CSA Global
Mining Industry Consultants

NI 43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Watson Lake and Mayo Mining Districts Yukon Territory, Canada

Prepared for:
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Date and Signature Page

This Report titled "NI 43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Watson Lake and Mayo Mining Districts, Yukon Territory, Canada" for Fireweed Zinc Ltd and dated 24 February 2018 was prepared and signed by the following authors:

"Signed and Stamped"

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10 January 2018.	

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24 February 2018	Senior Consultant
	CSA Global Geosciences Canada Ltd
Report Effective Date:	
10 January 2018.	

Certificates of Qualified Persons

Certificate of Qualified Person – Dr Dennis Arne

As a Qualified Person of this Technical Report covering the Project named as the NI 43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Watson Lake and Mayo Mining Districts, Yukon Territory, Canada, I, Dennis Arne do hereby certify that:

1. I am a Principal Consultant of CSA Global Geosciences Canada Ltd, and carried out this assignment for CSA Global Geosciences Canada Ltd of Suite 610, 1155 West Pender Street, Vancouver, British Colombia, Canada (dennis.arne@csaglobal.com).
2. The Technical Report to which this certificate applies is titled "NI43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Watson Lake and Mayo Mining Districts, Yukon Territory, Canada" and is dated 10 January 2018 ("the effective date").
3. I hold a BSc (Hons), MSc, PhD and Graduate Diploma, and am a registered Professional Geologist in good standing of the Engineers and Geoscientists British Colombia (#34686) and a Registered Professional Geoscientist of the Australian Institute of Geoscientists (#10064). I am familiar with NI 43-101 and, by reason of education, experience in exploration and evaluation of hydrothermal deposits, including sediment-hosted base metal deposits, and professional registration, I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes more than 35 years in geology.
4. I personally visited the project that is the subject of this Technical Report between 31 August 2011 and 2 September 2011 and between 24 July 2017 and 28 July 2017, for a total of eight days.
5. I am responsible for all sections of this Technical Report except Section 10 (Drilling), Section 14 (Mineral Resource Estimates), and those portions of Section 1 (Summary) that pertain to Mineral Resource Estimates.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have had prior involvement with the Project that is the subject of this Technical Report through a previous consulting engagement in 2011 to Hudbay Minerals.
8. I have read NI 43-101 and this Technical Report for which I am responsible has been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 24th day of February 2018.

"Signed and Stamped"

Dr. Dennis Arne, PGeo (BC), MAIG (RPGeo)
Principal Consultant - Geochemistry
CSA Global Geosciences Canada Ltd

Certificate of Qualified Person – Mr Leon McGarry

As a Qualified Person of this Technical Report covering the Project named as the NI 43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Watson Lake and Mayo Mining Districts, Yukon Territory, Canada, I, Leon McGarry do hereby certify that:

1. I am a Senior Consultant of CSA Global Geosciences Canada Ltd, and carried out this assignment for CSA Global Geosciences Canada Ltd of Suite 501, 365 Bay Street, Toronto, Ontario, Canada (leon.mcgarry@csaglobal.com).
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Watson Lake and Mayo Mining Districts, Yukon Territory, Canada" and is dated 10 January 2018 ("the effective date").
3. I hold a BSc (Hons) and am a registered member of the Association of Professional Geoscientists of Ontario (2348) and the Association of Professional Engineers and Geoscientists of Saskatchewan (34929). I am familiar with NI 43-101 and, by reason of education, experience in exploration and evaluation of hydrothermal deposits, including sediment-hosted base metal deposits, and professional registration, I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes more than 10 years in geology.
4. I have not personally visited the project that is the subject of this Technical Report.
5. I am responsible for responsible for the preparation of Section 10 (Drilling) and Section 14 (Mineral Resource Estimates) and portions of Section 1 (Summary) that pertain to the Report sections for which I am responsible.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the Project.
8. I have read NI 43-101 and this Technical Report for which I am responsible has been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 24th day of February 2017

"Signed and Stamped"

Leon McGarry, PGeo (ON, SK)
Senior Consultant – Resources
CSA Global Geosciences Canada Ltd

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1 Summary

The Macmillan Pass Project (also known as the Tom-Jason Project) is in eastern Yukon, Canada near the border with the Northwest Territories, approximately 400 kilometres (km) northeast of the city of Whitehorse. It consists of three contiguous blocks of claims: the Tom mining lease, the Jason claims and the MAC claims, for a total of 1,247 claims covering 21,939 hectares (ha), as well as a single surface lease in the Tom area comprising 120.7 ha. As of 7 February 2018, the Tom and Jason claims are 100% owned by Fireweed Zinc Ltd ("Fireweed" or the "Issuer"), a public company which trades on the TSX-Venture Exchange (TSX-V) under the symbol FWZ. The MAC claims are held by the Issuer under an option agreement with Newmont Canada Holdings ULC (Newmont).

Access to the site is by seasonal gravel road or by air, and there is minimal infrastructure available in the region. The nearest population centre is at Ross River located about 200 km to the southwest.

The Tom and Jason zinc-lead-silver deposits are proximal, stratiform, sediment-hosted (SEDEX) deposits formed during Devonian era rifting activity in the Selwyn Basin. They were subsequently folded during the transition of the Pacific margin of North America from a passive to convergent plate margin.

There has been a significant amount of historical exploration on the Tom and Jason claims. Commencing with the discovery of the Tom West Zone in 1951 and including the 2017 drilling by the Issuer, total drilling on the Jason property is 39,191 metres (m) in 135 drillholes and on the Tom property is 34,431 m in 219 drillholes. In addition, an adit with approximately 3,423 m of underground development and a spiral decline was excavated in stages into the Tom West deposit to assist exploration and for bulk sampling between 1971 and 1982. Exploration was effectively suspended on the properties after 1992.

Hudbay Minerals Inc. (Hudbay), the former owner of the Tom and Jason claims, commissioned a Mineral Resource estimate (MRE) in 2007 that is historical, not to current NI 43-101 standards, and is reproduced in Section 14.12.2.

Exploration recommenced briefly in 2011 with the drilling of 11 new diamond holes for a total of 1,823 m. These holes were drilled for metallurgical testing and infill purposes in the Tom West Zone. Five of the holes were twin holes that verify historical intersections. In 2017, the Issuer carried out a program of drilling, mapping, sampling, LiDAR topographic mapping and airborne geophysics on the property. Drilling totalled 936 m in seven holes on the Tom deposit and 1,266 m in seven holes on the Jason deposit. Results of the drilling and other 2017 work are described in Sections 9 and 10.

Risks impacting on the potential economic development of the Tom and Jason deposits include the remoteness of the location and a lack of infrastructure except for the airstrip and access road which will need upgrading. These infrastructure issues will be addressed in a Preliminary Economic Assessment report for the project anticipated to be published in the second quarter of 2018 (see Issuer news release dated 18 January 2018). Uncertainties associated with ongoing Native land claim negotiations with the Yukon government, and as such unresolved eventual title, remain a risk for future development of the project although this does not prevent the Issuer from carrying out exploration work on the properties and the Issuer reports good relations with local First Nations during the 2017 work program.

1.1 Mineral Resource Estimates

The Issuer commissioned CSA Global Geosciences Canada Ltd (CSA Global) to prepare an independent estimate of Mineral Resources for the project compiled using technical data up to a cut-off date of 31 December 2017. Table 1 is a summary of the Base Case Mineral Resources for the Tom and Jason deposits stated as at 10 January 2018 (see Section 14 for underlying parameters used, other details and additional tables).

Table 1: Base Case MRE (at NSR cut-off grade of C$65)

Category	Tonnes (Mt)	ZnEq %	Zn %	Pb %	Ag g/t	B lbs Zn	B lbs Pb	Moz Ag
Indicated	11.21	9.61	6.59	2.48	21.33	1.63	0.61	7.69
Inferred	39.47	10.00	5.84	3.14	38.15	5.08	2.73	48.41

1.2 Recommendations

The Tom and Jason properties are considered by CSA Global to be at an advanced stage of exploration. CSA Global concludes that the Macmillan Pass Project warrants additional expenditures. An exploration budget for the recommended 2018 work program of C$6,500,000 is proposed as detailed in Table 2. Note this budget only includes exploration work and does not include environmental monitoring and other non-exploration activities. The main components and objectives of this exploration program and budget are:

- Drilling: A minimum 10,000 metres of drilling should be directed towards four goals:
  - Upgrade priority zones to Measured and Indicated resources
  - Step-out drilling to expand known zones
  - Drilling new exploration targets to discover new zinc-lead-silver deposits
  - Obtaining sufficient fresh material for metallurgical testwork.
- Carry out exploration work (geological mapping, geochemistry, geophysics) to identify drill targets for new discoveries.

It is the opinion of the Authors that the property is of sufficient merit that the recommended exploration program and budget as outlined represents a worthwhile and sensible work program if carried out by qualified competent personnel. The Issuer and project manager may make adjustments to this program and budget as circumstances require. Note that budget excludes expenditures related to metallurgical and mining studies.

Table 2: Recommended 2018 exploration budget for Macmillan Pass Project

Expense category	C$
Drilling (10,000 m)	5,000,000
Planning, data compilation and reporting	150,000
Permitting	100,000
Mapping and geochemistry	500,000
Geophysics	200,000
Air support	200,000
Camp logistics and management	350,000
Total	**6,500,000**

2 Introduction

2.1 Issuer

This report has been prepared by CSA Global Geosciences Canada Ltd (CSA Global) for Fireweed Zinc Ltd (the "Issuer"), a public company whose shares trade on the TSX Venture Exchange under the symbol FWZ. Fireweed is registered in Yukon Territory, Canada with corporate offices in Vancouver, British Columbia, Canada.

2.2 Terms of Reference

CSA Global has been commissioned by the Issuer to prepare an independent National Instrument 43-101 (NI 43-101) compliant Technical Report including MREs on the Tom and Jason deposits of the Macmillan Pass Project in Yukon, Canada.

2.3 Sources of Information

This report has been prepared by CSA Global based on information supplied to them by the Issuer, much of which in turn was provided to them by Hudbay, on information from public sources referenced in Section 19 and elsewhere in this report, and on results from work carried out by the Issuer in 2017. CSA Global has taken reasonable steps to verify the historic information provided where possible, and through their predecessor company, Revelation Geoscience Ltd (Revelation), is familiar with the 2011 exploration data and through working with the Issuer is familiar with the 2017 exploration data.

2.4 Qualified Person Property Inspection

One of the Authors of this report (Dennis Arne) undertook a site visit to the Tom and Jason claims between 31 August and 2 September 2011 during the drilling program at the Project conducted by Revelation for Hudbay and again between 24 July and 28 July 2017 as the 2017 drill program was beginning, during which he implemented quality assurance/quality control (QAQC) procedures for the 2017 drill program.

3 Reliance on Other Experts

CSA Global has relied on information provided to them by the Issuer on claim ownership and in news releases published by the Issuer. The claim ownership information in this report was provided by the Issuer to the Authors and is based on written legal opinions for the Tom, Jason and MAC claims by Austring, Fendrick & Fairman, Barristers & Solicitors, of Whitehorse, Yukon, and dated 9 February 2018 (Austring and others, 2018a, 2018b). The Issuer has informed the Authors that on 7 February 2018, the Issuer exercised its option agreement with the previous owner, and is now 100% owner of the Tom and Jason claims subject to a 3% purchasable net smelter return (NSR) royalty on the Jason claims. Claims, permits, leases, licences and hard assets are currently in the process of being transferred into the name of the Issuer. The Issuer also informed the Authors that the Option and Exploration Agreement for the MAC claims between Newmont and the Issuer is dated 24 July 2017 with the terms of the agreement reproduced in Section 4. CSA Global has not independently verified ownership, mineral title or terms of the agreements beyond information that is publicly available or been provided by the Issuer.

With regard to operating and environmental permits, the Issuer has confirmed to CSA Global that all necessary environmental and operation permits for the project are being transferred from Hudbay to the Issuer and are either current or being revised to allow for a larger exploration program in 2018 (see Section 4.5 – Permitting Considerations).

4 Property Description and Location

4.1 Property Location

The Macmillan Pass Project is located in eastern Yukon, Canada near the border with the Northwest Territories (Figure 1). It is located approximately at latitude 63°10'N and longitude 130°09'W on NTS map sheet 105O-01, approximately 400 km northeast of Whitehorse, a regional capital city, and 200 km northeast of the community of Ross River, which is the nearest settlement.

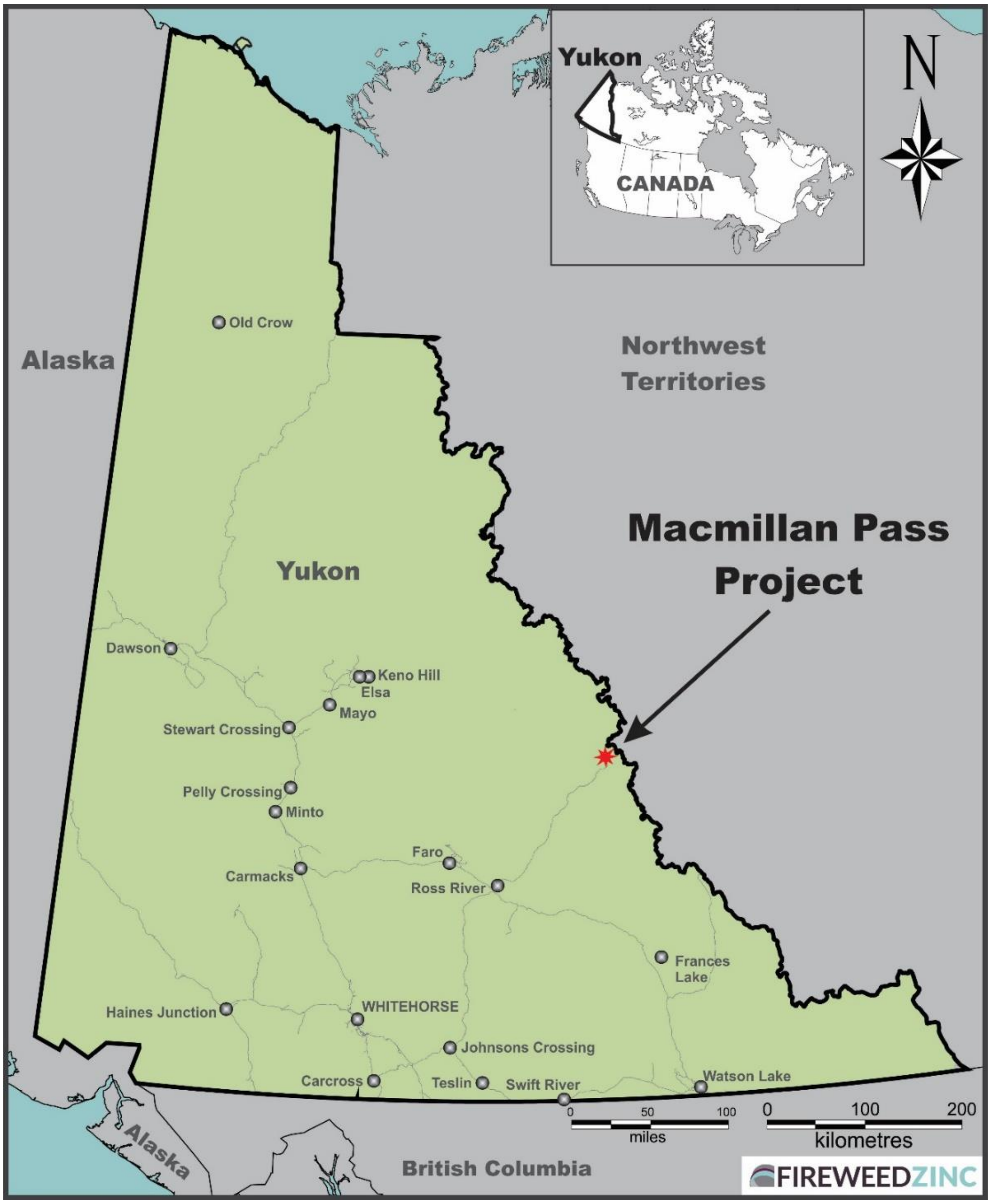

Figure 1: Location of the Macmillan Pass Project

4.2 Property Description and Mineral Tenure

The Macmillan Pass Project consists of three historically distinct but contiguous claim groups: the Tom claims, the Jason claims and the MAC claims (Figure 2). On 7 February 2018, the Issuer exercised its option from Hudbay and is now 100% owner of the Tom and Jason assets. Claims, permits, leases, licences and hard assets are currently in the process of being transferred into the name of the Issuer. The MAC claims are held by the Issuer under an option agreement with Newmont.

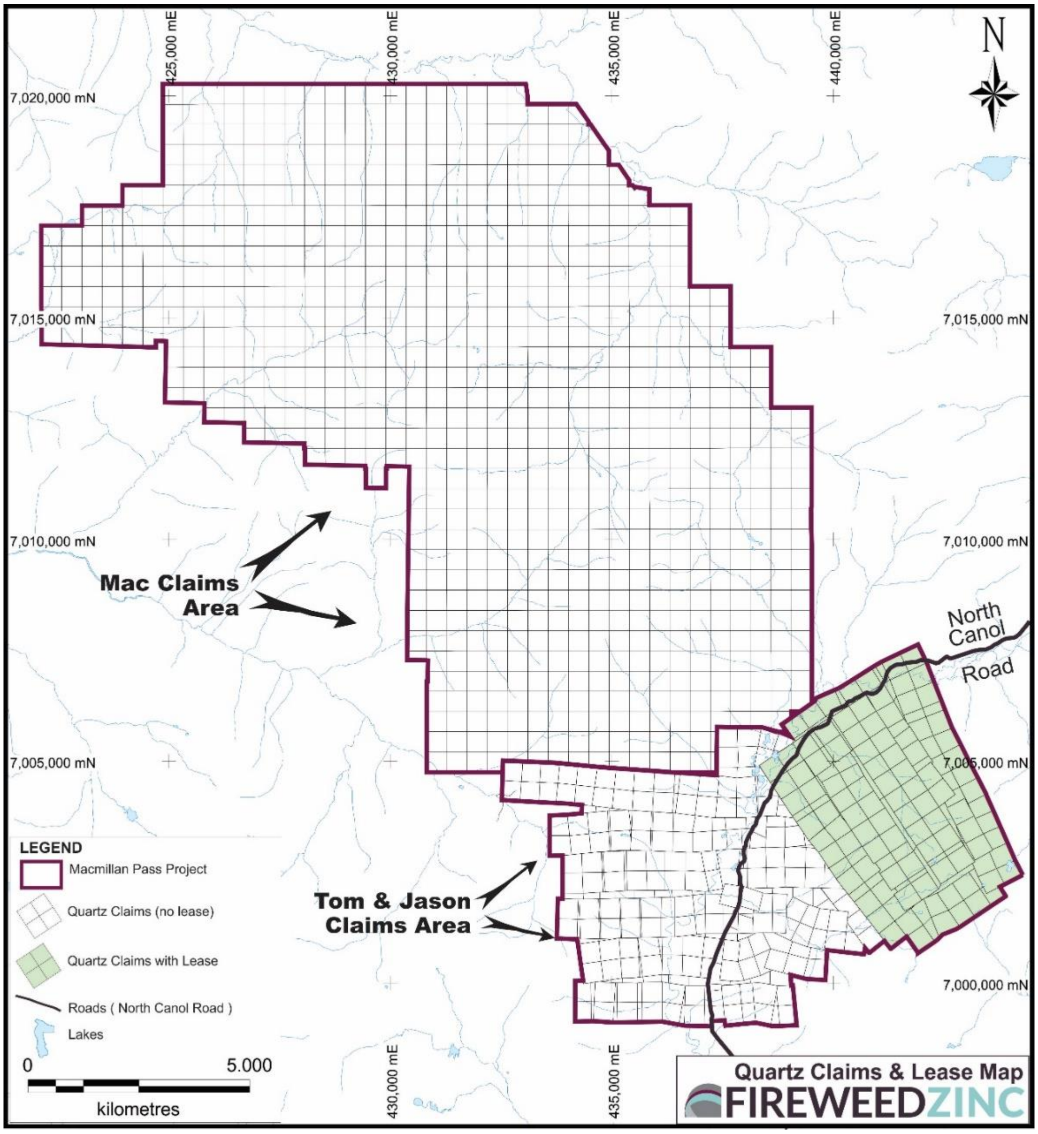

Figure 2: Tom, Jason and Mac claim groups

The Tom property/mining lease consists of 144 claims covering an area 2,295 ha (Appendix 1) with an anniversary date of 12 October 2018 which the Issuer reports will be extended. The group also includes a surface lease comprising 120.68 ha over the Tom West deposit which expires on 28 February 2022 but will be extended. The Jason property/claim group consists of 283 "quartz claims" covering an area of 3,528 ha (Appendix 1) with a current renewal date of 31 December 2022 which can be extended. The MAC property/claim group consists of 820 "quartz claims" covering an area of 16,780 ha (Appendix 1) with a current renewal date of 31 December 2022 which can be extended.

The Tom property and Jason property claims are 100% owned by the Issuer (Figure 2) and located in the Watson Lake and Mayo Mining Districts.

