



# Carrapateena Project Update – AusIMM Adelaide

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All figures are expressed in Australian dollars unless stated otherwise.

# Compliance Statements

## Prominent Hill Production Targets Cautionary Statement

Production Targets for the Prominent Hill Underground only are based on:

Proved Ore Reserve 44%  
Probable Ore Reserve 47%  
Measured Mineral Resource 1%  
Indicated Mineral Resource 3%  
Inferred Mineral Resource 5%

Production Targets for the entire Prominent Hill asset are based on:

Proved Ore Reserve 47%  
Probable Ore Reserve 45%  
Measured Mineral Resource 1%  
Indicated Mineral Resource 2%  
Inferred Mineral Resource 5%

The modifying factors used in the estimation of the Ore Reserve were also applied to the Mineral Resources in the generation of the production target. 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 targets will be realised.

The Ore Reserve and Mineral Resource Estimate underpinning these Production Targets were prepared by a Competent Person in accordance with the JORC Code 2012. The production targets are the result of detailed studies based on the actual performance of our existing mines and processing plant. These studies include the assessment of mining, metallurgical, ore processing, marketing, government, legal, environmental, economic and social factors.

## Prominent Hill Resources and Reserves

The information on Prominent Hill Mineral Resources and Ore Reserves in this presentation is extracted from the document entitled "Prominent Hill 2017 Mineral Resource and Ore Reserve Statement and Explanatory Notes" which is annexed to the ASX Release entitled "Prominent Hill underground Reserve growth continues, mine life extended to 2029" released on 21 November 2017 and available at [www.ozminerals.com/media/asx](http://www.ozminerals.com/media/asx). OZ Minerals confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates 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. OZ Minerals confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

# Compliance Statements

## **Carrapateena Production Targets Cautionary Statement**

Production targets for Carrapateena are based on:

Probable Ore Reserves:	94%
Inferred Mineral Resources:	6%

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

The Ore Reserve and Mineral Resource estimates underpinning the production targets were prepared by a Competent Person in accordance with the JORC Code 2012. The material assumptions used in the estimation of the production targets and associated financial information referred to in this presentation can be found in the Carrapateena Feasibility Study Update released on 24 August 2017, the Restated 2016 Carrapateena Mineral Resource Statement as at 18 November 2016 released on 9 December 2016, and the Carrapateena Ore Reserve Statement as at 4 August 2017 released on 24 August 2017.

## **Carrapateena Resources and Reserves**

The information on the 134 Mt Carrapateena Mineral Resource in this presentation is extracted from the document entitled "Carrapateena Project Mineral Resource Statement and Explanatory Notes as at 18 November 2016" released on 9 December 2016 and available at [www.ozminerals.com/media/asx](http://www.ozminerals.com/media/asx). OZ Minerals confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. OZ Minerals confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

The information on Carrapateena Ore Reserves in this presentation is extracted from the document entitled "Carrapateena Project Ore Reserve Statement and Explanatory Notes as at 4 August 2017" released on 24 August 2017 and available at [www.ozminerals.com/media/asx](http://www.ozminerals.com/media/asx). OZ Minerals confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. OZ Minerals confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

