

Austmine 2015  
Mining Innovator  
of the Year



# CARBINE RESOURCES LIMITED

## Mount Morgan Gold & Copper Project

Austmine Smart Mining Series Presentation:  
Targeting Near Term Mine Development



July 2015

# DISCLAIMER

## Mineral Resources

The Indicated and Inferred Resources referred to in this presentation were presented by Norton Gold Fields Limited at the Mining 2009 Resource Convention (Brisbane). The presentation was released to the ASX on 28 October 2009 and is available for viewing on the Norton Gold Fields website ([www.nortongoldfields.com.au](http://www.nortongoldfields.com.au)). The resources were stated to have been prepared in accordance with the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code") by Competent Person Troy Lowien, Resource Geologist, of consultants Coffey Mining Pty Ltd.

## Exploration Targets

Carbine has identified an Exploration Target at the site comprising low grade mullock dumps, slag dumps and retreated tailings from previous operations. In the Exploration Target table of this presentation a range of approximate tonnage and grade has been compiled from extensive review of historic reports and studies by previous owners. Carbine has not yet completed any exploration activity on the Exploration Target. The potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource, and it is uncertain if further exploration will result in the estimation of a Mineral Resource. The basis for the estimates of tonnage and grade include historic production records, various topographic and volume surveys, drilling by various methods, grab and channel sampling and small scale bulk sampling. Carbine proposes to further evaluate the Exploration Target during the next year by drilling and possible bulk testing to provide material for additional metallurgical test work and to verify tonnage and grade.

## Competent Person Statements

The information in this report that relates to the recently completed exploration results is based on and fairly represents information compiled by Dr Marat Abzalov, who is a geological consultant to Carbine Resources Limited. Dr Abzalov is a Fellow of The Australasian Institute of Mining and Metallurgy (FAusIMM) and he has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and the activity he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Dr Abzalov consents to the inclusion in the report of the matters based on information in the form and context in which it appears. Previous results were released to the ASX on 16 March and 20 April 2015 and have not materially changed since last reported.

The information in this report that relates to the Exploration Target is based on information compiled by Lance Govey, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Lance Govey is an independent geological consultant and has no association with Carbine Resources Limited other than being engaged for services in relation to the preparation of parts of this report. Lance Govey has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Lance Govey consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. This was initially release to the ASX on 13 November 2014 and has not materially changed since it was last reported.

The information in this report that relates to the Mineral Resources of the Mount Morgan Mine project was prepared in accordance with the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code") by Troy Lowien, Resource Geologist, of consultants Coffey Mining Pty Ltd, who is a Member of The Australasian Institute of Mining and Metallurgy ("AusIMM") and has a minimum of five years of experience in the estimation, assessment and evaluation of Mineral Resources of this style and is the Competent Person as defined in the JORC Code. Troy Lowien conducted the geological modelling, statistical analysis, variography, grade estimation, and report preparation. This report accurately summarises and fairly reports his estimations and he has consented to the resource report in the form and context in which it appears. This information was prepared and first disclosed under the JORC Code 2004. It has not been updated to comply with the JORC Code 2012 on the basis that the information has not materially changed since last reported on 28 October 2009.

