

# Developing Zinc Assets and More!



Zincore has received a positive **Preliminary Economic Assessment** ("PEA") for the development of its Accha Zinc Oxide District project ("AZOD") in southern Peru. At the AZOD, the Company is pursuing a district strategy with a single pyrometallurgical facility (Waelz kiln) to process zinc and lead oxide ores from all AZOD deposits to produce a high grade zinc-lead oxide concentrate. The PEA considered two scenarios for the production of final products of sale. A "**Base Case**" investigated further processing of the concentrate, at a refinery planned at the port of Matarani in southern Peru, including leaching/electrowinning and melting to produce a special high grade ("SHG") zinc ingot and a lead sulphate by-product. A second scenario, the "**Fume Case**", considered selling the zinc-lead oxide concentrate to a third-party refinery. Both scenarios included mining and processing two zinc-lead oxide deposits, Accha and Yanque, at a rate of 1.33 Mt/a using a combination of open pit and later underground mining methods to feed the central Waelz processing facility.

The NI-43-101 compliant PEA Technical Report was completed by AMEC.

AMEC recommendation that the AZOD proceed to Pre-Feasibility stage

Specific opportunities to further enhance already robust economics

High sensitivity to zinc and lead prices could dramatically improve project economics with increases in underlying commodity prices

## Key Report Highlights and Overview

### BASE CASE (Pre-Tax)

- Cumulative net cash flow (undiscounted) US\$635M
- NPV at 8% discount rate US\$232M
- IRR 20.3%
- Payback period 4.1 years
- Capital cost of US\$330M, with sustaining capital of \$21M giving a total capital cost estimate of US\$351M, including a contingency of US\$54M, owner's costs of US\$9M and indirect costs of US\$60M
- Cash operating costs over life of mine (11 years) and net of zinc premium and lead credits is US\$0.18/lb (zinc premium and lead credit applied of 0.62/lb zinc).

### Metallurgical

- Significant metallurgical test work on the project to date includes bench scale and pilot scale testing of the Waelz Kiln technology
- Indicated recoveries of 92% for zinc and 94% for lead
- Mintek (South Africa) and Hatch conducted the bench scale and pilot scale test work respectively

### Mining and Production

- Weighted average stripping ratio for the two pits over the life of mine is planned at 6.4:1
- Total material to be processed is expected at 14.1 million tons
- Average combined mine head grade is 4.8 % Zn and 3.0% Pb
- Planned SHG zinc production is 57 thousand tonnes per annum (total 610 kt) and 38 thousand tonnes per annum contained lead (400 kt over the project life, 52% lead content in lead sulphate).

### FUME CASE – Oxide Concentrate (Pre-Tax)

- Cumulative net cash flow (undiscounted) US\$622M
- NPV at 8% discount rate US\$271M
- IRR 30.1%.
- Payback period of 2.9 years
- Capital costs of US\$194M, with sustaining capital of US\$21M, giving a total capital cost estimate of US\$215M, including a contingency of US\$31M, owner's costs of US\$5M and indirect costs of US\$36M
- Cash operating costs over life of mine (11 years) net of lead credits is US\$0.40/lb zinc (lead credit applied of 0.71/lb Zn).

### Mineral Resources

- AMEC utilised the NI 43-101 compliant Mineral Resource estimates as the basis for both mine plans
- **Accha Resource Estimate** prepared by Qualified Person Thomas Stubens, P.Eng. of Micon International Limited in Vancouver, effective date May 5, 2011
  - Measured Resources of 1.8 Mt with a grade of 10.7% Zn and 0.9% Pb
  - Indicated Resources of 1.3 Mt with a grade of 8.8% Zn and 1.3% Pb
  - Inferred Resources of 0.3 Mt with a grade of 8.9% Zn and 1.5% Pb
- **Yanque Mineral Resource** prepared by AMEC Qualified Person Christopher Wright P.Ge., effective date May 31, 2011
  - Inferred Resource of 12.5 Mt with a grade of 3.5% Zn and 3.7% Pb

## Resources & Conceptual Mine Plan

- Seven phases of mining, three at Accha and four at Yanque
- Smoothed open pit designs for both Accha and Yanque containing, in total, 13.5 Mt of above cut-off material
  - Grading 4.6% Zn and 3.1 % Pb
  - 72.5 Mt of waste were constructed for the Accha and Yanque Deposits by AMEC.
- Life of Mine 11 years
- One year of pre-production stripping and ten years of near-full production.
- Conceptual mine plan features annual ore production rates of 0.3 Mt/a from Accha and 1.0 Mt/a from Yanque.

