

ASX ANNOUNCEMENT

SUCCESSFUL OPTIMISATION STUDY HIGHLIGHTS POTENTIAL FOR SIGNIFICANT SCALE EFFICIENCIES AT THE TALA HAMZA PROJECT

Terramin Australia Limited (ASX:TZN) announces the outcome from an initial Optimisation Study ('the Study') for the Company's 65% owned Tala Hamza Zinc and Lead Project in Algeria. The Study has identified the potential to substantially increase production rates and introduce additional mid-grade resources, with minimal change to the mine life and expected capital expenditure. The optimisation scenario leads to improved utilisation of the Resource and realises scale efficiencies, which may lower per unit costs, increase overall production and ultimately increase the value and returns of the project.

The Study was undertaken to assist in determining whether a multi-scenario multi-criteria optimisation review be commissioned and results of the Study should not be interpreted as a projection of the amount of resource that may be converted to reserve. The Study has been at an introductory level and outcomes are not to be construed as implying a change to the recently announced Ore Reserves (refer ASX announcement on 29 August 2018 'Tala Hamza Resources and Reserves Statement').

Highlights

- Potential for an additional 8Mt of indicated resource to be included in production, which represents an increase of approximately 30% of total Tala Hamza Reserve tonnage
- Anticipated production rate increased from 1.32Mtpa to 2.0Mtpa
- Minimal change in mine life (19 years) as compared to 2018 DFS (refer ASX announcement on 29 August 2018 'Tala Hamza Feasibility Statement') which contains a mine life of 21 years at 1.32Mtpa production capacity
- These Study results are based on existing Mineral Resources and do not consider any resource extensions or new near mine deposits
- Identification of a priority exploration work program from existing and nearby exploration targets to support and further improve expansion case development
- Other potential project benefits and trade-offs include:
 - Increase in local jobs through increased fleet requirements
 - Increased plant capital expenditure associated with moving to higher processing rates
 - Logistics efficiencies in port and shipping requirements derived from higher production rates

Commentary

"The results of initial optimisation study work has been very promising. The opportunity to potentially treat more of the Resource, increase throughput and bring forward production into the first 10 years of operation can be expected to present significant upside.

The compelling results have encouraged us to expedite optimisation to capture the project's full potential. Tala Hamza is a world class deposit that will enter production at a time where the market is feeling the effect of systemic under-investment in new supply. "

Richard Taylor

Chief Executive Officer

Pursuant to ASX Listing Rule 5.16 regarding production target assumptions and in addition to information in this release and the Appendix Tala Hamza Resources and Reserves Statement, the company repeats material assumptions from DFS 2018 and notes where the Optimisation Study departs from those assumptions:

Material Assumption	Outcome
Mineral Resources (Pg17 Appendix 1)	The Mineral Resources estimate (refer ASX Announcement: Tala Hamza Resources and Reserves Statement: 29 August & Appendix A) for the deposit was prepared by Terramin's Competent Person(s). The estimate is based on 32 HQ sized diamond drill holes drilled by ORGM between 1988 and 1994. A further 64 diamond drill holes were drilled by Terramin's Algerian subsidiary, WMZ, between 2006 and 2010. Terramin's Tala Hamza database has been independently validated by Golder Associates. The Mineral Resources are reported inclusive of the Ore Reserve.
Mining Method and Assumptions (Pg25 Appendix 1)	The mining method selected is underground, using mechanised Underhand Drift and Fill. Previous studies have examined other methods. Regulatory requirements that proscribe surface subsidence, combined with a low rock mass competence and variable ore boundaries mean that Underhand Drift and Fill is regarded as the most suitable method. Ore production will involve taking 5m layers (flitches) using a jumbo drift-advance/strip-retreat cycle in a top-down sequence under engineered reinforced paste backfill. Fill cycles will take place approximately every 3000t to 6,000t of mined ore. Inferred material inside the production shapes in DFS 2018 is 0.1% and the Optimisation Study is 0.3%. Justified for inclusion in Ore Reserves due to being less than the order of precision reported. 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 target itself will be realised.
Processing Method and Assumptions (Pg25 Appendix 1)	Between 2007 and 2010, detailed metallurgical test work was undertaken by Optimet on drill holes selected to represent the different styles of mineralisation present at Tala Hamza. Results indicate all styles of zinc and lead mineralisation are amenable to being recovered by flotation. Conventional flotation will be used to recover a Zinc Concentrate and a Lead Concentrate. Metallurgical recovery is modelled as 89.6% for Zinc for product at 53.8%Zn and 73.2% for Lead for product at 62.6%Pb. DFS 2018 considered a production capacity of 1.32Mtpa with mine life of 21 years. A rate of 2.0Mtpa was considered in the Optimisation Study for a mine life of 19 years. No changes to the plant design, processing and metallurgical assumptions except the size of the crusher, mill and flotation cells proportionate to the increase in scale were considered.
Cut-off Grades (Pg27 Appendix 1)	The cut-off grade for the Ore Reserves Estimate is a combined in-situ grade of 4.5% Zn+Pb. A scenario at 3.5% was run for the Optimisation Study. Production areas were hand-designed based on digitising horizontal boundaries around grade shells at these grades using Vulcan software.
Estimation Methodology (Pg24 Appendix 1)	Drill hole assay data was composited downhole over 5m intervals using Vulcan Envisage, starting at domain boundaries, and flagged with priorities and domain codes. Golder investigated potential spatial continuity using correlograms. Correlogram maps did not indicate significant spatial anisotropy for either zinc or lead. Experimental downhole correlograms and omnplanar correlograms were calculated and modelled to obtain kriging parameters for resource estimation.
Material Modifying Factors (Pg27 Appendix 1)	A mining dilution of 5% at zero grade has been used for all ore production in DFS 2018. The proposed 2009 mining method of block caving limited the ability to exclude internal dilution. The 2009 Indicated + Measured Resource classification included approximately 8Mt @ 1.9% Zn + Pb of internal dilution. The proposed mining method of "Underhand Drift and Fill" allows for the exclusion of internal dilution. A mining recovery of 93% has been used for all production.
Other (Environmental, Legal and Social) (Pg26 Appendix 1)	Terramin has been engaged in protracted discussions with regulatory authorities in Algeria in order to address environmental and social concerns. DFS 2018 assumes discussions will be finalised in 2018 and a two year pre-production capital development program. The timeframe may be subject to unforeseen delays. PEM 6911 expired on 1 February 2018. WMZ is entitled to apply for a grace period under the Mining Act, however discussions with the relevant authorities have indicated that this is unnecessary as a Mining Lease has been prepared for submission.

Cautionary Statement

The Study is based on lower-level technical and economic assessments which are insufficient to provide certainty that the conclusions of the Study will be realised. Further, the Company cautions that there is no certainty that the forecast production information contained in the Study will be realised. This forecasted information is deduced from an underlying mining production and processing rate deemed possible due to the size and nature of the Tala Hamza Deposit. Refer ASX announcement Tala Hamza Resources and Reserves Statement dated 29 August 2018 that shows the Tala Hamza deposit has sufficient Mineral Resources to support a 2.0Mtpa mining operation.

The Study referred to in this announcement has been undertaken to consider the potential changes in cut-off grade and processing rates. It is a preliminary technical and economic study of the potential viability of optimising Tala Hama in this manner. It is based on low level technical and economic assessments that are not sufficient to support the estimation of ore reserves. Further evaluation work and appropriate studies are required before Terramin will be in a position to estimate any ore reserves or to provide any assurance of an economic development case. The Study is based on material assumptions outlined below and assumptions about the availability of funding. While Terramin considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Study will be achieved.

To achieve the range of outcomes indicated in the Study, funding of in the order of \$360 million (an increase of US\$19 million) from DFS 2018 will likely be required. Investors should note that there is no certainty that Terramin will be able to raise that amount of funding when needed. It is also likely that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Terramin's existing shares.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Study.

Initial Optimisation Study Background and Results

The Study was commissioned to determine whether Terramin should proceed with a detailed review of the key parameters and assumptions in the 2018 DFS. One of the outcomes following the 2018 DFS was an indication that the cut-off grade used (4.5% Pb+Zn) was higher than the optimal cut-off grade for value maximisation.

In September 2018 Terramin commissioned mining consultants GO Mining to conduct a desktop-level mine Optimisation Study for the deposit using the existing Resource and financial model. GO Mining previously provided the Principal Mining Engineer and Competent Person to Terramin for the Tala Hamza DFS 2018 and Terramin relied on the GO Mining's experience and history with Tala Hamza to undertake the Study.

The scope of the commission was to determine whether a change in cut-off grade and processing scale could potentially deliver a step change in project economics and then assess the production design and processing plant capital and operating cost implications.

The initial assessment examined a scenario using 2018 DFS cost estimates and the effect of various cut-off grades on tonnage sensitivities in the Mineral Resource model. The outcome of this was confirmation that the optimal cut-off grade was equivalent to 3.7% Pb+Zn and that there was potential for significant synergies from reducing the cut-off grade and increasing the processing plant capacity.

The second stage of the Study focused on including preliminary production designs of incremental use of indicated resource in the range of 3.5% Pb+Zn to 4.5% Pb+Zn and rescheduling the project at a potential production capacity of 2.0Mtpa then adjusting the financial model to allow for the changes. No changes to the plant design, processing and metallurgical assumptions except the size of the crusher, SAG and ball mill and flotation cells proportionate to the increase in scale were considered. As in DFS 2018, for the Optimisation Study ROM material is crushed in a jaw crusher with the second stage of comminution completed by semi-autogenous

(SAG) mill and ball mill grinding circuit. Prior to DFS 2018, Terramin conducted design and study work on a number of larger scale plants, including 2Mtpa, when considering higher processing rates and a different mine method. The 2009 pre-feasibility study used a 2 Mtpa process plant designed by Bateman Engineering Ltd when the proposed mining methods were long hole open stoping with paste backfill. The Study work indicated that between the 1.32Mtpa and 2Mtpa material changes were limited to those above.

Terramin believes that this may not yet be the optimal arrangement and future studies will examine the potential upside from other combinations. As a result the above findings, Terramin is now seeking more detailed cost estimates which can be used to refine the GO Mining study and look at other, potentially more value accretive, cases.

No changes were made to any of the previously announced development designs, modifying factors or financial modelling assumptions and inputs other than as noted here:

- Addition of capital costs commensurate to increase in processing plant scale. This was derived by comparing estimated costs for a previous 2.0Mtpa plant design to the 1.4Mtpa DFS plant design;
- Addition of 1 loader and 2 trucks to the mining fleet along with replacements as necessary but removal of replacements and rebuilds to the whole of the fleet made possible by the shorter mine life; and
- Removal of manning due to the shorter project life offset in part by the inclusion of additional manning to meet the increased mining rate.

