



## **NEW, LARGE GOLD ANOMALY in Gawler Craton** **EXCEPTIONAL GOLD ANOMALIES at Westpoint Hill**

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Marmota Energy Limited (ASX: MEU) ("Marmota")

### **Background**

- In July 2015, Marmota commenced an aggressive gold exploration program across its prime tenement holdings around the Challenger gold mine (1 million ounces). The program is ongoing and expanding.
- Marmota has adopted the same calcrete sampling methodology that was used to find Challenger.

### **New Key Points**

- Marmota has identified a **NEW, LARGE GOLD anomaly** in the Gawler Craton, approximately 25km WEST of the Challenger gold mine, near Westpoint Hill.
- Calcrete sampling near Westpoint Hill has returned **exceptional gold-in-calcrete anomalous assay results** of 70ppb to 107ppb.
- For comparison, a gold-in-calcrete result of 100ppb is:
  - ⊙ better than **99.9% of all calcrete sampling data** recorded in the South Australian Government database of 192,677 samples
- Analogous to how Challenger was discovered [ see **Figure 5** ]

## Westpoint Hill target

Marmota recently commenced calcrete sampling at the Westpoint Hill target area to test co-incident magnetic and gravity anomalies [ see Figures 3 and 4 ]. Calcrete sampling was conducted on a 800m x 800m grid, and produced a zone in which samples returned exceptional, contiguous gold-in-calcrete values of 70ppb Au to 107ppb Au within a broader >10ppb gold anomaly [ see Figure 1 ].

