



# Updated Savannah Feasibility Study

“Enhances fundamentals for a decision to restart”

Investor Presentation 30 October 2017

For personal use only



# Disclaimer

## Cautionary Statements and Important Information

This presentation includes information extracted from Panoramic Resources Limited ASX announcement dated 27 October 2017 entitled “Updated Savannah Feasibility Study – Enhances fundamentals for a decision to restart”. The Savannah optimisation includes approximately 1.1% of material on a contained nickel basis classified as Inferred Resource. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

## No New Information or Data

This presentation contains references to exploration results, Mineral Resource estimates and Ore Reserve estimates, all of which have been cross referenced to previous market announcements made by the Company. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of estimates of Mineral Resources and 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.

## Forward Looking Statements

This presentation may contain certain “forward-looking statements” which may not have been based solely on historical facts, but rather may be based on the Company’s current expectations about future events and results. Where the Company expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, forward looking statements are subject to risks, uncertainties, assumptions and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks include, but are not limited to metals price volatility, currency fluctuations, increased production costs and variances in ore grade or recovery rates from those assumed in mining plans, as well as political and operational risks in the Countries and States in which we operate or sell product to, and governmental regulation and judicial outcomes. For a more detailed discussion of such risks and other factors, see the Company’s Annual Reports, as well as the Company’s other filings. The Company does not undertake any obligation to release publicly any revisions to any “forward-looking statement” to reflect events or circumstances after the date of this announcement, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

# Contents

Overview

Mining and Processing

Capital and Operating Costs

Financial Analysis

Metal Price Outlook

Summary





# OVERVIEW



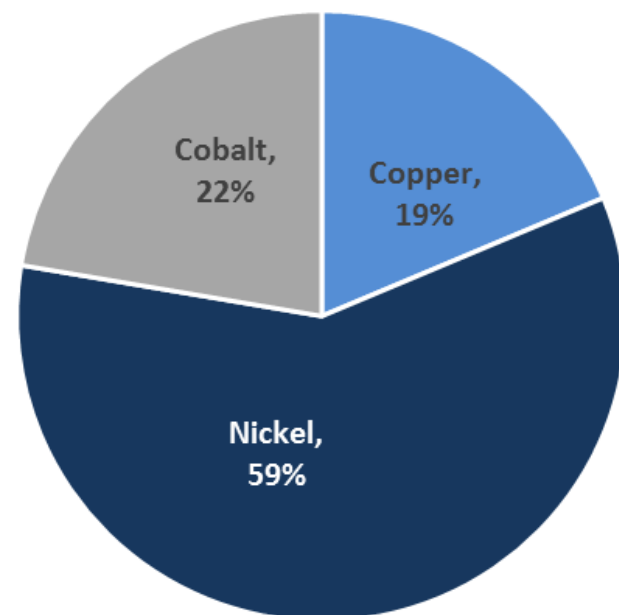
For personal use only



# Updated Feasibility Study Highlights

- Payable operating cash costs - US\$2.40/lb Ni
- Sustaining cash costs - US\$3.50/lb payable Ni
- Pre-production and ramp-up capital - A\$36M
- Mine life - 8.3 years
- Average annual production forecast\*
  - 10,800t Ni
  - 6,100t Cu
  - 800t Co
- Short lead time to production
- Strong interest from potential off-take partners
- Significant cobalt revenue

Mine Gate Gross Revenue Contribution by Metal



## \*Cautionary Statement

Approximately 1.1% of nickel in the Production Target is from material classified as Inferred Resource. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

# Key statistics

Operating Metric	Details
Mineral Resources	13.2Mt @ 1.65%Ni, 0.75% Cu, 0.11% Co containing 218,300t Ni 99,100t Cu 14,900t Co
Mine Production	7.65Mt @ 1.42% Ni, 0.68% Cu, 0.10% Co containing 108,700t Ni 51,700t Cu 7,300t Co
Mine Life	8.3 years
LOM production <i>(metal in concentrate)</i>	90,200t Ni 50,700t Cu 6,700t Co
Annual production <i>(metal in concentrate)</i>	10,800t Ni 6,100t Cu 800t Co

- **Long mine life ~8.3 years**  
(excluding future Resource to Reserve conversion and exploration upside potential)
- **Significant nickel production**
  - averaging 10,800t nickel in concentrate over LOM
- **Significant by-product credits**
  - 41% of gross mine-gate revenue from copper and cobalt

The Mineral Resources and Ore Reserves underpinning the above production target have been prepared by a competent person or persons in accordance with the requirements of the JORC Code – refer to PAN's ASX announcements of 24 August 2016, 30 September 2016 and 2 February 2017.

# October 2017 Updated FS Financials

Financial Metric	Units	Base Case Prices	Long Term Prices
Nickel price assumption	US\$/lb	5.50	6.75
Copper price assumption	US\$/lb	3.10	2.72
Cobalt price assumption	US\$/lb	28.00	26.00
US\$:A\$ FX assumption	US\$	0.78	0.75
Revenue	A\$M	1,470	1,720
Initial Capital	A\$M	36	32
LOM Capital ( <i>incl. initial capital</i> )	A\$M	240	230
Operating costs plus royalties	A\$M	900	920
Pre-tax cashflow	<b>A\$M</b>	<b>330</b>	<b>570</b>
Pre-tax NPV ( <i>8% discount rate</i> )	<b>A\$M</b>	<b>210</b>	<b>380</b>
IRR	%	100	200
C1 cash cost ( <i>Ni in concentrate basis</i> )	A\$/lb Ni	1.90	2.10
	US\$/lb	1.50	1.60
Operating cash costs ( <i>payable Ni basis</i> )	A\$/lb Ni	3.10	3.40
	<b>US\$/lb</b>	<b>2.40</b>	<b>2.60</b>
Sustaining cash costs ( <i>payable Ni basis</i> )	A\$/lb Ni	4.50	4.80
	<b>US\$/lb</b>	<b>3.50</b>	<b>3.60</b>

## Key changes from Feb 2017 FS

- Improved marketing terms
- Improved Cu and Co recoveries
- Lower Ni price for Base Case
- Ni processing recovery average 83%
- Initial capex (plant refurb cost estimates updated)
- Opex (salaries and power consumption updated)



# PRODUCTION

For personal use only





# Material in Updated FS mine plan

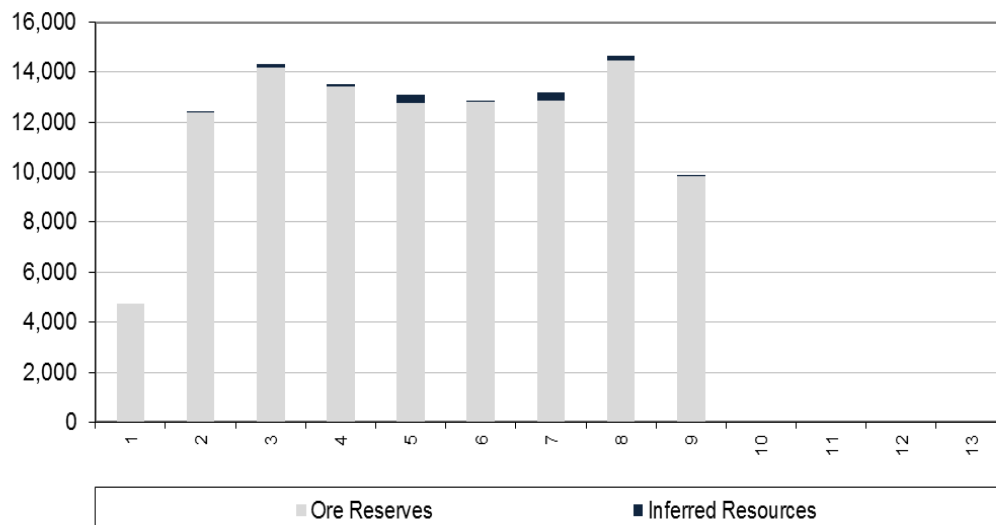
Classification	Tonnage Mt	Grade Ni %	Grade Cu %	Grade Co %	Contained Ni t	Contained Cu t	Contained Co t
Ore Reserves	7.58	1.42	0.68	0.09	107,500	51,200	7,200
Inferred Resource	0.06	1.91	0.69	0.13	1,200	400	100
<b>Total</b>	<b>7.65</b>	<b>1.42</b>	<b>0.68</b>	<b>0.10</b>	<b>108,700</b>	<b>51,700</b>	<b>7,300</b>

