



# Disclaimer and Notes for JORC and NI 43-101 Mineral Resources and Ore Reserves

This presentation includes certain statements that may be deemed "forward-looking statements". All statements in this presentation, other than statements of historical facts, that address future production, reserve or resource potential, exploration drilling, exploitation activities and events or developments that Paladin Energy Ltd (the "Company") expects to occur, are forward-looking statements.

Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results or developments may differ materially from those in the forward-looking statements. Factors that could cause actual results to differ materially from those in forward looking statements include market prices, exploitation and exploration successes, and continued availability of capital and financing and general economic, market or business conditions.

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In the following presentation, for those deposits that are reported as conforming to the Joint Ore Reserves Committee (JORC) 2004 or 2012 code, the terms Inferred Mineral Resources, Indicated Mineral Resources, Measured Mineral Resources, Ore Reserves, Proved Ore Reserves, Probable Ore Reserves and Competent Person are equivalent to the terms Inferred Mineral Resources, Indicated Mineral Resources, Measured Mineral Resources, Mineral Reserves, Proven Mineral Reserves, Probable Mineral Reserves and Qualified Person, respectively, used in Canadian National Instrument 43-101 (NI 43-101).

The technical information in this is extracted from the report entitled Paladin Energy Ltd 2018 Annual Report released on 28 August 2018 and is available to view on <a href="www.paladinenergy.com.au">www.paladinenergy.com.au</a>. The company confirms that it is not aware of any new information or data that materially affect the information included in the original announcement and, in the case of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not materially modified from the original market announcement.

Some of the information in this presentation, in relation to the mineral resources and ore reserves for all deposits except Langer Heinrich, Michelin, Jacques Lake and Manyingee was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with JORC Code 2012 on the basis that the information that the estimates are derived from has not materially changed since it was last reported.

Paladin Energy Investor Presentation



### What differentiates Paladin from other uranium producers?

# PALADIN

A GLOBAL URANIUM LEADER AND PROVEN PRODUCER

OWNS LANGER HEINRICH, A STRATEGIC TIER ONE MINE

IMPROVED BALANCE SHEET STRENGTH AND FLEXIBILITY

BEST SENIOR LEVERAGE TO URANIUM UPSIDE



## What differentiates Paladin from other uranium opportunities?

Strategic portfolio of developed mines and projects, with unsurpassed uranium price leverage

- Two mines available for re-start (~7Mlbpa idle capacity)
  - Lead time and capital associated with a re-start to bring back into production less vs new project
- Langer Heinrich a Tier 1 uranium asset
  - Low cost
  - Long mine life, 123 Mlbs resource base (incl. stockpiles)
  - Studies initiated to optimize future production
- Exploration portfolio large (>300Mlb¹) & globally diversified



#### Paladin Status

Better positioned to survive current low uranium prices and capitalise on an increased uranium price

- Balance sheet recapitalised significant debt reduction (was US\$739M now US\$115M 2023 PIK Senior Secured Note Jan. 2018)
- Newly appointed Board February 2018
- Newly appointed CEO July 2018
- LHM placed on care and maintenance to preserve a Tier 1 resource base:
  - Value maximized by reducing cash burn
- All non-essential corporate spending ceased
- Cash resources sufficient to fund ongoing activity

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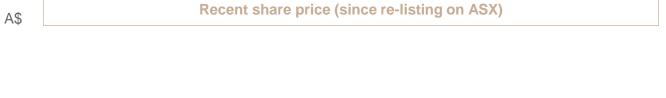


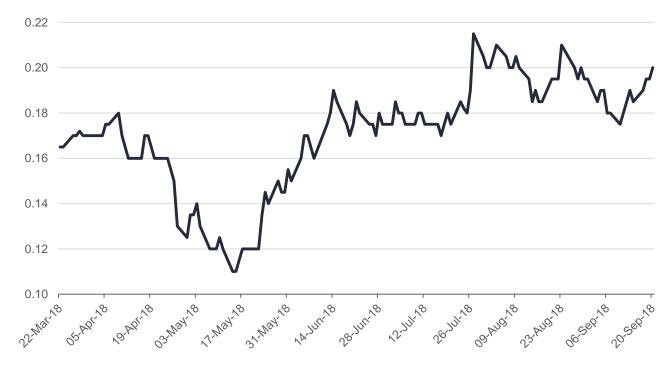
## Capital Structure and Major Shareholders