Whilst the Study considered capital cost changes for the underground fleet and changes in manning in underground mining, it has not considered capital or operating costs outside the battery limits of the processing plant. Accordingly total project capital costs and operating cost forecasts and revenue and production forecasts have not yet been fully determined although some efficiencies logically flow from the change in production rates.

The increase in scale efficiencies allow for the potential to treat up to an additional 8Mt of indicated resource grading between 3.5% and 4.5% Pb+Zn which represents an increase of approximately 30% of total Tala Hamza Reserve tonnage. The scale efficiencies allow for more of the Resource to be utilised in the mine plan, at a higher production rate with a low additional capex spend.

Consequently, the rescheduling identified that increasing the capacity of the process plant from 1.4Mtpa to 2.0Mtpa would result in a small reduction in mine life (from 21 years under the Tala Hamza DFS 2018 to 19 years).

The results of the Study are promising and Terramin has decided to progress to a full study with higher levels of confidence, engineering works and costing parameters. While further work (including revised cost estimates) is required to complete the Study to a Feasibility Study standard and demonstrate the potential economics of the optimisation case, early results are encouraging. If results are positive Terramin is likely to consider embedding expansion optionality into Front End Engineering and Design (FEED) works.

Any change to the Tala Hamza 2018 DFS that has been presented to the Government of Algeria will require consultation and approval.

Accuracy of Estimates

The Optimisation Study has been developed to a price and design guideline of +/-25%.

Near Mine Deposits

Further to the initial Optimisation Study results, the Company notes the Tala Hamza deposit remains open to the south and southeast which may support the potential expansion of the existing ore body and may see operations extend beyond the existing mine plan.

Additionally, there is potential to optimise production with material from potential nearby deposits at a central processing facility further underpinning the long life of the project.

An exploration work program, with drill ready targets will be developed as part of any full development of an expansion case.

Funding Options

To achieve the production-targets contained in the Study, Terramin will require a suitable funding solution. Terramin's financing-solution may require discussions with its joint-venture partners and Algerian authorities. The financing-solution will include, but not be limited to, the following factors:

- Securing a fully funded solution for the Tala Hamza Project;
- Minimising potential dilution for Terramin shareholders;
- Managing preferences for joint-venture partners and the Algerian government; and
- Capitalising on prevailing positive trends in the zinc and lead market.

The company is evaluating its financing strategy with the objective of minimising dilution for existing shareholders and for managing the priorities of the joint-venture. Terramin expects that, due to prevailing economic-conditions, the technical work undertaken to date and the results of the DFS 2018 and the Optimisation Study, it should be in a position to secure funding on reasonable terms. Terramin has had discussions with state-owned Algerian banks with significant appetite for funding projects of 'national significance' as defined under Algerian regulation.

Further Work

As a result of the Study, Terramin has decided to commission further works:

- Options analysis of cut-off grade and processing plant size;
- Costs and engineering studies to enhance confidence around capital cost implications;
- An exploration work program required to support expansion cases; and
- Preliminary discussions with stakeholders at local and national level in Algeria.

Contact details

For further information, please contact:

Investor Relations

Richard Taylor
Chief Executive Officer
Terramin Australia Limited
+61 8 8213 1415
info@terramin.com.au

Financial Advisers

Michel Mamet
Managing Director
Flagstaff Partners
+61 457 771 733

Media Enquiries

Mike O'Reilly
Media and Government Consulting
O'Reilly Consulting
+61 414 882 505

TALA HAMZA MINERAL RESOURCES & ORE RESERVES STATEMENT – AUGUST 2018

Table 1: Tala Hamza Zinc-Lead Project: Mineral Resources Estimate

Category	Mt	Zn (%)	Pb (%)	Zn Mt	Pb Mt
Indicated Resource	44.2	5.54	1.44	2.44	0.64
Inferred Resource	8.9	4.0	0.7	0.35	0.06
Total Resource	53.0¹	5.3	1.3	2.8	0.7

1. Numbers, totals and calculations included in this statement may be subject to rounding errors as a result of reporting to levels of precision appropriate to the category of Mineral Resources or Ore Reserves.

Notes: Mineral Resources are reported at a 3.0% Zn.eq cut-off
Mineral Resources are reported inclusive of and not additional to Ore Reserves

Table 2: Tala Hamza Zinc-Lead Project: Ore Reserves Estimate

Category	Mt	Zn (%)	Pb (%)	Zn Mt	Pb Mt
Proved	-	-	-	-	-
Probable	25.9	6.3	1.8	1.6	0.5
Total	25.9	6.3	1.8	1.6	0.5

Notes: Ore Reserves in Table 2 are for 100% of the project (Terramin share 65%)
Ore Reserves are reported at a 4.5% Zn+Pb cut-off (approx. 4.4% Zn.eq)

Competent Persons Statement

The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by Mr Eric Whittaker, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Whittaker is employed as the Principal Resource Geologist of Terramin Australia Limited. Mr Whittaker 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'. Mr Whittaker consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Ore Reserves is based on information compiled or reviewed by Mr Luke Neesham, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Neesham is Principal Mining Engineer for GO Mining Pty Ltd, a consulting firm engaged by Terramin Australia Limited to prepare mining designs and schedules for the Tala Hamza Feasibility Study. Mr Neesham 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'. Mr Neesham consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Aspects of the information used as inputs to or generated as part of the Feasibility Study associated with the Mineral Resources and Ore Reserves Estimates rely upon information prepared by parties other than the Competent Persons and outside of their areas of expertise. The associated documentation has been reviewed and utilised by the Competent Persons in compiling the Mineral Resources and Ore Reserves Estimate and Table 1 commentary.

Geology

A revised estimate of the Mineral Resources at the Tala Hamza deposit in Algeria, based on available data as at 1 January 2018, has been prepared by the staff of Terramin Australia Limited. The estimate was prepared and is reported in accordance with the Australian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves, December 2012 (JORC Code 2012) and also conforms to Algerian Executive Decree 05-252 of 19 July 2005.

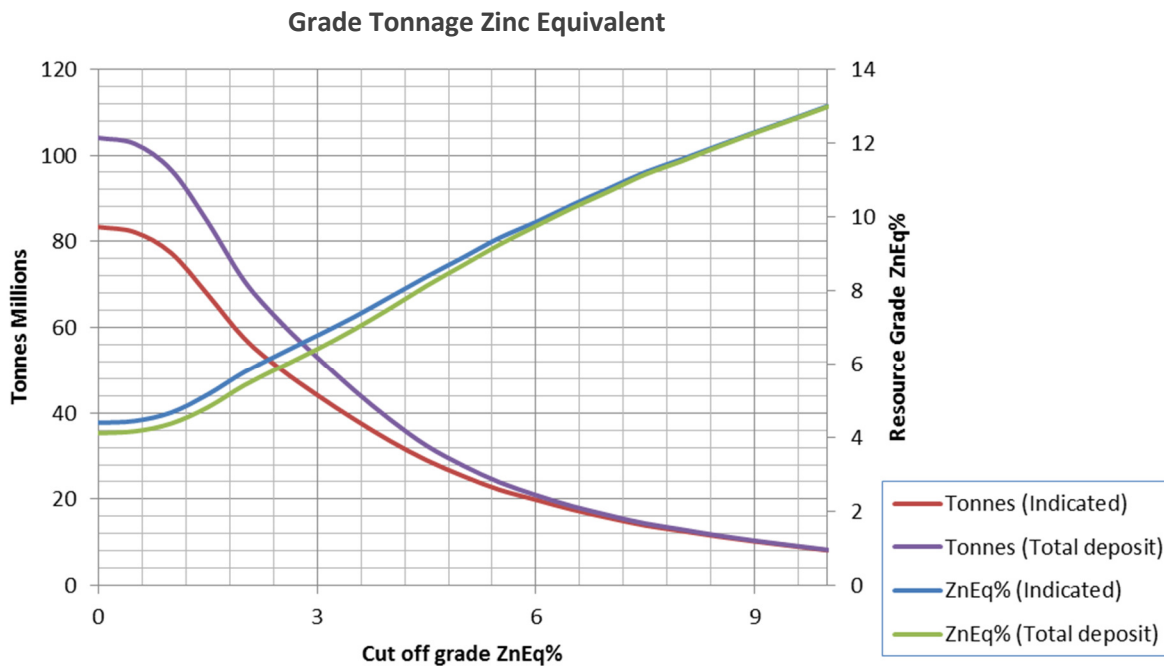
The global 2018 Resource Estimate for Tala Hamza deposit, at a 3% zinc equivalent (Zn.eq) cut-off is 53 Mt @ 5.3% zinc and 1.3% lead. A summary of the results and comparison with the previous estimate is presented in Table 3. The grade tonnage curves for the Indicated portion and for the Total Resource are shown in Figure 1

Table 3: Mineral Resource Estimate for Tala Hamza at a 3.0% Zn.eq cut-off as at January 2018.

Resource Classification	2018			2009		
	Tonnes (Mt)	Zn (%)	Pb (%)	Tonnes (Mt)	Zn (%)	Pb (%)
Measured	-	-	-	30.6	5.74	1.59
Indicated	44.2	5.54	1.44	20.5	3.57	0.79
Measured (2009) + Indicated	44.2	5.54	1.44	51.1	4.87	1.27
Inferred	8.9	4	0.7	17.5	3.7	0.6
Total Resource	53.0	5.3	1.3	68.6	4.6	1.1

Note: The January 2018 estimate is at a 3.0% Zn.eq cut off within the 1% lead + zinc outline. The November 2009 estimate is at a nominal 2.5% Zn.eq cut-off for the Measured and Indicated Resources with internal waste included. Inferred Resource is at a 2.5% zinc equivalent cut-off within the 1% lead + zinc outline. Resource is inclusive of Reserves.

Figure 1: Tala Hamza grade tonnage curves for Indicated and global Resource at different Zn.eq cut-offs.



The 2018 Resource Estimation is supported by a diamond drilling database comprising 93 drill holes, made up of 29 historic drill holes (pre 2005) drilled by the Algerian Government (ORGM) and 64 new holes (2006 - 2010) drilled by Western Mediterranean Zinc Spa (WMZ).

The geological model and estimation methods adopted were similar to those utilised for the 2009 Resource Estimation (reported to the ASX 3 December 2009). The 2018 Resource Estimate contains very similar metal overall to the November 2009 Resource Estimate used for Terramin's 2010 DFS. As per the 2009 Resource Estimate, the 2018 Resource Estimate has been completed in-house by Terramin using Ordinary Kriging (OK) on 20x20x10m parent blocks with sub-blocking to 5x5x5m. Grade-tonnage information was calculated by summation of blocks in the block model meeting specified criteria. The bulk of the Inferred Resource and all of the Indicated Resource are contained in two domains; Lower and Middle, shown in Figure 2 and Figure 3.