Continued tenure to mineral rights on a lode mineral claim (termed a "quartz claim" in the Yukon) is dependent upon work performed on the claim or a group of claims. When work has been done on a claim and is being used for the renewal of that claim, a full report of the work done must be submitted to the Mining Recorder Office. A renewal certificate will not be issued until the report and/or survey has been approved for the value required. The Yukon Quartz Mining Act (QMA) does not specify work to be performed, except in dollar terms. Renewal of a quartz claim requires that C$100 of work be done per claim per year, based on the Schedule of Representation Work outlined in the QMA. Where work is not performed, the claimant may make a payment in lieu of work. The fee for payment in lieu is C$100 per claim per year plus C$5 for the certificate of work per claim per year. Work must be performed on every claim unless groupings are filed. An application can be made to group adjoining claims; the maximum number of claims per grouping is 750. Grouping allows work to be performed on one or more claims and can be distributed to any or all other claims in the group. As such, annual work requirements for the Jason claims total C$28,300 per year and the MAC claims total C$82,000 per year. The Tom claims are a mining lease and are only subject to annual permit fees totaling $28,960 per year. In recent years, these work requirements and fees have been waived by the Yukon government due to the staking withdrawal in the region (described below under First Nations Consultations). The annual fee for the 120.68 ha surface lease on the Tom property is $2,311 per year.

4.3 Property Agreements and Encumbrances

The following information has been provided to the Authors by the Issuer as described in Section 3.

4.3.1 Tom and Jason Claims

The Issuer signed a Definitive Option Agreement with Hudbay on 14 December 2016 to acquire the Tom mining lease and Tom surface lease, the Jason quartz claims and associated permits, licences and hard assets. On 7 February 2018, the Issuer exercised the option and is now 100% owner of these assets. Claims, permits, leases, licences and hard assets are currently in the process of being transferred into the name of the Issuer.

The Jason quartz claims were purchased by Hudbay on 3 August 2006 from a consortium of companies operating as MacPass Resources Limited. As per a royalty agreement dated 3 August 2006, the Jason property is subject to a 3% NSR royalty. As part of the original option agreement, the Issuer has the right to purchase, at any time, 1.5% of the NSR for C$1.25 million and the remaining 1.5% of the NSR for C$4.0 million.

There is no NSR encumbrance on the Tom mining lease.

4.3.2 MAC Claims

The Issuer signed an option agreement with Newmont on 24 July 2017 to acquire the MAC claims. The total payments to acquire 100% interest in the MAC claims is C$450,000 which consists of C$50,000 on signing of the option agreement (paid), C$80,000 on or before the first anniversary of signing of the option agreement, C$95,000 on or before the second anniversary, C$110,000 on or before the third anniversary, and C$115,000 on or before the fourth anniversary. The Issuer must also carry out sufficient work to maintain the property in good standing (minimum cost C$82,000 per year).

Upon completion of the payment schedule, Newmont will be entitled to receive NSR royalties on future production as follows: 0.25% NSR on base metals, 1% NSR on silver and 3% NSR on gold. Newmont will also have an exclusive but limited 30-day right of first offer on any future proposed sale, transfer or disposition by Fireweed of its interest in the MAC claims. This right of first offer shall not apply to (i) any internal corporate reorganization of Fireweed or (ii) to any transfer of control of Fireweed itself to a third party if the book value of Fireweed's interest in the MAC claims (based on Fireweed financial statements) does not exceed 50% of the combined book value of all the assets of Fireweed.

4.4 Environmental Liabilities

The lower adit on the Tom property was partially plugged in 2010 to flood the mine workings and reduce the flow of acid mine drainage (AMD) from oxidation of sulphides in the mine workings. A waste pile from underground development at Tom West has also been covered with an impermeable barrier to reduce AMD from the site. The lower adit continues to make water as designed and metal contents and other parameters of the discharge water are monitored and have been within standards set in the current Type B water use licence (see Permitting Considerations below) (G. Gorzynski, pers.com., February 2018).

A preliminary environmental investigation of the Jason property in 2006 by Gartner Lee Limited noted that several exploration boreholes below an elevation of 1,250 m were discharging water. Water samples from one of these boreholes and four samples of surface water exceeded the Canadian Council of Ministers of the Environment (CCME) Aquatic Life guidelines for several metals, including Cd and Zn. Elevated metal concentrations and lowered pH levels reflect natural groundwater discharge from the site, as the Earn Group sediments are regionally elevated with respect to several metals, including Zn, Cd, Pb and Ag (Mackie *et al.,* 2015). In 2015, a number of drill pads and collars at the Jason property were rehabilitated and holes plugged with cement when ground conditions allowed it. Water still flows from some holes where proper cementing has not yet been completed (G. Gorzynski, pers.com., 2018).

4.5 Permitting Considerations

Exploration work is subject to the Mining Land Use Regulations of the Yukon QMA and to the Yukon Environmental and Socio-Economic Assessment Act (YESAA). A land use permit must be obtained and YESAA Board approval issued before large-scale exploration is conducted.

With the exercise of the property option, the Issuer and Hudbay have begun applications to transfer title and project permits into the Issuer's name. A Class 3 land use permit for exploration activities on the Tom and Jason properties (LQ00325) under the QMA and Quartz Mining Land Use Regulations was issued to Hudbay and extended to 21 September 2021. The Issuer is undertaking to revise the current land use permit to allow for a larger exploration program on the project site in 2018. A waste management permit issued in 2011 (81-029) has been extended to 31 December 2021.

Currently water use and discharge of water from the Tom adit are governed by a Type B water use licence (QZ15-060-01) granted on 24 July 2015 to Hudbay and extended until 31 December 2020. The discharge from the lower Tom adit has naturally elevated metals levels and has been the subject of water quality monitoring and water sampling a minimum of six times per year and reporting since 2001. Continued efforts will be required to monitor compliance with the water licence. An application has been begun to transfer this licence from Hudbay into the name of the Issuer.

Any potential future development of the Tom and Jason deposits will require an environmental assessment under YESAA and a Yukon Mining Licence and Lease issued by the Yukon Government. A preliminary environmental investigation was undertaken on the Jason deposit by Gartner Lee Limited (Pearson, 2006). Additional permits will be required from the territorial and federal governments to further develop the deposits. For example, development of mining activities in the Yukon requires the issuance of a Type A water licence by the Yukon Water Board.

4.6 First Nations Consultations

The Tom and Jason properties lie within an area of territorial claim by the Kaska First Nations that has been withdrawn from staking (Ross River Area OIC 2013/224 and OIC 2013/60) pending settlement of land claims. The Kaska have not reached a land claim settlement with the Yukon government, and so the terms of any future development of the Tom and Jason deposits remain uncertain and will require consultation with the Kaska and any other affected First Nation. Also, to obtain and renew permits for the project the Issuer is required, under Yukon permitting procedures, to consult with the affected First Nations. However, the current staking moratorium does not prevent exploration or development work to be carried out on existing claims and the Issuer reports good relations with local First Nations during the 2017 work program in which they hired local First Nations workers and purchased supplies and fuel from local First Nations businesses.

4.7 Other Significant Factors and Risks

As of the effective date of this report, CSA Global is unaware of any other significant factors and risks that may affect access, title, or the right or ability to perform work on the Macmillan Pass Project.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Topography, Elevation and Vegetation

The Macmillan Pass Project is in the Hess Mountain region of the Selwyn Mountains, part of the western North American Cordillera. Elevations in the Project area vary between approximately 1,125 m and 1,200 m in the flat, wide valley bottom of Macmillan Pass to approximately 2,100 m at mountain peaks on the Tom Property (Figure 2, Figure 3 and Figure 4). The tree line occurs at approximately 1,350 m, and mountain tops are covered by alpine vegetation. Vegetation below 1,350 m is dominated by mixed deciduous and conifer (mainly black spruce) forest.

Figure 3: View of the Tom camp taken in 2017 looking north down Sekie Creek

Figure 4: Aerial view of the Jason property in the middle distance looking northwest (access tracks through forested areas are visible)

5.2 Access to Property

Access to the property is via the sealed Robert Campbell Highway from Whitehorse, the capital of Yukon with an international airport, to the town of Ross River, a distance of approximately 400 km (Figure 1). The seasonal North Canol Road continues to the Project area at Macmillan Pass from Ross River approximately 200 km (Figure 1). This road can only be accessed by a ferry/barge across the Pelly River near the town of Ross River during the summer months (Figure 5) or an ice bridge crossing in the winter.

The Tom Property can be accessed directly from the North Canol Road. A wooden bridge across the South Macmillan River previously provided access to the Jason Property, but this bridge is now derelict. It is possible to ford the South Macmillan River during low water in the summer. Numerous tracks provide access to various areas of both projects (Figure 4).

A seasonal government-maintained gravel airstrip is located on the property and supports exploration activities in the region (Figure 6).

Figure 5: Pelly River barge near Ross River

Figure 6: Gravel airstrip at Macmillan Pass (circled) in middle distance looking north

5.3 Climate

The climate of the region is sub-arctic. Weather data collected by a government weather station at the Macmillan Pass airstrip averages about -16°C in the winter and +17°C in the summer.[1]

Precipitation data are not available for Macmillan Pass airstrip but between 1974 and 1982 at the Mactung project located 14 km to the north, the average recorded annual precipitation for this period was 490 millimetres (mm), with an average annual snowfall of 294 cm (Rennie, 2007).

The effective summer season for field exploration operations in the Project area runs from June through early October, and road access is dependent upon when the Pelly River ferry commences and ceases operations for the season. Mine operations in the region with supporting infrastructure, can operate year-round.

5.4 Infrastructure

There are no services available at the project site. Electricity must be generated locally by diesel or liquid natural gas generators.

A 20-person trailer camp was installed at the Tom property in 2011 (Figure 3), including a septic system. The majority of historical drill core from both the Tom and Jason deposits, including holes drilled in 2011 and 2017, are stored just upstream from the Tom camp in and around a shed (Figure 7).

Hudbay excavated an adit and underground workings in stages between 1969 and 1982 to access the Tom West Zone for bulk sampling and underground drilling, for a total of 3,423 m of underground workings. The adit was subsequently partially plugged on 26 August 2010 to flood existing workings and reduce the flow of AMD from the opening. An upper level decline into the deposit was developed in 1982, also for exploration purposes, but was subsequently backfilled.

[1] Source:
(https://www.google.ca/search?source=hp&ei=cZt_WpzMDJDojwPR6KiIDQ&q=macmillan+pass+airport+climate&oq=macmillan+pass+airport+climate&gs_l=psy-ab.3..33i160k1.1402.7259.0.9385.31.21.0.9.9.0.111.1612.17j4.21.0....0...1c.1.64.psy-ab..1.30.1696.0..0j0i131k1j0i10k1j0i22i30k1j33i21k1.0.mugzFf4NPCI

Figure 7: Core storage area near the Tom camp viewed in 2017

Note: Cross-piled core adjacent to the core shed is covered with fitted and ventilated nylon tarps.

Project infrastructure needs in the event of potential development of the Tom and Jason deposits to production stage have not been assessed in detail, but CSA Global is of the opinion that existing property surface rights along with likely available government land are sufficient for potential mining operations, processing plant sites and waste and tailings storage areas, provided necessary permits are obtained and a satisfactory land claim settlement is reached with the Kaska First Nations. Water is readily available, provided necessary permits can be obtained from the Yukon Water Board. The North Canol Road would require upgrading and the construction of a bridge across the South Macmillan River to the Jason area. Power needs would probably require installation of diesel or liquid natural gas generators at the site. The nearest year-round ice-free port facilities are in Skagway, Alaska and Stewart, British Columbia (Figure 8). These infrastructure issues will be addressed in a Preliminary Economic Assessment report for the project anticipated to be published in the second quarter of 2018 (see Issuer news release dated 18 January 2018).

The city of Whitehorse, 600 km via road from the Project, is the major center of supplies and communications in the Yukon and is a source of skilled labor for exploration diamond drilling, construction and mining operations. There is daily jet airplane service from Whitehorse to Vancouver, British Columbia and other points south. The closest population centres to the Project via road (Figure 8) from which local supplies may be obtained are:

- Ross River (population 350; 200 km)
- Faro (population 400; 275 km)
- Carmacks (population 500; 435 km)
- Watson Lake (population 1,200; 570 km).

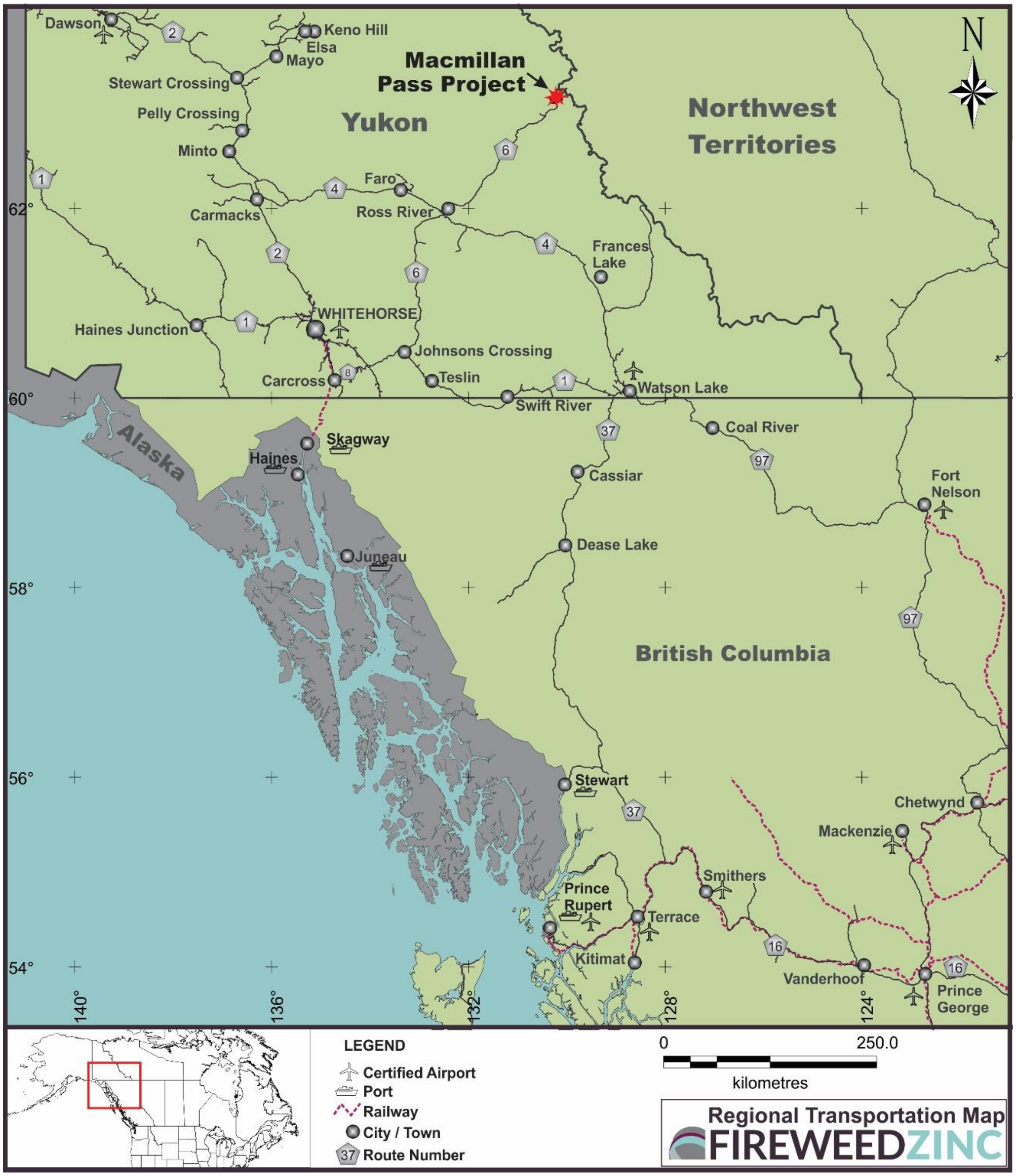

Figure 8: Regional transportation map for the Macmillan Pass Project

6 History

6.1 Property Ownership History

6.1.1 Tom Property

The Tom property has been held continuously by Hudbay through various subsidiaries since its discovery and staking in 1951, although it was temporarily optioned to Cominco Ltd between 1988 and 1992. On 14 December 2016, Hudbay signed a Definitive Option Agreement for the Tom and Jason properties with the Issuer as described in Section 4, and on 7 February 2018 the Issuer exercised the option and acquired 100% interest in the Tom and Jason claims.

6.1.2 Jason Property

The following history of ownership of the Jason property is taken largely from Rennie (2007). The Jason claims were first staked in 1971 by the Ogilvie Joint Venture. An interest in the property was obtained by Pan Ocean Oil Ltd in 1979 before being acquired by Aberford in 1981. Aberford's interest in the property was transferred to Abermin Corporation (Abermin) in 1985, and thence to CSA Gold Corporation (no connection to CSA Global). All parties transferred their interest to MacPass Resources Ltd and the property was then purchased by Hudbay in 2007 subject to a purchasable 3% NSR (see Section 4.3 – Property Agreements and Encumbrances, for details). On 14 December 2016, Hudbay signed a Definitive Option Agreement for the Tom and Jason assets with the Issuer as described in Section 4 and on 7 February 2018 the Issuer exercised the option and acquired 100% interest in the Tom and Jason claims.

6.1.3 MAC Property

The MAC property was staked by Newmont in 2011 who carried out exploration for gold in 2011, 2012 and 2013. In August 2017, the Issuer signed an Option and Exploration Agreement for the property with Newmont (see Section 4.3 – Property Agreements and Encumbrances, for details).

6.2 Project Results – Previous Owners

6.2.1 Tom Property

A brief history of exploration activity presented below is taken from Wells (2012). Key events include:

- Discovery of the Tom West Zone in 1951 with commencement of drilling in 1952
- Discovery of the Tom East Zone in 1953
- Commencement of adit development in 1969 (lower adit) with 1,703 m of lateral development in 1970
- Discovery of an extension to the Tom West Zone in 1979
- Completion of a spiral decline in 1982 (upper adit)
- Optioning of the property to Cominco Ltd between 1988 and 1992
- Partial plugging of the lower adit and covering of waste rock pile between 2007 and 2010
- 201 drillholes totalling 31,672 m completed between 1952 and 2007; details of this drilling are provided by Rennie (2007)
- 11 additional diamond drillholes totalling 1,823 m were drilled for metallurgical and infill drilling at the Tom property in 2011, followed by metallurgical testing
- Orientation surface geochemical soil sampling surveys on the Tom and Jason properties in 2011.

The next material exploration work carried out on the Tom property was by the Issuer in 2017 which is described in Sections 9 and 10.

6.2.2 Jason Property

The following summary of exploration is taken from Rennie (2007) and includes:

- Drilling of 87 holes, including 45 diamond and 33 rotary overburden holes, between 1974 and 1978.
- Drilling of 42 diamond drillholes between 1980 and 1982 for a total of 128 historical diamond and rotary holes totalling 37,924 m. Details of this drilling are provided by Rennie (2007). No drilling has occurred on the property since 1991.
- An option of the property to Phelps Dodge Corporation of Canada between 1990 and 1992.
- Purchase by Hudbay in 2006.

The Authors are unaware of any material exploration on the Jason property undertaken since 1992 until the work carried out by the Issuer in 2017.

A majority of the historical exploration work carried out at Tom and Jason was drilling with the goal of defining economic resources.

6.2.3 MAC Property

The following summary of exploration is taken from Smits (2014). Newmont carried out reconnaissance exploration for gold in 2011 (stream sediment BLEG – bulk leach extractable gold), 2012 (a small ridge and spur soil sampling program) and 2013 (ridge and spur soil sampling, mapping and prospecting). This work outlined several gold anomalous areas as well as zinc, lead and silver anomalies. Smits (2014) is an unfinished report which included maps of results but no interpretations or conclusions.

6.3 Historical Mineral Resource Estimates

In 2007, Scott Wilson of Roscoe Postle Associates Inc. (RPA) completed a MRE on the Tom and Jason deposits for Hudbay in accordance with NI 43-101 of that time (Rennie, 2007). After those estimates were made, there were 11 diamond holes drilled at Tom in 2011 by Hudbay, seven holes drilled at Tom in 2017 by the Issuer and seven holes drilled at Jason in 2017 by the Issuer. These new diamond holes along with other work carried out in 2017 by the Issuer, led to the current MRE described in this report (see Section 14 – Mineral Resource Estimates).

The 2007 MRE is not in compliance with current NI 43-101 standards and is reproduced in Section 14.12.2.

Drill cores, historic and recent, from both the Tom and Jason deposits are stored just upstream from the Tom camp (Figure 7). Much of the Tom deposit core is stored in a metal shed and the Jason deposit core was transported and cross-piled beside the shed and protected by thick vinyl covers in 2015. Hudbay carried out an inventory of the core stored in the building and reported that 79 holes are stored there, comprising some 4,000 boxes with 11,500 m of core. Some core was donated to the Yukon Geological Survey H.S. Bostock core library in Whitehorse where it is accessible for viewing and, with permission, sampling. This includes core from 70 drillholes from the Tom deposit, mainly from underground, and core from 20 Jason drillholes. Some core drilled from surface prior to 1975 was dumped in with mine waste and covered during rehabilitation of the site in 2010. One of the Authors (Dennis Arne) viewed the core stored at the Tom site during his 2017 visit and confirms it is generally in good condition given its age.

6.4 Production History

There is no known production from the property. An exploration adit and decline were excavated for underground bulk sampling and exploration purposes at the Tom West deposit in stages between 1969 and 1982 (see Section 6 – History for details).

