with a number of resource owners with regards to the benefits of *U-pgrade*TM to their projects, with the Company also looking at further projects for acquisition or application of *U-pgrade*TM.

UPCOMING ACTIVITIES

- ◆ The Company has just commenced electromagnetic (EM) surveying and a reconnaissance drilling programme on the Mile 72 EPL - additional activities will depend upon the results of this initial work.

- ◆ EM surveying is used to define the locations and profiles of the palaeochannels, followed up by drilling, which is commonly rotary air blast (“RAB”) - given the shallow depth of the channels the RAB drilling programmes can effectively cover a significant area with a limited metrage (and hence relatively cheap) drilling programme.
- ◆ The Company is currently applying for the environmental clearance certificate (“ECC”) for EPL6987 - this is expected to take ~ two months, and once received an exploration programme will commence, which will include locating extensions to the known palaeochannels and identifying drill targets additional to those found in the historic drilling.
- ◆ These targets will then be drilled.
- ◆ Work on the other areas, including the ECC applications, will commence upon grant of the relevant tenements.

PEERS

- ◆ Marenica is one of a number of active ASX and TSX listed uranium explorers and developers with current Resources, with this also including Paladin, which is looking at restarting Langer Heinrich and Boss Resources, with the fully developed Honeymoon operation which is also being considered for commencing production.
- ◆ We present a selection of these in Appendix 1, with a range of mineralisation styles and geographical locations - we have ranked these on the basis of EV/equity share of Resources - here we have adjusted the global project Resources to reflect ownership.
- ◆ This parameter however should be treated with care, and is indicative only, and will be determined by a number of factors.
- ◆ However what this does show is a correlation of EV/equity lb U₃O₈ with project stage and grade - as expected the very high grade Athabasca Basin operators are valued highly, followed by those companies under care and maintenance.
- ◆ This table also highlights the order of magnitude difference in grade between the Athabasca Basin unconformity related deposits (also applicable to deposits in the Northern Territory of Australia) and the other deposits, including hard rock and sedimentary - the Athabasca companies have been included for comparison purposes only.
- ◆ The comparison also highlights the uplift potential for Marenica with a meaningful discovery.

CAPITAL STRUCTURE

- ◆ Marenica currently has 73.2 million fully paid ordinary shares and 23.5 million unlisted options on issue - the options have exercise prices of between A\$0.17 and A\$0.21, and expiry dates from December 12, 2019 to November 30, 2021.
- ◆ There are also 202,500 unvested performance rights on issue.
- ◆ The largest shareholder is Hanlong Energy with 15.89%, directors hold 5.61% with the top 20 holding 58.17%.
- ◆ As of March 19, 2019 the Company had 1,736 shareholders.

BOARD AND MANAGEMENT

- ◆ **Mr Andrew Bantock – Non-Executive Chairman and Director:** Andrew is a Senior Managing Director of international corporate advisory firm FTI Consulting, where he co-leads the Australian Mining and Mining Services Practice. Andrew has operated as CFO, Chairman, CEO and Director of international, public, government sector and private corporations.

His previous roles include CFO of Glencore Xstrata Plc’s Australian nickel business; Director of WA Water Corporation where he also chaired the audit committee; Chairman, CEO and Corporate Director of an ASX listed multi-commodity minerals exploration group; and Finance Director of ASX/NZSE listed GRD Ltd, owner of New Zealand’s largest gold miner and GRD Minproc (now part of AMEC Foster Wheeler), a world class mining construction and development engineer. He has developed a reputation for building and improving companies over his 30 years in business.

- ◆ **Mr Murray Hill - BSc Extractive Metallurgy, FAusIMM – CEO and Managing Director:** Murray, a Fellow of the AusIMM, has 35 years’ of experience in the mining industry. He is a metallurgist with extensive operating and process plant commissioning experience.

Murray is an innovative thinker who has made a positive impact on operations through his career. He has held management roles at a metallurgical testwork laboratory and an engineering group, which compliments his practical experience. For the 11 years prior to joining the Company, he operated his own business providing metallurgical consulting services to the mining industry world-wide, including a range of uranium projects.