There are only small differences between the 2009 and 2018 defined mineralisation shells and estimation parameters. Only minor changes result from the inclusion of data from six new drill holes (TH064-TH068 and TH069C), five of which had been drilled and logged at the time of the 2009 Resource Estimate and were only awaiting assay results at the time.

The most significant changes to the Tala Hamza Resource result from the proposed change in the mining method from a bulk mining method 'block caving' to a more selective mining method 'Underhand Drift and Fill'. The proposed change in mining method necessitated a redefinition of how the 2018 Resource Estimate was classified to better reflect the significant reduction in the selective mining unit (SMU). The 2009 Resource Estimate was classified Measured where the drill spacing was better than 50 m and classified Indicated where drill spacing was between 50 and 75 m. For the 2018 Resource Estimate the highest resource classification of Indicated was assigned where the drill hole spacing is better than 75m.

In addition to the removal of the Measured classification, other significant changes include:

- The proposed 2009 mining method of block caving limited the ability to exclude internal dilution. The 2009 Indicated + Measured Resource classification included approximately 8Mt @ 1.9% Zn + Pb of internal dilution. The proposed mining method of 'Underhand Drift and Fill' allows for the exclusion of internal dilution;
- Removal of +2.5% Zn.eq 'bulk and carry', a requirement for the block cave Indicated classification; and
- Increase in the cut-off from 2.5% Zn.eq to 3% Zn.eq to reflect the change from a bulk mining method to a selective mining method.

The Zn.eq is based on the ratio of forecast zinc and lead prices; payables of 95% for lead and 85% for zinc; and metal recoveries of 62% for lead and 88% for zinc based on the 2010 'Definitive Feasibility Study' (reported to the ASX 12 October 2010). The 2018 zinc equivalent formula is; $Zn.eq = Zn\% + 0.856 Pb\%$.

Mining

Tala Hamza has been the subject of several pre-feasibility and feasibility level studies. These include a Scoping Study in 2007, Pre-feasibility Study in 2009 and Feasibility Study in 2010, all undertaken by or on behalf of Terramin.

Previous studies used extraction methods such as sub-level open stoping, sub-level caving and block caving however regulatory restrictions require a method that will not result in surface subsidence or long term environmental impact.

Following mining method studies in 2014-2015 by the China Non-Ferrous Metal Mining (Group) Co. Ltd (NFC) and China Non-ferrous Metal Industry's Foreign Engineering and Construction Co. Ltd (ENFI), an updated Feasibility Study was prepared by Terramin over the period 2017-2018 with the primary difference being a change in mining method from Block Caving to Underhand Drift and Fill.

The mineable ore zone at Tala Hamza extends from around 0mRL to minus 365mRL. The flat plunge and variable nature of the orebody is such that mining shapes vary significantly with depth. Ore zone strength is relatively weak, varying from less than 5MPa to an average of 25-30MPa.

The 2018 Feasibility Study was based on the following parameters:

- Conventional decline access, jumbo drill and blast, truck and loader haulage;
- Production cycles working under reinforced paste backfill as the sequence progresses downwards; and
- A 1.32Mtpa process plant with conventional crush, grind, float concentration and dry-stacked tailings.

Extraction is planned to be via 4 lifts ('panels'). Each panel is made up of a series of 5m high slices ('flitches') which vary from 30m x 50m to 500m x 300m in surface area. The flitches are in turn divided into up to 5 'districts'. Each district will be mined by jumbo in blocks of 3-6,000t stopes, sometimes referred to at other operations as 'cells'. This will be done by developing 5m wide ore drives up to 50m long and, depending upon the local rock quality, stripping up to 10m wide. Each cell will be filled with steel-reinforced cemented paste-fill before mining the production block alongside.

Flitches will be mined in a downwards or 'underhand' progression to allow working under an engineered roof.

Figure 4: Simplified development layout: plan view

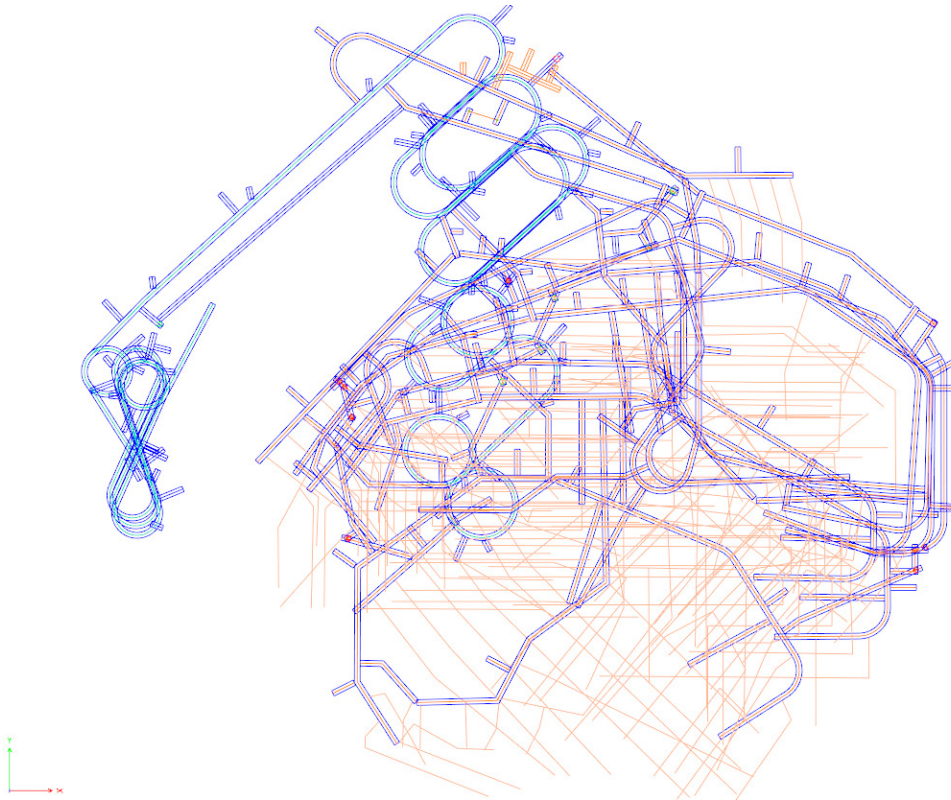


Figure 5: Development layout, looking down and south-east with 4.5% Pb+Zn grade shell

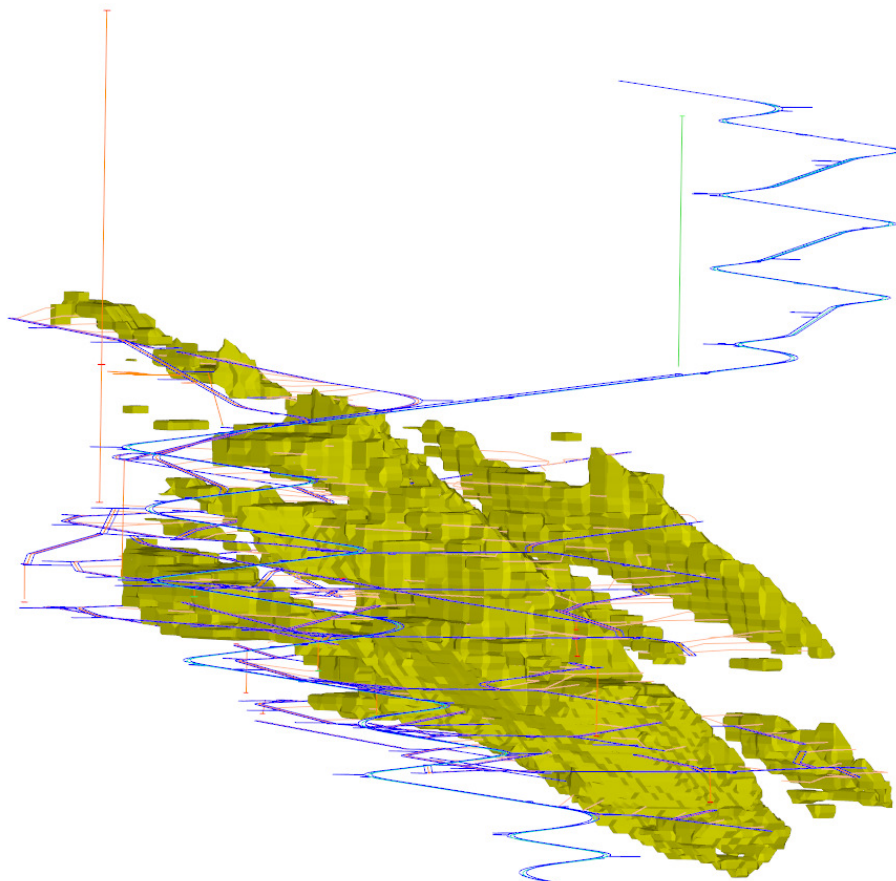


Figure 6: Upper mining flitches

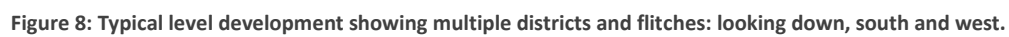


Figure 9: Typical flitch extraction concept.



Material Information relating to Ore Reserves

Table 4: Global inputs

Parameter	Units	Assumption
Zinc Price	US\$/t	2,756 (US\$1.25/lb)
Lead Price	US\$/t	2,315 (US\$1.05/lb)
USD/Dinar		114.94
USD/AUD		1.32
USD/Euro		0.84
Royalty	%	2
Corporate Tax	%	26
Electricity Price	US\$/kWhr	0.04
Diesel Price	US\$/L	0.18

Table 5: Cut-off grade parameters

Parameter	Input
Zinc price	US\$1.25/lb
Concentrator Zn recovery	89.6%
Zn Concentrate grade	53.8%
Smelter payable Zn	85%, min 8% deduction
Zinc TC/RC	6.1% of price
Total Operating Cost	US\$59.33/t mined
Op Cut off grade	3.7% Zn.eq
Capital Unit Cost	US\$18.77/t mined
Cut off grade (inc Cap)	4.8% Zn.eq
Project Analysis Cut-off grade	4.5% Pb+Zn

The results in Table 5 are post-Study outputs. Preliminary first-principles models indicated that an operating cut-off grade around 3.0% Pb+Zn could be appropriate however this was regarded as likely to be too low once the Study had been completed. For the purposes of the Study, the cut-off grade was set at 4.5% Pb+Zn. Future optimisations are expected to include examining the effect of a lower cut-off on the project economics.