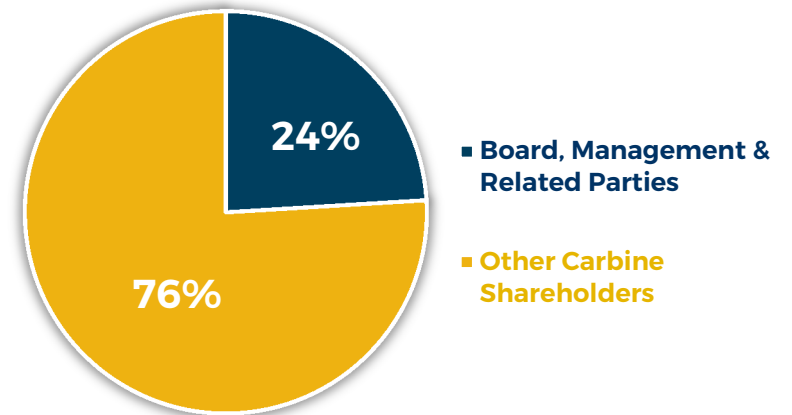
# CARBINE SNAPSHOT

Tightly held, strong cash position

## Share Price History



## Significant Shareholders



## Capital Structure

<b>Shares</b> (ASX: CRB)	140 million
<b>Unlisted Options</b> (\$0.05 - \$0.10)	25 million
<b>Market Capitalisation</b> (@ \$0.064/share)	\$9.0M
<b>Cash &amp; Deposits</b> (30 June 2015)	\$3.7M
<b>Enterprise Value</b>	\$5.3M

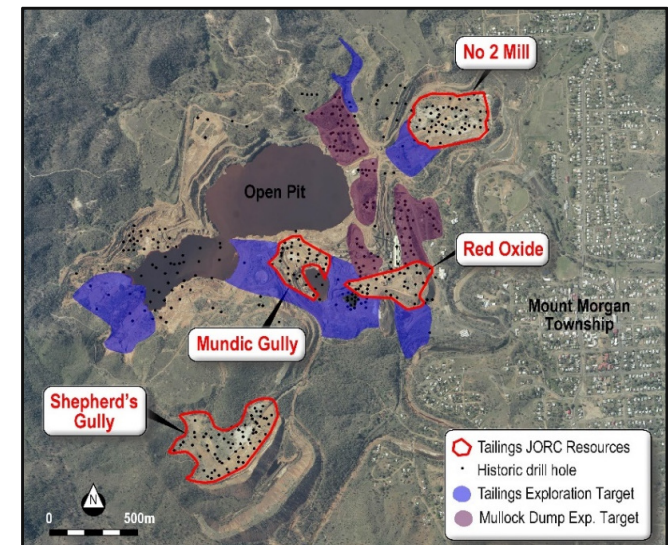
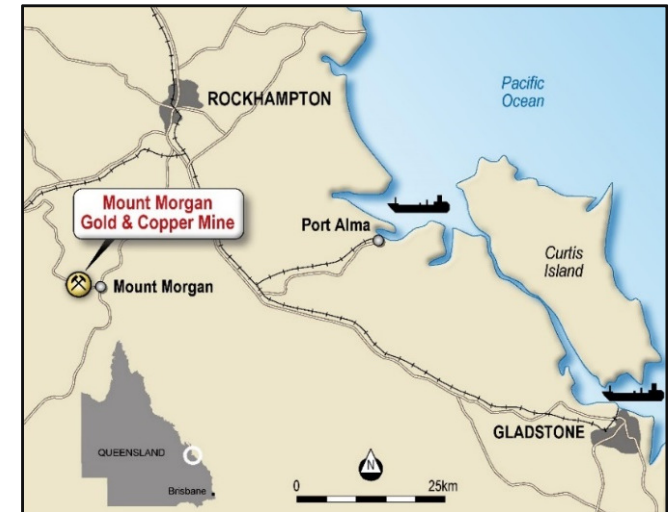
## Board & Management

<b>Patrick Walta</b>	Executive Director
<b>Evan Cranston</b>	Non-Executive Director
<b>Tom Bahen</b>	Non-Executive Director
<b>Stephen Dobson</b>	Non-Executive Director
<b>Rod Smith</b>	Chief Metallurgist
<b>Russell Dann</b>	Project Specialist

