




**Mullaquana Uranium
exploration case history
sediment hosted uranium mineralisation**

The AusIMM International Uranium Conference 2011

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This presentation was developed and delivered using the animation features of PowerPoint and was accompanied by a dialogue relating to the material on the slide.

This static version of the presentation does not have the benefit of the animation features and many of the slides are therefore very information dense.

Disclaimer

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The results reported herein, insofar as they relate to mineralisation, are based on information compiled by Russel Bluck who is a Member of the Australian Institute of Geoscience and an employee of UraniumSA Limited with sufficient experience relevant to the style of mineralisation and type of deposits being considered and to the activity which is being reported to qualify as a Competent Person as defined by the 2004 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2004 Edition). He consents to the inclusion in the report of matters based on his information in the form and context in which it appears.

Corporate Overview

UraniumSA

ASX code USA

- 146m shares
- ~\$7.6m cash at bank
- Top 20 shareholders ~42%
- Largest shareholder ~ 6%

- Only uranium
- Only in South Australia

- Inferred Mineral Resource 67.2 Mt @ 284 ppm
19,000 tonnes U₃O₈ (42M lb)
- Progression towards field trials leading to production
- Scheduling to commence field trials 1st Qtr 2012

The criteria UraniumSA applies in its exploration business are to:

- work where there are effective regulatory and administrative regimes
South Australia has a history of discovery and development of uranium mines
- focus where there is a known uranium endowment
the Gawler Craton in South Australia is self-selecting under this criterion
- apply a system approach to exploration and evaluation of results

Exploration Approach – sediment hosted uranium

For sediment-hosted uranium exploration we use a **source → transport system → depositional site** model

The uranium endowment of Miocene-Eocene in the Frome Embayment in South Australia was our starting point

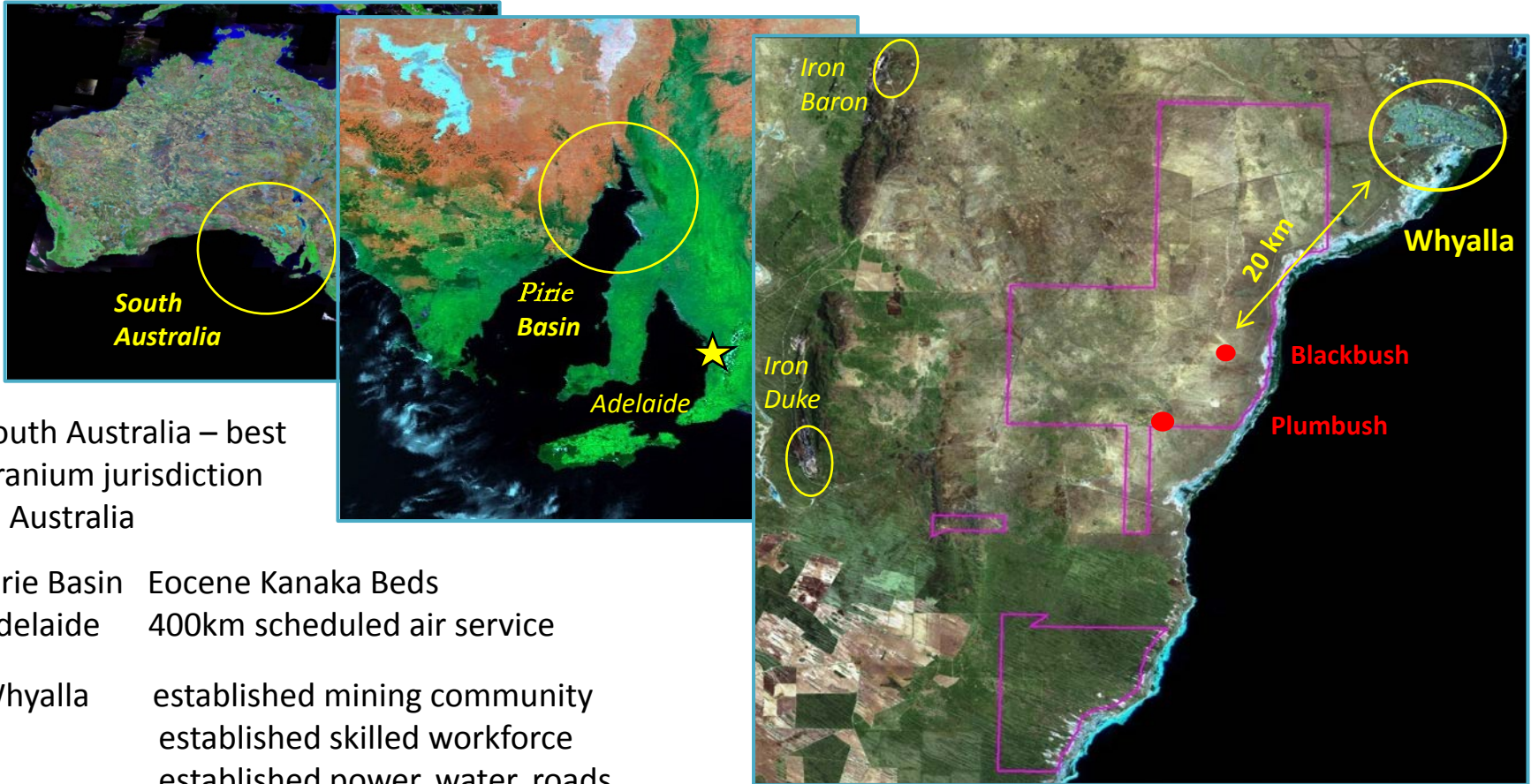
From this, the Mullaquana exploration project developed from:

- **source** an inferred proximal Hiltaba suite granite
- **transport** fluvial and transgressive facies in the Pirie Basin
- **deposition** sand/lignite assemblages in the Kanaka Beds

- **discovery** 1981 BHP drill hole PP15 *the log in PIRSA files has a pencil annotation “redox” on its face. Person unknown*

2007 UraniumSA drill hole MRM 001 intersected uranium mineralisation with “redox” alteration
- **architecture** 2007 – 2009 basin architecture from 49 drill holes and AEM survey for stratigraphy and mineralisation
- **resources** 5th May 2009, Blackbush maiden resource estimate
8th April 2011, total resource estimate 42 Mlb U₃O₈

Exploration location – South Australia – Pirie Basin



South Australia – best uranium jurisdiction in Australia

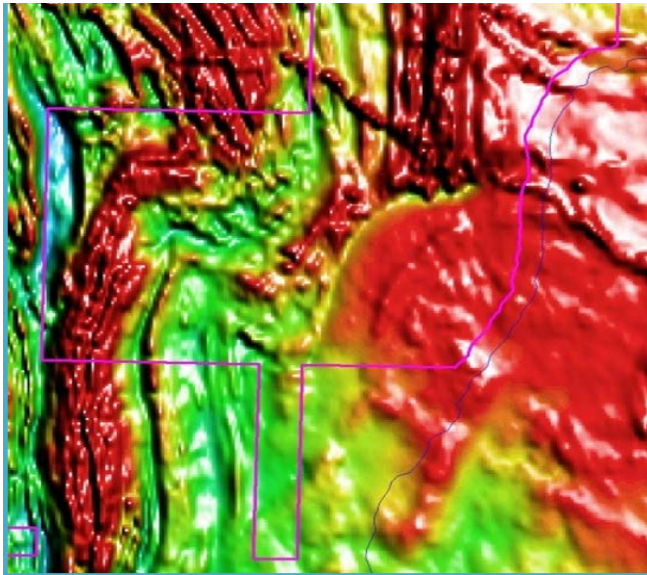
Pirie Basin Eocene Kanaka Beds

Adelaide 400km scheduled air service

Whyalla established mining community
 established skilled workforce
 established power, water, roads

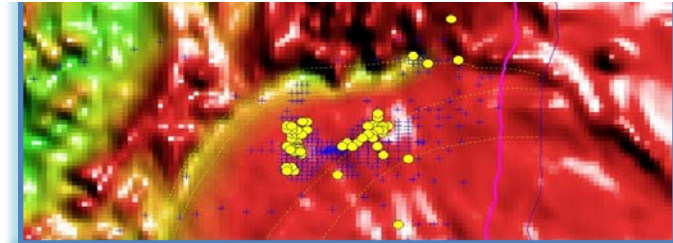
Exploration – source of uranium in sediments

