



**Heron Resources** Limited

# **HERON RESOURCES LIMITED**

## **AN AUSTRALIAN ZINC-COPPER PRODUCER**

RIU SYDNEY RESOURCES ROUND-UP

MAY 8, 2019

# AGENDA

ASX: HRR

- ▶ COMPANY
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- ▶ ASSET
  - ▶ WOODLAWN ZINC-COPPER PROJECT | KEY PROJECT PHYSICALS | PATH TO PRODUCTION
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- ▶ FOCUS
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  - ▶ EXPLORATION STRATEGY | IN-MINE EXPLORATION | REGIONAL EXPLORATION
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  - ▶ UNDERGROUND ORE & TAILINGS RECLAIM CONFIGURATION | MINERAL RESOURCES & RESERVES



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## Compliance Statement (JORC 2012)

The technical information in this release relating to the exploration results and forward program at the Woodlawn Project is based on information compiled by Mr David von Perger, who is a Member of the Australian Institute of Mining and Metallurgy (Chartered Professional – Geology). Mr von Perger is a full time employee of Heron Resources Limited and has sufficient experience, which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 edition). Mr von Perger has reviewed and approved the technical information this presentation.

An Exploration Target is term used within the JORC 2012 Code for an estimate of the exploration potential of a mineral deposit, however the potential quantity and grade is conceptual in nature and there is insufficient information to estimate a Mineral Resource and it remains uncertain if further exploration will result in the estimation of a Mineral Resource.

**The zinc equivalent (ZnEq) calculation takes into account, mining costs, milling costs, recoveries, payability (including transport and refining charges) and metal prices in generating a Zinc equivalent value for Au, Ag, Cu, Pb and Zn.  $ZnEq = Zn\% + Cu\% \times 3.12 + Pb\% \times 0.81 + Au\text{ g/t} \times 0.86 + Ag\text{ g/t} \times 0.03$ . Metal prices used in the calculation are: Zn US\$2,300/t, Pb US\$ 2,050/t, Cu US\$6,600/t, Au US\$1,250/oz and Ag US\$18/oz. These metal prices are based on Heron's long term view on average metal prices. It is Heron's view that all the metals within this formula are expected to be recovered and sold. Metallurgical metal recoveries used for the formula are: 88% Zn, 70% Pb, 70% Cu, 33% Au and 82% Ag; these are based on historical recoveries at Woodlawn and supported by metallurgical test work undertaken during the 2015-16 feasibility study.**

# HERON RESOURCES OVERVIEW

*Company snapshot*

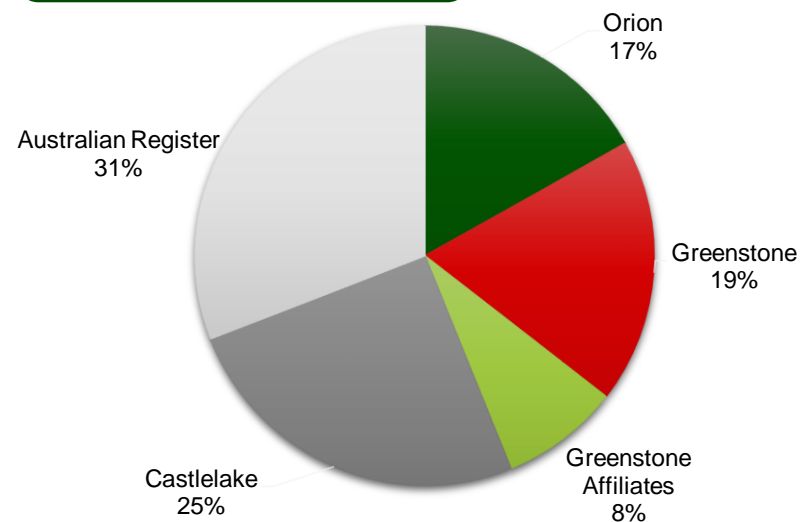


## CAPITAL STRUCTURE

Shares	242 million
Options/Perf. rights	6.7 million
Top 20 Shareholders	86.48% of issued capital
Share price	A\$ 0.56
Market cap	A\$ 136 million
Cash (as at 31 March 2019)	A\$ 66.5 million
Debt	US\$ 60 million facility
Listed Investments	Ardea Resources, Alchemy Resources



## SHARE REGISTER



# HERON RESOURCES TEAM

*Experienced Board & Management team*

## BOARD



Stephen Dennis  
Chairman (Non-Executive)



Mark Sawyer  
Director (Non-Executive)



Wayne Taylor  
Managing Director & CEO



Ricardo De Armas  
Director (Non-Executive)



Borden Putnam III  
Director (Non-Executive)



Peter Rozenauers  
Director (Non-Executive)



Fiona Robertson  
Director (Non-Executive)



Ian Pattison  
Director (Non-Executive)

## MANAGEMENT



Andrew Lawry  
Chief Operating Officer



Simon Smith  
General Manager, Finance & Company Secretary



David von Perger  
General Manager, Exploration & Geology



Charlie Kempson  
General Manager, Strategy & Business Development



Brian Hearne  
General Manager, Woodlawn Mine

# HERON RESOURCES INVESTMENT PROPOSITION

*In production. Next milestone - first shipment of concentrate.*

## FOCUS

- 100% Woodlawn
- Producer of zinc, copper and lead concentrates
- Growth - strong regional position and exploration strategy

## ASSET - WOODLAWN PROJECT

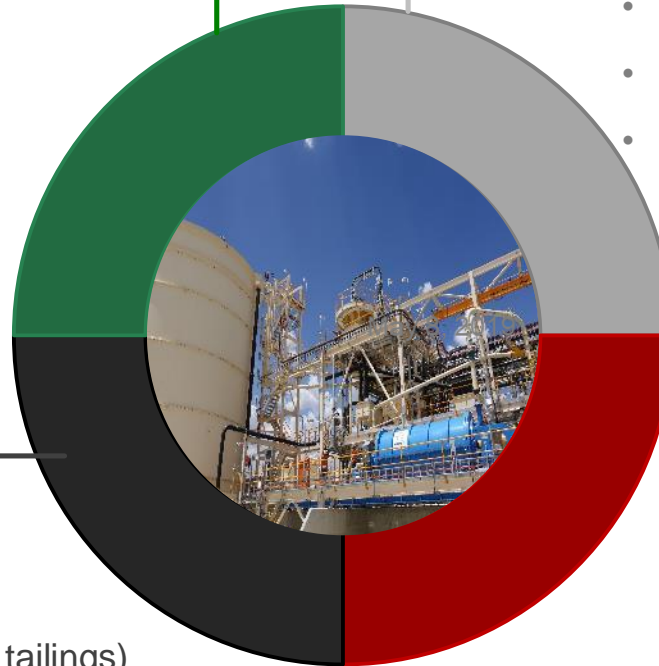
- High quality deposit
- Favourable jurisdiction, exceptional infrastructure
- Two production sources (underground and reclaim tailings)  
- reduced risk, operational flexibility and low cost
- Longevity through resource conversion & discovery

