



25 March 2019

## **ASX Announcement**

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# **Marenica secures a Strategic Uranium License**

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- **EPL 6987 “Koppies”, which covers the eastern extension of the highly prospective Tumas palaeochannel system, has been granted to Marenica**
- **Historical drilling indicates that eastern extensions of Deep Yellow’s - Tumas East Uranium Prospect occur within the Koppies Licence**
- **Koppies strategically adds to Marenica’s license position in the area**
- **Exploration is planned to commence in Q2 2019**

Marenica Energy Limited (“Marenica”, “The Company”, ASX:MEY) is pleased to advise that it has been granted exclusive prospecting licence (“EPL”) 6987 in Namibia. EPL 6987, known as Koppies, covers part of the eastern extension of the Tumas palaeochannel which hosts other uranium deposits, including the Tumas and Tubas uranium deposits owned by Deep Yellow Limited ASX:DYL (“DYL”).

Drilling results reported by DYL during 2018 for the Tumas East Uranium Prospect, came within 100 metres of the boundary with EPL 6987. On 11 July 2018, DYL announced an inferred resource in excess of 60 Mlb U<sub>3</sub>O<sub>8</sub> in the Tumas palaeochannel (DYL ASX announcement 11 July 2018 – “Uranium Resources at Tumas 3 Expanded by 32%”).

Marenica Managing Director, Murray Hill, said “securing the Koppies license is an exciting and strategic development for the Company. Koppies is adjacent to Deep Yellow’s - Tumas East Uranium Deposit and is the first of our EPL applications to be granted in the greater Namib Project Area. Historical drilling results obtained for the Koppies license has enabled the estimation of an Exploration Target.”

“The historical drilling results cover an area 1,000 metres in an east-west direction and 800 metres from north to south, providing Marenica with many significant drilling targets to pursue. Drilling costs in Namibia are low compared to Western jurisdictions, we cannot wait to start drilling on the Koppies licence.”

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## Exploration Potential

Using non-JORC compliant historical drilling data and interpretation of the extrapolated palaeochannel course, Marenica has identified an exploration target of 20 to 60 million pounds grading between 300 and 500 ppm  $U_3O_8$  ("Exploration Target"). As with all Exploration Targets, the potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to determine a mineral resource and there is no certainty that further exploration work will result in the determination of mineral resources or that the production target itself will be realised.

Marenica has estimated that due to the expected reduced cost base through use of ***U-pgrade™*** and the potential to transport a low-mass high-grade concentrate offsite for leaching and refining; the minimum resource size required to establish a viable production operation at Koppies ranges from only 10 to 15 million pounds  $U_3O_8$ . This compares to a minimum resource size of about 30 million pounds  $U_3O_8$  for conventional processes. Marenica anticipates that the Exploration Target could lead to a resource which would meet these parameters.

## Exploration Program to Commence

Now that the EPL has been granted, Marenica is planning to commence an exploration program including locating the extensions of the palaeochannel through the EPL to identify additional drill targets over and above those identified from historical drilling. A drill program will be completed to test these drill targets.

A condition of the EPL licence is that environmental clearance must be obtained before exploration can commence. The environmental clearance process has been initiated and is expected to take nominally two months, after which time the exploration program will commence.

## Known mineralisation and prospective location

Drilling results reported by DYL in 2018 for the Tumas East Prospect came within 100 metres of the boundary with EPL 6987 and confirmed the zone of uranium mineralisation shown on maps produced by General Mining. General Mining Union Corporation Limited ("General Mining") completed extensive uranium exploration in Namibia in the 1970's and 80's, identifying numerous exploration targets, some of which were drilled, including Koppies. However, upon finding the Langer Heinrich deposit General Mining moved all exploration to Langer Heinrich. Before General Mining returned to exploration targets in the Namib region it exited the country in the early 1980's, leaving exploration targets with low levels of exploration in areas such as Koppies, areas in which Marenica has applied for EPL's.