Table 6: Mining inputs, design outputs and modifying factors

Parameter	Design Parameter
Portal location	Valley B
Haulage Decline length	4.11 km plus 2.12km off-decline truck ramps
Haulage Decline grade	1 in 7
Haulage Decline dimensions (h x w)	5.5mW x 5.7mH fully-arched, when shotcreted, with 0.3m concrete floor
Total Lateral Development (not including ore driving)	33.11km
Total Vertical Development	870m
Waste development gradients	±1 in 50 to ±1 in 7
Truck haulage drives dimension (w x h)	5.5 m x 5.7 m, fully-arched
Stockpiles, ventilation drives, sub-stations, pump stations, refuge chamber cuddies, drill platforms	5.0m x 5.5mH, fully-arched, except stockpiles which will be square profile and sumps which will be 4.0mW x 4.0mH
Flitch Access drives, branch drives	5.0mW x 4.0-6.0mH, square profile
Truck loading, secondary fan stripping & truck tipping areas.	7.0mH
Ore drives grade	1 in 100 to 1 in 200
Ore drives dimension (h x w)	5.0mW x 4.0-6.0mH, square profile
Nominal Level Interval	30m
Nominal Panel height	65-145m
Total number of panels	4
Total waste trucking	2.65Mt
Total ore trucking	25.9Mt
Total paste backfilling	15.1Mt
Undesigned dilution factor	5% at zero grade
Mining recovery factor	93%

Table 7: Comparison to 2010 Ore Reserves Estimate

Category	Mt	Zn (%)	Pb (%)	Zn (Mt)	Pb (Mt)
2010					
Proved	-	-	-	-	-
Probable	38.1	4.8	1.4	1.9	0.5
Total	38.1	4.8	1.4	1.9	0.5
2018					
Proved					
Probable	25.9	6.3	1.8	1.6	0.5
Total	25.9	6.3	1.8	1.6	0.5
Difference					
Proved	-	-	-	-	-
Probable	-12.2	1.5	0.4	-0.2	-0.1
Total	-12.2	1.5	0.4	-0.2	-0.1
As percentage					
Proved	-	-	-	-	-
Probable	-32%	32%	32%	-10%	-10%
Total	-32%	32%	32%	-10%	-10%

The 2010 Ore Reserve was net of allowances for waste material able to be separated at the draw-point (6.9Mt), low grade dilution (5.9Mt) and Inferred dilution (1.8Mt).

When compared to the 2010 Ore Reserves, the 2018 Ore Reserves estimate has a 32% reduced tonnage and 32% increased grade, which results in a net 10% reduction in contained metal. The main source of this difference is the change from a Block Caving method to Underhand Drift and Fill. There is also some contribution from adjustments to the Mineral Resource.

JORC Code, 2012 Edition – Table 1 report template

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> Only diamond drilling has been utilised for the Tala Hamza Resource estimation. Sampling of mineralised zones was predominantly half diamond drill core with a nominal 1m sample length.
Drilling techniques	<ul style="list-style-type: none"> All ORGM and WMZ holes were diamond drilled for the entire hole. A total of 32 HQ sized diamond drill holes were drilled by ORGM into the Resource between 1988 and 1994. A further 64 diamond drill holes have been drilled by WMZ into the Resource between 2006 and 2010. All WMZ holes were commenced with HQ but where ground conditions required, or where daughter holes were taken off of parent holes, NQ was used to complete the drill holes. In total NQ was used to complete 15 holes and makes up 14% of sampled intervals.
Drill sample recovery	<ul style="list-style-type: none"> Due to poor recovery from some ORGM holes, 8 holes have been twinned and replaced by WMZ holes, while from the remaining 24 ORGM holes used in the resource calculation only 10 of these fall within the Indicated portion of the Resource. Diamond drill core recovery from the WMZ drilling programs has been excellent, with an average of 97.1% core recovery within the orebody. The remaining historical ORGM holes have an average weighted core recovery of 83.3%.
Logging	<ul style="list-style-type: none"> Geological logging has been undertaken by seven WMZ and ORGM geologists and two Terramin geologists. Training was provided by Terramin geologists familiar with volcanic terrains and Professor Jocelyn McPhie from CODES (University of Tasmania) provided advice on classification and nomenclature of the volcanic rocks. Core was originally logged using paper logs and transcribing these logs into the database. Direct logging using hand held computers was later implemented, followed by laptops. All systems use the same standard codes, however these have been adapted to reflect increasing understanding over time. Detailed logging routinely consisted of lithology, alteration, mineralisation, veining, structure, and geotechnical data. All drill holes were logged in full. All WMZ drill core was photographed using a digital camera. Photographs were initially transferred to the on-site directory and are backed up on compact disc. Advancements now see a Terramin server replicate a dedicated folder location on a WMZ server.
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> Mineralised intervals are identified by the site geologist who marks up the core sample intervals. Core sampling extends 20 metres above and below the main mineralised interval. Sample length interval is nominally at 1 metre but varies based on lithology and mineralisation styles. The core is cut on site by WMZ personnel using a diamond bladed core saw with individual intervals placed into numbered calico bags with all sample intervals and sample numbers recorded on a standard sample interval sheet. Half-core samples were initially sent to commercial laboratories for sample preparation prior to assaying. To minimize shipping costs from July 2008 half-core samples were crushed and split by WMZ prior to shipping. The crushing procedures and equipment were chosen to replicate those used by OMAC Laboratories (OMAC). The sampled half core intervals are crushed to 90% passing 2mm using a JC2500 jaw crusher. Using a riffle splitter (450 x 200 x 25mm) a 250g sample split is taken from the crushed sample interval and placed into a numbered plastic bag that is then sealed for shipment to OMAC. Quality control procedures during WMZ sampling included: <ol style="list-style-type: none"> 1. Certified standards sourced from Geostats Pty Ltd inserted in the drill sample sequence every

Criteria	Commentary
	<p>25 samples</p> <p>2. Inclusion of three blanks (very low level certified standards) at the start of every sample batch to act as a flush</p> <p>3. Duplicate samples of crushed and split core are taken at frequency of 1 duplicate for every 50 original samples</p>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> A number of Laboratories were used for analysis of samples used in the Tala Hamza Resource Estimate. Drill holes completed by ORGM were sampled and analysed in their laboratory at Bourmedes, Algeria. Analyses for WMZ samples were completed at the following laboratories: <ol style="list-style-type: none"> Amdel Limited (ISO 9001, ISO/IEC 17025), Adelaide, Australia (2007) ALS Laboratory Group (ISO 9001, ISO/IEC 17025), Adelaide & Brisbane, Australia (2007) Optimet Laboratories Adelaide, Australia (2007) OMAC (ISO/IEC 17025), Ireland (2007 to 2008) ORGM laboratory in Algeria used a two-stage, four acid digest to dissolve the aliquot. In the first stage HF + HCl or HClO₄ was used, followed by HCl + HNO₃. The samples were routinely analysed for zinc and lead by atomic absorption spectrophotometry (AAS), using Perkins Elmer equipment prior to 1990 and Phillips equipment subsequently. Standard solutions bought from suppliers in Germany and France were used to calibrate the AAS equipment prior to analysis of the sample solutions. Three percent of samples were automatically reanalysed by selecting a second 1g aliquot. Assay method used by Amdel for lead, zinc and silver determinations was a customized MET1 technique as Terramin requested that hydrofluoric acid not to be used in the digest to avoid analysis of zinc bound up in silicate minerals. A 1.5 to 3 gram sample from the pulp was digested in a modified aqua regia leach (using a nitric and perchloric acid digest with a hydrochloric acid leach) with determinations done on an ICP OES machine (Optima 5300). The ALS method selected was their ME-ICP41a-Ore Grade which involved a nitric acid/hydrobromic acid pre-digestion, followed by an aqua regia digestion. The resultant mixture was then leached in a strong hydrochloric acid and made up to final volume in a volumetric flask, and then analysed by inductively coupled plasma – atomic emission spectrometry on Varian Vista-Pro ICP-AES. OMAC's assay method used was their ICP-ORE technique where a portion of the pulverised material was digested using HCl-HNO₃-HBr which provided a strong oxidising digestion for sulphide minerals. The final analysis was done by an ICP-OES machine. The ICPORE upper detection limits for lead and zinc are 30% and 50% respectively. BM2/A a high precision atomic absorption technique is used on samples that have gone 'over range' for the ICPORE.
Verification of sampling and assaying	<ul style="list-style-type: none"> A Terramin geologist was assigned the task of monitoring the QC of resource definition assaying. Assay quality was monitored on a batch by batch basis to identify and rectify problems immediately as well as on a six-monthly basis to monitor long term trends. The QC data was stored in Terramin's Maxwell Geoservice's Datashed database and accessed through a linked programme QAQCR also from Maxwell Geoservices. All QAQCR reports are stored on the Terramin server. The QC implemented by Terramin for the WMZ drilling programme consisted of the following: <ol style="list-style-type: none"> Certified standards sourced from Geostats Pty Ltd inserted in the drill sample sequence every 25 samples Blanks (very low level certified standards) grind sizing checks check sampling using coarse duplicates and pulp duplicates check assaying using umpire laboratories In addition to QAQCR analyses further checks were carried out using: <ol style="list-style-type: none"> Standardised Response Mean (SRM) plots for the lead and zinc assays for standards submitted

