

# Canadian Zinc Files Technical Report on 2017 Feasibility Study of the Prairie Creek Mine

01.11.2017 | [CNW](#)

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VANCOUVER, Oct. 31, 2017 /CNW/ - [Canadian Zinc Corp.](#) (TSX: CZN; OTCQB: CZICF) reports that the Company has filed a new Technical Report on its Prairie Creek Zinc-Lead-Silver Project in the Northwest Territories.

The Technical Report entitled "Prairie Creek Property Feasibility Study NI 43-101 Technical Report" effective September 28, 2017, which provides the results of the recently completed 2017 Feasibility Study ("2017 Feasibility Study" or "2017 FS"), was prepared by AMC Mining Consultants (Canada) ("AMC"), with contributions by Ausenco Engineering Canada Inc. ("Ausenco"), Global Mineral Resource Services Ltd., Allnorth Consultants Limited and F. Wright Consulting Inc., in accordance with National Instrument 43-101 ("NI 43-101") and is available under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com) and on the Company's website at [www.canadianzinc.com](http://www.canadianzinc.com).

The results of the 2017 FS were previously announced by the Company on September 28, 2017. See Canadian Zinc News release September 28, 2017.

## Conclusions

AMC concludes that the Prairie Creek Mine is shown to be a viable project, based on the Mineral Reserves, mine plan and production and economic parameters determined within the 2017 Feasibility Study.

The Prairie Creek Property contains a high-grade, silver-lead-zinc-copper vein along with other lead-zinc deposits and deposit types. The Technical Report indicates a Mineral Reserve of 8.1 million tonnes and a life of mine ("LOM") from mill start-up of 15 years at a steady-state mining production rate of 584,000 tonnes of ore per annum.

AMC recommends that Canadian Zinc advance the Project to the next stage, which will include detailed design and planning of the required services, construction of the all season road, refurbishment of the mill, ordering the long-lead equipment for power generation, portal refurbishment, access widening, and development of ramp declines and underground infrastructure in preparation for ore production and processing.

Mill start-up is projected for August 2020, with a pre-production period during which detailed engineering, mill and camp refurbishment, underground development from existing workings, and construction of key surface infrastructure items, including a paste plant and all season road, will take place.

The 2017 FS indicates a base case pre-tax Net Present Value ("NPV") of \$344M using an 8% discount rate, with an Internal Rate of Return ("IRR") of 23.8% and a post-tax NPV of \$188M with a post-tax IRR of 18.4%. The Base Case metal price assumptions used in the model are: Zn=US\$1.10/lb., Pb=US\$1.00/lb., Ag=US\$19.00/oz., with a foreign exchange rate of C\$1.25=US\$1.00.

The development of the Prairie Creek Mine will offer significant economic advantages on a wider scale. There is broad support among Aboriginal organizations and communities in the Dehcho region for the direct benefit and economic stimulus that the mine would bring to this region of the Northwest Territories. The envisaged operation of the Prairie Creek Mine presents a significant opportunity for potential enhancement of the social and economic well-being of the surrounding communities.

During construction there will be approximately 211 jobs, and during operations approximately 330 direct full-time jobs over the life of the mine. In addition, the Project offers other potential indirect business and employment opportunities, related to transport, supply of the Mine Site and environmental management and monitoring.

## Recommendations

The principal recommendations in the Technical Report relate to further detailed studies and engineering associated with the design and operation of the future mine and, at the same time, initiating a path to production of mine construction that will lead to achieving a target mill production startup of August 2020.

Ausenco and AMC recommendations to be completed during the execution phase of the project that could either improve the project economics or advance the development of the project include:

- Detailed engineering and Issued For Construction drawings to support the procurement and construction of the process plant and sit infrastructure.
- Early works site activities including removal of existing generators from the power house, repair of the mill roof, initial work on the Water Storage Pond and Waste Rock Pile, site clearance of derelict buildings, equipment and scrap material.
- Investigate the utilization of second hand construction equipment and mobile equipment for operations.
- Additional study of paste binder requirements and backfill methodology.
- Additional detailed mine design and scheduling to further optimize grades and balancing of ore and tailings stockpile requirements.