7 Geological Setting and Mineralisation

7.1 Regional Geology

The regional geology of the Tom and Jason properties has previously been described by Rennie (2007), Goodfellow (2007) and Wells (2012). A summary is presented here from those sources.

7.1.1 Stratigraphy

The Macmillan Pass Project lies within the Selwyn Basin (Figure 9), a deep water marine basin that was initiated off the ancestral coast of North America during the late Proterozoic era with deposition continuing through the early to middle Paleozoic era. The Selwyn Basin consists of a package of sedimentary rocks beginning with continentally-derived sediments of the late Proterozoic to Cambrian Windermere Supergroup. These units were overlain in the late Cambrian to Ordovician by carbonate rocks of the Rabbitkettle Formation, and then by deep water cherts and shales of the Ordovician to early Devonian Road River Group. The Road River Group is in turn overlain by chert, black shales and turbidite sediments of the Devonian to Mississippian Earn Group, the host to the Tom and Jason deposits, as well as other zinc-lead-silver and barite mineralisation in the Macmillan Pass region (Figure 10).

The stratigraphy of the Selwyn Basin and the adjacent Mackenzie carbonate platform that existed to the north and east of the basin (Figure 9) is given in Figure 11. A detailed stratigraphic description of the Macmillan Pass area is available in Abbott and Turner (1991).

7.1.2 Magmatism

Locally, mafic volcanic rocks were erupted during deposition of both the Road River and Earn Groups and coincide regionally with the formation of zinc-lead-silver and barite deposits in the Selwyn Basin. The region was intruded by quartz monzonite plutons during the waning stages of the Jurassic to Cretaceous periods.

7.1.3 Regional Tectonics and Structure

The Selwyn Basin formed in a passive margin ocean setting following a major phase of rifting in the late Proterozoic to Cambrian. Gradual subsidence continued through the Paleozoic until the Antler Orogeny in the Devonian, at which time intracontinental rifting was initiated in a back-arc graben setting in the Macmillan Pass region. Extension faults controlling the circulation of hydrothermal fluids were active at this time and are characterized by significant thickness variations in stratigraphic units across the structures, consistent with growth faulting, and the presence of sedimentary breccias, mass flow deposits (diamictites) and conglomerates indicative of syn-sedimentary faulting. The region was subject to compression during regional east-west shortening during the Jurassic to Cretaceous, resulting in likely re-activation of normal faults, folding and thrust faulting. The Macmillan Pass region occurs in the Central Block of the Macmillan Fold Belt where south-verging thrust faults and folds may be truncated by strike-slip re-activation of Devonian normal faults (Abbott *et al.,* 1991).

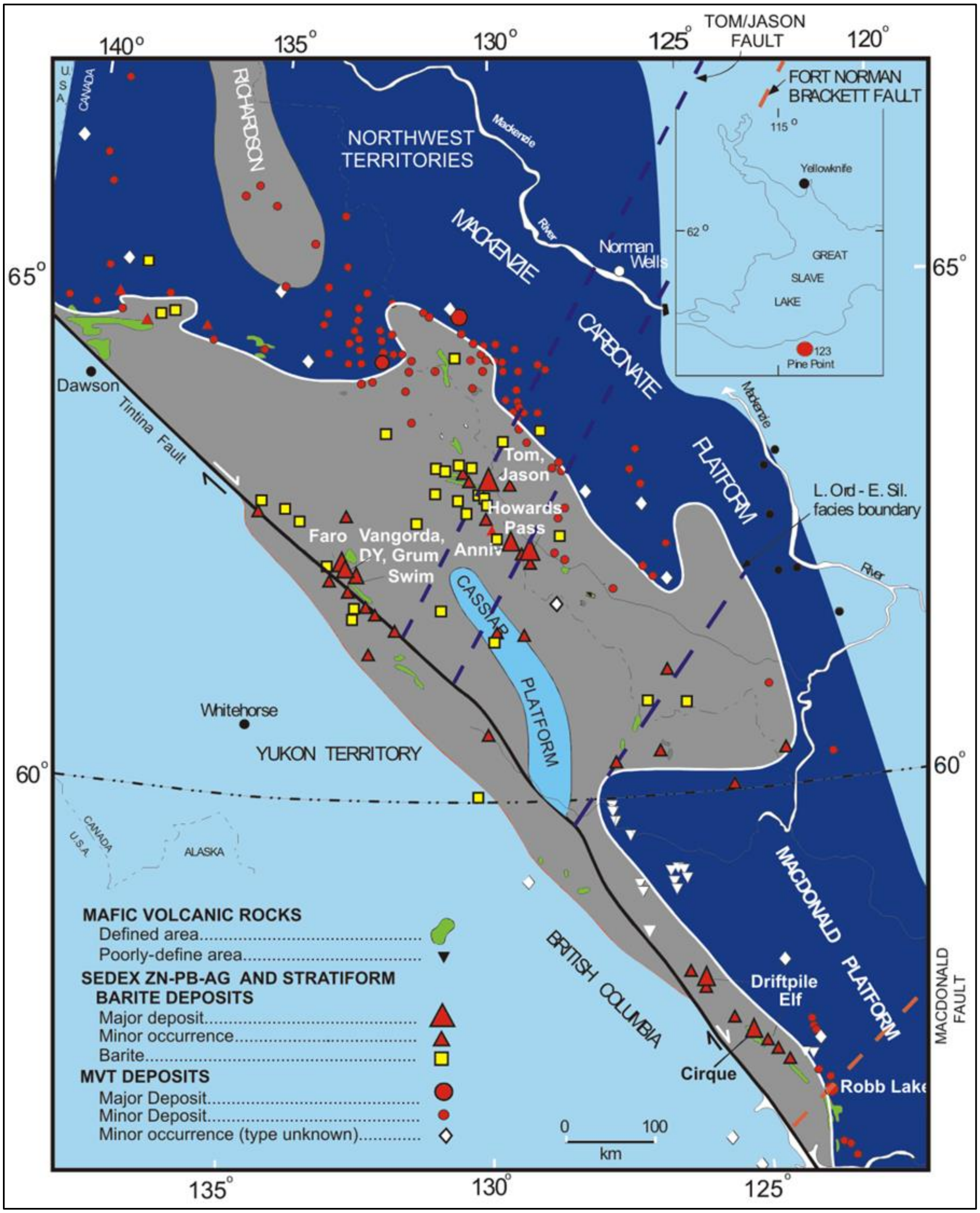

Figure 9: Regional geological setting and zinc-lead-silver deposits of the Selwyn Basin, including the Tom and Jason deposits (from Goodfellow, 2007)

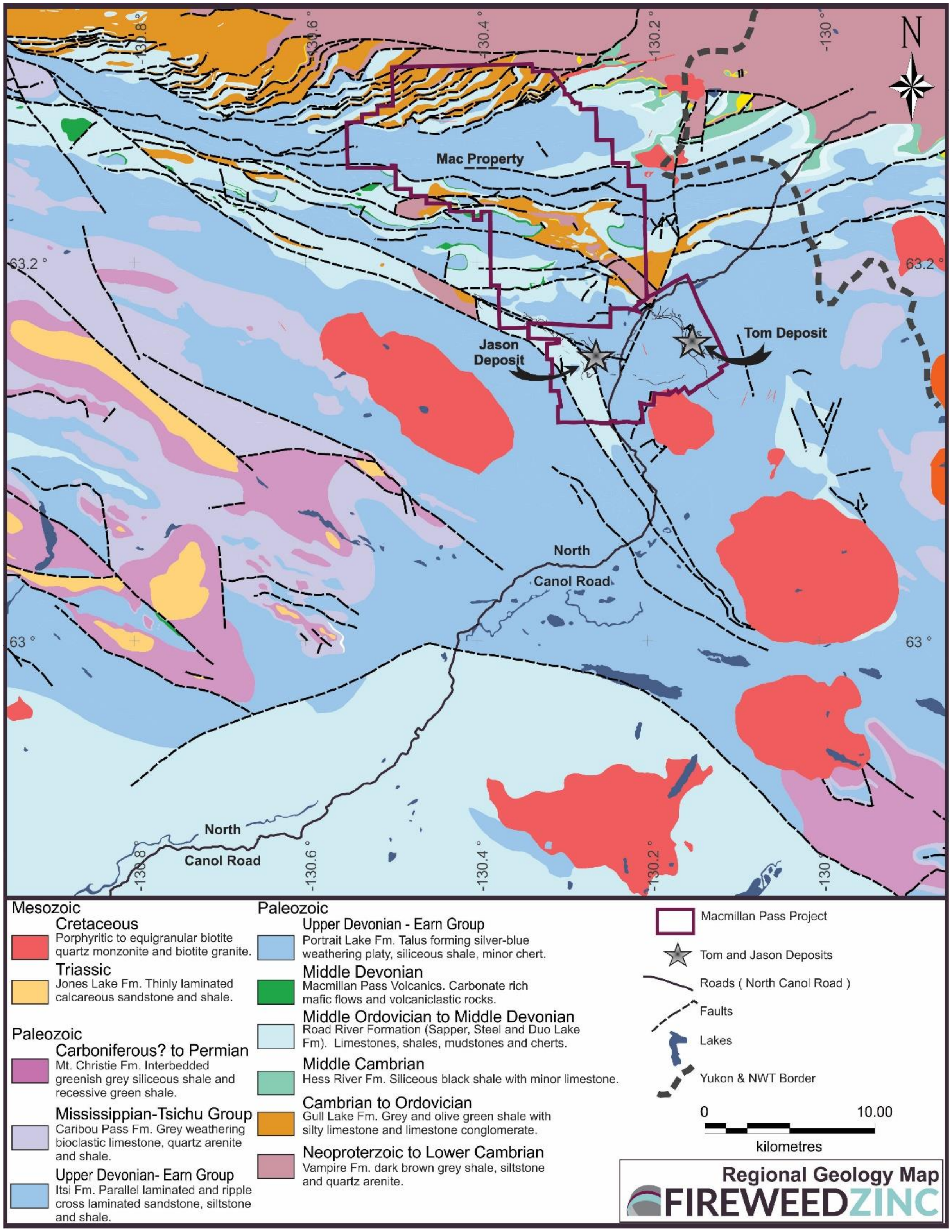

Figure 10: Geology of the Macmillan Pass region

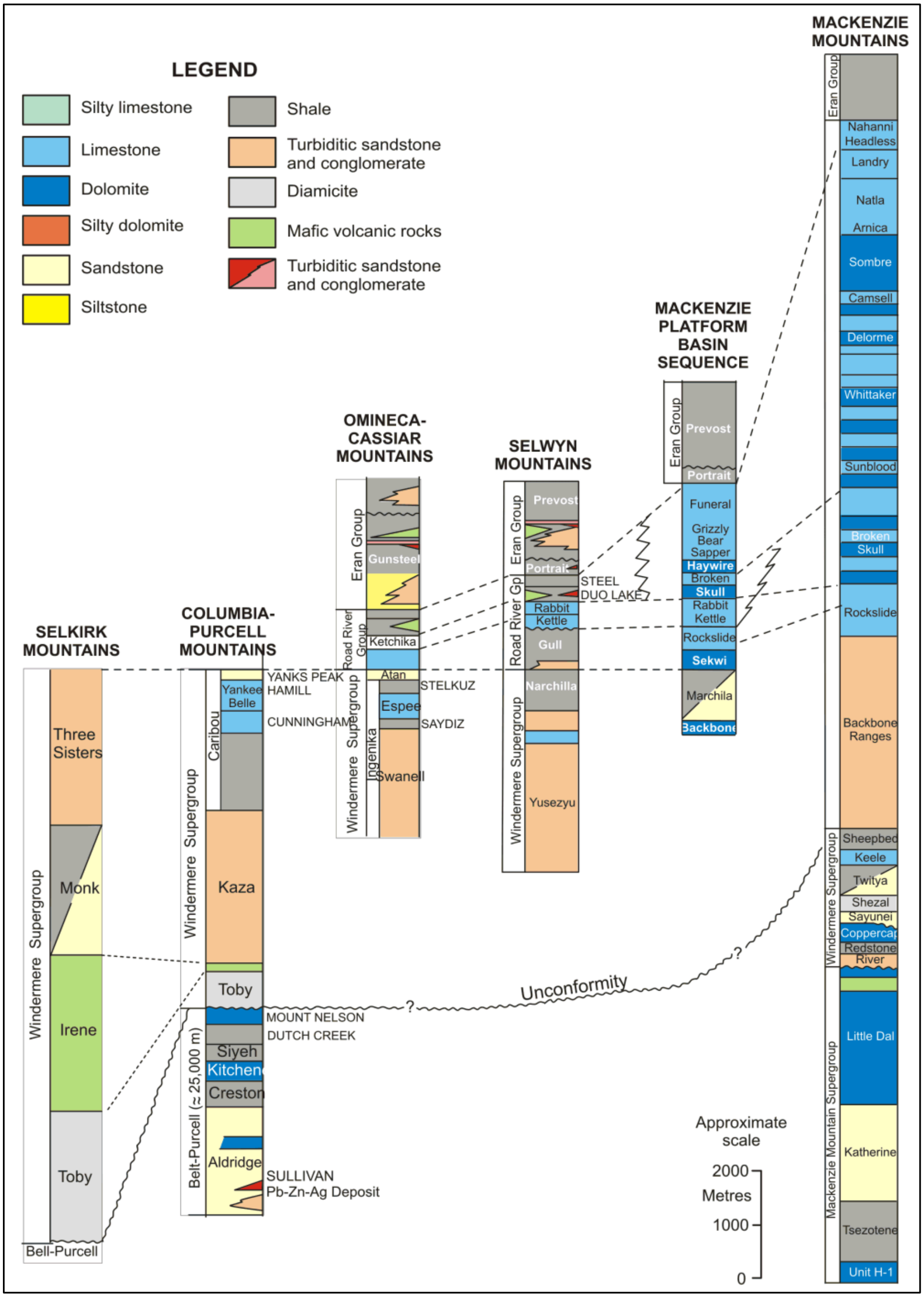

Figure 11: Stratigraphy of the Selwyn Basin and Belt Purcell Group (from Goodfellow, 2007)

7.2 Prospect and Local Geology

The local geology of the Project area is presented in Figure 12 and the local stratigraphy is summarized in Figure 13. Detailed descriptions are provided by Turner (1991) for the Jason deposit and Goodfellow (1991) for the Tom deposit. Summary descriptions of both deposits are provided in Rennie (2007) and Goodfellow (2007). The following descriptions are taken from those sources.

7.2.1 Tom Deposit

The Tom deposit is hosted by the Portrait Lake Formation of the Devonian Earn Group. Specifically, sulphide mineralisation occurs within an informal unit called the Tom Sequence (Goodfellow, 1991). The Tom Sequence is characterised by abrupt changes in sedimentary facies and unit thickness, demonstrating the influence of syn-sedimentary faulting. It consists of well banded carbonaceous and radiolarian chert, with occasional sandier intervals, barite nodules and pyrite laminae. It overlies sandy to silty laminated shales and siltstones of the MacMillan Pass Member which are interpreted to have been deposited by deep water turbidites (Goodfellow, 1991). The shales and siltstones are interbedded with occasional detrital chert layers containing chert pebble conglomerates, and with mixed clast diamictite, both indicative of submarine slumping near syn-sedimentary faulting. The Tom Sequence is unconformably overlain by fine grained clastic rocks of the informal Itsi Member. The sequence has been folded about a steeply south to southeast plunging upright anticline (Figure 14). The Tom Sequence is well exposed near the Tom deposit, although it is locally displaced along scree slopes and disrupted by frost heave in the alpine areas.

7.2.2 Jason Deposit

The Jason deposit is hosted by a Devonian sequence disrupted by the Hess Fault and folded into a series of "upright tight west-trending, shallowly east-plunging folds" (Turner, 1991) (Figure 15). The position of the Jason deposit is controlled by the location of the Jason Fault, a syn-sedimentary growth fault that brings older rocks of the Road River Group and lower Portrait Lake Formation of the Earn Group into contact with the Macmillan Pass Member and a stratigraphic package considered to be the lateral equivalent of the Tom Sequence (Goodfellow, 1991). The latter contains well developed sedimentary breccias, conglomerates and mass flow deposits (diamictites) that thicken towards the position of the Jason Fault, consistent with syn-sedimentary fault movement. Bedrock exposure is good within the alpine areas, but the valley bottoms and walls at lower elevations are concealed by a blanket of till that has inhibited exploration.

7.3 Regional Mineralisation

The following information on regional SEDEX zinc-lead-silver mineralisation is taken from Goodfellow and Lydon (2007) and Goodfellow (2007).

The Selwyn Basin is one of the most prolific basins for SEDEX zinc-lead-silver deposits in the world. The basin hosts 12 large deposits including the Tom and Jason deposits, the subject of this report (Figure 9). Past producers were Faro (aka Anvil), Grum and Vangorda. The Howards Pass deposit (aka Selwyn) is currently one of the world's largest undeveloped zinc deposits.[2] SEDEX mineralisation of the Selwyn Basin occurs in four main districts of different ages: Anvil/Faro (Cambrian), Howards Pass/Selwyn (Silurian), Gataga/Cirque (Late Devonian) and Macmillan Pass/Tom-Jason (Late Devonian). Synchronous and genetically related Mississippi Valley Type zinc-lead mineralisation occurs in the carbonate platforms along the east side of the Selwyn Basin (Figure 9).

[2] Source: https://www.woodmac.com/reports/metals-selwyn-howards-pass-zinc-mine-project-16157559

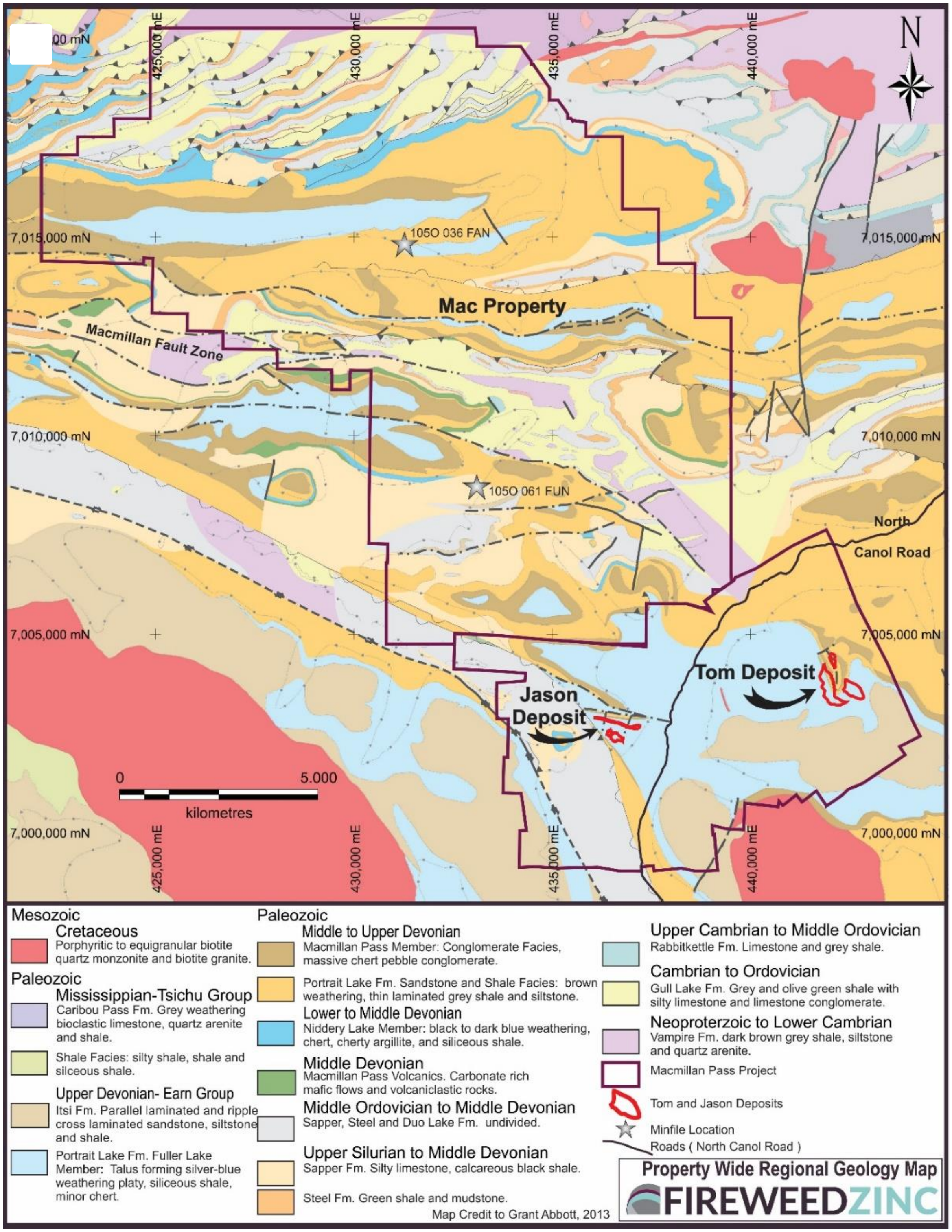

Figure 12: Geology of the Macmillan Pass project area (from Abbott, 2015)

Note: Two base metal occurrences on the Mac claim group (Fan and Fun) are also shown.