DYL has announced an inferred resource in excess of 60 Mlb  $U_3O_8$  in the Tumas palaeochannel (DYL ASX announcement 11 July 2018 – "Uranium Resources at Tumas 3 Expanded by 32%"). DYL is expected to release a resource estimate for the Tumas East prospect in 2019 (DYL "31 December 2018 Half-Year Financial Report", 8 March 2019).

Historical drilling results reported by General Mining that exceed 350 ppm  $U_3O_8$  are shown below.

- 3 metres at 555 ppm
- 4 metres at 482 ppm
- 1 metres at 412 ppm
- 6 metres at 369 ppm
- 6 metres at 351 ppm

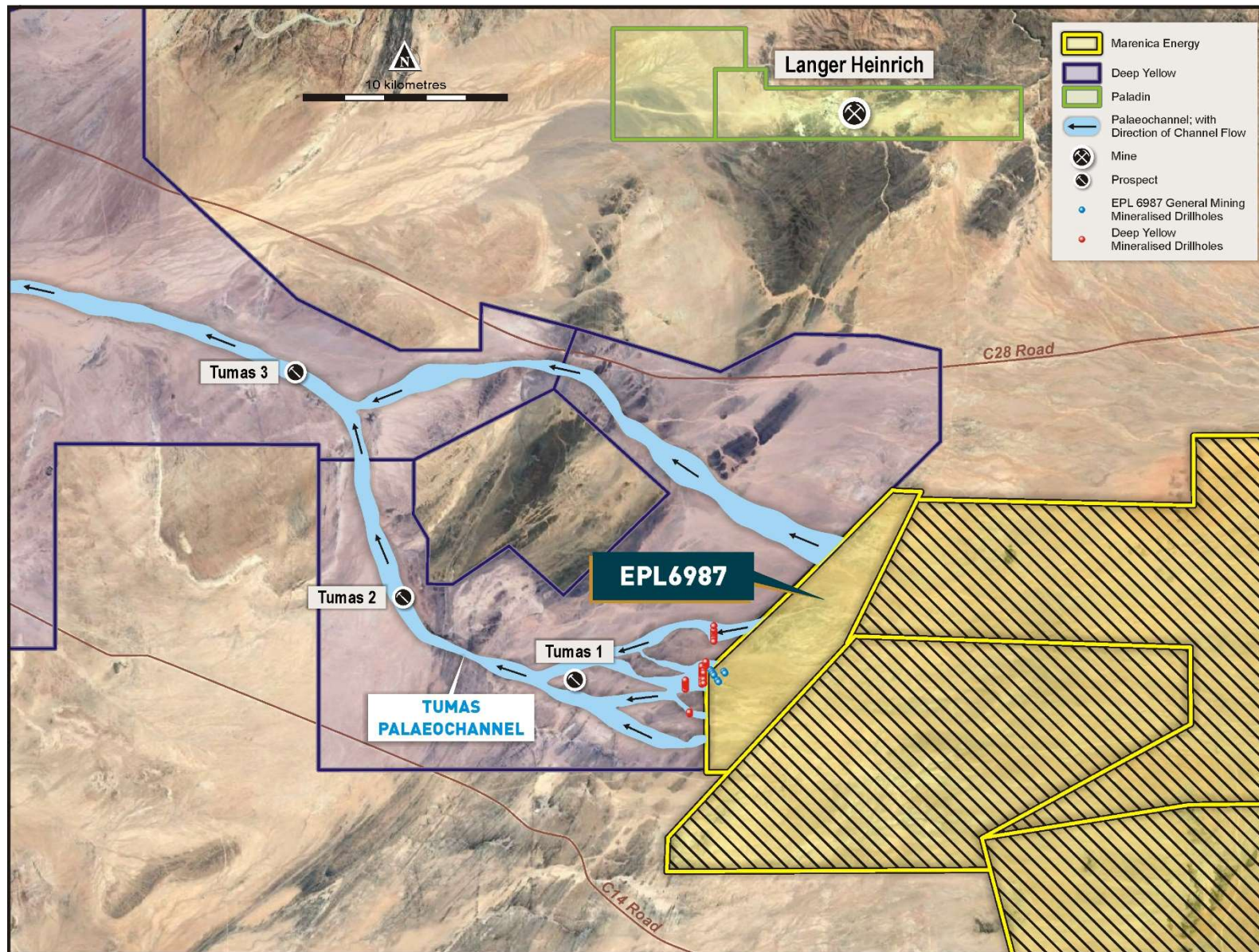
The location of the General Mining mineralised drill holes along with DYL's most eastern mineralised drill holes on the Tumas East prospect, are shown in Figure 1.