The Updated FS mine plan has only ~1.1% material classified as Inferred Resource

## Cautionary Statement

There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

Contained Nickel in Mining Plan by JORC Category (tonnes per year)



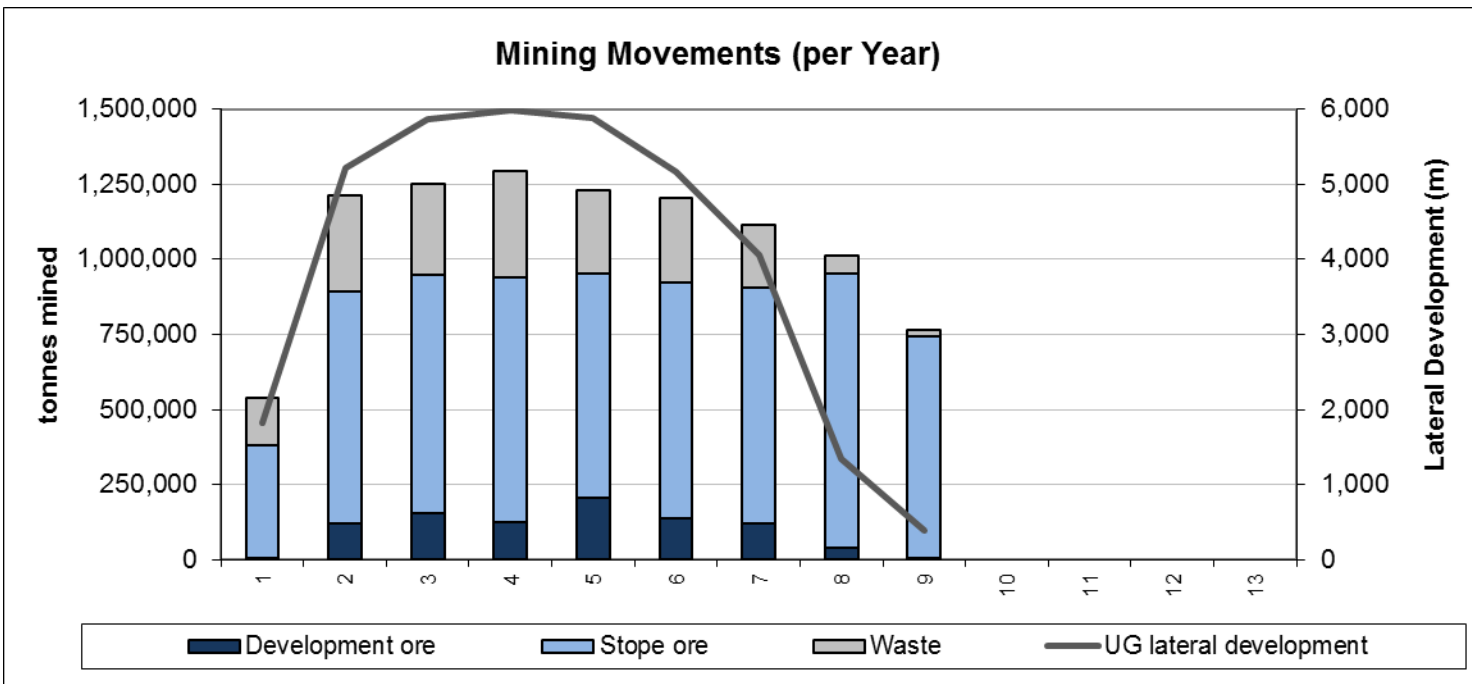
# Mining

## Savannah

- Remaining forecast mine production of **1.68Mt @ 1.18% Ni for 19,800t Ni contained**
- Use Savannah to top-up production from Savannah North
- Material below 900F is not included in mine plan (**Resources - 0.90Mt @ 1.65% Ni for 14,900t Ni**)

## Savannah North

- Forecast mine production of **5.97Mt @ 1.49% Ni for 88,900t Ni contained**
- Commence development when restart Savannah
- First ore 9 months after commencing access development and full production after 15 months





# Processing - Mineralogy

## ■ Savannah North Mineralogy (QEMSCAN™)

- Pyrrhotite-dominant sulphides with sub-ordinate pentlandite and chalcopyrite
- Good pentlandite liberation: 60-75% of pentlandite is liberated, with  $P_{80}$  grainsize between 59um and 78um
- Pyrrhotite:Pentlandite ratio is higher compared to Savannah
- Nickel in solid solution in Pyrrhotite comprises 16-17% of total nickel content at Savannah North (compared to 12% at Savannah)
- Mineralogy indicates 3-5% lower Ni processing recoveries at Savannah North compared to Savannah



*KUD1562 intersection between 672.2 – 676.9m  
4.70m @ 2.28% Ni, 1.06% Cu, 0.15% Co*

# Processing - Flotation Test Work

## ■ Savannah North 2017 Flotation Test Work Program

- 46 rougher-scavenger flotation tests
- 19 cleaner tests
- Nickel recoveries in testwork are 3-5% lower than that achieved for a Savannah reference sample (as predicted by the QEMSCAN™ mineralogy)
- Predicted recoveries (%) from flotation test work for 8% bulk Ni-Cu-Co concentrate:

	Ni	Cu	Co
Savannah North Upper Zone	82	99	92
Savannah North Lower Zone	84	99	95

For personal use only



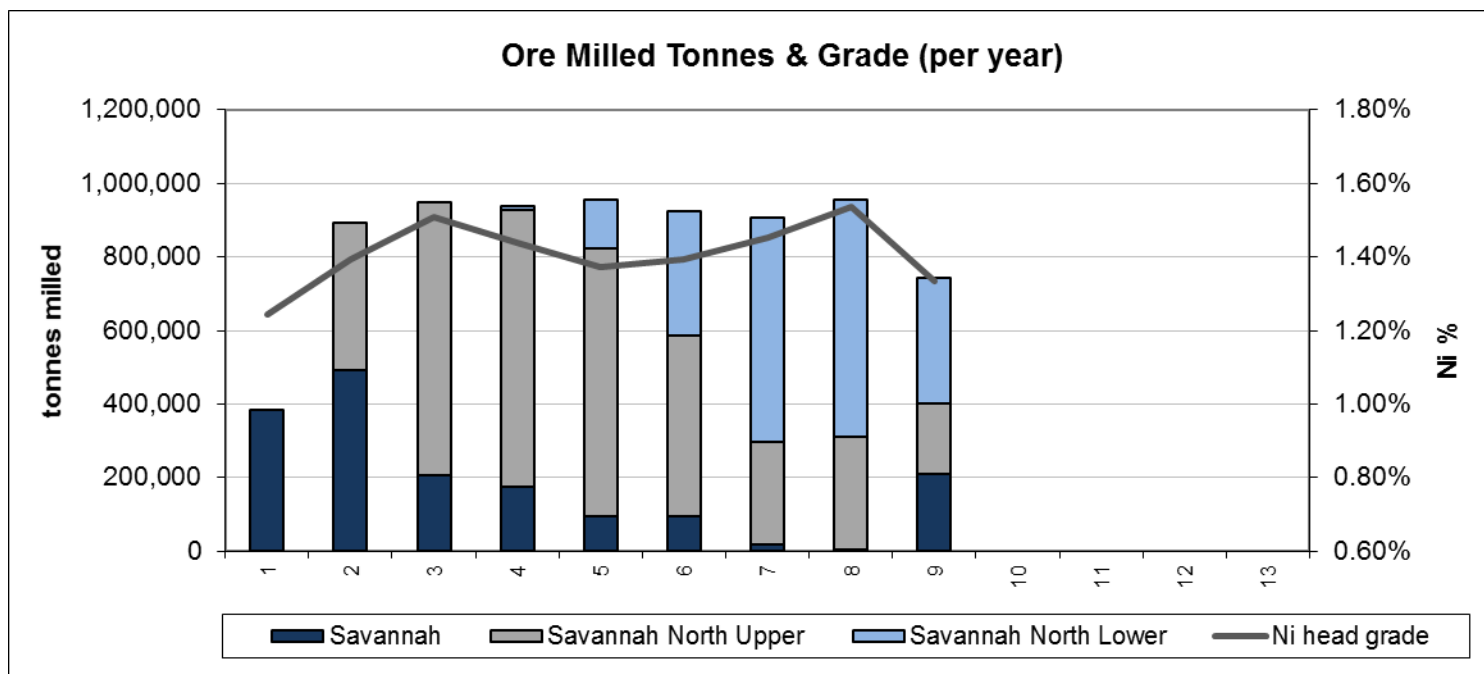
# Processing – Mill throughput and recovery

## ■ Mill

- Average 120 tonnes per hour (~940,000 tonnes per year) at full production
- Estimated four months to refurbish plant
- Three months ramp up to steady-state production and 12 months to full production
- Life-of-mine head grade averages **1.42% Ni**
- Lower grades in first year of production, associated with the remnant Ore Reserves at Savannah

## ■ Assumed Average Recoveries over LOM

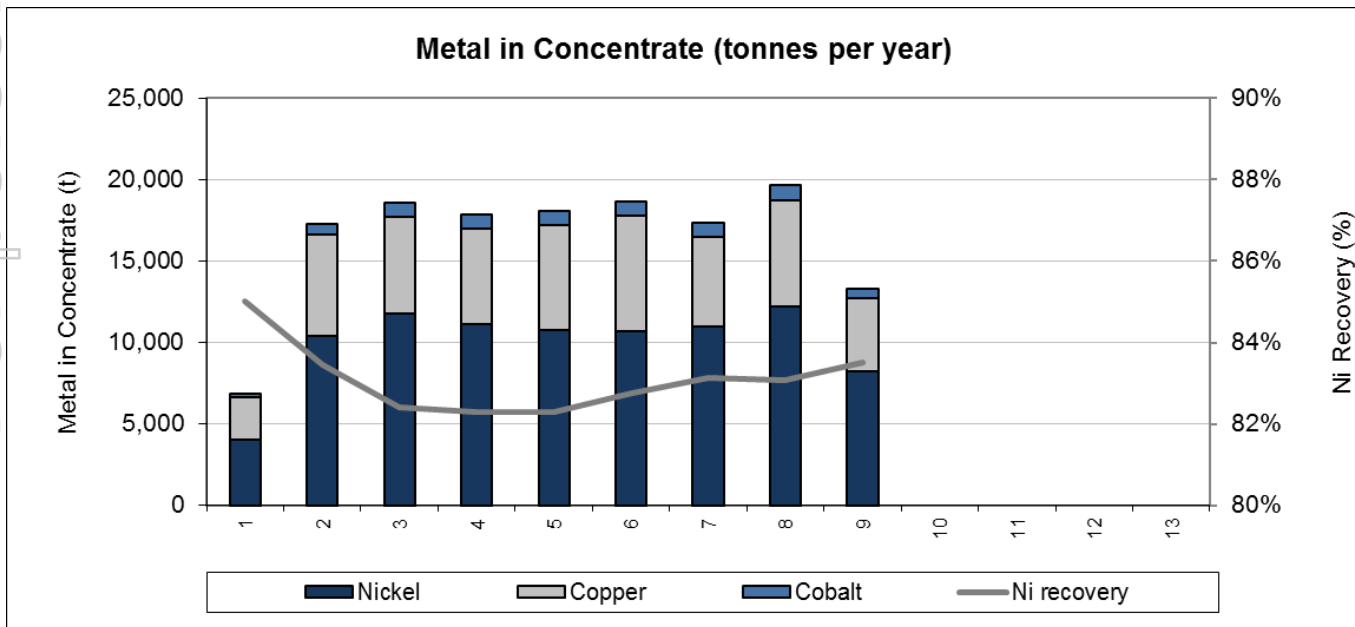
- 83% Ni
- 98% Cu
- 92% Co



# Concentrate Production

- Bulk Ni-Cu-Co concentrate targeting 8% Ni
- Low impurities and attractive Fe:MgO and Ni:Fe ratios
- Ideal blending feed for third-party smelters

	Grade %	Life of Mine	Annual Average
Concentrate		1,130,000dmt	<b>135,000dmt</b>
Ni	8.0%	90,200t	<b>10,800t</b>
Cu	4.5%	50,700t	<b>6,100t</b>
Co	0.6%	6,700t	<b>800t</b>



For personal use only



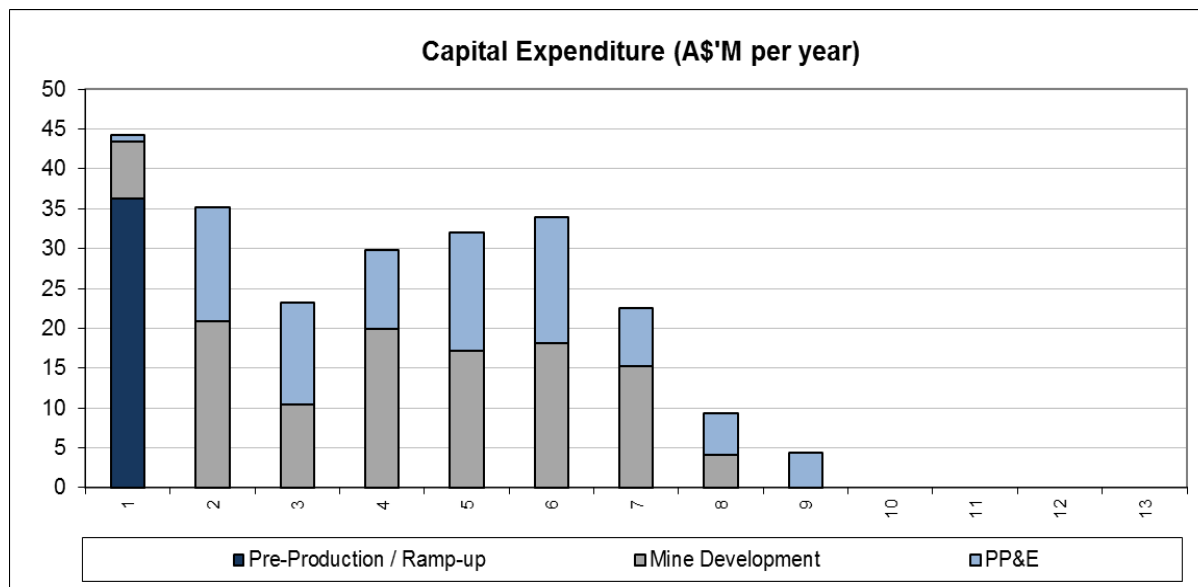
# CAPITAL AND OPERATING COSTS

For personal use only



# Capital costs

- Total capex over LOM: ~\$240M
- Pre-production and ramp-up: \$36M
  - Plant refurb
  - Savannah Nth access
  - Savannah Nth ventilation
- LOM sustaining capex: \$27M pa
  - Mine dev't average \$17M pa
  - PP&E capex average \$11M pa