#### Rotation from bondholders into natural equity holders continues

Capital structure			
Shares Outstanding	1.713Bn		
Share price A\$	20c		
Market capitalisation A\$	343M		
Market capitalisation US\$1	249M		
Cash US\$2	50M		
Debt US\$3	120M		
Enterprise value US\$	319M		

Major shareholders <sup>4</sup>			
Tembo	13.1%		
Paradice Investment Management	9.9%		
Value Partners	8.9%		
HOPU	7.0%		
RBC	5.7%		
China Investment Corporation	5.6%		





<sup>1</sup> AUD/USD 0.72737

<sup>&</sup>lt;sup>2</sup> As at 30 June 2018 – of the US\$50M cash balance, US\$11M is restricted cash

<sup>&</sup>lt;sup>3</sup> As at 30 June 2018 – US\$115M Notes plus US\$5M accrued interest

<sup>&</sup>lt;sup>4</sup> As at 31 August 2018



#### **Key Activities Underway**

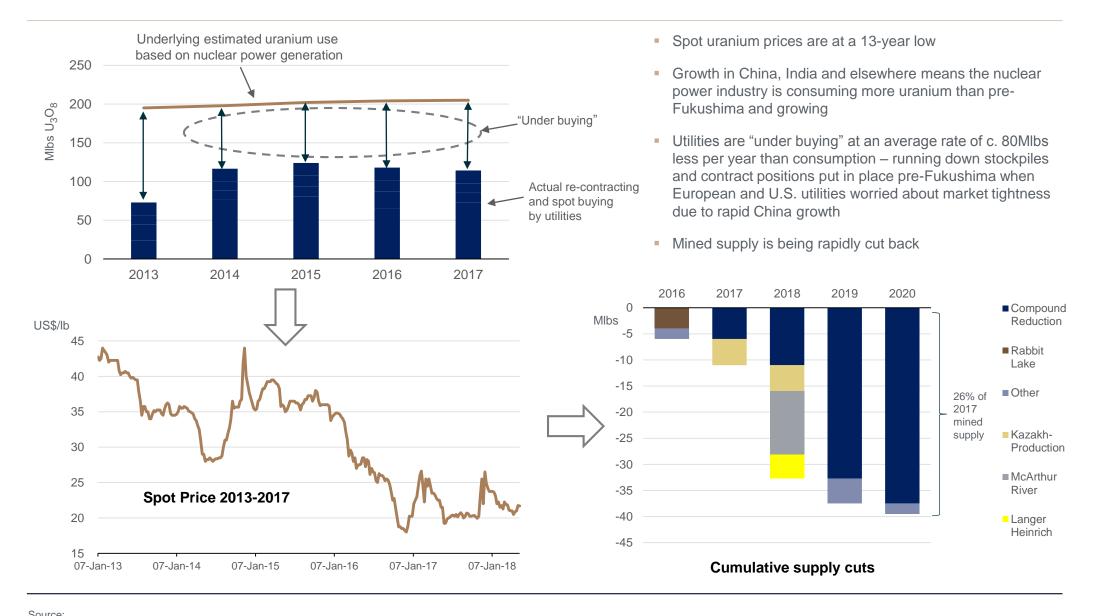
Ready to mobilise when uranium prices increase

- Operational Review of Langer Heinrich Mine
  - Optimisation studies increased efficiencies, beneficiation and reduced operating cost
  - Assess production capacity/Life of mine alternatives maximize IRR
  - Prepare the asset, ready for restart
- Operational Review of Kayelekera Mine
  - Review and enhance previous restart study
  - Focus on optimisation leverage off work to be completed on LHM where possible
  - Prepare the asset, ready for restart
- Exploration portfolio review
  - Spend limited to minimum expenditure required to maintain tenements
  - Strategic alignment

