ASX RELEASE
19 November 2014

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ASX Code: USA

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PROJECTS
South Australia
Samphire ELs 4979, 5426
Blackbush MC 4280
Murninnie EL 5440
Wild Horse Plains EL 4693
Muckanippie EL 4694

ISSUED CAPITAL
Shares on Issue: 174,274,756
Quoted shares: 174,274,756
Unlisted Options: 16,150,000

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SAMPHIRE PROJECT STRATEGY UPDATE

- **BLACKBUSH DEPOSIT'S HIGH GRADE UNCONFORMITY RELATED URANIUM MINERALISATION REMAINS AN IMMEDIATE FOCUS**
- **FIRM DRILL TARGETS ESTABLISHED TO TEST THE EOCENE-GRANITE UNCONFORMITY**
- **POTENTIAL FOR PRIMNARY URANIUM MINERALISATION IN SAMPHIRE GRANITE**

Attached to this release is a company report that sets out the background technical information and modelling which supports the potential of UraniumSA's wholly owned the Samphire Project near Whyalla on South Australia's Eyre peninsula to continue to provide both increased uranium tonnages and improved grade at multiple locations.

UraniumSA's Geoscience Team has identified structural corridors and alteration zones (Figure 1) which influence the known distribution of sediment-hosted mineralisation and which have a high probability of being controls on the location of high grade mineralisation at the unconformity and down into the granite basement (targeting >1% U_3O_8 mineralisation, ASX 24 July 2014).

The Western Zone of Samphire's Blackbush deposit is the target for two proposed inclined drill holes to test the concepts targeting high grade in granite basement (Figures 2 and 3, herein). Drilling will be scheduled for early in 2015 and the drill holes will be cored from about 75 to 150 metres (eoh).

Previously reported tonnage and grade scenarios for the existing Blackbush deposit are summarised below.

Blackbush deposit

Blackbush deposit has been re-estimated to comply with JORC Code 2012 (ASX 27 September 2013):

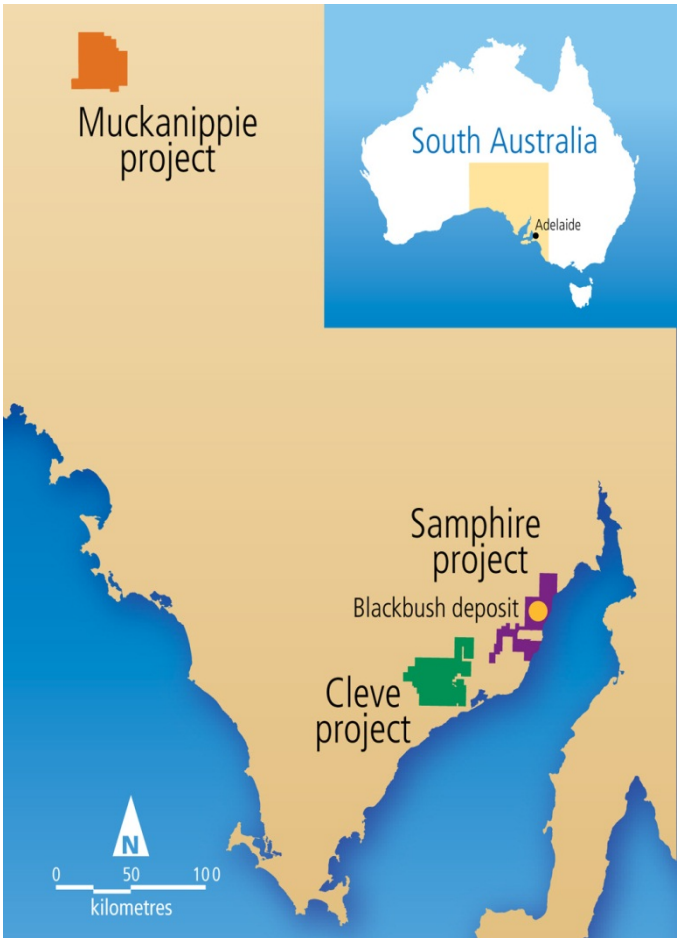
- at a 100ppm eU_3O_8 cut-off a headline estimated Inferred Resource 64.5 million tonnes of mineralisation at a bulk grade of 230ppm containing 14,850 tonnes eU_3O_8.
- at a 200ppm eU_3O_8 cut-off grade, an estimated Inferred Resource 19.5 million tonnes of mineralisation at a bulk grade of 460ppm containing 8,900 tonnes eU_3O_8.
- at a 500ppm eU_3O_8 cut-off grade, an estimated Inferred Resource 4.5 million tonnes of mineralisation at a bulk grade of 960ppm containing 4,500 tonnes eU_3O_8.

UraniumSA's Geoscience Manager, Russel Bluck:

"the Samphire granite has clear potential for the discovery of large tonnage hard rock uranium mineralisation. It is improbable to me that the occurrence of large tonnages of uranium in sediments at Blackbush and the nearby Plumbush overlying fractionated Hiltaba suite A1 type granites in the Northwest Arcuate Zone is coincidental."

" This sediment-hosted uranium is clearly sourced from the Samphire granite, and the possibility is that it may be a secondary dispersion halo localised above a substantial primary deposit – and that is an exploration concept well worth pursuing."

About UraniumSA Limited



UraniumSA is an Adelaide based explorer specialising in uranium mineralisation within a substantial portfolio of properties in South Australia's Gawler Craton.

The Company has discovered sediment hosted uranium mineralisation within Exploration Licence 4979, Samphire, which is located 20km south of the industrial city of Whyalla on the eastern Eyre Peninsula in South Australia. The exploration Licence is owned and operated by Samphire Uranium Pty Ltd, a wholly owned subsidiary of UraniumSA Limited.

The Samphire project contains the:

Blackbush deposit with an estimated inferred resource 64.5 million tonnes of mineralisation at a bulk grade of 230ppm containing 14,850 tonnes U_3O_8 at a 100ppm eU_3O_8 cut-off grade (JORC 2012).

Plumbush deposit with an estimated inferred resource 21.8 million tonnes of mineralisation at a bulk grade of 292ppm containing 6,300 tonnes U_3O_8 at a 100ppm eU_3O_8 cut-off grade (JORC 2004).