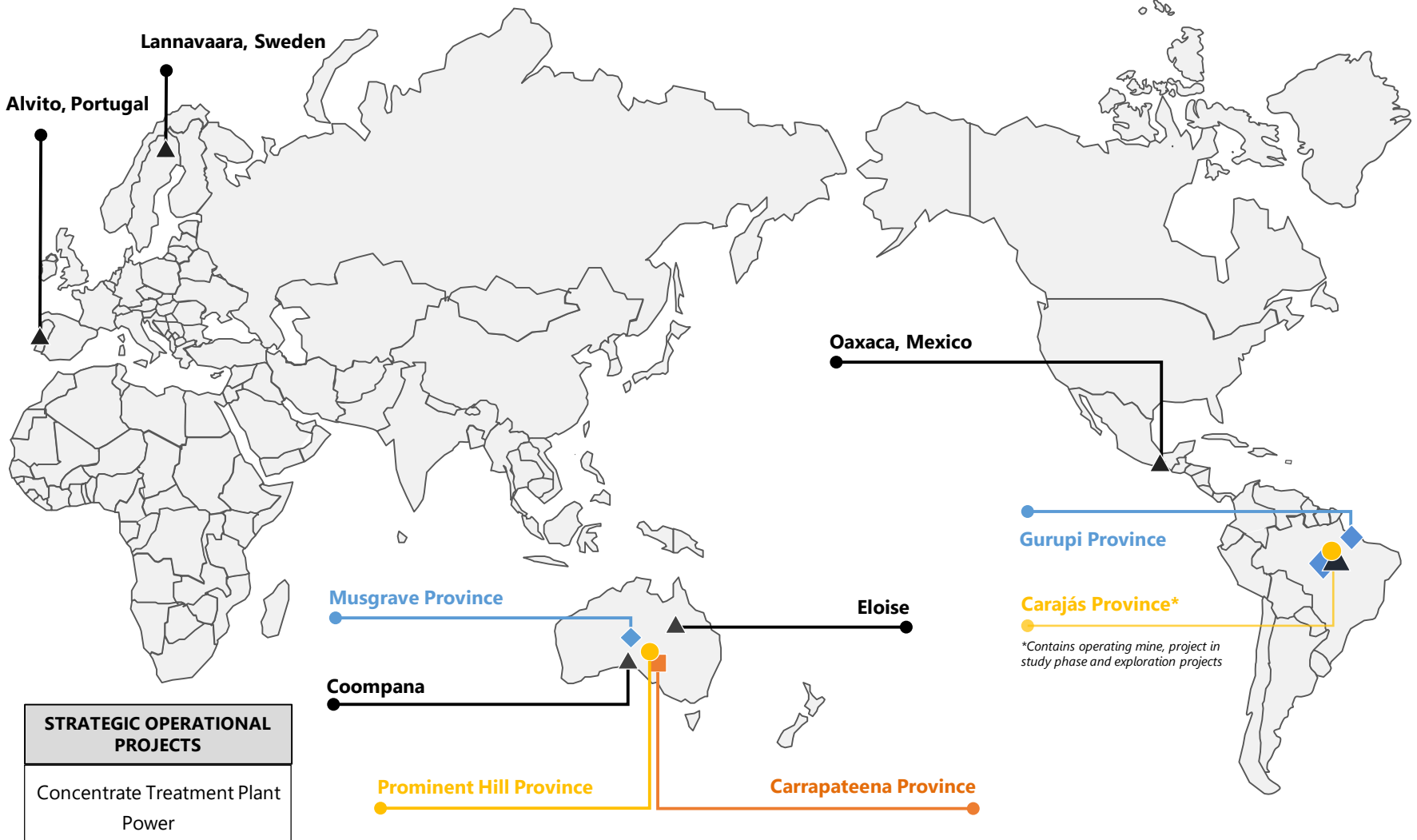
# OZ Minerals Overview

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# Company Snapshot



# A Modern Mining Company Strategy

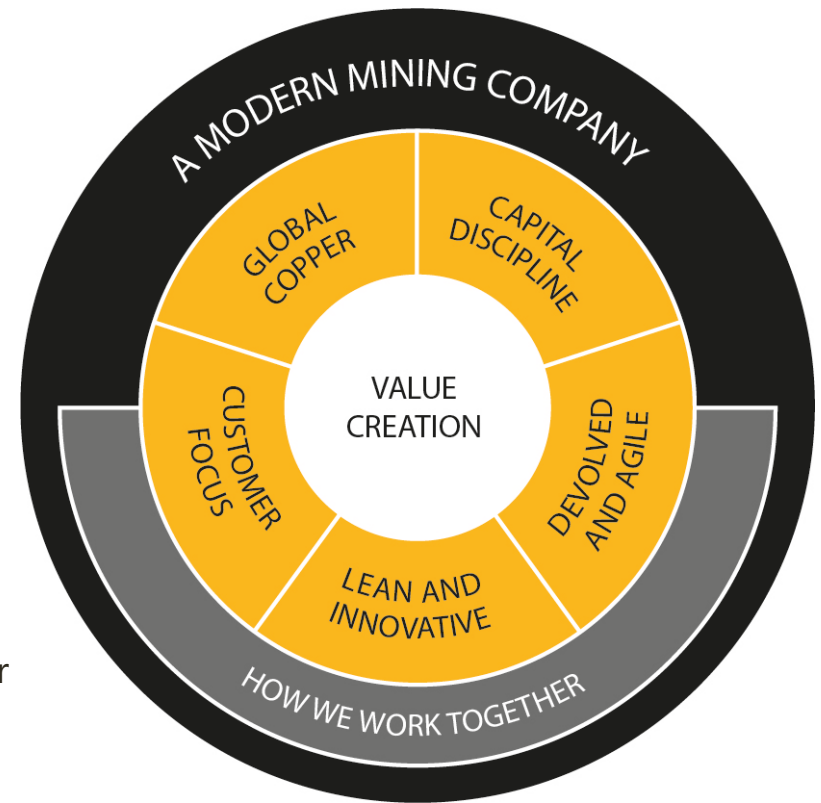
Reflecting the next phase of value creation growth

## What we do

- **Global copper** – Copper as driver of value; strategic exposure to base and precious metals
- **Capital discipline** – Spending on things we need that represent best value and make a difference
- **Devolved and agile** – Embracing a devolved model to unlock discretionary effort and value; assets that easily bolt on or off
- **Lean and innovative** – Delivering bottom half cost curve and superior operating performance; lean principles to drive innovative solutions
- **Customer focus** – Leveraging global asset base to develop partnerships with customers

## How we work

- Driving inclusion and diversity, resulting in superior performance
- Working safely, unlocking innovation, embracing change and consistently delivering
- Our people are our ambassadors



# Carrapateena Project

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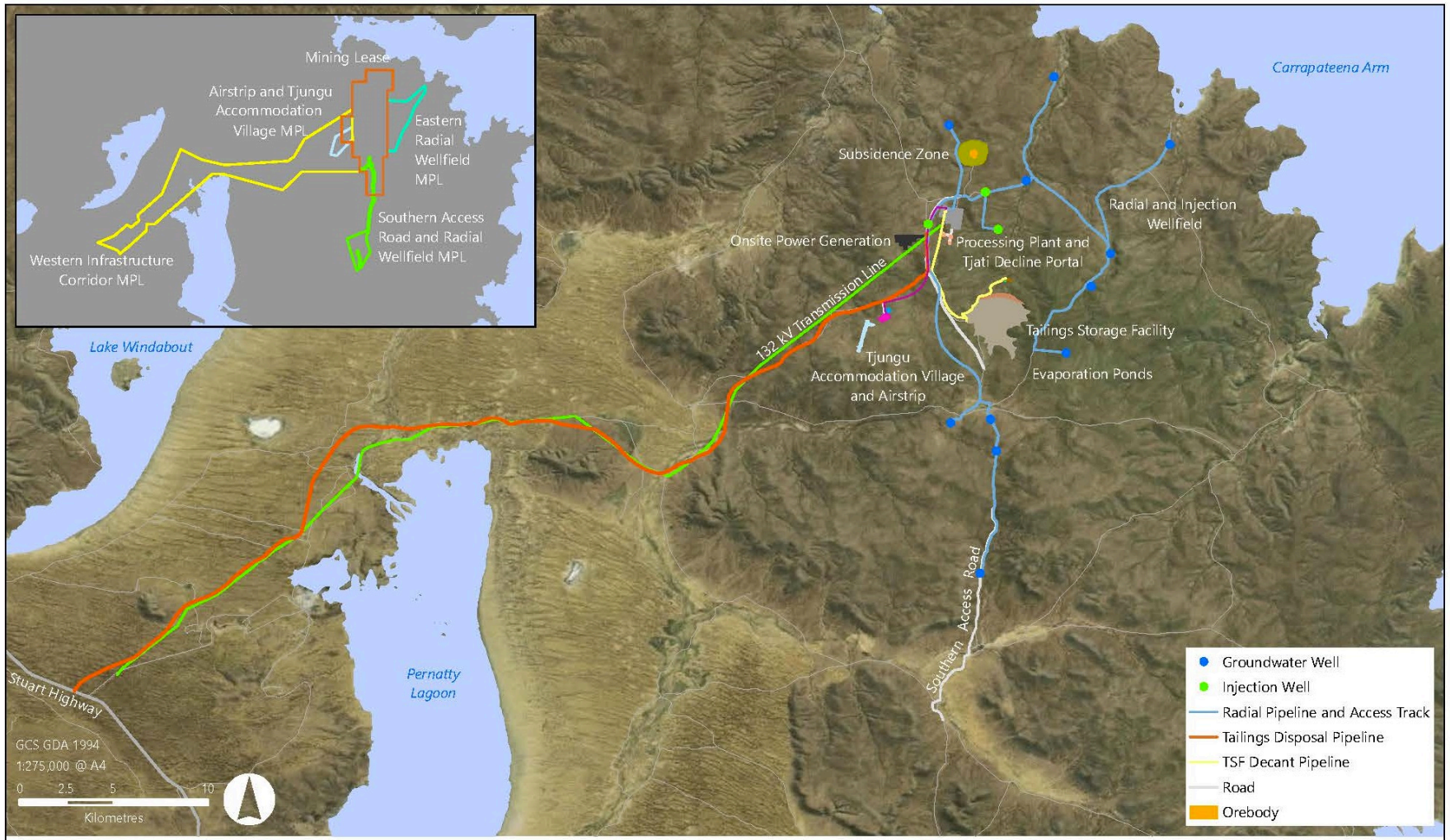