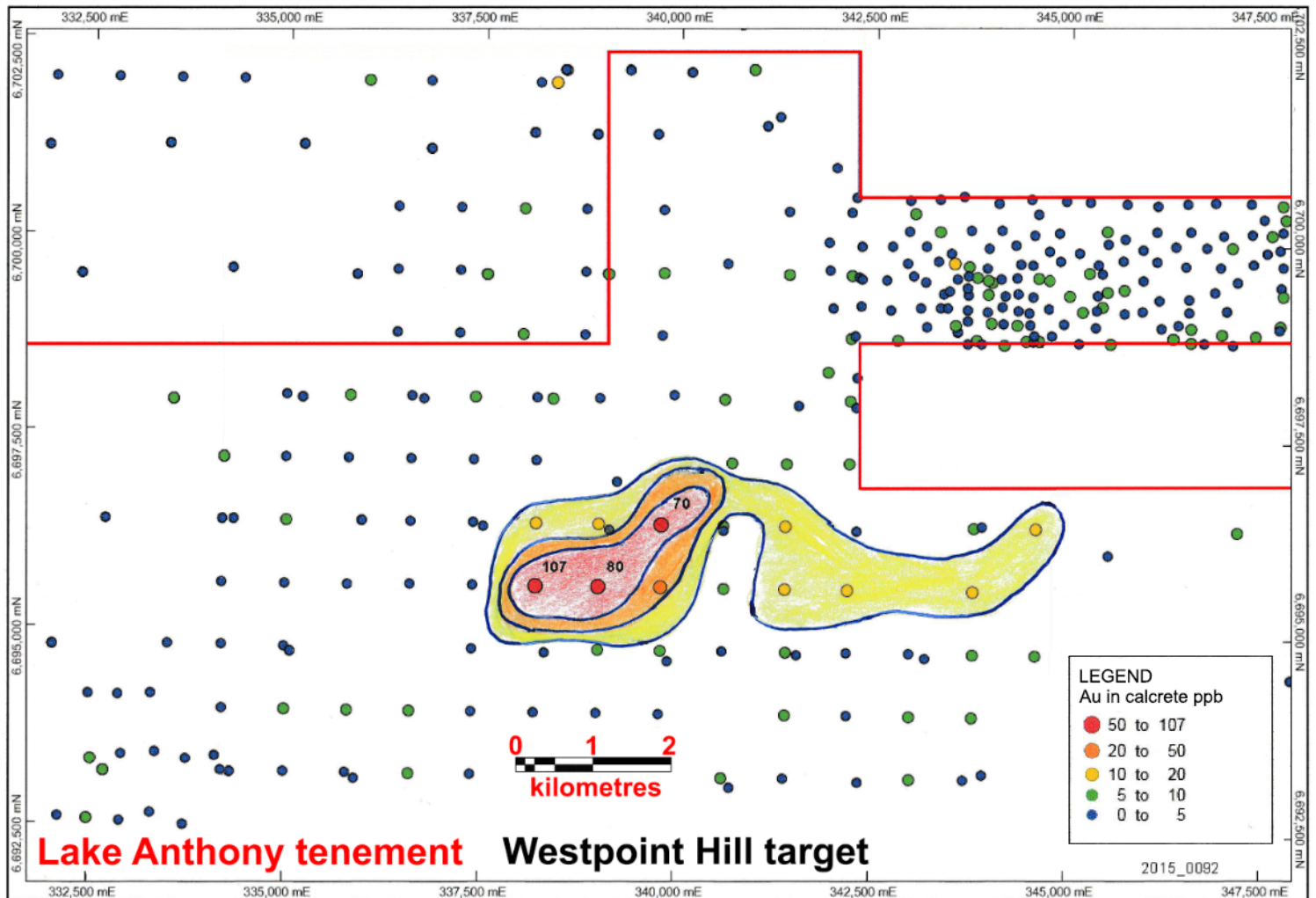
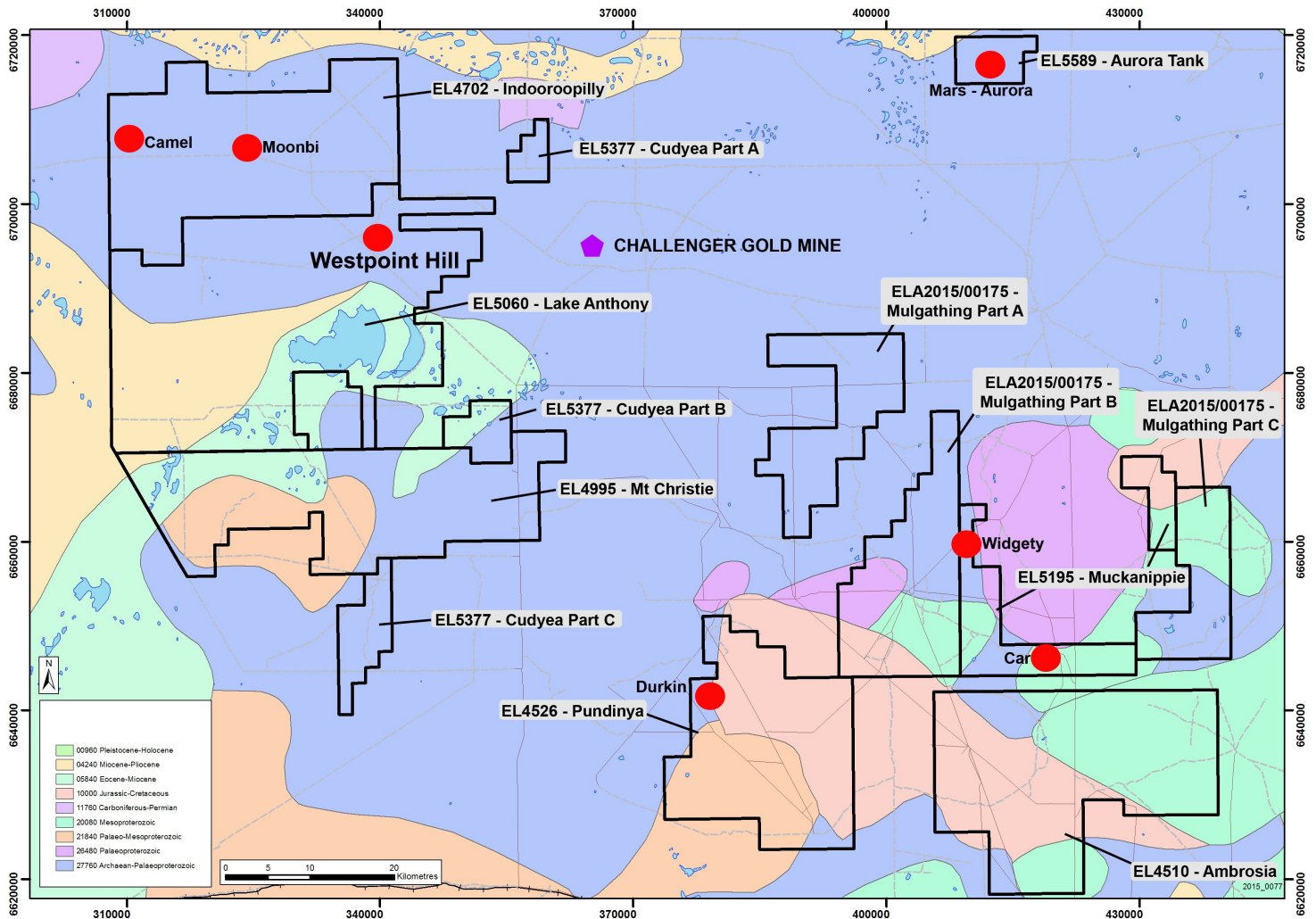


