

# ASX Shareholder Report

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Terramin is a dedicated base metals company focused on developing zinc mines close to infrastructure.

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# **CAPITAL DOWN AT TALA HAMZA**

## HIGHLIGHTS

- The capital estimate has been revised down by 25 per cent to US\$266 million for a Sub-Level Caving development
- Life-of-mine C1 cash costs are estimated at US42c/lb payable zinc
- Strong potential for at least a 40% increase in Indicated Resources with further infill drilling
- Mining costs are low by world standards and could be reduced even further by optimisation now underway
- Environmental impact statement for a mining licence expected in August
- Early development of twin mine declines under consideration

Terramin Australia (ASX: TZN) today released the Prefeasibility Study (PFS) for the Tala Hamza zinc project in Algeria, which concluded that even at current low commodity prices the deposit can be developed successfully as a technically and financially viable long term mine.

Dr Kevin Moriarty, Terramin's Executive Chairman, said "this was a positive result that has cleared the way to proceed with final feasibility studies for the mine."

"Tala Hamza is proving to be a low cost, world class project that is getting cheaper to mine the more we study it," Dr Moriarty added.

"In particular, we are focussed on optimising mine design for either the proposed Sub-Level Caving or a Block Cave to further reduce operating costs and increase metal output.

"Expressions of interest to finance the Tala Hamza project have been received from within and outside Algeria, while offtake agreements for 240,000tpa of concentrate further underpin financing.

"We are aiming at start-up in late 2011 to replace production lost as older and less cost efficient mines close," he said.

The Tala Hamza project is being designed to produce 250,000 tonnes of zinc and lead concentrate each year, eventually climbing to 400,000-500,000 tonnes.

Dr Moriarty commented that the deposit had "a lot of high grade resources in the lower section that could lift early cash flows, so we can see where further work can improve financial outcomes. We are also assessing the impact on cash flows of drilling more of the Inferred Resource, particularly given the high grades encountered in holes around the current indicated resource. This could lift concentrate production in the early years."

Focus on Zinc



#### **Major Conclusions**

The Prefeasibility Study by Bateman Engineering, Golder Associates and Terramin, concludes that, even at the current low levels of commodity pricing, the Tala Hamza deposit can be developed successfully as a viable long-term project. The project was found to have the advantage of low capital and operating cost in an environment of globally increasing mining costs.

The geotechnical analysis indicates that Sub-Level Caving and Block Caving are the most technically favourable options for development of the Tala Hamza deposit.

An overall capital requirement of US\$266M (c.f. Scoping Study estimate of \$356M) has been estimated for project construction and development under the Sub-Level Caving mining method. Operating costs are estimated at US\$30 per tonne milled for Sub-Level Caving, and US\$25 per tonne for Block Caving.

Life of mine C1 cash costs are estimated at US\$0.42/lb payable zinc after allowance for lead by-products, based on long term price forecasts of US\$0.80/lb zinc and US\$0.60/lb lead with a zinc treatment charge of \$US229/dmt. C1 cash costs under current spot prices and treatment charges are estimated at US\$0.39/lb.

#### **Mineral Resources and Ore Reserves**

Sufficient resource drilling has been completed on a significant portion of the deposit to provide a basis for the prefeasibility studies.. This has allowed estimation of Indicated Resources, reported to the ASX in October 2008.

The Prefeasibility Study has been based on the extraction of this Indicated Resource only.

#### Mineral Resource at 2.5% ZnEq cut-off

Category	Mt	Zn (%)	Pb (%)
Indicated	24.8	6.49	1.82
Inferred	33.8	4.3	0.9
Total	58.6	5.2	1.3

Details of assumptions used in the Resource estimate are included in the Release to the ASX dated 13 October 2008. The Resource is inclusive of material converted to Ore Reserve.

Ore Reserves at Tala Hamza have been estimated by Golder Associates for both Sub-Level Cave and Block Cave during the course of the prefeasibility study. The Reserve for the Sub-Level Cave option (preferred method) is presented below.