# MOUNT MORGAN MINE

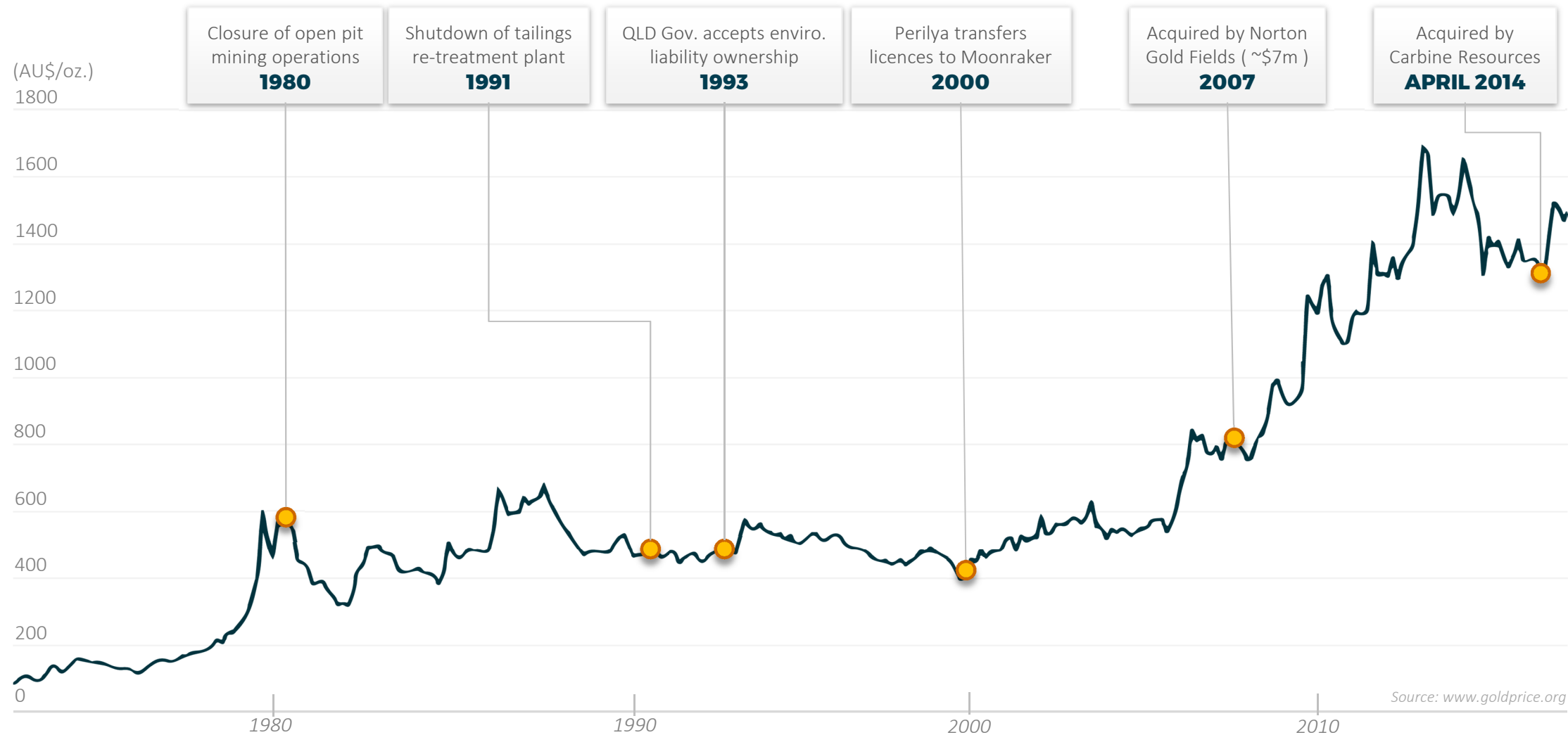
## Overview

- Significant historical gold mine on central Queensland coast
- Close proximity to infrastructure and cities, ports & rail
- Primary ore deposit mined for ~100 years
- Production 8.4Moz Gold, 400kt Copper & 1.2Moz Silver
- ~40Mt mineralised tailings deposited on site
- Significant environmental legacy, 100% owned by QLD government



# GOLD PRICE TIMELINE

## Mount Morgan Mine development history



### PRIMARY ORE MINING 1882 - 1980

- 50Mt ore mined & processed
- Production: 8.4M oz. Au, 400kt Cu, 1.2M oz. Ag

### HISTORICAL TAILINGS RETREATMENT 1881 - 1991

- ~28Mtpa reprocessed via 3Mtpa CIL plant
- Excess cyanide consumption caused by soluble copper

### PERILYA LTD 1992 - 2000

- Explored for ore body extensions
- Identified large in-situ sulphide resource, remains underexplored