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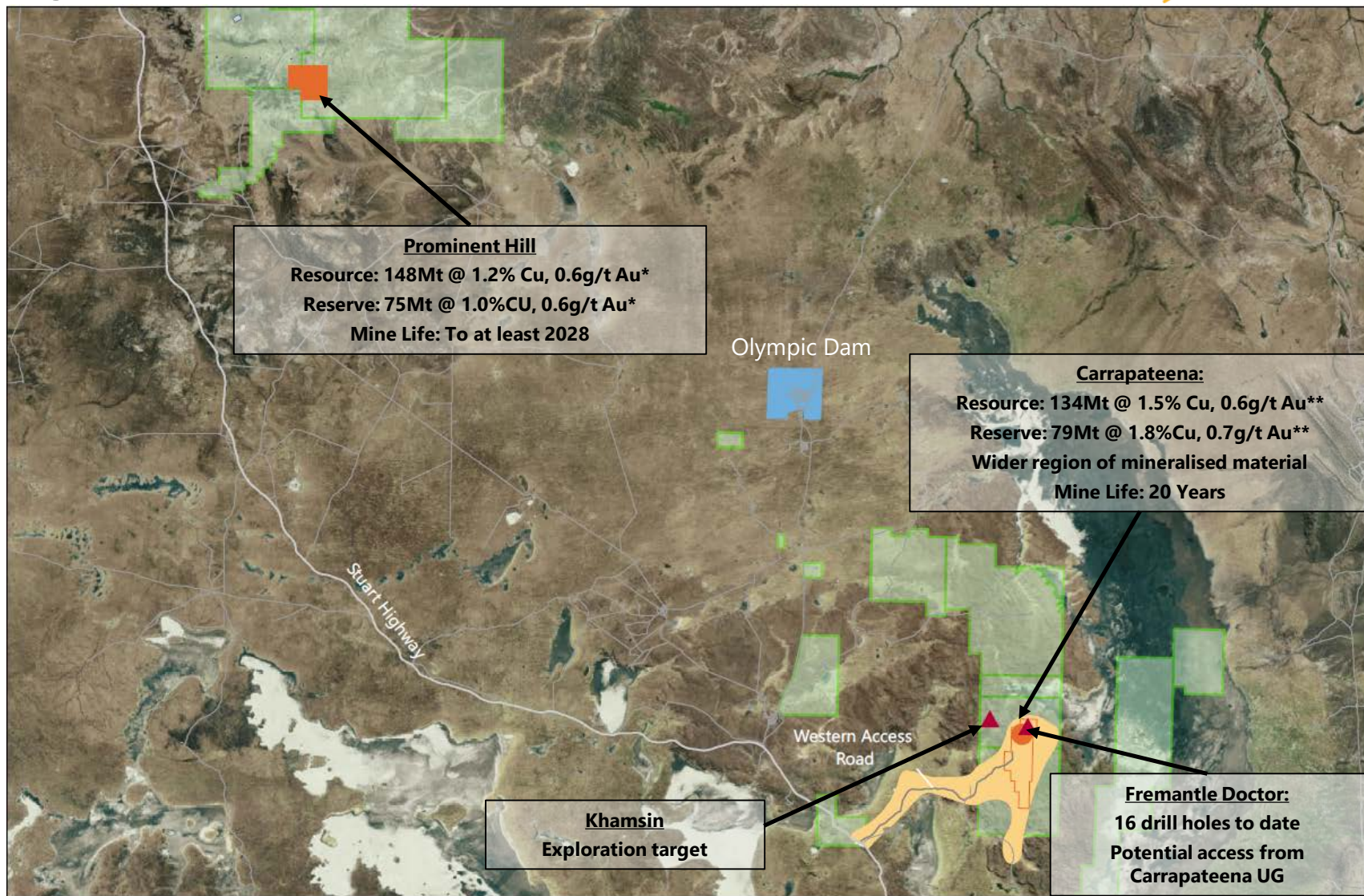


# Carrapateena Project Location

## Site and regional infrastructure overview



# Regional Mineralisation



\* Please read in conjunction with the Prominent Hill Mineral Resource and Ore Reserve estimate compliance statements on slide 3

\*\* Please read in conjunction with the Carrapateena Mineral Resource and Ore Reserve estimate compliance statements on slide 4

# Infrastructure Development

## Carrapateena Project Update

### / Earthworks for processing plant



### / Airstrip complete



### / Recent progress

- Earthworks for processing plant and non process infrastructure
- Borrow pit for construction works
- Stage two of Tjungu village commissioned and occupied
- Airstrip construction completed
- Permanent fibre optic cable installation commenced
- Construction of high voltage powerline and associated infrastructure commenced