The estimated mineralisation is predominantly sediment hosted in Eocene age Kanaka Beds. Exploration has discovered uranium mineralisation in other geological settings and exploration is continuing.

An evaluation of mining methods to optimise the recovery of uranium from the identified resources of mineralisation is continuing. Application has been made for a Retention Lease for an in-situ recovery field trial at the Blackbush deposit.

Through its own tenure and by joint venture UraniumSA has exploration control over what it considers the most prospective portions of the Pirie Basin. The Board has continued its diversification of UraniumSA's exploration efforts into commodities and opportunities other than uranium. Work on the Blackbush deposit within the Samphire project will continue at a rate which reflects the current global uranium market, production opportunities and investor sentiment.

David Paterson
Acting Chief Executive Officer
UraniumSA Limited

The exploration results mineral resources reported herein, insofar as they relate to mineralisation, are based on information compiled by Mr Russel Bluck a Director of UraniumSA Limited and Member of the Australian Institute of Geoscientists with sufficient experience relevant to the style of mineralisation and type of deposits being considered, and to the activity which is reported to qualify as a Competent Person as defined by the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2012 Edition). Mr Bluck consents to the inclusion in the report of matters based on his information in the form and context in which it appears. It should be noted that the abovementioned exploration results are preliminary.

Forward Development and Exploration Strategy

Blackbush deposit and the Samphire Project

UraniumSA Limited (ASX: USA) is pleased to provide an update of its forward exploration and development strategy for the Blackbush deposit within the 100% owned Samphire project, south of Whyalla on the Eyre Peninsula in South Australia.

Strategic Objective

The Samphire uranium project south of Whyalla on the Eyre Peninsula in South Australia was a new discovery in a new district. Following successful exploration the project now contains the Blackbush and Plumbush JORC resources of mineralisation. It is the opinion of the Company that the present Blackbush deposit Inferred Resource of mineralisation (ASX 27 September 2013) has the potential to be economic with an appropriate mining method and a uranium price which reflects the very positive long term market outlook for the metal.

The Directors are pursuing a strategy at Blackbush to:

1. Determine the potential for high grade basement hosted uranium mineralisation below the Blackbush West portion at Blackbush. If successful, this work could transform the economic potential of the deposit. Two exploration holes are proposed to investigate the controls on mineralisation in basement below known high grade zones at the unconformity.

2. Increase the bulk grade of the drilled out high grade sediment-hosted mineralisation at the unconformity by targeted in-fill pattern drilling. This work has a high probability of success and is expected to lead to a significant improvement in the tonnage/grade data for the Blackbush West portion of the Blackbush deposit.

3. Pursue the exploration opportunity for the discovery of large tonnage uranium targets within the Samphire granite.

The technical objective is to confirm and quantify the upside potential of the Blackbush deposit in particular and of the Samphire project as a whole.

The Company has a tradition of successful concept lead exploration, discovery and innovation. Exploration for high grades in basement will be a test of the models released to ASX 24 July 2014. Pattern drilling of the known envelopes of high grade at the unconformity at Blackbush West will use a continuation of our proven models. The conceptual basis for exploration of the Samphire granite for large tonnage uranium mineralisation is presented in the following pages.

1. Mineralisation in basement

The value opportunity is that discovery of high grade mineralisation in granite below the unconformity has the potential to transform the tonnage/grade attributes of the Blackbush system. The objective is to develop a resource with sound geotechnical characteristics and favourable geographic location which is in the lower half of the cost curve and potentially profitable in all parts of the commodity cycle.

UraniumSA's geological systems modelling of the Blackbush mineralisation indicates there is clear potential for the discovery of high grade mineralisation (>1% U3O8) within basement below the basal unconformity in the Western Zone (ASX 24 July 2014). Ongoing interpretation and modelling continues to map out alteration/structural settings in basement below the mineralised unconformity. The geological model indicates these are feeder structures for the unconformity mineralisation and they may themselves contain high grade material.

A design for two drill holes to test the conceptual model at Blackbush comprises an initial two inclined combined rotary mud and cored drill holes (dip -60^0, azimuth northwest, open hole rotary mud to ~75m, core to eoh at ~150m). The drill holes are targeted into areas which have high grade mineralisation within Eocene sediments at the Eocene unconformity, where the underlying granite basement is significantly uranium mineralised or enriched with recognisable hydrothermal/epithermal alteration, and lying within north-east trending structural corridors.

The attached Figure 1 shows the location of the proposed drill holes within the Blackbush West portion of the Blackbush deposit and in relation to the drilled out envelopes of >1m% uranium mineralisation.