### MOONRAKER PTY LTD 2000 - 2007

- Tailings processing testing
- Applied convention CIL tech.
- Soluble copper issue remained

### NORTON GOLD FIELDS LTD 2007 - 2014

- Secondary asset to Paddington
- 2009 GFC – financial issues
- 2010 DFS demonstrates viable project, but NGF focus elsewhere



# SIGNIFICANT RESOURCE BASE

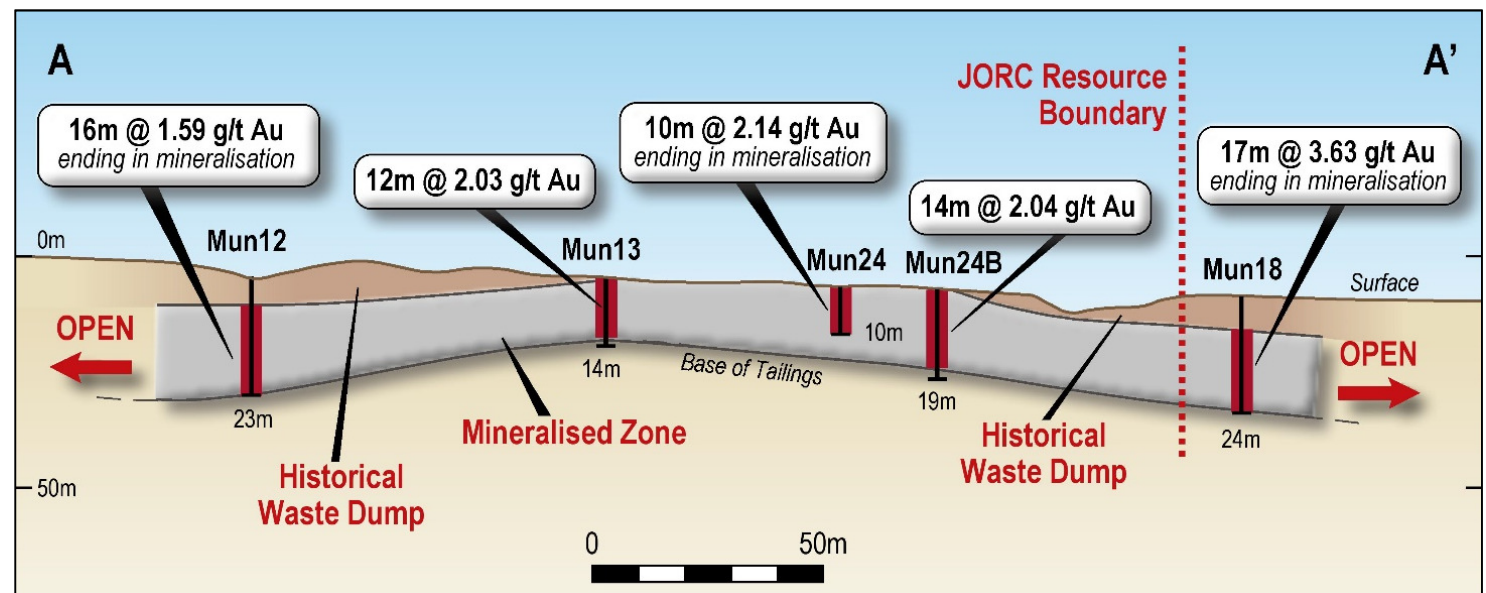
+1M oz. Au remaining in tailings

Resources	Tonnes		Au (g/t)		Cu (%)		Au (oz)		Cu (t)	
Indicated	2.49 Mt		1.59		0.16%		127,000		3,900	
Inferred	5.86 Mt		1.07		0.14%		202,000		8,400	
<b>TOTAL JORC</b>	<b>8.35 Mt</b>		<b>1.23</b>		<b>0.15%</b>		<b>329,000oz</b>		<b>12,300t</b>	
<b>TOTAL EXP. TARGET*</b>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
	<b>31.8 Mt</b>	<b>39.8 Mt</b>	<b>0.67</b>	<b>0.79</b>	<b>0.11%</b>	<b>0.19%</b>	<b>690,000oz</b>	<b>1,015,000oz</b>	<b>36,500t</b>	<b>76,500t</b>