The Koppies licence is located in the highly prospective Namib uranium province, with the Tumas palaeochannel system running through the EPL. The map in Figure 2 is a reproduction of Carlisle's Model<sup>1</sup> applied to the Namib Desert in the south of the Erongo region of Namibia. The source rocks of uranium and vanadium underlie the plains at the foot of the Khomas Highlands and the groundwater containing the dissolved metals moves laterally down slope to where the deposits of Langer Heinrich, Tumas and Aussinanis have been found. The groundwater has clearly had to move through the Namib Desert covered by Marenica's tenements and these known deposits to the west.

An internationally recognised authority on calcrete uranium deposits, Dr Charles Butt, formerly a Chief Research Scientist with the commonwealth Scientific and Industrial Research Organisation ("CSIRO"), reviewed Marenica's model and commented, "The rocks in the region seem to be entirely suitable as sources for uranium and vanadium and accordingly, there is potential for uranium and vanadium mobility in groundwater and the presence of trap sites that will determine the prospectivity of ground overlying and downstream from these sources".

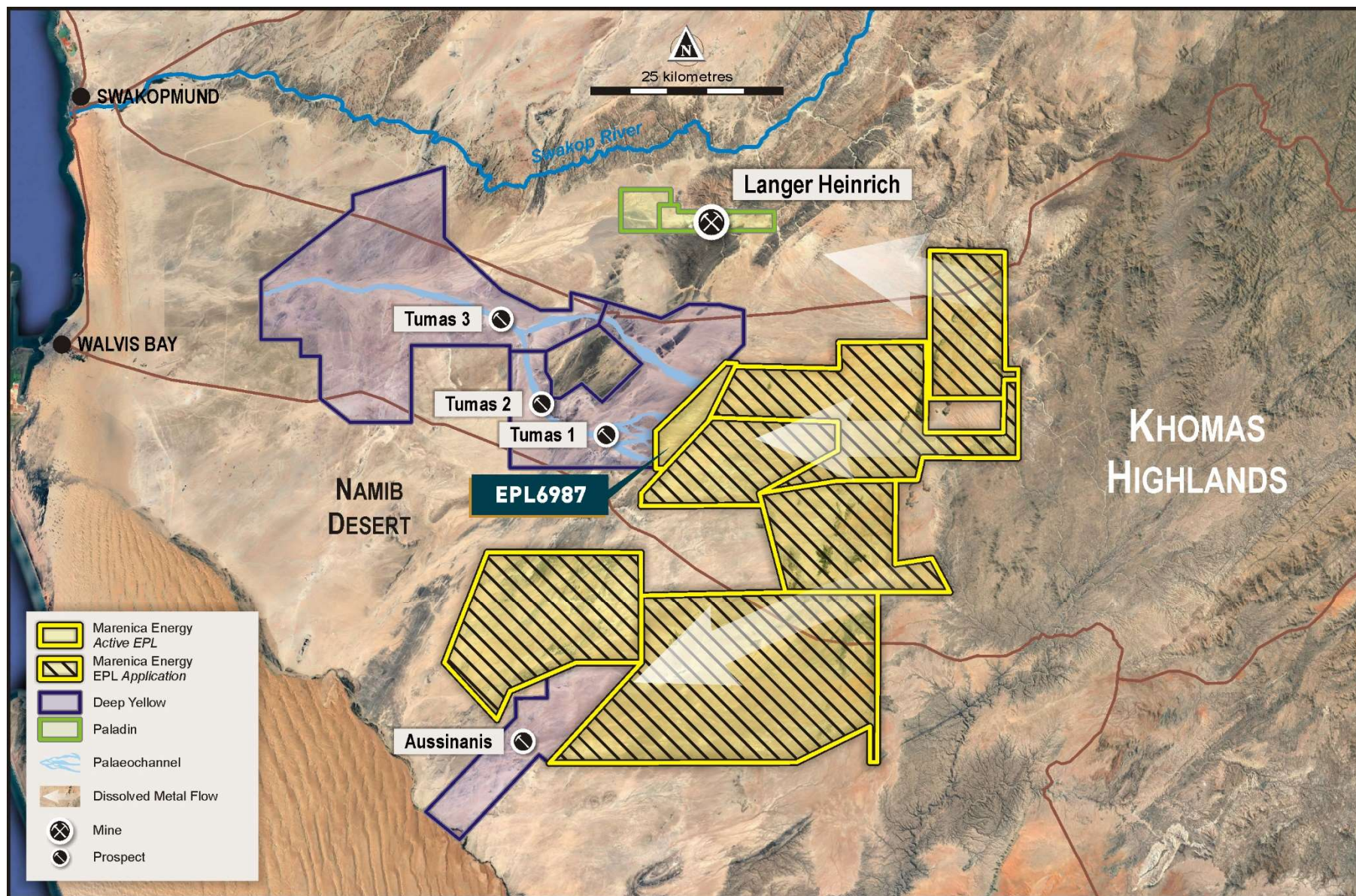
The U<sub>3</sub>O<sub>8</sub> results from General Mining's drilling confirm that uranium mineralisation occurs east of Tumas within the Koppies licence and potentially extends east to the base of the Khomas Highlands.