Figure 1: Westpoint Hill target: Gold-in-calcrete anomalism (contoured at 10ppb, 20ppb and 50ppb gold)

The calcrete sampling results at Westpoint Hill are **NOT** the result of in-fill sampling around a known anomaly. Quite the opposite, Marmota initiated auger drilling of calcrete on almost virgin territory. The target area appears to have had almost no exploration work done on it, other than wide-spaced 1.6km grid sampling by a previous tenement holder [see Figure 6 in the Appendix].

## Location of the Westpoint Hill target

The Westpoint Hill target is located about 25 km west of the Challenger Gold Mine, in Marmota's 100% owned Lake Anthony tenement (EL 5060), in the Woomera Prohibited Defence Area, in the highly prospective and significantly underexplored Gawler Craton [see Figure 2].



**Figure 2:** Marmota's Gawler Craton Gold Project  
Westpoint Hill is located about 25km west of Challenger

## Co-incident Gravity and Magnetic anomalies

The Westpoint Hill target area is the subject of a co-incident **gravity** anomaly [ **Figure 3** ] + **magnetic** anomaly [ **Figure 4** ]: this is relatively rare for this region, and Marmota was keen to test it. The new gold anomalism is coincident with the southern peak of the magnetic anomaly, and with the margins of the gravity high. As there is no known outcropping basement within this area, these geophysical anomalies have unknown geology at this time.

