

# POSITIVE ECONOMICS CONFIRMED FOR ZETA UNDERGROUND MINE

## HIGHLIGHTS

- > A Definitive Feasibility Study for the Zeta Underground Mine (**Zeta Underground DFS**) at the Boseto Copper Operation was completed in 2012 by Mining Plus Pty Limited, an industry respected Perth based mining consulting group.
- > Further integration studies have been undertaken to refine cost estimates, finalise the mine design ready for construction, confirm ramp-up parameters and production milestones.
  - Mining is scheduled over a strike length of 2km beneath the Zeta open pit between 150 and 630 metres below surface.
  - **Twin-decline development** from within the Zeta open pit will provide underground access to separate northern and southern mines, with the southern mine development following the northern mine by approximately 18 months.
  - **Sublevel Caving** was selected as the most appropriate mining method with a 20-25 metre sublevel interval.
  - **Contract mining** using conventional trackless mining techniques.
  - Expected average production from the combined northern and southern Zeta mines of 1.5 Mtpa at 1.2% Cu (average of 16.6kt Cu and 720koz Ag per annum) is scheduled over an eleven year period mining Ore Reserves and Additional Mineral Inventory.
- > The Zeta Underground Mine's economics were evaluated based on the use of experienced underground mechanised mining contractors. At US\$3.18/lb Cu and US\$20/oz Ag the economic evaluation showed:
  - NPV (10% p.a. discount factor) of US\$97 million (US\$41 million mining the 2013 Ore Reserves only);
  - IRR of 45% p.a. (41% p.a. mining the 2013 Ore Reserves only);
  - C1 cash cost of US\$2.12/lb, which includes the contractor's profit and capital investment recoupment (US\$2.14/lb mining 2013 Ore Reserves only);
  - Total capex to first stope ore production of only US\$5.9 million (occurs in Q3/FY15);
  - Total capex to first positive cash flow (occurs in Q3/FY17) of US\$34.7 million; and
  - Total capex to cash flow payback of US\$69.7 million (occurs in Q2/FY19).

- > Both the Zeta Underground DFS completed by Mining Plus Pty Limited, and subsequent refinements to the mining parameters, have been reviewed by an external third party consultant, Runge Pincock Minarco (**RPM**), as a part of the current (2014) Ore Reserve estimation process. RPM considered the mining parameters reasonable and appropriate given the information provided.

Discovery Metals' CEO Mr Bob Fulker said " *The Zeta Underground Mine has been a key strategic component of the Boseto Development plan since inception in August 2010. This was reaffirmed during our Life of Mine planning that was completed in early 2014. The future of the Boseto Operation lies in the development of underground mining. We envisage having a minimum of three distinct mines with potentially five declines within the Boseto mineral district over the next decade, of which the Zeta Underground will be the first. These mines should have the potential to bring copper production up to a sustainable +30ktpa for 15 years or more.*

*The Zeta Underground DFS established the technical and economic viability of the Zeta Underground Mine. Subsequent revisions to the design and the cost estimates reaffirm the Development Plan concept. Importantly, we intend that the Zeta Underground Mine will be a model for more extensive underground mining developments at Boseto, creating value from the significant mineral resources on the Boseto project."*

## REFINED ZETA UNDERGROUND MINE

Discovery Metals Limited (**Discovery Metals, DML** or the **Company**) reports the refinements made to the original strategies proposed by the Zeta Underground DFS. The Zeta deposit forms part of the Boseto Copper Operation (100% owned by Discovery Metals) where open pit mining operations have been progressing since October 2011. The Company has completed its review of the Zeta Underground DFS and summary results are presented here.

### 1. STUDY SCOPE AND METHODOLOGY

#### (a) Scope

The Zeta Underground DFS evaluated the development of an underground mining operation at Zeta based on the extraction of Ore Reserves and Additional Mineral Inventory located under the Zeta Open Pit. The Zeta Underground Mine was evaluated as a stand-alone mine with ore processed at the Boseto concentrator.

The Zeta Underground DFS was undertaken by Mining Plus Pty Limited (the **Consultant**), an experienced Perth based mining consultant, in 2012. The subsequent refinement of the mine design and schedule were completed by the Consultant in January 2014.