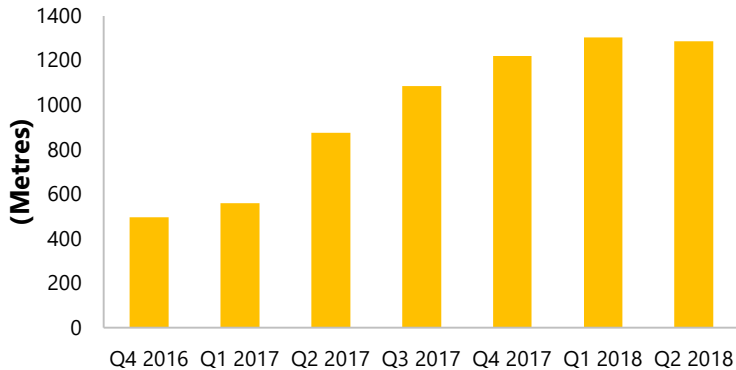
### / Upcoming activity

- Ongoing process plant and non-process infrastructure construction
- Radial wellfield commissioning

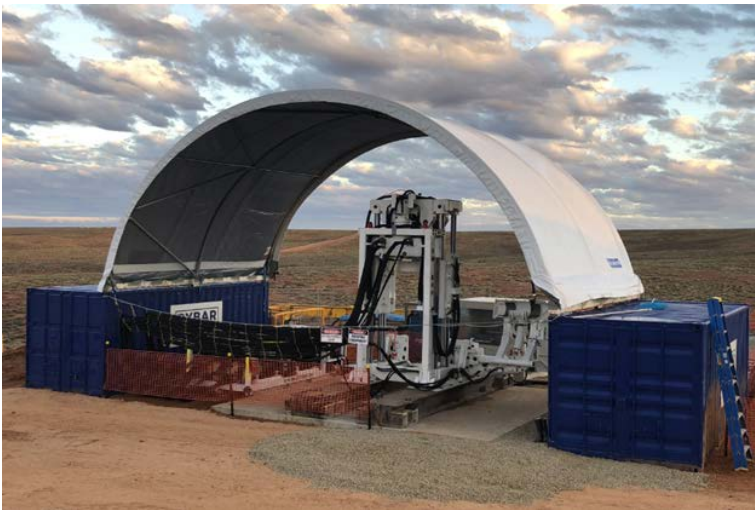
# Mining Development

## Carrapateena Project Update

### / Quarterly decline advance



### / Raisebore installation commenced



### / Recently Completed

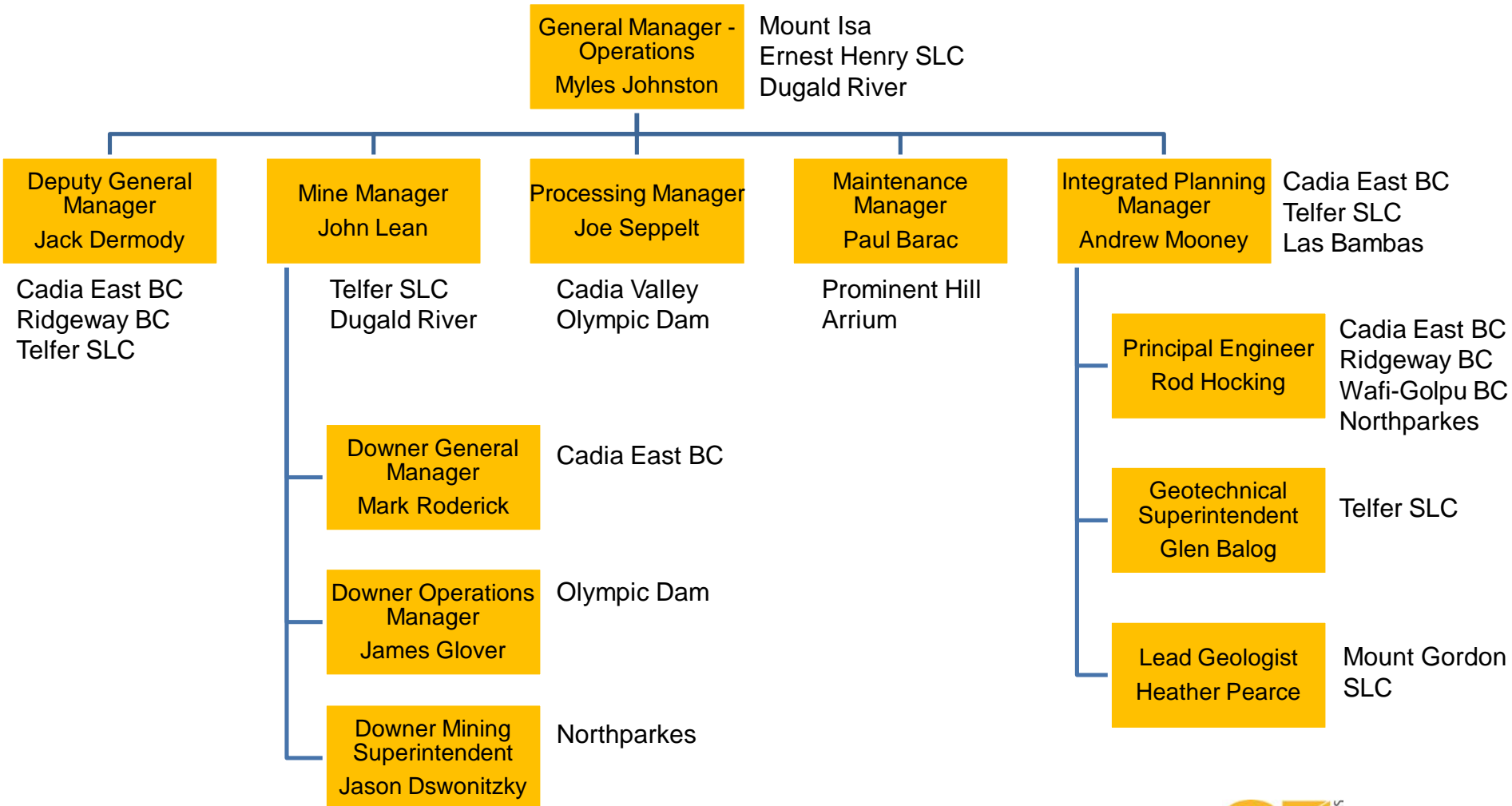
- Total decline development Q2 2018 at 6,825 metres (3,015 metres to face of Tjati decline); vertical depth 435 metres
- Successful transition to Downer EDI
- Decline development has progressed through Woomera Shale
- Ventilation raiseboring commenced, to support mine development