**Figure 1**      **Location of Mineralised Drill Holes**





**Figure 2**      **Calcrete Hosted Uranium Deposition Model**



## **Link to Marenica's *U-pgrade*<sup>TM</sup> Process**

Marenica owns the patented *U-pgrade*<sup>TM</sup> beneficiation process, which it would intend to use to materially lower capital and operating costs for calcrete hosted uranium deposits like Koppies.

Marenica has previously announced the successful results of an extensive *U-pgrade*<sup>TM</sup> testwork program on the neighbouring Tumas deposit. Marenica has also completed testwork on samples from the Langer Heinrich uranium mine, confirming the amenability of the *U-pgrade*<sup>TM</sup> process. Ore characterisation of all other Namibian calcrete hosted uranium deposits has also confirmed their amenability to *U-pgrade*<sup>TM</sup>.

Based on the work done on the Tumas ore, and the expected similarities between the Tumas and Koppies mineralisation, Marenica expects Koppies ore to perform similar to the Tumas ore tested, concluding that its proprietary *U-pgrade*<sup>TM</sup> process would likely be effective in concentrating the Koppies ore into a high-value low-mass concentrate.

Marenica awaits the outcome of the Namibian regulatory review process on six other EPL applications in the same area, all containing exploration targets identified by General Mining in the 1970's, but not drilled.

## **Geo-referencing of Historical Map**

Marenica has conducted an extensive review of historical reports and maps generated by General Mining in the 1970's, on its Namib II licence, which included a portion of Marenica's EPL 6987 and eastern extensions of the Tumas deposit.

A plan obtained by Marenica and generated by General Mining in 1978, showing the location and grades of historical drill hole samples contained sufficient detail for Marenica's Namibian geologists to geo-reference the plan (Figure 3). This geo-referencing suggested that at least fifteen historical holes were drilled by General Mining within the western portion of EPL 6987, of which eight contained uranium mineralisation (Figure 4).

