

# ALTA 2013

25 May - 1 June

Perth, Western Australia

## LETLHAKANE URANIUM PROJECT

By

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Presenter

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## Highlights

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### Advanced Uranium Development Project – Scoping Study Completed

- Total resource of 350 million lb U<sub>3</sub>O<sub>8</sub>
- Includes 90 million lb U<sub>3</sub>O<sub>8</sub> higher grade resource at 284ppm U<sub>3</sub>O<sub>8</sub>
- Significant initial production (*3Mlbs pa*) with Long Mine Life (*+20 years*)
- Low risk mining method – ore body is shallow, soft and flat
- Low capital cost with high recoveries (up to 77%) averaging 71.5%
- Mid range, predictable forward operating cost
- Well established infrastructure in Botswana, a stable and mining friendly country
- Assets includes major new coal deposits

# Corporate Overview

## Capital Structure

Current Share Price <sup>1</sup>	A\$	\$0.06
Shares on Issue <sup>2</sup>	#	260,104,986
Options on Issue <sup>2</sup>	#	14,210,000
Market Capitalisation <sup>2</sup>	A\$	\$15.9million
Cash at bank <sup>2</sup>	A\$	\$4million
Debt <sup>2</sup>	A\$	Nil
Investments held for trade <sup>2</sup>	A\$	\$1.7 million

- There are 14.21 million options on issue with a volume weighted average exercise price of \$0.429 and a volume weighted time to expiry of 2.2 years
- As at 3<sup>rd</sup> May 2013

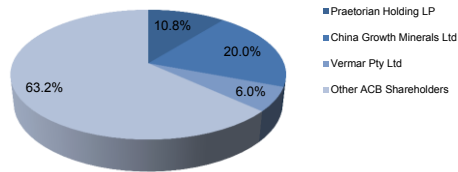
## Board & Management

Director	Role
Robert Pett	Chairman
Richard Lockwood	Non-Executive Director
Dr Andrew Tunks	Non-Executive Director
Dr Paul Woolrich	Executive Director
Paul Ingram	Non-Executive Director
Harry Stacpoole	Non-Executive Director
Paul Thomson	Chief Executive Officer
Anthony Khama	Chairman of A-Cap Botswana Pty Ltd
Steve Groves	General Manager, Exploration

## Share Price & Volume



## Ownership Analysis

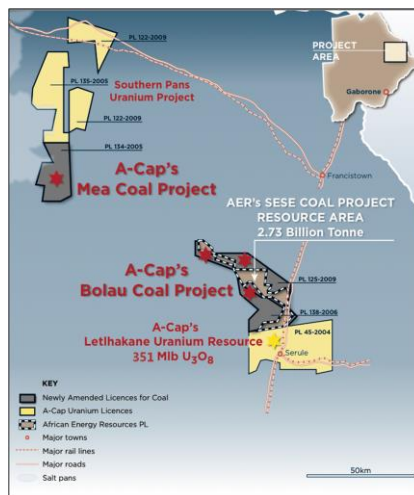


# Asset Overview

+4,000km<sup>2</sup> of U<sub>3</sub>O<sub>8</sub> tenure in Botswana

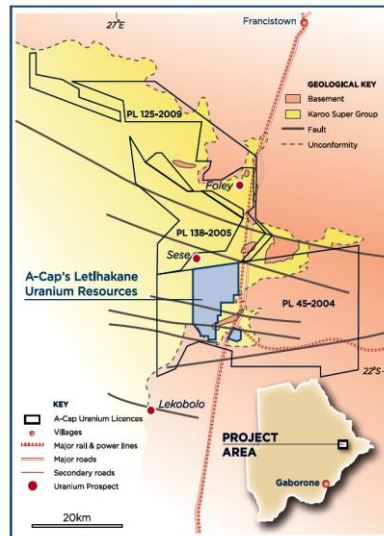


Major new coal deposits discovered



## Lethakane Uranium Project

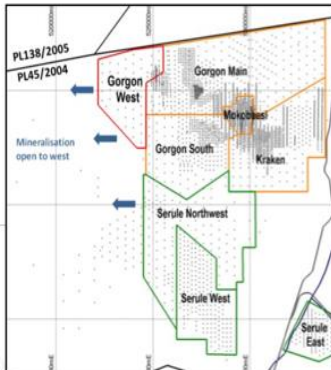
- One of largest undeveloped uranium deposits in the world - 350Mlbs  $U_3O_8$
- Significant higher-grade portion 90Mlbs  $U_3O_8$  at a grade 284ppm  $U_3O_8$
- Resource remains open and still growing
- Excellent recoveries from heap leach test work combined with high grade resource indicates competitive operating cost per pound
- Low capital cost estimated at under \$400M for 3Mlbs per annum production