The area is underlain by a magnetically concentrically zoned body interpreted as a Hiltaba suite granite

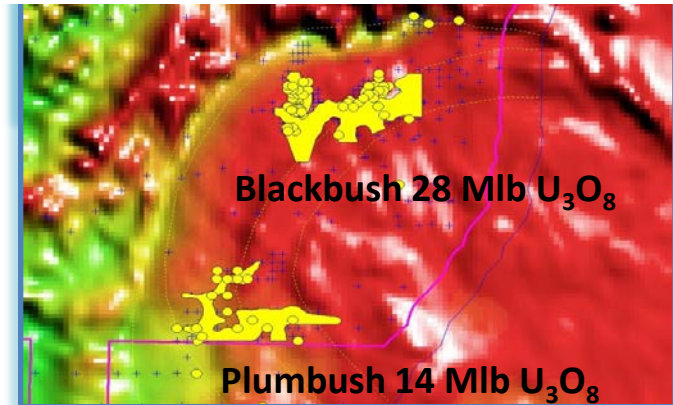


View north, scene is ~23km east-west

the granite is uranium anomalous
yellow dots granite basement at eoh >100ppm eU_3O_8



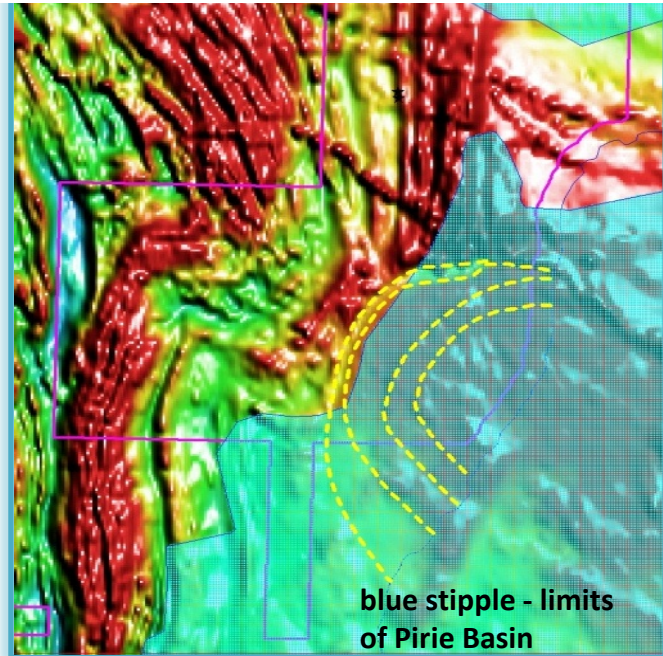
and is overlain by mineralisation



View north, scene is ~13km east-west

Exploration – transport/deposition in sediments

The Pirie Basin extends across the area of the inferred granite



View north, scene is ~23km east-west

In the Mullaquana area the Pirie Basin sequence has a characteristic gamma profile

Cover: soil, sand, calcrete, gypcrete, alluvium.

Plastic Clay: blue-grey massive to thick bedded plastic clay: ~12m

*Pliocene
Gibbon Beds*

Limestone: fawn, cream and white bioclastic limestone, calcareous marl and sand, predominantly thin bedded: ~ 18m

*Miocene
Melton
Limestone*

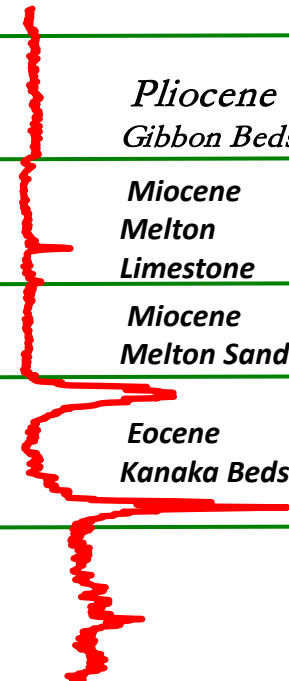
Pollymict Sand: oxidised fine grained to granular sand, well rounded lithics, ~ 12m

*Miocene
Melton Sands*

Monomict Sand: grey to black, fine grained to granular sand, intercalated carbonaceous clay and lignite: 8m to 30m

*Eocene
Kanaka Beds*

Basement: variously weathered granite, granite gneiss and metamorphic.