### Accha Underground Option

- Accha mine plan ALSO includes underground production at the end of the open pit mine life
- Recover 0.6 Mt of material grading 9.0 % Zn and 1.5 % Pb
- Underground operations will be highly mechanized consisting of diesel powered trackless development and production equipment
- Underground mine life approximately 2 years

## Mining Costs

### Open Pit

Average LOM open pit operating cost for AZOD is estimated to be US\$2.79/t for conventional truck and front-end loader (FEL) open pit mining including drill, blast, load, haul of approximately 34.6 km to the primary crusher and 2.6 km to the waste dump, and 100% of crusher feed delivered directly to the plant from the pit. Total LOM operating costs are US\$ 231.6 M

### Accha Underground Option

Average LOM operating cost is US\$ 28.89 /t including management drill, blast, load, backfill, ventilation, ground support, haulage and electrical services.

## Metallurgy & Processing

- Run of mill ore crushed and fine ore mixed with fine anthracite through helicoidal mixers and then pelletized
  - Pellets fed into three Waelz rotary kiln lines
  - In the kilns, after drying and pre-heating, the material charge enters the reduction zone
  - Zinc, lead, cadmium oxides and others are reduced to metals vaporized by the action of carbon monoxide generated in the combustion of the anthracite to a temperature of 1,150 °C
  - Iron, calcium, magnesium and other oxides withdrawn as slag at kiln discharge
  - Once classified and cooled, slag is transported to disposal area
  - Zinc and Lead oxide fume from the kilns collected in two parallel gas cooling and baghouse lines
  - Fume has a high content of fluorine and chlorine halides
  - Alkaline wash to remove, then thickened and dewatered on belt filter
- \*\*\*This fume – oxide concentrate is the saleable product in the Fume Case considered as an alternative in the PEA study.**

## Environmental Studies, Permitting and Social or Community Impact

**PEA confirms that Zincore has necessary permits and community agreements to explore and carry out more advanced study work on the AZOD project**

### Environmental

No known environmental, archaeological liabilities or other conditions that would restrict Zincore's ability to continue its development of the project through the pre-feasibility and feasibility stages of development

### Community

- Proposed open pits, underground mine (at Accha) and centralised mineral processing and pyrometallurgical plant situated between 70km to 150km south of Cusco
- Area is sparsely populated

Zincore is very aware of importance of good community relations and communication and devotes significant time and effort to maintain successful outcomes in these areas. The Company is also aware of the sensitivity around issues relating to communities as a whole in Peru. Zincore believes that it has been very proactive and has sound relations with the various communities and individuals who own the surface rights to the land which would be affected by any form of mine development. As the Company moves towards development of the AZOD project, it anticipates engaging in discussions with local communities, municipalities, the Regional government of Cusco, and regulatory authorities with a view to agreeing on plans that best suit all parties impacted by the proposed operation.

## Opportunities to Further Improve AZOD Project Economics

The Company is considering undertaking further evaluations of several aspects of the project that may extend the life and/or profitability of the project including:

- Expanding the resource base and confidence levels on both the Accha and Yanque deposits
- Conducting further exploration and drilling on other known zinc/lead oxide deposits within the AZOD, which may lead to the development of further mines to supply ore to the central processing facility
- Further detailed pyrometallurgical and hydrometallurgical test work to optimize the economics of the planned metallurgical process route
- Further studying and evaluating improvement of mine design and logistics relating to the transport of ore and oxide fume
- ZNC has received exploration rights for coal and dolomite on known occurrences of these commodities.
- Further evaluating the planned refinery at the port of Matarani and considering the option of finding a strategic partner for the development of the refinery
  - ZNC believes the refinery will be strategic to the sourcing of other oxide concentrate feed from third parties.