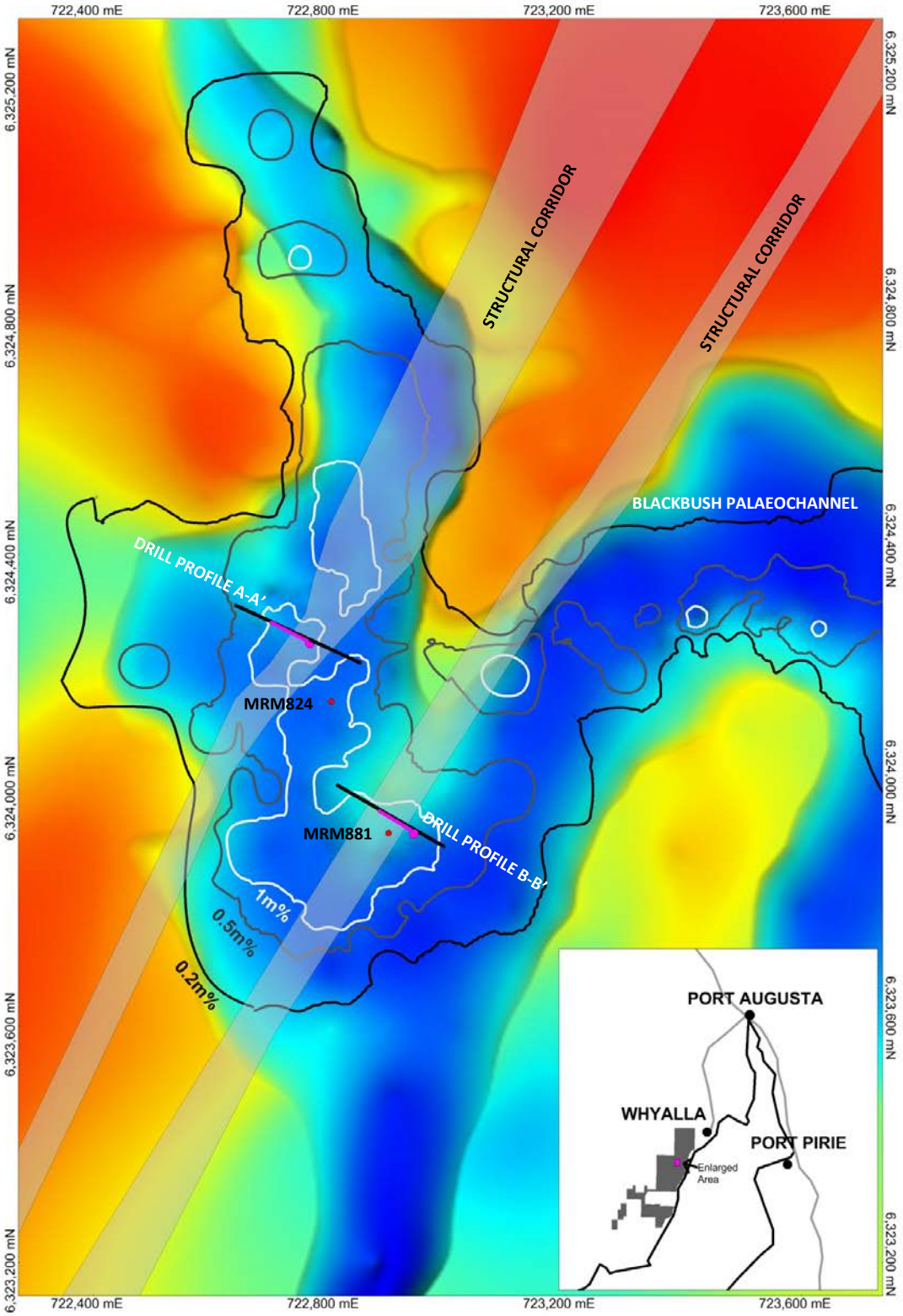
The attached Figures 2 and 3 show interpretive cross sections and targeting objectives for each proposed drill hole.

Given the scale, geometry and complexity of the target style these holes will be regarded as technically successful if they intersect mineralisation at grades of 500 – 1,000ppm uranium associated with significant alteration, veining and possibly other metals in basement below the unconformity.

The known Eocene sediment-hosted mineralisation is contained in laterally extensive flat lying sheets which have been effectively tested by relatively cheap vertical rotary mud drilling. However, basement targets are conceptualised as shoot-like and localised within sub-vertical planar structures – they are much smaller and more difficult targets and require more expensive inclined drilling to cut across potential mineralisation.

The difficulty in targeting sub-vertical structural mineralisation is illustrated by the discovery history of the Patterson Lake South deposit in the Canadian Athabasca Basin. The property was acquired in 2008; 7 holes were drilled in 2011; a further 16 in 2012 all finding anomalous uranium with associated alteration, but within the right geological setting supporting decisions to continue exploration drilling. Discovery came in 2013 in the first 14 of a 46 hole program and drilling continues to deliver intercepts of high grade mineralisation such as 22.0m at 4.8% U_3O_8 (hole PLS13-043). That is between 23 and 37 inclined drill holes for an internationally significant discovery – the present proposal at Blackbush West is for 2 inclined drill holes to investigate already known structure, alteration and uranium anomalism.

Figure 1. Blackbush West, Blackbush deposit, showing the location of proposed drill holes (purple trace) and holes referenced in the text (red dots).



The image is an elevation model of the basal Eocene unconformity. Contours are of uranium mineralisation meter thickness x grade percent.

Figure 2. Profile A – A'

