# Mining a cleaner tomorrow

WA Mining Club - 25 February 2016

Mike Young, Managing Director and CEO





Vimy's Vision and Mission



# 'Mining a Cleaner Tomorrow'

Vimy aims to become a **reliable** and **respected** uranium producer.







I was very anti-nuclear until I worked on the after effects of the Chernobyl accident – now I am very pro-nuclear as I realise that we have an unwarranted fear of radiation, probably due to all the **rubbish about a nuclear winter** we were fed during the Cold War."

Professor Geraldine Thomas
London's Imperial College
Member of the UNSCEAR committee
on the health effects of the Chernobyl accident

## Vimy Resources – a uranium company











Hon. Cheryl Edwardes Non-Executive Chairman

Significant networks in Government and in Asia's business community

Former WA State Government Minister holding Ministries of Environment, Labour Relations and Attorney General



Mike Young
CEO and Managing Director
Building mines

Founding Managing Director of BC Iron Ltd Uranium experience in Canada and Australia



Julian Tapp
Executive Director

Expertise in regulatory approvals

Previous Head of Government Relations and Director of Strategy at Fortescue Metals Group



**Tony Chamberlain**Chief Operating Officer

Considerable experience with Australian uranium projects

Delivered pre-feasibility, feasibility studies and process design packages for Goldfields, Barrick, Paladin and Mega Uranium





Ron Chamberlain CFO and Company Secretary

Finance professional with uranium experience

Significant experience in funding and development of uranium projects
Inaugural CFO for Paladin Energy





Capital structure	
Shares on issue	228.5 million
Share price (24 Feb 2016)	\$ 0.30
Market cap	\$ 68.5 million
Cash (31 Dec 2015)	\$ 7.13 million
Bank debt	\$ 0 million
Options (unlisted)	57 million @ 35c (June 2016)
	2.9 million @ 35c (June 2018)
	8.7 million @ 154c (Dec 2018)
	8.7 million @ 70c (Dec 2018)
	1.4 million @ 80c (Dec 2019)

25%
21%
19%
16%
8%
3.5%

#### A\$30m funding package from Resource Capital Fund VI

- \$5m placement (@ \$0.30 per share received May 2015)
- \$10 million royalty payment (1.15% GSR received September 2015)
- \$15 million bridging loan (undrawn)

### Chinese action on climate change

VIMY

- Chinese commitments (INDCs\*) to UNFCC\*\*
  - Carbon emissions will peak by 2030 or earlier
  - Carbon emissions/GDP lowered by 60-65% compared to 2005 levels (34% already achieved)
  - Increase share on non-fossil fuels in primary energy to ~ 20%
    - Will require > 150 GW by 2030
- Primary energy from non-fossil fuels (in 2014) ~ 11.2%

Source of power	Design capacity	Capacity utilisation factor	Energy generated TWh	Share of primary energy
Hydro	~ 300 GW	~ 40%	~ 1065	8.6%
Wind	~ 115 GW	~ 16%	~ 160	1.3%
Solar	~ 30 GW	~ 11%	~ 30	0.2%
Nuclear	~ 20 GW	~ 72%	~ 125	1.0%

<sup>\*</sup> Intended Nationally Determined Contributions; \*\* United Nations Framework Convention on Climate Change