- ◆ **Mr Nelson Chen – Master of Applied Finance, CA - Non-Executive Director:** Nelson has served as Chief Operating Officer of Hanlong (Australia) Resources Pty Ltd since March 2010 and director of Hanlong (Australia) Resources Pty Ltd since June 2010. He has served on the board of Moly Mines Limited as an alternate director to the principal of Hanlong Group since April 2010. Prior to joining Hanlong, Nelson was an Associate Director at the Sydney, Australia office of PricewaterhouseCoopers with experience in audit and M&A transaction advisory experience.
- ◆ **Mr Shane McBride – FCPA, FGIA, FCIS, MAICD - CFO and Company Secretary:** Shane has thirty seven years' of commercial management experience gained in listed Australian public companies incorporating the disciplines of corporate management, project development and mine site operations management, management and financial accounting, corporate finance, investor relations, and company secretarial functions. Thirty two years of this experience has been with mining industry. Over the last seven years Shane worked for an Australian listed uranium project development company and was intimately involved with the exploration advancement, scoping and pre-feasibility studies undertaken on the project; and the financing activities to undertake those activities. Shane is a Fellow of CPA Australia, Fellow of Governance Institute of Australia and the Institute of Chartered Secretaries and Administrators; and is a Member of the Australian Institute of Directors.

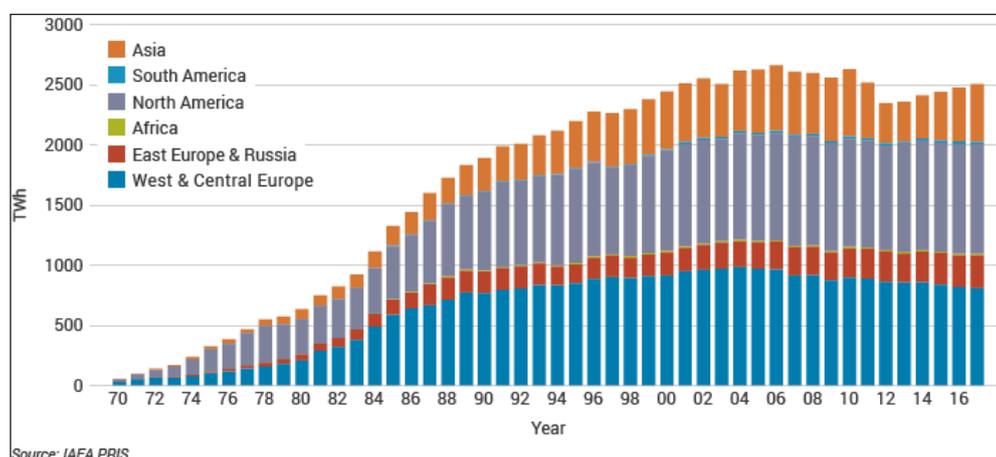
Bios extracted from Company website, March 17, 2019.

BACKGROUND - URANIUM MARKETS

GENERATION CAPACITY

- ◆ The global uranium markets are tied closely to electricity generation, with the majority of uranium being used in power stations - around 11% of the world's 2017 power consumption of 21,375 TWh was nuclear fuelled, with 451 reactors for a total capacity of 396 GWe in operation.
- ◆ Nuclear power generation for civil use commenced in the late 1960s, grew rapidly until the 1990s with growth then slowing and plateauing (Figure 9) - this also shows the fall in generation in 2011/2012 following the Fukushima accident, with Japan taking all reactors off line - prior to the accident Japan produced some 30% of generation from nuclear power, with, in 2010, this supplying some 288 TWh, or ~11% of global nuclear generation.
- ◆ As can be seen in Figure 9 generation has again started to grow, with this largely due to China actively growing its nuclear generation capacity - in 2017 nuclear power, at 43 GWe in 45 operable reactors accounted for some 4% of the country's generation capacity; China currently has 13 reactors under construction to take its generation capacity to 58 GWe by 2020, and another 43 planned with a medium term target of an additional 30 GWe capacity

Figure 9: Global nuclear fuelled electricity generation 1970 to 2017



Source: WNA

- ◆ Prior to Fukushima, China had indicated plans to grow its nuclear generation capacity to ~400 MWe by 2050, however subsequent to the events of 2011 there have been some mixed messages coming out of the country regarding the potential growth in nuclear generation.
- ◆ Table 4 shows the potential increase in reactor numbers (not taking into account any shutdowns), with Figure 10 breaking this down by the top 10 countries - note in Table 4 we have included our estimate of U₃O₈ requirements based on 190 t per GWe per annum.