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## The Uranium story is compelling and timing is right





## It's all about Supply.... Uranium prices higher for longer?

Becoming increasingly difficult for uranium supply to respond to future uranium price rises in a realistic timeframe

- +30Mlbs taken out of the market in recent years
- Significant decrease in exploration spend since Fukushima
- New Project Development timelines stretched:
  - Majority are still very much in the early stages of development
  - Require significantly higher uranium price
  - Production from new mines will be many years after required uranium price threshold
  - Permitting uncertainty
- Mines currently on care and maintenance will take some years to restart not all will restart
- Global mine supply now structurally impaired and unable to respond in time to price increases
- When long-term contracting returns to historical levels, enrichment tails will increase, reducing the contribution of secondaries to the market
- Supply shock impact exacerbated by US utilities reluctance to contract whilst s232 petition unresolved – final decision up to 12 months away

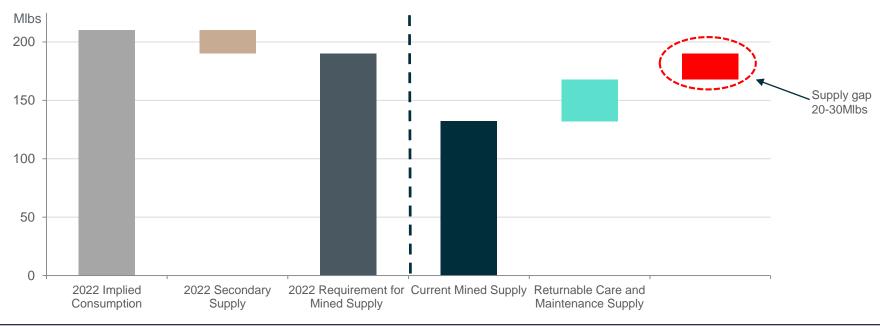
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### The supply demand equation could look like this



- At the current rate of "under buying" <u>utilities will be at "zero" discretionary</u> <u>inventories before 2022</u> – buying will need to equalise with consumption before then
- Care and maintenance supply can generally come back online if prices lift to US\$40-60/lb range (i.e. 1.5-2.5 x current price levels)
- However!: The industry also needs additional new growth from mining before 2022 this requires incentive prices of US\$60-80/lb (i.e. 2-3 x current price levels)
- In reality, the downtrend has been so long and deep, it will be difficult for the industry to meet medium term demand and conditions are in place for an "overshoot"





### Langer Heinrich A Strategic Tier One Mine

## **First Quartile**

All-in Cash Cost<sup>1</sup>

Lowest cost open-pit mine globally<sup>1</sup>

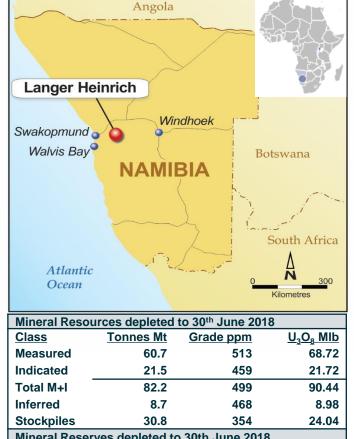
# Top 10 Uranium Mine by Production<sup>2</sup>

4th largest open-pit

+20 Year Mine Life<sup>3</sup>

43.4Mlb

Cumulative production



Stockpiles	30.8	354	24.04	
Mineral Reserves depleted to 30th June 2018				
<u>Class</u>	Tonnes Mt	Grade ppm	U <sub>3</sub> O <sub>8</sub> MIb	
Proved	42.0	524	48.49	
Probable	13.1	484	14.04	
Stockpiles	30.8	354	24.04	
Total	85.9	457	86.57	

#### Source:

<sup>1.</sup> UxC Uranium Production Cost Study – August 2017

<sup>2.</sup> TradeTech Uranium Market Study – 2017: Issue 3 (based on 2016 production)