Photos courtesy of guardianly.com, vice.com and theaustralian.com.au

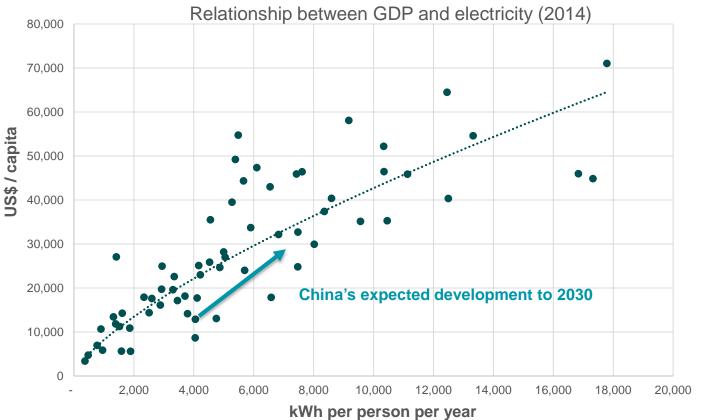
China's coal use – 5 Bt p.a. by 2020





### Cross sectional analysis of electricity consumption



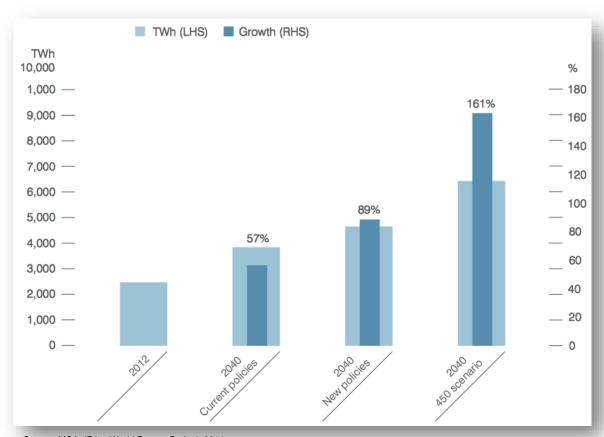


Sources: IMF (GDP/capita); BP Statistical Review (electricity); UN (population);

Vimy

### International Energy Agency World Energy Outlook 2012-2040





# Global growth in Nuclear Energy

Three Scenario energy projections to 2040:

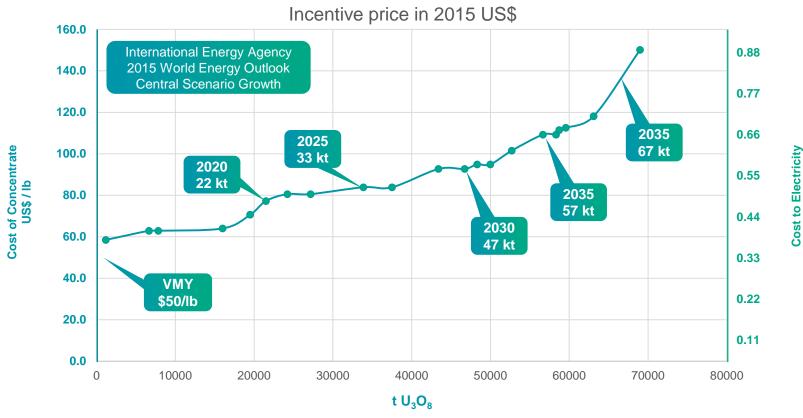
- Current policies **57**%
- New policies 89% (Central Scenario)
- 450 Scenario which seeks to keep CO<sub>2</sub> at 450 ppm 161% (2°C scenario)