A visit was undertaken to the licence area in October 2018 with the aim of locating drill hole collars in the field. This proved to be successful with five drill hole collars being present within and immediately adjacent to the licence area (circled yellow in Figure 4). These holes and nearby geographic features were then used to adjust the geo-referencing of the original plan and all historic drill holes were then digitised from this correlation.

After this work, it was concluded that none of the plotted historical holes located within EPL 6987 are likely to be more than a few metres out from their original position.

## **References**

<sup>1</sup> Carlisle, Donald (1980), United Nations – International Atomic Energy Agency, Handbook on Surficial Uranium Deposits, Chapter 3.

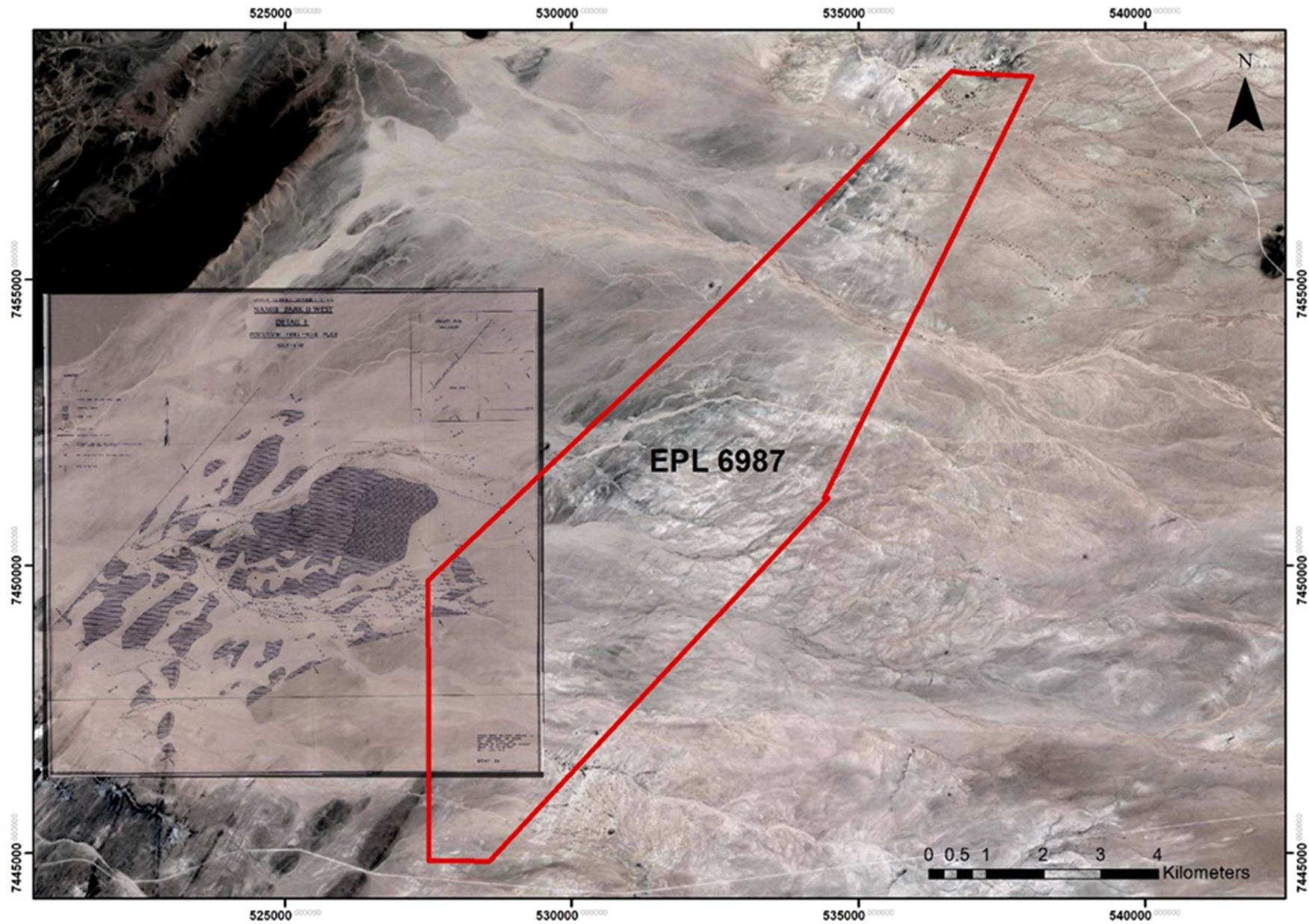
Carlisle, Donald (1980), Possible Variation on the Calcrete-Gypcrete Uranium Model, Prepared for the United States Department of Energy.