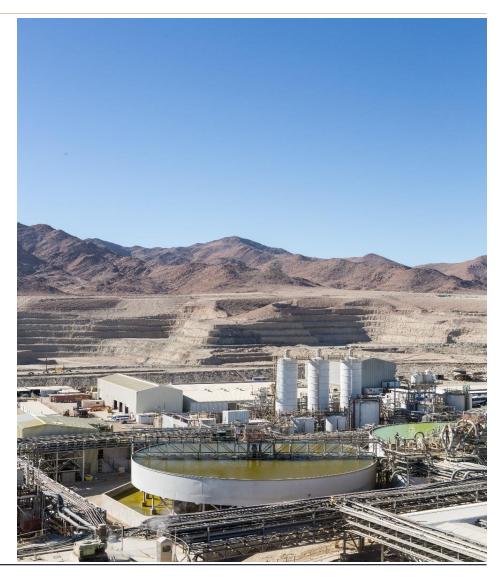
<sup>3.</sup> At current processing rates



### Langer Heinrich Mine – Care and Maintenance Update

Care and maintenance makes the most sense to preserve our strategic tier one resource for higher uranium prices

- To reduce cash operating costs, Langer Heinrich ceased physical mining in November 2016 maintaining processing feed from medium grade ore stockpiles
- In May 2018, Paladin announced Langer Heinrich would be placed on care and maintenance
- Strategic decision to preserve the asset
- Run-down phase expected to be complete by September 2018
- Unique opportunity to review a number of optimisation projects to ensure the mine will restart in the most efficient and competitive state
- Given Langer Heinrich's relatively low cash cost of production and working capital requirement to unwind care and maintenance, the mine should be one of the first global producers to return to production once the uranium price recovery commences





## Langer Heinrich Mine - Future Optimisation Potential

Innovation to be worked on during care and maintenance to re-envision LHM as an even lower cost operator for its return to production

#### **Back-end Upgrade Project (BUP)**

- The BUP will utilise the existing Langer Heinrich Mine process across the Beneficiation, Leach, CCD and TSF areas with relatively minor changes
- The PLS to be treated via a substantially new process that has been divided into the following process areas:
  - PLS concentration:
  - Vanadium precipitation;
  - Uranium precipitation;
  - Causticisation & carbonation;
  - Crystallisation:
  - Vanadium refinery; and
  - Uranium refinery
- BUP has completed the R&D phase with material benefits identified across the operations including:
  - Potential to reduce process cost by US\$4-5/lb
  - Vanadium produced as a by-product for sale
  - Process more stable and operability improved
- Potential implementation period of 2 years and a capital payback period of 12 -18 months

#### **U-pgrade**

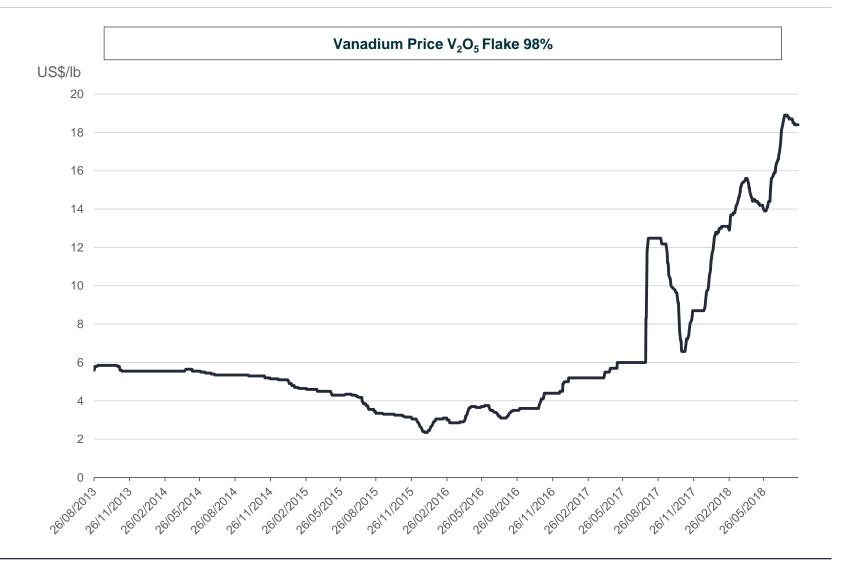
- Marenica Energy Ltd has performed initial test work and proceeded to calculate the possible benefit to LHU of feeding the currently uneconomical low grade ore into an upgrade plant. Preliminary results are positive
- The *U-pgrade*™ process uses mineralogical data to determine a processing route to reject a low grade stream, leaving a high grade product for further processing
- Initial study and test work completed for a 3Mt p.a. (avg grade of 325ppm) *U-pgrade*™ plant to co-process low grade material
- Potential to increase production by 1.5-1.8Mlb p.a. and reduce average costs by US\$1-2/lb