Description	Pre-production and ramp-up	Sustaining	Life of Mine
Mine development	8	103	111
Mining mobile equipment	4	32	36
Capitalised pre-production and ramp-up opex	28	-	28
Other pre-production and sustaining capital	6	23	29
Savannah North primary ventilation	4	13	17
Plant refurbishment	10	-	10
Tailings facilities construction	2	8	9
Solar power plant	-	7	7
TSF 1 capping	-	7	7
Concentrate haulage fleet	-	5	5
Initial store inventories	2	-	2
Capitalised Revenue	(28)	-	(28)
<b>TOTAL</b>	<b>36</b>	<b>198</b>	<b>235</b>

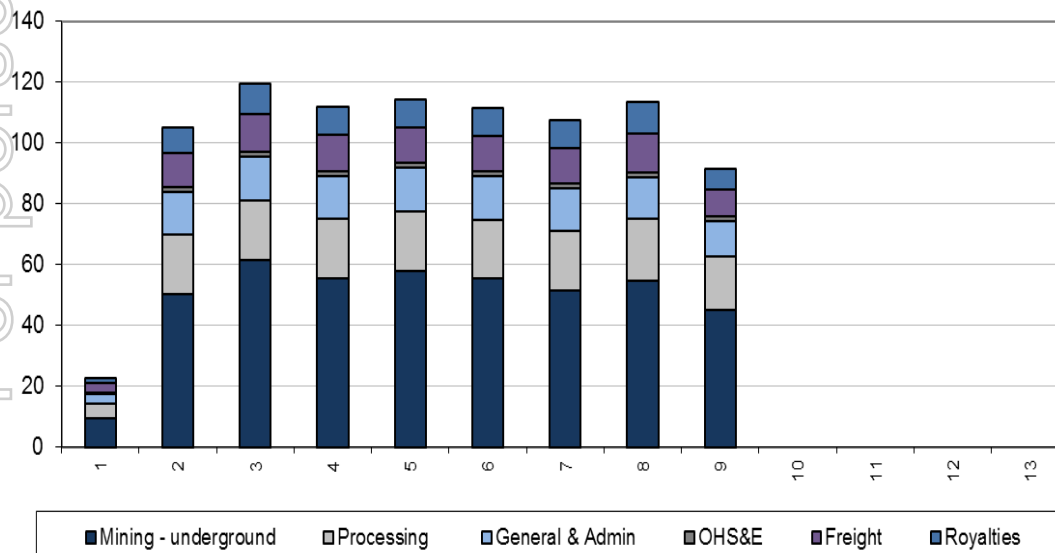
For personal use only

# Operating costs

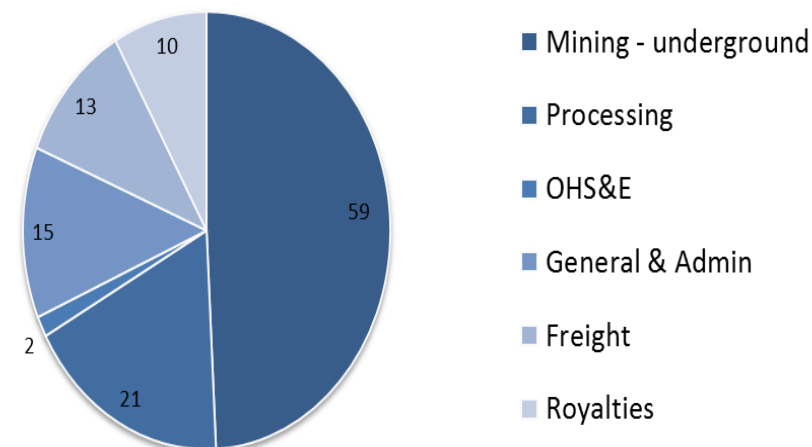
- Site operating unit costs: ~\$100/t
- Major cost impacts:
  - Labour costs (higher salaries) – 25% of total opex
  - Power & fuel (increased ventilation and cooling requirements) – 15% of total opex

Description	LOM cost per tonne milled (\$/t)	LOM total (\$'M)
Mining (incl. Geology)	59	440
Processing	21	160
Other site costs	17	130
<b>Total</b>	<b>97</b>	<b>730</b>

Operating Costs (A\$'M per year)



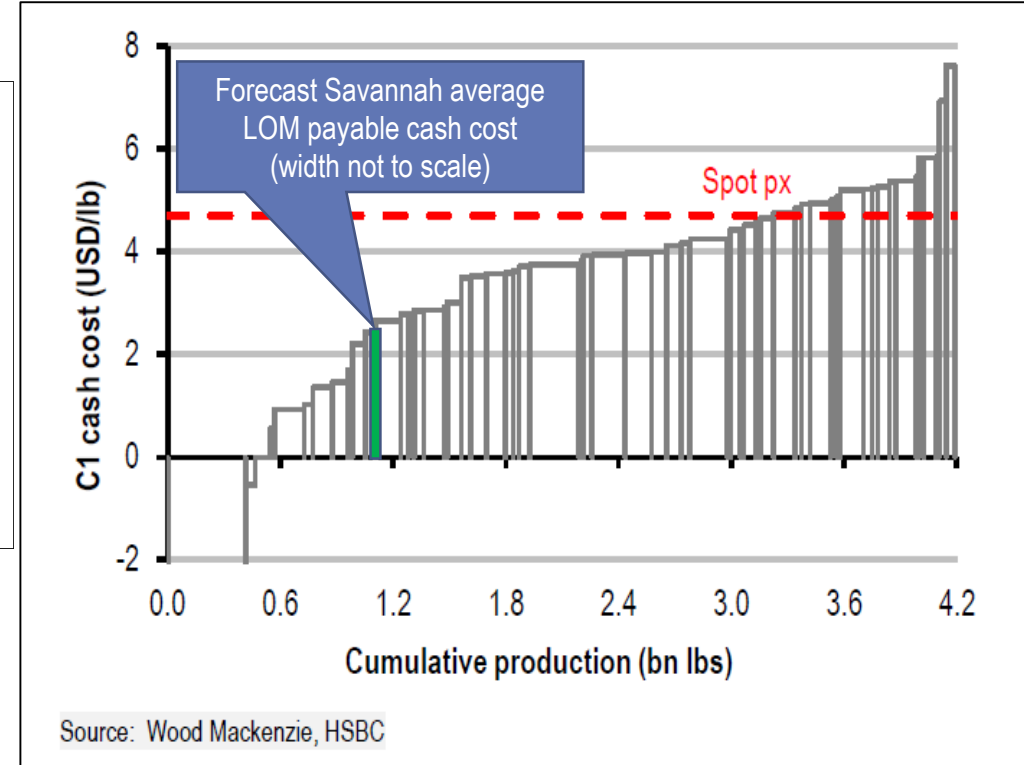
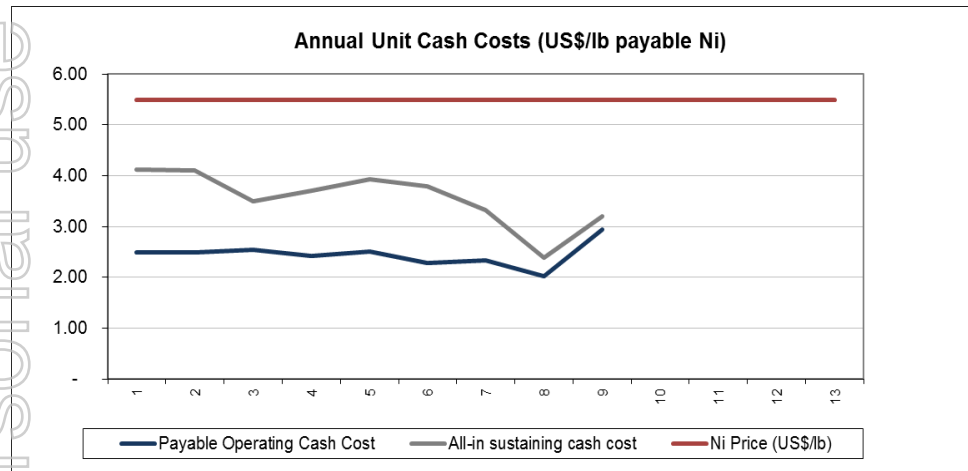
Unit Cash Operating Cost (\$/t milled)