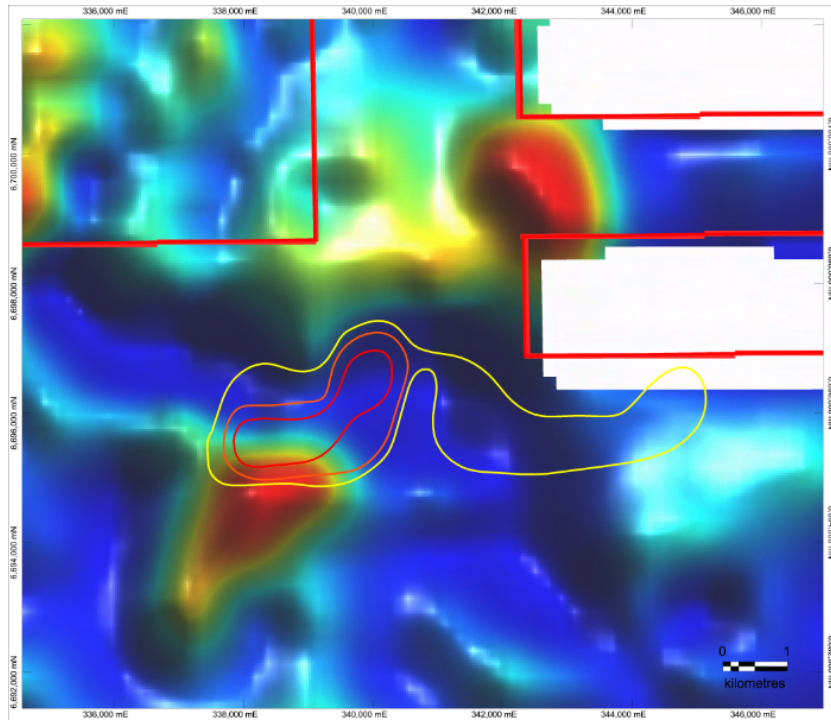


Figure 3: **Gravity anomaly** in target area

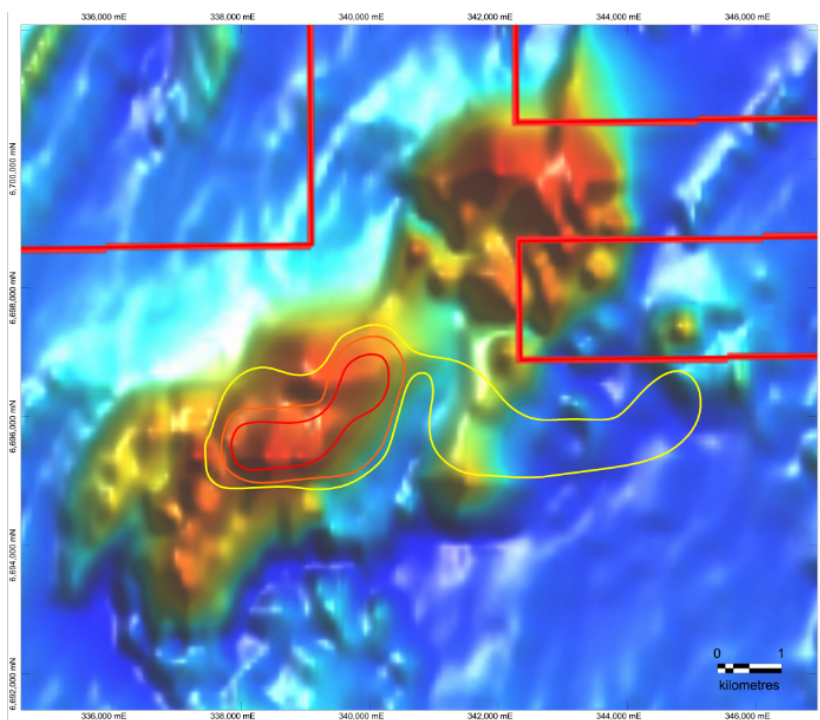


Figure 4: Co-incident **magnetic anomaly** in same target area

## COMPARISON TO DISCOVERY OF CHALLENGER

### How Challenger was discovered

Challenger was discovered by a calcrete sampling program on a 1.6km x 1.6km grid.

This program yielded a stand-out sample point of 180ppb Au, surrounded on all sides by grid points yielding below 10ppb Au [see Figure 5a].

The 180ppb Au point was approximately 400m away from where the Challenger gold deposit was ultimately discovered.

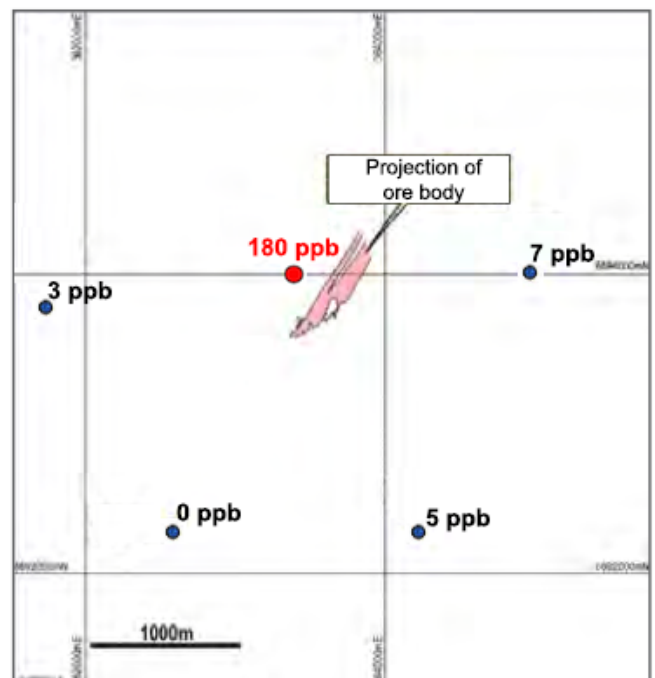


Figure 5a: How Challenger was found: gold-in-calcrete  
Adaptation of diagram from Wills and Edgecombe (2014) <sup>1</sup>

### How the anomaly at Westpoint Hill was found

Marmota has adopted the same calcrete sampling methodology that was used to find Challenger. However, instead of using a coarse 1.6km x 1.6km grid (which can easily miss anomalies), Marmota implemented a 800m x 800m grid at Westpoint Hill.

Like Challenger, highly anomalous gold-in-calcrete samples stand out at Westpoint Hill relative to the surrounding grid [see Figure 5b], including a result of 107ppb Au.

Importantly, the stand-out results at Westpoint Hill cover not just one grid point, but three contiguous grid points, spanning approximately 2km.