#### Ore Reserve at 3.17% Zn cut-off<sup>1</sup>

Category	Mt	Zn (%)	Pb (%)
Proved	-	-	-
Probable	24.1	5.89	1.67
Total	24.1	5.89	1.67

The Probable Reserve is estimated at a cut off of 3.17%Zn. To achieve sensible mining shapes the Reserve includes a small tonnage of Inferred Resource (0.5Mt at 3.6% Zn, 1.0% Pb). The Reserve also includes internal dilution of 3.5Mt at 1.6% Zn and 0.3% Pb, comprising Indicated Resource below 3.17% Zn and waste.

This Reserve is based on the preliminary mine design and is expected to be refined following optimization during the early stages of the Feasibility Study.

The Prefeasibility Study has been completed on only a portion of the known deposit. There is considerable upside potential as demonstrated by subsequent drilling. At least 10Mt of the existing Inferred Resource is considered to have high potential for conversion to Indicated Resource at similar grades. This could allow for an increased extraction rate, increased mining efficiencies and higher throughput.

<sup>&</sup>lt;sup>1</sup> "Cut-off grade of 3.17% Zn was applied for the Sub-Level Caving option, based on the following parameters (all figures are Australian dollars unless otherwise stated): Mining cost - \$13.25/t ore, Mining dilution - 20% (with 0% Zn), Mill recovery - 90% for Zn and 71% for Pb, Milling cost - \$17.0/t ore, Shipping cost - \$5.30/t ore, Smelter recovery - 85% for Zn and 95% for Pb, Smelter treatment cost - \$31.2/t ore, assuming average in situ ore grade 6.75% Zn, metal prices - US\$0.80/lb for Zn and US\$0.40/lb for Pb, exchange rate - AUD\$1=USD\$0.75, Royalty - 2% of net revenue."



#### Mining

The preferred method of mining is Sub-Level Caving as it offers increased flexibility in mine design and grade profile, as well as producing a superior return under current modelling. However the Block Caving option has not been sufficiently optimised at this stage and will therefore be a priority during the initial stages of the Feasibility Study.

Preliminary mine designs and production schedules have been generated and capital and operating costs estimated. There will be 14 production levels starting from the -120m level and ending at the -380m level.

Twin 5.5x5.5m production and ventilation declines were selected as the main method of access from surface to the bottom of the orebody. Underground road trains were selected for hauling ore and waste to the surface. The decline has been designed to enable upgrading with a conveyor system to allow for increased future production rates.

The Feasibility Study will consider the benefits of higher production rates, various processing options including underground crushing and conveying, and any requirement to convert additional Inferred Resources for mining.

## **Metallurgy and Processing**

The processing plant has been designed to treat 2Mtpa of ore to produce 113,000t of zinc in a zinc concentrate and 27,000t of lead in a lead concentrate.

Grinding will be conducted in a conventional SAG mill, ball mill circuit. The Bond ball mill work-indices were relatively consistent ranging from 12.0kWh/t to 14.4kWh/t. These results compared well with the value of 13.5kWh/t obtained from the composite sample used for the majority of the flotation testwork.

The zinc flotation circuit will produce a zinc concentrate assaying 54% zinc at an overall recovery of 90%.

The lead circuit will produce a lead concentrate assaying 60% Pb at an overall recovery of 72%.

There is a sufficiently large area of land available in the Port to store concentrate for shipment, and the Port Authority is willing to make this land available for WMZ to construct a storage shed to be located just to the rear of the designated export berth.

Based on the preliminary site-wide water balance it has been assumed for the Prefeasibility Study that additional supplies of water from the Soummam, borefields, or Tichi Haf pipeline will not be required. Further investigation is required to narrow the range of uncertainty in the groundwater estimates and improve the water balance model for the Feasibility Study.