## 2015 Drilling Results

- Significant intercepts outside of existing JORC resources
- Opportunity to access high grade resources during early operations

\* The potential quantity and quality in these exploration targets are conceptual in nature, there has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource



# TAILINGS REPROCESSING

Historical operations & technical development

## 1981 – 1991: Tailings Reprocessing Operations

- 28Mt tailings reprocessed via 3Mtpa CIL plant
- Excess cyanide consumption caused by soluble copper
- Ops ceased due to ↑ sol. copper and ↓ gold price

## 2000 – 2007: Moonraker Tailings Feasibility

- Developed flowsheet to reprocess remaining 12Mt
- Conventional CIL technology, attempt to mask Cu
- Soluble copper issue remained

## 2010/11: Norton Gold Fields Tailings Feasibility

- CIL flowsheet taking advantage of higher gold prices
- Additional pyrite con. recovery (2nd revenue stream)
- Demonstrated viable project with +ve NPV
- Financial issues & lack of focus hampered development



*The Mount Morgan Mine has remained dormant for ~25 years*

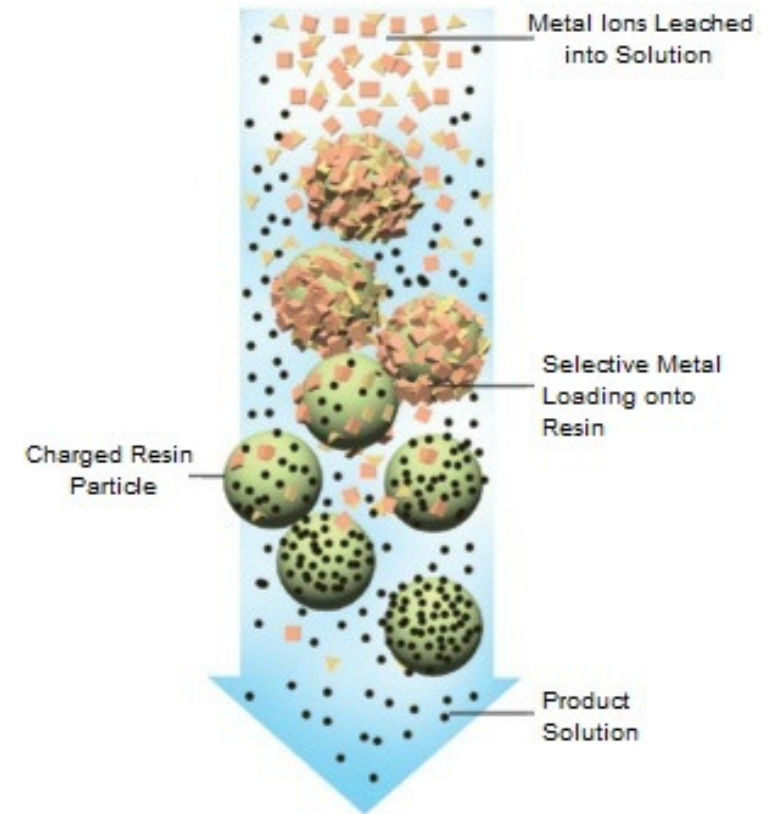
# UNLOCKING THE VALUE

## Carbine's Process Solution: Reverse Leach IX - CIL

- Application of ion exchange technology to solve soluble copper issue
- IX technology provides:
  - Selective removal of copper prior to gold CIL extraction
  - Decreased cyanide consumption in gold circuit
  - Additional revenue stream from copper production
  - Increased gold recoveries (reduced Cu competition)