Period			Unit	Description	Hydrothermal Alteration & Hydrothermal Deposits
Cretaceous			5	Quartz monzonite Quartz feldspar porphyry dykes	
Mississippian	Earn Group Portrait Lake Fm	Itsi Member	4	Argillite, siltstone, sandstone, massive to thickly bedded, parallel and cross-laminated, rusty.	Pyritic hornfels adjacent to quartz monzonite
Devonian		Tom Sequence	3B	Black, carbonaceous, siliceous mudstone,local spotted bright horizons.Laminated sulphide, sulphate deposits (Tom, Jason) near base.	
			3D	Diamictite Unit - Local fault scarp breccias,homolithic argillite breccias, polylithic breccias, interbedded silt-banded argillites.	Tom-Jason Horizon: Laminated barite, galena, sphalerite, pyrite, chert interbedded with 3B or 3D. BaSx.
		Macmillan Pass Member	3A 3D	3A-Silt and sand banded argillite, local intraformational breccias are at base, local-3AD	Iron carbonate flooding of permeable layers, cross cutting iron carbonate veining and quartz veining, silicification.
			2	2-Dominantly chert pebble conglomerate, with chert grit and sandstone, argillite and silt banded argillite	
			1	Silt and sand banded argillite Local massive argillite	
Ordovician Silurian Devonian	Road River Group		RR	Mudstone, chert, local calcareous siltstone, limestone; fossiliferous; rare volcanics	Iron carbonate and quartz veining.

Geological interpretation by R.Cameron, Fox Geological Consultants Ltd.

Figure 13: Stratigraphic column for the Macmillan Pass Project area

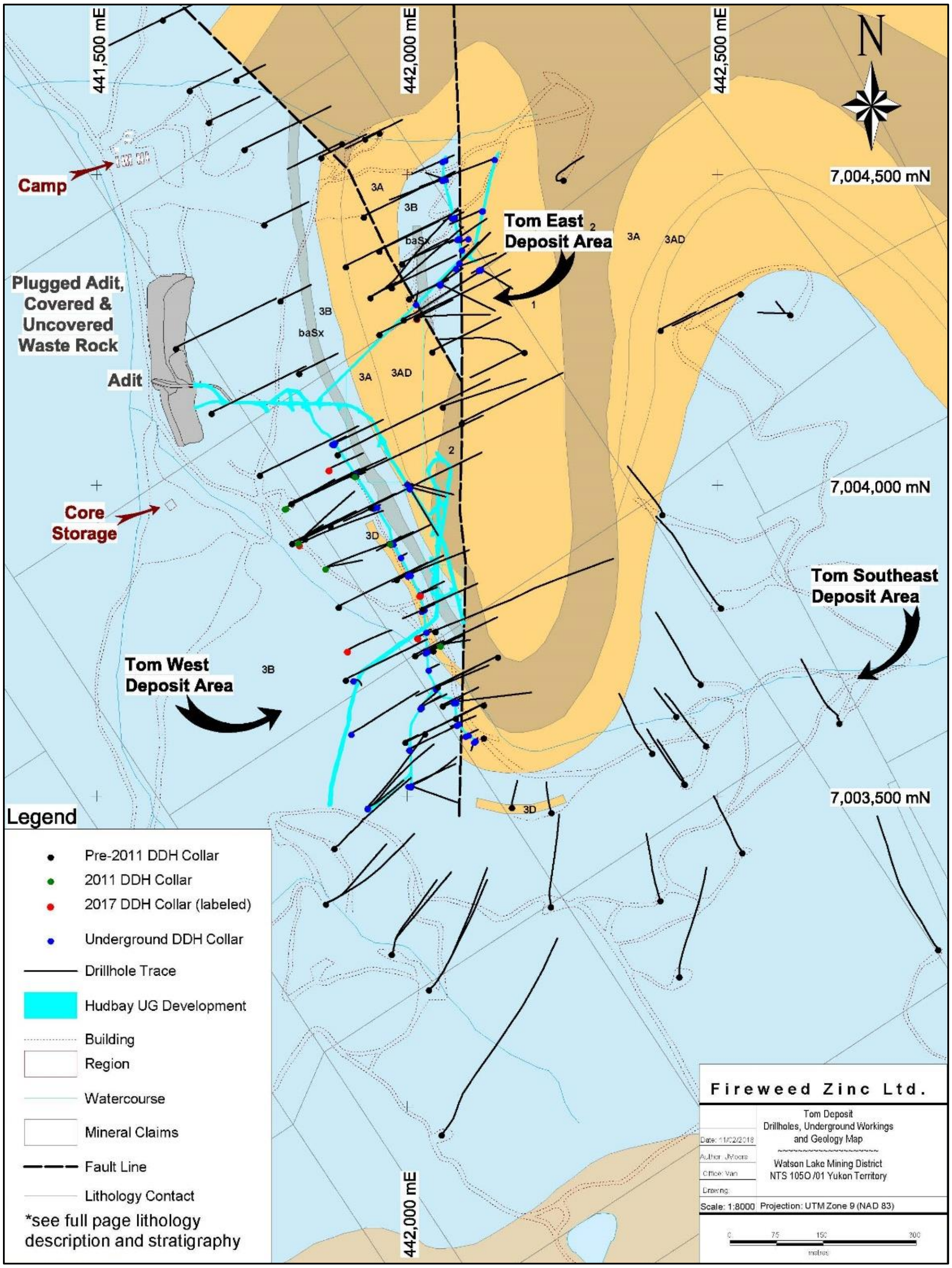

Figure 14: Geology of the Tom deposit (historical and recent drillhole collar locations are also shown)

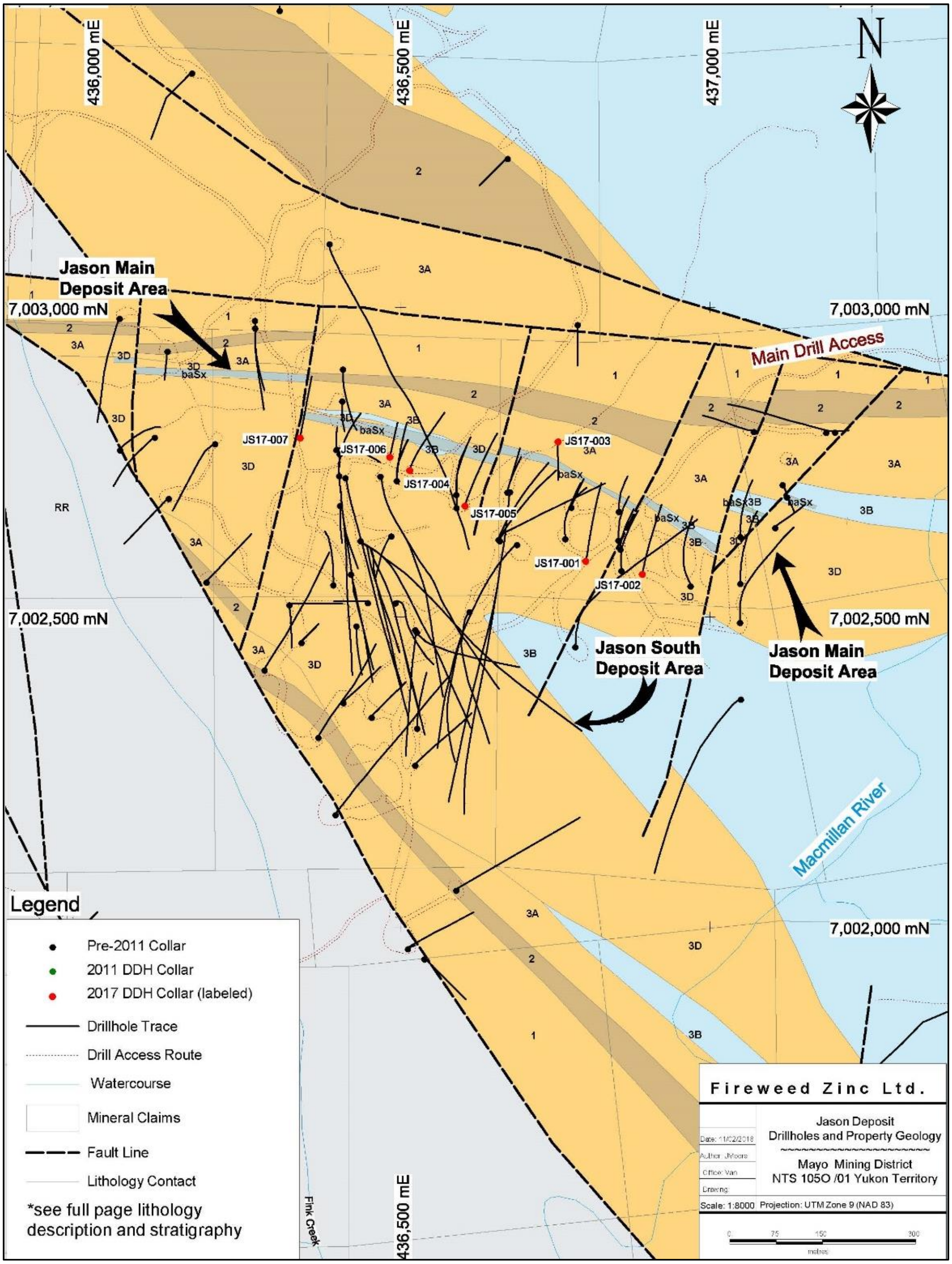

Figure 15: Geology of the Jason deposit (historical and recent drillhole collar locations and traces are also shown)

7.4 Property Mineralisation

Detailed descriptions of the Jason and Tom deposits are provided by Turner (1991) and Goodfellow (1991), respectively. The following descriptions of the Tom and Jason deposits have been taken from summaries by Goodfellow (2007) and Rennie (2007).

7.4.1 Tom Deposit

Zinc-lead-silver-barite mineralisation at the Tom deposit varies from well laminated and stratiform (parallel to sedimentary layering) to a brecciated stockwork zone adjacent to the Tom normal fault (Figure 16). The Tom West and Tom East zones, both of which are exposed at surface (Figure 17), are interpreted to have formed one continuous strata-bound controlled lens prior to folding and faulting of the Tom Sequence, whereas the Southeast Zone is interpreted to have formed in a separate sub-basin to the main graben structure hosting the Tom West and Tom East zones (Goodfellow, 1991). All three zones have been affected by folding (Figure 14), with evidence for the possible development of a crenulation cleavage (Figure 18) as opposed to the chaotic folding of laminae due to soft-sediment deformation (Figure 19). Ferroan carbonate alteration and quartz veining are common in footwall conglomerates near vent facies at Tom West.

The Tom West Zone dips 60° to the southwest, has a strike extent of approximately 1 km and extends up to 400 m down dip. It is about 40 m thick at its widest point and breaks into two discrete layers in the centre at depth. Contacts vary from transition over <1 m (Figure 20) or are faulted and abrupt. The highest-grade portion of the Tom West Zone occurs along the southern and near surface portion of the zone where Pb+Zn grades exceed 10% with elevated silver. The Tom West Zone hosts the bulk of the resource at the Tom deposit.

The Tom West Zone can be divided into a series of mineralization facies (after Goodfellow, 1991; 2007) consisting of:

- Vent facies – Stockwork of pyrite, pyrrhotite, galena, sphalerite, with minor chalcopyrite, arsenopyrite and tetrahedrite with a gangue of ferroan carbonates, quartz and barite subdivided into five types, including an upper high-grade zone with 15–30% Pb+Zn, Ag between 150 g/t and 200 g/t and a low Zn/(Zn+Pb) ratio.
- Pink facies – Interbedded barite, chert, cream-coloured sphalerite, fine grained pyrite and black Ba-carbonate, overprinted by pink and yellow sphalerite resulting in locally high grades in the range of 10–30% combined Pb and Zn.
- Gray facies – Interbedded pink sphalerite, fine grained galena and pyrite, white to pale gray barite, pale grey chert and grey to white Ba-carbonate/Ba-feldspar, typically with grades in the range of 4–5% Pb+Zn with negligible Ag.
- Black facies – Black mudstone and chert interbedded with barite, witherite (Ba-carbonate) and fine-grained sphalerite, galena and pyrite, typically with grades in the 4–10% Pb+Zn range and a high Zn/(Pb+Zn) ratio.

The Tom East Zone occurs near the hinge of the anticline that has folded the originally planar deposit, and which plunges northward in this area. It consists of interbedded high-grade sphalerite, galena, barite and chert thought to have formed within the same stratigraphic interval as Tom West (McClay and Bidwell, 1986).

The Tom Southeast Zone is not exposed at surface, and consists of a tabular, stratiform body 0.5 m to 6 m thick with a strike length of approximately 400 m and a down-dip extension of at least 350 m dipping 60–70° to the east. It is located near the nose of the southeast-plunging Tom anticline on its eastern limb. Mineralisation consists of finely laminated sphalerite, galena, pyrite and black cherty mudstone (Goodfellow, 1991).

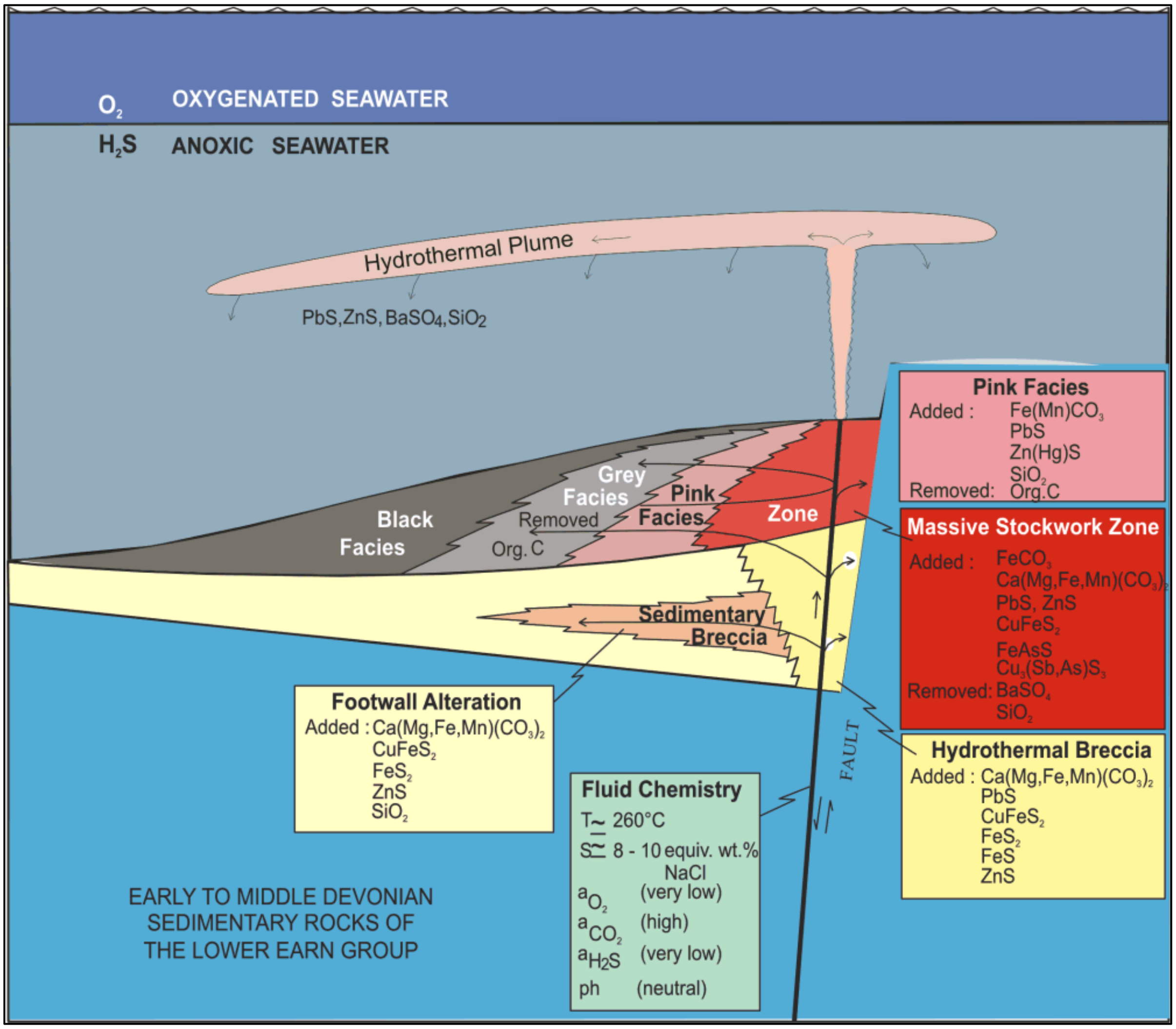

Figure 16: Schematic stratigraphic reconstruction of the mineralization facies (zones) at the Tom deposit (from Goodfellow, 2007)

Figure 17: View of the Tom West Zone (defined by black lines) exposed at surface

Note: Bulldozer for scale below the mineralized band.

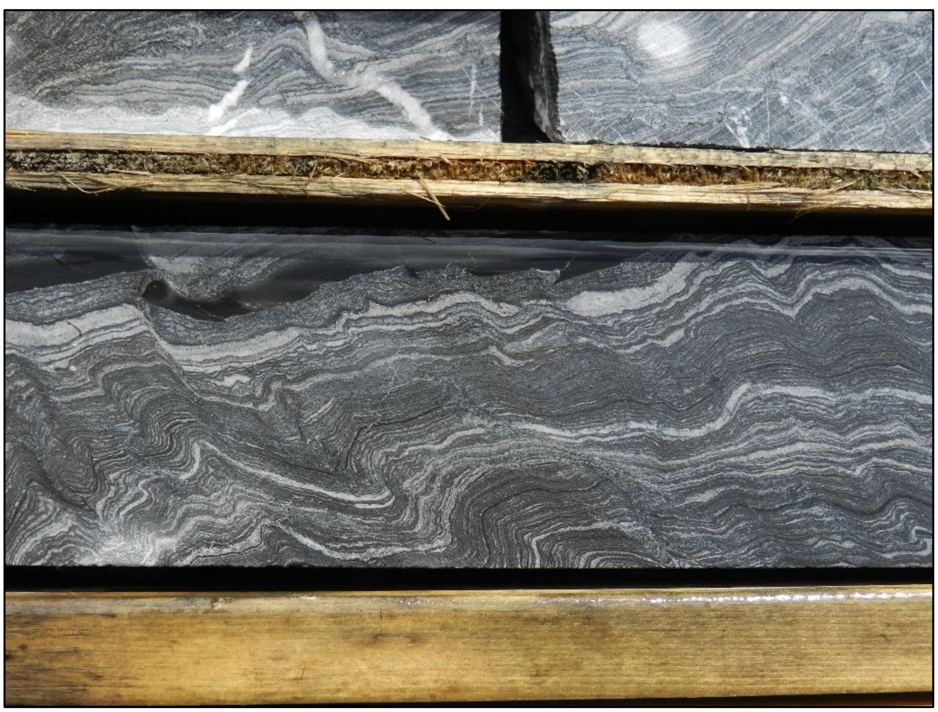

Figure 18: Minor folds of possible tectonic origin in gray facies mineralization from Tom West

Note: NQ diameter drill core from TYK-010 drilled in 2011 (depth 103.5 m).

Figure 19: Chaotic folds related to soft-sediment deformation in gray facies mineralization from Tom West

Note: NQ diameter drill core from TYK-010 drilled in 2011 (depth 104.7 m).

Figure 20: Hangingwall and footwall contacts for Tom West in hole TYK-006 drilled in 2011

Note that core boxes from the main zone are missing from this image.

7.4.2 *Jason Deposit*

A stratigraphic reconstruction of the Jason deposit at the time of mineralisation is presented in Figure 21. The Jason Main Zone is located on the northern limb of the east-plunging Jason syncline, while the Jason South Zone occurs on the southern limb (Figure 15). The South Zone consists of two separate horizons whereas the Main zone is defined by a single horizon. These two separate zones are likely connected through the hinge of a syncline, but this has yet to be demonstrated through drilling. These horizons can be divided into several distinct mineralisation facies (zones), including (after Turner, 1991):

- Pb-Zn-Fe sulphide facies – Massive, banded sphalerite-galena and galena-pyrite overlain by debris flow deposits containing clasts of earlier deposited massive sulphides.
- Barite-sulphide facies – Interbedded fine-grained sphalerite, galena, barite, chert and ferroan carbonate forming the bulk of the mineralisation at Jason.
- Quartz-sulphide facies – Interbedded sphalerite, pyrite, quartz and carbonaceous chert with quartz-celsian (barium feldspar) bands in the lower lens.
- Massive pyrite facies – Massive pyrite beds interbedded with sphalerite, galena, chalcopyrite, pyrrhotite and quartz located near the Jason Fault.
- Ferroan carbonate facies – Massive beds of siderite and ankerite up to several metres across with irregularly distributed galena, sphalerite, pyrrhotite, pyrite, quartz, muscovite and pyrobitumen; spatially associated with a breccia pipe.