## **Competent Persons Statement – Exploration Targets**

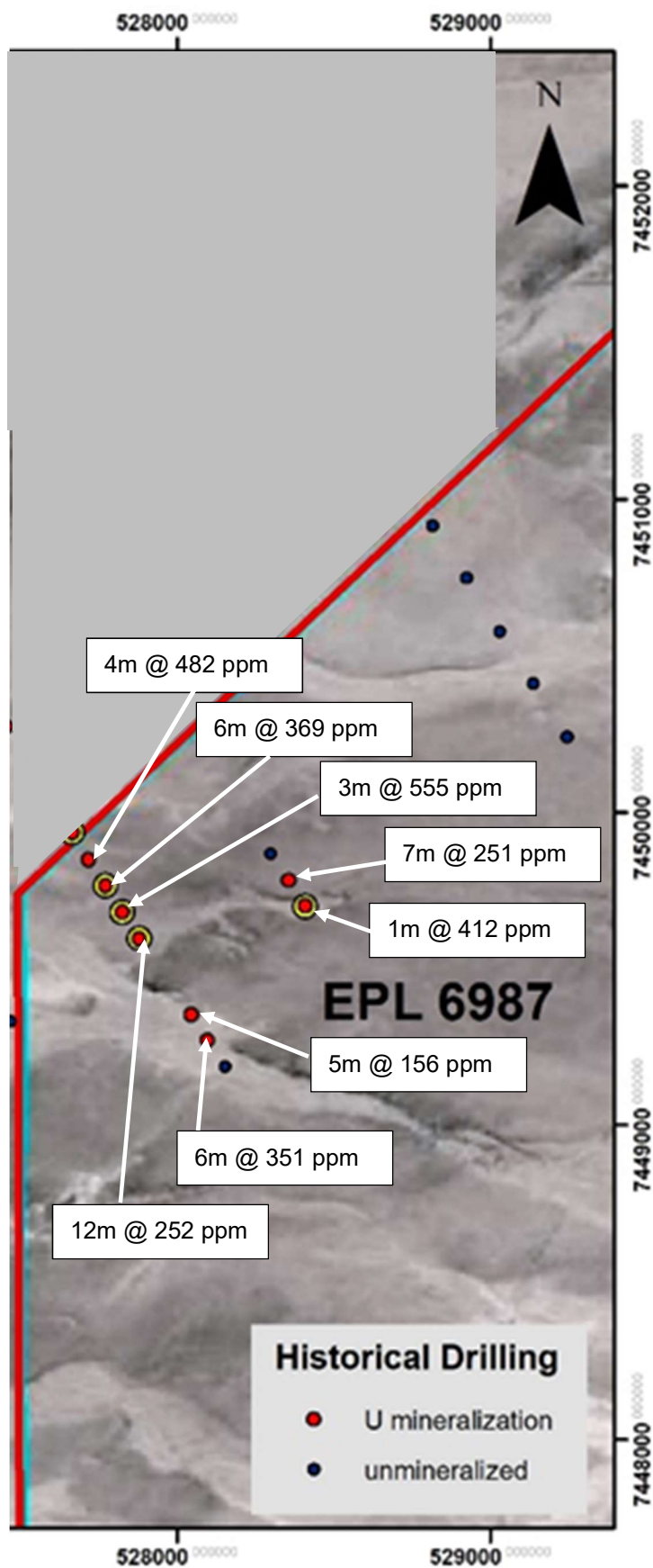
*The information in this announcement as it relates to Exploration Targets was compiled by Mr Keith Webb, a Competent Person who is a Member of the Australian Institute of Geoscientists (AIG). Mr Webb, who is an independent consultant to the Company, has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which 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 Webb consents to the inclusion in this announcement of the matters based on the information in the form and context in which it appears.*