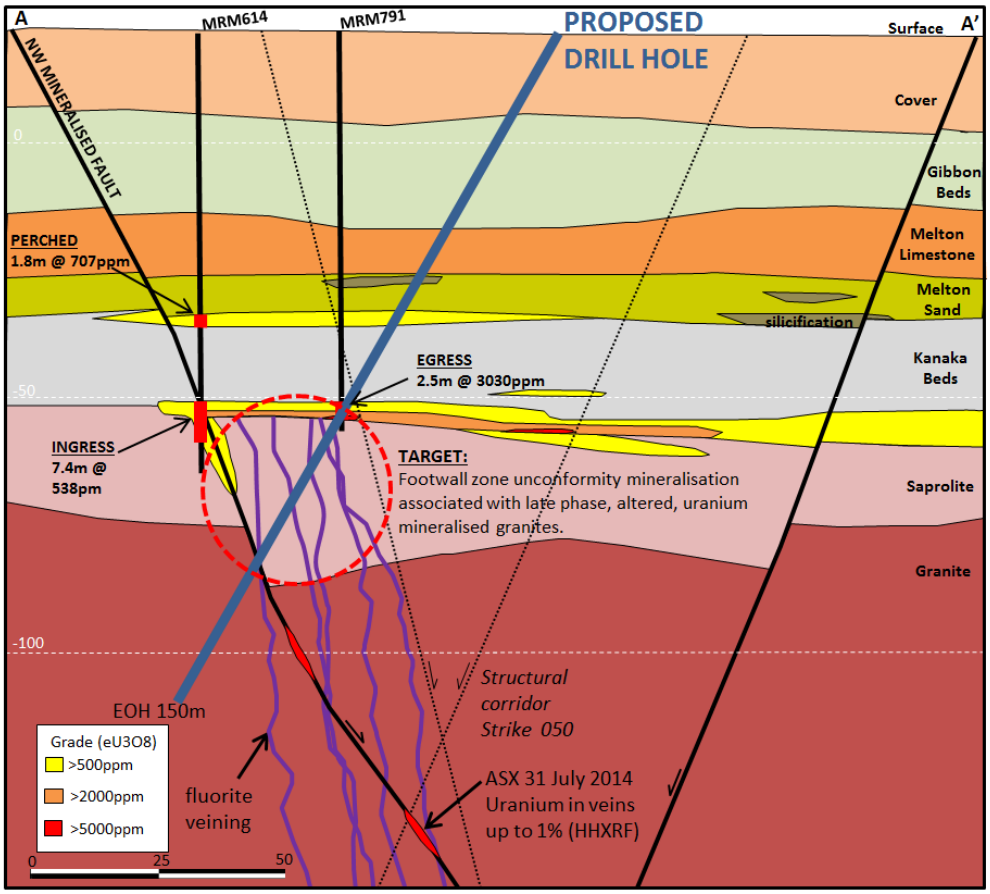
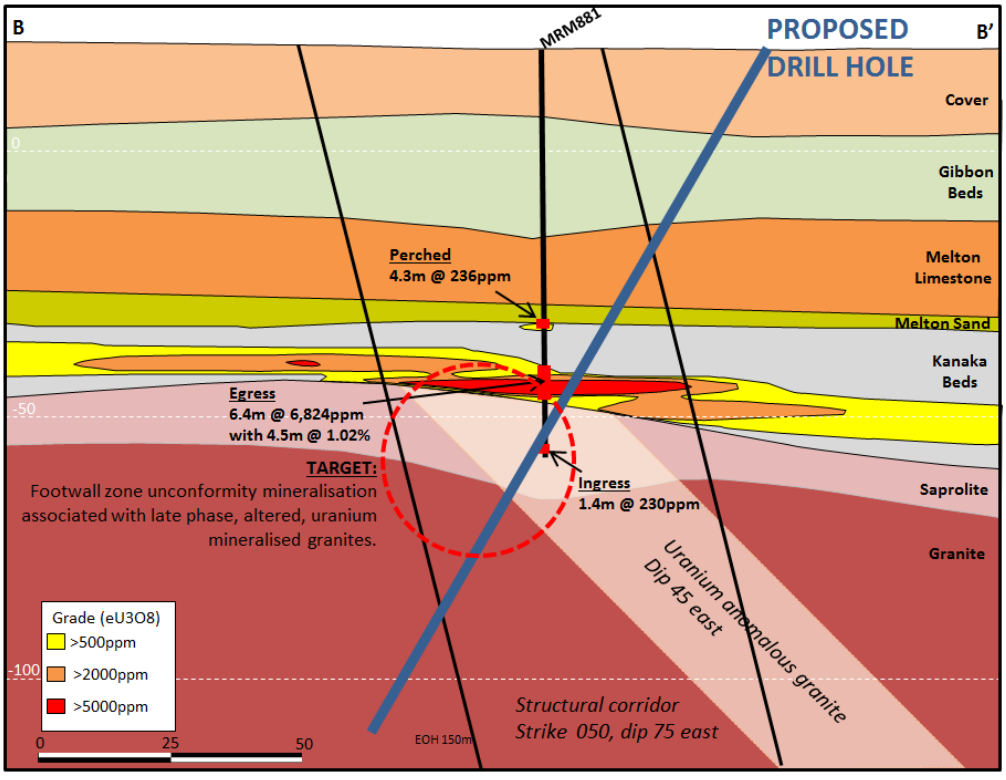


Figure 3. Profile B – B'



2. Sediment hosted mineralisation

The best grades and thickness of sediment hosted mineralisation at Blackbush are located within the Western Zone. Predictive geological models for the distribution of this mineralisation have been developed (ASX 21 March 2012) and repeatedly validated by drilling (ASX 18 April 2012; 15 and 29 May 2012; 25 July 2012; 22 August 2012). Targeted gravity surveying and detailed data manipulation has also been used to map areas of uranium mineralisation (ASX 24 October 2013).

The strongest leverage on bulk grade improvement will come from drilling these targets in the expectation of repetitions of holes such as MRM 824 which intersected 25m at 1,570ppm eU_3O_8 (at 100ppm cut-off) from 52m, including 8.3m at 4,300ppm or 0.43% eU_3O_8 (at 500ppm cut-off) , ASX 24 October 2013.

Improving the average grade and thickness of the envelope of sediment hosted mineralisation through the Western Zone will significantly contribute to the Strategic Objective (above). This will involve the staged completion of;

1. 50m infill drilling to define and extend the limits of 1m% mineralisation (presently estimated at ~1,000m of strike within an ~1,250m envelope of 0.5m%).
2. 25m centre infill drilling comprising to follow-up unusually high grade intercepts (such as are known from MRM881 26m at 0.19% eU_3O_8 including 4.5m at 1.02% eU_3O_8, ASX 24 July 2014).

3. Samphire granite – the discovery opportunity

The ultimate source of the uranium in the sediment hosted Blackbush and Plumbush deposits is the underlying Samphire granite. There is ubiquitous uranium anomalism throughout the granite and this high background is a critical component of the "systems models" which are being used in the targeting for unconformity uranium mineralisation at Blackbush West. The Samphire granite has potential for the discovery of large tonnage hard rock uranium mineralisation.

As granites are emplaced into the ground, the magma from which they are derived can become progressively richer in hydrous metal rich phases. The exploration possibility is that in the Samphire granite this process has resulted in the fractionation of bodies at potentially economic grades and tonnages. The requirements for the formation of such fractionates is extensively discussed in the literature and UraniumSA has been steadily working to establish that such an opportunity does exist within the Samphire granite: the present work is described in the following pages.

Geological and geophysical interpretation of the Samphire granite which underlies the Blackbush and Plumbush deposits indicates that it is a part of a large composite batholith, informally named the Samphire batholith. The batholith is comprised of several discrete phases and a distinctive curvilinear textured portion which is informally designated the Northwest Arcuate Zone (NAZ), is basement to all of the presently known sediment-hosted uranium mineralisation including the high grade portions of Blackbush West.

Imaging of the aeromagnetic data (Figure 4 to 6, next pages) shows fabrics which within and immediately east of the NAZ have a prevailing 45^0 east dip and northeast strike. These fabrics are geologically interpreted as a reflection of variations in composition resulting from fractionation of the granite magma (preceding discussion and below).