## Large Global Resource

Lethakane Project at 100ppm cut-off  
(All Deposits)

**1041Mt at 153ppm  $U_3O_8$   
for a contained  
351.8Mlbs of  $U_3O_8$**

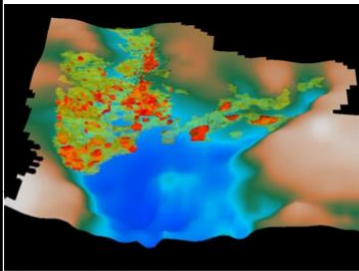


Ore Type	Indicated			Inferred			TOTAL		
	Mt	$U_3O_8$ ppm	$U_3O_8$ Mlbs	Mt	$U_3O_8$ ppm	$U_3O_8$ Mlbs	Mt	$U_3O_8$ ppm	$U_3O_8$ Mlbs
Total Secondary	9	172	3.4				9	172	3.4
Total Oxide	60.4	148	19.7	124.3	133	36.4	184.8	138	56.3
Total Primary	151.9	154	51.5	694.8	157	240.6	846.7	157	292.1
<b>ALL DEPOSITS</b>	<b>221.3</b>	<b>153</b>	<b>74.7</b>	<b>819.1</b>	<b>153</b>	<b>277</b>	<b>1,040.50</b>	<b>153</b>	<b>351.8</b>

## Large Higher Grade Resource

*Lethakane Project at 200ppm cut-off  
(All Deposits)*

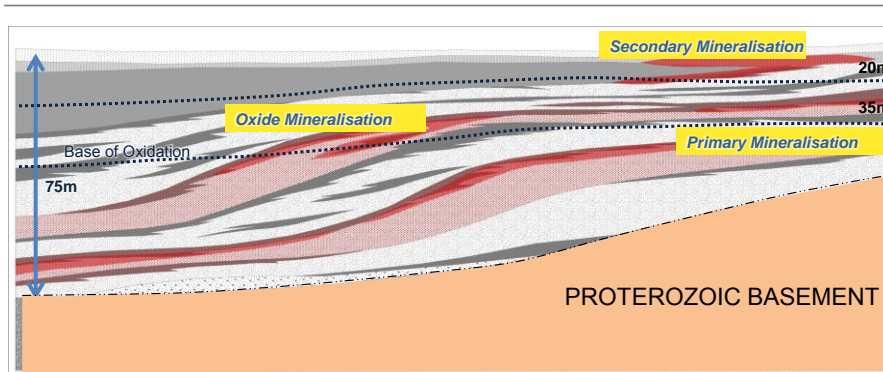
**143.2Mt at 284ppm  $U_3O_8$   
for a contained  
89.7Mlbs of  $U_3O_8$**



*Basement topography with 100ppm (green)  
and 200ppm (Red) grade shells*

Ore Type	Indicated			Inferred			TOTAL		
	Mt	$U_3O_8$ ppm	$U_3O_8$ Mlbs	Mt	$U_3O_8$ ppm	$U_3O_8$ Mlbs	Mt	$U_3O_8$ ppm	$U_3O_8$ Mlbs
Total Secondary	2.9	256	1.6	-	-	-	2.9	256	1.6
Total Oxide	7.5	275	4.6	7.3	270	4.3	14.8	274	8.9
Total Primary	22.2	275	13.5	103.4	288	65.7	125.5	286	79.2
<b>All DEPOSITS</b>	<b>32.6</b>	<b>274</b>	<b>19.7</b>	<b>110.7</b>	<b>287</b>	<b>70.0</b>	<b>143.2</b>	<b>284</b>	<b>89.7</b>