## HERON RESOURCES LTD

- Experienced Board & Management team
- AU\$66.5 million cash~
- Three supportive cornerstone investors
- Offtake agreements in place

## BASE METALS

- Exposure to commodities with positive supply / demand fundamentals
- Global inventories remain at low levels
- Woodlawn production timed to meet tight physical market



~ At last disclosure (HRR: Quarterly Activities Report and Appendix 5B, 29 April 2019)

# ASSET WOODLAWN ZINC-COPPER PROJECT

*Key Project Physicals – 2016 Feasibility Study*

- ▶ 1.5Mtpa Production Rate
- ▶ 9.3 year LOM (Reserves only)
  - ▶ Significant potential for upside
- ▶ Reserves
  - ▶ Underground 2.8Mt @ 14% ZnEq<sup>1</sup>
  - ▶ Reprocessing 9.5Mt @ 6% ZnEq<sup>1</sup>
- ▶ Steady State Gross Production
  - ▶ 40ktpa Zn (88Mlbs)
  - ▶ 10ktpa Cu (20Mlbs)
  - ▶ 12ktpa Pb (25Mlbs)
  - ▶ +Ag/+Au



<sup>1</sup>. Refer to slide 3 for ZnEq definition and slides 23-24 for Reserves table



# ASSET WOODLAWN ZINC-COPPER PROJECT

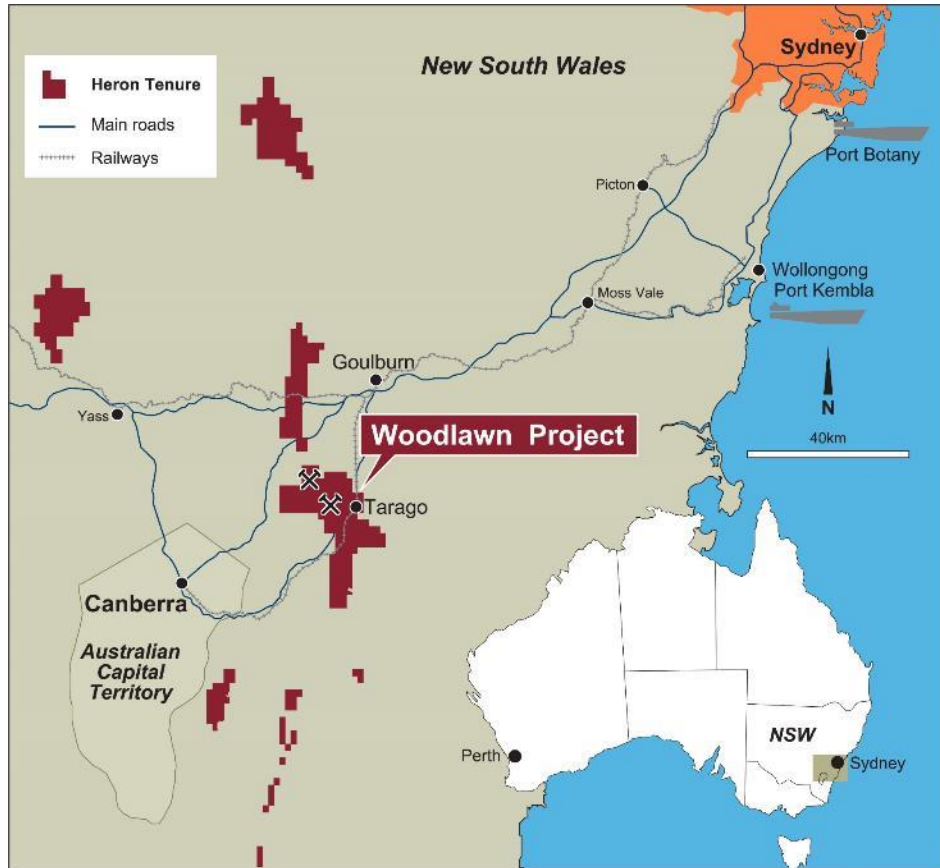
*Unrivalled infrastructure*





# ASSET WOODLAWN ZINC-COPPER PROJECT

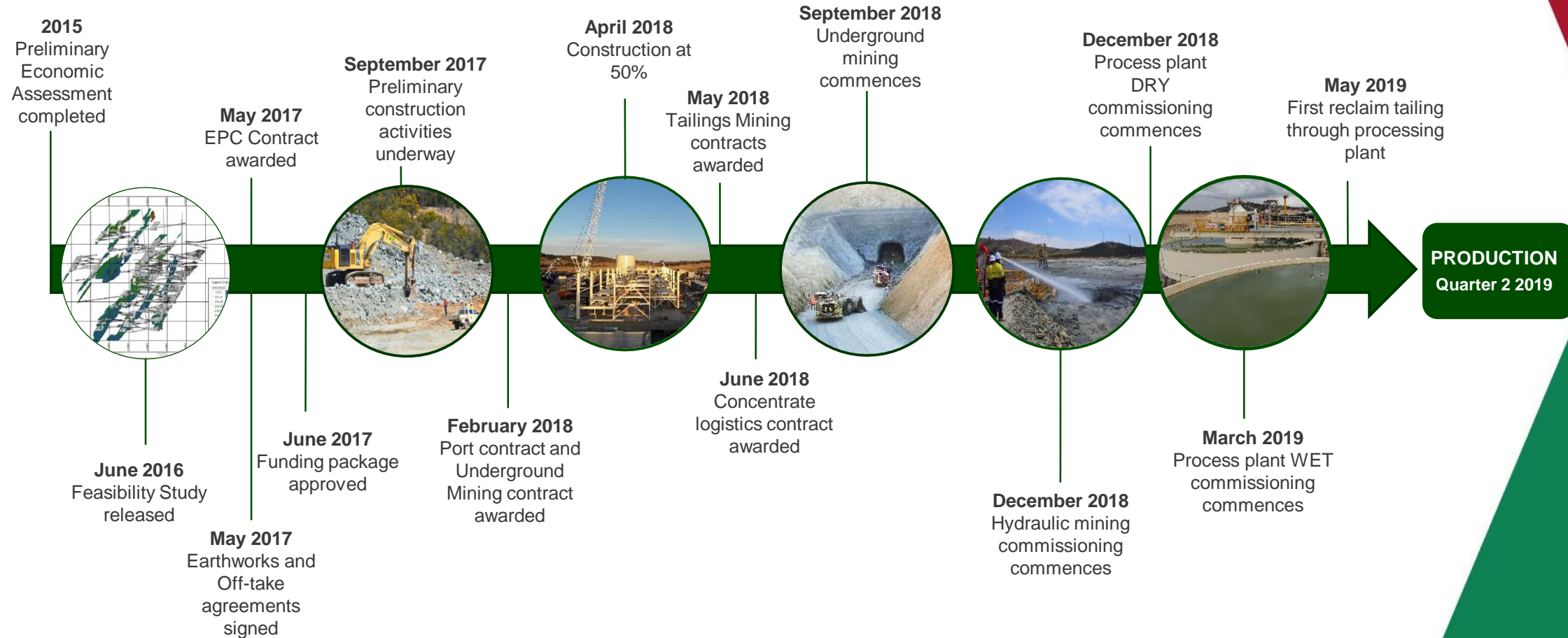
*Premier location in favorable jurisdiction with existing infrastructure – cost effective solutions*