Exploration – location of mineralisation in sediments

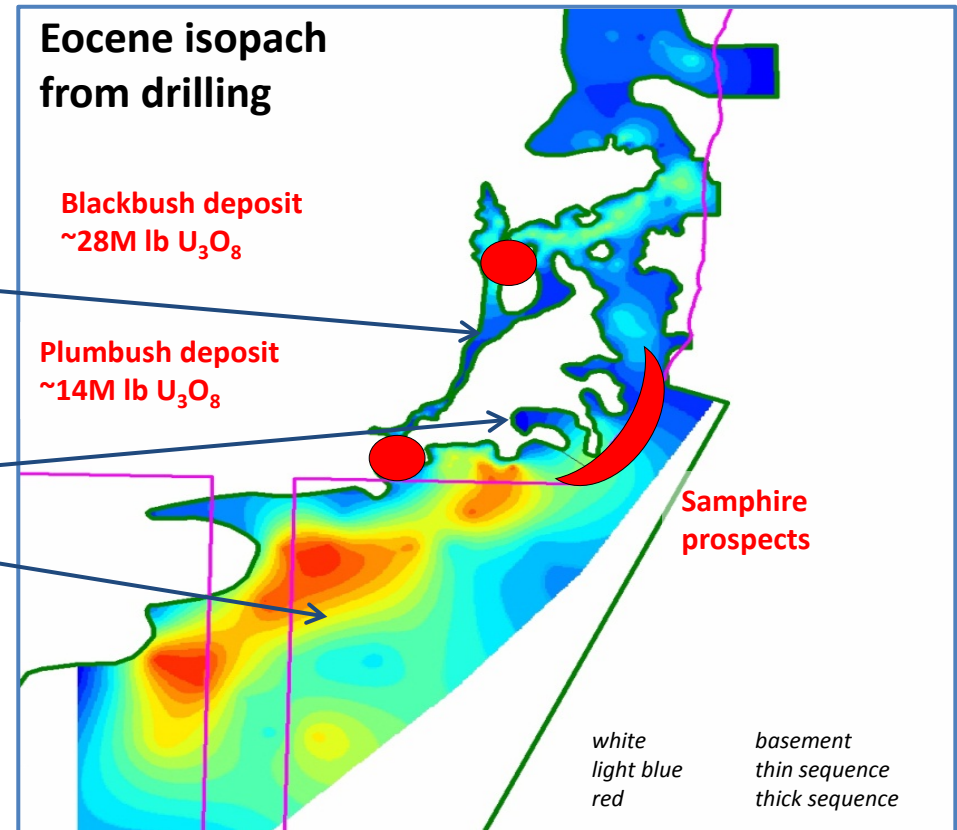
596 holes have been drilled for regional exploration, resource estimation, mineral characterisation and hydrogeology

basement incised fluvial systems dominate in the north and west

merge into lacustrine and marginal marine assemblages east and south

basin sequence to the south is not well known

potential ore grade mineralisation in fluvial channels and along the edge of marginal marine settings