*Operating 4,500m<sup>3</sup>/hr IX facility  
in Kazakhstan*



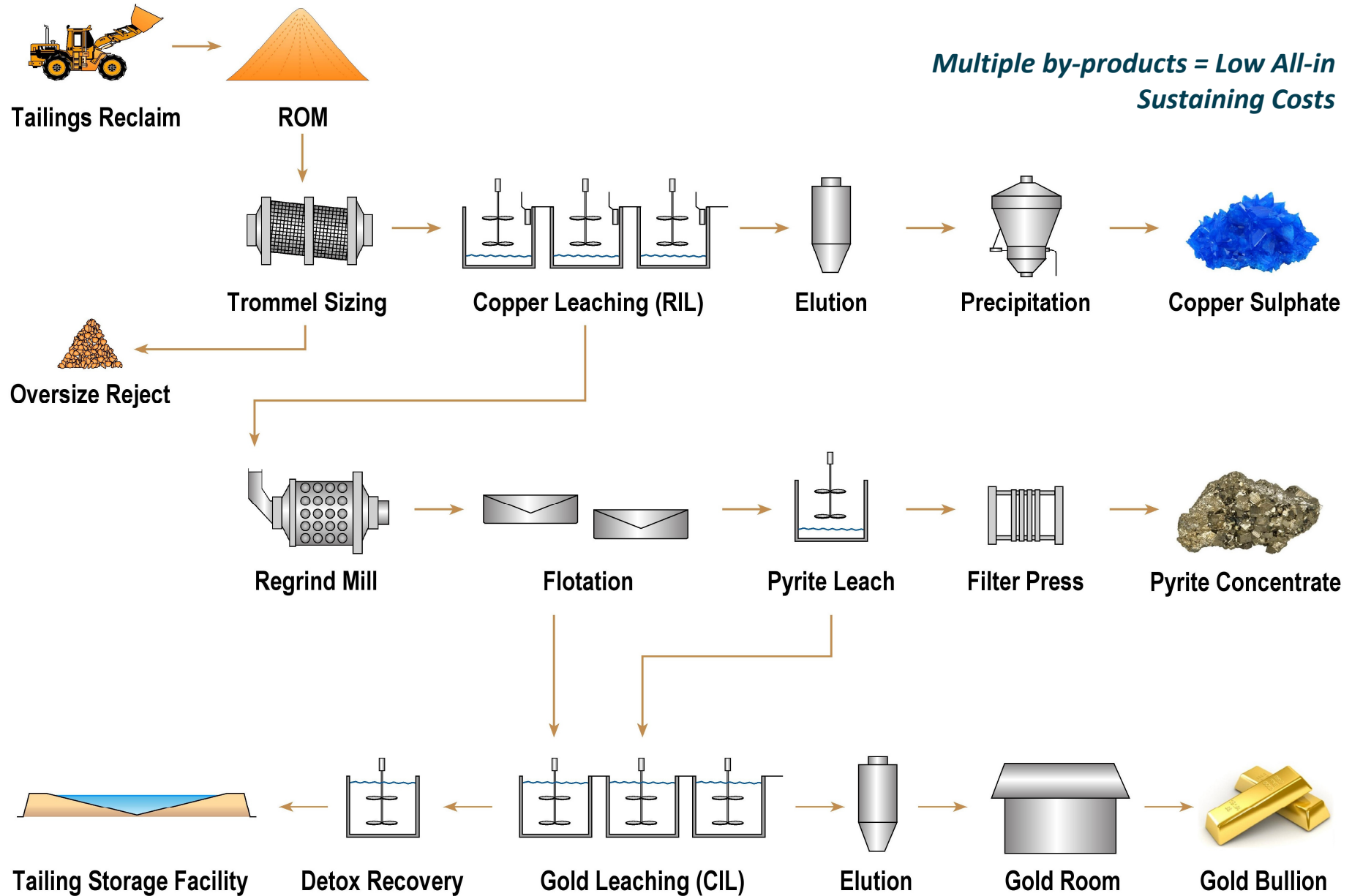
## ION EXCHANGE (IX)

- Developed in the Former Soviet Union
- 60+ years of operating history
- 30+ full scale IX operations globally



# IX-CIL FLOWSHEET

Addressing the soluble copper issue



# SCOPING STUDY ECONOMICS

Completed by engineering firm Ausenco (Oct '14)