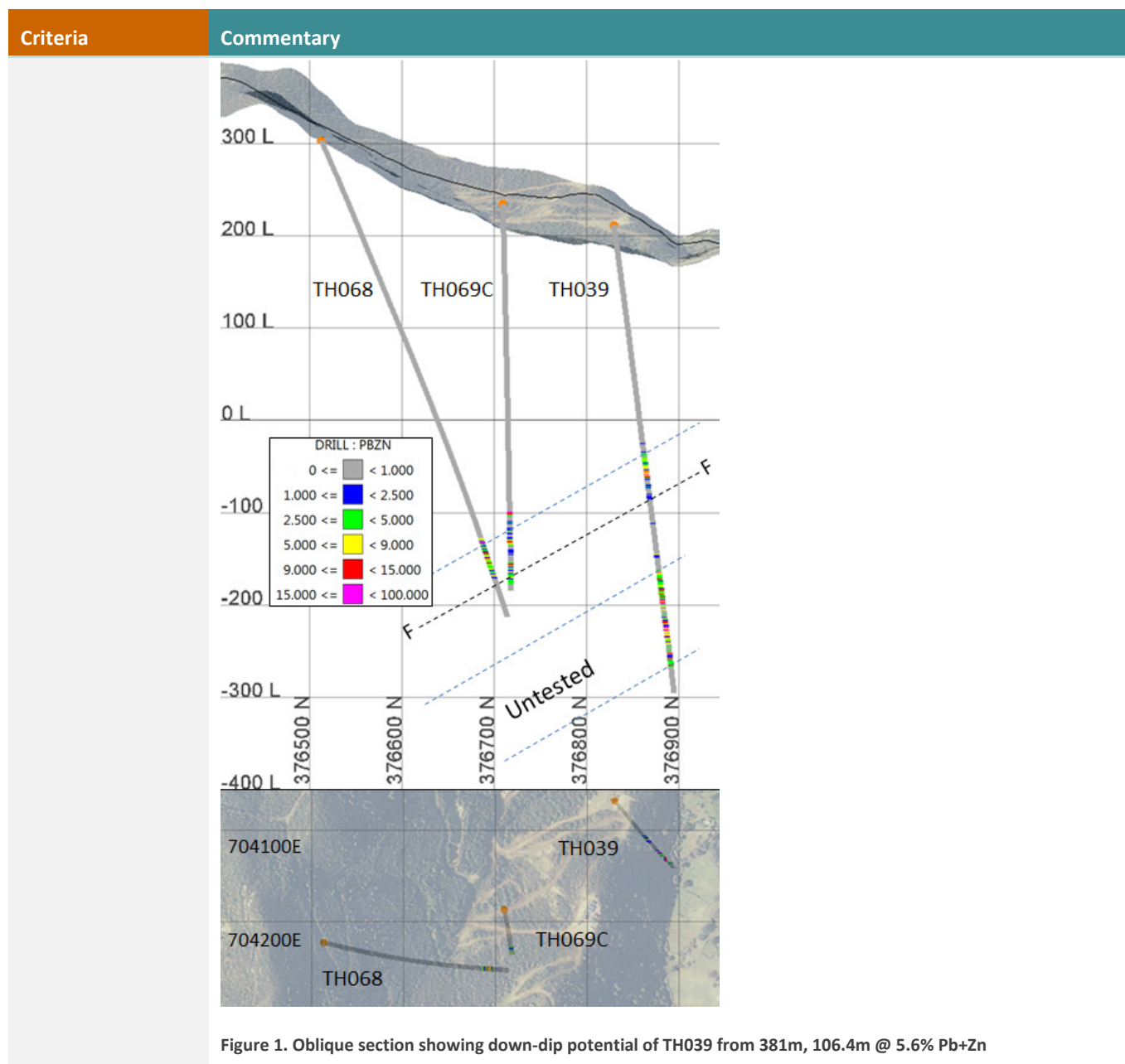
Criteria	Commentary
	<p>2. The analytical results for the original and duplicate samples were compared using scatter and Mean Absolute Paired Difference (MAPD) plots</p>
Location of data points	<ul style="list-style-type: none"> • ORGM located drillhole collars using 'projection conique conforme de Lambert Nord Algérie' which uses the Voirol 1960 datum on the 1880 Clarke ellipsoid. WMZ relocated where possible and resurveyed ORGM holes. SARL Geomatica (an Algerian based surveying company) was contracted to obtain collar location surveys. Control points were established and measured using a Leica SR530 differential GPS with an accuracy of +/- 5mm. Measurements and transformations were conducted using SKI-PRO Version 3.0 software in WGS-84, using the UTM Zone 31 North projection for the purpose of providing local survey control. • All ORGM holes (except OA074) were collared vertically. ORGM completed downhole geophysical surveys in many of their drill holes. Downhole survey measurements were generally performed every 20m. These surveys included hole deviation logs, however the data is sporadic and cannot be used on a consistent basis. Partial information was retrieved for OA077, OA078, and OA079, OA102, and OA104. Attempts have been made to reopen some holes but all are blocked near the collar. The lack of downhole surveys for ORGM holes is of only limited concern as the vertical holes that have been drilled by WMZ have shown very little deviation from vertical. All ORGM holes (except OA074) have been assumed for modelling purposes to be vertical. • Vertical drill holes TH002D1 and TH003 to TH006 were surveyed nominally between 50 to 100 metres apart whereas holes TH007 through to TH064 were surveyed at a nominal 30 metres. • WMZ have used Flexit survey tools to conduct downhole surveys. The Flexit tools provide information on the magnetic susceptibility which assists in determining the validity of the survey. Surveys have shown very little variation in the intensity of the magnetic field strength. There is only limited evidence of magnetic minerals within the hanging wall or mineralisation, and the azimuth measurements are generally assumed to be accurate.
Data spacing and distribution	<ul style="list-style-type: none"> • The maximum drill spacing within the portion of the Resource categorised as Inferred is 120m. The Indicated portion of the Resource has been drilled out at a closer than 75m drill spacing. As the deposit is very thick (typically 150m) relative to its length and breadth (600m by 650m), at a 75m drill spacing this means the drill spacing is one-half of the body thickness so closer spaced drilling is not required to have confidence in the deposit geometry; • There is good geological predictability, with boundaries usually predictable within 1-3 metres • Subsequent drilling is unlikely to change the volume (and hence tonnage) estimate by a significant amount (<5%). • All drilling is by diamond core and therefore no sample compositing has been applied.
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> • Overall the mineralisation plunges approximately 20 degrees to the south east but the fault controlled high grade core (+3.5% Zn.eq) plunges 40 degrees to 200. • The mountainous terrain limits the selection of suitable drill pads and the depth of the deposit means most holes are collared just off vertical. Drill holes typically intersect the plane of mineralisation at 60 to 80 degrees. • Orientations are not creating any known bias.
Sample security	<ul style="list-style-type: none"> • Drill core was transported from the drilling site to the Tala Hamza core yard by WMZ personnel on a daily basis. All samples are stored in the WMZ core yard which is either manned or locked at all times. The core will be transferred to the government on approval of the Mining Lease in accordance with the Mining Law. Once the core is logged cut and crushed the samples are then transported to the assay laboratory in Ireland using DHL. All deliveries are tracked using consignment numbers. Once they are received at the laboratory, the samples are reconciled against the sample dispatch.
Audits or reviews	<ul style="list-style-type: none"> • Terramin's Tala Hamza database has been independently validated by Golder Associates.