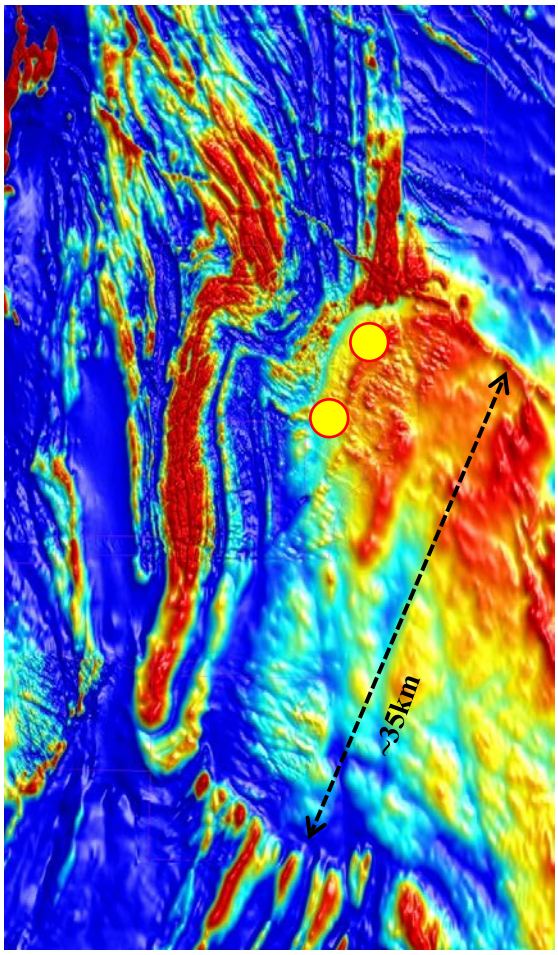


Figure 4

TMI image of the Samphire project area showing the Samphire batholith (right side, middle and lower quadrants) extending ~35km from southwest to northeast. The image is a composite of detailed UraniumSA data and SARIG open file data.

UraniumSA tenure covers the majority of the western on-shore portion of the Samphire batholith, excluding the Munyaroo Conservation Park (ASX 23 May 2014). The red/yellow circles show the locations of the Blackbush (north) and Plumbush (south) deposits.

View north, the image is ~35km by 60km. Location image Figures 1 and 6.