### AZOD Project Economic Sensitivity to Zinc and Lead Prices

All figures in US dollars

	(-20%)	(-10%)	Base Price	+20%	+40%
Zn Price (\$/lb)	\$ 0.76	\$ 0.86	\$ 0.95	\$ 1.14	\$ 1.33
Pb Price (\$/lb)	\$ 0.70	\$ 0.78	\$ 0.87	\$ 1.04	\$ 1.22

#### Pre-Tax

Base Case					
NPV (\$M)	\$ 9	\$ 120	\$ 232	\$ 455	\$ 679
IRR (%)	8.5	14.7	20.3	30.1	39.0
Fume Case					
NPV (\$M)	\$ 105	\$ 188	\$ 271	\$ 437	\$ 604
IRR (%)	17.4	24.0	30.1	41.3	51.7

#### After-Tax

Base Case					
NPV (\$M)	\$ (-20)	\$ 63	\$ 140	\$ 296	\$ 454
IRR (%)	6.7	12.0	16.5	24.4	31.5
Fume Case					
NPV (\$M)	\$ 60	\$ 120	\$ 176	\$ 292	\$ 409
IRR (%)	14.1	19.6	24.3	33.1	41.3

#### Assumptions

1. 8% discount rate
2. Zinc price of US\$0.95/lb and Lead price of US\$0.87/lb
3. Fume Case – 80% payability of zinc oxide and 60% payability of lead oxide
4. It should be noted that a buyer of the lead-zinc oxide concentrate from the Fume Case, which would give the assumed level of payability, has not been identified.
5. Cost assumptions used in the economic analysis are preliminary and are likely to change in the prefeasibility study.
6. The PEA is preliminary in nature, and includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized. Mineral resources are not mineral reserves as they do not have demonstrated economic viability.

## Base Case – Producing SHG Zinc Ingot

- Fume produced in Waelz Kiln process transported to refinery at port city of Matarani for further processing
- Dehalogenized filter cake subject to a neutral leach digestion in depleted zinc sulphate solution from the electrowinning to dissolve metal oxides
- Lead is not leached and stays in the residue as a sulphate
- Neutral digestion residue is thickened and the impure overflow solution is sent to the initial stage of purification (cold)
- Neutral thickener slurry underflow passes to acid leaching and the acid leached pulp is thickened.
- Acid thickener solution overflow is recycled to the neutral leaching process and slurry underflow is dewatered in two filter presses to obtain a by-product lead residue
- The impure zinc sulphate is subjected to cold purification with zinc dust to precipitate elements such as cadmium, arsenic and lead
- Filter press polishes the cold purified solution and discharges a residue containing mainly residual zinc dust, arsenic and cadmium
- Residue still contains economic zinc quantities and is subject to a weak acid re-dissolve to recover zinc before disposal in storage ponds on site
- Filtered cold purified zinc sulphate solution heated prior to hot purification to precipitate mainly nickel and cobalt (impurities) with zinc dust slurry
- Filter press polishes solution and discharges a residue comprised mainly of nickel and cobalt to site residue storage ponds
- Pure filtered solution is transferred to electrowinning tank house
- Pure solution fed to electrowinning cells for recovery on cathodes, followed by smelting to produce a SHG Zinc ingot (99.99% Zn)
- The Waelz kiln technology application to the high yield recovery of both zinc and lead has been investigated in a number of bench scale and pilot plant scale tests. Over 10 tonnes of bulk sample were processed in the pilot plant tests and successfully demonstrated the amenability of Accha samples to Waelz kiln processing. Pilot plant testing of Yanque samples did not yield as favourable zinc recoveries. Subsequent bench scale test work indicated higher recoveries may be achieved with the use of metallurgical additives such as dolomite.
  - Further bench-scale optimization and pilot plant test work required to verify the higher Yanque bench scale recoveries used in this PEA
  - The pilot plant test work was conducted by Hatch Peru
  - Preliminary bench scale testing of the hydrometallurgical treatment of the fume product indicated it was very amenable to leaching
  - The hydrometallurgical test work was conducted by Mintek of South Africa
  - Future pre-feasibility work will investigate the purification of high grade Zinc solutions and production of a quality lead sulphate by-product.