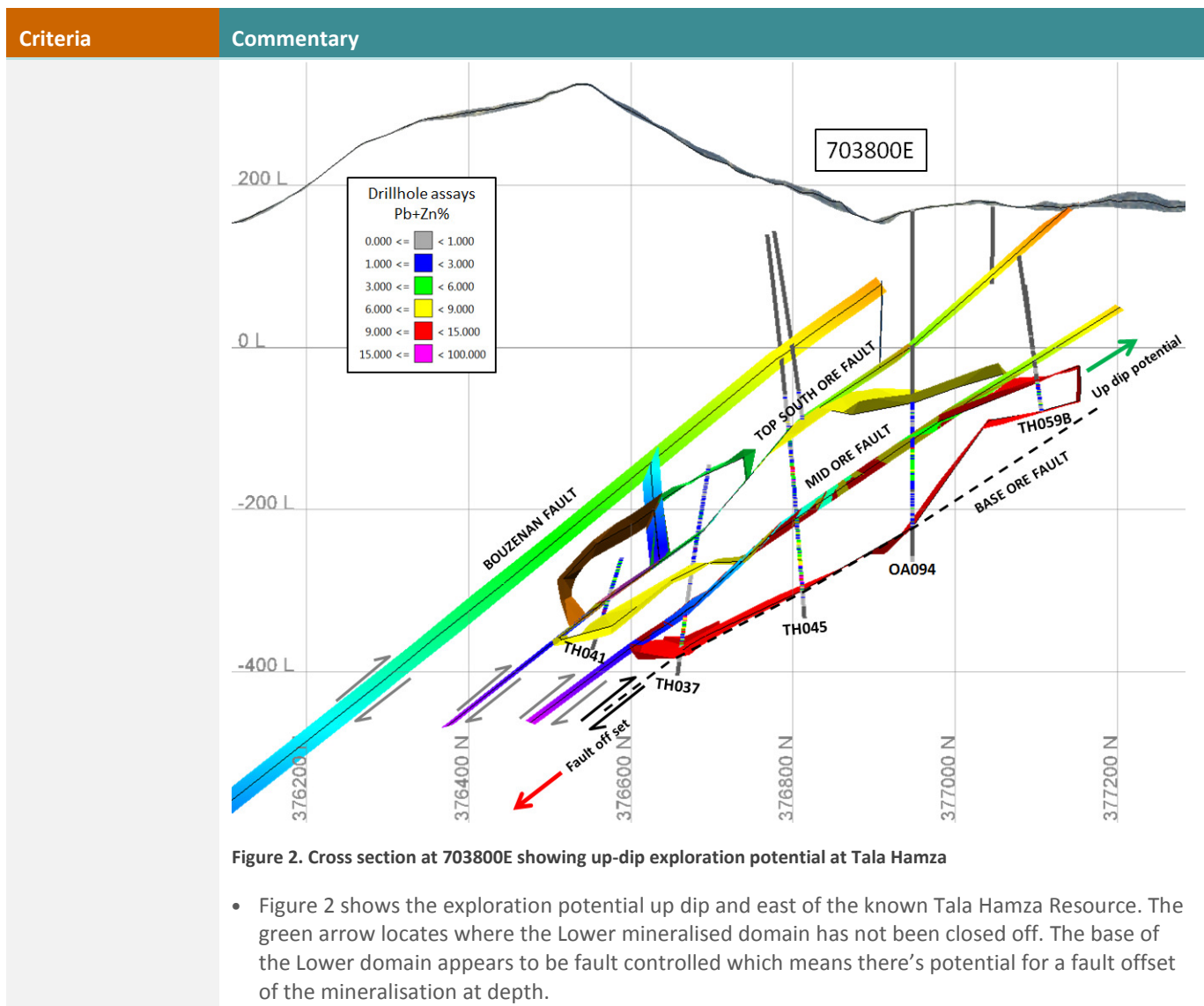
Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	Commentary																																																												
Mineral tenement and land tenure status	<ul style="list-style-type: none">The Tala Hamza exploration license, PEM 6911 title was held by the Algerian registered company Western Mediterranean Zinc Spa (WMZ). This company is the management vehicle for the Oued Amizour Joint Venture signed in February 2006 between Terramin Australia (65%), Entreprise Nationale Des Produits Miniers Non Ferreux et des Substances Utiles (ENOF) (32.5%) and Office National de Recherche Géologique et Minière (ORGM) (2.5%). The ownership of the Mining Lease is expected to remain unchanged from that of PEM 6911.PEM 6911 expired on 31 January 2018. WMZ is entitled to apply for a grace period under the Mining Act, however discussions with the relevant authorities have indicated that this is unnecessary as a Mining Lease has been prepared for submission.																																																												
Exploration done by other parties	<ul style="list-style-type: none">In the 1980’s, geological, geophysical and geochemical surveys were carried out by Soviet geologists on behalf ORGM. The ‘blind’ Tala Hamza base metals mineralisation was discovered in 1988, after several years of detailed exploration. ORGM undertook drilling at Tala Hamza until 1994 and regional exploration drilling until 2000.																																																												
Geology	<ul style="list-style-type: none">Mineralisation at Tala Hamza lies within a sequence of volcanic and volcanoclastic rocks located within a Miocene graben structure. For this reason it has been referred to as a volcanic hosted massive sulphide (VHMS) deposit or more commonly volcanic hosted sulphide deposit. It is however missing many of the features normally associated with such deposits. Many of the observed features are more akin to an epithermal or hydrothermal replacement style of mineralization.																																																												
Drill hole Information	<ul style="list-style-type: none">Exploration results previously reported and available from ASX or Terramin website. <table><tr><th colspan="3">Table A. Date and title of ASX releases and drillholes documented</th></tr><tr><th>Date</th><th>Report</th><th>Drillholes</th></tr><tr><td>05/01/2007</td><td>First Algerian assays</td><td>TH001 - TH004</td></tr><tr><td>31/01/2007</td><td>Fourth Quarter Activities Report 2006</td><td>TH001 - TH006</td></tr><tr><td>14/03/2007</td><td>Tala Hamza assay results</td><td>TH003</td></tr><tr><td>04/04/2007</td><td>New assay results enhance size and grade, Tala Hamza</td><td>TH004</td></tr><tr><td>30/04/2007</td><td>First Quarter Activities Report 2007</td><td>TH001 - TH008</td></tr><tr><td>30/07/2007</td><td>Second Quarter Activities Report 2007</td><td>TH005 - TH014</td></tr><tr><td>14/09/2007</td><td>Southerly high grade zone expands Tala Hamza Deposit</td><td>TH007 - TH011</td></tr><tr><td>28/11/2007</td><td>Further high grade intersections at Tala Hamza Deposit</td><td>TH012 - TH015</td></tr><tr><td>04/02/2008</td><td>Tala Hamza infill program</td><td>TH016 - TH021</td></tr><tr><td>08/07/2008</td><td>Oued Amizour Zinc Project</td><td>TH017B - TH031</td></tr><tr><td>24/10/2008</td><td>Third Quarter Activities Report 2008</td><td>TH030 - TH040</td></tr><tr><td>15/01/2009</td><td>Fourth Quarter Activities Report 2008</td><td>TH041 - TH047</td></tr><tr><td>15/01/2009</td><td>First Quarter Activities Report 2009</td><td>TH044 - TH049</td></tr><tr><td>29/07/2009</td><td>Second Quarter Activities Report 2009</td><td>TH050 - TH055</td></tr><tr><td>26/10/2009</td><td>Third Quarter Activities Report 2009</td><td>TH053B - TH059B</td></tr><tr><td></td><td>Not reported non-mineralised geotechnical holes</td><td>TH060 - TH062</td></tr><tr><td>28/01/2010</td><td>Fourth Quarter Activities Report 2009</td><td>TH063 - TH064</td></tr><tr><td>19/07/2010</td><td>Drill results enhance Tala Hamza upside</td><td>TH065 - TH067</td></tr></table> <ul style="list-style-type: none">Collar ‘set ups’ of previously unreported drill holes discussed in below section ‘Further work’ are	Table A. Date and title of ASX releases and drillholes documented			Date	Report	Drillholes	05/01/2007	First Algerian assays	TH001 - TH004	31/01/2007	Fourth Quarter Activities Report 2006	TH001 - TH006	14/03/2007	Tala Hamza assay results	TH003	04/04/2007	New assay results enhance size and grade, Tala Hamza	TH004	30/04/2007	First Quarter Activities Report 2007	TH001 - TH008	30/07/2007	Second Quarter Activities Report 2007	TH005 - TH014	14/09/2007	Southerly high grade zone expands Tala Hamza Deposit	TH007 - TH011	28/11/2007	Further high grade intersections at Tala Hamza Deposit	TH012 - TH015	04/02/2008	Tala Hamza infill program	TH016 - TH021	08/07/2008	Oued Amizour Zinc Project	TH017B - TH031	24/10/2008	Third Quarter Activities Report 2008	TH030 - TH040	15/01/2009	Fourth Quarter Activities Report 2008	TH041 - TH047	15/01/2009	First Quarter Activities Report 2009	TH044 - TH049	29/07/2009	Second Quarter Activities Report 2009	TH050 - TH055	26/10/2009	Third Quarter Activities Report 2009	TH053B - TH059B		Not reported non-mineralised geotechnical holes	TH060 - TH062	28/01/2010	Fourth Quarter Activities Report 2009	TH063 - TH064	19/07/2010	Drill results enhance Tala Hamza upside	TH065 - TH067
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Criteria	Commentary																																																																												
	<p>reported in Table B and assay results are reported in Table C These holes were not reported previously as they were not considered significant.</p> <p>Table B. Drill hole collar information</p> <table><tr><th>Hole</th><th>East</th><th>North</th><th>RL (m)</th><th>Max depth (m)</th><th>Azimuth</th><th>Dip</th></tr><tr><td>TH039</td><td>704067.5</td><td>376829.4</td><td>211.47</td><td>516.9</td><td>50.4</td><td>-78</td></tr><tr><td>TH068</td><td>704223</td><td>376512.9</td><td>303.22</td><td>555.4</td><td>12.5</td><td>-65</td></tr><tr><td>TH069C</td><td>704186.6</td><td>376709.3</td><td>234.39</td><td>422.5</td><td>75.5</td><td>-82</td></tr></table> <p>Table C. Summary drill intersections</p> <table><tr><th>Hole</th><th>From (m)</th><th>To (m)</th><th>Length (m)</th><th>Approx. true width (m)</th><th>Pb</th><th>Zn</th><th>Comment</th></tr><tr><td>TH039</td><td>253.1</td><td>280</td><td>26.9</td><td>25</td><td>0.76</td><td>5.81</td><td>Mineralisation open to east</td></tr><tr><td>and</td><td>381</td><td>487.4</td><td>106.4</td><td>105</td><td>0.57</td><td>5.03</td><td>Mineralisation open to east</td></tr><tr><td>TH068</td><td>465.3</td><td>509.1</td><td>43.8</td><td>41</td><td>0.40</td><td>4.81</td><td>Hole failed to reach main target 570-605m</td></tr><tr><td>TH069C</td><td>352.85</td><td>373</td><td>20.15</td><td>17</td><td>0.53</td><td>3.42</td><td>Hole failed to reach main target 440-510m</td></tr><tr><td>and</td><td>391</td><td>414.6</td><td>23.6</td><td>22</td><td>0.44</td><td>3.62</td><td></td></tr></table> <ul style="list-style-type: none">TH068 was abandoned at 509.1m due to poor ground conditions both in the hanging-wall and due to a large open fault breccia in the footwall of the reported mineralisation. Several attempts were made to intersect the same deeper target position as TH068 with the TH069 series of holes; TH069 (max. depth 59.4), TH069B (max. depth 65m) and TH069C, none of which were successful in reaching the target depth due to poor ground conditions in the top 70m and in the case of TH069C due to the same footwall breccia intercepted in TH068.	Hole	East	North	RL (m)	Max depth (m)	Azimuth	Dip	TH039	704067.5	376829.4	211.47	516.9	50.4	-78	TH068	704223	376512.9	303.22	555.4	12.5	-65	TH069C	704186.6	376709.3	234.39	422.5	75.5	-82	Hole	From (m)	To (m)	Length (m)	Approx. true width (m)	Pb	Zn	Comment	TH039	253.1	280	26.9	25	0.76	5.81	Mineralisation open to east	and	381	487.4	106.4	105	0.57	5.03	Mineralisation open to east	TH068	465.3	509.1	43.8	41	0.40	4.81	Hole failed to reach main target 570-605m	TH069C	352.85	373	20.15	17	0.53	3.42	Hole failed to reach main target 440-510m	and	391	414.6	23.6	22	0.44	3.62	
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Data aggregation methods	<ul style="list-style-type: none">Summary intercepts reported in Table C are a ‘bulk and carry’ of better than 2.5% Pb+Zn.																																																																												
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none">Drilling has were possible been designed to intercept mineralisation at a high angle and as such the previously reported downhole intercepts widths are a good indicator of true widths.																																																																												
Diagrams	<ul style="list-style-type: none">The company has maintained continuous disclosure of significant drilling details and results for Tala Hamza, which are presented in Table A in the above section ‘Drill hole Information’.																																																																												
Balanced reporting	<ul style="list-style-type: none">Comprehensive reporting is undertaken.																																																																												
Other substantive exploration data	<ul style="list-style-type: none">There are no further Tala Hamza exploration results to report.																																																																												
Further work	<ul style="list-style-type: none">The deposit is still open and there is excellent potential to extend the Resource. Geological and structural modelling has shown potential for extensions up dip and for fault offsets and extensions particularly in the south and east of TH039.																																																																												



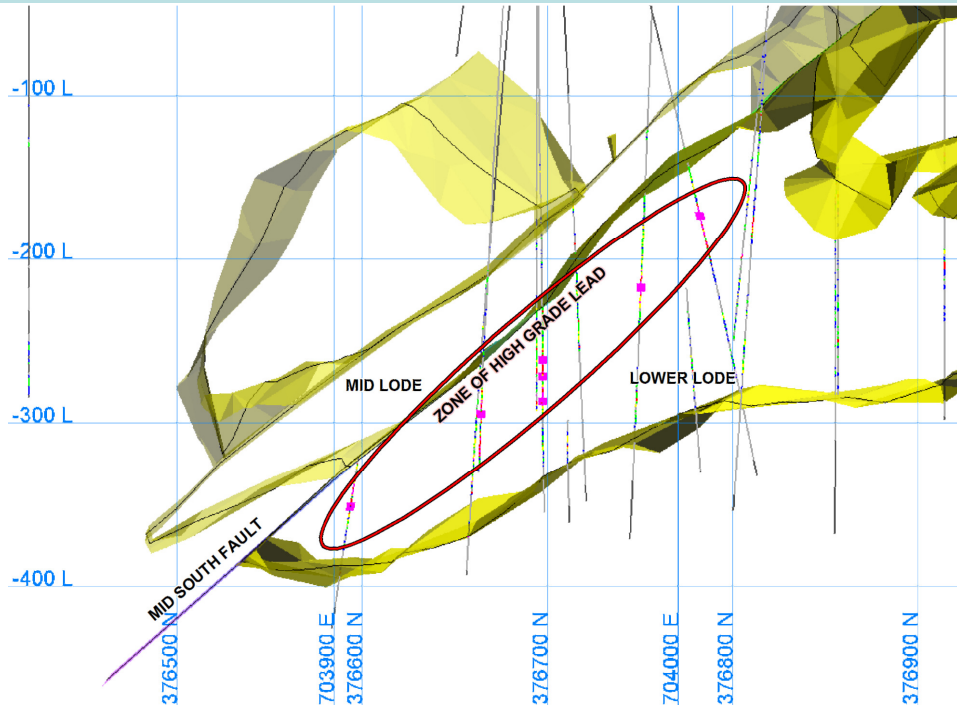


Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	Commentary
Database integrity	<ul style="list-style-type: none"> All drill hole and assay data for WMZ/Terramin is stored in an SQL database, which is maintained by Terramin's fulltime Database Manager. User access to this database is through Maxwell Geoservices' DataShed software. Full daily database backups are made to a dedicated local server and offsite at Terramin's IT service provider LogicPlus Pty Ltd's datacenter. Annual backups are stored indefinitely at a secure offsite facility. Drill hole templates in MS-Excel format are distributed to geologists. Each hole is drilled, sampled, surveyed and logged in the template. Once the hole is completed the data is forwarded to the Data Manager who then loads this information into DataShed. The Database Manager is responsible for validation of all data loaded into DataShed. All codes used are matched with records held in the appropriate libraries within DataShed. Overlapping intervals, depth past end of hole and incorrect codes will not be loaded into the database and these records are flagged and a file generated. These errors are corrected and then loaded into