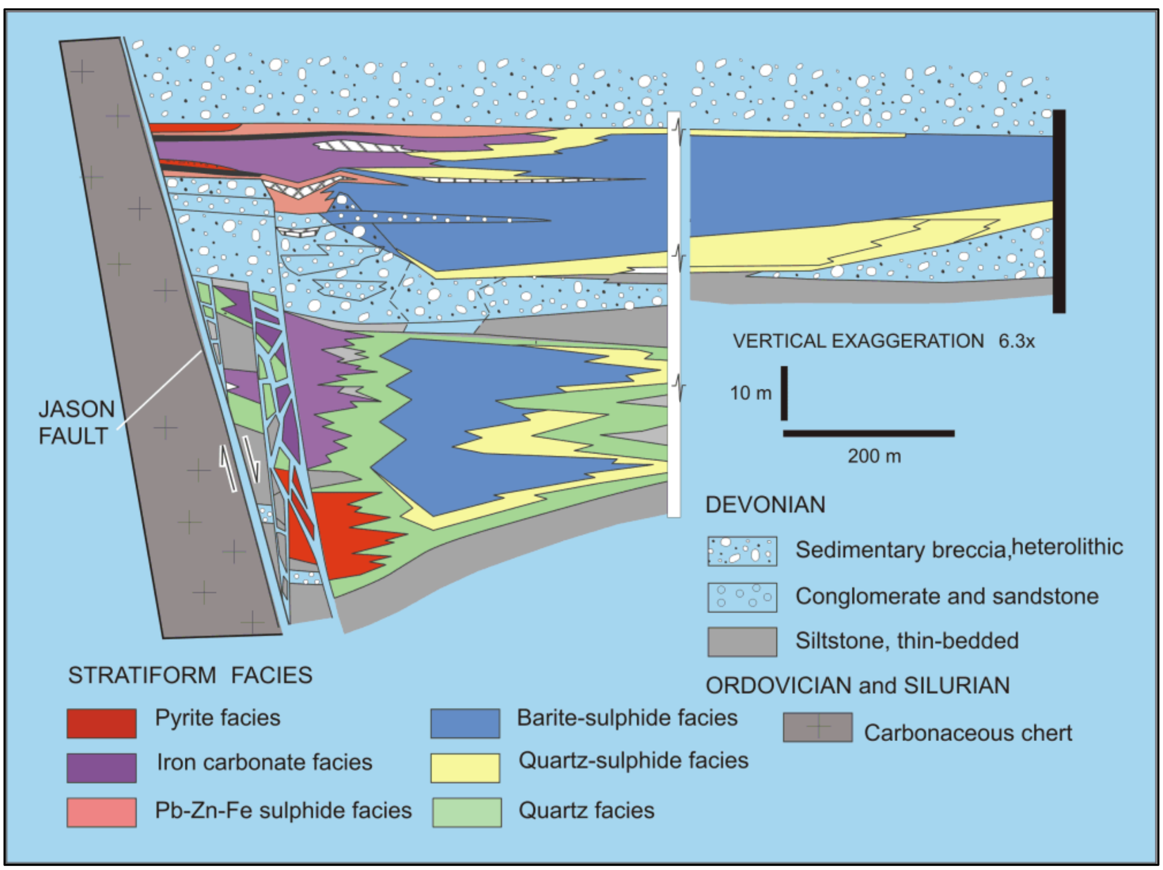

Figure 21: Stratigraphic reconstruction of the mineralisation facies (zones) at the Jason deposit (from Goodfellow, 2007)

8 Deposit Types

The Tom and Jason deposits are examples of stratiform, strata-bound sediment-hosted, exhalative ("SEDEX") zinc-lead-silver-barite deposits (Figure 22; Goodfellow et al., 1993; Leach et al., 2005; Goodfellow et al., 2007; Goodfellow, 2007). Historically the term SEDEX was first used in a report describing the zinc-lead-silver deposits of the Selwyn Basin by Carne and Cathro (1982) and since then the term has been used to describe these deposits worldwide. SEDEX deposits (also known as clastic-dominated or CD deposits) formed in rift basins primarily in the late Paleoproterozoic and in the early Phanerozoic, with typical grades of 10% combined Pb+Zn in producing mines.

Mineralization is interpreted to have formed at or close to the seawater-sediment interface either proximal or distal to submarine exhalative vents localized along syn-sedimentary (growth) faults (Figure 23). Euxinic conditions may have been present during deposition of sulphides, but these may not have been necessary (e.g. Magnall *et al.,* 2015). The more distal deposits are therefore largely stratiform in nature in that the mineralised zones are concordant with sedimentary layering, whereas proximal deposits show more complex metal zonation and replacement textures. Proximal deposits are more closely linked spatially with syn-sedimentary feeder faults. A clear understanding of structural geology and stratigraphy are therefore important aspects of exploration for SEDEX mineralisation. Metal ratios, such as Ag/Pb, Pb/(Pb+Zn), Cu/((Zn+Pb), Zn/Fe and Zn/Ba typically increase towards the feeder faults and vents providing a vector towards the central and potentially higher-grade parts of the hydrothermal system. Both the Tom and Jason deposits are proximal SEDEX deposits (Goodfellow, 2007).

Other important guides to exploration for SEDEX mineralisation include (after Goodfellow, 2007):

- The presence of footwall feeder zones involving silicification of the footwall sedimentary package, brecciation, veining and trace element enrichments (Cu, Co, Ni, Mo, As, Sb, Zn, Cd, Pb and Hg)
- Laterally extensive stratigraphic horizons equivalent to the main deposit lens with elevated Zn, Cd, As and Hg
- Hangingwall alteration characterized by elevated Ba, Zn and pyrite enriched in Co, Ni and Cu
- The presence of pyrite and/or pyrrhotite in vent complexes that may be detectable by electrical and/or electromagnetic geophysical exploration methods
- Positive gravity anomalies that may be directly indicative of massive sulphide concentrations at depth.

Many of the exploration guides described in this section were developed through extensive research into the Tom and Jason deposits, as well as into other SEDEX deposits found within the Selwyn Basin. Much of this research was carried out by the Geological Survey of Canada (GSC) prior to 1991. There has been little in the way of meaningful exploration work carried out on the Tom and Jason properties since this research was completed and many of the concepts developed by the GSC have not yet been tested by modern exploration.

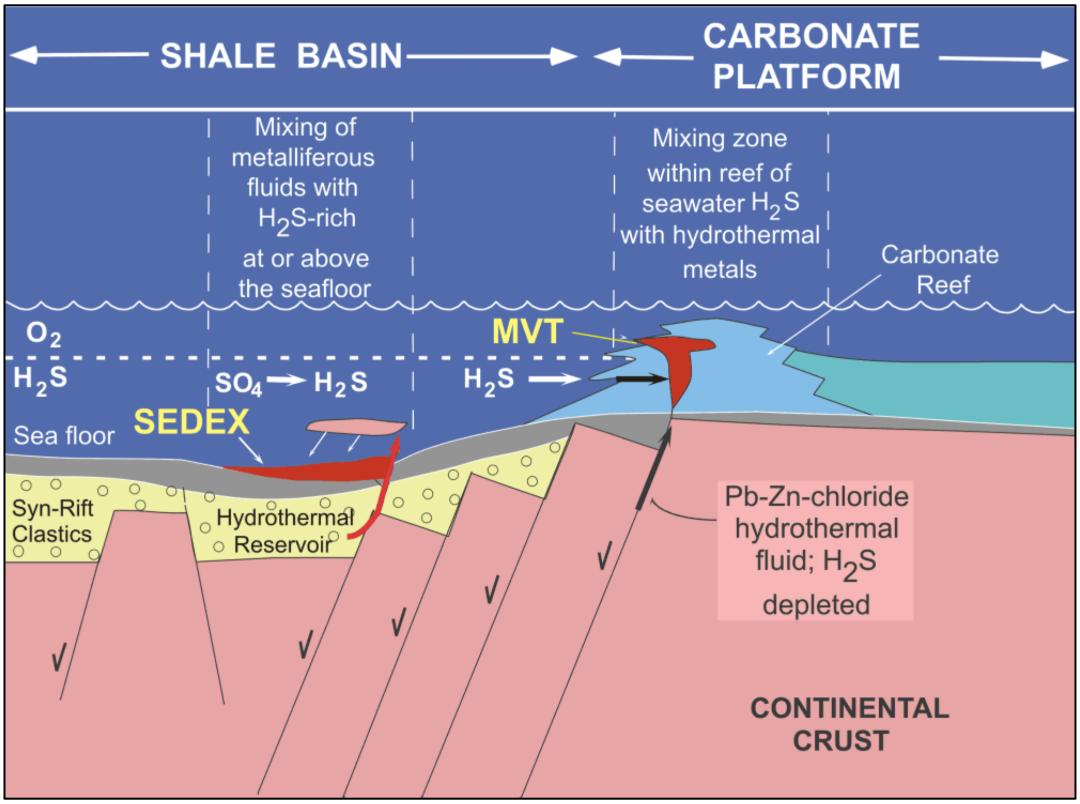

Figure 22: Conceptual models for SEDEX and MVT (Mississippi Valley-type) Pb-Zn deposits (from Goodfellow, 2007)

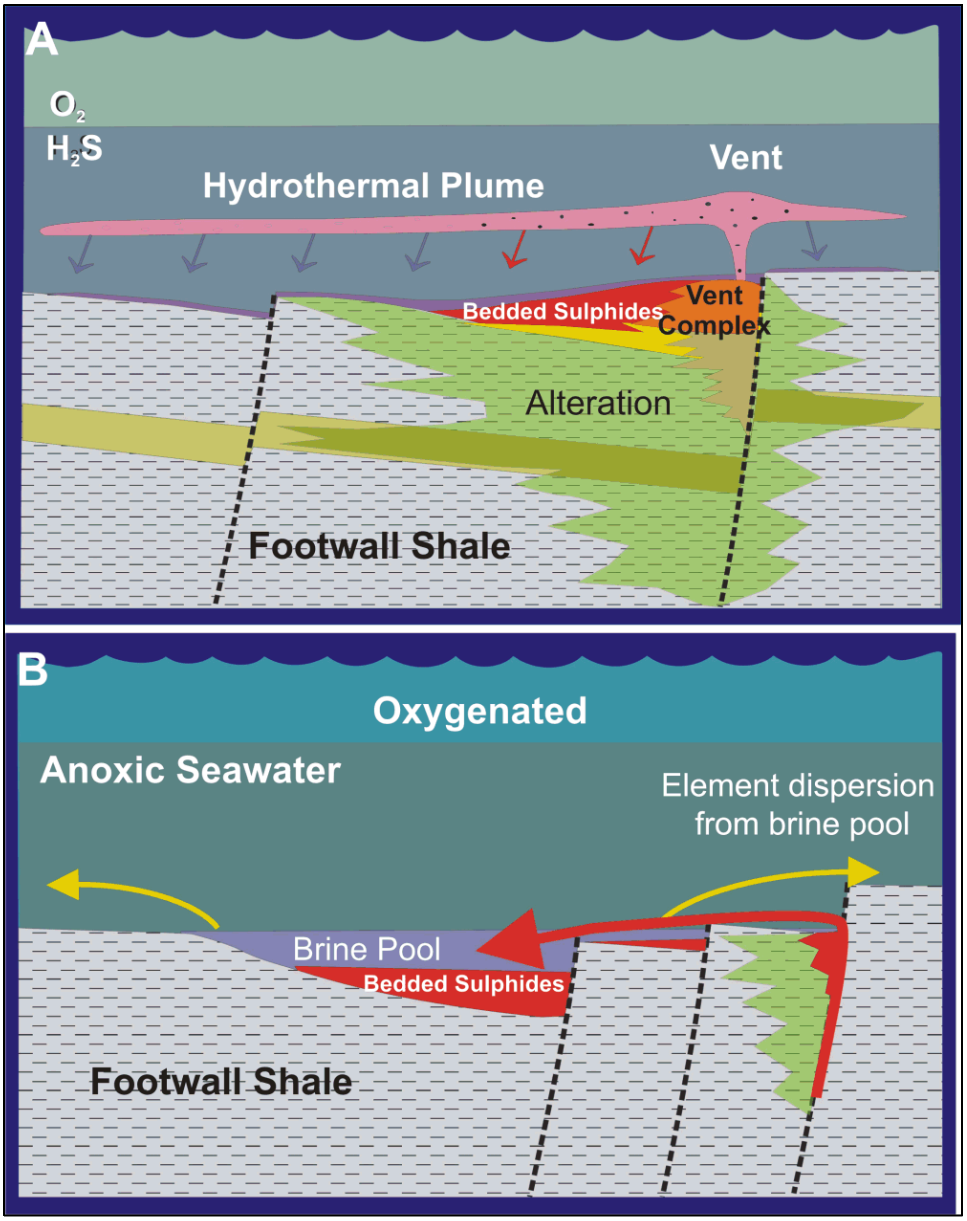

Figure 23: Conceptual models for proximal (A) and distal (B) SEDEX deposits (from Goodfellow, 2007)

9 Exploration

In 2017, the Issuer carried out a program of drilling, mapping, sampling, LiDAR topographic mapping and airborne geophysics on the property. Drilling totalled 936 m in seven holes on the Tom deposits and 1,266 m in seven holes on the Jason deposits. The following summary is taken from the Issuer's news release dated 27 December 2017. Drilling results from 2017 are described in Section 10 (Drilling).

9.1 Airborne Geophysics

The airborne geophysics program was designed to rapidly cover the entire area of the Tom and Jason claims as well as the southern portion of the adjacent MAC claims with the objectives of helping to map critical subsurface geology and identify drill targets for new discoveries and extensions of known mineralization. The geophysics work employed a state-of-the-art helicopter-borne Versatile Time-Domain Electromagnetic (VTEM) system and a high sensitivity magnetometer. Parallel lines were flown at 100 m spacing on a north-northeast bearing for a total of about 1,000 line kilometres. Preliminary results have been received and are being analyzed and interpreted to define areas for exploration and potential new discoveries in 2018.

9.2 Airborne LiDAR Topographic Mapping

A program of airborne LiDAR (Light Detection and Ranging) surveying was carried out and the Jason portion of the property completed before it was suspended late in the season due to poor weather. The LiDAR work over the Tom and other areas will be completed in 2018. The purpose of the LiDAR survey is to produce a very accurate topographic map of the property for engineering and mapping work as well as aid in the mapping of geological features. High definition aerial photography was also carried out during the survey which will aid in geological and engineering work.

9.3 Field Work

Exploration field work carried out in 2017 included surface geological mapping and geochemical sampling in the search for new discoveries in the Tom and Jason deposit areas. The mapping has resulted in a better understanding of the geology and setting of the mineralization. Geochemical results are being interpreted. A more extensive program of mapping and geochemistry is planned for 2018 to guide exploration.

10 Drilling

The Issuer carried out drilling on both the Tom and Jason areas in 2017 (Figure 24 and Figure 25). The following description is based on the Issuer's news release dated 27 December 2017.

The objectives of the 2017 drill program were to:

1. Complete sufficient new drilling and resampling of old drill core to verify historic drill results for use in a NI 43-101-compliant mineral resource report.
2. Step-out drill holes on the known zones of mineralization to expand on historic drill results.
3. Collect fresh rock core samples from the new drilling for metallurgical test work (now in progress).

All these objectives were met and locally exceeded with drill results that were, in places, higher grade and/or wider than historic drill data indicated. Significant drill results from the 2017 program are summarized in Table 3.