## Vanadium Opportunity



- By-product not waste product
- Significant price increase due to usage within vanadium redox flow batteries
- Future demand is expected to rise due to supply constraints





## Kaylekera Mine - Ready Built With Proven Operating Status

# Developed mine on care and maintenance

Fully built mine commissioned in 2008 with 3.3Mlbpa capacity

Restart implementation plan under preparation incorporating optimised economics

# >5 Year Remaining Mine Life<sup>1</sup>

**10.9Mlb** 

Production before being placed on care and maintenance in 2014

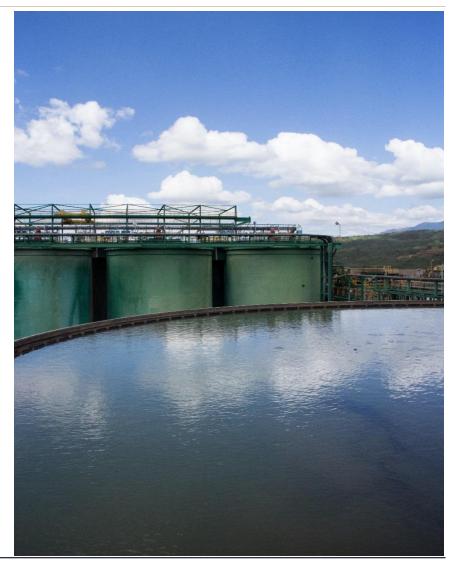




#### Kayelekera Mine – Care and Maintenance

Care and maintenance made the most economic sense to preserve the asset for higher uranium prices

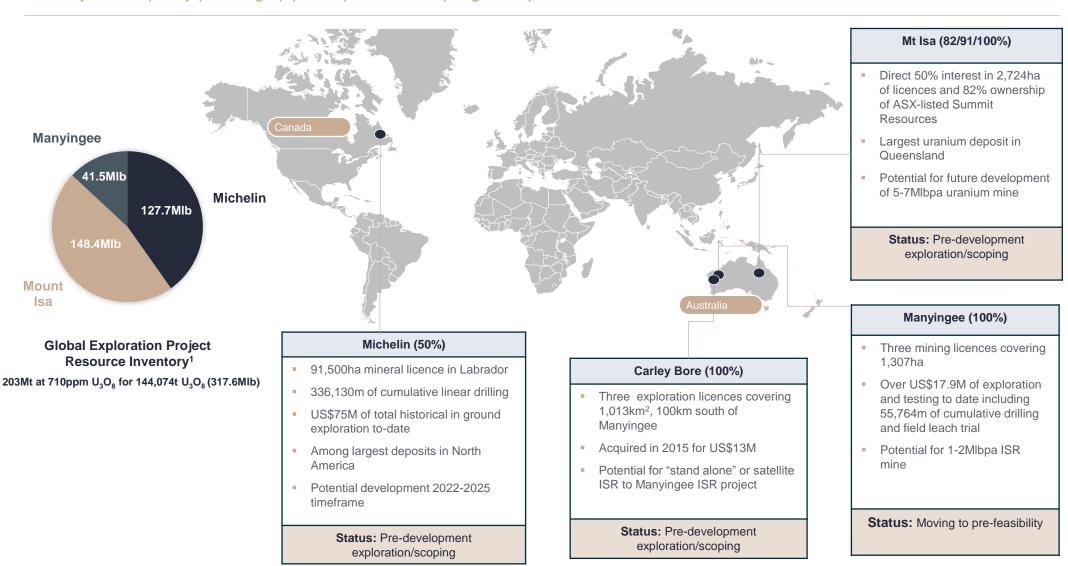
- Kayelekera was placed on care and maintenance in 2014 due to the consistently low spot uranium prices
- Since this time Paladin has continued to treat water and now maintains a stable ready to start site
- Work continues on ways to reduce costs including power costs
- A restart study was completed in 2016. Current state of care and maintenance across both sites will provide the opportunity to dedicate additional resources to refining this restart
- Optimisation studies at Langer Heinrich will also be assessed for the potential application at Kayelekera
- New site manager appointed with a focus on preparing and assessing alternatives for restart