Source: MCA, IEA - World Energy Outlook 2014

### Incentive price drivers for new uranium supply



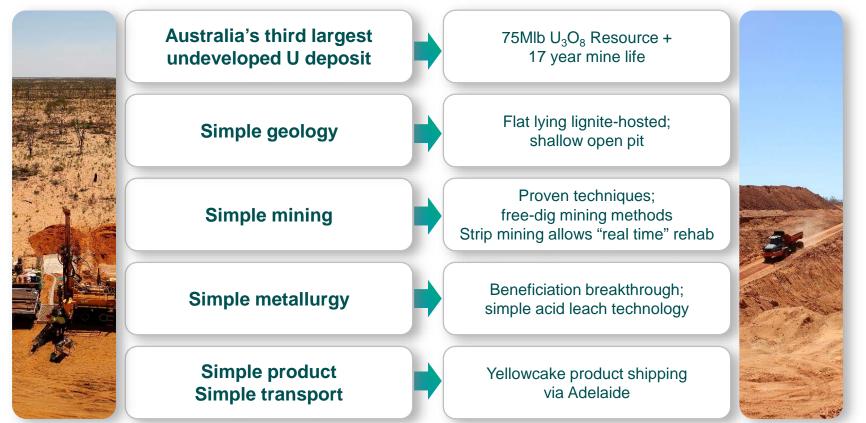
Cents / kWh



Incentive price = marginal costs + 15% post-tax nominal rate of return

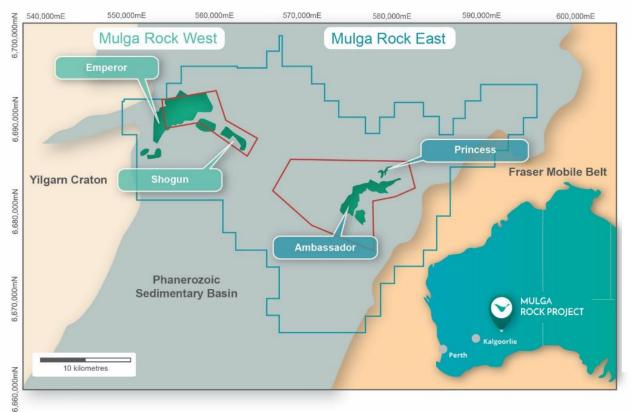
## Mulga Rock Project – Western Australia





### Mulga Rock Project location plan

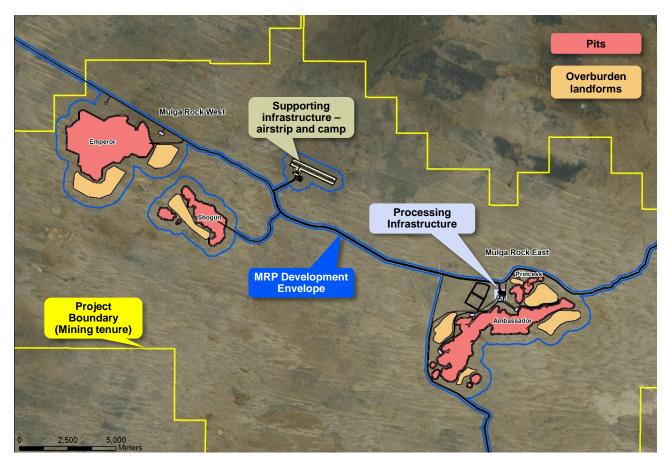




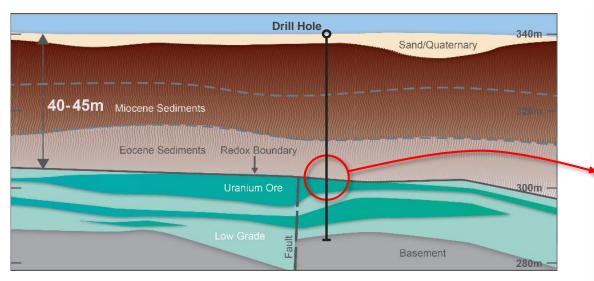
- 75Mlb U<sub>3</sub>O<sub>8</sub> Resource,
   >17 year mine life
- 50Mlb U<sub>3</sub>O<sub>8</sub> Mineral Inventory (diluted and recovered)
- Remote, arid location with no local inhabitants +200km to nearest town
- Deposits covered by granted Mining Leases

## Deposit location plan showing development envelope





### Geology: carbon-rich sediment host rock



- Hosted within deeply weathered sediments comprising carbonaceous sandstone; silt; sandy lignites
- Mostly Uraninite (UO<sub>2</sub>) associated with carbonaceous material and lignite – no complex silicate minerals
- Deep weathering = *soft friable rock*
- Deep pit voids to provide tailings disposal and waste dumps

#### Typical aircore Drill hole





Overburden
- oxidised
sediments

Redox boundary

Uraniumbearing carbonaceous sandstone

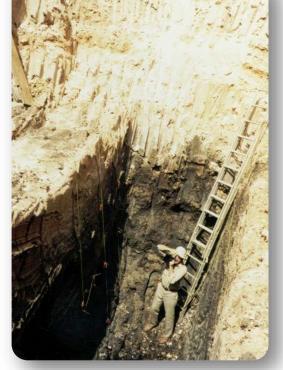
### Mining: simple, established mining methods

VIMY

- Test pits, and drilling show a clear demarcation between carbon-rich mineralisation and oxidised overburden
- Overburden amendable to <u>free dig mining methods</u>
- DFS will optimise bulk mining methods for overburden excavation using coal mining technology
- Strip mining method results in in-pit waste disposal and 'real time' rehabilitation – key environmental factor
- Pit voids to be used for tailings disposal and management key environmental factor