- ▶ Transport – Base metal concentrates to Port Botany and Port Kembla via existing road-rail infrastructure:
  - ▶ Roads - sealed B-double rated
  - ▶ Rail - Goulburn rail yard (approx. 50km)
  - ▶ Intermodal solution is highly attractive
- ▶ Power – NSW State grid sub-station
- ▶ Water – Willaroo Bore Field, Goulburn Fractured Rock Aquifer
- ▶ Population Centres – skilled labour and community infrastructure

# ASSET PATH TO PRODUCTION

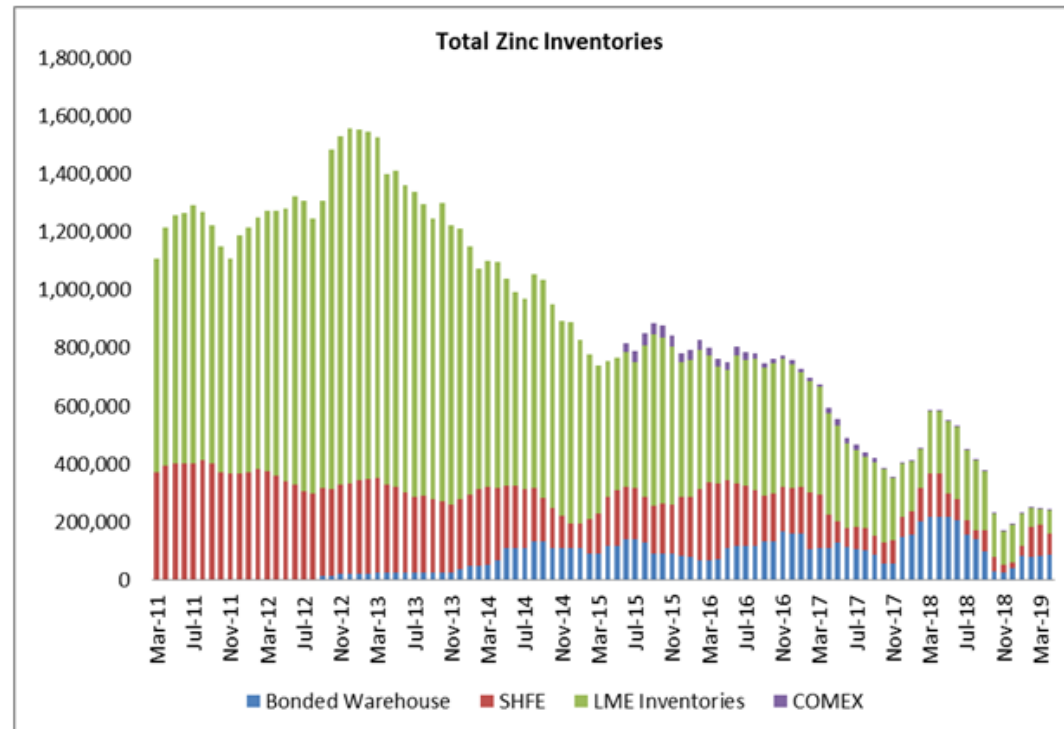
*The focused delivery of the Woodlawn Zinc-Copper Mine*



# MARKET ZINC FUNDAMENTALS

*Current prices remain above both feasibility study and financing case levels.*

- ▶ Supply Shortage and Diminishing Stocks
- ▶ Market Commentators
  - ▶ Refined metal deficit in 2019<sup>1</sup>
  - ▶ Prices to US\$3,500/t (15 April US\$3,031/t)
- ▶ Stocks
  - ▶ 238kt (LME, SHFE, Bonded, COMEX)<sup>2</sup>
  - ▶ Estimated at 5.9 days of global consumption<sup>3</sup> (<10 considered tight; 25-year average 22.3 days)



Source: Scotia Bank

1. Reuters, 5 March 2019. Shortages, shrinking stocks to energize zinc bulls.
2. The Daily Mining Scoop, Scotia Bank 30 April 2019.
3. Teck Resources Limited 2019 First Quarter News Release, 22 April 2019.



# FOCUS OPERATIONAL READINESS

*In production. Next milestone - first shipment of concentrate.*



- ✓ Hydraulic mining in production mode
- ✓ First ore from underground delivered to ROM
- ✓ DRY, WET and load commissioning of retreatment circuit complete
- ✓ Flotation commenced 6 May
- ✓ Operational personnel in place
- ✓ Fully stocked operational stores
- ✓ Concentrate containers on site
- ✓ Off site logistics set for product delivery



# FOCUS HYDRO MINING

- ✓ Hydraulic mining circuit fully operational and in production
- ✓ Established working face for initial production slot
- ✓ Excellent flow densities and excavation control
- ✓ Ramp-up & optimisation continues under the guidance of specialist Paragon Tailings
- ✓ Cap removal – expected to improve processing performance and assist recoveries



# FOCUS UNDERGROUND MINING

- ✓ 1.4km of underground development completed
- ✓ UG ramp-up – steady trend of above plan monthly advance
- ✓ First ore from underground delivered to run-of-mine (ROM) pad (G2 lens)
- ✓ Primary ventilation & second means of egress well advanced
- ✓ Paste plant commissioning scheduled for June Quarter





# FOCUS PROCESS PLANT



- ✓ Production commenced on reclaim tailing – 6 May
- ✓ Commissioning of UG only component (crushing & ball mill) advancing with feed stock ready to go
- ✓ Additional specialist support in place to effect a rapid production ramp-up
- ✓ Focus now on ramp-up – throughput, recoveries, concentrate specifications