## Fume Case – Selling Oxide Concentrate

- Fume Produced in Waelz Kiln process sold to third-party refinery

## Risks

As with all mine development projects, there are a number of risks that can affect the successful outcome of the project, including without limitation:

- Decreased metal prices and / or detrimental exchange rates.
- Variation between the resource estimate and the actual resource, potentially leading to higher dilution, modifications in the mining method or requiring additional definition drilling.
- Reduction in metallurgical recoveries and concentrate grades upon conducting further metallurgical tests on samples that are more representative of the entire resource.
- Operating and capital costs may vary as more detailed engineering work is completed.
- Generally accepted concentrate sales terms utilized in the PEA may be more beneficial or detrimental in the future.
- Ability to obtain the necessary permits in a timely manner.
- Ability to negotiate with local landowners, businesses and/or local municipality in regards to possible purchase, relocation or re-building of homes, facilities, services and / or structures.

## AZOD Resources

### Accha Mineral Resource Statement

- Measured Resources total 1.8 Mt at an average grade of 10.7% Zn and 0.90% Pb above a **cut-off grade of 5% Zn**
- Indicated Resources total 1.3 Mt with an average grade of 8.8% Zn and 1.3% Pb
- Inferred Mineral Resources total 0.3 Mt at an average grade of 8.92% Zn and 1.5% Pb

### Accha Mineral Resources

	Cut-off Grade (%)	Tonnes (000s)	Average Zn Grade (%)	Average Pb Grade (%)	Contained Zn (mmlbs)	Contained Pb (mmlbs)
Measured	2.0	2,492	8.71	0.78	478	43
	5.0	1,791	10.73	0.90	424	36
	8.0	1,161	13.03	1.03	333	26
Indicated	2.0	3,071	5.64	0.84	382	57
	5.0	1,324	8.83	1.29	258	38
	8.0	295	11.98	1.59	157	21
Measured + Indicated	2.0	5,563	7.01	0.82	860	100
	5.0	3,115	9.92	1.07	681	73
	8.0	1,756	12.97	1.22	491	47
Inferred	2.0	1,276	4.60	0.65	129	18
	5.0	331	8.92	1.53	65	11
	8.0	155	12.15	1.92	42	7

- The Mineral Resources for the Accha deposit are those estimated by Tom Stubens, P.Eng. of Micon International Limited, a Qualified Person as defined under NI 43-101, with an effective date of March 5, 2011
- Cut-off grade of 5% used for Base Case scenario – other cut-offs given to show sensitivity to cut-off grade

### Yanque Mineral Resource Statement

- Updated Inferred Resources estimate for Yanque deposit total 12.5 Mt with an average grade of 3.5% Zn and 3.7% Pb
- Mineral Resources estimated by Chris Wright P.Geo. (APGO, 901) of AMEC, a qualified person as defined under NI 43-101, with an effective date of 31 May, 2011
- Mineral Resources for Yanque have been estimated according to the Best Practices guidelines adopted by the CIM and recognized in NI 43-101.

Mineral Resources for the Yanque deposit have reasonable prospects for economic extraction assuming open pit mining, haulage to a central pyrometallurgical processing facility, smelting to produce a zinc fume with a lead sub-product credit and the metallurgical recovery, operating cost and metal prices used in the PEA. A Mineral Resource pit shell was constructed to define the portion of the Yanque block model having reasonable prospects for economic extraction. The Resource Pit Shell was built using Whittle® commercial software package. Parameters used were long range Zn and Pb prices, metallurgical recoveries and refining and selling costs, mining, processing and general and administrative (G&A) costs estimated in the PEA.

### Yanque Mineral Resources

Zone	Tonnes (000s)	Average Zn Grade (%)	Average Pb Grade (%)	Contained Zn (mmlbs)	Contained Pb (mmlbs)
Inferred Mineral Resources	12,515	3.5	3.7	966	1,021

- Mineral Resources are within the Mineral Resource open pit shell constructed based on a zinc price of US\$ 1.08/lb, and a lead price of US\$ 1.00/lb and the assumptions listed in table above.
- The Mineral Resources for the Yanque deposit are those estimated by Chris Wright, P.Geo., of AMEC, a Qualified Person as defined under NI-43-101, with an effective date of May 31, 2011
- The PEA is preliminary in nature, and includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized. Mineral resources are not mineral reserves as they do not have demonstrated economic viability.