## Ore Body – Flat, Shallow, Easy to Mine



- Sediment-hosted deposit (Lower Karoo mudstones and sandstones)
- Shallow, Flat, Simple, Easy to mine, dips west at one degree
- Layer cake type deposit - Three ore types: Secondary, Oxide & Primary

# Mining

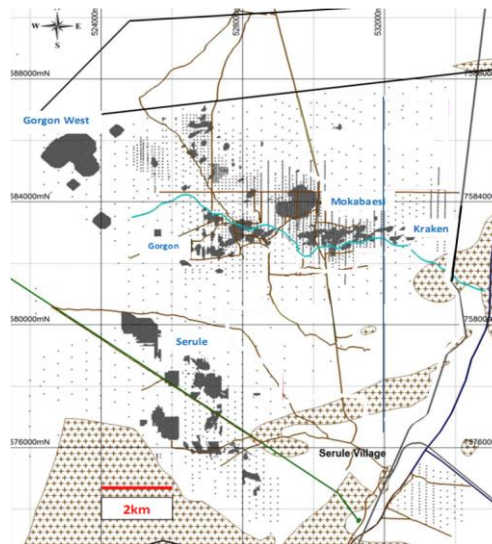
- A mix of conventional mining equipment and surface miners planned
- Low cost surface miners planned for the flat lying ore zones
- Pre Strip using conventional equipment



Wirtgen 4200 operating at FMG

# Pit Optimisation

- An optimised in-pit resource of **57Mlbs  $U_3O_8$  grading 197ppm  $U_3O_8$**
- Additional unscheduled in-pit resources at Gorgon West of **13Mlbs  $U_3O_8$  grading 196ppm  $U_3O_8$**
- **9Mtpa open pit heap leach project to produce 3Mlbs  $U_3O_8$  with a Mine Life in excess 20years 197ppm  $U_3O_8$**
- Higher production rates possible in improved market conditions.



## **METALLURGY**

ALTA 2013

### **Metallurgy - Test Programs 2008-2013** **Mintek & SGS Perth**

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- Acid & alkaline leach regimes
- Various diagnostic testing
- Mineralogical investigations
- Beneficiation testwork including radiometric sorting
- IX testwork at SGS, SX testwork at Ansto

#### **Results**

- Secondary Calcrete & Mudstones respond well to alkaline leaching
- Secondary Mudstones also respond well to low acid leaching
- Oxides and Primary ores require strong acid leach conditions
- Radiometric sorting not considered further at this time

## Metallurgy - Ore Type Composition

Analysis	Unit	Kraken Primary	Gorgon Primary	Oxide	Shallow Mudstone
Al	%	9.22	10.01	8.38	13.3
Fe	%	0.68	1.15	2.72	0.99
K	%	0.50	0.41	0.00	0.54
Mg	%	0.11	0.12	0.10	0.42
S	%	0.13	0.68	0.2	0.05
Si	%	25.8	23.3	-	25.4
U	ppm	202	198	182	136
V	ppm	329	522	234	138
Total C	%	5.48	11.0	2.54	0.77
C Org	%	4.34	9.59	2.43	0.38
CO <sub>3</sub> -C	%	1.14	1.41	0.11	0.39
Acid Neut. Capacity	kg H <sub>2</sub> SO <sub>4</sub> /t	17	7	NA	NA