### / Upcoming Activity

- Commencement of crusher access development to enable future underground materials handling installation
- Installation of first ventilation rise and associated infrastructure

# Operational Readiness Underway

## Carrapateena Project Update



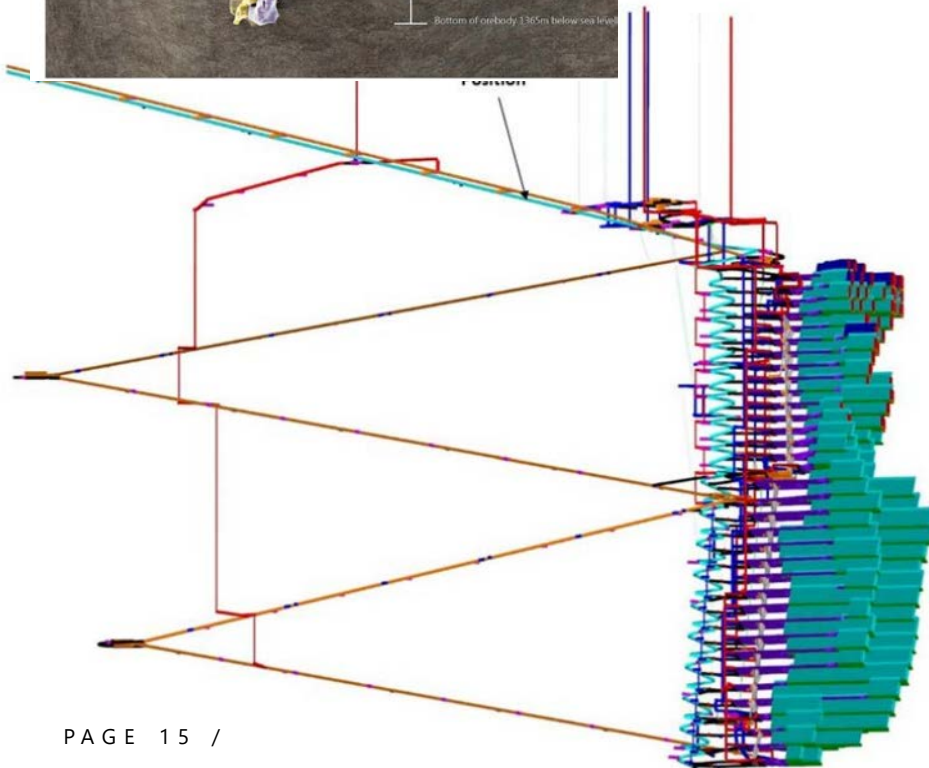
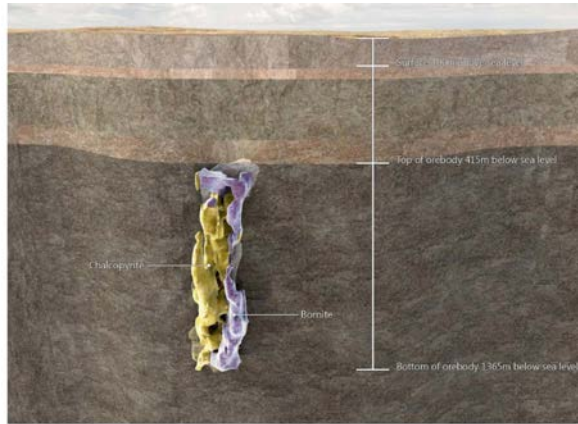
# Carrapateena Sub Level Cave



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# Carrapateena Mine

## Sub Level Cave

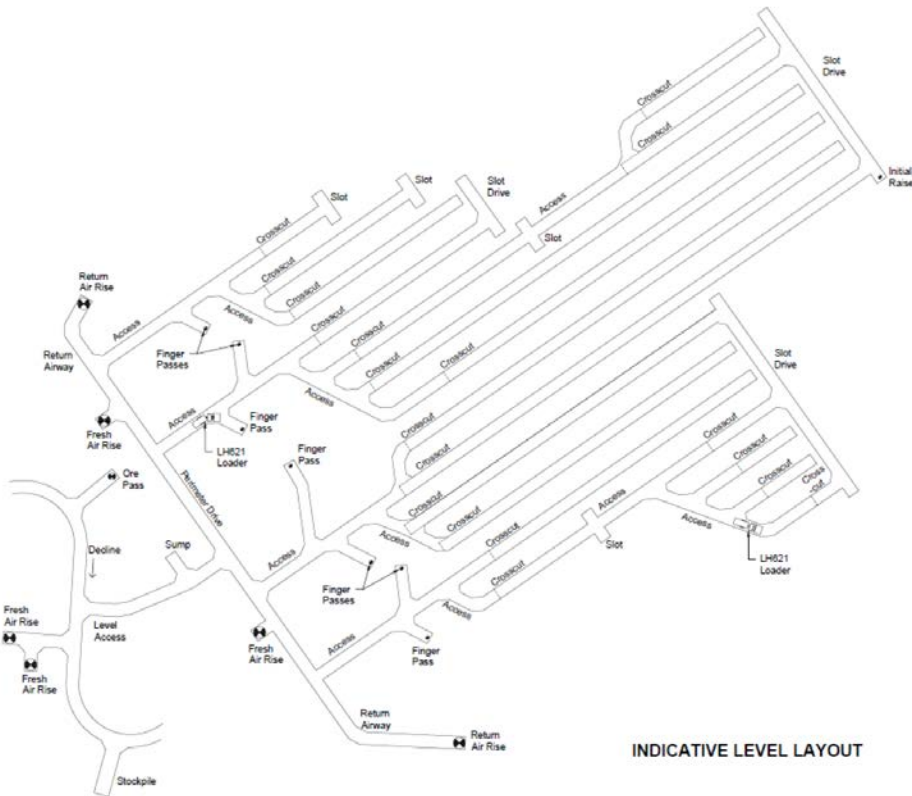


- / Sub Level Cave (SLC) mining methodology – focused on optimising ore extraction and minimising underground development
- / 20 Year mine life from a plant operating at 4.25Mtpa after ~18 month ramp up\*
  - Ore Reserve: 79Mt @ 1.8%Cu, 0.7g/t Au\*
  - Average annual production: 65kt copper and 67koz gold\*
- / Dual decline – an access decline and a conveyor decline.
  - ~500m of waste rock overburden
  - 25m production level spacing
  - Three crusher locations