Exploration to Development – ISR resources

Blackbush deposit

45.5M tonnes

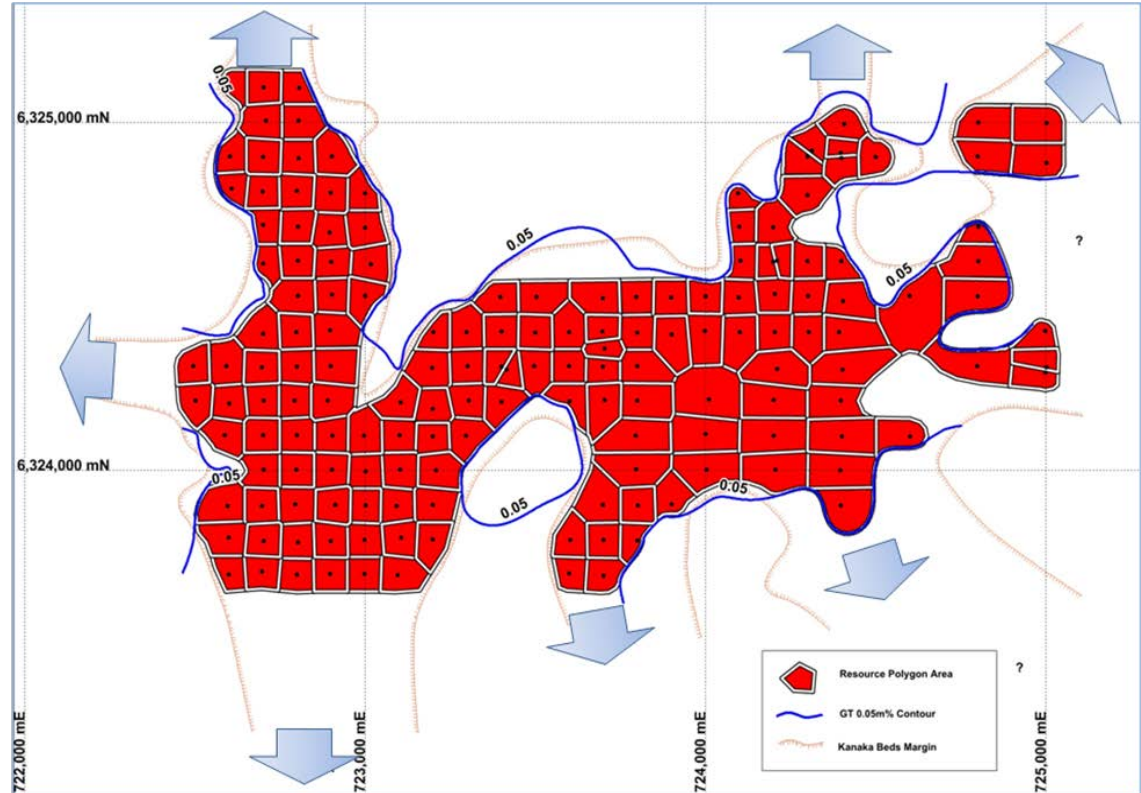
12,700t contained U_3O_8
(28 million lbs)