# Payable cash costs

- Payable operating cash cost - US\$2.40/lb average over LOM (bottom of 2<sup>nd</sup> quartile)
- Sustaining cash cost - US\$3.50/lb average over LOM (US\$4.20/lb in Years 1 and 2)
- Sustaining cash cost margin – 36% average over LOM



Source: HSBC Metals Quarterly Q4 2017, 11 October 2017

# PROJECT ECONOMICS



For personal use only

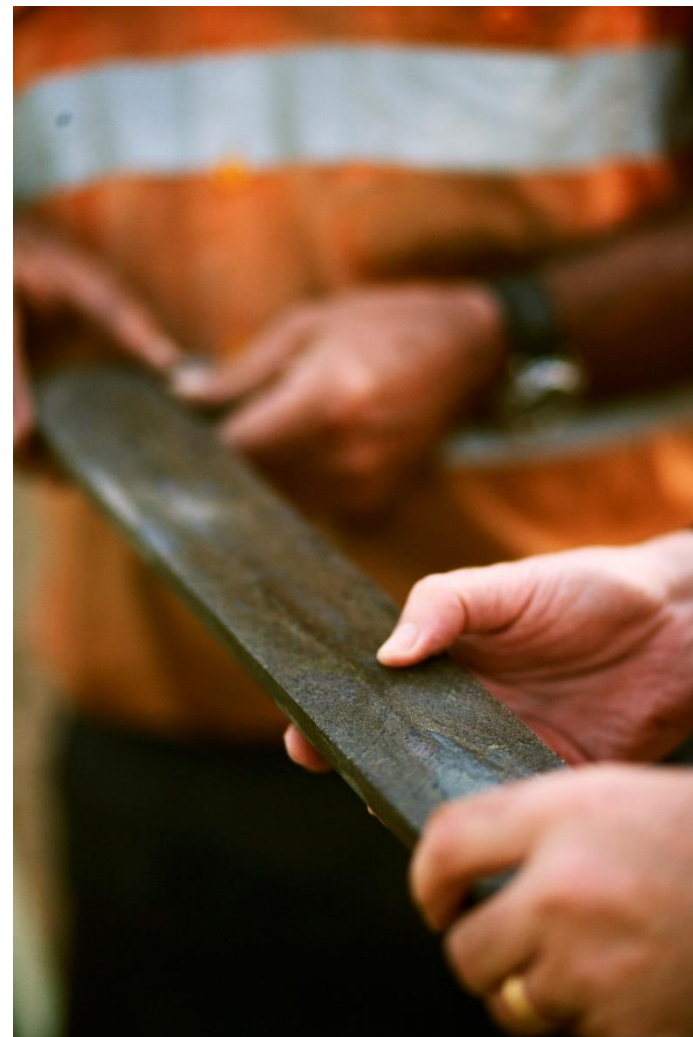


# Financial assumptions

- Revenue assumptions based on recent indicative sales terms received from potential offtake partners
- Commodity and FX assumptions used in the Base Case model are reflective of current prices:

Commodity	Base Case
Nickel	US\$5.50/lb
Copper	US\$3.10/lb
Cobalt	US\$28.00/lb
US\$:A\$	0.78

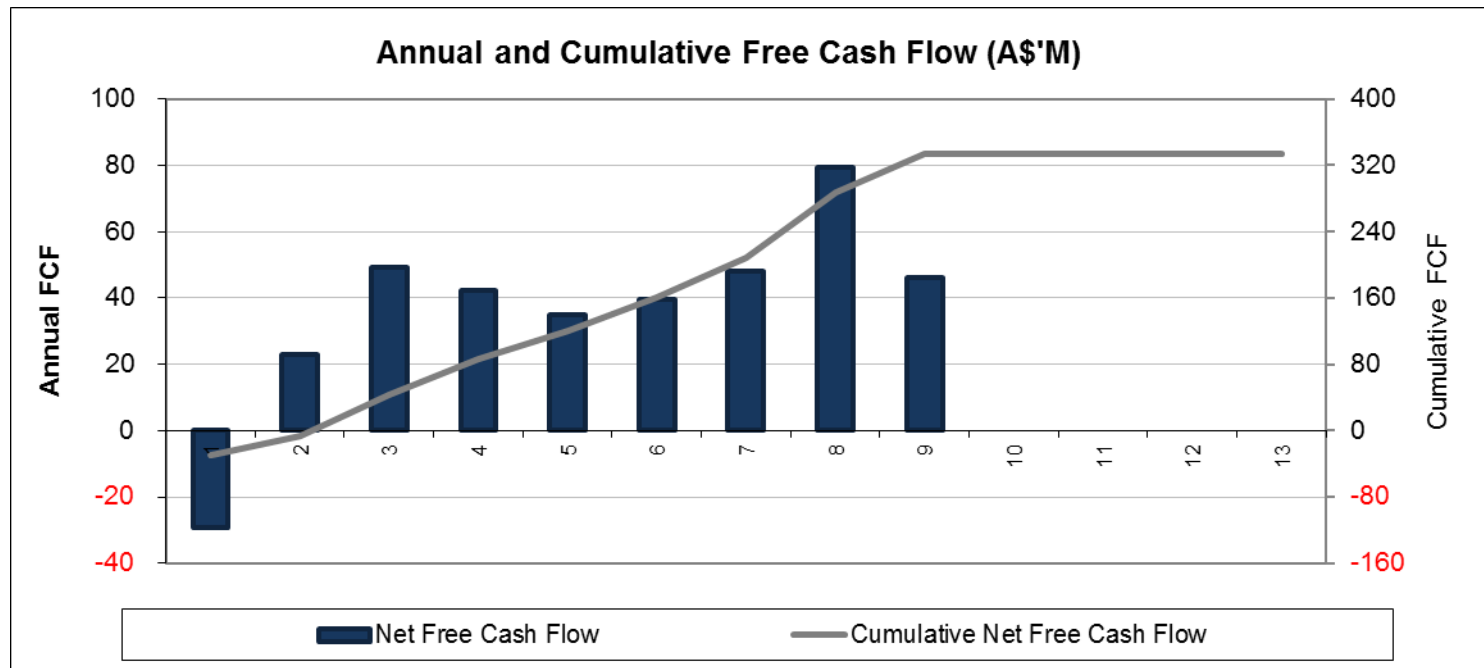
- Discount rate 8%
- Modelling is pre-tax
- **Tax losses of \$65M** - at 31 December 2016 PAN had accumulated tax losses of approximately \$65M (not included in modelling)