Criteria	Commentary
	<p>the database. The collar name and sample numbers are unique and all assay information is loaded automatically to that sample number.</p> <ul style="list-style-type: none"> Visual validation is performed using Vulcan 3D to check data against surrounding drill holes, geological model, and mapped information. Assay data is received from the contract laboratories in electronic form. Assay merges are performed on the day of receipt of assays. The assay merge is an automated process that is activated by the Database Manager. Repeat and duplicate assays are stored separately within the database. No average results are used or stored in the database. Initial assays are used in resource estimations. Quality control reports are run after every assay load and forwarded to the geologist and any reports of suspect data are checked and rectified.
Site visits	<ul style="list-style-type: none"> The competent person for the Resource section of this report, Eric Whittaker (Terramin Consultant Geologist) has spent several months at Tala Hamza mentoring WMZ geologists and observing field practices.
Geological interpretation	<ul style="list-style-type: none"> The geological model of the blind Tala Hamza deposit was developed by Terramin. As a first pass the location of faults intersected in drill holes that were seen to truncate mineralization were spatially located in Vulcan 3D. Through a process of disambiguation, possible fault planes were generated from selected fault intersections and tested for continuity. Further modelling of a distinctive coarse feldspathic dacite identified additional faults. Alteration zones were not modelled separately due to the complex overprinting relationships. However, alteration was used as a guide for interpreting mineralised envelopes. Mineralisation was modelled using wire frames constructed from interpretations on 20 metre sections oriented north-south. Where not controlled by faults the limits for the lodes were based on a >1% Pb+Zn cut off boundary that represented the mineralised envelope.
Dimensions	<ul style="list-style-type: none"> Tala Hamza mineralisation is approximately 650m across strike, 600m down-dip, typically 150m thick and located between 120-680m below surface. Overall the mineralisation plunges approximately 20 degrees to the south-east. The fault controlled high grade core (+4.5% Zn.eq) is approximately 450m across strike, 500m down-dip, typically 100m thick and located between 200-680m below surface and plunges 40 degrees to the south-east.
Estimation and modelling techniques	<ul style="list-style-type: none"> Drill hole assay data was composited downhole over 5m intervals using Vulcan Envisage, starting at domain boundaries, and flagged with priorities and domain codes. Golder investigated potential spatial continuity using correlograms. Correlograms were selected to define appropriate variograms for ordinary kriging (OK) as they are robust when erratic grades are present. Correlogram maps did not indicate significant spatial anisotropy for either zinc or lead. Consequently, experimental downhole correlograms and omniplanar correlograms were calculated and modelled to obtain kriging parameters for resource estimation. Cumulative probability plots for zinc and lead composites on a log scale were generated, in order to examine the shape of the distributions of grades and in particular the high-grade tails. These indicate that the distributions are moderately skewed and identified upper population breaks at 30% for zinc and 16% for lead representing 0.25% and 0.41% respectively of all samples. Analysis of these higher values showed that they are spatially correlatable, coincident with the search parameters of the variograms and that they are located in the higher grade portion of the Lower Lode. The spatial association of these samples supported their assays inclusion as un-cut in the Resource.

Criteria	Commentary
	 <p>Figure 3; Oblique cross-section showing the spatial association of the +16% lead composites (shown as pink squares)</p>
Moisture	<ul style="list-style-type: none"> A total of 979 measurements of moisture loss were made on samples collected from core trays that had been naturally air-dried for four to six days (during the period February to June 2008). Samples of a little over 1kg were dried in an oven at 105°C for four hours. The average moisture loss was 1.7% and only minor variation between the months was noted. There was no correlation between the number of natural drying days and the moisture loss. Density and moisture loss measurements were determined for a further 1073 samples. Each sample was dried in an oven at 105°C for four (4) hours. The average moisture loss was 1.48%. The moisture loss in the 'altered lithologies' (massive sulphide, semi-massive sulphide, metasomatite and intensely silicified rock) was generally less than 2%. the majority of samples, which show moisture loss after four hours of oven drying of less than 2%, it appears that the total moisture content may not be much higher than 2%. From these tests it was concluded that an average allowance of 2% moisture content is required to correct the bulk density measurements obtained using the whole tray method.
Cut-off parameters	<ul style="list-style-type: none"> A cut-off grade of 3% zinc equivalent has been used, which is based on economic modelling undertaken by Terramin and is comparable to deposits of a similar size and style. Zinc equivalent is calculated by conversion of Lead grades at a factor of 1% Pb = 0.856% Zn. This is based on price forecasts from Macquarie Research of \$2,400/t for lead and \$2,425/t for zinc, applied to relative metallurgical recoveries of 69% for lead and 89% for zinc. Average silver content in concentrates does not reach a point where it would be a credit and so does not affect calculations.
Mining factors or assumptions	<ul style="list-style-type: none"> The Resource Estimate assumes the selective mining method of Underhand Drift and Fill. The 2009 Tala Hamza Resource assumed block caving as the preferred mining method, the change from a bulk mining method has seen an increase to the Resource cut-off grade from 2.5% Zn.eq to 3% Zn.eq and a change in Resource classification as discussed below.
Metallurgical factors or assumptions	<ul style="list-style-type: none"> Between the period 2007 to 2010 detailed metallurgical test work was undertaken by Optimet on drill holes selected to represent the different styles of mineralisation present at Tala Hamza. Results indicate all styles of zinc and lead mineralisation are amenable to being recovered by flotation with no issues apparent due to deleterious elements.

Criteria	Commentary
	<ul style="list-style-type: none"> DFS 2018 considered a production capacity of 1.32Mtpa with mine life of 21 years. A rate of 2.0Mtpa was considered in the Optimisation Study for a mine life of 19 years.
Environmental factors or assumptions	<ul style="list-style-type: none"> Waste rock will be disposed of in a combination of plant construction foundations, water catchment ponds (Emergency Tails Storage pond and CSF seepage pond), as armouring on the CSF and various drains, encapsulated inside the CSF itself and in a mine waste dump. Material will be separated as Acid Forming, Non-Acid Forming and Potentially Acid Forming for disposal in the appropriate locations. Tailings will be disposed of in a combination of Cemented Paste Backfill (approx. 60%) and dry-stacked tails. Excess mine and processing water will be treated prior to release into local waterways.
Bulk density	<ul style="list-style-type: none"> The presence of vughs along with the variability in style and type of alteration (especially kaolinisation) and or friable sections of Tala Hamza core limited the use of Archimedes, stoichiometric, pycnometric and regressional methods of determining the dry bulk density of core. The method chosen for density determination for Tala Hamza core was the calliper method, done on a tray by tray basis. Calculating the density by whole trays reduces the potential bias introduced by sub sampling heterogeneous core. A weak positive correlation between bulk density and both the zinc and lead grades. The scatter plot shows large amount of scatter, suggesting that the bulk density of the core is controlled not only by the zinc and lead grades but also by the amount of alteration of the rock (eg. pyritisation, kaolinisation, and silicification) and by the occurrence of vughs. Fitting of second order polynomial regression curves to length-weighted average zinc and lead grades versus bulk density indicates an average bulk density of 2.40 t/m³ for unmineralised core.
Classification	<ul style="list-style-type: none"> The previous Resource estimate (2009) classified mineralisation of +2.5% Zn.eq with a drill spacing of <50 m classified as Measured, while material with drill spacing between 50 and 75 m classified as Indicated. These classifications were suitable for the preferred mining method of the time, block caving. The 2014 ENFI study recommend the Underhand Drift and Fill mining method in preference to block cave. In light of this more selective mining method all material previously classified as Measured has now been reclassified as Indicated. This reclassification has no effect on Reserve classification no material had previously been classified as Proved.
Audits or reviews	<ul style="list-style-type: none"> There has only been minor additional information since the 2009 resource estimation and no remodelling of the geology or block model estimation parameters was required. The zinc and lead numbers assigned to individual blocks remain essentially unchanged from the 2009 estimate. The main changes in the reported Resource result from the updating the Zn.eq formula based on current long term forecasts and resource reclassification based on the updated proposed mining method. For the 2009 Resource polygons for Measured and Indicated Resources were defined based on drill hole spacing and a nominal 2.5% Zn.eq cut-off. To reflect the preferred mining method of block caving, a bulk mining technique the reported Measured and Indicated Resources included all material within the respective polygons including internal dilution of 7.8Mt @ 0.27% Pb and 1.59% Zn. The change to 'drift and fill' as the preferred mining method has led to a change in the way the Resource is reported. The drift and fill method is a selective mining method allowing the 2018 Resource to be reported at straight 3.0% Zn.eq. In the opinion of the Competent Person the results are a fair and reasonable representation of the Mineral Resource.
Discussion of relative accuracy/ confidence	<ul style="list-style-type: none"> In the opinion of the Competent Person the results are a fair and reasonable representation of the Mineral Resource.

Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	<ul style="list-style-type: none"> The Mineral Resource consists of an Indicated Resource of 44.2Mt @ 5.54%Zn and 1.44%Pb plus an Inferred Resource of 8.9Mt @ 4.0%Zn and 0.7%Pb for a total of 53.0Mt @ 5.3%Zn and 1.3%Pb. Mineral Resource block models and geological wireframes used in the generation of Ore Reserves are as provided by Eric Whittaker of Terramin. Ore Reserves have been generated using the Vulcan software package. The Mineral Resources are reported inclusive of and not additional to the Ore Reserves.
Site visits	<ul style="list-style-type: none"> The Competent Person has not visited the site. The fact that no mining has yet taken place meant that this was regarded by the CP as unnecessary. Four visits were undertaken to the Terramin Offices in Adelaide to discuss the project with staff who have extensive on site experience. The Competent Person is satisfied with relying on the information provided. Detailed topographical and photographic information has been used in the preparation of designs. Persons preparing the bulk of the Feasibility Study were either based in Algeria or made several visits to Algeria over the period 2016-2018. There were also visits to China to view similar underhand mining techniques in operation. Processing, environmental and social aspects of the Study were undertaken, verified or supervised by in-country expatriate and national staff who make regular visits to the site.
Study status	<ul style="list-style-type: none"> The study is regarded by the CP as meeting the JORC 2012 criteria for a Feasibility Study. It incorporates detailed designs, schedules, financial workups and analysis in all key material aspects other than as mentioned below. The mine plan is technically achievable and economically viable and material Modifying Factors have been considered. Before mining of the ore body commences, it is envisaged that a further program of testing geotechnical performance of reinforced backfill as a roof element will be required to address local regulatory requirements. The design and financial parameters used for the study are regarded by the CP as sufficiently conservative that any adjustments to the plan as a result of this work are unlikely to result in a material change to the Ore Reserves Estimate.
Cut-off parameters	<ul style="list-style-type: none"> The cut-off grade used for the Ore Reserves Estimate is a combined in-situ grade of 4.5% Zn + Pb. Production areas have been hand-designed based on digitising horizontal boundaries around grade shells generated at this grade using the Vulcan software package. Analysis of outputs from the study indicates that an operating cut-off grade of 3.5% Zn.eq (approx. 3.6% Zn+Pb) would be able to be used in future work. This difference is not expected to have a negative or otherwise material impact upon future estimates.
Mining factors or assumptions	<ul style="list-style-type: none"> The mining method selected for the study is underground mining using a mechanised Underhand Drift and Fill technique. Previous scoping, pre-feasibility and feasibility studies have examined options including sublevel open stoping with paste fill, sublevel caving and block caving. Regulatory requirements that proscribe surface subsidence, combined with a generally low rock mass competence and variable ore boundaries mean that Underhand Drift and Fill is regarded by the CP as the most suitable method for the deposit. Access will be by decline with medium to large sized diesel truck and loader haulage. Development will be by conventional jumbo techniques with conventional drill and blast. Ore production will involve taking 5m layers (flitches) using a jumbo drift-advance/strip-retreat cycle in a top-down sequence under engineered reinforced paste backfill. Fill cycles will take place approximately every 6,000t of mined ore. Designs and schedules incorporate four panels or lifts over 365 vertical metres and 30m level intervals with footwall truck access and loader flitch access. 5m pillars will be left between panels. A mining dilution of 5% at zero grade has been used for all ore production.

Criteria	Commentary
	<ul style="list-style-type: none"> A mining recovery of 93% has been used for all production. A minimum mining height of 4m and maximum of 6m has been assumed with all designs generated as 5m thick slices (flitches). Inferred Mineral Resources are ignored outside of the planned production shapes (eg. where development to access the production areas passes through Inferred material). These areas are assumed to be waste rock at zero grade. Inferred material inside the planned production shapes makes up 0.1% of the total and is justified as able to be included in the Ore Reserves estimate due to being less than the order of precision reported. No sensitivity analysis has been done on the potential for inclusion of Inferred Mineral Resources. Mobile fleet is modelled to include; twin-boom jumbos, 8m³ loaders, 50-60t underground trucks, surface tails haulage trucks and loaders, dozers, charge wagons, shotcreting fleet, toolcarriers and telehandlers, light vehicles, medium service vehicles and ancillary ground support equipment. Fixed plant (for underground operations) will include light and medium submersible pumps, mid-sized modular pump stations, secondary fans, primary fans, surface and underground substations, electrical starters and switching to Australian standards, conventional steel wire armoured and polyethylene reticulated services, surface compressors, paste filling plant and reticulation, shotcrete batching plant, surface maintenance facilities, offices, surface refuelling, and leaky feeder, wireless and wired communications.
Metallurgical factors or assumptions	<ul style="list-style-type: none"> Between 2007 and 2010, detailed metallurgical test work was undertaken by Optimet on drill holes selected to represent the different styles of mineralisation present at Tala Hamza. Results indicate all styles of zinc and lead mineralisation are amenable to being recovered by flotation with no issues apparent due to deleterious elements. Conventional flotation will be used to recover a Zinc Concentrate and a Lead Concentrate. Metallurgical recovery is modelled as 89.6% for Zinc to produce a product at 53.8%Zn and 73.2% for Lead to produce a product at 62.6%Pb.
Environmental	<ul style="list-style-type: none"> Environmental, Socioeconomic, Archaeological, Anthropological, Climatological, Water Management, Noise, Visual Impact, Flora and Fauna, Closure and other required Studies have been undertaken by a combination of international and in-country consultants with reference to national regulatory requirements and international standards. Waste rock will be disposed of in a combination of plant construction foundations, water catchment ponds (Emergency Tails Storage pond and Cake-Storage Facility (CSF) seepage pond), as armouring on the CSF and various drains, encapsulated inside the CSF itself and in a mine waste dump. Material will be separated as Acid Forming, Non-Acid Forming and Potentially Acid Forming for disposal in the appropriate locations. Tailings will be disposed of in a combination of Cemented Paste Backfill (approx. 60%) and dry-stacked tails. Excess mine and processing water will be treated prior to release into local waterways.
Infrastructure	<ul style="list-style-type: none"> The deposit lies approximately 10km from the port city of Bejaia, the capital of the local province with a population of 175,000 in the city and 950,000 in the province. Loading and transportation facilities exist at the port, ship loading to bulk carrier will be undertaken using a 'rotainer' rotating container system. The city has an international airport with flights to Algiers and Europe. The deposit is located across several hills and valleys at elevations from 100-300mASL. Locations have been selected for construction of all plant and dumps. Title to the land required will be acquired through the government JV partner. Undertakings have been received from government suppliers that sufficient electrical power will be provided to the planned operation. Make up water will be sourced from orebody perimeter dewatering bores.
Costs	<ul style="list-style-type: none"> The financial model used for the study is appropriate, taking into account such items as local

Criteria	Commentary
	<p>taxation regimes, projected variations as a result of government incentive arrangements, ongoing sustaining capital requirements, discounted cash flows and other detailed factors.</p> <ul style="list-style-type: none"> Capital infrastructure costs have been estimated from designs submitted to various potential EPCM suppliers, estimates provided by local authorities and international suppliers and/or costs for similar items at recent projects. Capital mining equipment and development costs have been derived from first principles using in-country prices and costs from similar operations both in Australia and overseas. Operating costs have been derived from a detailed build-up of fixed and variable unit costs using in-country prices and costs from similar operations both in Australia and overseas. These have been applied to physical outputs from a schedule generated in the Deswik software package which has in turn derived its activities from development and production designs generated in the Vulcan software package. Metal prices are variable in the early years, derived from the June 2018 Wood Mackenzie forecast projected beyond the forecast period at a constant rate. Exchange rates have been set based on recent spot projected at a constant rate. Transportation costs are based on local trucking rates and discussions with the local Port Authority who have provided indicative charges and indicated the availability of a suitable laydown area and ship berth. Detailed capital and operating costings are included in Study documents. No deleterious elements or penalties are expected. Smelter and treatment charges have been estimated from standard contract rates for similar products. An allowance of 2% has been made for royalties.
Revenue factors	<ul style="list-style-type: none"> Head grades are determined by schedule outputs See above regarding derivation of metal prices metal, exchange rates, transportation and treatment charges, etc. The long term projected zinc price is USD2,756/dmt The long term projected lead price is USD2,315/dmt The exchange rates used are EUR/USD = 1.19, AUD/USD = 0.76 and DZD/USD = 115 Treatment and refining charges have been derived from industry standards. There are no contracts yet in place. <ul style="list-style-type: none"> Payable zinc is 85% of the contained metal with a minimum 8% of the concentrate grade. Payable lead is 95% of the contained metal with a minimum 3% of the concentrate grade. TC/RC's for zinc are 6.1% of the metal price. TC/RC's for lead are 7.0% of the metal price.
Market assessment	<ul style="list-style-type: none"> Tala Hamza concentrate is of high quality and low in penalty elements. The proximity of the mine to Europe also means that the product is expected to sell at a premium and in preference to product from other operations. Expected market conditions have been sourced from the June 2018 Wood Mackenzie forecast.
Economic	<ul style="list-style-type: none"> CPI rate for calculating nominal estimates is 2% pa, higher than recent experience but the lower target range for Australian and US regulators NPV for all estimates is discounted at 8% pa Pre-tax IRR is 16%, post-tax is 14%
Social	<ul style="list-style-type: none"> Sociological studies and engagement with stakeholders have been ongoing for many years. Compulsory acquisitions of a number of homes in one village and land will be required. If the project is designated a 'Project of National Importance' acquisition will be undertaken by the government. The project may be designated a 'Project of National Importance' once the ML is granted. As such

Criteria	Commentary
	there is priority placed on providing the assistance necessary to facilitate operations.
Other	<ul style="list-style-type: none"> The Project lies in an earthquake prone zone. This has been allowed for in relevant parts of the Study. Some adjustments to government supplied commercial explosives and initiation systems may be required in order to undertake the project as planned. Alternative non-blasting extraction techniques exist and if found to be appropriate to the project are thought likely to have a positive impact on the overall Ore Reserves and project economics. PEM 6911 expired on 31 January 2018. WMZ is entitled to apply for a grace period under the Mining Act, however discussions with the relevant authorities have indicated that this is unnecessary as a Mining Lease has been prepared for submission.
Classification	<ul style="list-style-type: none"> The Ore Reserve Estimate is classified entirely as Probable. Previous studies included Measured Mineral Resources however these were also entirely classified as Probable for the purposes of the 2010 Block Caving DFS. Due to changes in the selectivity of the mining method relative to the drill spacing available the updated Mineral Resource has reclassified the Measured component as an Indicated Mineral Resource. The reclassification of the Mineral Resource is considered to be an appropriate course of action. The selectivity associated with the mining method means that classifying the whole of the Ore Reserve according to the Mineral Resource classification also remains appropriate. The resulting Ore Reserve Estimate appropriately reflects the Competent Person's view of the deposit.
Audits or reviews	<ul style="list-style-type: none"> WMZ is subject to statutory auditing by an independent locally qualified auditor. Terramin is audited by Grant Thornton.
Discussion of relative accuracy/ confidence	<ul style="list-style-type: none"> The confidence level of the Mineral Resource Estimate is regarded as the main consideration with regard to relative accuracy of the Ore Reserves Estimate. No statistical or other techniques have been used to estimate the accuracy or confidence level of the Ore Reserves Estimate other than those performed on the Mineral Resource Estimate. The DFS 2018 is completed to +/-15%. The estimated Ore Reserves should remain economic within these tolerances based on Terramin's modelling. This would include both the Cut Off Grade and cost inputs. Alternative courses of action are available should known areas of technical uncertainty affect the mining method, these alternatives are unlikely to negatively impact the overall size of the Ore Reserves. The selective mining method means that the modifying factors used are considered by the Competent Person conservative yet sufficiently close to the unmodified design physicals that changes to these factors are unlikely to have a material impact on the Ore Reserves Estimate.