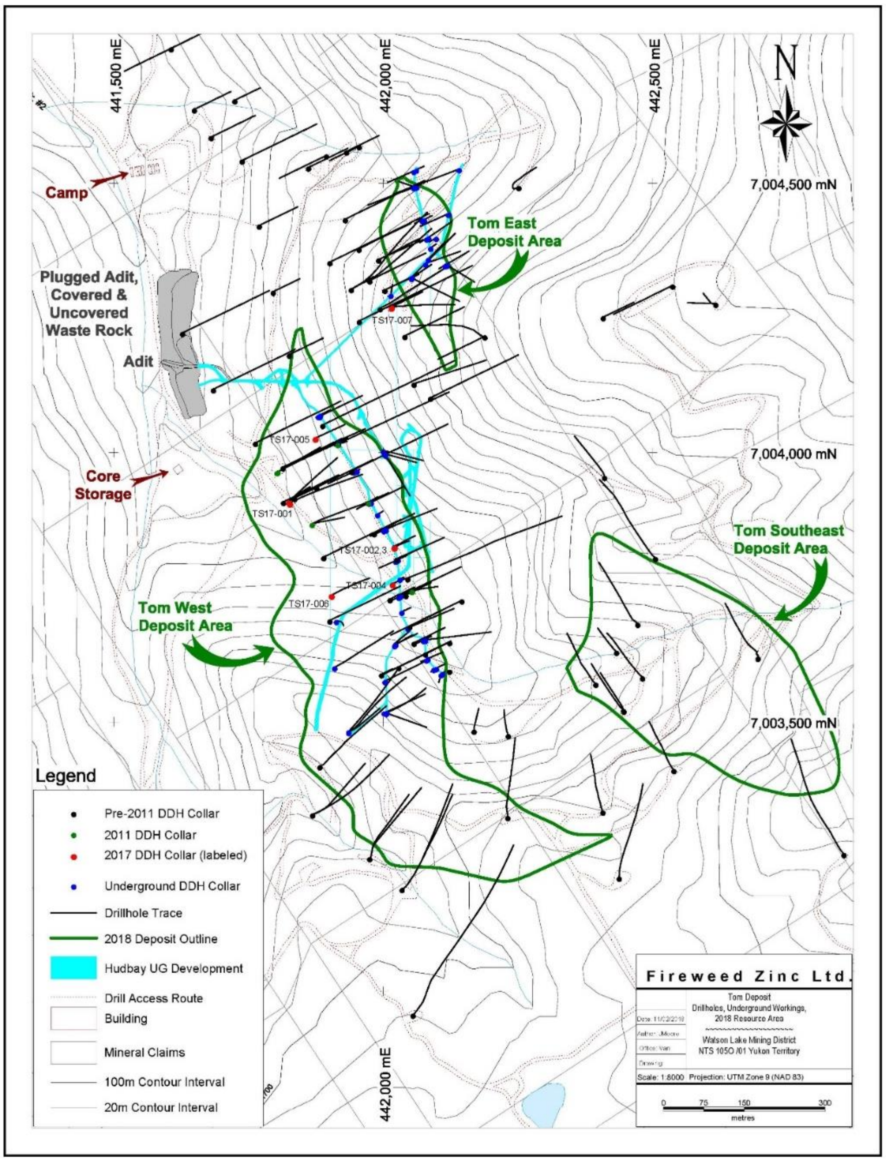

Figure 24: Drillhole collars and traces from the Tom deposit

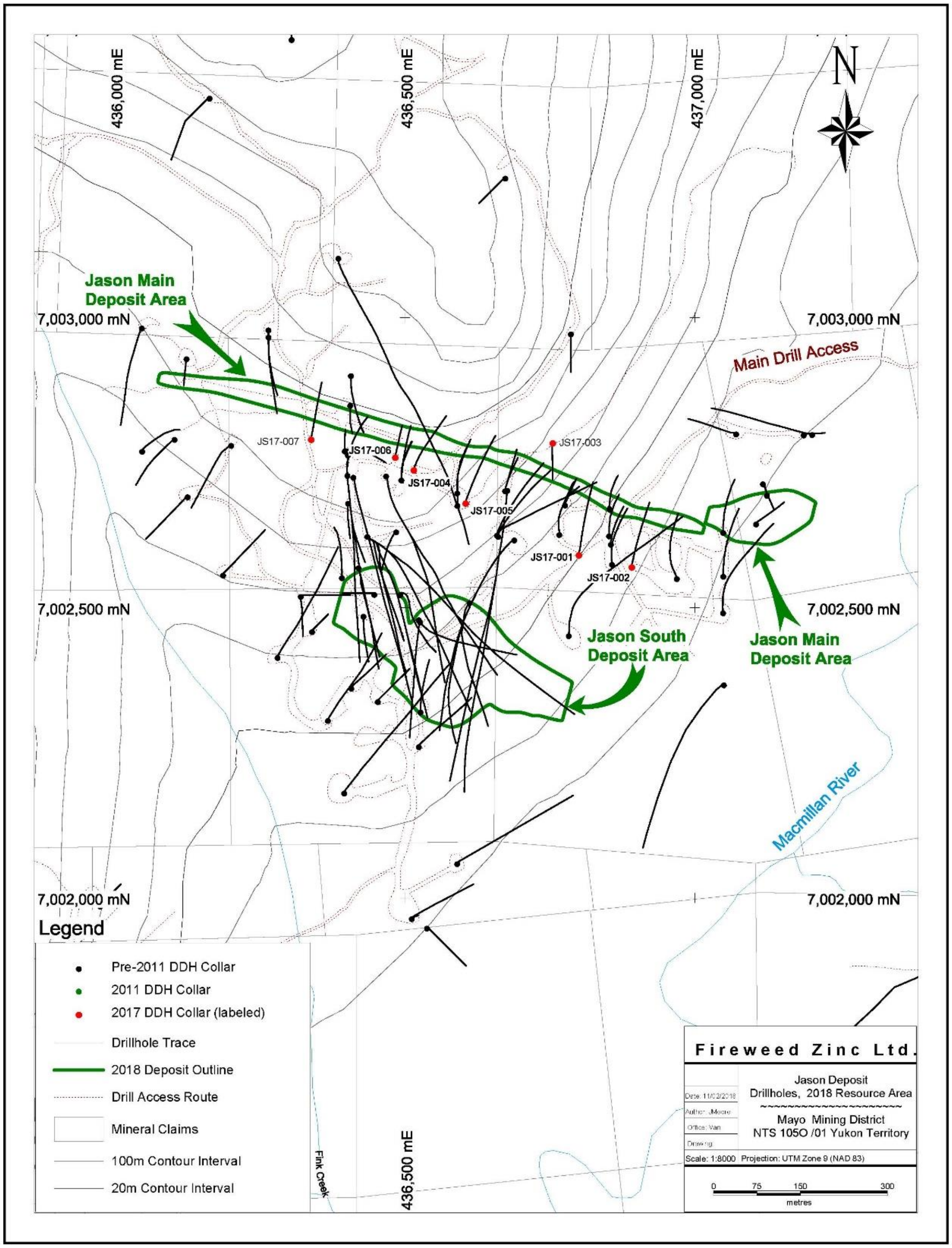

Figure 25: Drillhole collars and traces from the Jason deposit

Table 3: Significant drilling intercepts from the 2017 drill program

Hole no.	From (m)	To (m)	Interval (m)	Estimated true width (m)	Zn (%)	Pb (%)	Ag (g/t)
Tom West zone drill results							
TS17-01	98.25	157.00	58.75	50.9	5.05	1.22	0.6
TS17-02	17.25	40.00	22.75	21.6	11.26	7.88	136.7
Including:	30.00	40.00	10.00	9.5	15.88	12.04	290.4
Including:	35.40	40.00	4.60	4.4	21.57	19.24	491.8
TS17-03	16.70	42.47	25.77	24.4	10.20	6.30	87.7
Including:	34.00	42.47	8.47	8.0	14.66	9.82	234.1
Including:	38.65	42.47	3.82	3.6	19.20	13.95	379.8
TS17-04	40.50	69.65	29.15	21.5	6.53	2.93	18.2
Including:	55.40	66.50	11.10	8.2	7.23	4.65	38.8
TS17-05	57.55	94.20	36.65	27.7	6.35	3.15	34.2
Including:	79.90	93.80	13.90	10.5	7.55	5.99	87.0
Including:	83.50	86.00	2.50	1.9	14.99	2.36	54.4
Including:	90.00	93.80	3.80	2.9	10.33	7.15	166.7
TS17-06	196.85	239.00	42.15	28.5	5.27	0.70	0.4
Including:	198.60	206.00	7.40	5.0	8.45	0.41	1.5
Tom East zone drill results							
TS17-07	61.00	154.20	93.20	38.0	8.73	7.62	129.7
Including:	88.55	150.45	61.90	25.2	10.62	10.32	178.0
Including:	121.00	150.45	29.45	12.0	11.76	11.80	228.5
Including:	121.60	124.65	3.05	1.2	15.55	23.41	389.4
Including:	132.00	142.18	10.18	4.2	17.66	12.95	277.0
Including:	138.38	142.18	3.80	1.5	23.84	17.70	392.2
Jason Main zone drill results							
JS17-01	172.30	183.26	10.96	7.0	12.16	3.13	1.6
JS17-02	155.18	172.76	17.58	10.5	7.82	1.39	1.3
Including:	165.00	172.76	7.76	4.6	11.19	1.94	1.2
JS17-03	Drillhole abandoned before reaching main zone due to drilling and survey problems						
JS17-04	154.19	179.00	24.81	11.2	9.07	1.60	0.7
Including:	170.70	179.00	8.30	3.7	14.03	1.29	1.1
JS17-05	177.98	206.72	28.74	15.7	10.22	1.95	0.5
Including:	184.60	193.22	8.62	4.7	15.02	3.05	0.3
Including:	187.16	191.17	4.01	2.2	19.53	3.97	0.6
Including:	203.50	206.00	2.50	1.4	18.75	1.12	1.8
JS17-06	57.50	83.83	26.33	13.1	13.24	3.38	1.4
Including:	57.50	61.30	3.80	1.9	12.93	4.29	3.0
Including:	64.70	68.40	3.70	1.8	25.06	5.00	3.4
Including:	77.20	83.83	6.63	3.3	20.66	3.95	0.8
JS17-07	61.00	85.05	24.05	16.9	5.25	1.24	2.0
Including:	79.95	85.05	5.10	3.6	8.91	1.58	0.4

Notes to Table 3:

- *Maps and sections of the Tom and Jason drillholes are provided elsewhere in this report and are available on the Issuer's website at www.FireweedZinc.com .*
- *True width estimates are based on the Issuer's understanding of the orientation of the mineralized bodies in the area of the drill intersections at the time of the news release (27 December 2017).*
- *Details on the drilling procedures, sampling and assay methods are in Section 11.*

11 Sample Preparation, Analyses and Security

The Issuer conducted exploration activities on the property in 2017. All other data are historical in nature. Sampling, analyses and quality control are discussed for three distinct phases of drilling on the Property:

1. Historical drilling prior to 2011 for which the records are incomplete.
2. Drilling carried out by Hudbay in 2011.
3. Drilling carried out by the Issuer in 2017.

11.1 Pre-2011 Sample Preparation, Analyses and Security

Due to its historic nature, CSA Global has been unable to confirm the sampling protocols, core-handling procedures, or site security utilized on diamond drill programs prior to 2011. As previously described in Section 6, some of the archived pre-2011 core is stored in a metal-clad building at the site or cross-stacked in the surrounding area This building is not presently locked but are nailed shut when no one is on site and could be made secure easily. There is no evidence that any vandalism has taken place. Core from 70 Tom holes is stored in Whitehorse, in a secure government warehouse (Rennie, 2007) at the H.S. Bostock (Yukon government) Core Library. The Jason core was moved from a shed on the east bank of the South Macmillan River by Hudbay to the Tom core storage site between 2011 and 2015. The Jason core has been cross-piled and covered with breathable canvas covers (Figure 7). The core, for the most part, is secure although it is in a remote site that is accessible by road and so is vulnerable in some degree to tampering. Core from 20 Jason holes is also stored at the H.S. Bostock Core Library.

Pre-2011 core samples were collected using a diamond saw or a blade splitter. Core samples from both Tom and Jason were sent to a number of labs including Bondar Clegg and Company Ltd, Chemex Labs Ltd and Hudson Bay Mining and Smelting Co. Limited (Rennie, 2007). CSA Global notes that the analytical work carried out on samples from the Tom deposit at the Hudson Bay Mining and Smelting lab was not independent as it was performed by employees of same company which was undertaking the exploration drilling at the time.

Assay certificates for some historical analyses are available for the Tom deposit from the 1980s. Only random spot checks of digital copies of historical assay certificates have been undertaken. Original Ag values were either reported as oz/ton or gram/tonne and conversions to ppm appear to have been done correctly. Some assays are recorded only on drill core strip logs, in which case low values were often recorded as “tr”, for trace amounts. These values have been recorded as “0” values in the historical database, and an effort has been made to replace these false “0” values with a nominal detection limit amount so that it is clear that a sample was assayed and that no significant metal value was returned.

No quality assurance and quality control (QAQC) data are available for the pre-2011 historic analyses beyond check assays aside from a number of samples that appear to have been analyzed at a different laboratory. For this reason, a re-assay program of historical drill core was undertaken in 2017 to verify historical data. The results of this program are discussed in Section 11.

Despite the incomplete documentation for historical assays, it is CSA Global’s opinion that the historic sample preparation and analyses would have been carried out using industry standard procedures for that time by reputable laboratories. There is no reason to suspect that analytical results contained in the Tom and Jason historic drill database are not representative of *in situ* mineralization and CSA Global considers the data adequate for the purposes of this report.

11.2 2011 Hudbay Drill Core Sample Preparation and Security

Sample preparation, analyses and security methods and protocols for the 2011 drilling program carried out by Revelation on behalf of Hudbay (Wells, 2012) are described in this section.

Drill core was halved for sampling using a diamond saw installed at the new Tom camp. Quarter core was sampled for assay where the half core was required for metallurgical testing. Samples for analysis were collected into polypropylene bags. Security of samples prior to dispatch to the analytical laboratory was maintained by limiting access of unauthorized persons to the site. Samples were stored in a secure storage area at the base camp on the Property. Detailed records of sample numbers and sample descriptions provided integrity to the sampling process. Labelled samples bags were packed in polypropylene rice bags and sealed for shipping. Samples remained under the supervision of Revelation personnel while onsite at the Project and during delivery to the ACMELabs (ACME) preparation facility in Whitehorse, Yukon. ACME completed sample preparation at their Whitehorse facility, and employed bar coding and scanning technologies that provided complete chain of custody records for every sample. Master pulps were then shipped by ACME to their Vancouver laboratory for analysis.

The ACME Whitehorse preparation facility is certified to standards within ISO 9001:2008. The Vancouver analytical facility was certified to standards within ISO 9001:2008 and, at the time of the 2011 program, was in the process of accreditation to ISO/IEC 17025:2005 from the Standards Council of Canada (SCC). ISO/IEC 17025:2005 accreditation conforming to requirements of CAN-P-1579 and CAN-P-4E was received in October 2011 for methods including the determination of Ag, Cu, Pb and Zn by multi-acid digestion with an atomic absorption spectrometry (AAS) finish. ACME sample preparation procedures and analytical methods are routine and follow industry best practices and procedures. CSA Global notes however that ACME's ISO/IEC 17025:2005 accredited analytical methods do not include those utilized for the analysis of the 2011 drill core samples.

ACME and its employees were independent from CSA Global, the Issuer, Hudbay and its consultant Revelation. Hudbay and Revelation personnel, consultants and contractors were not involved in the 2011 sample preparation and analysis.

11.3 2011 Drill Core Sample Analytical Method

Drill core samples from the Tom Zn-Pb -Ba-Ag deposit were analyzed by ACME following crushing and pulverization of the samples to >85% less than 75 microns. The pulps were analysed for a suite of 24 elements using inductively-couple plasma optical emission spectroscopy (ICP-OES), including base metals, following a hot modified aqua regia digestion consisting of a 1:1:1 ratio of $HCl:HNO_3:H_2O$ (ACME group 7AR). Samples with greater than 4% Pb or 20% Zn were re-digested using a dilution to obtain data within range for the ICP-OES. Two samples with greater than 300 ppm Ag were also re-analysed by fire assay. Barium was determined by fused disc X-ray fluorescence (XRF) (ACME group 8X – Ba). Gold was determined by aqua regia digestion of a 15 g charge (ACME group 3A01) as a preliminary check of Au levels, there being few previous analyses. It was not intended to provide rigorous Au assay data.

11.4 2011 Drill Core Sample QAQC

11.4.1 Overview

Several in-house certified reference materials (CRMs) manufactured from Flin Flon, Manitoba area base metal material and supplied by Hudbay were included with the core sample submissions. These were A5 (seven samples), B5 (seven samples), E5 (seven samples) and the base metal blank F6 (42 samples). Because these samples are not matrix-matched to the sediment-hosted base metal mineralization at Tom, two additional Pb-Zn-Ag CRMs manufactured from base metal material from the Mount Isa district in Australia were purchased from Ore Research & Exploration and included in the sample submission – Oreas 133a (six samples) and 134a (nine samples). In addition, data for two ACME internal CRMs, Oreas 131b (27 analyses) and Geostats GBM997-6 (19 analyses) were also assessed. Oreas 131b is a low-grade Pb-Zn-Ag CRM made from the same material as Oreas 133a and 134a, and GBM997-6 is a high-grade Pb-Zn CRM.

11.4.2 Analysis of 2011 QAQC Data

A summary of CRM performance is provided in Table 4. Samples with a bias and no failures are lie mainly within two standard deviations of the calculated mean for the CRMs (i.e. the expected value). A failure is taken to be any analysis that lies more than three standard deviations away from the expected value, or two consecutive analyses with the same bias (i.e. positive or negative) more than two standard deviations from the expected value.

Table 4: Summary of CRM performance for 2011 assays

CRM	No.	Pb	Zn	Cu	Ba	Ag
HBMS A5	7	NA	Positive bias	Negative bias	NA	NA
HBMS B5	7	NA	Positive bias	Negative bias	NA	NA
HBMS E5	7	Acceptable	Positive bias	Excellent	NA	Positive bias
HBMS F6	42	No failures	1 failure	No failures	n/a	No failures
Oreas 133a	6	Negative bias	Acceptable	Negative bias	2 failures	6 failures; positive bias
Oreas 134a	9	1 failure	3 failures	2 failures; positive bias	3 failures	1 failure; positive bias
Oreas 131b	27	6 failures; negative bias	Acceptable but with drift	Not assessed	Not assessed	9 failures; positive bias
GBM997-6	19	1 failure; negative bias	Negative bias	NA	NA	NA

NA = not applicable

The Hudbay CRM F6 is not an ideal blank material because the material is already pulverized and thus does not pass through the crushing and pulverizing stream at the laboratory. Therefore, the blank tests only for laboratory contamination during digestion and analysis. Aside from a single instance of probable Zn cross-contamination, the results are acceptable when the data are filtered to remove all data within an order of magnitude of the lower limit of detection.

Laboratory precision has been assessed through an assessment of pulp duplicate analyses provided by ACME. This estimate of laboratory precision does not include any variance introduced during the sample preparation stages and assesses only the combined effects of subsampling the final pulp, sample digestion and instrumental uncertainties. The analysis used the square root of the average relative variances for individual duplicate pairs (relative standard deviation = RSD; RMS method of Stanley and Lawie, 2007). The data were filtered to remove any values within an order of magnitude of the lower limit of detection, as these data are inherently imprecise. The results of this analysis for the main commodity elements are summarized in Table 5. There were insufficient Ag data for pulp duplicates greater than an order of magnitude above the detection limit to allow an assessment of laboratory precision for Ag. The results for Pb, Zn and Ba are all less than 5% and considered to be best practice for base metals assays (Abzalov, 2008). In general, the relative standard deviation for pulp duplicate pairs decreases with increasing grade.

Pulp splits from 38 samples processed by ACME were obtained and submitted to ALS Minerals of North Vancouver with Oreas 133a and 134a for check assays. The ALS North Vancouver analytical facility is individually certified to standards within ISO 9001:2008 and has received accreditation to ISO/IEC 17025:2005 from the SCC for methods including: fire assay Au by AAS; fire assay Au and Ag by gravimetric finish; aqua regia Ag, Cu, Pb, Zn and Mo by AA; and aqua regia multi-element analysis by ICP-OES and ICP-MS. ALS sample preparation procedures and analytical methods are routine and follow industry best practices and procedures.

ALS and its employees were independent from CSA Global, the Issuer, Hudbay and its consultant, Revelation. Hudbay and Revelation personnel, consultants and contractors were not involved in the 2011 sample preparation and analysis.

The analytical methods used by ALS were similar to those used by ACME Labs: Pb, Zn, Ag, S and Fe were analysed by ICP-OES following an aqua regia digestion (ALS method ME-OG46); Ba was analysed by fused disc XRF (ALS method Ba-XRF15c); Au was analysed by 30g fire assay to check the validity of the aqua regia Au data from ACME (ALS method Au-ICP21). The data for the two CRMs submitted with the check assays are acceptable. While Au values by fire assay are systematically higher than those obtained by aqua regia, the values are all typically only an order of magnitude above background levels and are not considered to be economically significant.

Aside from Ba, the other main commodity elements show a negative bias in the check assay results compared to the original assays (Table 5), indicating that the original ACME data are slightly higher, on average, relative to the check assays from ALS Minerals. In the case of Zn, this bias occurs at all grades and is consistent with the positive bias shown by some of the CRMs submitted to ACME (Table 5). By contrast, the negative bias is strongest at lower grades in the case of Pb and may even give way to a positive bias at higher grades, consistent with the bias observed from the CRMs (Table 5). The negative bias in the Ag check assays is also supported by a positive bias in the ACME Ag data for the CRMs (Table 5). These biases appear to account for most of the variation between the two datasets.

Table 5: Summary of laboratory precision and bias from check assays for 2011

Element	Pb	Zn	Ba	Ag
Precision (average % RSD)	3.9	4.9	2.4	n/a
Bias (average % relative difference)	-10	-5	1	-6

11.5 2017 EEC Drill Core Sample Preparation and Security

The 2017 drill program at the Project was managed by Equity Exploration Consultants Ltd (EEC), an independent mineral exploration company, contracted by the Issuer. The drill core was received in a purpose-built trailer and re-aligned in the core trays, prior to collection of structural information, photographing and determination of rock quality designation (RQD). Half samples of oriented HQ3 (spilt tube) core (61 mm diameter) were cut with a diamond saw on site at the Tom camp. The other half of the core was returned to the core box and is stored on site for future reference. Highly weathered, soft intervals of core from the Jason deposit were sampled with a putty knife.

Entire core intervals sampled for assay were also measured for dry bulk density using the water immersion method before the samples were shipped from camp. Samples were enclosed in individual plastic bags and then placed into rice bags for shipment from site. The rice bags were sealed with security tags. Drill core samples were either flown directly to Whitehorse from Tom camp by charter aircraft using Tintina Air or transported via road by Tu-lidlini Petroleum truck to Ross River where they were stored in a secure compound.

Samples were then transported by truck from either Ross River or the Tintina Air hangar by Small's Expediting Services Ltd directly to the Bureau Veritas (formerly ACME; "BV") sample preparation facility in Whitehorse. All rice bags were received intact by BV.

11.6 2017 Drill Core Sample Analytical Method

Sample preparation and analytical methods were selected to conform as closely as possible to those used previously. The details of historical analyses are not known, but samples from the 2011 drill program were analysed at ACME using a hot modified aqua regia digestion. ACME was purchased by Bureau Veritas in 2012, and the previous preparation and method codes were renamed. The equivalent method codes at BV to those used during 2011 are as follows: preparation – PRP70-500 and hot modified aqua regia digestion – AQ370. The latter method was used for the re-sampling and assay of historical drill core. Due to lower limits of detection for some potentially deleterious elements and additional elements included in the package, the decision was made in late July to analyse all new drill core samples from 2017 using AQ270, noting that AQ270 and AQ370 use the same modified hot aqua regia digestion. The over-range method code for base metals by the aqua regia digestions with an atomic absorption finish was MA404 for samples exceeding the upper limit of detection of 4% Pb and 20% Zn (reduced for this program to 8% Zn to trigger over-range analyses by MA404), followed by a classical titration method for any further over range Pb assays exceeding 20% (BV code GC817) or Zn assays over 30% (BV code GC816). The Vancouver BV laboratory is accredited by ISO/IEC 17025:2005 for AQ370 and MA404 methods.

Barium by fused disk XRF–XF700 is no longer available as a single element method at BV. Instead, a 250 g pulp split was sent from the BV preparation laboratory in Whitehorse (code SPTPL) to MS Analytical in Langley, British Columbia for Ba analysis by WRA-3Ba. This method involves a total fusion of the sample using a lithium metaborate fusion, digestion in acid and then analysis by ICP-ES. MS Analytical is not accredited for this method but was selected because the quoted upper limit using a similar method at BV is 5% Ba and much higher levels than this were anticipated.

The use of a four-acid digestion for over-range samples greater than 4% Pb and 8% Zn raised issues as to whether the results would be comparable to those obtained using a modified, hot aqua regia digestion. There are a sufficient number of samples that overlap in the range 8% to 20% Zn that were analysed by both digestions and which allow a direct comparison (Figure 26). For the most part, there is good agreement between assays obtained using either acid digestion method. However, there are a few samples, generally containing very high Ba contents >20%, where the four-acid digestion under-reports Pb due to precipitation of Ba and Pb sulphates during digestion (J. Sader, pers.com., 2017). On average, the aqua regia Pb data are 6% higher than the four-acid Pb data. This discrepancy for those few samples was resolved through the use of a reverse aqua regia (3:1 HNO_3:HCL) digestion (J. Sader, pers.com., 2017), although this was not been implemented on a routine basis for the 2017 assay results. Note also that the Oreas CRM used to monitor data accuracy do not contain significant Ba (i.e. <1,000 ppm) and are not likely to be affected by this phenomenon.

Recognition that some Zn assays might also be under-reported in the modified, hot aqua regia digestion resulted in a lowering of the trigger value for the use of the four-acid method to 8% from 20%. This resulted in a large dataset for which data were obtained by both acid digestions (Figure 3). As in the case of the Pb data, there is general agreement between Zn data obtained using both digestions, but the occasional sample for which the difference is significant. However, overall, there is no statistically significant difference between the two datasets and the use of a four-acid digestion for the over-range analyses for Zn introduces no bias to the data overall.