# Cashflow forecast - LOM

- LOM Revenue - \$1,470M (\$180M per year)
- LOM pre-tax cashflow - \$330M
- Pre-production and ramp-up capex - \$36M
- Payback period - less than 2 years after recommencement of production



# Financial results – viable at spot, highly leveraged to nickel recovery

Financial Metric	Units	Base Case Prices	Long Term Prices*
Nickel price assumption	US\$/lb	5.50	6.75
Copper price assumption	US\$/lb	3.10	2.72
Cobalt price assumption	US\$/lb	28.00	26.00
US\$:A\$ FX assumption	US\$	0.78	0.75
Revenue	A\$M	1,470	1,720
Initial Capital	A\$M	36	32
LOM Capital ( <i>incl. initial capital</i> )	A\$M	240	230
Operating costs plus royalties	A\$M	900	920
Pre-tax cashflow	<b>A\$M</b>	<b>330</b>	<b>570</b>
Pre-tax NPV ( <i>8% discount rate</i> )	<b>A\$M</b>	<b>210</b>	<b>380</b>
IRR	%	100	200
C1 cash cost ( <i>Ni in concentrate basis</i> )	A\$/lb Ni	1.90	2.10
	US\$/lb	1.50	1.60
Operating cash costs ( <i>payable Ni basis</i> )	A\$/lb Ni	3.10	3.40
	<b>US\$/lb</b>	<b>2.40</b>	<b>2.60</b>
Sustaining cash costs ( <i>payable Ni basis</i> )	A\$/lb Ni	4.50	4.80
	<b>US\$/lb</b>	<b>3.50</b>	<b>3.60</b>

## \*Long Term Prices

The Long Term (LT) Real (2017\$) US\$ nickel and copper prices and the US\$:A\$ FX rate are consensus forecasts sourced from UBS Global I/O Miner Price Review, dated 5 October 2017. The LT Real (2017\$) US\$ cobalt price is sourced from Macquarie Bank Limited Research Report titled "Price Forecast Changes", dated 9 October 2017.

# Leveraged to commodity prices and currency

- Strongly leveraged to nickel price and US\$:A\$

- US\$1.00/lb increase in nickel price adds ~A\$160M to pre-tax NPV
- US\$0.05 cent decrease in the US\$:A\$ exchange rate adds ~A\$50M to pre-tax NPV

Pre-tax NPV <sub>8</sub> (\$'M)		Nickel Price US\$/lb)					
		5.00	6.00	7.00	8.00	9.00	10.00
US\$:A\$ FX Rate	0.65	270	453	635	790	946	1,102
	0.70	207	377	546	690	835	979
	0.75	153	312	469	604	739	874
	0.80	105	254	401	528	654	781
	0.85	63	203	342	461	580	699

For personal use only



# METAL PRICE OUTLOOK

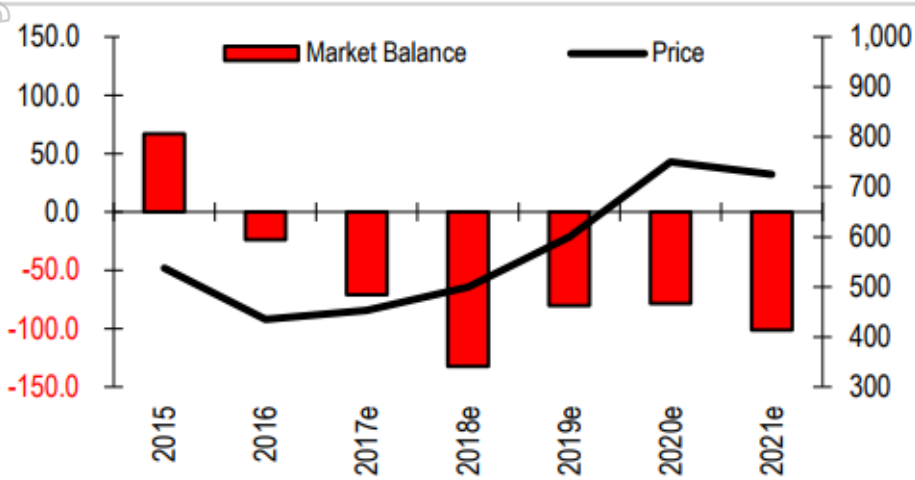


For personal use only



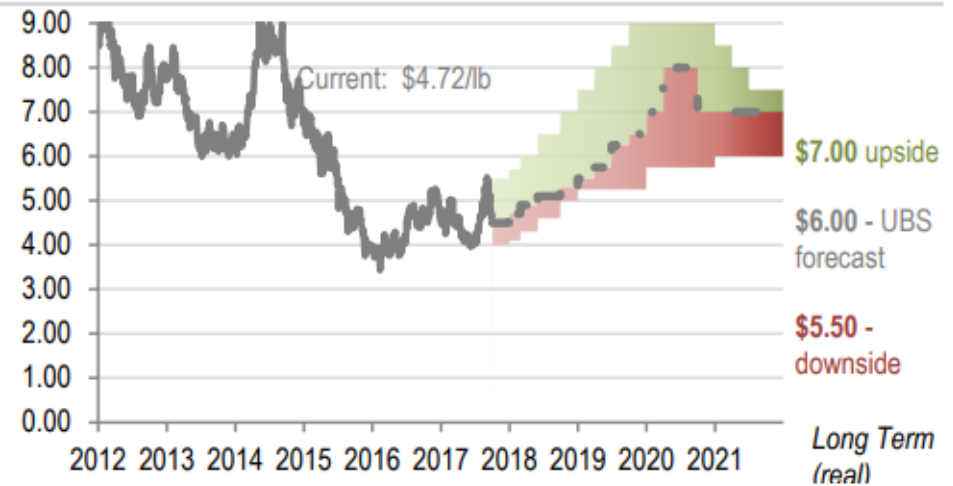
# Nickel price - outlook much brighter

Figure 76: Price & supply/demand balance (Mt & US\$/lb)



Source: UBS Research.

Figure 77: Price forecasts & Upside/Downside (US\$/lb)



Source: UBS & Bloomberg.