**Figure 3** Referenced General Mining Drill Hole Plan showing overlap with the western portion of Marenica's EPL6987



**Figure 4** Digitised boreholes showing mineralised and unmineralised holes based on General Mining data.





# JORC Code, 2012 Edition – Table 1 report template

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

| Criteria              | JORC Code explanation   | Commentary   |
|-----------------------|---|--|
| Sampling techniques   | <ul style="list-style-type: none"> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul> | <ul style="list-style-type: none"> <li>The drill results have been reported on a map generated by General Mining and Finance Corporation Limited (General Mining) in July 1978. The interval of uranium mineralisation is in units of metres and the U<sub>3</sub>O<sub>8</sub> grade in units of parts per million are reported with the location of the hole.</li> <li>The sampling technique is not known.</li> <li>The assay method is not known.</li> </ul> |
| Drilling techniques   | <ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</li> </ul>   | <ul style="list-style-type: none"> <li>The location map generated by General Mining indicates the drill method to be 'percussion', but no further information is known.</li> <li>From the five drill holes located in the field the drilling appears to be vertical, but this cannot be confirmed for all holes.</li> </ul>  |
| Drill sample recovery | <ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>  | <ul style="list-style-type: none"> <li>No information is available on the drill sample recovery.</li> </ul>  |
| Logging               | <ul style="list-style-type: none"> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> </ul>   | <ul style="list-style-type: none"> <li>No logging information is available.</li> </ul>   |

| Criteria                                       | JORC Code explanation  | Commentary  |
|--|--|---|
|  | <ul style="list-style-type: none"> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>  |   |
| Sub-sampling techniques and sample preparation | <ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul> | <ul style="list-style-type: none"> <li>No information is available.</li> </ul>  |
| Quality of assay data and laboratory tests     | <ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>   | <ul style="list-style-type: none"> <li>The assay method is unknown.</li> </ul>  |
| Verification of sampling and assaying          | <ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>  | <ul style="list-style-type: none"> <li>The intervals are reported in units of metres on the General Mining map but depth data is not available. The assay data has not been verified yet.</li> </ul>  |
| Location of data points                        | <ul style="list-style-type: none"> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>  | <ul style="list-style-type: none"> <li>The General Mining drill hole map contained sufficient detail to be able to rectify the image with reasonable accuracy. This was confirmed through a field trip which located five drill hole collars. These holes were used to refine the rectification of the original map and all historic drill holes were digitised.</li> <li>The localised grid system has been geo referenced to the World</li> </ul> |

| Criteria   | JORC Code explanation  | Commentary   |
|--|--|--|
|  |  | Geodetic System (WGS) 1984, Zone 33.   |
| <i>Data spacing and distribution</i>                           | <ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>                        | <ul style="list-style-type: none"> <li>• The drilling was completed in three lines running in a NNW to SSE direction.</li> <li>• The line spacing is 500 m and 1,000 m apart.</li> <li>• The drill hole spacing is not consistent and varies from 100 m to 200 m.</li> </ul> |
| <i>Orientation of data in relation to geological structure</i> | <ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</i></li> </ul> | <ul style="list-style-type: none"> <li>• Unknown.</li> </ul>   |
| <i>Sample security</i>   | <ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>   | <ul style="list-style-type: none"> <li>• Unknown.</li> </ul>   |
| <i>Audits or reviews</i>                                       | <ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>   | <ul style="list-style-type: none"> <li>• No audits located.</li> </ul>   |