The aim of the revision was to:

- > bring the Zeta Underground Mine into production within the minimum time frame possible;
- > reduce the expenditure to first ore production, as well as the overall project cost; and
- > align the development/spend profile to projected revenue from the open pits to minimise the impact on the Operation's overall cash flow.

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Key design changes made following the revision of the Zeta Underground DFS are shown in Figure 1 and include:

- > sequencing mine development into northern and southern mines, with commencement of northern mine development leading the southern mine by approximately 18 months;
- > deepening of the Zeta open pit at the southern end, providing an improved platform for the development of the southern decline in the footwall of the open pit;
- > developing portals for underground access from within the established Zeta open pit, rather than via northern and southern boxcuts developed externally to the Zeta open pit;
- > accessing upper production (stopping) levels directly from the Zeta open pit via adits developed along the orebody strike;
- > establishing a temporary portal and decline at the base of the Zeta open pit to access the third production level, also allowing the life-of-mine portal and access decline to be developed from both ends, reducing the overall construction time;
- > reducing vertical development through the installation of ventilation adits; and
- > reducing surface fixed installation costs through the re-use of existing facilities.

A Mining Services Contract has been tendered, with firm pricing now received and a preferred tenderer selected.

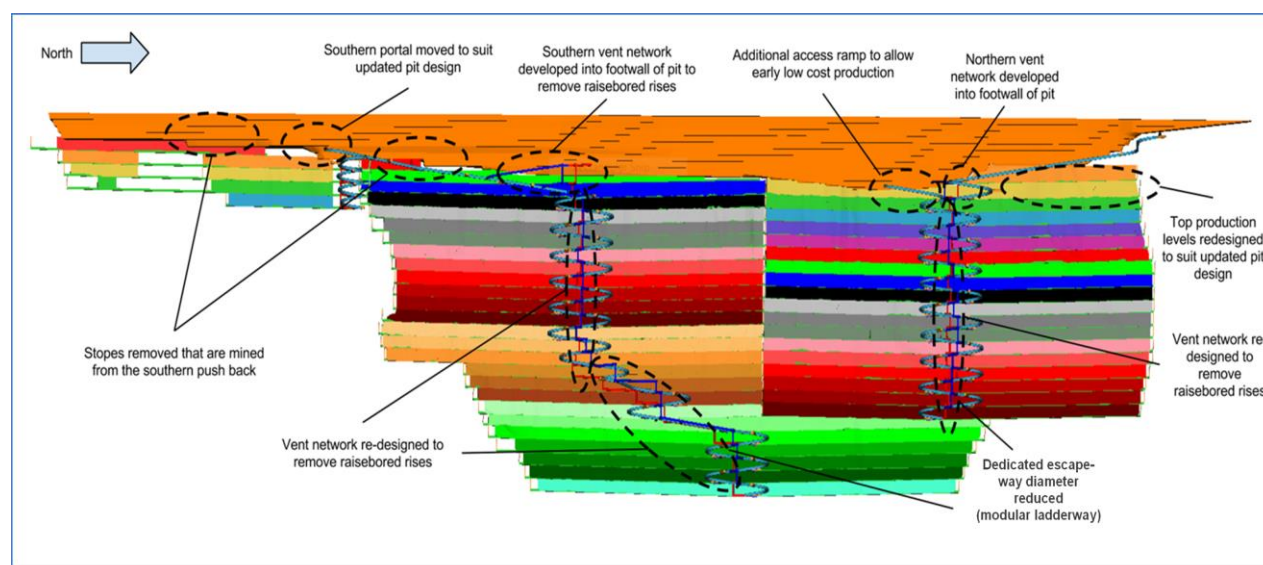


Figure 1 – Key revisions to the Zeta Underground Design since the completion of the Zeta Underground DFS

Both the Zeta Underground DFS and subsequent refinements have been reviewed by RPM as part of the current (2014) Ore Reserve estimation process.