## UBS Nickel Price Forecasts

- 2018 - \$5.00/lb
- 2019 - \$6.00/lb
- 2020 - \$7.50/lb
- 2021 - \$7.00/lb

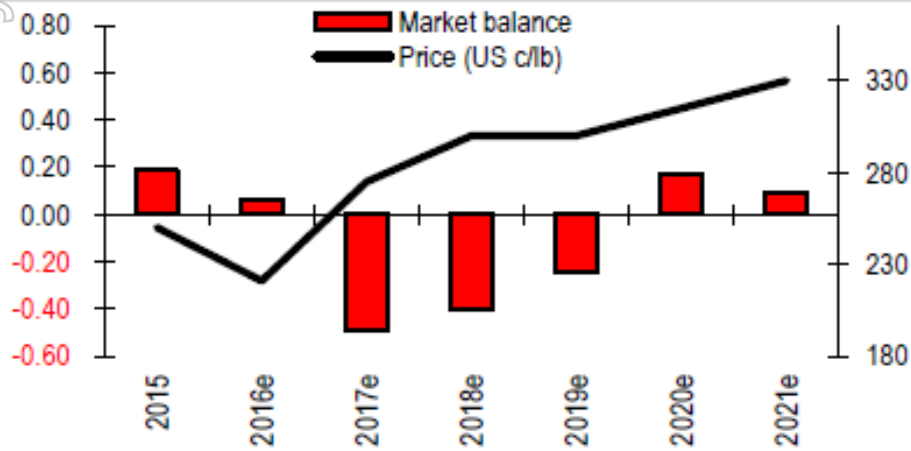
## Nickel price to surge in 2019-20e from Electric Vehicles:

“We see substantial price upside from the current spot of ~US\$4.60/lb to US\$7.50/lb in 2020e. Here electric vehicle penetration & a cathode chemistry shift to greater nickel use will drive a substantial uplift in demand.” (UBS 5/10/17)

Source: UBS - 5 October 2017

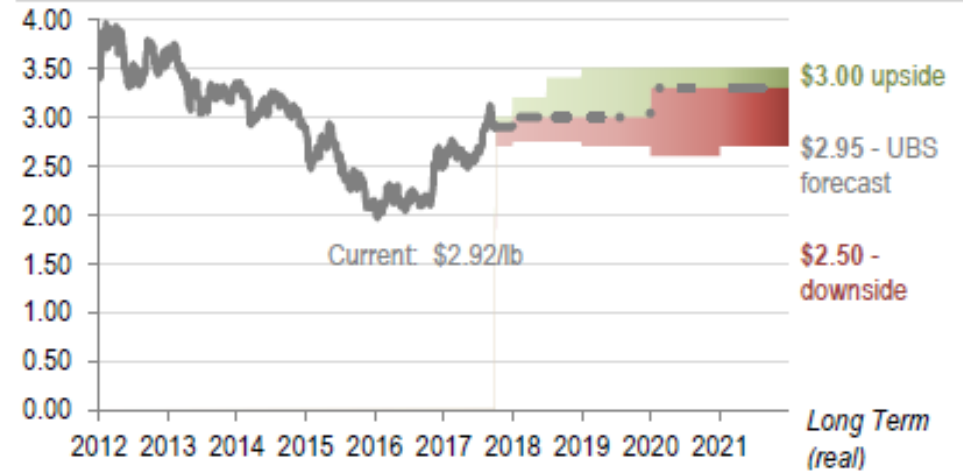
# Copper price - outlook stable

Figure 52: Price & supply/demand balance (Mt & USc/lb)



Source: UBS Research.

Figure 53: Upside/Downside



Source: UBS & Bloomberg.

## UBS Copper Price Forecasts

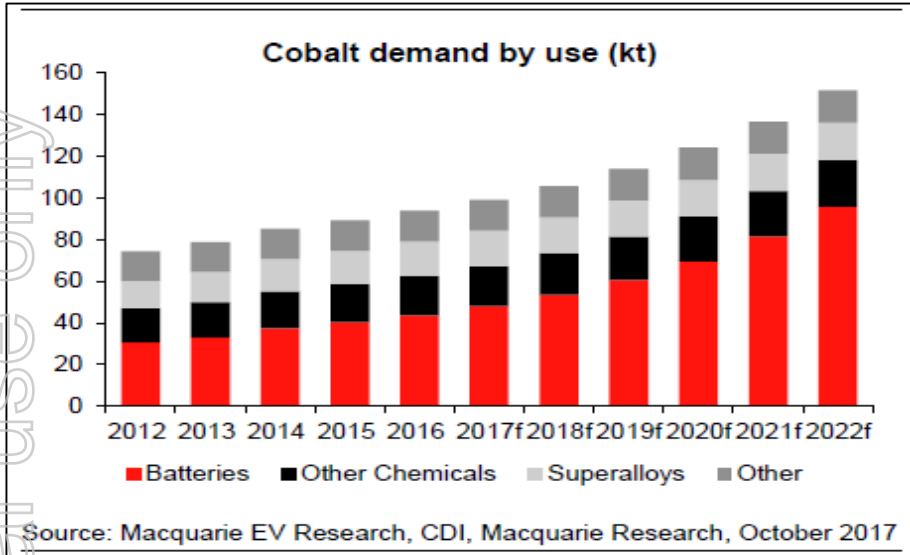
- 2018 - \$3.00/lb
- 2019 - \$3.00/lb
- 2020 - \$3.30/lb
- 2021 - \$3.30/lb

“Beyond the near term, we think EV’s & the promise of accelerating demand underpin the case for an incentive price of ~US\$3/lb (real)”. (UBS 5/10/17)

Source: UBS - 5 October 2017



# Cobalt price – EV's to revolutionise transport

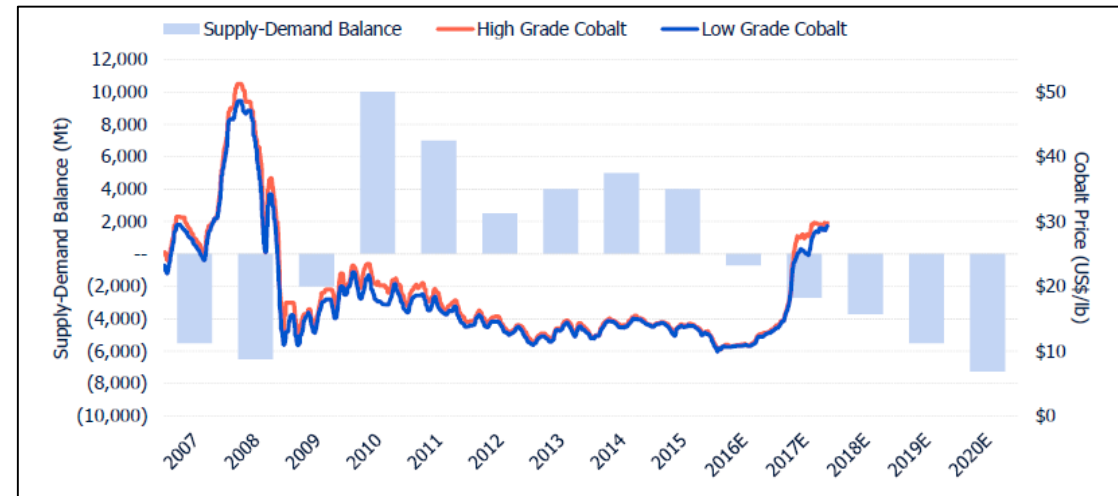


## Cobalt 27 Capital Corp comments

- Cobalt demand in lithium-ion batteries forecast to grow at 11.7% CAGR to 2022
- Supply currently concentrated in the DRC (65% of 2016 mine output)
  - Relatively politically unstable country
  - Lack of infrastructure
  - ~15% of DRC output from unregulated artisanal mining

## Macquarie Cobalt Price Forecasts

- 2018 - \$27.00/lb
- 2019 - \$20.00/lb
- 2020 - \$22.00/lb
- 2021 - \$32.00/lb
- 2022 - \$41.00/lb