#### Prairie Creek Mine Project Highlights

- An initial 15-year mine life based on a Proven and Probable Mineral Reserve of 8.1 million tonnes grading 8.6% Zn, 8.1% Pb and 124 g/t Ag. Potential for extended mine life through further underground exploration leading to the possible conversion of Inferred Mineral Resources to Mineral Reserves.
- During the first 10 years of operation, annual production is projected to average 64,800 tonnes of zinc concentrate and 71,600 tonnes of lead concentrates containing 95 million lbs. zinc, 105 million lbs. lead and 2.1 million oz. silver.
- Pre-production capital costs, including provisions for a new all season road are estimated to be \$279 million including a contingency of \$26 million
- LOM average EBITDA of \$81 million per year and cumulative EBITDA earnings of \$1,294 million over the projected 15-year mine life.

#### Optimization

As part of the 2017 Feasibility Study, a number of optimization programs suggested in earlier Preliminary Feasibility Studies were completed that had a beneficial impact on the Prairie Creek Project, including:

- Underground hydrology studies that enabled more detailed and accurate predictions for pre-mining dewatering, which in turn enabled more accurate determination of the surface storage requirements, reduced water treatment requirements and produced a simpler site water management plan.
- Testing of a composite bulk sample of ore from the Main Quartz Vein ("MQV"), derived from 2015 underground drilling, that is more representative of LOM feed than historically collected which showed excellent recoveries utilizing a simpler process flow sheet.
- As part of the metallurgical program the first Stockwork ("STK") material was metallurgically characterized and tested and indicated good recoveries.
- Variability testing on different types of MQV material using different reagents type was carried out to maximize recoveries.
- Additional paste backfill studies on tailings generated from the 2017 metallurgical program.
- Further engineering and design assessment of the surface infrastructure by Ausenco.
- Risk and reliability assessment completed by Ausenco.
- Mining / milling maximization capacity analysis.
- Underground mine trade-off studies including ventilation, heating, haulage and development.
- Analysis of energy alternatives for the operation.
- Advancement of transport routing and logistics.
- All season road studies and permitting.

#### Mining

The Prairie Creek Mine will be an underground operation, based primarily on the MQV and mining an average of 1,600 tonnes per day over a 15-year mine life. During full production, approximately 584,000 tonnes of ore per year will be mined.

Adits were previously driven on three levels: the 970 mL, the 930 mL and the 883 mL, totalling approximately 5 km of underground workings. Access for mining will be through an enlarged 883 mL portal and adit with secondary access through the 930 mL. The 970 mL penetrates the topmost limits of the MQV only and is not part of the current mine plan. As mining progresses to depth, ore from the MQV will be supplemented by ore from the deeper Stratabound Massive Sulphide ("SMS") deposit, both deposits being accessed by common ramp development.

Mining in the MQV and STK areas will be by longhole open stoping with paste backfill. Mechanized drift-and-fill will be used for the SMS ore, also with paste fill. The plan and objective is to use 100% of flotation tailings as backfill.

Ground conditions in existing development underground are good and the existing workings have stood unsupported for thirty years with minimal bolting.

The new mine plan envisages slashing out of some of the existing development to establish two spiral ramps to access deeper levels in the MQV, and the STK and SMS deposits. A single ramp will provide access to the ore above 883 mL. The plan biases initial production towards higher grade sulphide ore, rather than oxide mineralization, with beneficial effects on mine economics.

Ore drifts will be driven on the MQV north and south from the ramp access points to the strike limits of the ore body. Stopping will begin at the ore limits and retreat to the ramp access points. Pre-production development is expected to take approximately 15 months, before stope ore becomes available as mill feed. This work will be performed by a contractor. On completion of the contracted scope of work, CZN will have the option of taking over the work itself or continuing with contract mining.

The majority of water from underground will be collected through advanced dewatering boreholes and pumped to surface, avoiding contamination. All water discharged from the mine will either be sent to the mill as process water, pumped into the existing impoundment pond, which will be modified into a two-cell water storage pond, or directly treated in a new water treatment plant.

#### Power Generation Plan

It is planned to utilize a turnkey type power generation as proposed by Northwest Territories Power Corporation. This proposal utilizes four new 2.77 MW dual-fuel LNG/diesel powered generator units that will provide power and heat for the site. The power generator units will be located within the existing mill powerhouse. Maximum power running load for the site is estimated at 6.4 MW. These generators will be outfitted with heat recovery systems to maximize energy efficiency. The waste heat from the generators will be used to heat the surface facilities and, potentially, mine air. Further heat for underground and accommodations will be generated by LNG based furnaces.