A zoned rockfill dam has been selected for the Tailings Storage Facility (TSF) containment structure, lined on the upstream side by a concrete curb-backed bitumen impregnated geomembrane. The TSF will be designed to mitigate the potential for environmental contamination from seepage and run off.

#### **Social and environmental**

Consultation conducted by WMZ to date has included meetings with government agencies, including within the Wilaya of Bejaia, land owner/users in the project area and presence at promotional events for the public within the Wilaya. Most were supportive of the potential employment opportunities and other benefits from this type of project.

An archaeological study found that no officially recorded cultural heritage sites or artefacts occur in the project area.

Preliminary plans for community management, conceptual mine closure and environmental management have been developed.

WMZ will employ more than 410 people for the first year of operation of the project. For these positions approximately 350 people will be recruited from within Algeria and 60 from outside sources to fill all the site-related functions of the mine, processing plant and support services.

#### **Financial Analysis**

The following tables are a summary of study results by Bateman Engineering (processing), Golder (mining) and Terramin (administration, marketing and corporate).

# **Project summary**

Project Summary	Unit	Sub-Level Cave
LOM production	Mt	24.07
LOM zinc grade	% zinc	5.89
LOM lead grade	% lead	1.67
Zinc metal produced	Mt	1.258
Lead metal produced	Mt	0.284
Project capital	US\$M	266
Life of mine operating cost	US\$/t ore	30.4
C1 unit cost (after lead by-products)	US¢/lb Zn	42.5
Life of project (from first concentrate)	Years	13
Annual milling rate	Mtpa	2

# C1 unit costs (US cents per lb. payable zinc)

Facility	Sub-Level Cave
Mining	9.94
Processing	12.60
On-site administration	2.04
Subtotal – Direct costs	24.58
Concentrate freight	6.45
Zinc treatment charges	23.22
By-product credits	(11.77)
TOTAL CASH COSTS	42.48

# Capital costs (US\$ Million) – project capital only

Facility	Sub-Level Cave	Block Cave
Direct costs		
Mining, mobile equipment and fixed plant	33	30
Mining, development	30	49
Processing plant inc. crushing, grind, float etc.	58	58
Tailings	22	22
Services, electrical and instrumentation	23	23
Plant & port infrastructure	25	25
Total direct costs	192	207
Indirect costs		
EPCM	20	20
Owners cost	18	18
Other	2	2
Contingency – 15%	35	38
Total indirect costs	74	77
TOTAL CAPITAL COSTS	266	285

# **Operating costs (US\$ per tonne milled)**

Cost centre	Sub-Level Cave	Block Cave
Mining costs	9.73	5.72
Processing costs	12.34	12.04
Other production costs	1.97	1.83
Marketing and transport	5.30	4.72
Other	1.01	0.97
Non production costs	6.32	5.69
TOTAL OPERATING COSTS	30.36	25.28



#### Value add opportunities

There is considerable upside potential to add to resources and reserves demonstrated by recent drilling results. This could allow for an increased extraction rate, better mining efficiencies and higher throughput.

The use of Block Caving as primary mining method would be expected to reduce mining costs and could potentially sustain a higher production rate and improve cash flows.

A hybrid mining system combining Sub-Level Caving and Block Caving could potentially optimise production grade and cashflow.

An underground ore crushing/screening and conveyor system could potentially reduce costs and allow increased production, while reducing ventilation requirements.

Commence decline excavation earlier to accelerate project development. This will provide for earlier plant construction and cash flows.

The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by *Mr* Robert Singer. The information that relates to Ore Reserves is based on information compiled by *Dr* Yi Huang. Both are Members of The Australasian Institute of Mining and Metallurgy.

Mr Singer is Chief Geologist and a full time employee of Terramin Australia Limited. Dr Huang is a full time employee of Golder Associates Pty Ltd, Both have 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 the 2004 Edition of the 'Australasian Code for Reporting Exploration Results, Mineral Resources or Ore Reserves'. Mr Singer and Dr Huang consent to the inclusion in the report of the matters based on his information in the form and context in which it appears.