Test pit January 2016



Close-up in test pit showing carbon-rich ore and free dig nature of material

- Geotechnical investigation trenches
  - Free dig / dozer ripping
  - Geotech confirmed upper horizon highly stable
  - Mining rates higher than expected
  - Groundwater level as expected



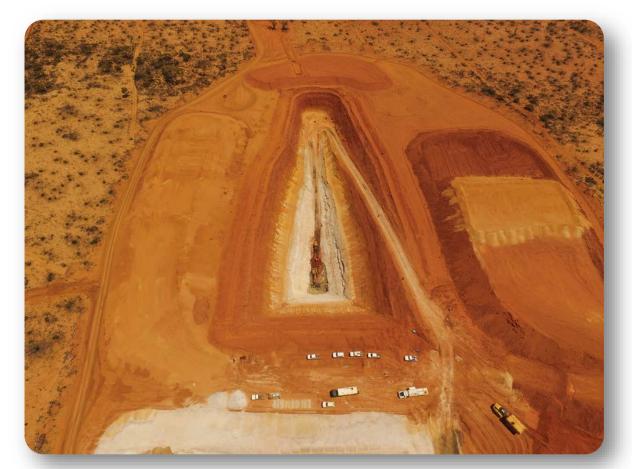






# Mulga Rock



















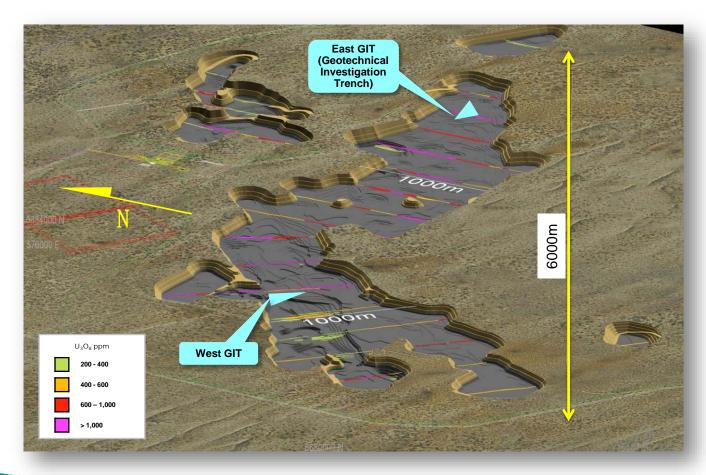
# Mulga Rock





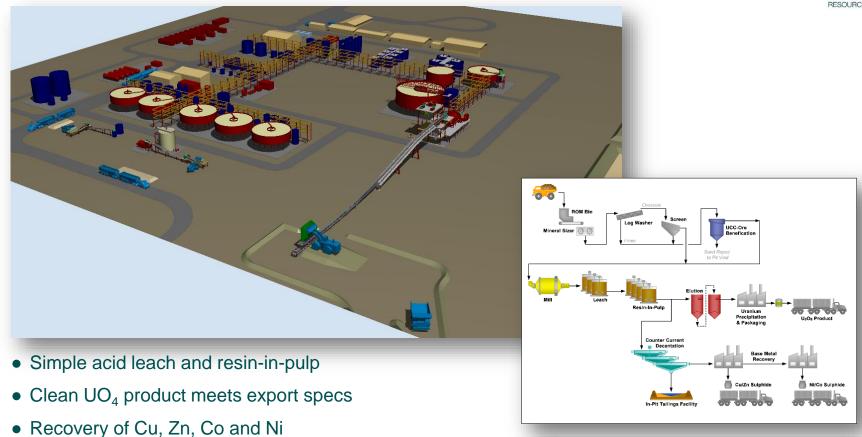
# Mining: large, strip mining operation





## Process plant design



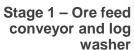


### Metallurgy: DFS Piloting

- Pilot plant bulk sampling underway (2 x 15 tonne)
- DFS piloting 4 stages:
  - Stage 1 Ore beneficiation (awarded to ALS)
  - Stage 2 Uranium leach and Resin-in-pulp (RIP)
  - Stage 3 Uranium precipitation
  - Stage 4 Base metals recovery
- Optimisation test work nearing completion:
  - Leach feed thickening completed Outotec
  - Uranium leach optimisation ALS
  - Uranium RIP optimisation ANSTO