- > RPM consider the mining method, appropriate given the geotechnical and geological parameters provided.
- > The broad approach taken to mine planning for the Zeta Underground DFS was appropriate; the subsequent revision has improved the detail on the design aspects.
- > Scheduling parameters used in the Zeta Underground DFS were revised in the January 2014 review, and are being further refined as part of DML's current work program.

- > The cost model used in the Zeta Underground DFS was recommended to be replaced to reflect the recently tendered contract submissions once that process is concluded.

#### (b) Mining Method

The Zeta Underground Mine extends over a strike length of approximately two kilometres and is situated immediately underneath the Zeta open pit extending from approximately 150 metres to 630 metres below surface. Copper-silver mineralisation has been intersected by drilling to a vertical depth of 630 metres with high-grade copper silver mineralisation potential remaining open below this level (**Figure 1**).

The underground mining operations will be accessed via twin declines from portals developed from within the Zeta open pit. Following refinement of the mining sequence, the portal for the northern mine will commence 18 months before the southern mine portal, smoothing cash flow requirements. The northern and southern declines and associated mine development are independent, providing flexibility over the timing difference between commencement of the northern and southern halves of the Zeta Underground Mine.

Sublevel caving has been selected as the most appropriate mining method. Each production level will be accessed centrally from the decline with ore drives developed to the periphery of the ore body. Stope production from the sublevel caving will progress along the ore drives, retreating to the central decline access points.

Ore from both development and caving operations will be trucked to the surface, stockpiled and then trucked approximately nine kilometres to the Boseto Concentrator.

#### (c) Contract Operator Concept

The Zeta Underground DFS evaluated a contractor based operation and an owner based operation. The contractor based operation was selected as the preferable option due to strategic considerations commensurate with the stage of the Company's development (e.g. rapidity of implementation, lower capex and operational experience).

A Mining Services Contract was put out to tender to experienced underground mechanised mining contractors in April 2014. The tender process is nearing conclusion with final discussions currently being held with a preferred tenderer. Award of the Mining Services Contract is subject to finalising contract documentation with the preferred tenderer and the timing of funding for the development of the Zeta Underground Mine.

## 2. ORE RESERVES AND MINERAL RESOURCES

The 2013 Zeta Underground Ore Reserves, announced in July 2013, have been used as the basis for the refinements to the mine design.

	Tonnes (Mt)	Cu %	Ag g/t
Underground Proved Ore Reserve	0.9	1.2	21
Underground Probable Ore Reserve	6.4	1.3	23
<b>Underground Total Proved &amp; Probable Ore Reserve</b>	<b>7.3</b>	<b>1.3</b>	<b>23</b>

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The total Underground Ore Reserve at Zeta is reported as 7.3 million tonnes at 1.3% Cu and 23 g/t Ag and is reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) 2012 Edition.

The economic cut-off grade used to determine the Zeta Underground Ore Reserve is 1.07% copper equivalent (CuEq), where:

$$\text{CuEq\%} = \text{Cu\%} + 0.0113 \times \text{Ag (g/t)}$$

All underground Ore Reserves are scheduled for mining in the Zeta Underground Mine schedule. Mining is scheduled to depths below the current limit of Ore Reserves. Between approximately 360 metres and 630 metres below surface, Additional Mineral Inventory has been scheduled for mining in areas where insufficient drill hole information currently exists to define Ore Reserves (see below).

Additional Inventory Inferred			Additional Inventory Unclassified			Total Additional Inventory		
Mt	Cu %	Ag g/t	Mt	Cu %	Ag g/t	Mt	Cu %	Ag g/t
7.92	1.4	26.9	1.15	1.1	26.1	9.07	1.3	26.8

It is planned to drill additional holes into this zone, between 360 metres and 630 metres below surface, after access has been established underground.

Copper-silver mineralisation remains open below the current depth of drilling (approximately 630 metres) and potential exists to extend the Mineral Resources and Ore Reserves at depth and to increase the scheduled mine life.

### 3. ECONOMICS

#### (a) Capital costs to first stoep ore production

Capital expenditure over the current planned life of the underground mine, to complete all decline development to the base of the mine, and fully equip the underground mine has been revised as follows:

- > Total capex to first stoep ore production, in Q3/FY15, of only US\$5.9 million given the advanced stage of the open pit at Zeta;
- > Total capex to first positive cash flow quarter totals US\$34.7 million (occurs in Q3/FY17); and
- > Total capex to cash flow breakeven or payback of US\$69.7 million (occurs in Q2/FY19).