## Parameters

Parameter	Value	Notes
Mine Life	8 years	JORC resources only
Annual Throughput	1,000,000 t/yr	Based on available JORC resources
Production		High grade resources targeted during initial years of operations
<i>Gold</i>	36,000 oz./yr	
<i>Copper</i>	850 tpa	
<i>Pyrite</i>	230,000 tpa	

## Results

Parameter	Value	Notes
Capital Costs	A\$ 81.9m	Assumed new plant construction
Operating Costs	A\$ 32.2/t	
<b>All-in Sustaining Costs</b>	<b>US\$ 393/oz.</b>	<b>Life of mine</b>

*\*Note: Metal prices Gold US\$1,250/oz.; Copper US\$7,000/t; Pyrite US\$86/t. Exchange rate \$0.85.*

Upgraded economics from PFS due Aug '15

# SCOPING → PFS OPTIMISATION

Targeting capex reduction

## PFS Optimisation Testwork:

- Upgrading of feed ore via rejection of poorly mineralised coarse material
- General reduction in circuit complexity via minimisation of acid circuit unit processes
- 21% increase in copper recovery via use of resin-in-leach
- Production of more valuable copper sulphate by-product over copper cathode
- Removal of capital requirements for copper electrowinning facility
- Maintaining low reagent consumptions achieved in the Scoping Study

Metal Extraction	Historical Tailings Reprocessing (1981 - 1991)	Norton Feasibility Study (2010)	Carbine Scoping Study (2014)	Carbine PFS Testwork (2015)
Gold	50 - 55%	65%	78%	76%
Pyrite	-	86%	91%	90%
Copper	-	-	56%	68%

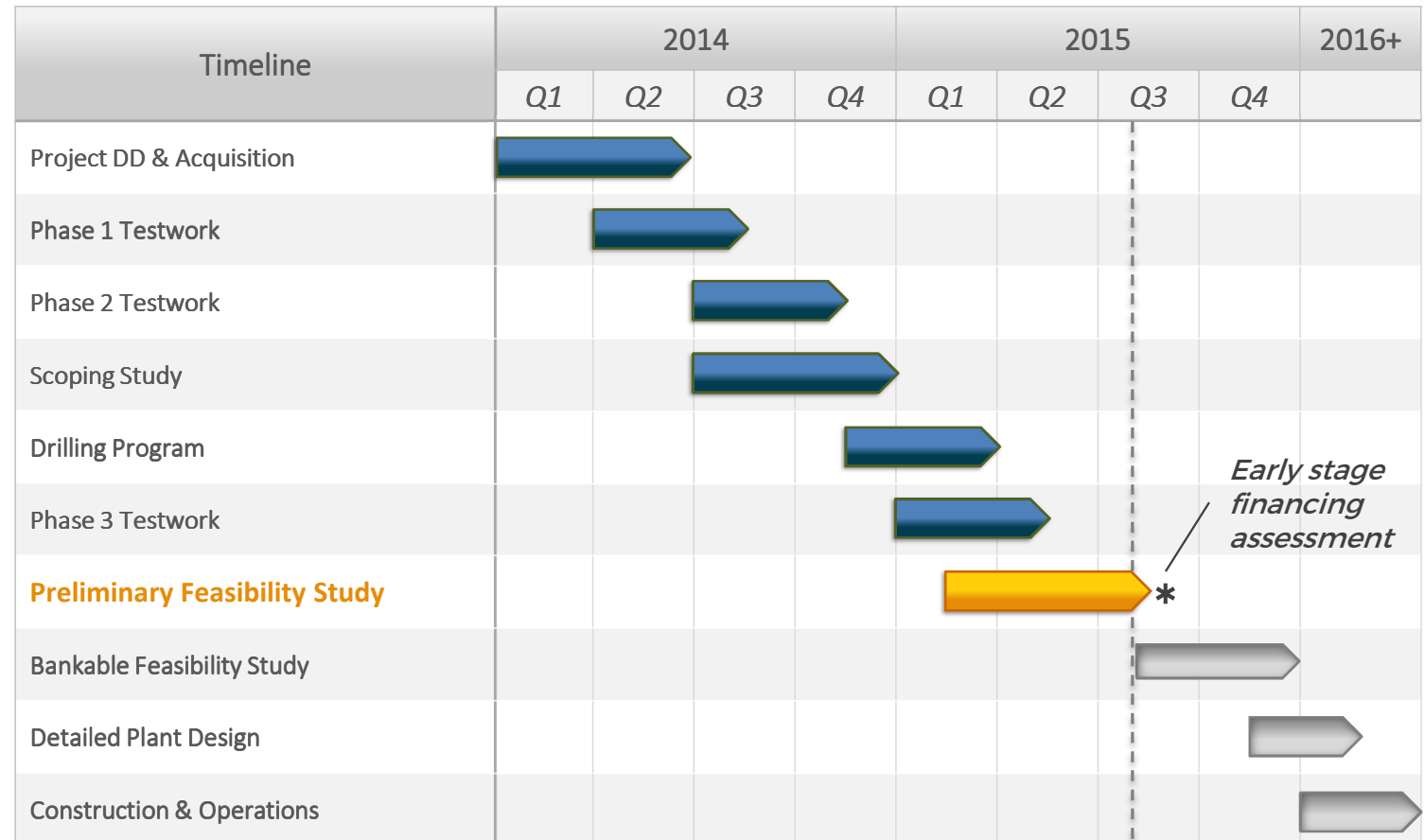
*PFS flowsheet likely to provide significant capital & operating cost benefits*