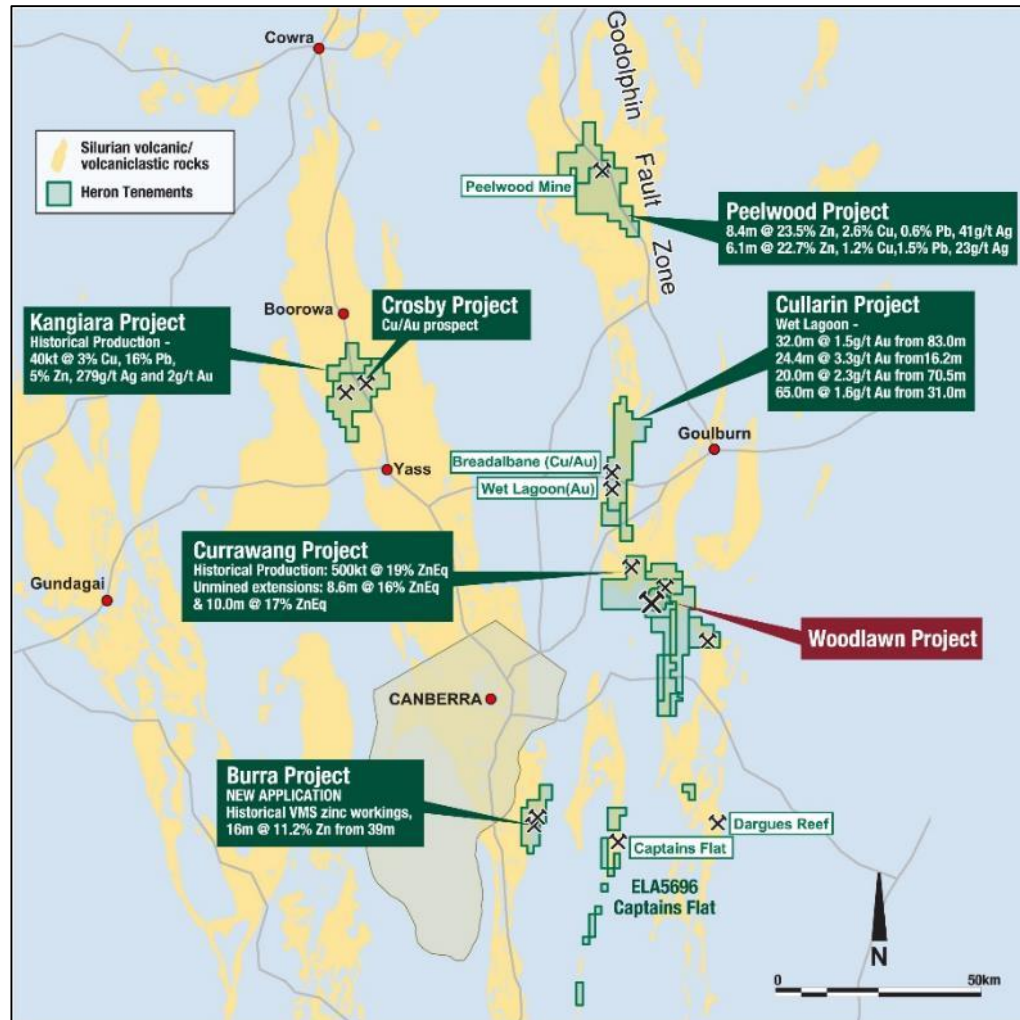
Construction – 100%

Commissioning – 90.1%



# GROWTH EXPLORATION STRATEGY

*Committed to exploration of in-mine and regional targets to extend mine life*



## 9.3 YEAR MINE LIFE (RESERVES ONLY)

Prioritised mine life extension opportunities:

1. Convert UG Resources
  - 2.8Mt P+P Reserves from 7.2Mt M+I+I Resources<sup>1</sup>
2. Extensions to existing VMS lenses
3. New discoveries in-mine (4 of 14 lenses discovered after mining ceased)
4. Near mine deposits & prospects
5. Regional deposits & prospects
  - Dominant Regional Position
  - Tenure of 1,200km<sup>2</sup>
  - Coverage of VMS host rocks
  - Acquiring 'forgotten' projects

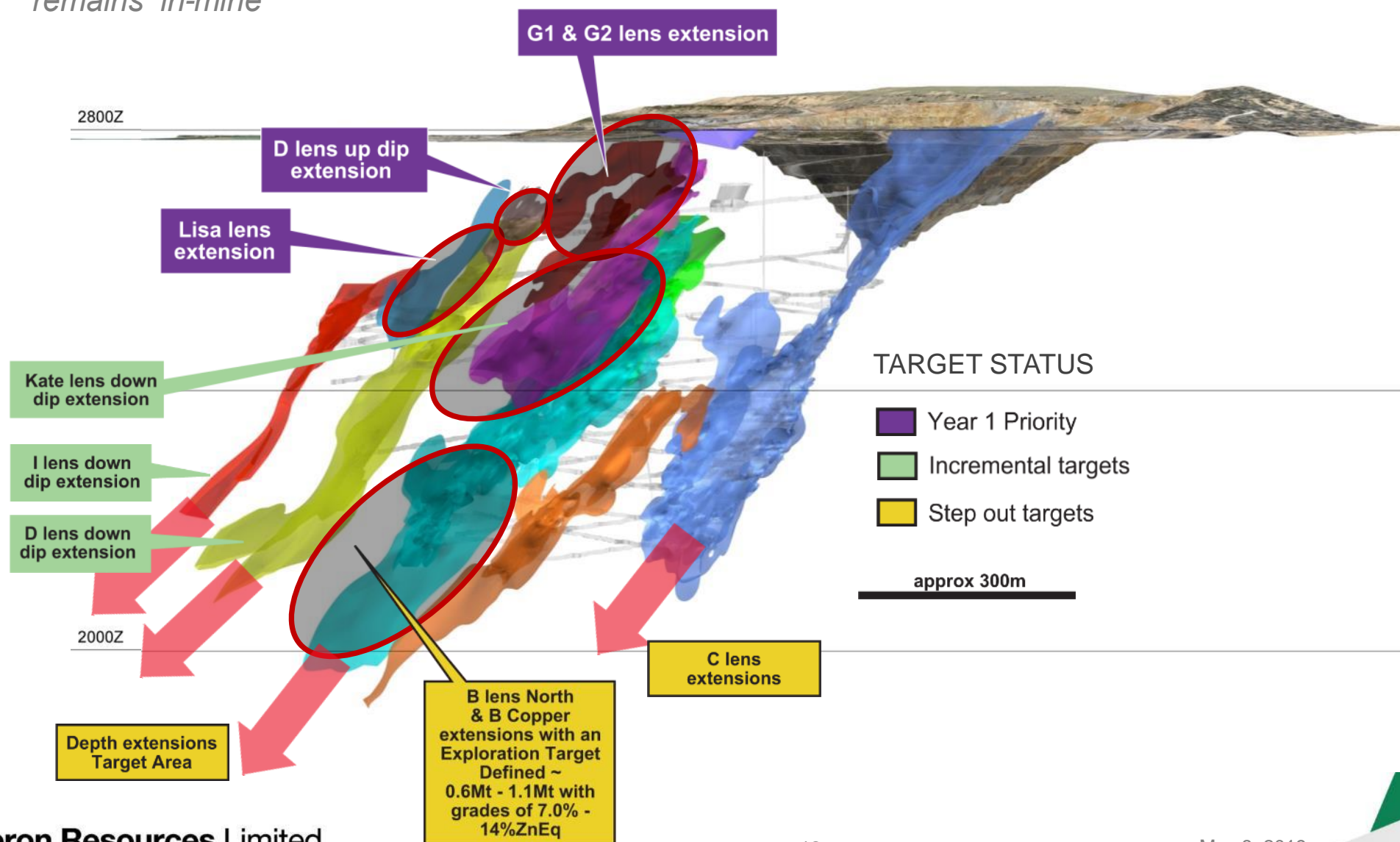
<sup>1</sup> Refer to Slide 26 for detailed breakdown