Stage 1 – Outotec pilot paste thickener







#### **Key financial metrics for PFS**

Key Financials - see appendix for details					
Life of Mine (LOM)	17.1 years				
CapEx Plant and infrastructure	US\$254m				
Pre-strip – Princess Pit	US\$33.6m				
C1 cost (Mulga Rock East Y1 – 10)	US\$27.80 / lb U <sub>3</sub> O <sub>8</sub> *				
C1 cost (LoM)	US\$31.50 / lb U <sub>3</sub> O <sub>8</sub> *				
NPV <sub>10</sub> (pre-tax, including royalties)	A\$431m				
IRR	25.1%				
Payback from first production	3.9 years				

Including by-product credits

#### **Sensitivity Analysis to Uranium Price**

		Uranium Price (US\$/lb U₃O₂)						
Item	Unit	US\$49.83/lb	US\$55.00/lb	US\$65.00/lb	US\$75.00/lb			
NPV <sub>10</sub>	A\$ M	0	146	431	716			
IRR	%	10	15.7	25.1	33.6			
Payback	Years	7.2	5.6	3.9	3.0			

For full details of the Pre-feasibility Study, see: http://www.asx.com.au/asx/statistics/displayAnnouncement.do?display=pdf&idsId=01685657

## Provisional project schedule



#### **Key dates**

- Drilling/Resource Update Q2 CY16
- Public Env Review Q3 CY16
- Ore Reserves Q4 CY16
- DFS complete
   Q1 CY17
- Final investment decision
   Q1 CY17
- Works Approvals
   Q2 CY17
- "First shovel in ground"
   Q2 CY16

		20	16			20	17			20	18	
Activity	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PER Approval												
Works Approval												
Mineral Resources Estimate												
Ore Reserves												
Definitive Feasibility Study												
Investment Decision												
Engineering and Procurement												
Civils and Site Infrastructure												
Plant Fabrication – offsite												
Plant Fabrication – onsite												
Princess Pre-strip												
Princess Ore Mining												
Commissioning												
Hand-over and First U <sub>3</sub> O <sub>8</sub>												

### Investment summary



Globally significant uranium deposit
- size and scale

Excellent commodity opportunitygrowing uranium demand

People with track record and vision

"Non-stop" development schedule

Strong balance sheet



#### Benefits to Western Australia

- New jobs created in WA ~ 490 full-time employees
- New business for existing service industries and suppliers, particularly in Kalgoorlie
- Royalties paid to State\* ~ A\$15m pa
- Payroll tax paid to State ~ A\$4m pa
- Mostly high value-adding / skilled jobs
- Exports ~ A\$300m p.a.
- Vimy's elevation to an ASX200 company headquartered in Perth
- Very low operating environmental impact

<sup>\*</sup> Assumes US\$65/lb U<sub>3</sub>O<sub>8</sub>



#### Disclaimer and Statement of Confirmation



The purpose of this presentation is to provide general information about Vimy Resource Limited (**Vimy**); it constitutes a professional opinion only and is given in good faith. It is not recommended that any person makes any investment decision in relation to Vimy based on this presentation. To the extent that this presentation contains "forward-looking statements" they are only subjective predictions and are subject to inherent risks and uncertainties which could cause outcomes to differ materially from those expressed, implied or projected in such forward-looking statements. No representation or warranty, express or implied, is made by Vimy that the material contained in this presentation is accurate, reliable, relevant or complete, or will be achieved or prove to be correct.

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#### **Pre-feasibility Study Statement**

The Company advises that the Pre-feasibility Study referred to in this announcement is based on lower-level technical and preliminary economic assessments, and does not yet support a statement of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the PFS will be realised. The Production Target referred to in this announcement is partly based on Inferred Mineral Resources (which comprise approximately 28% of the Inferred Resource mined during the project payback period of 7 years at the capital breakeven uranium price). There is a low level of geological confidence associated with the Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated or Measured Mineral Resources or that the production target or preliminary economic assessment will be realised.

#### **Statement of Confirmation by Company**

The Company confirms that all the material assumptions underpinning the information in the Pre-Feasibility Study release of 17 November 2015 continue to apply and have not materially changed.