#### Processing

The Prairie Creek plant is designed and planned to process the run-of-mine ("ROM") ore produced from the underground mine. More and better information concerning the characteristics of the ore obtained from studies conducted over the past two years has enabled the design of an enhanced mine plan, which will supply optimal feed to the process plant and provide better predictability of quantity and quality of concentrate products. The daily operating throughput will be approximately 1,600 tpd to a Dense Media Separation ("DMS") facility, at the front end of the mill. The DMS product will be fed to the grinding and flotation circuit at a feed rate of nominally 1,200 tpd when treating softer early ores, with addition of a secondary ball mill required as the ores become harder. The proposed process flowsheet for the Prairie Creek Project will include:

- Two stages of crushing to reduce the ROM ore to 100% passing 16 mm.
- DMS on the coarse fraction of the crushed ore to reject gangue minerals.
- One stage of grinding on the pre-concentrated ore to 80% passing 156 µm.
- Future addition of a secondary ball mill, timing dependent on ore hardness and other economic factors.
- Lead sulphide flotation producing a lead sulphide concentrate.
- Zinc sulphide flotation producing a zinc sulphide concentrate.
- Lead oxide flotation producing a lead oxide concentrate.

- Concentrate dewatering and load-out systems.
- Tailings dewatering and paste backfill preparation systems.

Metallurgical tests on MQV and SMS material and recent tests completed on STK material indicated the three types of mineralization can be commingled during processing.

#### Waste Management Plan

Tailings from the mill will be placed permanently underground as paste backfill, produced in a new paste backfill plant, and augmented by DMS reject material in the event of any volume shortfall. The majority of DMS reject and mine development material will be placed in a newly created waste rock pile facility.

#### Concentrate Production

The Prairie Creek Mine will produce three types of concentrates: zinc sulphide, lead sulphide and lead oxide. The concentrates will then be transported in enclosed haul trucks via the mine access road and Liard Highway 7 to Fort Nelson, and from there by train to the Port of Vancouver.

#### Access Road Construction and Transportation Plan

The Mackenzie Valley Environmental Impact Review Board recently recommended approval of the Prairie Creek All Season Road, subject to implementation of various measures, many of which build on Canadian Zinc's commitments.

Construction of site infrastructure will be initially serviced via a winter road. Concentrates will be trucked out and supplies delivered over the all season road and will utilize an ice bridge in winter and a barge in summer to cross the Liard River.

An all season road has the following benefits, but with an increased capital cost:

- Decreased working inventory
- More timely delivery of product and consistent supply of materials
- Lower logistical risk of transporting concentrate and supplies
- A smaller trucking fleet required throughout the year
- Facilitates the use of alternative energy sources such as Liquid Natural Gas

Upon reaching the Liard Highway, concentrates will be trucked to the railhead at Fort Nelson and transported by rail to the port of Vancouver for shipment to smelters overseas. Inbound freight will be trucked as backhaul over the same route. A staging area will be established at the junction of the mine access road and the Liard Highway. A loading area will be constructed at the railhead in Fort Nelson.

#### Project Execution

The mine start-up schedule is significantly influenced by the seasonal weather conditions in the Northwest Territories. Target start-up for commencement of production/milling operations at Prairie Creek mine is scheduled for August 1, 2020 with commissioning of the mill for three months prior to this date.

The first year of the project schedule comprises detailed engineering and initial site/portal preparation, including the completion of permitting and design of the all season road, the second year to procure long-lead-time items and further prepare the site, followed by continuous site construction and mine development to production. Mobilization will initially be by winter road, concurrent with construction of the all season road.

#### Qualified Persons

This news release has been reviewed and approved by Alan Taylor, P.Geo., COO & VP Exploration, who assisted the Qualified Persons in the preparation of the 2017 Feasibility Study and is a Non-Independent QP under National Instrument 43-101 ("NI 43-101") for Canadian Zinc.

The following Qualified Persons, who are responsible for the preparation of the Technical Report have reviewed and approved the content of this news release as it pertains to their areas of expertise and project responsibility.

H. A. Smith, P.Eng. AMC Mining Consultants (Canada) Ltd.

L. P. Staples, P.Eng Ausenco Engineering Canada Inc.

S. Elfen, P.Eng. Ausenco Engineering Canada Inc.

G. Z. Mosher, P.Geo Global Mineral Resource Services Ltd.

F. Wright, P.Eng. F. Wright Consulting Inc.

D. Williams, P.Eng. Allnorth Consultants Limited

#### Cautionary Statement & Forward-Looking Information

This press release contains certain forward-looking information, including, among other things, the expected completion of acquisitions and the advancement of mineral properties. This forward looking information includes, or may be based upon, estimates, forecasts, and statements as to management's expectations with respect to, among other things, the completion of transactions, the issue of permits, the size and quality of mineral resources and reserves, future trends for the company, progress in development of mineral properties, future production and sales volumes, capital costs, mine production costs, demand and market outlook for metals, future metal prices and treatment and refining charges, the outcome of legal proceedings, the timing of exploration, development and mining activities, acquisition of shares in other companies and the financial results of the company. There can be no assurances that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Mineral resources that are not mineral reserves do not have demonstrated economic viability. Inferred mineral resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that mineral resources will be converted into mineral reserves.