# GROWTH WOODLAWN IN-MINE EXPLORATION

*Targeted additions to the mine plan with immediate value-add – significant untapped potential remains 'in-mine'*

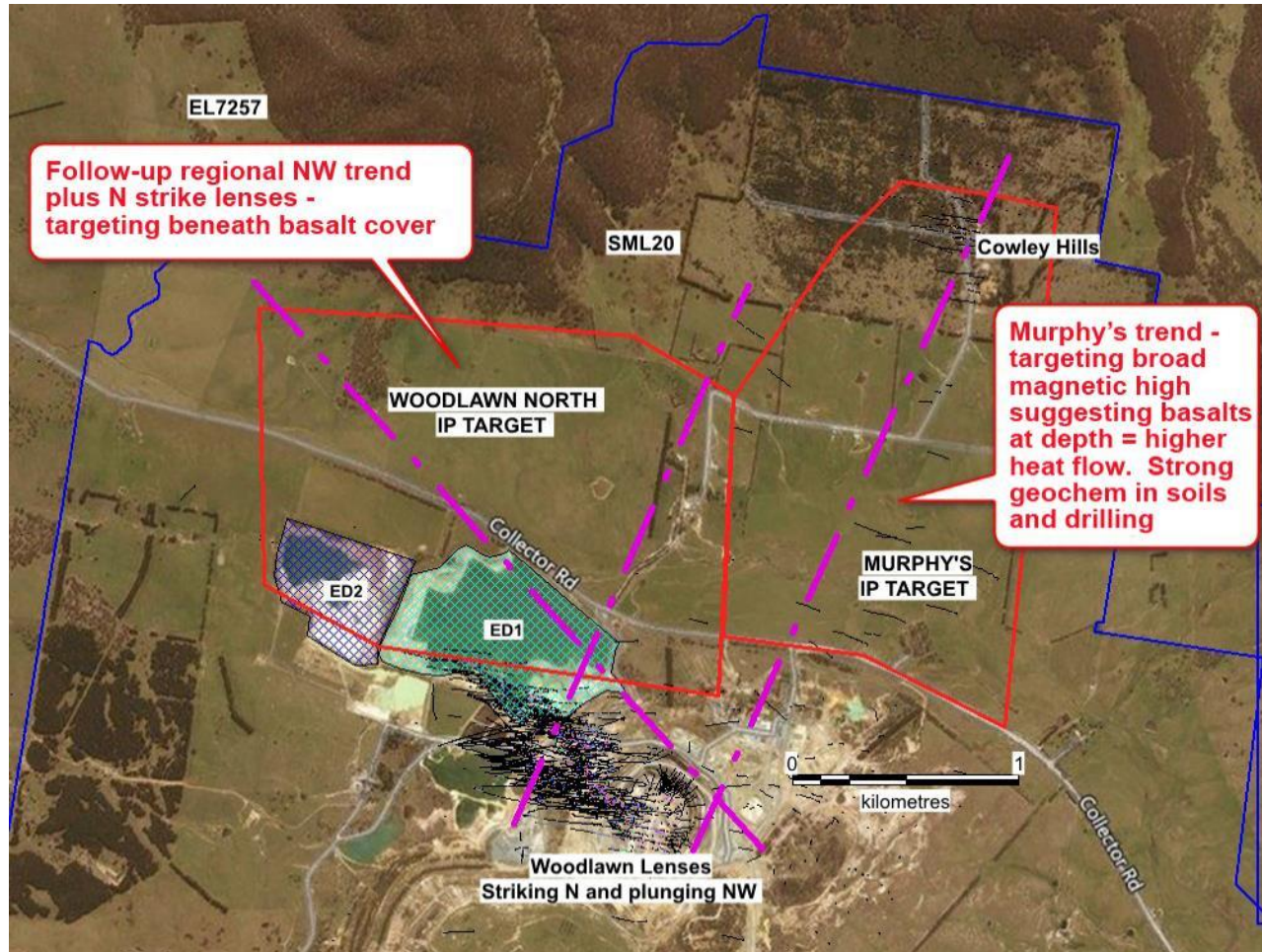




# GROWTH WOODLAWN REGIONAL POTENTIAL

Woodlawn North IP Survey – March 2019

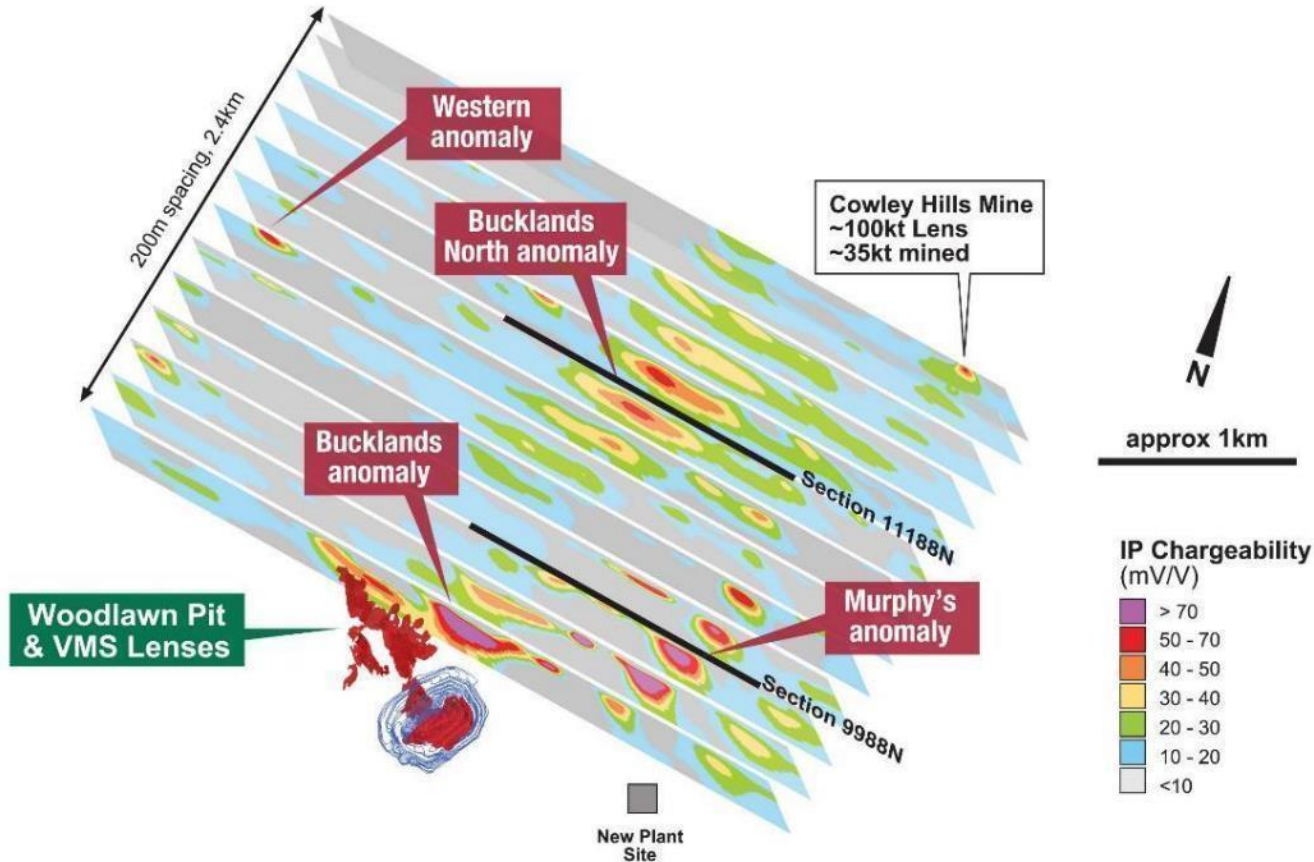
## TARGET: WOODLAWN REPEATS NORTH OF EXISTING MINE ON GRANTED MINING LEASE



- ▶ 1970s surveys - good Induced Polarisation (IP) response
- ▶ Historical survey limited to ~150m depth. Modern surveys good to 700-800m depth (optimal conditions)
- ▶ IP measures broad patterns of conductivity also chargeability which measures disseminated sulphides