The Resource Estimate referred to above was announced to the market by the Company on 17 September 2015. The Company is not aware of any new information, or data, that affects the information in that announcement and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.



# **Appendix**

Biographies - Board and key management Resource Estimates and tables Pre-feasibility Study project metrics Site photos

# People: The Board





#### The Hon. Cheryl Edwardes – Non-Executive Chairman

- Former WA State Government Minister holding Ministries of Environment, Labour Relations and Attorney General
- Providing statutory and approvals advice to Atlas Iron, Hancock Prospecting, FTI Consulting
- Significant networks in State and Federal Government and broad experience and networks in China's business community

#### Mike Young - Chief Executive Officer and Managing Director



- Founding Managing Director of BC Iron Limited (ASX200:BCI) from 2006 2013. BC Iron went from first drill hole to first ore on ship in under four years and now exports 6 Mtpa of Iron Ore from a JV with FMG (75:25 BCI:FMG)
- Experienced mining consultant Resource modelling and estimation with Golder Associates
- Founding director of uranium developer Bannerman Resources and currently non-executive Chairman of Cassini Resources
- Studied at Queens University, Ontario and worked on Uranium exploration projects and mines in Canada

#### Julian Tapp – Executive Director

- Head of Government Relations and Director of Strategy at Fortescue Metals Group until 2012 with special responsibility for expediting approvals
- Chief Economist for Ford Europe, BP and Rover Group before transitioning into role as Director, New Business Development
- Trained as an economist in London, lectured at a number of universities including the London School of Economics



#### **David Cornell - Non-Executive Director**

- Founding director of the Element Group with significant commercial and financial experience in the mining and oil and gas sectors
- Previously an associate director at the LinQ group which managed Australia's largest listed resource fund
- Specialist in providing corporate and professional services to both WA junior explorers and international mining companies



#### **Aaron Hood- Non-Executive Director**

- Currently Director of Corporate Finance with EMR Capital, a mining-focussed private equity fund currently managing in excess of US\$500m
- Previously Chief Investment Officer of Andrew Forrest's Minderoo Group and remains nominee director for Minderoo
- BEng (Mechanical) and BCom both from the University of Western Australia and MBA from INSEAD

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### People: The Team





#### Ron Chamberlain – Chief Financial Officer and Company Secretary

- Financial professional with over 25 years' experience in resources companies exploration through to mine closure
- Significant experience with uranium companies as inaugural CFO for Paladin Energy and Extract Resources
- Bachelor of Commerce from UWA and Fellow of Chartered Accountants Australia and New Zealand



#### **Tony Chamberlain - Chief Operating Officer**

- Involved in a number of uranium projects in Australia, Asia, Africa and Eurasia
- Extensive operational and process engineering experience with WMC and BHP Billiton projects
- Delivered pre-feasibility and feasibility studies and process design packages for Goldfields, Barrick, Paladin and Mega Uranium



#### **Xavier Moreau – Geology and Exploration**

- General Manager of Geology and Exploration at Vimy since February 2010
- Valuable uranium project management experience with Areva and U3O8 Limited
- Extensive experience in uranium and gold exploration with Areva and Afmeco with significant time spent on Goldfields projects
- Educated in France and Canada and holds an Honours degree in Geology







We are proud that
Mulga Rock will deliver
enough uranium fuel
to offset the equivalent of
50Mt of CO<sub>2</sub> emissions
per year or
9% of Australia's
total CO<sub>2</sub> emissions

A flat exchange rate of A\$1.00 : \$US\$0.7019 and a flat uranium price of US\$65/lb U<sub>3</sub>O<sub>8</sub> have been assumed across the entire project life for the Pre-feasibility Study.

Base metal prices are based on LME spot prices as of 1 September on a Real LOM flat rate basis.