weighted average

grade 280ppm e U_3O_8
thickness 11.71m

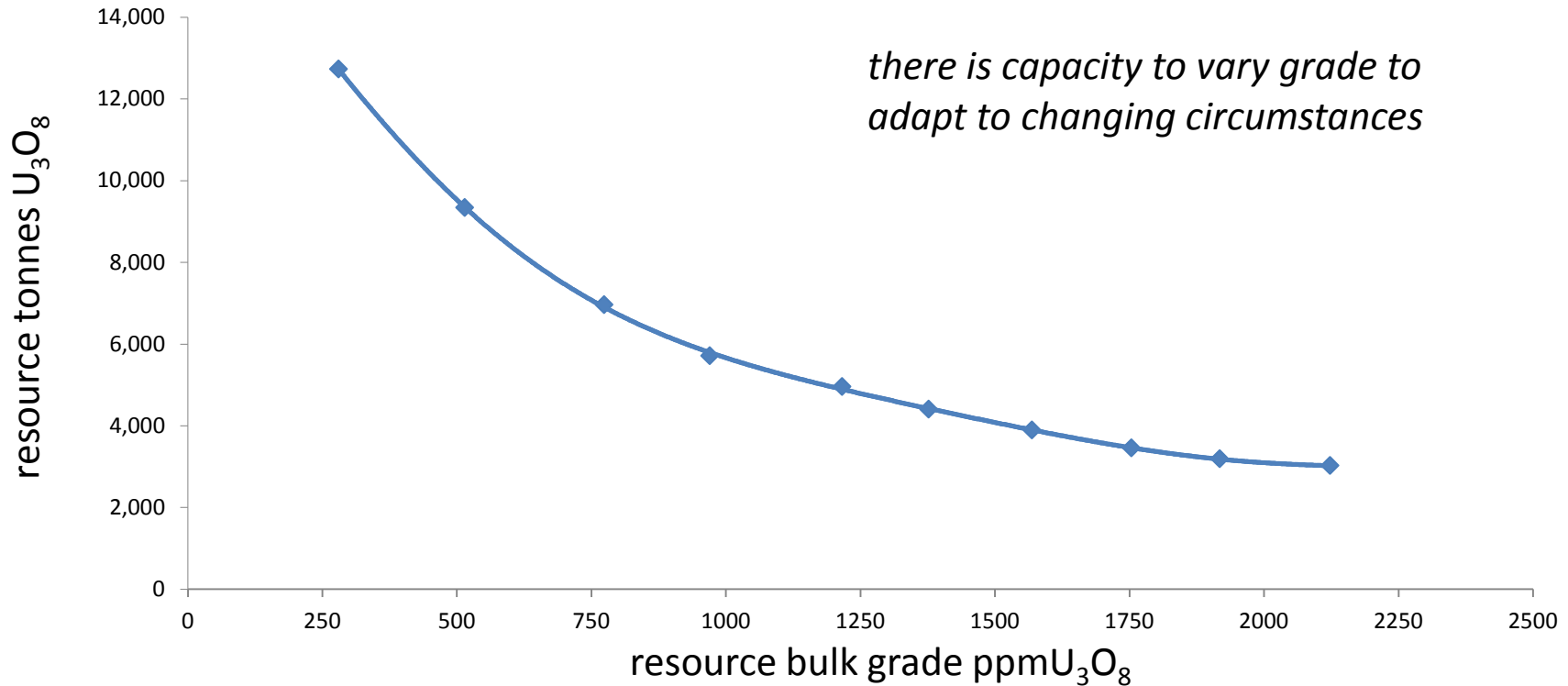
Resource envelope remains
open in several directions

Higher grade/thickness
“starter zones” present



Development – tons/grade for ISR

Blackbush deposit



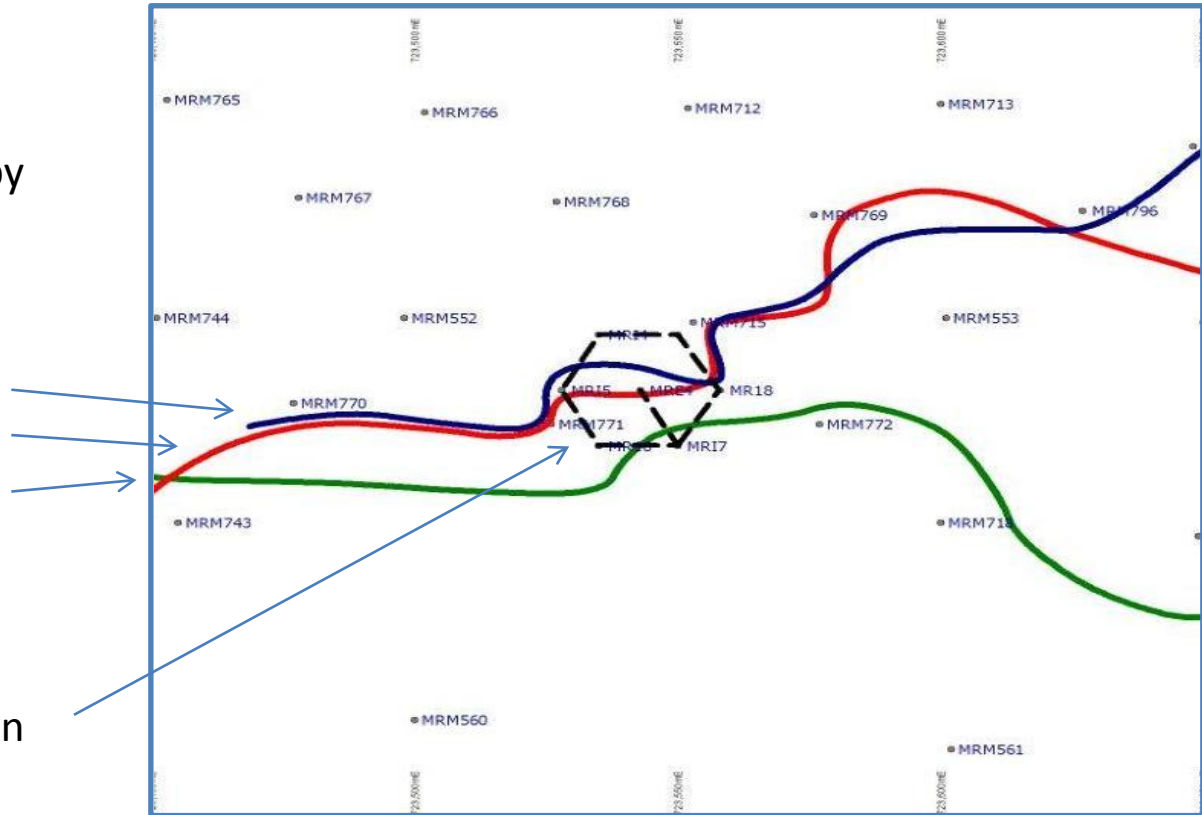
Development – roll front mapping for ISR