### Paladin has a quality global suite of exploration and development assets

Our fully built capacity plus large pipeline provides unique growth potential





### We have greatly reduced our costs to preserve our cash on C & M...

#### Sufficient cash to fund operations into the future

#### **Exploration**

- Exploration costs will reflect the work required to meet minimum tenement commitments
- Includes 100% spend for the Michelin Project

#### **Corporate Costs**

- All non-essential expenditure continues to be reduced
- No change to recently reduced corporate staffing levels
- Does not include spend for optimisation/restart studies

#### **LHM Care and Maintenance Costs**

- Predominant costs associated with staffing
- Costs will continue to be scrutinised without compromising the asset

#### **KM Care and Maintenance Costs**

- Predominant costs associated with power and water treatment (c.US\$3.1M)
- Higher than expected rainfall can result in increased power costs for water treatment

## **Total Ongoing Annual Costs**

~ US\$1.5Mpa

~ US\$4.0Mpa

~ US\$3.5Mpa

~ US\$5.0Mpa

~ US\$14Mpa



# PRESERVE THE VALUE OF STRATEGIC TIER ONE LHM THROUGH CARE AND MAINTENANCE AND CONTINUED DEVELOPMENT OF OPTIMISATION INITIATIVES

MAINTAIN KM AND EXPLORATION ON A MINIMAL EXPENDITURE, CARE AND MAINTENANCE BASIS

MINIMISE CORPORATE AND ADMINISTRATIVE COSTS

PREPARE FOR GROWTH



## Paladin Energy Ltd – Contact Details

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**Andrew Mirco** 

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## **Additional Information**