Sources:

Macquarie Research – Commodities Compendium, 10 October 2017

Cobalt 27 Capital Corp - corporate presentation, 20 September 2017

# SUMMARY



For personal use only



# Summary

✓ Savannah is a significant Australian base metal project containing\*

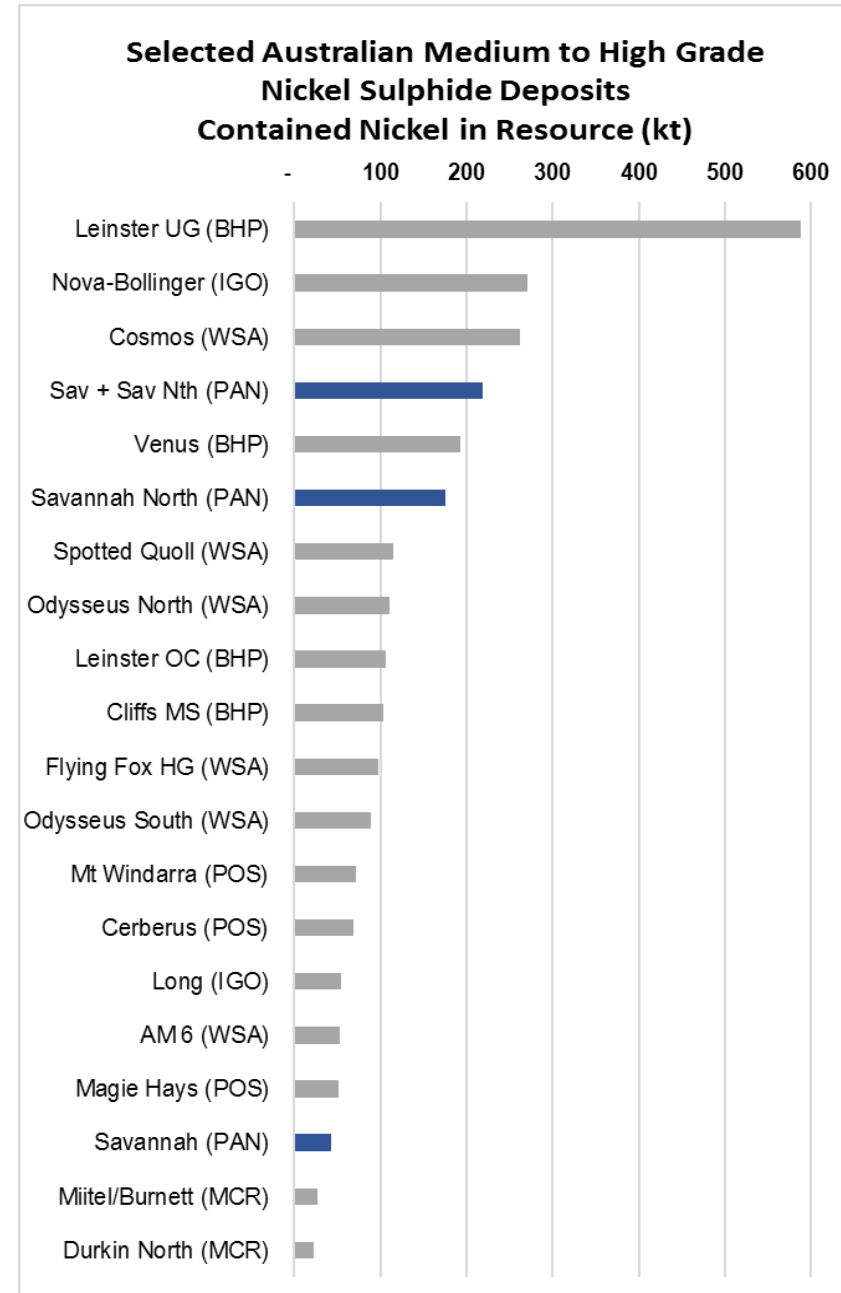
- 218,300t contained nickel
- 99,100t contained copper
- 14,900t contained cobalt

## Updated Feasibility Study confirms

- Financially robust project at current commodity prices and US\$:A\$ FX
- +8 year mine life
- Globally competitive cash costs
- Low re-start capex
- Short timeframe to production leveraging off existing Savannah infrastructure
- Significant leverage to nickel, copper and cobalt prices

✓ Excellent potential for further exploration success and mine life extension

\*Refer to Appendices







**ASX: PAN**

**[www.panoramicresources.com](http://www.panoramicresources.com)**

**Mission Statement**

We strive to achieve excellence in all aspects of our business to provide long term capital growth and dividend return to our shareholders, a safe and rewarding work environment for our employees, and opportunities and benefits to the people in the communities we operate in.

For personal use only



# APPENDICES

For personal use only



# SAVANNAH PROJECT - MINERAL RESOURCES

Resource	Metal	Resource Date	JORC	Measured		Indicated		Inferred		Total		Metal Tonnes
				Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	
<b>Savannah</b>												
Above 900F	Nickel	Jun-16	2012	1,275,000	1.51	759,000	1.20			2,034,000	1.39	28,300
	Copper				0.87		0.90				0.88	17,900
	Cobalt					0.07		0.07			0.07	1,400
Below 900F	Nickel	Jun-15	2012			780,000	1.64	125,000	1.72	905,000	1.65	14,900
	Copper				0.76		0.75				0.76	6,900
	Cobalt				0.10		0.09				0.10	900
Savannah North	Nickel	Aug-16	2012			<b>7,168,000</b>	<b>1.78</b>	<b>3,104,000</b>	<b>1.53</b>	<b>10,272,000</b>	<b>1.70</b>	<b>175,100</b>
	Copper						<b>0.77</b>		<b>0.62</b>		<b>0.72</b>	<b>74,400</b>
	Cobalt						<b>0.13</b>		<b>0.11</b>		<b>0.12</b>	<b>12,700</b>
<b>Total Savannah Project</b>	Nickel											<b>218,300</b>
	Copper											<b>99,100</b>
	Cobalt											<b>14,900</b>

## Notes:

- Refer to the Company's ASX Announcements of 24 August 2016 and 30 September 2016 for the relevant JORC Competent Person statements and disclosure tables
- Figures have been rounded and therefore may not add up exactly to the reported totals
- All resources are inclusive of reserves
- Resource cut-off grade is 0.50% Ni



# SAVANNAH PROJECT – ORE RESERVES

Reserve	Metal	Date of Reserve	JORC Compliance	Proven		Probable		Total		Metal Tonnes				
				Tonnes	(%)	Tonnes	(%)	Tonnes	(%)					
Above 900 Fault	Nickel	Jun-16	2012	1,365,000	1.15	194,000	1.24	1,558,000	1.16	18,100				
	Copper										0.66	1.28	0.74	11,500
	Cobalt										0.06	0.07	0.06	900
Savannah North	Nickel	Jan-17	2012			6,650,000	1.42	6,650,000	1.42	94,500				
	Copper											0.61	0.61	40,900
	Cobalt											0.10	0.10	6,700
Total	Nickel							8,208,000	1.37	112,600				
	Copper								0.64	52,400				
	Cobalt								0.09	7,600				

## Notes:

- Refer to the Company's ASX Announcements of 30 September 2016 and 2 February 2017 for the relevant JORC Competent Person statements and disclosure tables
- Figures have been rounded and therefore may not add up exactly to the reported totals
- Reserve cut-off grade is 0.80% Ni