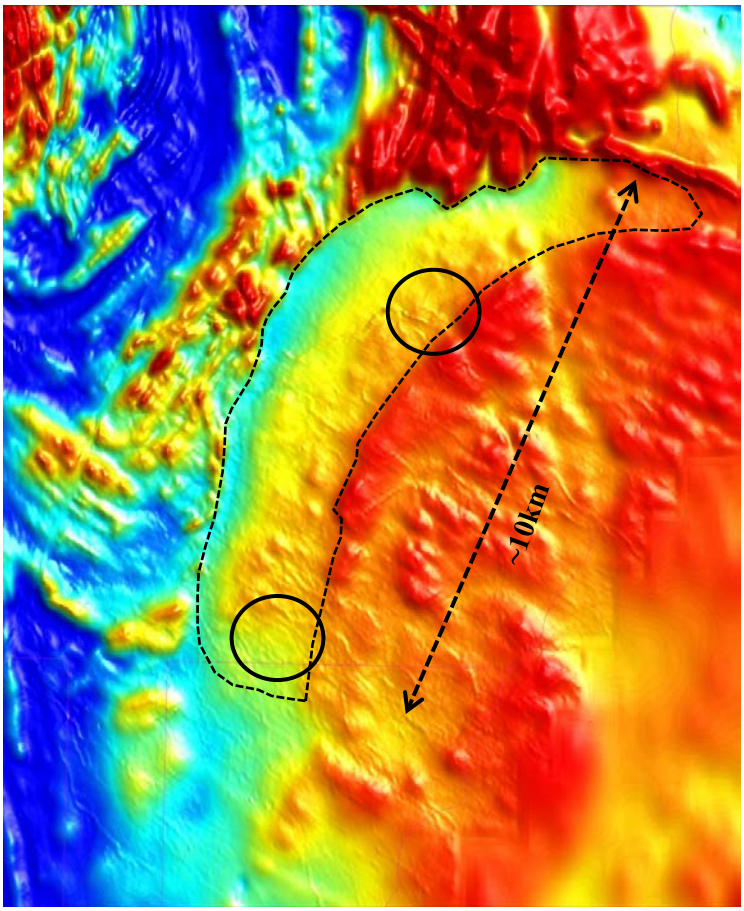


Figure 5

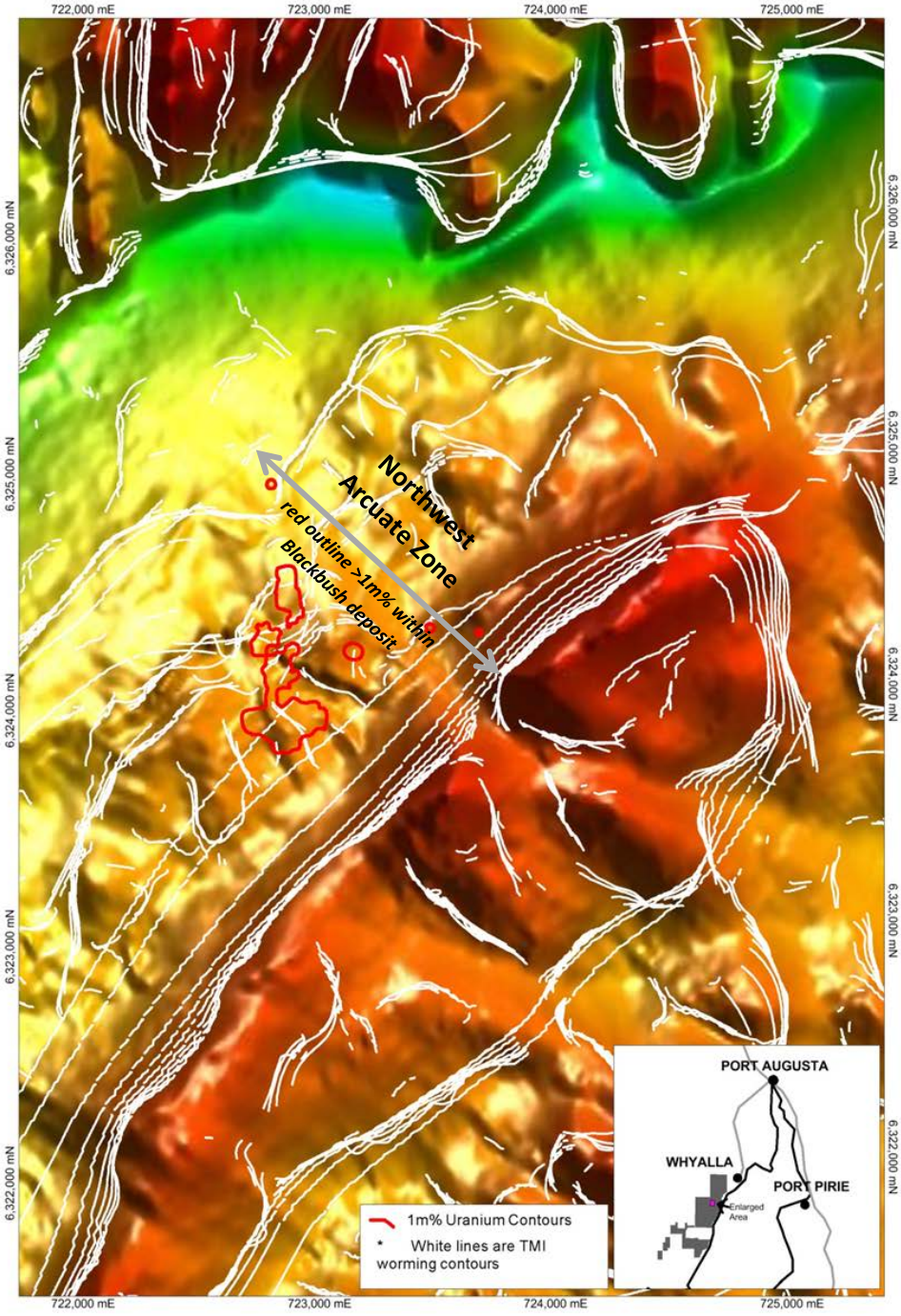
The Northwest Arcuate Zone (black dotted outline, ~10km long) located along the margin of the Samphire batholith.

The NAZ is basement to sediment hosted mineralisation at the Blackbush deposit (north circle) and Plumbush deposit (southern circle). High grade uranium mineralisation in granite has been drilled within the Western Zone at Blackbush.

View north, the image is ~10km by ~15km. Location image Figures 1 and 6.

Figure 6. Total magnetic intensity with derived worming emphasising gradients.

Blackbush high grade mineralisation >1m% outline is in red. The Plumbush deposit lies along strike to the southwest and also within the NAZ but out of this image view.



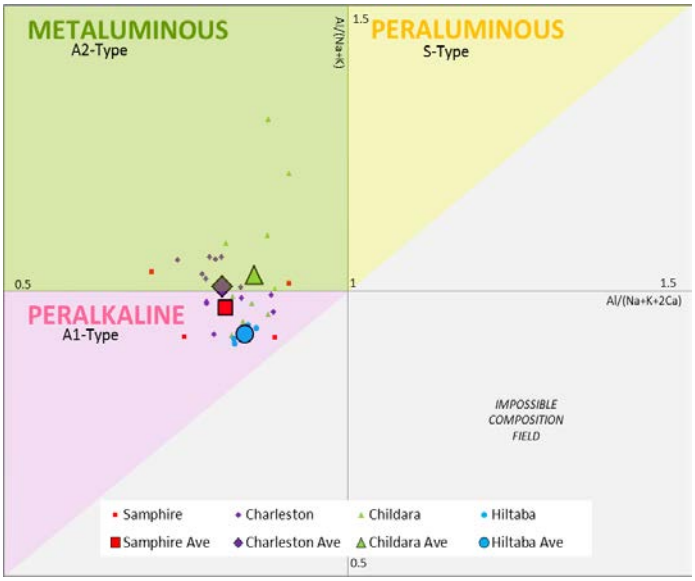
View north. Scale is as shown; image is ~5 km by ~6km.

The easterly dip of compositional variation is most apparent along the western edge of the higher amplitude red zone which forms the eastern boundary of the NAZ. Extending west from that boundary is the yellow-orange, medium amplitude, relatively fine textured response of the NAZ. The western contact zone of the Samphire granite NAZ with country rock is apparent in the flatter textured blue-green-yellow tones.

Geochemically the Samphire granite is within the peralkaline field, petrographically it is described as an A1 type, and it has been age dated as Mesoproterozoic granite of the Hiltaba Suite. Similar granites are associated with significant mineralisation at Olympic Dam in South Australia and at Ernst Henry in Queensland.

Figure 4. Individual points for the Hiltaba, Childara and Charleston granites have been calculated from public domain data, the Samphire data is from three UraniumSA core holes drilled under a South Australian Government PACE grant.

The small markers are individual data points, the larger markers are the averages of the individual values.



The theoretical potential for uranium bearing minerals to form in granitic rocks is indicated by the Th/U ratio – broadly as the Th/U ratio falls from >10 through towards 0.1 various uranium bearing minerals (allanite, monazite, urano-thorites, uraninite) successively become potentially stable.