## Key Economic and Operating Input Factors

Item	Unit	Base Case	Fume Option
Functional currency	US\$		
Total material processed	Tonnes (000's)	14,103	14,103
Accha Zn grade	%	7.83	7.83
Accha Pb grade	%	0.64	0.64
Yanque Zn grade	%	3.81	3.81
Yanque Pb grade	%	3.72	3.72
Accha Zn conc grade	%	61.6	61.6
Accha Pb conc grade	%	6.3	6.3
Yanque Zn conc grade	%	32.5	32.5
Yanque Pb conc grade	%	33.9	33.9
Zinc process recovery	%	90.0	90.0
Lead process recovery	%	94.0	94.0
Metal Price – Zinc	US\$/lb	0.95	0.95
Metal Price – Lead	US\$/lb	0.87	0.87
Zinc payability	%	n/a	80
Lead payability	%	n/a	60
Operating Costs – Mining	US\$/tonne	16.1	16.1
Operating Costs – Processing	US\$/tonne	42.5	27.1
Operating Costs – G&A	US\$/tonne	3.5	2.8
Operating Costs – Indirect	US\$/tonne	13.8	41.4
Total Operating Costs	US\$/tonne	76.0	87.4
Zn premium & Lead credits	US\$/tonne	(58.8)	(56.1)
Net Operating Costs	US\$/tonne	17.1	31.3
Total Capital	US\$ Million	351	215
Royalty (on NSR)	%	2.5	2.5
Life of Mine Cash Flow	US\$ Million	635	622
Pre-Tax IRR	%	20.3	30.1
Pre-Tax NPV @ 8%	US\$ M	232	271
Pre-Tax NPV @ 10%	US\$ M	173	220
Life of Mine	Years	11	11
Payback Period	Years	4.1	2.9

### Qualified Persons

**Christopher Wright**, P.Geo. Consulting Manager, Geology and Mining for AMEC (Perú) S.A., is the overall author of the PEA report and is the Qualified Person, as defined under National Instrument 43-101, responsible for Yanque Deposit resource estimate.

**Marcello Hernando**, Registered Member of the Comisión Calificadora de Competencias en Recursos y Reservas Mineras de Chile, Principal Mining Engineer for AMEC Engineering and Construction, Chile, is the Qualified Person, as defined under National Instrument 43-101, responsible for the Mine Plan contained in the PEA report.

**William Colquhoun**, FSAIMM, Principal Metallurgical Consultant, AMEC (Perú) S.A. is the Qualified Person, as defined under National Instrument 43-101, responsible for the Metallurgical and Processing sections and the Economic analysis contained in the PEA report.

**Thomas C. Stubens**, P.Eng., of Micon International is the Qualified Person, as defined under National Instrument 43-101, responsible for Accha Deposit resource estimate.

**Vernon Arseneau**, P.Geo., Vice President, Exploration for Zincore has prepared or supervised the preparation of the information contained in this document and is the Qualified Person as defined under National Instrument 43-101 for this document.

### About AMEC

AMEC (LSE: AMEC) is a focused supplier of high-value consultancy, engineering and project management services to the world's oil and gas, minerals and metals, clean energy, water and environmental sectors. With annual revenues of almost £3 billion, AMEC designs, delivers and maintains strategic and complex assets for its customers. The company employs some 22,000 people in around 40 countries worldwide.

AMEC's global Mining & Metals business develops some of the most challenging projects in the world. AMEC is recognized for a unique combination of excellent project delivery, industry-leading mining and process expertise, and full project life cycle capability. AMEC is an industry leader in a broad range of commodities from base and precious metals, to diamonds, iron ore, coal, uranium and fertilizers.

Since 1995, AMEC has provided study, design, project management and construction management services to international and domestic mine developers in Peru.

### Forward Looking Statements

Statements in this release that are forward-looking, in particular with regards to the potential of the Accha Zinc Oxide District project, are subject to various risks and uncertainties concerning the specific factors disclosed under the heading "Risk Factors" and elsewhere in the Annual Information Form of Zincore dated March 18, 2011 which is filed with Canadian securities regulatory authorities and available on SEDAR ([www.sedar.com](http://www.sedar.com)). Such information contained herein represents management's best judgment as of the date hereof based on information currently available.

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