- ▶ Supporting evidence of mineralisation - surface geochem and limited shallow historical drilling
- ▶ Survey completed on 200-400m spaced lines
- ▶ Significant anomalies detected

# GROWTH WOODLAWN REGIONAL POTENTIAL

Woodlawn North IP Survey – March 2019



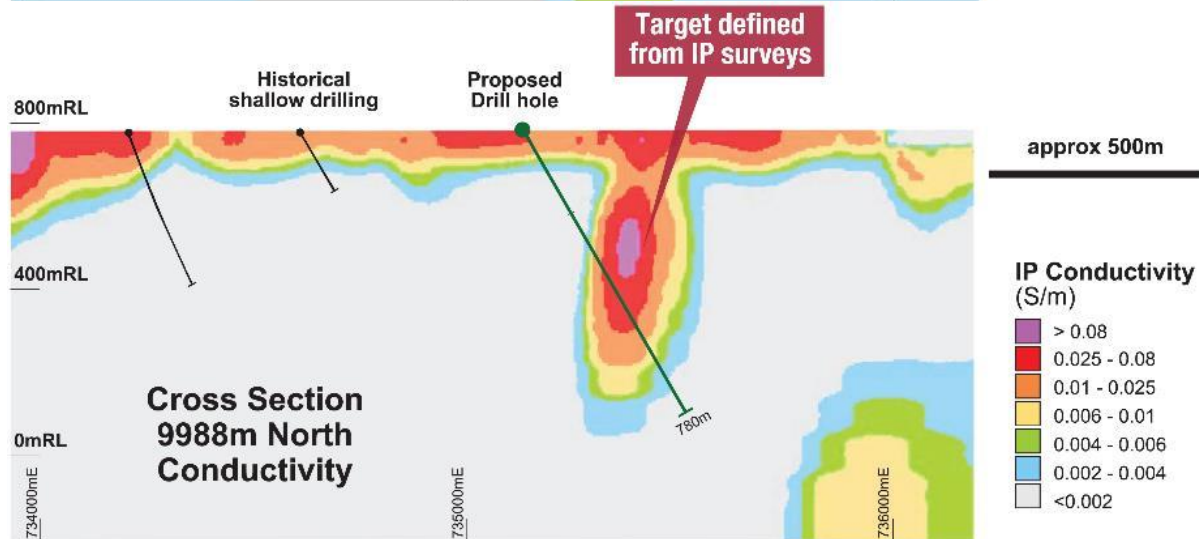
## RESULTS – CHARGEABILITY

- ▶ A number of significant anomalies
- ▶ Chargeability response indicative of sulphide content of the rock
- ▶ Weak anomaly at the Cowley Hills deposit c.35kt historical mined (provides an orientation data set for the rest of the survey)
- ▶ Bucklands potentially a continuation of the Woodlawn lenses beneath basalt cover directly north of the mine