Table 4: Forecast reactor builds and U₃O₈ demand

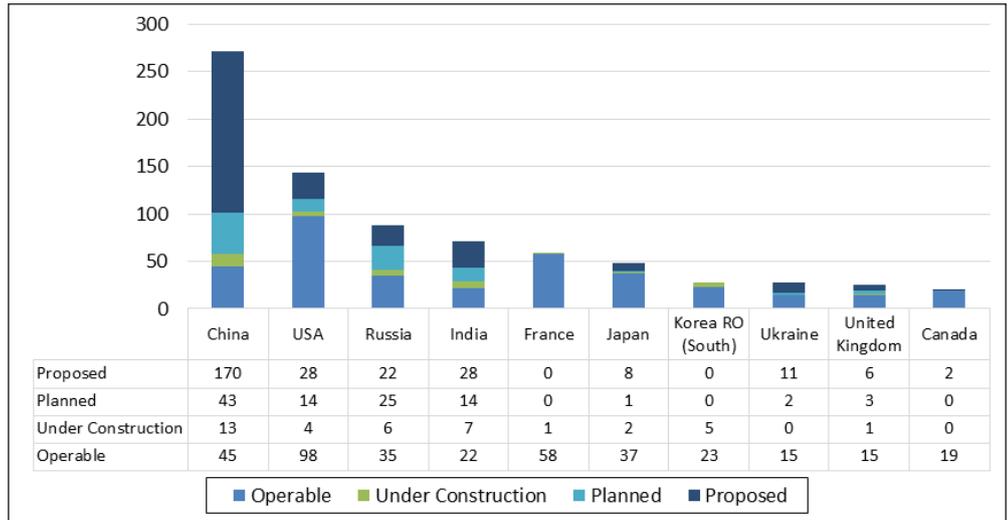
Forecast reactor builds and U ₃ O ₈ demand					
Stage	Number	Capacity Mwe	U ₃ O ₈ Required Tonnes	Est'd U ₃ O ₈ Req'd Mlbs pa	Cumulative U ₃ O ₈ Mlbs
Operating	449	396,547	75,344	166	166
Under Construction	57	61,960	11,772	26	192
Planned	126	125,190	23,786	52	244
Proposed	372	423,622	80,488	177	422

Source: IAEA, IIR analysis

- ◆ The takeout from Figure 10 which shows the top 10 countries by total planned reactors is that expected future growth will largely be from Asia, with this driven by China and India; Japan is progressively restarting a number of its 42 operable reactors - as of 2017 nine had been restarted.
- ◆ The top 10 comprise ~80% of both existing and total planned numbers.
- ◆ Growth in Europe is estimated to be flat at best - Germany plans to shut down its seven remaining reactors by 2022, however with France postponing previously announced plans to reduce its reliance on nuclear energy from 72% to 50%.

- ◆ Expected near term growth in North America will be relatively flat, with contributing factors including the cost and time to build new reactors, and the availability of cheap gas - the US is currently extending the life of its aging reactor fleet.

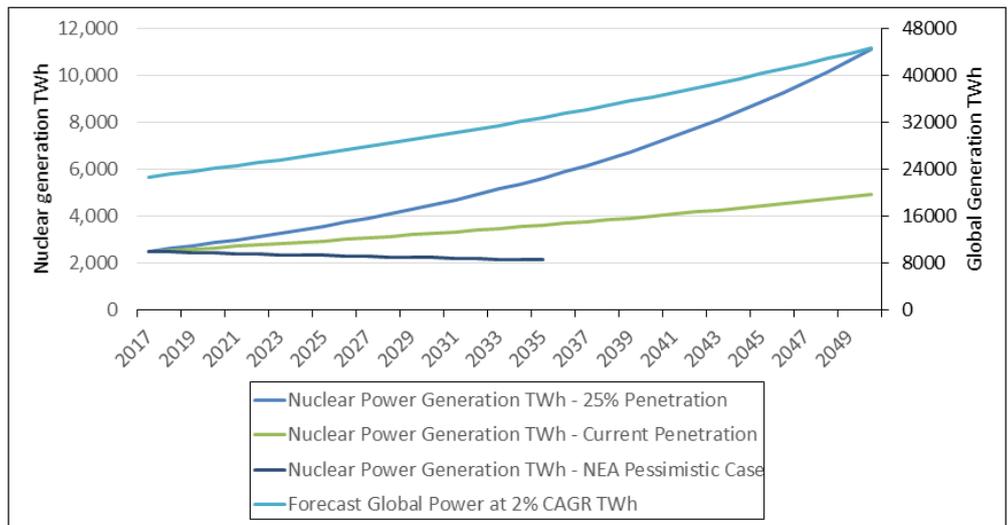
Figure 10: Reactor builds - top 10 countries