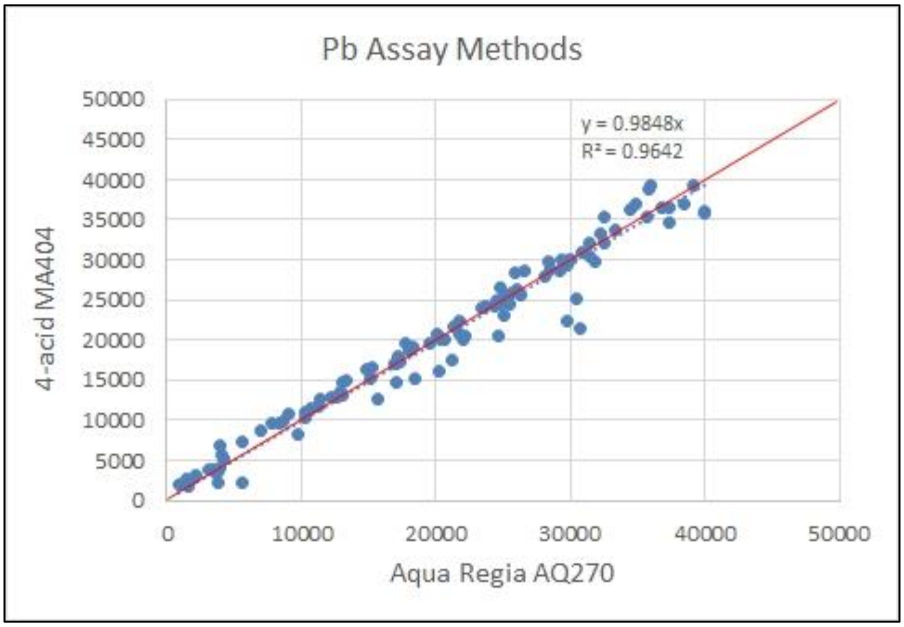

Figure 26: Comparison of modified hot aqua regia and four-acid digestion for Pb assays (the red line represents the trend of equal values)

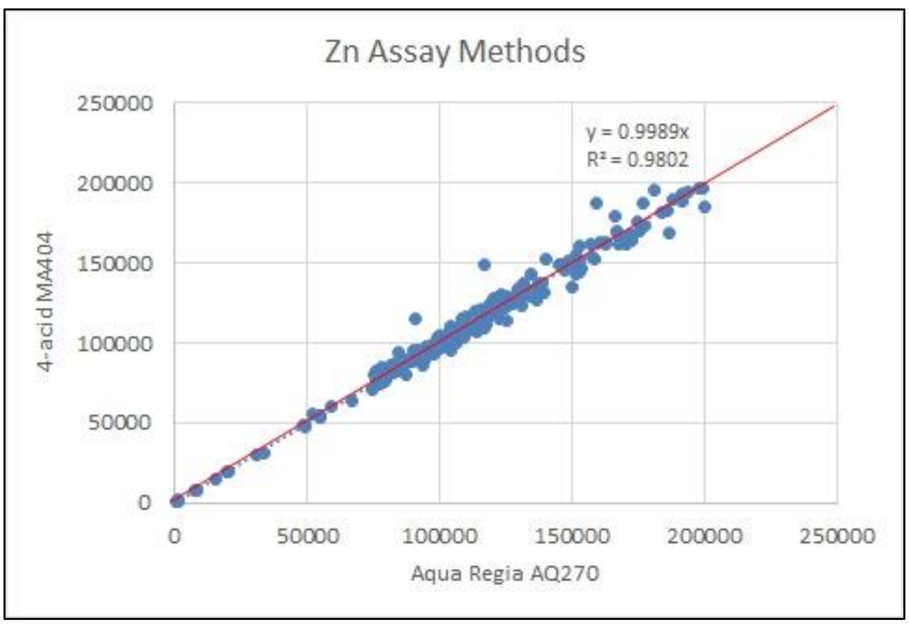

Figure 27: Comparison of modified dilute aqua regia and four-acid digestion for Zn assays (the red line represents the trend of equal values)

11.7 2017 Drill Core Sample QAQC

11.7.1 Overview

A comprehensive QAQC program accompanied the 2017 drilling program on the Property. It involved the use of CRM, quarter-core field duplicates, assessment of coarse crush and pulp duplicate data, and the measurement of bulk density field standards and duplicates. Minimal check assays were conducted on samples from the 2017 drill program. The results of this program are summarized in the following section.

11.8 Analysis of 2017 QAQC Data

The CRM used for the 2017 drill program are shown in Table 6 along with estimated mean biases. While mean biases are useful for summarizing overall laboratory performance, they can disguise significant individual CRM failures. The performance of individual CRM has been assessed using Z-score plots (Figure 28, Figure 29 and Figure 30), and these charts give an indication of systematic biases that may exist in the data. CRM Z-scores are calculated as follows:

CRM Z-score = (Observed CRM value – Certified CRM value)/Certified standard deviation

A Z-score >3 or <-3 would constitute a failure at 3 standard deviations, and two out of three consecutive CRM with a Z-score >2 or <-2 of the same polarity would also constitute a quality control failure. No failures of CRM inserted by Fireweed occurred during 2017, although there is a significant positive bias to the Ag data, similar to that observed in 2011 at ACME. Mean biases observed for Pb and Zn are generally within an acceptable range of +/-2%.

Table 6: Summary of CRM values and mean biases for 2017

CRM	No.	Certified Pb (%)	Mean Pb bias (%)	Certified Zn (%)	Mean Zn bias (%)	Certified Ag (ppm)	Mean Ag bias (%)
Oreas 131b	11	1.86	-1.2	3.03	-2.4	32.1	+7.7
Oreas 132a	11	3.6	-0.8	4.86	-0.7	55.6	+2.4
Oreas 133a	11	4.9*	-0.2	10.97*	-0.8	96.9	+3

**Certified values for a four-acid digestion. All others are for an aqua regia digestion.*

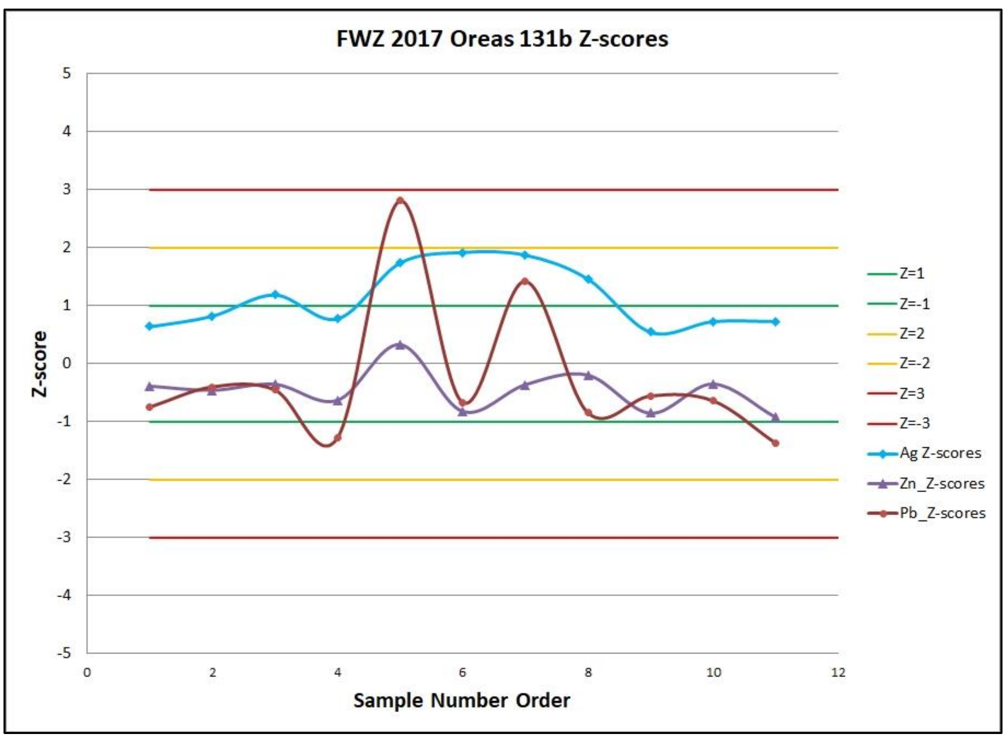

Figure 28: Z-score chart for Pb, Zn and Ag for CRM Oreas 131b from the 2017 drilling program

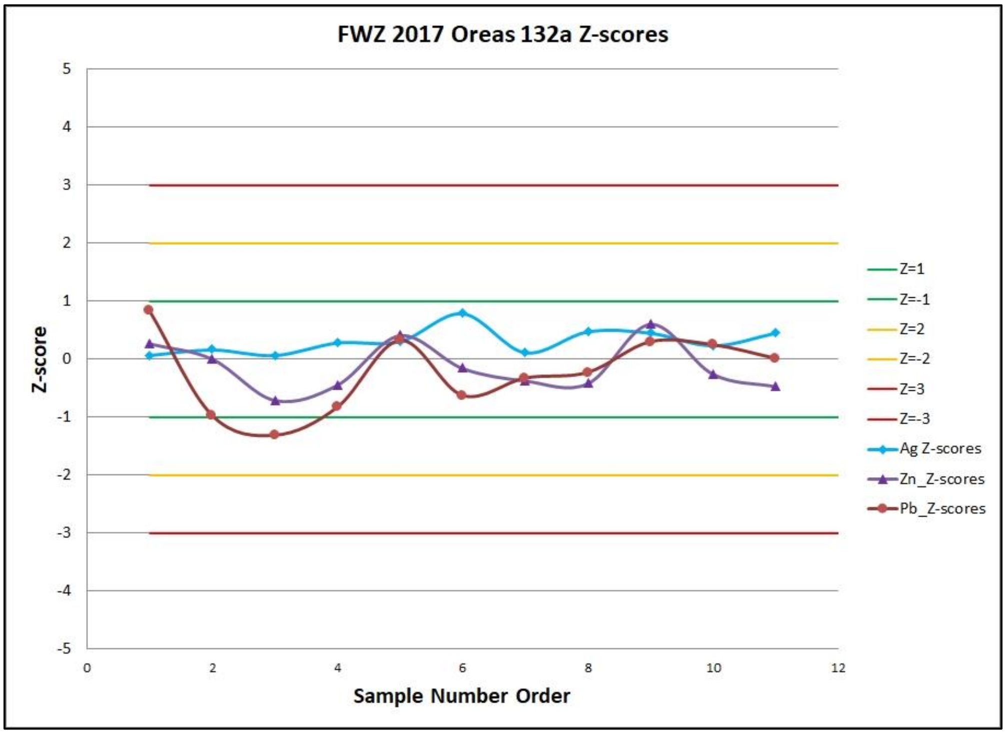

Figure 29: Z-score chart for Pb, Zn and Ag for CRM Oreas 132a from the 2017 drilling program

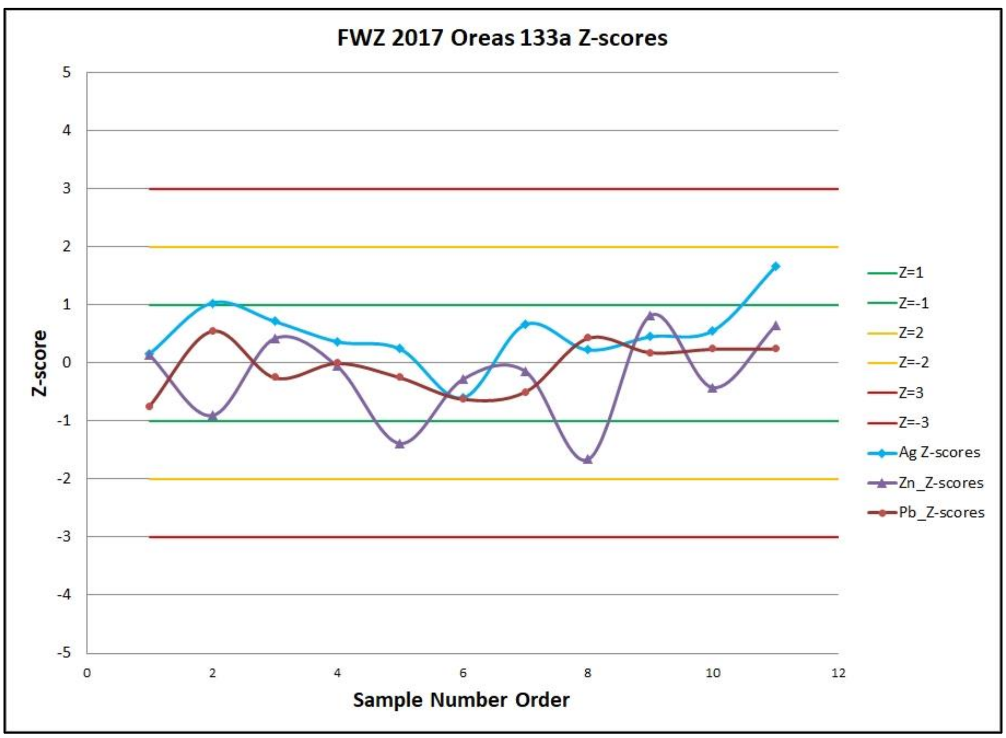

Figure 30: Z-score chart for Pb, Zn and Ag for CRM Oreas 133a from the 2017 drilling program

A total of 61 coarse blank samples were submitted with the core samples in 2017. This material consisted of approximately 0.5 kg of 20 mm crushed granite from a quarry in the lower mainland area near Vancouver. The samples all returned Ag values less than five times the detection limit of 0.5 ppm Ag. However, the Pb and Zn values are typically more than 10 times the lower limit of detection (LLD) for the analytical method used. Possible cross contamination of samples is measured in terms of a blank Z-score calculated as:

Blank Z-score = (Observed value – lower limit of detection)/Lower limit of detection

Some coarse blanks contain up to 1,000 times the LLD for Pb, which is 500 ppm, and up to 100 times the LLD for Zn, which is also 500 ppm. These values are well above what would be expected in a granite and indicate the potential level of cross-contamination, or carryover, between samples. This carryover is likely a small percentage of the base metals contained in the sample preceding the coarse blank and is not considered to be significant (i.e. carryover <1%).

Precision has been assessed in a similar fashion to 2011, through the use of quarter duplicate, coarse crush duplicate and pulp duplicate data assessed using average relative standard deviations calculated following the RMS method of Stanley and Lawie (2007). The data were filtered to remove any values within an order of magnitude of the lower limit of detection for the analytical method, as these data are inherently imprecise. A summary of data is provided in Table 7 for Zn, Pb, Ag and Ba.

In general, the samples show excellent repeatability. The coarse crush and pulp duplicates give average RSD values that are within best practice guidelines from Abzalov (2008; 2011) for magmatic base metal and skarn deposits, and for VMS Cu from Arne and Cobb (2017). The field duplicate RSD values, which have been mass corrected for the use of quarter samples to estimate the precision of routine half core samples, are also good, and lie within the range of acceptable practice for most coarse crush duplicates.

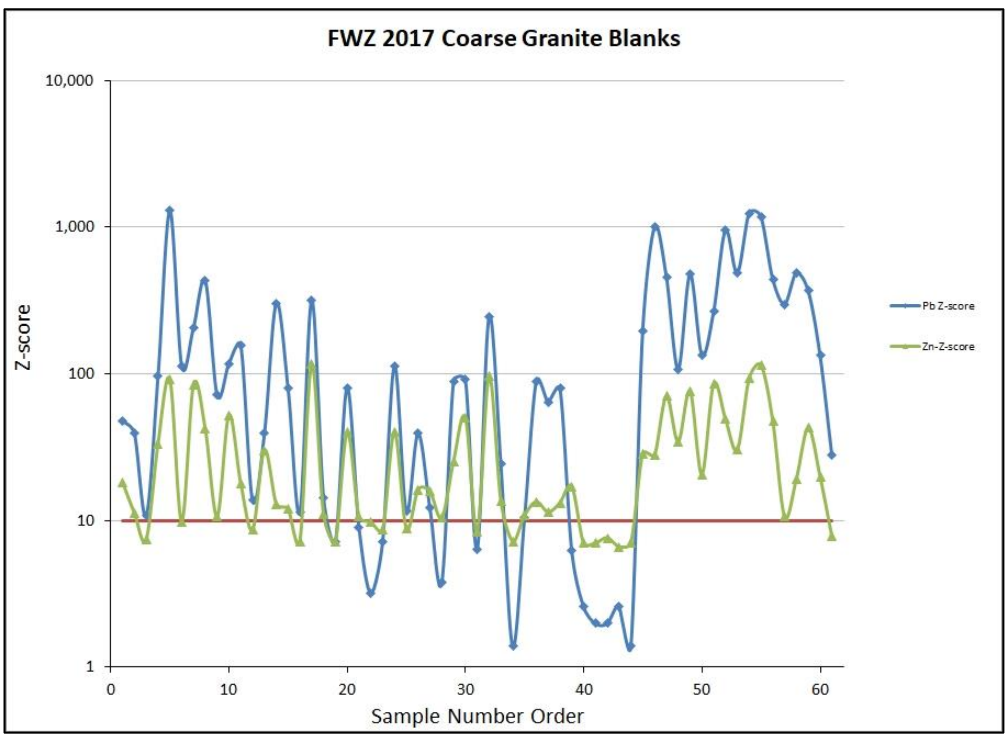

Figure 31: Coarse field blank Z-score chart for Pb and Zn from the 2017 drilling program

Table 7: Summary of precision estimates for duplicates analyzed in 2017

Duplicate type	Number	Zn % RSD	Pb % RSD	Ag % RSD	Ba % RSD
Quarter-core field*	55	12.7	11.9	11.6	8.4
Coarse crush	37	2.6	2.8	3.3	n/a
Pulp	8-65	3.6	4.5	2.2	n/a

** Mass corrected using the a* ***priori*** *method of Stanley (2014); n/a = not available.*

Dry bulk densities were determined in the field using the water immersion (buoyancy) method. Four core samples were selected to represent a range of bulk densities for repeated measurement. The results of repeated measurements of these four core samples are presented in Table 8. Data from 45 core samples were analysed in duplicate for dry bulk density are also summarized in Table 8. The repeat analyses of the bulk density measurements are all within +/-5% and so reflect good reproducibility. As the dry bulk densities of the core samples used as standard reference materials are not known independently from the field determinations, nothing definitive can be said about accuracy of the data, although the balance was checked before every use using a known 1 kg weight. The temperature of the weighing room within the core shed was kept relatively constant compared to outside temperatures, and the water was changed on a regular basis when it became dirty in order to maintain a constant density.

Table 8: Summary of repeated analysis of dry bulk density reference materials

Reference	No. of measurements	Rock type	Mean bulk density (g/cm^3)	Standard deviation (g/cm^3)	Relative standard deviation (%)
1	9	Wall rock	2.802	0.034	1.2
2	10	Mineralized	3.630	0.069	1.9
3	10	Mineralized	3.395	0.106	3.1
4	7	Barite-bearing	4.049	0.127	3.1
Duplicates	45	Various	NA	NA	2.6

NA = not applicable

11.9 QAQC Analysis Summary

The quality control data for the 2017 drilling program are generally excellent, with no failures of CRM inserted by the Issuer and demonstrated good repeatability of field, coarse crush and pulp duplicates. Duplicate data lie within best practice guidelines when compared to published studies from similar deposit types. Coarse blank material inserted into the sample stream show evidence of some cross-contamination of base metals, particularly when inserted with high-grade samples, but the carryover from mineralized samples is estimated to be <1% and so within acceptable limits.

In general, the 2011 data for the in-house Hudbay CRM were acceptable for Zn and Cu. The Pb and the Ag levels are too close to the lower limit of detection available for the Tom deposit assays in many of the Hudbay CRM for a precise assessment of accuracy. There is a clear bias toward lower Au values from the aqua regia digestion of the Hudbay CRM that probably reflects incomplete digestion compared to the certified fire assay results. The poor performance of the Au assays at Tom is not considered to be relevant.

Of concern are the strong positive biases displayed by the aqua regia Ag data in the Oreas CRM, including the ACME internal CRM Oreas 131b, and the Hudbay CRM E5. Clearly, the Ag data for the samples are over-estimated by these assays, probably on the order of 5% to 10%. This positive bias is confirmed by the results of analyses of Oreas CRM during the 2017 drilling program, with mean positive biases ranging from 2.4% to 7.7%.

In general, the Zn assays for the Oreas CRMs in 2011 are acceptable, but there appears to have been a problem with the initial dilutions for the over-range samples. The original Zn analyses for Oreas 134a were generally acceptable, except for one failure outside of three standard deviations below the expected value and a clear negative bias. However, the over-range re-assays show erratic data for several early analyses, before steadying at quite good results. The Zn data for Oreas 131b show a distinct drift through the sample sequence from a negative to positive bias. The Pb data for Oreas 131b in 2011 also show a negative bias, with numerous analyses greater than three standard deviations below the expected value. Although a slight negative bias for Pb is apparent in the 2017 analyses from BV for similar Oreas CRM, it does not appear to be as significant as that observed in 2011.

The 2011 Ba data for both Oreas 133a and 134a are erratic, with both positive and negative failures. Both CRMs have low Ba contents and the values are only an order of magnitude or so above the lower limit of detection. Imprecise data are expected at these levels. The accuracy of the Ba data generated in 2017 at MS Analytical was monitored by the laboratory using commercially available CRM.

Given the poor performance of the CRMs for the higher-grade material in 2011, re-assays of two batches were requested at ACME. Re-assays of over-range samples using method 7AR and a dilution method showed a slight positive bias for both Pb and Zn compared to the original analytical results, and this is reflected in Zn data from CRMs. Despite these slight biases, the re-assay data are generally within a 20% relative difference from the original data in the case of Pb, and within 10 % in the case of Zn. Given the absence of significant differences between the original and re-assay data, as well as evidence of positive bias in the ACME data relative to check assays performed at ALS Minerals, retention of the original data in the database was recommended.

Uncertainties associated with incomplete recoveries of Pb from acid digestions in the 2017 dataset have been assessed and, for the most part, data obtained using acid digestions are similar regardless of whether a modified hot aqua regia or four-acid digestion was used. A re-assessment of assay methods in future drilling campaigns on the Property, with the possibility of using a reverse aqua regia or fused disk XRF for base metals is underway.

11.10 Author's Opinion on 2011 and 2017 Sample Preparation, Security and Analytical Procedures

It is the Authors' opinion that sample security, collection, preparation and analysis undertaken on the Macmillan Pass Project during 2011 by Hudbay and in 2017 by the Issuer were appropriate for the sample media and mineralization type and conform to industry standards. The Pb, Zn and Ag data from both ACME in 2011 and BV in 2017 show evidence of minor systematic biases, but these are generally <5%, and are acceptable for the estimation of a MRE. The precision of the 2011 and 2017 data is industry best practice.