For the purposes of this economic evaluation, capex includes the owner mine establishment costs, contractor mobilisation and site establishment costs, underground development capex and vertical developments costs. Provisions for costs have been included in this economic analysis for concentrator sustaining capex, tailings storage expansion and the further development of Additional Mineral Inventory.



## (b) Revenue and NPV

Input	Unit	Cost
Average Copper Price	US\$/t or US\$/lb	\$7,000 or \$3.18
Average Silver Price	US\$/oz	\$20.00
Discount rate for NPV	%	10

## (c) Operating Costs

Operating Costs	Life of Mine (incl Inferred Mineral Resource)		Mining of 2013 Ore Reserves only	
	US\$/lb Cu Metal	US\$/t Ore	US\$/lb Cu Metal	US\$/t Ore
Mining Costs	1.43	35.9	1.51	39.0
Plant Processing Costs	0.24	5.9	0.23	5.9
Power Costs (process only; mine in mining cost)	0.25	6.1	0.24	6.3
Site Support Costs	0.09	2.4	0.09	2.4
<b>Total Site Costs</b>	<b>2.01</b>	<b>50.3</b>	<b>2.07</b>	<b>53.6</b>
Transport Costs	0.30		0.30	
Treatment Costs	0.10		0.10	
Refining Costs (9.2c/lb Cu, 40.0c/oz Ag)	0.08		0.08	
Silver Credit	(0.36)		(0.40)	
<b>Average C1 Cash Costs</b>	<b>2.12</b>		<b>2.14</b>	

## (d) Financing

It is envisaged that the development of the Zeta Underground Mine will be financed using capital raised from equity markets together with cash flows from the Boseto open pit operations. The first stage of development at Zeta Underground Mine will be financed from the proposed Rights Issue as announced to the ASX on 1 September 2014.

## 4. TIMETABLE FOR DEVELOPMENT

### (a) Permitting

Discovery Metals received approval from the Ministry of Minerals, Energy and Water Resources of the Republic of Botswana to amend Mining Licence No. 2010/99L to include the Zeta Underground Mine into the Boseto Copper Operation, as announced on 10 April 2014.

**(b) Indicative Timeline**

The Company intends to commence the development of the Zeta Underground Mine as soon as the announced Rights Issue has been completed. Recruitment of a project development team for the Zeta Underground Mine has commenced and the current schedule is for sufficient work to be progressed to allow the award of a mining contract in the Q2/FY15. Contractor mobilisation and site establishment is expected to take 60-90 days with development to provide underground access commencing soon after.

Activity	Scheduled Timing
Final Project Planning	Q1/FY15 – Q2/FY15
Award Underground Mining Contract	Q2/FY15
Infrastructure Construction	Q2/FY15 – Q3/FY15
Infrastructure Construction Completion	Q3/FY15
Commencement of Decline Development	Q3/FY15

**5. FINANCIAL OUTCOMES**

The financial outcomes forecast in this release are for the stand-alone operation of the Zeta Underground Mine and are calculated pre-tax and pre-financing charges and exclude any corporate cost charge.

Highlight	Units	Life of Mine (incl. Inferred Mineral Resource)	Mining of 2013 Ore Reserves only
Evaluated Operation Period	Years	10.75	5.75
Average Underground Ore	Million Tonnes per year	1.5	1.3
Average Copper Production	Tonnes Cu p.a.	16,600	15,000
Average Silver Production	Oz Ag p.a.	720,000	710,000
Average C1 Cash Costs*	US\$/lb	2.12	2.14
Capital Expenditure (to first stope ore)	US\$ Millions	5.9	5.9
Copper Price	US\$/lb Cu	3.18	3.18
Silver Price	US\$/oz Ag	20	20
Operating Surplus	US\$ Millions	332	155
Project NPV	US\$ Millions	97	41
Internal Rate of Return	% p.a.	45	41

\* includes the benefit of silver credits.