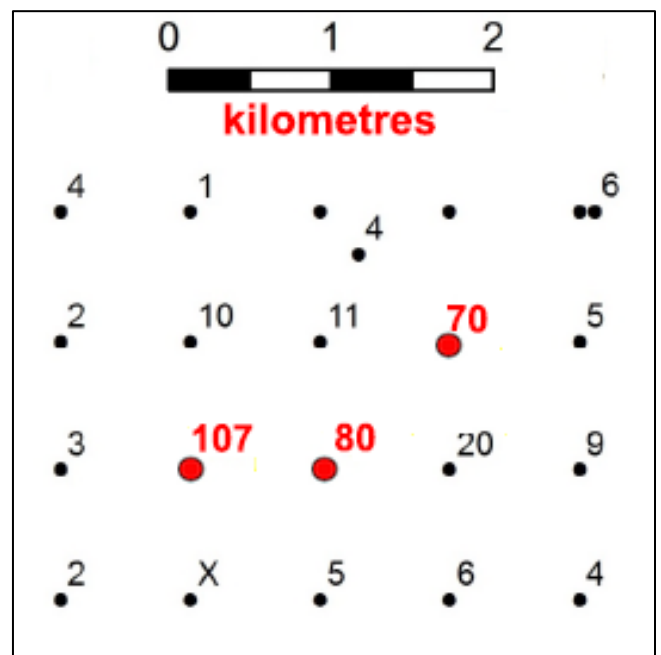


Figure 5b: Anomaly at Westpoint Hill  
(gold-in-calcrete ppb)

<sup>1</sup> Wills, K. and Edgecombe, D. (2014), *Discovery of the Challenger Gold Mine*, Presentation 6 June 2014, Adelaide Conference (South Australia Branch: Australian Institute of Geoscientists).



## SUMMARY

The results at the Westpoint Hill target appear highly interesting for 5 reasons:

1. They are coincident with magnetic and gravity anomalism and likely regional structures.
  2. They are statistically exceptional, and not just a single-point anomaly, but three contiguous high values spanning 2km.
  3. They are not the result of in-fill sampling around a known anomaly.
  4. Sampling on an 800m grid has identified a 7 km long anomaly at >10ppb gold (the typical threshold for anomalous gold-in-calcrete values for this region).
  5. There are strong similarities between the discovery of Challenger and the discovery of the anomalism at Westpoint Hill.
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Marmota's Chairman, Dr Colin Rose, said:

“ This is the most exciting thing to happen to Marmota since I have been with the Company. Whilst we have been searching for Challenger-style systems, I did not expect that we would come across something like this so soon. While this is an early stage exploration result, I have some sense now of how the exploration team must have felt when they collected the 180ppb gold sample that ultimately led to the discovery of the Challenger gold deposit. It demonstrates the potential of this very under-explored region. ”

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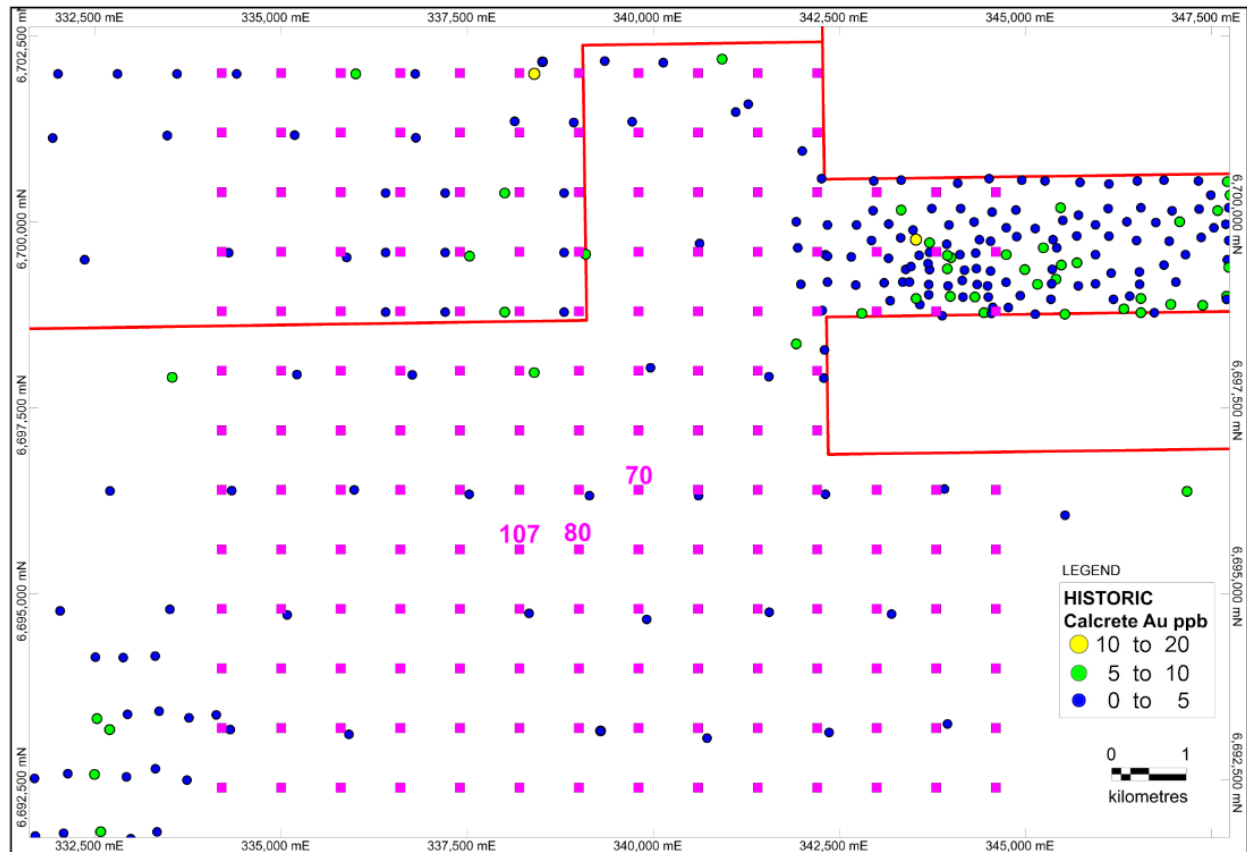
## Forward Program