#### **Board of Directors**

#### Mr Rick Crabb

B. Juris (Hons), LLB, MBA, FAICD

Non-executive Chairman

#### Mr David Riekie

BEcon, Dip Acc, MAICD, CA

Independent Nonexecutive Director

## Mr Daniel Harris BSc

Independent Nonexecutive Director

### Mr John Hodder

BSc, BCom, MBA

Non-executive Director

- Mr Crabb is a solicitor by background and was a partner in Perth firms Robinson Cox (now Clayton Utz) and Blakiston & Crabb (now Gilbert & Tobin).
- He has over 25 years experience specialising in mining, corporate and commercial law, advising multinational and Australian companies in relation to numerous project developments in Australia, Asia and Africa.
- He is also chairman of Eagle Mountain Mining Limited, director of Thundelarra Limited and was previously chairman of Golden Rim Resources Ltd,
   Otto Energy Ltd and Lepidico Ltd (formerly Platypus Minerals Ltd).
- Mr Riekie has operated in a variety of counties globally and throughout Africa; notably Namibia and Tanzania. David is Managing Director of junior explorer MetalsTech Limited. David has throughout his career provided corporate, strategic and compliance services.
- Additional experiences were been gained during his time as a corporate reconstruction specialist with Price Waterhouse. David has overseen, exploration and resource development, scoping and feasibility studies, production, optimisation and rehabilitation initiatives.
- Mr Riekie has special interest in the energy and energy storage sector, primarily through energy storage minerals and commodities with specific knowledge of uranium (Uranio Limited), oil and gas (Hawkley Oil and Gas), graphite (Battery Minerals Limited) and cobalt (MetalsTech Limited).
- Mr Harris is a seasoned and highly experienced mining executive and director and has most recently held the role of interim CEO and Managing Director of ASX listed Atlas Iron Ltd. Daniel remains a Director to the Atlas Iron Board.
- Mr Harris has been involved in all aspects of the industry for over 37 years and held both COO and CEO positions in Atlantic Ltd.
- Mr Harris is also the former Vice President of EVRAZ Plc, responsible for their global vanadium business. EVRAZ plc is a £4.2 billion publicly traded steel, mining and vanadium business with operations in the Russian Federation, Ukraine, Europe, USA, Canada and South Africa.
- Mr Harris is also a Director Australian Vanadium Ltd, a consultant and member of the Advisory Board of Black Rock Metals. Mr Harris is the Chief Advisor to the Board of Directors of Queensland Energy Minerals.
- Mr Hodder is a Geologist by background and spent ten years in the mining and oil and gas industries before completing a MBA at London Business School. John established the Commonwealth Development Corporation (CDC) mining, oil and gas investment department in 1995 and was responsible for its investment activities for some eight years.
- Mr Hodder has served as a director of a number of junior mining companies and has significant experience of operating and investing in Africa. John also worked at Suncorp and Solaris as a Fund Manager focusing on the resources sector managing an index-linked natural resource portfolio of ~AUD\$1.25bn. In 2014 John was one of three principals who established Tembo Capital a mining focused private equity fund.



#### Senior Management

#### Mr Scott Sullivan BEng, MBA

Chief Executive Officer

- Mr Sullivan brings 30 years of diversified mining experience to Paladin, across multiple commodities and projects domestically and internationally. His experience spans strategic planning in mines and smelters; feasibilities; commissioning; mine expansion and restructuring; mine, port and rail infrastructure; project management; sustainability and government and has a strong emphasis on operational optimisation.
- He was most recently General Manager of Newcrest's large and complex Telfer gold-copper mine in the Pilbara Western Australia. Prior roles include CEO and Managing Director roles with ASX-listed companies centered in West Africa and the US and Asset President of NSW Energy Coal at BHP Billiton, being directly responsible for the operation and rapid expansion of one of Australia's iconic and highest producing coal mines, Mt Arthur, along with the Caroona Coal project and BHPB's share in the NCIG port infrastructure in Newcastle. Mr Sullivan was also GM of the Wambo Coal OC and UG operations in the Hunter Valley with Peabody Energy and successfully commissioned the UG mine to be one of the most productive thin seam Long Wall mines in the world.
- Mr Sullivan is a Fellow of the Australian Institute of Mining and Metallurgy (FAusIMM) and Graduate of the Australian Institute of Company Directors (GAICD).

## Mr Craig Barnes BCom, BCom (Hons), CA

Chief Financial Officer

• Mr Barnes is a chartered accountant with more than 20 years of experience in senior finance and financial management within the mining industry and previously the financial services industry. Before joining Paladin, Craig held the position of Chief Financial Officer of DRDGOLD Limited and its affiliated subsidiaries for 7 years after initially joining the company as the Group Financial Controller. Prior to that, he was the Head of Financial Reporting at Liberty Life Limited. Craig has considerable experience in project financing, mergers and acquisitions and implementation of accounting controls and systems.

## Mr Andrew Mirco BCom, GradDip Inv&Fin

General Manager Corporate Development & Investor Relations

- Mr Mirco has over 25 years of corporate experience in banking, oil & gas and mining, across a range of finance roles. Prior to joining Paladin he worked for Woodside Energy Ltd for over 12 years in a range of treasury roles and prior to this with the ANZ Banking Group.
- Mr Mirco has comprehensive treasury knowledge and experience in capital market raisings including equity, bonds and convertible bonds, bank debt and ECA/project financing, commodity and currency hedging, insurance and enterprise risk management. He also has a extensive commercial skills including, strategy formulation and execution as applied to mergers and acquisitions, divestments, joint venture agreements, royalty agreements and industry alliances.