## Metallurgy – Column Results

### Acid leaching of primary & oxide ore

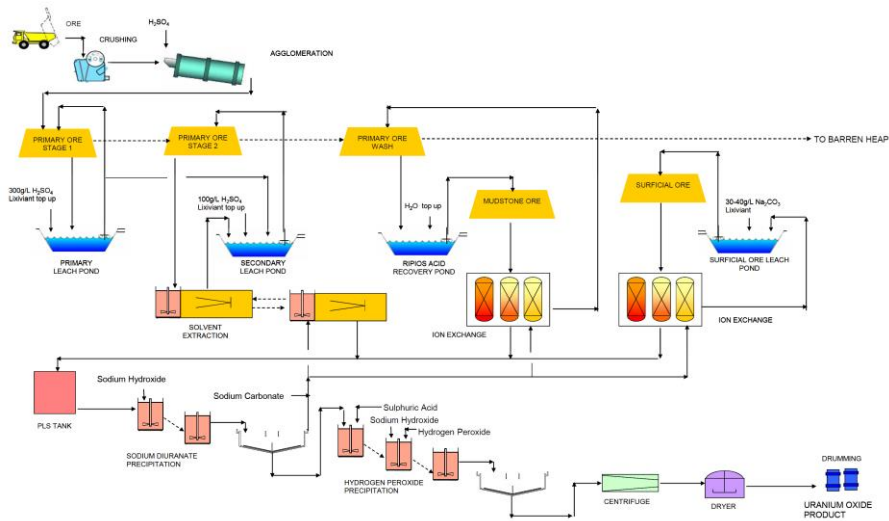
- Large number of mini, 1m & 2m columns completed using all ore types and mainly 2 acid regimes:-10kg/t acid at agglom/50g/L acid in leach & 25kg/t acid at agglom/100g/L acid in leach
- Majority of initial testwork completed on -8mm crushed material
- Data includes residue profile samples, sand traps at base of columns and mineralogical studies of feed and residue samples
- Results indicate that at lower acid strengths there is significant preg robbing – confirmed by comparison of 1m & 2m column results & profile residue samples
- **Optimum leach conditions confirmed to be 25kg/t acid at agglom/100g/L acid in leach (see graph on next slide)**
- Using this acid regime on Gorgon primary ore gave similar recoveries for 1m, 2m & 4m columns
- Leaching using -19mm crushed material indicate similar recoveries to -8mm samples

## Metallurgy – 2m Optimisation Columns

- **Total 17 x 2m columns** – 4 ores tested:- MO-Mixed Oxide, SWP-Serule Primary, GSP-Gorgon Primary, KRP-Kraken Primary
- Evaluated 3 crushed sizes (-8mm, -19mm & -30mm) & 3 acid regimes
- Acid regimes include 2 stage leach (25kg/t acid at agglom/300g/L acid leach stage 1/50g/L acid stage 2), single stage leach 25kg/t acid at agglom/100g/L acid in leach and single stage leach using 10kg/t/50g/L acid

Column	Ore Type	Crush Size, mm	Acid Regime	Calc Head ppm U	Recovery %
OT-1	SWP	19	2 Stage	335	76.5
OT-4	SWP	19	25/100	313	76.5
OT-5	SWP	19	10/50	321	73.3
OT-10	SWP	8	25/100	291	72.9
OT-14	SWP	30	25/100	284	75.1
OT-3	GSP+KRP	19	2 Stage	330	74.9
OT-9	GSP+KRP	19	25/100	313	72.4
OT-7	GSP	19	25/100	284	70.3
OT-12	GSP	8	25/100	288	70.0
OT-16	GSP	30	25/100	305	68.5
OT-8	KRP	19	25/100	271	67.3
OT-13	KRP	8	25/100	281	70.4
OT-17	KRP	30	25/100	274	70.4
OT-2	MO	19	2 Stage	218	68.0
OT-6	MO	19	25/100	208	64.6
OT-11	MO	8	25/100	212	65.2
OT-15	MO	30	25/100	207	67.8

## Heap Leach Process

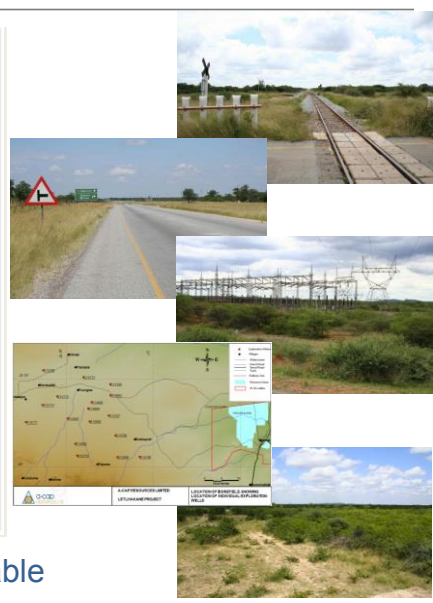
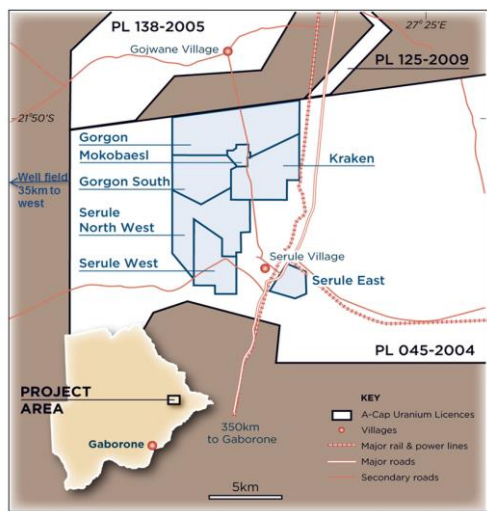