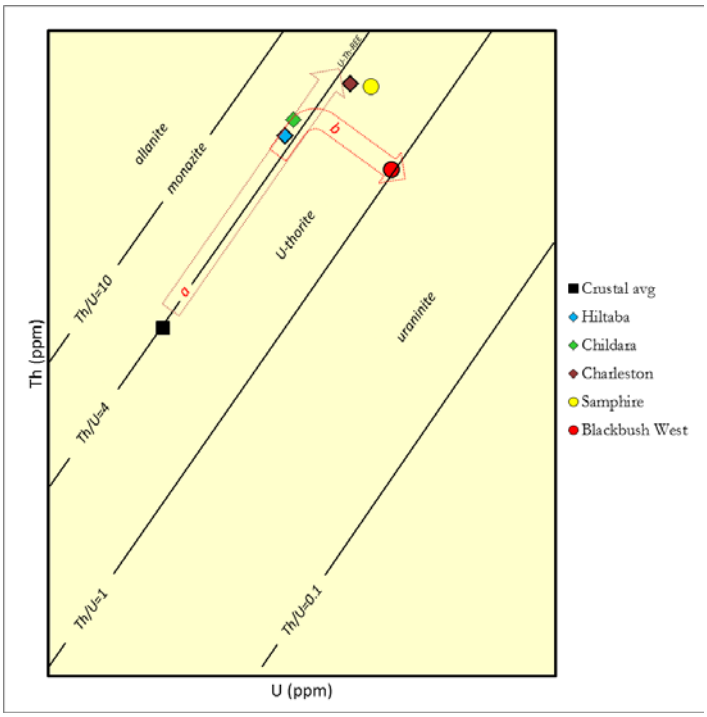


Figure 5. The Th/U geochemical data for Hiltaba Suite granites (sub-suites Hiltaba, Childara, Charleston and Samphire, public domain) trend along the Th/U = 4 line (brown dotted outline arrow "a") from a crustal average composition with increasing potential for the formation of stable uranium-thorium-REE minerals.

The average value for Samphire granite (yellow dot, ASX 29 April 2013) diverges from the overall trend towards Th/U = 1 and this trend is accentuated for granites at Blackbush West within the Northwest Arcuate Zone (NAZ, red dot) which plot at the margin of the uraninite stability field (red outline arrow "b").

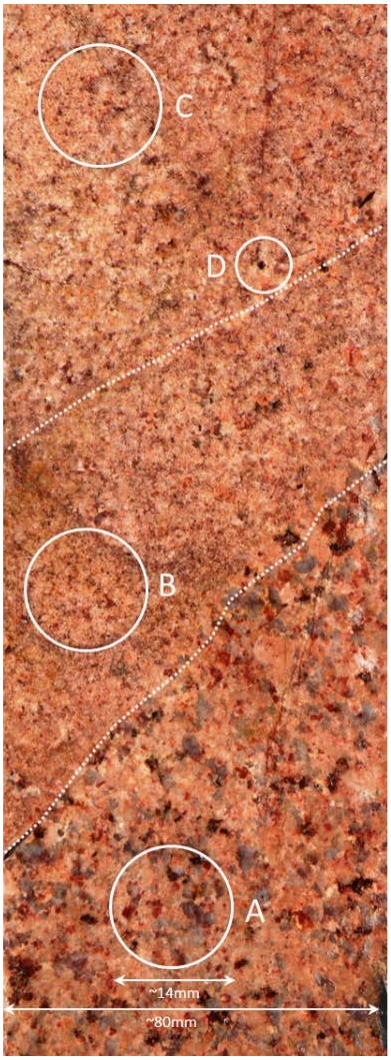
The Blackbush West value is the average of six core tails (10 hand held XRF point values per hole: results are at geochemical precision, values are anomalous not economically significant).

Detrital zircons collected from the Blackbush palaeo-channel fluvial sediments (Figure 1) for age dating reported in excess of 2% uranium; the deeply incised nature of the channel and its palaeogeomorphic relationship to its surrounds effectively limits the potential source area for these zircons to the Blackbush West area.

The conclusion of UraniumSA is that the peralkaline Samphire granite is significantly internally fractionated, that the granite phases lying below the Blackbush West mineralisation within the NAZ have the potential to contain primary uraninite minerals and have generated hydrothermal and epithermal fluids (discussed below).

The analysis and data plotting approach used here has been informed by the presentation "Felsic magmatism and uranium deposits" by Michel Cuney, presented to the International Atomic Energy Agency URAM Conference, 2014, June 23-27 Vienna. The presentations, interpretations and conclusions herein have been made by UraniumSA alone.

Compositional fabrics within granite with similar attitudes to the gross magnetic dips are apparent in core from within the NAZ at Blackbush West. The core slab photo (Figure 7, below) shows compositional and textural variations separated by planar contacts dipping at between 45^0 to 60^0 core-to-axis.



Grain size variation is most apparent, changing from 1-5mm in band A (bottom) through to 0.1-1mm in band C (top). The grain size variation is paralleled by systematic change in the rock-forming elements, by uranium content, and by Th/U ratio. The changes indicate increasing fractionation and potential for the formation of primary uraninite up-section.

	Si%	Al%	K%	Ca%	U ppm	Th/U	
C	3.8	4.6	4.6	2.1	22	1.07	(top)
B	3.8	4.5	4.0	2.5	13	3.07	
A	3.8	3.7	2.7	3.0	6	5.25	(bottom)

hand held XRF, average of 6 readings per site. Na, F not available

Miarolitic cavities and vesicles in the range 0.1 to 1mm are common throughout band C, some are present in band B, none are observed in band A (visual examination, referenced against microscopy). Miarolitic cavities are in-filled with crystal materials and form from fractionates separated late in crystallisation and emplacement. Vesicles are open cavities with internal sparry crystal growths and form in the final stages of fractionation or at granite emplacement from gas or saline hydrothermal/epithermal fluids. Miarolitic cavities and vesicles in this example are associated with increasing K, decreasing Ca and increasing U.

	Si%	Al%	K%	Ca%	U ppm	Cl
D	3.9	5.2	4.6	2.5	47	677

hand held XRF, average of 4 readings per site. Na, F not available

It is inferred that the vesicle at point D formed as an open fluid/vapour void from a saline metal rich brine separated from the melt at crystallisation.

Figure 7. *MRC009, 95.05 - 95.20m, vertical drill hole, top is up page.*

Hydrothermal and epithermal mineralisation. The slab in Figure 7 shows traces of fine sub-vertical earthy hematite filled veinlets which cross-cut matrix fabrics and compositional boundaries. Core of Samphire granite from below Blackbush West is extensively fractured and veined with a significant number of post-lithification hydrothermal to epithermal earthy/specular hematite, quartz, fluorite veins whose interrelationships and mineral associations have yet to be determined.