# ACHIEVING PROJECT MILESTONES

Tracking toward mine development financing

## Highlights

- ✓ Acquired project (April '14)
- ✓ Completed Scoping Study
- ✓ Confirmed <US\$400 All-in Sustaining Costs
- ✓ Developed preliminary by-product offtakes
- ✓ Employed key technical staff
- ✓ Received 2015 Austmine Innovation Award for Miners
- ✓ Progressed PFS toward completion (August '15)
- ✓ Maintained strong cash balance



**2014/15: Successful project development milestones achieved**  
**2015/16: Targeting mine development financing & decision to mine**



# PLANS

For the next 12 months

- Finish PFS & assess potential for early stage financing
- Drill program to upgrade JORC resources and Exploration Target
- Complete BFS and detailed design
- Proceed with decision to mine and construction activities
- Finalise binding contracts for by-product offtakes
- Execute service contract with Queensland Government to operate existing site Water Treatment Plant



*Unlocking significant metal value left behind  
after 100+ years of operations*

# BOARD & MANAGEMENT

## Overview and experience

### **Patrick Walta**

#### *Executive Director*

- Metallurgist and mineral economist, commercial & tech. mining experience
- MD of Raging Bull Mining and former CEO of Cradle Resources Limited
- Experience in mineral resource dev., M&A and project management

### **Rod Smith**

#### *Chief Metallurgist*

- Extractive metallurgist with 40 years experience in metallurgical R&D
- Former Managing Director of Ammtec Laboratories Limited
- Vast experience in gold, base metals, rare earths and uranium extraction.

### **Russell Dann**

#### *Project Specialist*

- Former Regional Director – QOL Department of Mine & Energy
- Long association with development & remediation of Mount Morgan
- Significant experience with mine approvals and stakeholder relations

### **Evan Cranston**

#### *Non-Executive Director*

- Lawyer specializing in corporate and mining law
- Former Executive Director of gold explorer Ampella Mining
- Current Director of Attila Resources, Boss Resources and Cradle Resources

### **Tom Bahen**

#### *Non-Executive Director*

- Current Director of Private Clients & Inst. Sales and Paterson Securities
- Significant experience in capital raisings and corporate advisory
- Previous experience in assurance and advisory with Deloitte

### **Stephen Dobson**

#### *Non-Executive Director*

- Financial specialist, vast experience & networks across debt & equity markets
- Former MD of Mirabaud Securities Australia
- International financing experience with Merrill Lynch & Co

**Austmine 2015  
Mining Innovator  
of the Year**

## **Contact**

Patrick Walta  
Executive Director  
Ph: +61 8 6142 0986

## **Carbine Resources Limited**

Suite 23  
513 Hay Street  
Subiaco WA 6008



**CARBINE RESOURCES**  
LIMITED