Marmota will move to advance the Westpoint Hill target area as a priority. The next step is detailed in-fill calcrete sampling in and around the discrete area of high gold anomalies and finer grid gravity and magnetic data surveys. Marmota is hiring additional geologists and field assistants so as to speedily advance both Widgey and Westpoint Hill.

# APPENDIX

**HISTORICAL Sampling:** 1600m grid ●●● + **NEW Sampling:** 800m grid ■

Historical sampling at Westpoint Hill was predominantly just coarse regional sampling at 1.6km x 1.6km spacing [ see Figure 6 ].



**Figure 6:** Historical sampling: round dots ●●●  
New MEU sampling: pink squares ■

## Calcrete Sampling

Calcrete sampling is a useful exploration tool utilised to detect potential gold mineralisation hosted in basement rocks beneath the surface. It is the very method that was used to discover the Challenger Gold Mine. Calcrete is a calcium rich sedimentary rock type that typically forms just below the surface within the project region. It is typically formed by calcium carbonate precipitated from solution and re-deposited through the agency of infiltrating waters, or deposited by the escape of carbon dioxide from groundwater. It occurs in a variety of forms, where it can form a duricrust, can be pisolitic, nodular, pebbly, slabby or massive and powdery. It is a proven accumulator of gold and other metals in the Gawler Craton. Calcrete samples are obtained by auger drilling close to the surface.

## Empirical Distribution of 'Gold-in-Calcrete'

The Gawler Craton data set

The South Australian Government maintains and collects a huge database of all registered calcrete samples, currently totaling 192,677 different calcrete samples taken in the Gawler Craton area. The database includes both random 1 mile (1.6 km) grid data and massive in-fill data. To enable meaningful evaluation, Marmota has conducted a basic statistical analysis on both:

### A: 'Pure random sampling' data set (includes discovery of Challenger)

Size: 3,691 calcrete samples [ based on pure 1 mile grid data — no in-fill ]

For this pure random sampling dataset, a gold-in-calcrete result of:

70 ppb is better than 99.97% of pure random data

### B: Massive South Australia Government database The Gawler Craton data set

Size: 192,677 calcrete samples [ based on: random data AND in-fill sampling ]

For the complete data set (including in-fill sampling), a gold-in-calcrete result of:

20 ppb Au is better than 98.4% of all data collected

70 ppb Au is better than 99.8% of all data collected

100 ppb Au is better than 99.9% of all data collected

10 ppb gold-in-calcrete at a specified sample spacing is typically considered to be anomalous.