# GROWTH WOODLAWN REGIONAL POTENTIAL

Woodlawn North IP Survey – March 2019

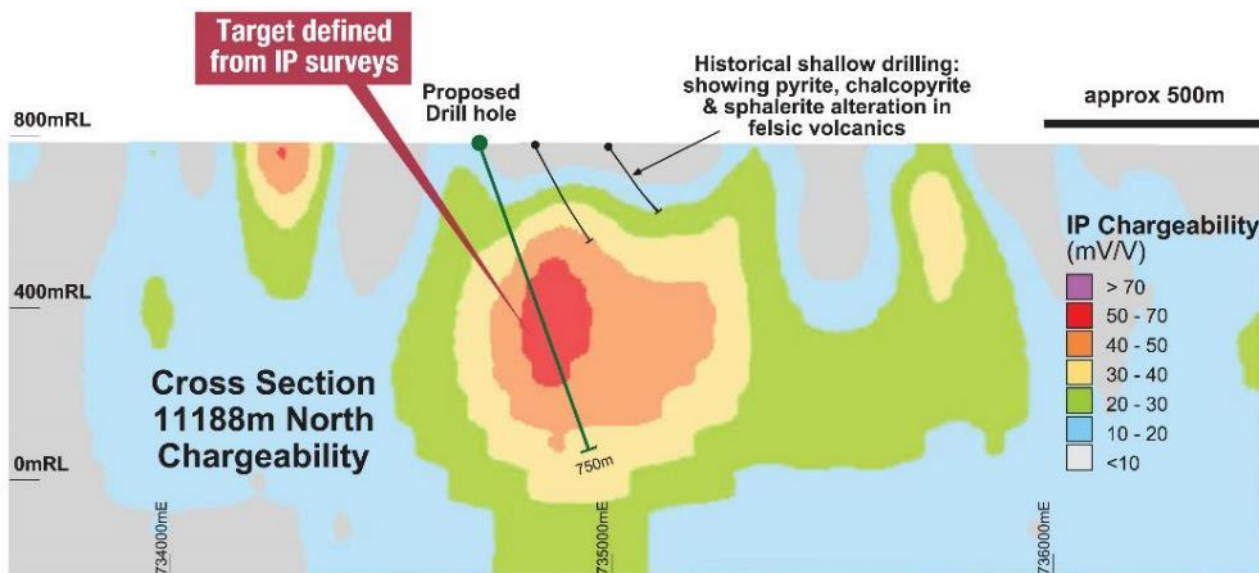


## MURPHY'S PROSPECT

- ▶ Coincident chargeability and conductivity anomaly
- ▶ Strike >600m
- ▶ Extends to 800m below surface (losing signal strength)
- ▶ Surface geochemical anomaly defined by shallow historical drilling
- ▶ Mixed host sequence, felsic volcanics and mudstones (favoured host) with shales, minor limestone and intrusive and extrusive mafic units (dolerite and basalt)
- ▶ In a similar stratigraphic position to the Woodlawn C Lens

# GROWTH WOODLAWN REGIONAL POTENTIAL

Woodlawn North IP Survey – March 2019



## BUCKLANDS NORTH PROSPECT

- ▶ Chargeability anomaly – indicative of a zone of sulphidic alteration
- ▶ Strike >600m
- ▶ Extends to 800m below surface (losing signal strength)
- ▶ Shallow drilling of surface geochemical anomaly in the 1980's and 1990's returned weak base-metal mineralisation in three holes
- ▶ Mixed host sequence, felsic volcanics and mudstones (favoured host) with intrusive and extrusive mafic units (dolerite and basalt)

# SUMMARY HERON RESOURCES

*An Australian Zinc-Copper Producer*

- ▶ Quality high-grade zinc and copper asset
- ▶ Production in ramp-up
- ▶ Highly prospective growth opportunities
- ▶ Sound commodity market fundamentals
- ▶ Supportive shareholder base
- ▶ Committed & experienced team



## HERON RESOURCES – NOW PRODUCING!





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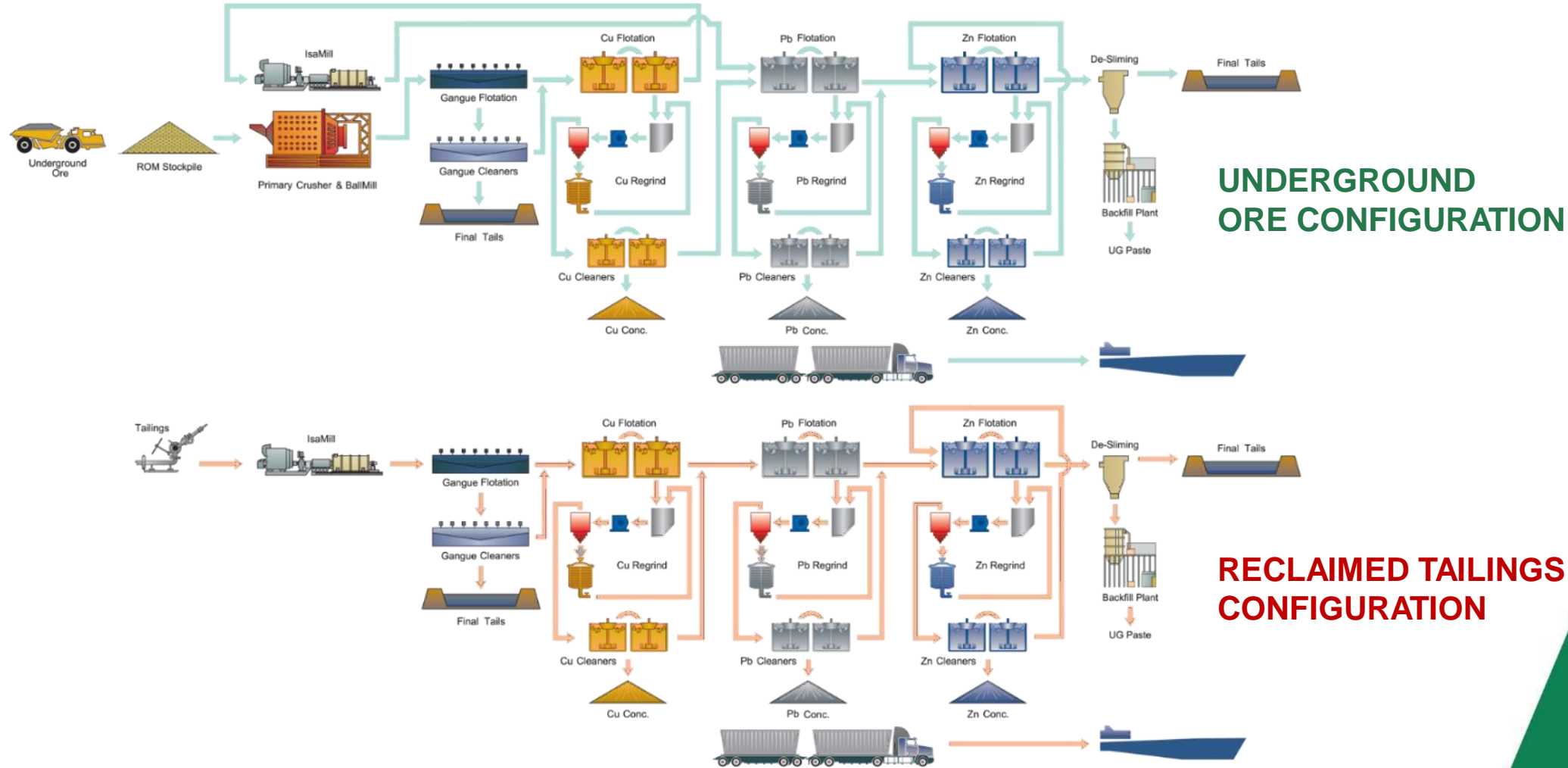


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# FOCUS PROCESS PLANT

*Two ore sources (underground and tailings) reduce risk and increase operational flexibility.*