\* These production targets must be read in conjunction with the production cautionary statement on slide 4

# Mining Level Layout

## Sub Level Cave



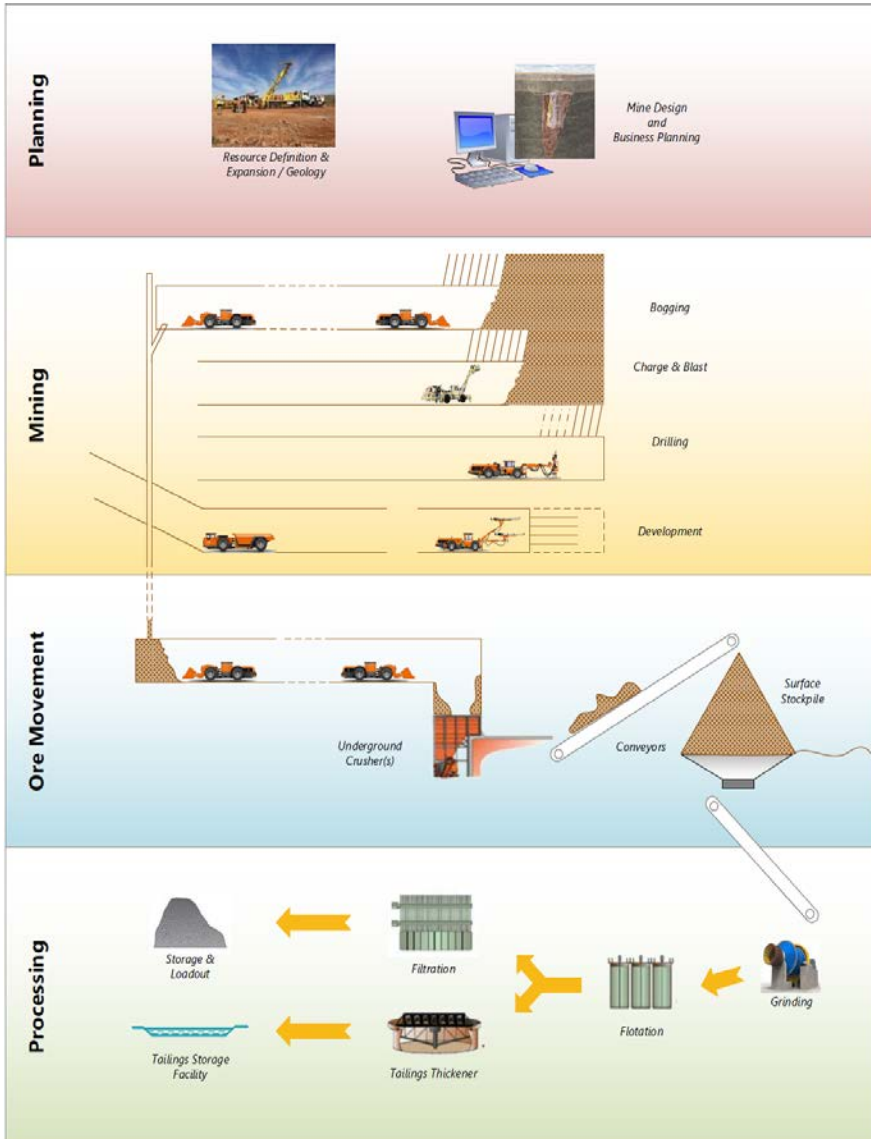
INDICATIVE LEVEL LAYOUT

- / Designing a suitable level footprint to increase the hydraulic radius and allow caving to occur
- / Level layouts to improve productivity and reduce traffic interactions along the perimeter drives, and support loader automation
- / Production Management Plan:
  - Operating guidelines and parameters for SLC mining operations.
  - Assigns responsibilities and authority levels to mining personnel.
  - Trigger Action Response Plans (TARPs)



# Production Material Flow

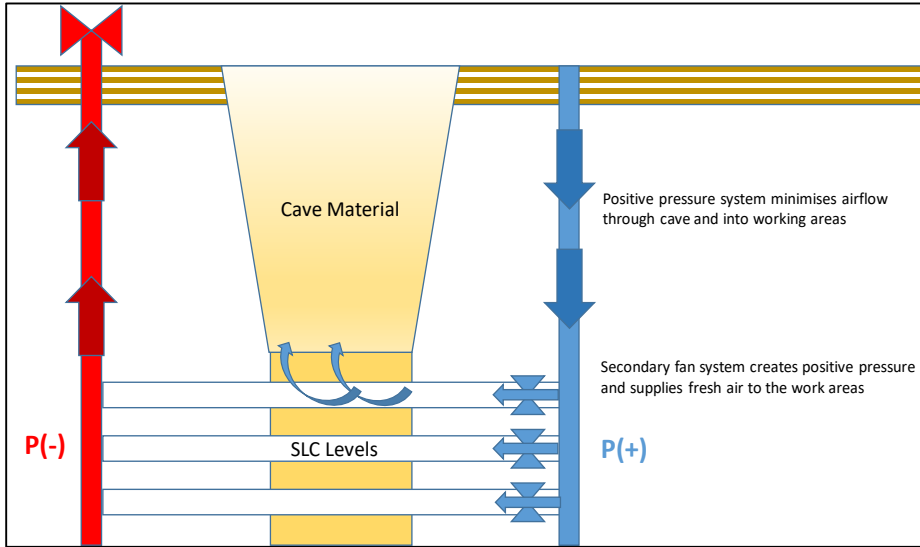
## Sub Level Cave



- / Ore blanket created at top of cave
  - First level 50% draw
  - Second level 70% draw
  - Third level 90% draw
    - Assist in managing dilution and other caving hazards.
- / Ore material cave flow modelling by [Power Geotechnical PGCA](#) software
- / Optimised SLC cut-off grade to maximise the IRR and NPV of the Project
- / Cost model and benchmarks against comparable Australian SLC operations
- / Mine to mill optimisation process