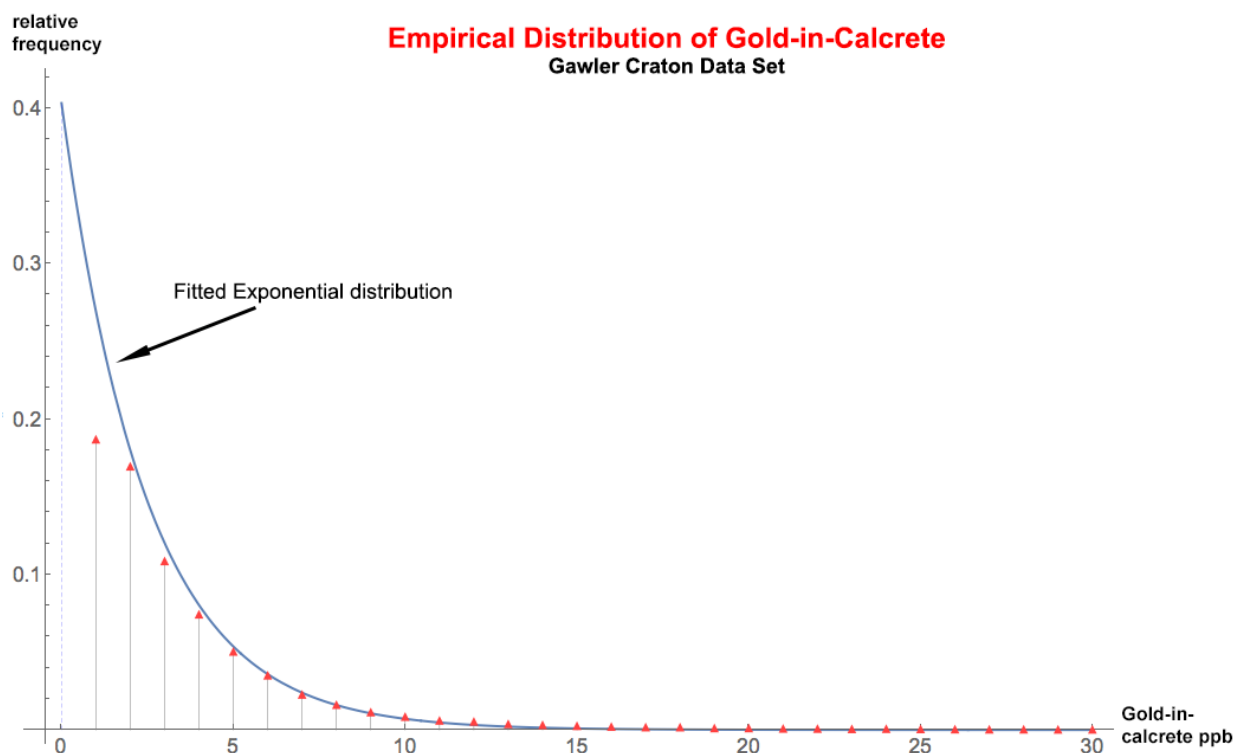


Figure 7: Gawler Craton data set: Empirical distribution (pmf) of gold-in-calcrete (▲)



### Competent Persons Statement

The information in this release that relates to Exploration Results and Mineral Resources is based on information compiled by Dan Gray as Senior Project Geologist of Marmota Energy Limited who is a member of the Australasian Institute of Geoscientists. He has sufficient experience which is relevant to the styles of mineralisation and types of deposits under consideration and to the activities being undertaken 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 Gray consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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### About Marmota Energy Limited

Marmota Energy Limited (ASX: MEU) is a South Australian mining exploration company, focused on gold, copper and uranium. Gold exploration is centred on the Company's dominant tenement holding in the highly prospective and significantly underexplored Gawler Craton, near the Challenger gold mine, in the Woomera Prohibited Defence Area. The Company's cornerstone copper project is based at the Melton project on the Yorke Peninsula. The Company's largest uranium project is at Junction Dam adjacent to the Honeymoon mine.

For more information, please visit: [www.marmotaenergy.com.au](http://www.marmotaenergy.com.au)