# UNDERGROUND – MINERAL RESOURCES AND ORE RESERVES

Woodlawn Total Underground Mineral Resource 2017 (ASX Release 13 Nov 2017)  
(7% ZnEq cog for Polymetallic and 1% Cu cog for Copper)

## Indicated + Measured Mineral Resource

			Tonnes Mt	ZnEq %	Zn %	Cu %	Pb %	Au g/t	Ag g/t
All Lenses	Polymetallic	Ind+Mea	2.7	21.6	10.9	1.5	4.0	0.7	79
All Lenses	Copper	Ind+Mea	1.9	9.7	0.7	2.6	0.1	0.2	14
<b>Total</b>	<b>Combined</b>	<b>Ind+Mea</b>	<b>4.6</b>	<b>16.7</b>	<b>6.7</b>	<b>1.9</b>	<b>2.4</b>	<b>0.5</b>	<b>52</b>

## Inferred Mineral Resource

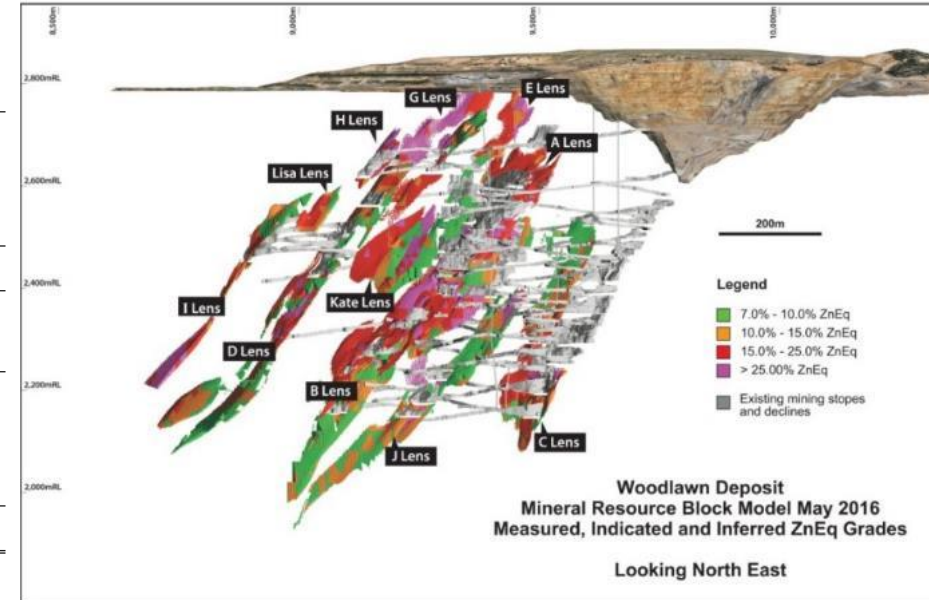
			Tonnes Mt	ZnEq %	Zn %	Cu %	Pb %	Au g/t	Ag g/t
All Lenses	Polymetallic	Inf	1.9	16.9	7.3	1.5	3.0	0.8	61
All Lenses	Copper	Inf	0.7	9.2	0.7	2.5	0.1	0.2	12
<b>Total</b>	<b>Combined</b>	<b>Inf</b>	<b>2.6</b>	<b>14.9</b>	<b>5.6</b>	<b>1.8</b>	<b>2.2</b>	<b>0.6</b>	<b>48</b>

## Total Mineral Resource

			Tonnes Mt	ZnEq %	Zn %	Cu %	Pb %	Au g/t	Ag g/t
All Lenses	Polymetallic	Ind+Mea+Inf	4.6	19.7	9.4	1.5	3.6	0.7	71.6
All Lenses	Copper	Ind+Mea+Inf	2.6	9.6	0.7	2.6	0.1	0.2	13.5
<b>Total</b>	<b>Combined</b>	<b>Ind+Mea+Inf</b>	<b>7.2</b>	<b>16.0</b>	<b>6.3</b>	<b>1.9</b>	<b>2.3</b>	<b>0.5</b>	<b>50.6</b>

## Woodlawn Underground Mineral Reserve Estimate 2016

Type	Reserve Category	Quantity (Mt)	ZnEq(%)	Zn(%)	Cu(%)	Pb(%)	Au(g/t)	Ag(g/t)
Polymetallic	Proven	0						
Polymetallic	Probable	1.8	16	8.1	1.2	2.9	0.56	57
Copper	Proven	0						
Copper	Probable	0.96	8.8	0.61	2.4	0.13	0.23	14
<b>Total</b>	<b>Probable</b>	<b>2.8</b>	<b>14</b>	<b>5.5</b>	<b>1.6</b>	<b>1.9</b>	<b>0.45</b>	<b>42</b>



# TAILINGS – MINERAL RESOURCES AND RESERVES

## Mineral Resource Estimate - Woodlawn Retreatment Project (2016)

Resource Category	Grades						
	Quantity (Mt)	ZnEq (%)	Zn (%)	Cu (%)	Pb (%)	Au (g/t)	Ag (g/t)
<b>Measured + Indicated Mineral Resources</b>							
North Dam	2.7	6.0	2.40	0.42	1.30	0.27	34
South Dam	3.3	6.0	2.50	0.46	1.20	0.25	27
West Dam	3.8	6.5	2.0	0.62	1.40	0.40	35
<b>Total Mea+ Ind</b>	<b>9.8</b>	<b>6.2</b>	<b>2.30</b>	<b>0.51</b>	<b>1.3</b>	<b>0.31</b>	<b>32</b>
<b>Inferred Mineral Resources</b>							
North Dam	0.2	6.2	2.40	0.42	1.30	0.27	34
South Dam	0.9	5.6	2.30	0.48	1.20	0.25	24
West Dam	0.0	-	-	-	-	-	-
<b>Total Inferred</b>	<b>1.1</b>	<b>5.8</b>	<b>2.30</b>	<b>0.47</b>	<b>1.20</b>	<b>0.25</b>	<b>27</b>
<b>Total Mea+Ind+Inf</b>	<b>10.9</b>	<b>6.2</b>	<b>2.30</b>	<b>0.51</b>	<b>1.29</b>	<b>0.30</b>	<b>32</b>



## Woodlawn Tailings Mineral Reserve Estimate 2016

Reported with no cut-off grade applied

Reserve Category	Quantity (Mt)	ZnEq(%)	Zn(%)	Cu(%)	Pb(%)	Au(g/t)	Ag(g/t)
Proven	6.4	6.0	2.2	0.5	1.3	0.29	31
Probable	3.2	6.0	2.1	0.5	1.3	0.33	32
<b>Total (Proven + Probable)</b>	<b>9.5</b>	<b>6.0</b>	<b>2.2</b>	<b>0.5</b>	<b>1.3</b>	<b>0.31</b>	<b>31</b>