Blackbush deposit

multiple vertically stacked
roll-front traces separated by
horizontal aquatards
*three fronts mapped and a
further 3-4 to be delineated*

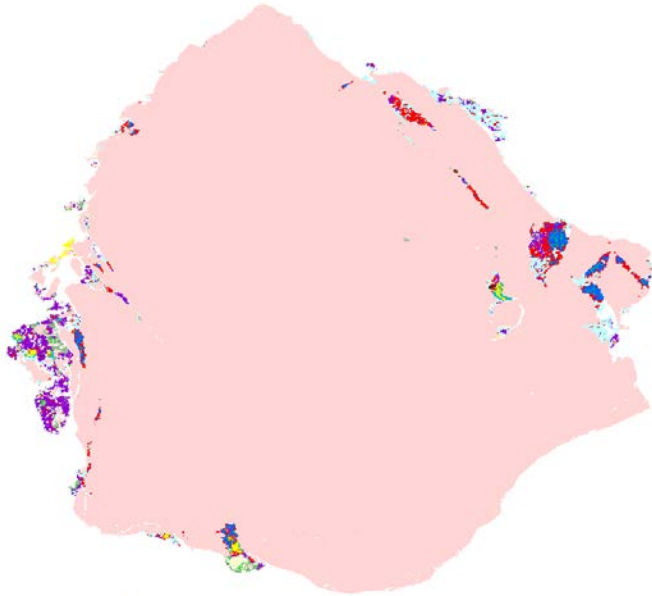
Zone 1 55.0m to 57.0m
Zone 2 57.1m to 58.5m
Zone 3 59.0 to 60.20m
*fronts have been mapped,
volumes and grades not yet
estimated*

7-spot pattern for circulation
trials (15m separation)



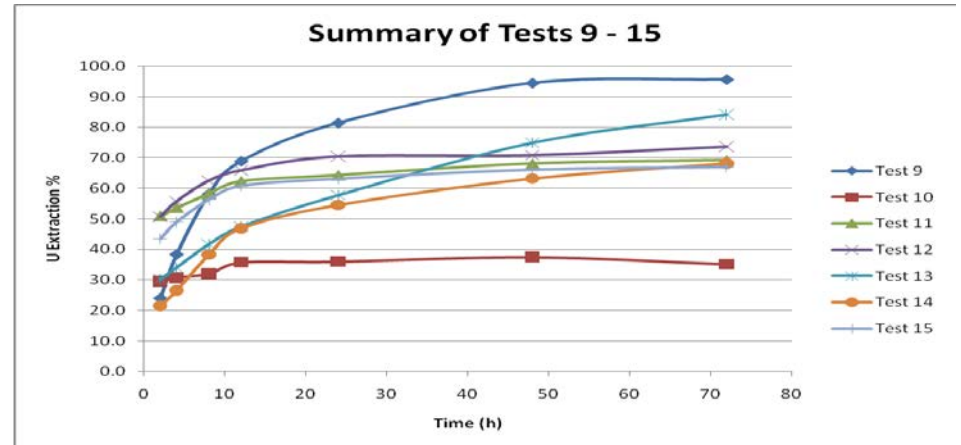
Development – mineralogy in sediments

Mineralisation is predominantly uraninite/coffinite localised on grain boundaries and fractures