# JORC Code, 2012 Edition – Table 1 report

## Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<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>Calcrete samples were collected on a pre-planned grid pattern of varying dimensions depending upon target. The grids were oriented on an east-west/north-south direction. Occasional grab samples were obtained where calcrete outcrops were noted.</li> <li>Calcrete samples were obtained from varying depths ranging from surface to 110cm the maximum achievable depth using a hand held mechanical auger. Samples were sieved and only good quality calcrete (nodular or massive) was taken for geochemical analysis. Samples obtained were ~1kg in weight.</li> <li>Samples are annotated with descriptions including, location, type of calcrete, depth, level of HCl reaction, terrain, rock outcrop occurrence and any notes relating to potential contamination.</li> </ul>
<b>Drilling techniques</b>	<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>Hand held mechanical auger was used to obtain calcrete samples. The auger blade is 20cm in diameter with a maximum reach of 110cm when utilizing an extension rod.</li> </ul>
<b>Drill sample recovery</b>	<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>Samples were taken by hand and sieved so that a good quality calcrete only sample obtained for geochemical analysis.</li> <li>Samples averaging 1kg in weight were taken, which are considered to be representative for this sampling medium (calcrete).</li> </ul>
<b>Logging</b>	<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> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>Recorded data at each sample point included sample number, GDA94 Zone 53 Co-ordinates, calcrete type, sample depth, level of HCl reaction, terrain, rock outcrop or float occurrence and any notes relating to potential contamination eg near roads.</li> </ul>
<b>Sub-sampling techniques and sample</b>	<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,</li> </ul>	<ul style="list-style-type: none"> <li>No sub sampling was undertaken during the calcrete sampling program.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>preparation</b>	<p>rotary split, etc and whether sampled wet or dry.</p> <ul style="list-style-type: none"> <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>	
<b>Quality of assay data and laboratory tests</b>	<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>A certified and accredited global laboratory (Intertek Genalysis) was used for all assays.</li> <li>Samples from the Westpoint Hill Target were subject to analysis by ARU25/MS; 25gram Aqua Regia digest, unfiltered. Analysed by Inductively Coupled Plasma Mass Spectrometry and ARU25/OE; 25gram Aqua Regia digest, unfiltered. Analysed by Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry.</li> <li>Internal certified laboratory QA/QC is undertaken by Intertek Genalysis.</li> <li>No additional standards, blanks or field duplicates were considered necessary for this calcrete sampling program.</li> </ul>
<b>Verification of sampling and assaying</b>	<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>Field data is captured on field sheets and transferred to digital medium at the end of each day. All data is managed in-house by Marmota Energy.</li> <li>Laboratory assay data is not adjusted.</li> </ul>
<b>Location of data points</b>	<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>All samples are located using hand held GPS with an accuracy generally within +/- 5m. All coordinates are recorded in GDA94, Zone 53.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>Samples were collected at 800m x 800m grid spacing which is considered to be appropriate spacing for progressing the target to the next stage of exploration.</li> <li>Calcrete sampling only – no association or reliance should be made on level of mineralisation</li> <li>Samples were not composited.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> </ul>	<ul style="list-style-type: none"> <li>It is not considered that the sampling method (grid calcrete sampling) should introduce a sampling bias.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <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>	
<b>Sample security</b>	<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>Each sample was put into individually numbered calico bags which were tied and placed into cable tied polyweave bags.</li> <li>Samples remained at the remote field camps with Marmota staff until Marmota staff returned to Adelaide and the samples dropped off at the Intertek Genalysis Laboratory in Wingfield, Adelaide.</li> </ul>
<b>Audits or reviews</b>	<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 or reviews have been undertaken.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<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>Indooroopilly (EL4702) and Lake Anthony (EL5060) are 100% owned by Marmota Energy Limited.</li> <li>The project is located in the Gawler Craton of South Australia.</li> <li>There are no third party agreements, no government royalties, historical sites or environmental issues.</li> <li>Underlying land title is Crown Lease.</li> <li>EL's 4702 and 5060 are in good standing.</li> </ul>
<b>Exploration done by other parties</b>	<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>Marmota has reviewed past exploration data over the region. The region in which EL's 4702 and 5060 are located have been the subject of mineral exploration in the past by various companies including Dominion, Hindmarsh Resources Limited, Deep Yellow Limited as well as regional exploration drilling conducted by the South Australian Department of Mines and Energy.</li> </ul>
<b>Geology</b>	<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>Style of mineralisation in the region is considered to be Challenger style gold mineralisation.</li> </ul>
<b>Drill hole Information</b>	<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> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>N/A, no drilling conducted.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>○ down hole length and interception depth</li> <li>○ hole length.</li> <li>• If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>• Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>• The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>• N/A, no drilling conducted.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>• These relationships are particularly important in the reporting of Exploration Results.</li> <li>• If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>• If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>• N/A, no drilling conducted.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul style="list-style-type: none"> <li>• See figures in release attached.</li> </ul>
<b>Balanced reporting</b>	<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>• Geochemical data was gridded and contoured.</li> </ul>
<b>Other substantive exploration data</b>	<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>• See attached release.</li> </ul>
<b>Further work</b>	<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>• See attached release.</li> </ul>