# Mine Ventilation

## Sub Level Cave

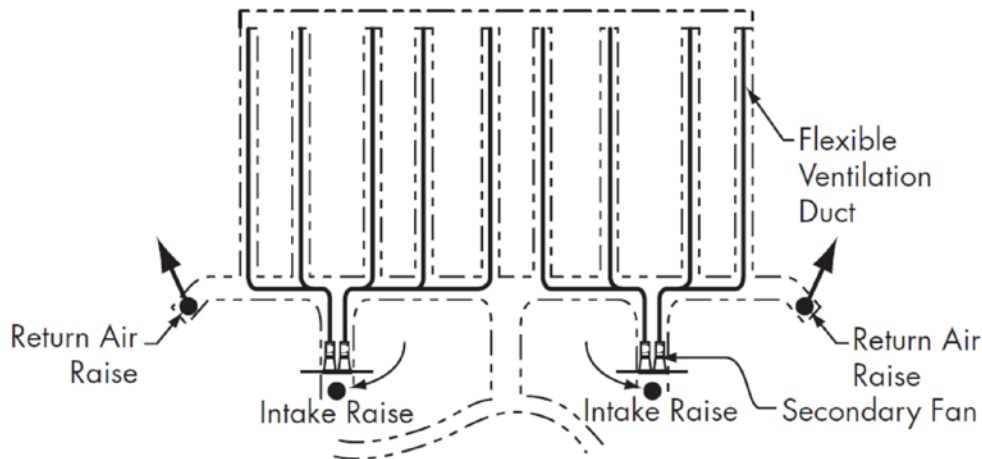


/ Primary exhaust fans on the surface

- Three exhaust return air raises

/ Fresh air 'back bone'

- Two fresh air raises
- Secondary fans installed in a wall of the fresh air backbone, with a ventilation on demand system
- Provide uncontaminated clean air to working areas
  - As per Telfer SLC, WA

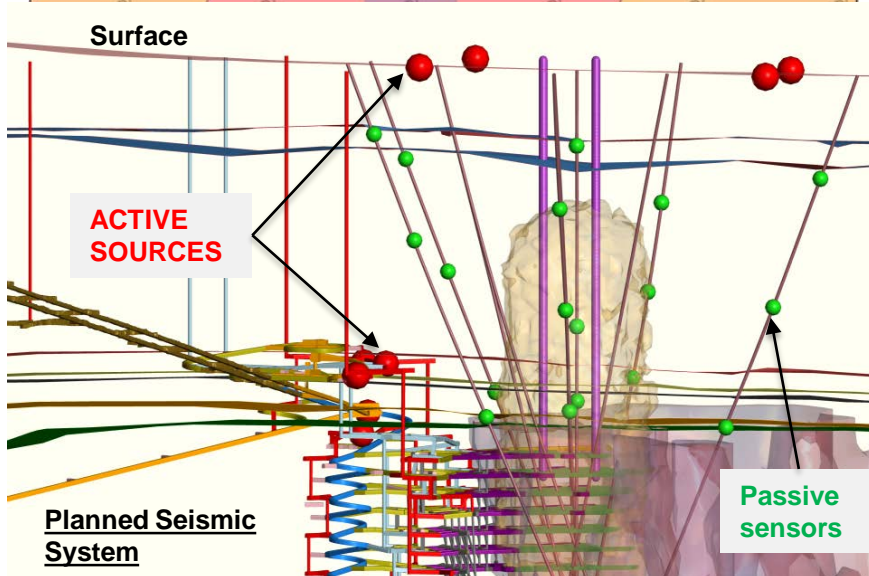
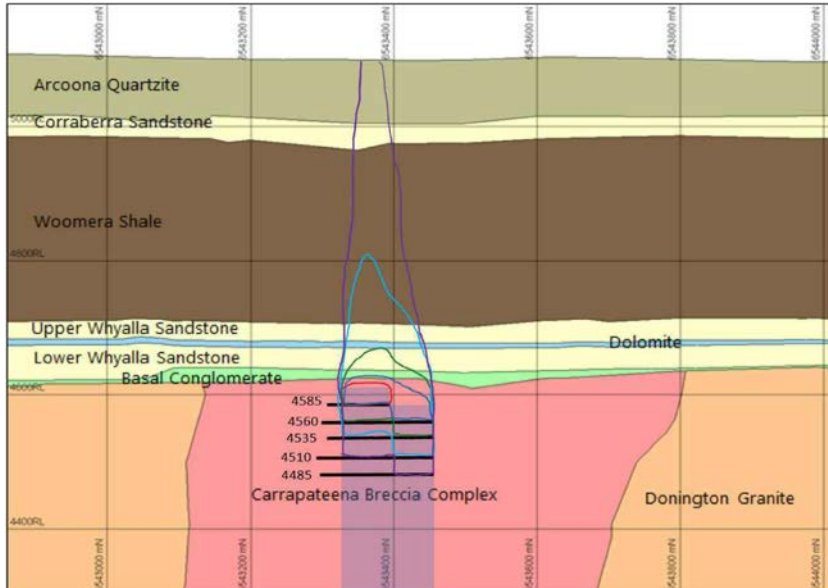


Mine cooling plant

- When production is below a depth of 930m (~2026)

# Cave Management

## Sub Level Cave



- / Cave Monitoring Plan:
  - Manage caving hazards so early warning signs are observed and addressed
    - Early cave propagation to surface
    - Operational cave management
    - Flow and dilution management

- / Cave Management
  - Active seismic system
  - Open drill hole monitoring
  - Network smart markers
  - Elexcon cave tracker markers
  - Metso smart tag markers

- / OZ Minerals presenting a paper at the [Caving 2018](#) Conference on 'Early Cave Management'