## Resource and Reserve Tables

30-Jun-18

Mineral Resources  Canada	l	M tonnes	grade % U <sub>3</sub> O <sub>8</sub>	Mlb U <sub>3</sub> O <sub>8</sub>	Paladii Ownership %
Measured	Michelin	17.62	0.097	27.6	50
Measured	Rainbow	0.21	0.097	37.6 0.4	50
Indicated	Gear	0.35	0.032	0.6	50
Indicated	Inda	1.2	0.069	1.8	5
	Jacques Lake	12.96	0.063	18.0	5
	Michelin	20.65	0.098	44.6	5
	Nash	0.68	0.083	1.2	5
	Rainbow	0.76	0.086	1.4	5
Inferred	Gear	0.3	0.093	0.6	5
	Inda	3.26	0.067	4.8	5
	Jacques Lake	3.61	0.055	4.4	5
	Michelin	4.54	0.099	9.9	5
	Nash	0.51	0.072	0.8	5
	Rainbow	0.91	0.082	1.6	5
Total Canada		67.56	0.086	127.7	
Malawi					
Measured	Kayelekera	0.74	0.101	1.7	8
Indicated	Kayelekera	12.71	0.070	19.6	8
Inferred	Kayelekera	5.35	0.062	7.4	8
Stockpiles	Kayelekera	1.59	0.076	2.6	8
Total Malawi		20.39	0.070	31.3	
Namibia					
Measured	Langer Heinrich	60.71	0.051	68.7	7:
Indicated	Langer Heinrich	21.48	0.046	21.7	7:
Inferred	Langer Heinrich	8.70	0.047	9.0	7:
Stockpiles	Langer Heinrich	30.78	0.035	24.0	7:
Total Namibia		121.67	0.046	123.5	
Australia					
Measured	Valhalla	16.02	0.082	28.9	9
Indicated	Andersons	1.4	0.145	4.6	8:
	Bikini	5.77	0.050	6.3	8.
	Duke Batman	0.53	0.137	1.6	10
	Odin	8.2	0.055	10.0	9
	Skal	14.3	0.064	20.2	9
	Valhalla	18.64	0.084	34.5	9
	Carley Bore	5.4	0.042	5.0	10
	Manyingee	8.37	0.085	15.7	10
Inferred	Andersons	0.1	0.164	0.4	8:
	Bikini	6.7	0.049	7.3	8
	Duke Batman	0.29	0.110	0.7	10
	Honey Pot	2.56	0.070	4.0	10
	Mirrioola	2	0.056	2.5	8:
	Odin	5.8	0.059	7.6	9
	Skal	1.4	0.052	1.6	9
	Valhalla Watta	9.1 5.6	0.064 0.040	12.8	9
	νν απα Warwai	0.4	0.040	5.0 0.3	8.
	Carley Bore	17.4	0.036	10.6	10
	Manyingee	5.41	0.028	10.6	10
Total Australia	wanyingee	135.39	0.064	189.9	10
Global Total		345.01	0.062	472.3	

Ore Reserves		M tonnes	grade % U <sub>3</sub> O <sub>8</sub>	Mlb U <sub>3</sub> O <sub>8</sub>	Paladin Ownership %
Malawi					
Proven	Kayelekera	0.39	0.117	1.0	85
Probable	Kayelekera	5.34	0.088	10.4	85
Stockpiles	Kayelekera	1.59	0.076	2.6	85
Kayelekera	a Total	7.32	0.087	14.0	
Namibia					
Proven	Langer Heinrich	41.97	0.052	48.5	75
Probable	Langer Heinrich	13.14	0.048	14.0	75
Stockpiles	Langer Heinrich	30.78	0.035	24.0	75
Langer He	nrich Total	85.89	0.046	86.6	