Source: IAEA

- ◆ However, accurate forecasting of future trends is inaccurate at best - it depends on a number of factors in addition to those for most commodities, including politics, cost of building reactors and public sentiment.
- ◆ In the 2018 “Red Book”, the Nuclear Energy Agency (“NEA”) has an upper case demand increase of 45% to 568 GWe by 2035 (this is a close figure to that incorporating operating, under construction and planned reactors in Table 4), however on the flip side, the pessimistic case is for a 15% fall to 331 GWe over the same period - these are respectively a 2% CAGR rise and -1% CAGR fall, with the former being very similar to the forecast global increase in total electricity generation, thus not allowing for any increase in penetration of nuclear power generation.
- ◆ Figure 11 shows forecast global power generation to 2050, as well as three cases for nuclear fuelled generation - one with the status quo at 11% penetration (and the NEA’s upper case), the NEA’s pessimistic case to 2035 and an upside case with an increase in penetration to 25% by 2050 as envisaged in the WNA’s “Project Harmony”.

Figure 11: Forecast generation



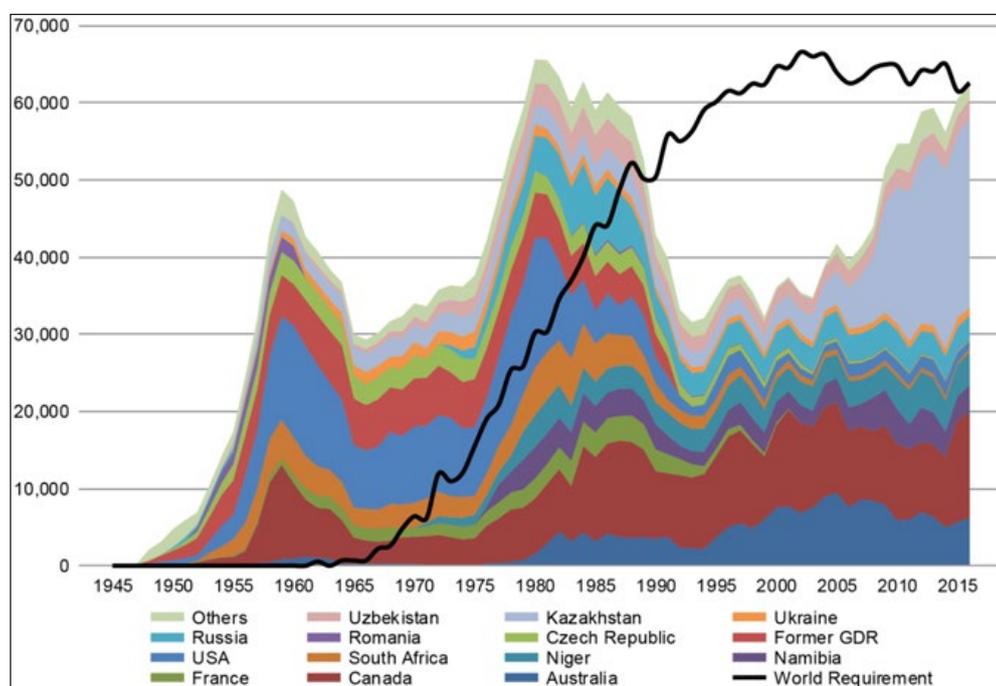
Source: IRR analysis

URANIUM DEMAND AND SUPPLY

- ◆ As a rule of thumb, currently operating reactors require ~190 t of U₃O₈ each annually to keep operating, resulting in current global demand of 160 mlbs to 170 mlbs - only around ~0.7% of the U₃O₈ produced and sold is the fissile U-235 isotope; the rest is U-238 which goes to “tails” in the conversion and enrichment process.

- ◆ This usage intensity has been falling over time, with improvements in processing and reactor efficiency driving this.
- ◆ There are two main sources of uranium - primary mine supply and secondary supply with the latter including stockpiles, reprocessed military warheads and reprocessed used fuel - primary mine supply made up ~85% of total supply in 2017.
- ◆ Figure 12 highlights the variability in primary supply since the 1940s:
 - Production in the 1940s to late 1960s was largely for military use, with this leading to large stockpiles,
 - As mentioned previously, the 1970s to 1990s saw rapid growth in civil reactor construction and operation, with this resulting in the drawdown of stockpiles, and hence relatively low primary uranium production in the latter part; and,
 - This was followed by a flattening of generation growth, however a sharp spike in primary production that was coincident with sharply rising prices in the mid to late 2000s.
- ◆ Again this led to growing stockpiles followed by falling prices which were exacerbated by the Fukushima accident.