Life of Mine (LOM)	17.1 years
Nameplate Run-of-Mine	2.65 Mtpa
ROM Uranium Grade (Years 1-10)	601 ppm U <sub>3</sub> O <sub>8</sub>
ROM Uranium Grade (LOM)	515 ppm U <sub>3</sub> O <sub>8</sub>
Average Strip Ratio LOM (waste tonne / ore tonne)	15.8
Overall Metallurgical Recoveries	
Uranium	85.3%
Copper	35%
Zinc	48%
Nickel	43%
Cobalt	38%
Annual Production – Uranium as U <sub>3</sub> O <sub>8</sub>	3.00 Mlbs U <sub>3</sub> O <sub>8</sub>
Process plant and infrastructure capital costs	US\$254M
Mine pre-strip cost (additional to process plant capital)	US\$33.6M
Uranium Opex Years 1 - 10 (after by-product credits)	US\$27.77 / lb U <sub>3</sub> O <sub>8</sub>
Uranium Opex Years 1 - 10 (before by-product credits)	US\$31.47 / lb U <sub>3</sub> O <sub>8</sub>
Uranium Opex LOM (after by-product credits)	US\$31.32 / lb U <sub>3</sub> O <sub>8</sub>
Uranium Opex LOM (before by-product credits)	US\$33.89 / lb U <sub>3</sub> O <sub>8</sub>
Base Case Uranium Price	US\$65.00 / lb U <sub>3</sub> O <sub>8</sub>
Exchange Rate A\$:US\$	0.7019
NPV (inclusive of royalty, pre-tax @ 10% DCF)	A\$432M
IRR (inclusive royalty, pre-tax)	25.1%
Payback from start of production	3.9 years





Deposit / Resource	Classification	Cut-off Grade (ppm U₃O <sub>8</sub> )	Tonnes (Mt)	U <sub>3</sub> O <sub>8</sub> (ppm)	U <sub>3</sub> O <sub>8</sub> (MIb)
Mulga Rock East					
Princess	Indicated	150	1.3	690	1.9
Princess	Inferred	150	2.5	380	2.1
Ambassador	Indicated	150	13.2	750	21.7
Ambassador	Inferred	150	16.1	460	16.3
Sub-total			33.1	580	42.0
Mulga Rock West					
Emperor	Inferred	150	28.4	450	28.1
Shogun	Inferred	150	4.1	550	4.9
Sub-total			32.5	460	33.0
Total Resource			65.6	520	75.0

This resource estimate was released to the ASX on 17 September 2015 Please see http://www.asx.com.au/asxpdf/20150917/pdf/431cyg0ffcj60f.pdf



### Base Metal Mineral Resource Estimate



Deposit / Resource	Tonnes (Mt)	Cu (ppm)	Zn (ppm)	Ni (ppm)	Co (ppm)
Mulga Rock East – tonnes an	d grade				
Princess – Indicated	1.3	750	1270	440	210
Princess – Inferred	2.5	270	510	250	140
Ambassador – Indicated	13.2	330	1330	600	250
Ambassador – Inferred	16.1	160	320	310	170
Total	33.1	260	770	430	200

Deposit / Resource	Status	Cu (kt)	Zn (kt)	Ni (kt)	Co (kt)
Mulga Rock East – contained	metal				
Princess	Indicated	0.9	1.6	0.6	0.3
Princess	Inferred	0.7	1.3	0.6	0.4
Ambassador	Indicated	4.4	17.5	7.9	3.3
Ambassador	Inferred	2.6	5.2	5.1	2.7
Total		8.6	25.6	14.2	6.7

This resource estimate was released to the ASX on 17 September 2015 Please see http://www.asx.com.au/asxpdf/20150917/pdf/431cyg0ffcj60f.pdf

## Optimised Diluted Mineral Inventory — November 2015



Deposit / Pits	Ore Tonnes (Mt)	Waste Tonnes (Mt)	U <sub>3</sub> O <sub>8</sub> (ppm)	Cu (ppm)	Zn (ppm)	Ni (ppm)	Co (ppm)
Mulga Rock East							
Princess	3.7	54	450	460	815	330	175
Ambassador	28.0	378	550	245	890	475	220
Sub-Total	31.7	432	535	270	885	460	215
Mulga Rock West							
Emperor	14.3	319	500	-	-	-	-
Shogun	5.8	69	445	-	-	-	-
Sub-Total	20.1	388	485	-	-	-	-
Total Inventory	51.8	820	515	270	885	460	215

The Pre-feasibility Study was released to the ASX on 17 November 2015 See: http://www.asx.com.au/asx/statistics/displayAnnouncement.do?display=pdf&idsId=01685657