# Copper Price Sensitivity

Cu Price Case	US\$/lb	\$2.86 -10%	\$3.02 -5%	\$3.18 Base	\$3.33 +5%	\$3.49 +10%
Life of Mine (includes Inferred Mineral Resource)						
Ag Price Case	US\$/oz	20	20	20	20	20
Operating Surplus	US\$ Millions	216	274	332	391	449
Project NPV	US\$ Millions	30	63	97	131	164
IRR	% p.a.	21	32	45	57	70
Mining of 2013 Ore Reserves only						
Ag Price Case	US\$/oz	20	20	20	20	20
Operating Surplus	US\$ Millions	99	127	155	183	211
Project NPV	US\$ Millions	1	21	41	61	81
IRR	%	11%	26%	41%	56%	70%

The study based on the mine design refinements and updated cost estimates shows that the value created by introducing the Zeta Underground Mine on its own (i.e. without open cut extension) using US\$3.18/lb Cu and US\$20/oz Ag price is US\$97 million. The sensitivity analysis identifies that the Zeta Underground Mine is an accretive investment at current metal prices.

The Zeta Underground DFS announced in April 2012 quoted a headline NPV of US\$131 million using US\$3.00/lb Cu and US\$30/oz Ag price assumptions. The variance between the two NPVs is summarised as follows:

- > revenue improvements of US\$36 million in NPV, driven primarily by expected improvements in silver metallurgical recovery;
- > higher selling and distribution costs resulting in the loss of US\$27 million in NPV, particularly concentrate transport costs, concentrate treatment costs and copper refining costs;
- > higher power costs resulting in the loss of US\$40 million in NPV as a result of the exclusion of a previously proposed coal fired power station; and
- > inclusion of further resource development costs costing US\$3 million in NPV to upgrade Additional Mineral Inventory.



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## COMPETENT PERSONS STATEMENT

The information in this announcement that relates to the Zeta Underground Mine is extracted from page 17 of the report 'Zeta Mineral Resource, Ore Reserve and Exploration Target Statements' created on 18 July 2013, which was included as an attachment to the announcement 'Mineral Resources and Ore Reserves Update' dated 22 July 2013, and is available to view on [http://www.discoverymetals.com/files/media/20130722\\_asx\\_announcement\\_mineral\\_resources\\_and\\_ore\\_reserves\\_update\\_for\\_website.pdf](http://www.discoverymetals.com/files/media/20130722_asx_announcement_mineral_resources_and_ore_reserves_update_for_website.pdf). The Company 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 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 been materially modified from the original market announcement.

The information in this announcement is based on information compiled by Mr Andrew Gasmier, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM). Andrew Gasmier is a full time employee of Mining Plus Pty Ltd, and has no interest in, and is entirely independent of, Discovery Metals Limited. Andrew Gasmier has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a 'Competent Person' as defined in JORC 2012. Andrew Gasmier consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

## FORWARD LOOKING STATEMENTS

This release includes certain statements that may be deemed "forward-looking statements". All statements in this discussion, other than statements of historical facts, that address future activities and events or developments that Discovery Metals expects, are forward-looking statements. Although Discovery Metals 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, continued availability of capital and financing, and general economic, market or business conditions. Investors are cautioned that any such statements are not guarantees of future performance and that actual results or developments may differ materially from those projected in forward-looking statements.

## DISCOVERY METALS BACKGROUND

Discovery Metals is an ASX/BSE listed copper exploration and production company focused on the emerging Kalahari Copperbelt in north-west Botswana. The Company is a copper producer at its 100% owned Boseto Copper Operation. The Kalahari Copperbelt sediment-hosted mineralisation of the Boseto Copper Operation is similar in style to the well-known and large deposits of the Central African Copperbelt of Zambia and the Democratic Republic of the Congo. Discovery Metals has prospecting licences covering approximately 26,150 km<sup>2</sup> in Botswana.

**Further information on the Company including Mineral Resources and Ore Reserves is available on our website:**  
**[www.discoverymetals.com](http://www.discoverymetals.com)**

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**For further information on this release and Discovery Metals Limited, please contact:**

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