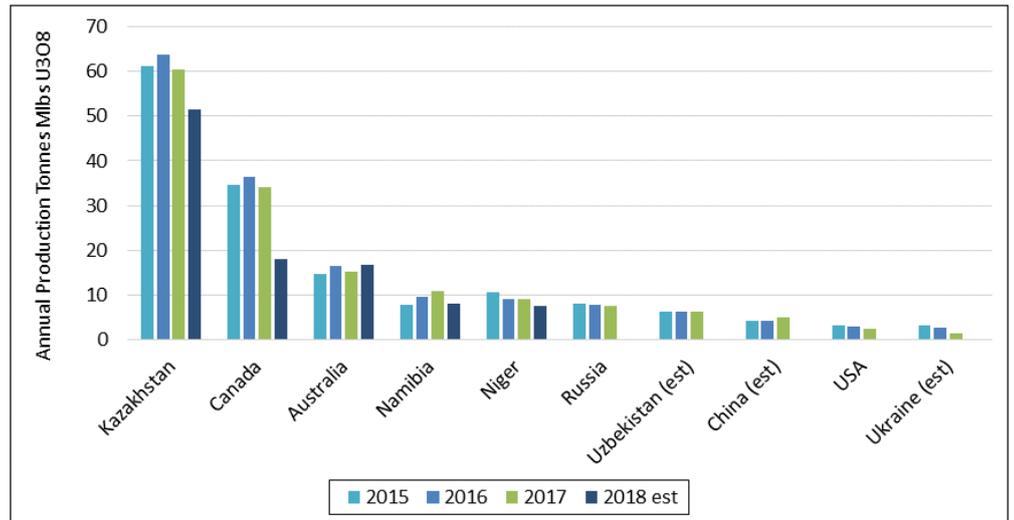
Figure 12: Uranium production by country and demand (tonnes U)



Source: WNA

- ◆ The end result has been major production cuts in 2018 following on from smaller cuts in 2017, as shown in Figure 13 - this shows actual data for 2015 to 2017 sourced from the WNA for the 10 largest producers (which produce some 98% of global uranium), with the data for the top five for 2018 estimated by IIR from publicly released figures:
 - A production cut of ~20% by Kazatomprom in Kazakhstan, resulting in a cut of ~9 Mlb U_3O_8 ,
 - Suspension of operations at the McArthur River Mine in Canada, removing 16 Mlbs U_3O_8 of production,
 - Company releases indicate an increase in Australian supply of ~9%, largely due to increased production from Olympic Dam where uranium is a by-product,
 - Suspending operations at the 5 Mlbs U_3O_8 per annum Langer Heinrich operation in Namibia; and,
 - Production cuts totalling ~15% from the SOMAIR and COMINAK operations in Niger.
- ◆ In 2017 the top five countries delivered some 85% of primary mine production.
- ◆ Together these changes have removed around 28 Mlbs U_3O_8 or close to 20% of the estimated 2017 primary production of 155 Mlbs U_3O_8 , and with stockpiles being run down have resulted in markets going into deficit for the first time in a decade.

Figure 13: Uranium production by country and year, top 10 producers

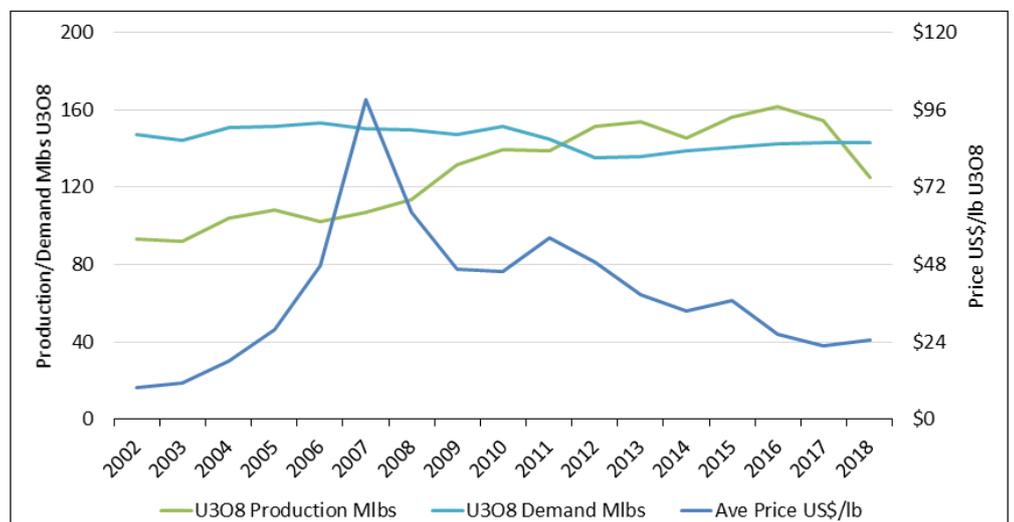


Source: WNA (2015 to 2017), IIR analysis, company reports and other publicly available data (2018)