# INFRASTRUCTURE, SCOPING STUDY & FEASIBILITY STUDY

ALTA 2013

## Major Infrastructure in Place



Rail, Road, Power & Water Available

## Feasibility Team

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**Technical Director:** Paul Woolrich

**Lead Consultant:** Lycopodium Minerals Ltd, Perth

**Geology and Resource Estimation:** Optiro , H&S Consultants, David Wilson - Probe Calibration

**Mining, Pit Optimisation and Scheduling:** David Cairns Perth, CUBE Consulting, Wirtgen, Germany

**Mineralogy and Geology:** Rob Bowell SRK Consulting U.K.

**Metallurgical Testing:** Mintek, South Africa and SGS, Perth

**Engineering:** Lycopodium and Knight Piésold, Perth

**Environmental (EIA):** SLR Consulting South Africa & Ecosurv Botswana

**Well Field Surveys:** Water Surveys Botswana

**Metallurgy & Process Plant Design:**

- ALTA Metallurgical Services – Alan Taylor
- Orway Mineral Consultants – Grenvil Dunn
- Kappes Cassidy & Associates – Randall Pyper

## Highlights of Scoping Study

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### **Advanced Uranium Development Project – Scoping Study Completed**

- Resource of 90Mlb  $U_3O_8$  at 284ppm  $U_3O_8$  using a cut-off of 200ppm within a global resource of 352Mlbs  $U_3O_8$
- An optimised in-pit resource of 57Mlbs  $U_3O_8$  grading 197ppm  $U_3O_8$
- Additional unscheduled in-pit resources of 13Mlbs at 196ppm  $U_3O_8$  at Gorgon West
- 9Mtpa open pit heap leach project to produce 3Mlbs  $U_3O_8$  /annum with a Mine Life in excess 20 years
- Low risk mining method – ore body is shallow, soft and flat
- Metallurgical recoveries averaging 71.5% from acid heap leach process
- Operating costs estimated at US\$42/lb in the first five years and US\$48/lb in first 10 years
- Production capability in 2016 when uranium price forecast to be US\$70/lb
- Capital costs for plant and infrastructure US\$395M
- Well established infrastructure in Botswana, a stable and mining friendly country

## Operating Costs

### OPERATING COSTS PER POUND YEARS 1-5

Option	Recovered Mlbs U <sub>3</sub> O <sub>8</sub>	Grade ppm U <sub>3</sub> O <sub>8</sub>	Operating Cost US\$/lb U <sub>3</sub> O <sub>8</sub>	Mlbs pa
<b>Base Case</b>	15.4	275	42.15	3.1
<b>Increased Recovery 3%</b>	16.1	275	40.33	3.2
<b>5% Increase in grade</b>	16.2	289	40.03	3.2
<b>Increase of 3% rec &amp; 5% grade</b>	16.7	289	38.42	3.3

### OPERATING COSTS PER POUND YEARS 1-10

Option	Recovered Mlbs U <sub>3</sub> O <sub>8</sub>	Grade ppm U <sub>3</sub> O <sub>8</sub>	Operating Cost US\$/lb U <sub>3</sub> O <sub>8</sub>	Mlbs pa
<b>Base Case</b>	27.1	246	48.41	2.7
<b>Increased Recovery 3%</b>	28.3	246	46.46	2.8
<b>5% Increase in grade</b>	28.5	259	46.09	2.8
<b>Increase of 3% rec &amp; 5% grade</b>	29.7	259	44.25	3.0