The upper surface of the Samphire granite is extensively clay altered and has been regarded as a pre-Eocene saprolite weathering product. However, ongoing work on trace minerals from within the clay-altered profile and underlying granite has found a range of exotic REE (rare earth element) minerals and alterations typical of hydrothermal veins and epithermal voids and it is improbable that the clay alteration is a simple palaeo-weathering product.

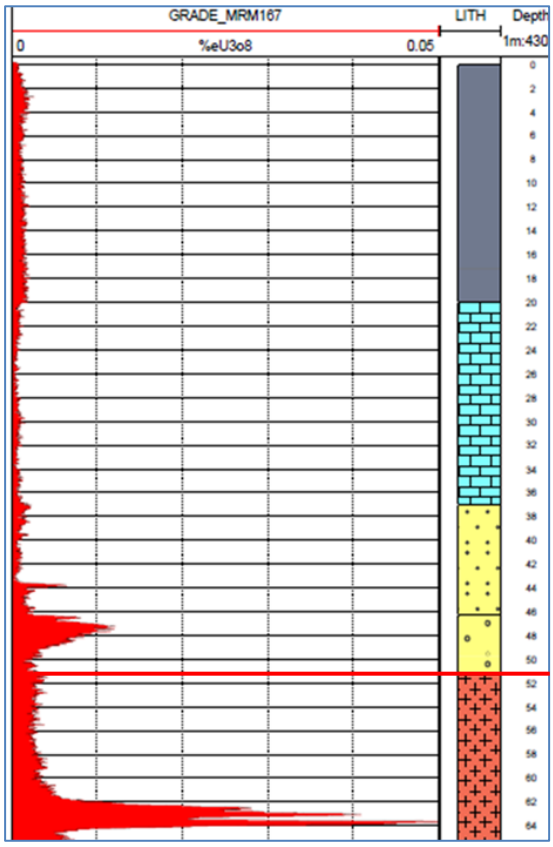
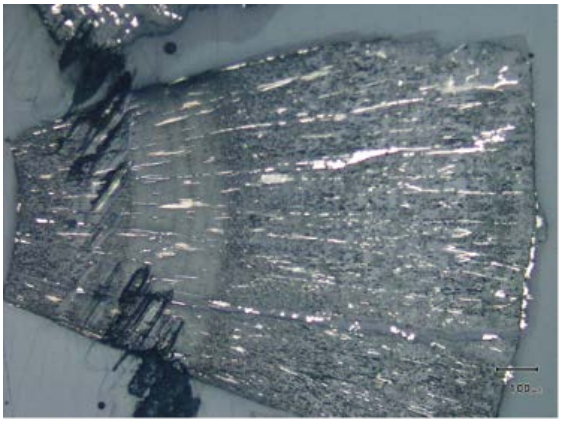


Figure 8. Rotary mud drill hole MRM 167 drilled at the eastern extremity of the Blackbush deposit (and east of the area of Figure 1) intersected radiometrically anomalous clay-altered granite ~12m below the Eocene unconformity.

Eocene unconformity, ~51m

Radiometrically anomalous clay-altered granite, ~63m

Figure 9. *MRM167, 62-66m.* A heavy mineral fraction was panned from the anomalous zone rotary mud cuttings. Fragments of bassanite ($2CaSO_4.H_2O$) partially replacing clustered long prismatic crystals of metamict-altered monazite ($(CeLa\text{-}NdYTh)PO_4$) with subordinate bright thread-like intergrowths of pyrite were identified. It is postulated by UraniumSA that fluids from late fractionation/emplacement (above) caused extensive hydrothermal/epithermal clay-alteration in the upper portions of the Samphire granite and this was subsequently over-printed by pre Eocene palaeo-saprolite weathering.



The exploration opportunity

The Samphire granite is well fractionated, uranium rich granite with some fractionate phases in the Th/U uraninite stability field, and it has been subject to a number of hydrothermal/epithermal mineralising events.

There is clear evidence of hydrothermal/epithermal mineralising events late in the history of granite fractionation and emplacement – textures and alteration appear similar in part to those described at Olympic Dam, but only uranium mineralisation is known in the Samphire project and at Blackbush. As a better understanding of the extent and controls on fractionation, alteration and mineralisation during emplacement (at potentially at sub-volcanic depths) is worked up, there will be an increased potential for new discovery.

Erosion of the Samphire granite in the Blackbush West area has yielded detrital zircons reporting in excess of 2% uranium. If these can be traced back to a fractionated granite phase with Th/U ratios in the uraninite stability field it could constitute a viable exploration target for large tonnage/low grade mineralisation.

There is no doubt that the Eocene sediment-hosted uranium mineralisation has been sourced directly from the underlying uranium rich Samphire granite and the best thickness/grade is spatially related to fractionated/altered/mineralised granite phases. Identification of such fractionated and potentially uranium rich phases from geophysical/geological interpretation could improve drill targeting for the discovery of new occurrences of sediment-hosted mineralisation.

Ahead

Work which is currently in progress is directed towards:

1. The proposed drilling to confirm the conceptual model for unconformity style uranium mineralisation within altered granite basement within the Western Zone, Blackbush is described earlier in this report, along with criteria to evaluate technical success from the drilling.

   The conceptual model is well supported by data and the opinion of the Geoscience Team is that the proposed drilling will significantly enhance the balance of risk/reward towards discovery.

2. Determining the sequence of intrusive events, alteration and mineralisation within the Northern Arcuate Zone to identify permissive settings for unconformity mineralisation (above), and to find systems within basement which constitute stand-alone targets for bulk mineable mineralisation.

   Work currently in progress is identifying the uranium mineral species present in the veins and alteration systems within granite below the Western Zone at Blackbush. Detailed core logging is establishing the sequences of brecciation, veining and alteration – incomplete results suggest sub-vertical sheet-fracture vein bounded breccia pipe systems underlie parts of the Western Zone, Blackbush.

3. Understanding and mapping out the history of sequential intrusion of granite phases within the Samphire batholith. The recognition of the Northwest Arcuate Zone as a discrete phase of the Samphire granite within the batholith complex indicates that other discrete intrusive phases of fractionated and potentially bulk-mineralised granite are present and can be exploration targets.