SALES AND PRICING

- ◆ Most uranium supply is priced on a contract basis between the buyer and seller, with the terms being confidential - these prices are different to the spot price that is quoted in the markets.
- ◆ However, over recent years, the proportion of spot sales has increased, with sellers, as contracts run out, not wanting to enter into new contracts at low prices - one upshot of this has been the closure of some of the lowest cost mines, including McArthur River, as contracts finish and companies naturally not prepared to keep mining when costs are higher than prices.
- ◆ Additionally companies would rather meet the contract requirements from stockpiles - this has also seen producer companies entering the spot market to source cheap supply to fulfil contracts.
- ◆ Figure 14 presents pricing, demand and primary supply since 2002 - this highlights the sharp spike in prices during the mid to late 2000s, subsequent correction and then the bull market following Fukushima.
- ◆ This also shows the supply surplus from 2011 to 2017, which has led to the very depressed prices with the market again moving into deficit with supply cuts.
- ◆ However, with the recent withdrawal of supply we have seen prices on the increase again since the late 2016 low of US\$18/lb - although these have now reached ~US\$30/lb, this is still lower than the cost of production for around 40% of producers, thus highlighting the unsustainability of current prices.

Figure 14: Uranium demand, supply and price 2002 to 2018



Source: WNA, IndexMundi (to 2017), IIR analysis, company reports and other publicly available information (2018)

WHERE TO FROM HERE?

- ◆ Most factors are pointing towards upcoming price rises, with the market going into deficit with no substantial new production on the horizon with the exception of Husab; prices will also need to increase for currently mothballed operations to be brought back on stream - the owners of Langer Heinrich and McArthur River are now looking at the feasibility of restarts, with Boss also looking at a start-up at Honeymoon.
- ◆ In addition to expected growth in civil demand, rising geopolitical tensions could result in increases in military demand.
- ◆ Another pointer to the upside potential is the buying of uranium for speculative purposes by financial players - an example is the recently listed Yellow Cake plc (LSE:YCA), which has an agreement to purchase uranium from Kazatamprom.
- ◆ Some believe that a price of US\$30/lb to US\$40/lb will be required to justify restarts, and that incentive prices of at least US\$60/lb to US\$70/lb will be required to fund and develop new start-ups.
- ◆ As mentioned earlier, what is unclear are demand increases in the future, however current prices are unsustainable with the market in deficit but a restart of currently shut operations should be sufficient to meet current requirements.
- ◆ It is expected that new capacity, in addition to that which could come from expansion of existing operations, will be needed to come on stream to supply future increases in demand.
- ◆ This points towards a possible price rise to at least US\$60/lb to US\$70/lb in the medium term to meet the incentive price, a view to which we concur.
- ◆ The successful commercialisation of **U-pgrade™** could be a disrupting factor, in bringing down costs to a figure well below the current incentive cost for calcrete style opportunities, and thus making such an operation a lot more attractive to financiers at a uranium price lower than the current incentive price.

Notes - China

- ◆ Although China is building the most reactors and thus could be seen as being the major customer for producers, it has a strategy of securing fuel supply through ownership of operations - these include considerable current and potential holdings in Namibia:
 - The state owned China National Uranium Company ("CNUC") is in the process of purchasing 68.62% of Rossing, with a nameplate capacity of 10 Mlbs of U₃O₈ per year, and which produced 4.65 Mlbs in 2017,
 - CNUC also owns 25% of Langer Heinrich (5 Mlbs U₃O₈ per year); and,
 - Swakop Uranium, which owns Husab, is owned 90% by Chinese interests and 10% by the Namibian Government, and is ramping up to a production of 12 Mlbs U₃O₈ per year, 80% of which will be supplied to China and 20% of which will be traded.
- ◆ At full/name plate production and closure of deals Chinese interests would have access to close to 18 Mlbs U₃O₈ per year, sufficient to supply ~40 GWe of generation capacity, close to current numbers of 43 GWe.
- ◆ However with a planned medium term generation capacity of 88 GWe, China will need to find an additional 20 Mlbs U₃O₈ per annum to meet requirements - currently it imports 95% of requirements.