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

| Criteria                                       | JORC Code explanation  | Commentary   |
|--|--|--|
| <i>Mineral tenement and land tenure status</i> | <ul style="list-style-type: none"> <li>• <i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</i></li> <li>• <i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i></li> </ul> | <ul style="list-style-type: none"> <li>• The drill holes are located on the western area of EPL 6987.</li> <li>• The EPL was granted to Manmar Investments One Eight Two (Pty) Ltd (95% owned subsidiary of ASX listed Marenica Energy Limited) on 22 March 2019.</li> <li>• The EPL is located within the Namib Naukluft National Park in Namibia.</li> <li>• The General Mining drill area covered the western area of EPL 6987 and the eastern area of EPL 3497.</li> <li>• EPL 3497 is held by Reptile Uranium Namibia (Pty) Ltd, a subsidiary of ASX listed Deep Yellow Limited.</li> <li>• The area on EPL 3497 covers the exploration area identified as Tumas East, which was announced to ASX on 3 October 2018.</li> </ul> |



| Criteria  | JORC Code explanation  | Commentary  |
|---|--|---|
| <i>Exploration done by other parties</i>                                | <ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>   | <ul style="list-style-type: none"> <li>General Mining located uranium mineralisation from a drill program reported in July 1978. The results of this program have provided the base information for Marenica to locate exploration targets.</li> </ul>  |
| <i>Geology</i>  | <ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>   | <ul style="list-style-type: none"> <li>The drilling completed by Reptile Uranium Namibia in the area covered by the General Mining drilling confirms calcrete hosted uranium mineralisation.</li> </ul>   |
| <i>Drill hole Information</i>   | <ul style="list-style-type: none"> <li><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</i> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> </li> <li><i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i></li> </ul> | <ul style="list-style-type: none"> <li>Fifteen percussion drill holes are shown on the General Mining map within the boundary of EPL 6987.</li> <li>The drill hole collar coordinates have been determined from geo-referencing the original General Mining map, but further drill hole details are not known.</li> <li>The drill results are provided in Table 1 in Appendix 1.</li> </ul> |
| <i>Data aggregation methods</i>   | <ul style="list-style-type: none"> <li><i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</i></li> <li><i>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</i></li> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>   | <ul style="list-style-type: none"> <li>Unknown but mineralised intervals are reported to whole metres.</li> </ul>   |
| <i>Relationship between mineralisation widths and intercept lengths</i> | <ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg ‘down hole length, true width not known’).</i></li> </ul>   | <ul style="list-style-type: none"> <li>Drill intercepts are expected to be close to true thickness.</li> </ul>  |
| <i>Diagrams</i>   | <ul style="list-style-type: none"> <li><i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of</i></li> </ul>  | <ul style="list-style-type: none"> <li>The General Mining map is provided in Figure 1 of Appendix 1.</li> </ul>   |

| Criteria                                  | JORC Code explanation   | Commentary   |
|---|---|--|
|   | <i>drill hole collar locations and appropriate sectional views.</i>   |  |
| <i>Balanced reporting</i>                 | <ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>   | <ul style="list-style-type: none"> <li>Information not available.</li> </ul>   |
| <i>Other substantive exploration data</i> | <ul style="list-style-type: none"> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul> | <ul style="list-style-type: none"> <li>The drilling completed by General Mining prior to July 1978 has been reported.</li> <li>These results are supported by drilling by Reptile Uranium Namibia in 2018 which confirms uranium mineralisation within 100 m of the western boundary of EPL 6987 in the area covered by the General Mining map.</li> </ul> |
| <i>Further work</i>                       | <ul style="list-style-type: none"> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>                                       | <ul style="list-style-type: none"> <li>Planned work includes exploration to confirm the extent of the palaeochannel followed by drilling.</li> <li>Figure X and Y show the known mineralised palaeochannel and potential extensions.</li> </ul>  |