## Capital Cost

AREA	Cost (US\$m)	EPCM + Contingency (25%) (US\$m)	Total (US\$m)
Treatment Plant	\$206.37	\$51.59	\$257.96
Infrastructure	\$41.17	\$10.29	\$51.46
<b>Total</b>	<b>\$247.54</b>	<b>\$61.88</b>	<b>\$309.42</b>
<b>Additional Capital Requirements</b>			
Owners Pre-production Costs incl. Project Management Team	\$3.21	\$0.80	\$4.01
Preproduction Mining	\$56.00	\$14.00	\$70.00
Mobilise Mining Contractor	\$3.10	\$0.78	\$3.88
Preproduction Manning	\$0.71	\$0.18	\$0.89
Insurance	\$0.43	\$0.11	\$0.54
Medium/Heavy Equipment	\$0.47	\$0.12	\$0.59
First Fills Consumables	\$4.21	\$1.05	\$5.26
<b>Total</b>	<b>\$68.13</b>	<b>\$17.04</b>	<b>\$85.17</b>

Estimated CAPEX for the Lethakane Project

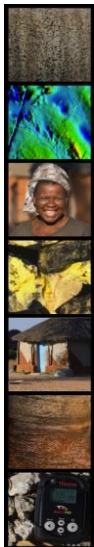
## The Road to Production

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- Letlhakane has all of the key ingredients for a successful project
- Letlhakane is one of the largest undeveloped deposits in the world
- Of the few capable of production in the next three years, Letlhakane is one of the ONLY deposits:
  - With plant CAPEX estimated at less than \$400M
  - With competitive and highly predictable operating costs
  - In a stable political and permitting friendly environment

## The Road to Production

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### Pre Feasibility Study (PFS) and Bankable Feasibility Study (BFS)

- BFS complete Q4 2014

### Water & Power

- Well field exploration complete, abstraction permit granted
- Water access capable by Q1 2015
- Power available Q1 2015

### Mining Licence

- Initiated on final ESIA & EMP acceptance Q4 2013
- Mining Licence approval capable by Q1 2014

### Construction & Production

- Construction capability Q2 2015
- Production capability Q2 2016

## Highly Experienced Technical Team

- Highly experienced technical and operational team
- World best expertise in geology, mining, process design and development engaged
- Team with project development, infrastructure & construction expertise
- Board and management with strong track record of taking projects from exploration to production



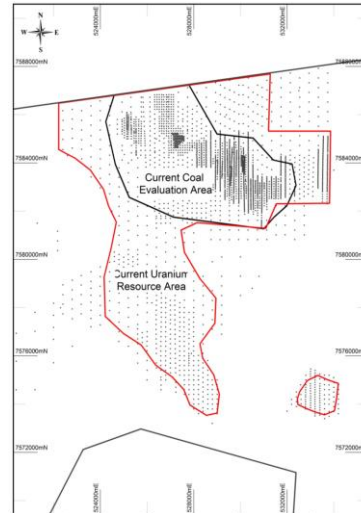
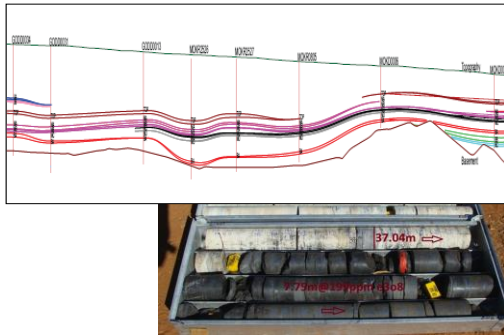
## Botswana

- Botswana ranks #1 in Africa for political stability, democracy and rule of law
  - No land access issues
  - Skilled mining work force
  - English speaking
  - No economic empowerment (BEE) / tribal issues
  - GDP per capita is \$16,000
- Mining accounts for 40% of current GDP and is critical for continued economic growth
- Simple Mining Law with demonstrable track record e.g. Debswana
- Botswana a safe and secure place to invest



## Lethakane Uranium and Coal

- Significant coal measures identified above and below uranium horizons at Lethakane
- Work underway to evaluate size and quality of resource and
- Potential economic synergies with mining and processing of uranium
- Coal will be mined with uranium at Lethakane



## Summary

- Resource of 90Mlb U<sub>3</sub>O<sub>8</sub> at 284ppm U<sub>3</sub>O<sub>8</sub> using a cut-off of 200ppm within a global resource of 352Mlbs U<sub>3</sub>O<sub>8</sub>
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