Notes - The United States

- ◆ The US Department of Commerce is considering a Section 232 petition, a trade law that allows imports to be subject to duties if they are deemed to be a threat to U.S. national security - this was the same clause under which tariffs were placed on imports of steel and aluminium in 2018.
- ◆ At the same time the administration is also considering whether to make US utilities buy 25% (or whatever figure may be decided on) of their uranium requirements from domestic producers.
- ◆ With 2017 usage of 42 Mlbs U₃O₈, domestic production would need to rise to ~10 Mlbs to meet the potential Section 232 requirements, five times the current production of ~2 Mlbs U₃O₈.
- ◆ The findings and recommendations are expected to be released to the President's office on April 14, with the President then having a 90 day period to consider and act on the findings - at the time of writing no news as to the recommendations had been released.

APPENDIX 1 - URANIUM EXPLORERS AND DEVELOPERS PEER COMPARISON

Uranium Explorers and Developers Peer Comparison										
Code	Description	Last Price	EV	Key Project	Style	Stage	Equity* Tonnes Mt	Equity Grade ppm U ₃ O ₈	Equity Contained U ₃ O ₈ Mlbs	EV/lb U ₃ O ₈
NXE.TSX	NexGen Energy Ltd.	\$2.31	\$826.0 m	Arrow	Unconformity	PFS Completed	5.43	25,126	301	\$2.75
FCU.TSX	Fission Uranium Corp.	\$0.56	\$249.2 m	Triple R	Unconformity	PEA Completed	3.52	18,124	140	\$1.77
PEN.ASX	Peninsula Energy Ltd	\$0.27	\$52.5 m	Lance	Roll front	Operating, performance improvement initiative	50.7	465	52	\$1.01
BOE.ASX	Boss Resources Ltd	\$0.05	\$69.7 m	Honeymoon	Paleochannel Sandstone	C & M, looking at a start-up	52.4	618	71	\$0.98
PDN.ASX	Paladin Energy Ltd	\$0.14	\$331.7 m	Langer Heinrich	Paleochannel Calcrete	C & M, looking at the feasibility of restarting	272	683	410	\$0.81
TOE.ASX	Toro Energy Limited	\$0.02	\$50.8 m	Wiluna	Playa Lake Calcrete	DFS Completed	79.1	483	84	\$0.60
DYL.ASX	Deep Yellow Limited	\$0.40	\$71.2 m	Reptile	Paleochannel Calcrete	PFS Completed	201	320	142	\$0.50
GXU.TSXV	GoviEx Uranium Inc.	\$0.20	\$80.9 m	Madaoela	Paleochannel Sandstone	PFS Completed	143	632	199	\$0.41
VMY.ASX	Vimy Resources Ltd	\$0.07	\$31.3 m	Mulga Rock	Paleochannel Lignite	DFS Completed	71.4	574	90	\$0.35
FSY.TSX	Forsys Metals Corp.	\$0.24	\$37.4 m	Norasa	Alaskite	DFS Completed, Permitted	291	197	126	\$0.30
BMN.ASX	Bannerman Resources	\$0.05	\$46.8 m	Etango	Alaskite	DFS Completed	432	191	181	\$0.26
MEY.ASX	Marenica Energy Ltd	\$0.11	\$7.0 m	Marenica	Paleochannel Calcrete	Scoping Completed	224	93	46	\$0.15
BKY.ASX	Berkeley Energia Ltd	\$0.31	-\$19.8 m	Salamanca	Hydrothermal	Permitting	82.6	479	87	-\$0.23

Source: IRESS, Company reports. * "Equity" refers to company's equity share in uranium Resources.

DISCLAIMER

(a) Disclaimer

The information, reports, financial models, forecasts, strategies, audio broadcasts and other media (referred to as "Content" throughout this Legal Notice), provided on this web site has been prepared and issued by Altavista Research Pty Ltd trading as Independent Investment Research "IIR," Independent Investment Research Holdings Pty Ltd (ACN 155 226 074), as authorised to publish research under an Australian Financial Securities Licence (AFSL No 420170) which allows Independent Investment Research to offer financial service advice to retail and wholesale clients. Users of this web site should not act on any Content without first seeking professional advice. Whilst the Content contained on this web site has been prepared with all reasonable care from sources which we believe are reliable, no responsibility or liability is accepted by Independent Investment Research, for any errors or omissions or misstatements however caused. Any opinions, forecasts or recommendations reflect our judgement and assumptions at the date of publication or broadcast and may change without notice. Content on this web site is not and should not be construed as an offer to sell or the solicitation of an offer to purchase or subscribe for any investment. We are not aware that any user intends to rely on the Content provided or of the manner in which a user intends to use it. In preparing our Content it is not possible to take into consideration the investment objectives, financial situation or particular needs of any individual user.