Statements about the Company's planned/proposed Prairie Creek Mine operations, which includes future mine grades and recoveries; the Company's plans for further exploration at the Prairie Creek Mine and other exploration properties; future cost estimates pertaining to further development of the Prairie Creek Mine and items such as long-term environmental reclamation obligations; financings and the expected use of proceeds thereof; the completion of financings and other transactions; the outlook for future prices of zinc, lead and silver; the impact to the Company of future accounting standards and discussion of risks and uncertainties around the Company's business are not guarantees of future performance and are subject to certain risks, uncertainties and assumptions that are difficult to predict. Therefore, the Company's actual results could differ materially and adversely from those expressed in any forward-looking statements as a result of various factors. You should not place undue reliance on these forward-looking statements.

The Company cautions that the list of factors set forth above is not exhaustive. Some of the risks, uncertainties and other factors which negatively affect the reliability of forward-looking information are discussed in the Company's public filings with the Canadian securities regulatory authorities, including its most recent Annual Report, quarterly reports, material change reports and press releases, and with the United States Securities and Exchange Commission (the "SEC"). In particular, your attention is directed to the risks detailed therein concerning some of the important risk factors that may affect its business, results of operations and financial conditions. You should carefully consider those risks, in addition to the other information in the Company's filings and the various public disclosures before making any business or investment decisions involving the Company and its securities.

The Company undertakes no obligation to revise or update any forward-looking statement, or any other information contained or referenced in this Press Release to reflect future events and circumstances for any reason, except as required by law. In addition, any forecasts or guidance provided by the Company are based on the beliefs, estimates and opinions of the Company's management as at the date of this Press Release and, accordingly, they involve a number of risks and uncertainties. Consequently, there can be no assurances that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Except as required by law, the Company undertakes no obligation to update such projections if management's beliefs, estimates or opinions, or other factors should change

#### Cautionary Note to United States Investors

The United States Securities and Exchange Commission ("SEC") permits U.S. mining companies, in their filings with the SEC, to disclose only those mineral deposits that a company can economically and legally extract or produce. We use certain terms in this press release, such as "measured," "indicated," and "inferred" "resources," which the SEC guidelines prohibit U.S. registered companies from including in their filings with the SEC.

This Press Release includes resource and reserve information that has been prepared in accordance with the requirements of the securities laws in effect in Canada, which differ from the requirements of United States securities laws. The terms "mineral reserve", "proven mineral reserve" and "probable mineral reserve" are Canadian mining terms as defined in accordance with Canadian National Instrument 43-101 &ndash; Standards of Disclosure for Mineral Projects ("NI 43-101") and the Canadian Institute of Mining, Metallurgy and Petroleum (the "CIM") - CIM Definition Standards on Mineral Resources and Mineral Reserves, adopted by the CIM Council, as amended. These definitions differ from the definitions in SEC Industry Guide 7 under the United States Securities Act of 1933, as amended (the "Securities Act"). Under SEC Industry Guide 7 standards, a "final" or "bankable" feasibility study is required to report reserves, the three-year historical average price is used in any reserve or cash flow analysis to designate reserves and the primary environmental analysis or report must be filed with the appropriate governmental authority.

SOURCE [Canadian Zinc Corp.](#)

#### Contact

John F. Kearney, Chairman & Chief Executive, (416) 362-6686, Suite 1805, 55 University Avenue, Toronto, ON M5J 2H7; Alan B. Taylor, Vice President Exploration & Chief Operating Officer, (604) 688-2001, Suite 1710 - 650 West Georgia Street, Vancouver, BC V6B 4N9, Tollfree: 1-866-688-2001; Steve Dawson, Vice President Corporate Development, (416) 203-1418, Suite 1805, 55 University Avenue, Toronto, ON M5J 2H7; E-mail: [invest@canadianzinc.com](mailto:invest@canadianzinc.com), Website: [www.canadianzinc.com](http://www.canadianzinc.com)

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