QEMSCAN grain ~1mm across

which has contributed to favourable results in bottle rolls



Simon Hall, UraniumSA Metallurgical Manager, is presenting on this topic later in the conference

Development – trajectory to ISR production

Blackbush deposit

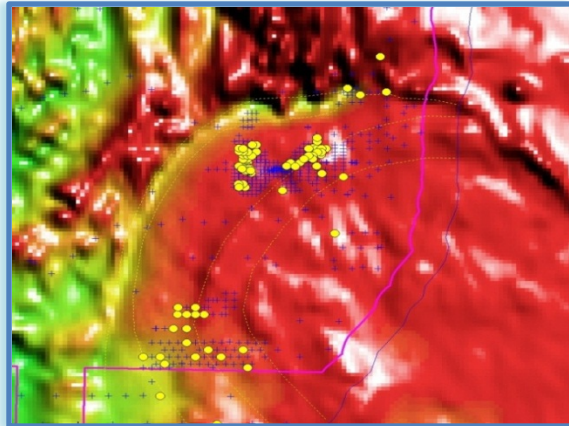
our emphasis is on staged sequential de-risking to advance the project

- 1st Qtr 2012 – schedule commencement of field trial
- 1st to 2nd Qtr 2012 – field trial for resource upgrade and mine design
- 2nd Qtr to 3rd Qtr 2012 – submission of mining proposal
- 3rd Qtr to 4rd Qtr 2012 – commencement of site works
- 4th Qtr 2012 to 1st Qtr 2013 – first 100tpa production module
- 2nd Qtr to 3rd Qtr 2013 – production ramp up to 400tpa

Exploration – next. granite hosted mineralisation

The Mullaquana granite is an exploration target in its own right.

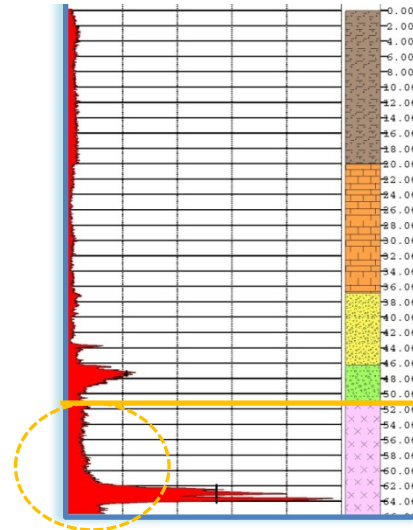
Uranium anomalism in granite mirrors the magnetic zonation



yellow dots - granite basement
eoh >100ppm eU₃O₈

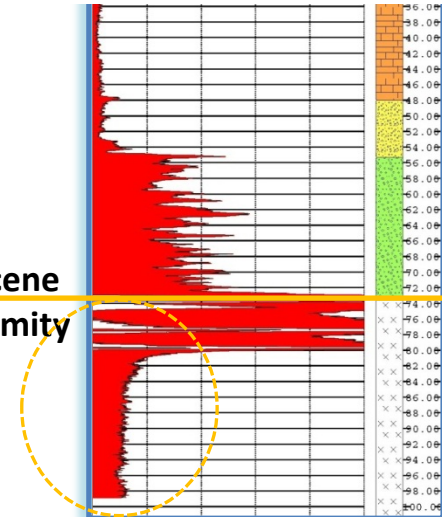
View north, scene is ~13km east-west

Background uranium content in granite varies vertically suggesting a compositional layering



Granite :
background 20-30 ppm eU₃O₈
increasing to 50-70ppm eU₃O₈
full scale is 500ppm eU₃O₈

A recent core hole returned 5.4m @ 434ppm pU₃O₈ (peak grade 2,485ppm pU₃O₈) in sulphide bearing clay altered granite



the challenge

is to move as quickly and as cost-effectively as possible from

positive results

to new discoveries

to drums of
ISR product





UraniumSA