Access by any user to this website does not create a client relationship between Independent Investment Research and the user. Users seeking to invest must obtain individual financial advice to determine whether recommendations are appropriate to their investment objectives, personal financial situation or particular needs, before acting on any recommendations. Any Content is not for public circulation or reproduction, whether in whole or in part and is not to be disclosed to any person other than the intended user, without the prior written consent of Independent Investment Research.

(b) Disclosure of Interest

General

Independent Investment Research, its officers, employees, consultants and its related bodies corporate have not and will not receive, whether directly or indirectly: any commission; fee; benefit; or advantage, whether pecuniary or otherwise, in connection with making any recommendation contained on this web site. Independent Investment Research, discloses that from time to time, it or its officers, employees and its related bodies corporate: may have an interest in the securities, directly or indirectly, which are the subject of these recommendations; may buy or sell securities in the companies mentioned in the Content; may effect transactions which may not be consistent with the recommendations in the Content; may have directorships in the companies mentioned in the Content; and/or perform paid services for the companies that are the subject of such recommendations.

However, under no circumstances, has Independent Investment Research been influenced, either directly or indirectly, in making any recommendations contained on this web site.

Corporate Research

Independent Investment Research has or may have, received a fee either directly by a company itself or by a third party, to provide coverage and/or corporate research (the "Fee"). Where a Fee has been received, Independent Investment Research does not publish:

Buy / Hold / Sell recommendations for the security or managed investment schemes.

(c) Copyright Protection

All Content at this web site is protected by copyright. Apart from any use permitted under the Copyright Act (Cth) 1968, you must not copy, frame, modify, transmit or distribute the material at this web site, without seeking the prior written consent of the copyright owner. Content on this web site is owned by the business Independent Investment Research. Users are prohibited from copying, distributing, transmitting, displaying, publishing, selling, licensing, creating derivative works or using any content on the web site for commercial or public purposes

Copyright 2010 Independent Investment Research. All rights reserved.

(d) Trade Marks

The trade marks and logos displayed on this web site belong to Independent Investment Research or other parties. Such trade marks include registered trade marks and trade marks pending registration. Users are prohibited from using any of these trade marks, without seeking the prior written consent of IIR or such third party, which may own the trade mark content on this web site.

(e) Limitation of Liability

To the fullest extent permitted by the law, Independent Investment Research and any of its officers, employees, agents, consultants or related bodies corporate disclaim any liability, whether based in contract, tort, strict liability or otherwise, for any direct, indirect, incidental, consequential or special damages arising out of or in any way connected with the use of any Content made available on this web site by any person or entity.

(f) No Warranties

Independent Investment Research does not make any claims, promises, guarantees, representations or warranties regarding the accuracy, completeness or fitness for purpose of the Content made available on this web site. All information on this web site is provided to you on an as is basis, without warranty of any kind either express or implied. To the extent that research can be provided by third parties, Independent Investment Research makes no warranty or representation as to the accuracy or completeness of such information displayed on this site, and accepts no liability for errors or omissions arising from such third party information. To the fullest extent permitted by law, under no circumstances will Independent Investment Research be liable for any loss or damage caused by users reliance upon information obtained through this web site. It is the responsibility of the user to evaluate the accuracy, completeness or usefulness of any information, opinion, general advice or other content made available through this web site. Furthermore, Independent Investment Research does not warrant or represent that this web site is error free or free from viruses or defects. A user must do all that is necessary (including using virus checking software) to satisfy itself that accessing this website will not adversely affect its system.

For further information, please contact IIR at: client.services@independentresearch.com.au



Independent Investment Research LLC
Independent Investment Research (Aust.) Pty Limited

DENVER OFFICE

200 Quebec Street
Suite 200
Denver Colorado 80230 USA
Phone: +1 720 355 0446

NEWYORK OFFICE

Phone: +1 917 336 0818

SYDNEY OFFICE

Level 1, 350 George Street
Sydney NSW 2000
Phone: +61 2 8001 6693
Main Fax: +61 2 8072 2170
ABN 11 152 172 079

MELBOURNE OFFICE

Level 7, 20-22 Albert Road
South Melbourne VIC 3205
Phone: +61 3 8678 1766
Main Fax: +61 3 8678 1826

MAILING ADDRESS

PO Box H297 Australia Square
NSW 1215