# Carrapateena Expansion

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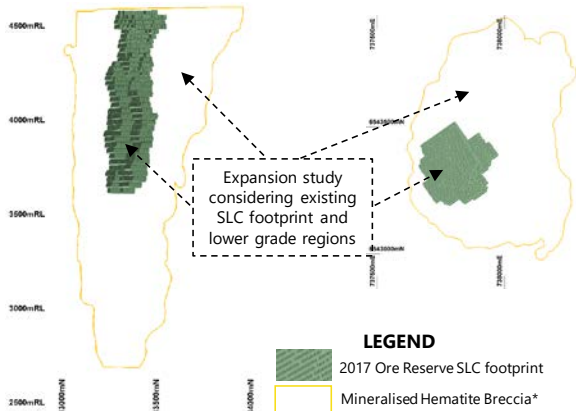


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# Expansion Study Team

## Carrapateena Expansion

### / Resource Optimisation Studies

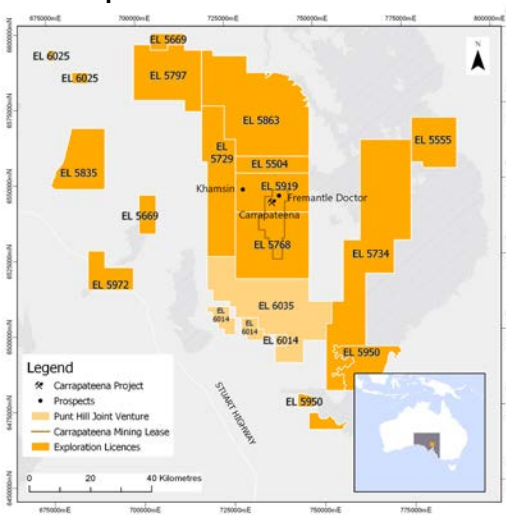


/ Carrapateena Expansion Study Team established with a focus on Life of Province Planning

/ Increase value from known mineralisation and wider region potential

- Studies relating to caving engineering, infrastructure, mining and geotechnical elements

### / Exploration Tenements

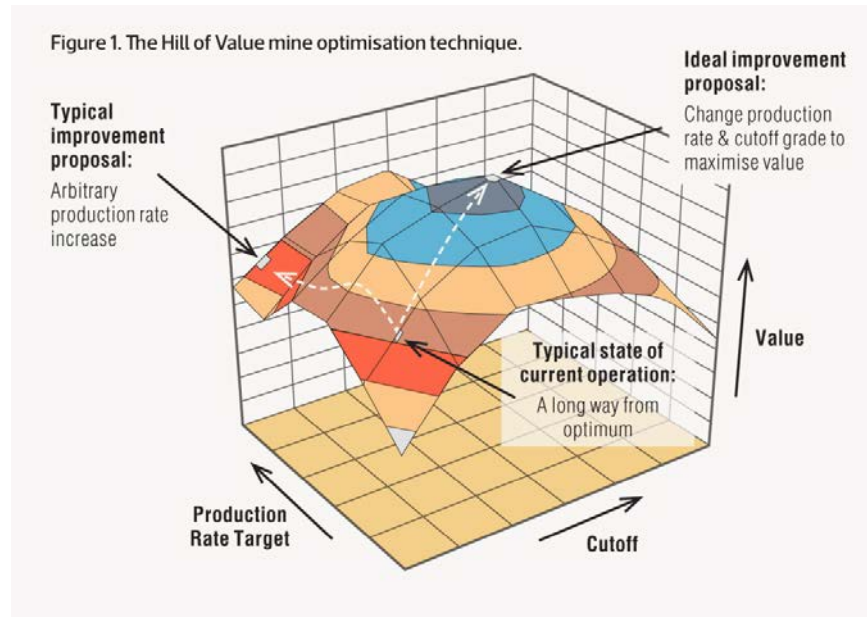


/ Options under consideration for optimisation of the Carrapateena Resource include:

- Sub Level Cave footprint and flow optimisation
- Sub Level Cave to Block Cave Transitions for lower half of orebody
- Block Cave of lower grade regions

# Hill of Value – AusIMM Bulletin

## Carrapateena Expansion



/ [AusIMM Bulletin – ‘The role of mine planning in high performance’ \(Hall, 2015\)](#)

/ Using ‘Hill of Value’ approach for evaluation of regional mineralisation when developing the Life of Province Plan.

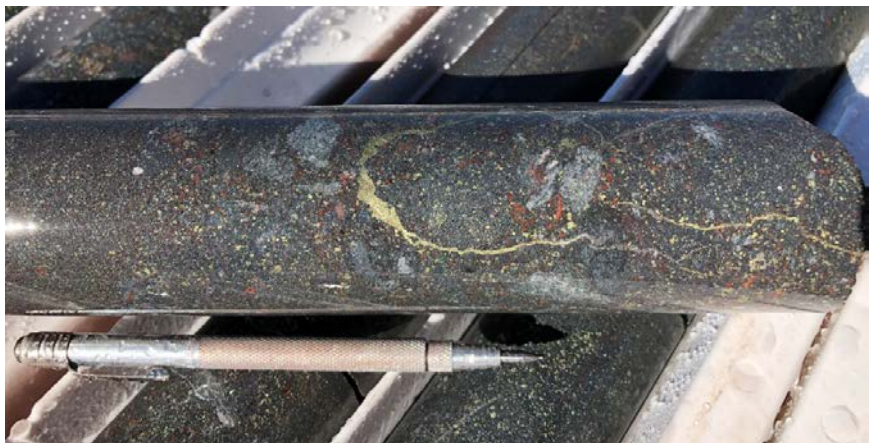
/ Hill of Value scenarios test:

- Site infrastructure requirements
- Regional infrastructure capacity
- Production rate
- Cut off grade
- Capital costs
- Operating costs

## Province Drill Activity

### Carrapateena Expansion

- / Chalcopyrite mineralisation at Fremantle Doctor



- / Bornite mineralisation at Khamsin



- / ~6,000 metres of exploration drilling of regional targets on OZ Minerals leases to commence H2

- Infill and extension diamond drilling programs at Khamsin and Fremantle Doctor deposits
- Punt Hill earn-in exploration drilling to commence H2

- / Resource modelling of Khamsin and Fremantle Doctor

- / Carrapateena Expansion Scoping Study 2019

# Summary

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