CSA Global recommends that approximately 5% of samples from the 2017 drill program and future drilling programs be submitted for check assaying at an accredited laboratory using similar assay procedures.

12 Data Verification

12.1 Site Visit

One of the Qualified Persona authoring this report (Dennis Arne) undertook a five-day site visit to the Tom and Jason properties between 24 July and 28 July 2017. He had previously visited the site between 31 August and 2 September 2011 during the drilling program conducted by Revelation for Hudbay. The site visit involved a review of sampling procedures used during the 2017 drill program, the establishment of quality control procedures for both drill core samples and the determination of dry bulk densities in the field, and a review of historical drill core re-sampled as part of the data verification process.

12.2 Data Verification

12.2.1 Drill Collar Locations

Rennie (2007) recommended that the drill collars on the Jason property be re-surveyed. Wells (2012) noted that verification checks of a limited number of historical drillhole collars at the Jason deposit using a Trimble GeoExplorer 6000 GeoXH model DGPS receiver indicated that there was a locational error in the positions of these collars in the Hudbay database; database collars were located approximately 53 m northwest of their actual locations in NAD83 UTM-Z9. All Jason drill collars that could be identified in the field were re-surveyed using a Trimble R10 DGPS during the 2017 field season and this error rectified.

A similar exercise was conducted in 2017 on the historical Tom drill collar locations. These revised locations were cross-referenced with survey plans of the historical drillhole locations to correct all remaining drill collar locations that could not be measured directly in the field. While there is always potential to locate further historical drillhole collars, the collar locations are now considered to have been located as accurately as can be expected given the passage of time since they were drilled.

12.2.2 Database

The historical drilling information up to and including the 2011 data was reviewed by Arne (2017). Many of the issues raised in that review, including uncertainties in precise drill collar locations, have been rectified for the present report.

Digital assay certificates are not available for all historical drillholes, and so random spot checks of pdf copies of historical assay reports and core logs with assay data transcribed onto them have been compared to the digital database supplied to the Issuer by Hudbay. The 2011 data, which contained omissions in the data provided by Hudbay, have been updated from records retained from the 2011 drilling program by CSA Global. Random spot checks of digital assay certificates from the 2011 and 2017 drilling programs have been undertaken.

Verification of the complete database has been complicated by the fragmental nature of the data residing in a number of spreadsheets and Microsoft Access databases. A historical compilation provided by the Issuer and the 2017 digital assay certificates provided by the laboratory directly to CSA Global were loaded into Maxwell Geoservices DataShed™ SQL database to allow verification of the data and to correct various data entry errors that existed in the historical compilations (e.g. overlapping intervals, data entries extending beyond bottom of hole, inconsistent units). Issues encountered included conversion of trace amounts of metal from assays recorded on historical drill logs to "0" values in some versions of the historical data compilation. In some instances, "0" values have replaced with below detection limit values and the value "-1" used to designate that no sample was taken. These entries have been cross-referenced in the database used for this report using various historical files and "0" values replaced with values either at (trace) or below historical detection limits. Logged intervals not sampled have been converted to null in the database to avoid confusion. The identification of historical core intervals not sampled versus those sampled but relatively barren of metal is significant for modelling of the deposits.

CSA Global has taken what it considers to be reasonable steps to validate and correct the data compilation provided to it by the Issuer. CSA Global strongly recommends the adoption of an auditable SQL database for the storage of the existing data and for the addition of new data for future programs. Digital assay certificates from the laboratory and logging data from site should be loaded directly into the database and standard verification rules applied to the data on a routine basis. Data entry procedures should be modified to include the collection of quality control data for the measurement of dry bulk density data in the field.

12.3 Re-sampling of Historical Drill Core

Arne (2017) recommended a program of re-sampling and assaying of historical drill core given the lack of assay certificates for some drillholes and the absence of historical quality control data. Intervals for re-sampling were selected to provide a representative sampling from various historical drilling campaigns by different operators, and to obtain material from various zones within both the Tom and Jason deposits. An effort was made to sample identical sample intervals where these could be identified in the core trays. A total of 111 samples were collected from historical drill core from the Jason deposit and 108 samples were collected from historical drill core from the Tom deposit. A listing of intervals resampled is included in Table 9.

Table 9: Historical core intervals re-sampled in 2017

Deposit	Zone	Hole no.	No. of samples	From (m)	To (m)
Jason	South – middle	JS82-087	7	635.56	644.06
	South – upper	JS82-087	10	583.22	593.52
	South – middle	JS82-088	5	357.05	364.57
	South – lower	JS82-088	5	344.1	349.2
	South – middle	JS81-070	8	797.27	803.91
	South – middle	JS81-068D (W4)	9	679.96	687.54
	South – upper	JS81-070	15	740	754.78
	Main	JS77-025	16	218.39	232.56
	Hangingwall	JS77-026	13	247	260.6
	Main	JS81-075	10	485.84	499
	Hangingwall	JS81-071	7	81.12	99.28
	Hangingwall	JS81-081	6	92.52	106.38
Tom	East	TU001	13	21.03	37.16
		TU024	4	3.78	9.88
		TS091	14	66.10	87.50
	West	TS085	9	35.99	51.24
		TU053	15	3.05	21.24
		TU015	10	0.00	11.98
		TU017	10	1.71	15.85
		TS086	2	60.30	78.33
		TS087	5	33.70	44.20
		TS89-007W1	17	568.00	579.00
		TS88-004	9	546.50	555.50

12.4 Analysis of Data from the 2017 Re-sampling Program

The re-sampled data are effectively half core where all remaining material was sampled (majority) or quarter core (minority) duplicate samples of historical drill core. As such they can be assessed in a similar fashion to the quarter core duplicates discussed in Section 11, although they have not been mass corrected for the use of some quarter core samples as the majority of samples were of half core. Therefore, the RSD estimates provided in Table 10 should be treated as maximum estimates where quarter core was sampled.

The estimates of RSD for the re-sampled assays for Zn is within acceptable levels, although higher than the variability obtained for field duplicates during the 2017 drilling program. More importantly, they show very little bias. Most of the variability in the data occurs at low to background values where the historical data will be imprecise (Figure 32, Figure 33 and Figure 34). The relative bias for the re-sampled assays is well within acceptable limits.

The Pb data show a positive bias in the re-sampled core, particularly at the higher grades (6.1%), and this may reflect historical difficulties experienced in assaying for Pb in samples with high Ba contents. Historical Pb is therefore likely under-reporting compared to the more recent assays from 2011 and 2017.

Reproducibility of the Ag data is excellent, with minimal relative bias (0.6%) and a RSD of 13.9%, which would fall within best practice for field duplicates for a precious metal.

12.5 Author's Opinion on the Project Data

The re-sampling program of historical drill core completed in 2017 indicates that the historical Zn and Ag data show no appreciable bias compared to modern assays. However, historical Pb assays are likely under-reporting Pb by an average of 6%. The data compilation provided to CSA Global has been verified and is adequate to support a MRE.

Table 10: Summary comparison of historical assays for drill core re-sampled in 2017

Element	Relative bias (%)	RSD (%)
Zn	0.5	22.0
Pb	6.1	25.7
Ag	0.6	13.9

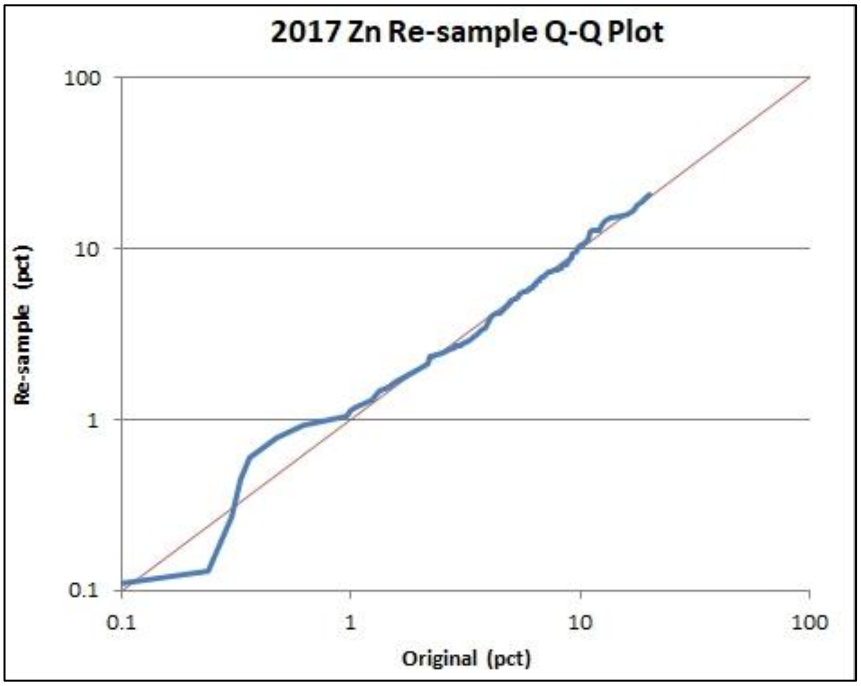

Figure 32: Quantile-quantile plot of historical assays and re-sampled 2017 assays for Zn

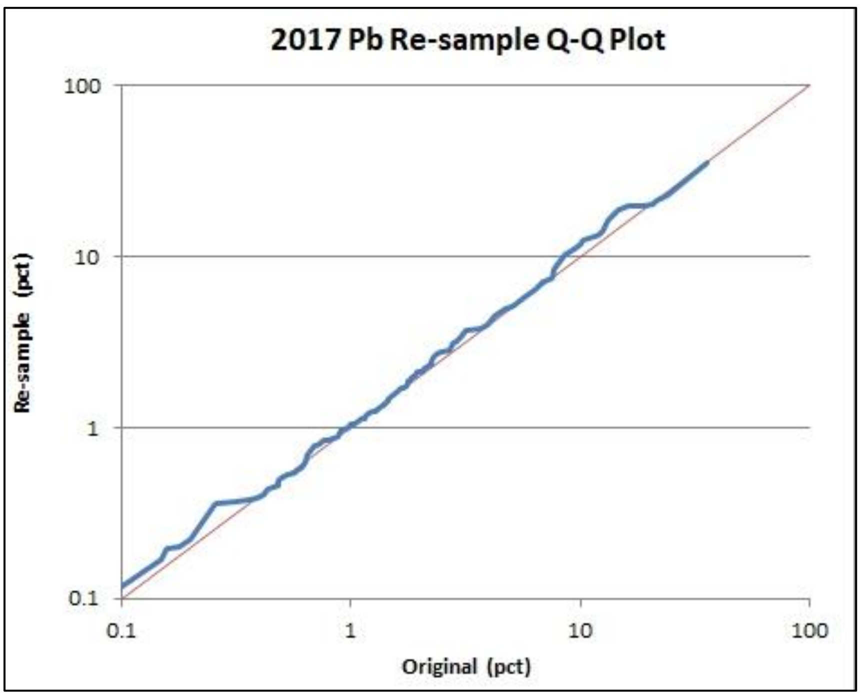

Figure 33: Quantile-quantile plot of historical assays and re-sampled 2017 assays for Pb

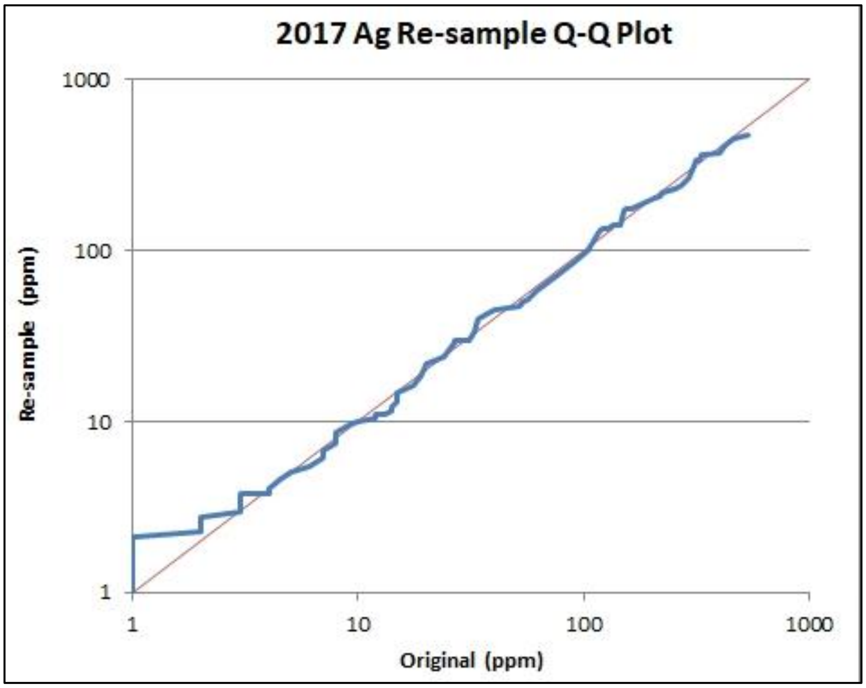

Figure 34: Quantile-quantile plot of historical assays and re-sampled 2017 assays for Ag

13 Mineral Processing and Metallurgical Testing

The Issuer is currently conducting mineral processing and metallurgical testing on 2017 drill core samples from the Tom and Jason deposits, but no results were available when this report was written. Results of limited historical 2011 metallurgical work carried out by Hudbay are described in Arne (2017). It should be noted that the most recent work reported was based on near vent material from the Tom West deposit and that test results on other zones of the Tom deposit and the Jason deposit are pending.

14 Mineral Resource Estimates

14.1 Introduction

During the period November 2017 to January 2018, CSA Global carried out a MRE update study for the Tom and Jason deposits at the Macmillan Pass Zinc-Lead-Silver Project. In the opinion of the Author, the resource evaluation reported herein is a reasonable representation of the zinc, lead, silver mineral resources at the deposits based on the available information. The updated MRE has an effective date of 10 January 2017 and is reported in accordance with the Canadian Securities Administrators' NI 43-101. The MRE is generated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practice Guidelines" (CIM Council, 2003).

The MRE for the Tom and Jason deposits has been prepared by L. McGarry, CSA Senior Resource Geologist and a Qualified Person for the reporting of Mineral Resources as defined by NI 43-101. Mr McGarry is responsible for the geological domaining, block modelling, MRE studies presented in this Report section.

Previous NI 43-101 MREs generated for the deposits in 2007 are described in Section 6. The current MRE presented in this Report supersedes all past estimates and benefits from the additional information summarized in Section **14.12.2** '*Comparison With Previous Resource Estimate*', which includes geologic data from a exploration core drilling programs undertaken by Fireweed in 2017 and Hudbay in 2011.

Reported Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or any part, of a Mineral Resource will be converted into a Mineral Reserve.

14.2 Informing Data and Validation

14.2.1 Deposit Drill Data

The Author has relied on the following drillhole data for the deposits provided by Fireweed by way of a digital data export containing Microsoft Excel spreadsheets transferred to CSA Global in December 2017.

Tom

Hudbay – 96 surface core drillholes completed between 1952 and 1980 totalling 14,587 m:

- Holes TS001 to TS036 were EX size, holes TS037 to TS062 were BQ size, all others were NQ size.
- Drilling focused on Tom West and Tom East deposits and comprised predominantly angled holes drilled on a north-northwest orientated grid with collar spacings of 60 m to 120 m along strike.
- At Tom West, holes typically intercepted mineralized horizons at an angle of 45° to 90°, with downhole intercepts equal to approximately 100% to 140% of horizon true thickness.
- At Tom East holes typically intercepted mineralized horizons at an angle of 30° to 45°, with downhole intercepts equal to approximately 140% to 200% of horizon true thickness.
- Downhole survey data derived from acid dip tests is available for 73 holes, from Sperry Sun tests for five holes and from Tropari tests for 18 holes. Location errors for Hudbay holes without azimuth data may be +/-10 m per 100 m of vertical depth. For Hudbay holes that intercept Tom West at 200 m below surface, pierce point location errors of up to 20 m might be expected.
- Lithology data is available for all drillholes. Recovery data is available for five drillholes.
- 1,131 samples were collected from 63 drillholes representing a combined length of 1326.52 m.

Hudbay – 80 underground core drillholes completed between 1970 and 1982 totaling 5,235 m:

- Holes TU001 to TU64 were AX size, holes TU064 to TU71 were BQ size, TU072 to TU077 were AQ size, all others were NQ size.
- Drilling comprised predominantly short horizontal holes drilled perpendicular to the strike of the deposit at 30 m collar spacings from adits at Tom West and Tom East. Longer angled holes were drilled from exploratory drifts.
- Horizontal underground holes typically intercepted mineralized horizons at an angle of 65°, with downhole intercepts equal to 110% of horizon true thickness. Angled underground holes had comparable to interception angles to surface drillholes.
- Negatively angled holes have downhole survey data derived from acid dip tests for 14 holes and from Tropari tools for four holes. Horizontal holes do not have survey data.
- Lithology data is available for all drillholes. Recovery data is available for 20 drillholes.
- 1,894 samples were collected from 61 drillholes representing a combined length of 902.77 m.

Cominco – 23 surface core drillholes completed between 1988 and 1981 totalling 11,952 m:

- Drilling comprised widely spaced angled HQ and NQ holes that targeted the southeast of Tom West and the Tom Southeast deposit areas and typically intercepted mineralized horizons at an angle of 60°.
- Downhole survey data derived from a Sperry Sun device is available for 19 holes.
- Lithology data is available for all drillholes. Recovery data is available for two drillholes.
- 307 samples were collected from 14 drillholes representing a combined length of 436 m.

Hudbay – 11 HQ size surface core drillholes completed in 2011 totalling 1,823 m:

- Drilling infilled between earlier Hudbay holes at Tom West, with hole orientations and horizon interception angles comparable to earlier drilling.
- Downhole survey data derived from a Reflex multi-shot device is available for all holes.
- Lithology data is available for all holes and includes: major and minor rock types, mineralization, alteration and structural data. RQD data is available for all holes.
- 706 samples were collected from 11 drillholes representing a combined length of 649 m.

Fireweed – seven HQ size surface core drillholes completed in 2017 totalling 1,823 m:

- Drilling comprised six angled holes at Tom West and one at Tom East that infilled between, and stepped out from, earlier Hudbay holes. Hole orientations and horizon interception angles were comparable to earlier drilling.
- Down hole survey data, derived from a multi-shot Reflex device is available for all holes.
- Lithology data is available for all holes and includes: major and minor rock types, mineralization, alteration and structural. Recovery and RQD data is available for all holes.
- 531 samples were collected from seven drillholes representing a combined length of 467 m.

Jason

Ogilvy – 56 surface core drillholes completed between 1975 and 1979 totalling 9,279 m:

- Holes were of unknown core size.
- Drilling comprised angled holes drilled on a west-northwest orientated grid at 80 m to 160 m collar spacings and was focused on the Jason Main Zone and shallow portions of the Jason South deposits.

- Holes were orientated perpendicular to the strike of the deposits and typically intercept mineralized horizons at an angle of 20° to 40, with downhole intercepts equal to approximately 155% to 300% of horizon true thickness.
- Downhole survey data derived from acid dip tests is available for eight holes and from an unknown single shot device for 30 holes.
- Lithology data is available for 54 drillholes. Recovery data is available for two drillholes.
- 933 samples were collected from 37 drillholes representing a combined length of 1,229 m.

Pan Ocean – 48 surface core drillholes completed between 1980 and 1981 totalling 20,225 m:

- Holes were of unknown core size.
- Drilling comprised angled and wedged holed drilled at variable spacings predominantly focused on the deeper portions of the Jason South deposit.
- Holes were orientated at an acute angle to the strike of the deposit and typically intercepted mineralized horizons at an angle of 40° to 90°, with down hole intercepts equal to approximately 100% to 160% of horizon true thickness.
- Downhole survey data from either gyroscope, single or multi-shot devices are available for all holes.
- Lithology data is available for 46 drillholes. Recovery data is available for five drillholes.
- 1,672 samples were collected from 38 drillholes representing a combined length of 2,094 m.

Aberford – five surface core drillholes completed in 1982 totalling 3,198 m:

- Holes were of unknown core size.
- Drilling infilled between earlier Pan Ocean holes and Ogilvy at Jason South, with hole orientations and horizon interception angles that are comparable to Pan Ocean drilling.
- Downhole survey data from either gyroscope, single or multi-shot devices are available for all holes.
- Lithology data is available for all holes. Recovery data is available for two drillholes.
- 234 samples were collected from five drillholes representing a combined length of 264 m.

Phelps Dodge – 20 surface core drillholes completed in 1991 totalling 5,221 m:

- Drilling comprised angled exploration holes drilled at variable spacings throughout the property. Holes did not intercept Jason Main Zone or Jason South mineralised horizons.

Fireweed – seven HQ size diamond drillholes completed by Fireweed in 2011 totalling 1,823 m:

- Drilling comprised angled holes that infilled between earlier holes at Jason Main Zone. Hole orientations and horizon interception angles were comparable to earlier drilling.
- Downhole survey data, derived from a multi-shot reflex device, is available for all drillholes.
- Lithology data is available for all holes and includes: major and minor rock types, mineralization, alteration and structural. Recovery and RQD data is available for all holes.
- 531 samples were collected from seven drillholes representing a combined length of 466.55 m.

The current grid system used is NAD83 UTM Zone 9N. Drillhole azimuths are recorded in True North. Measurements are in metric units.

All drill data was imported into Micromine software and interrogated via Micromine validation functions prior to constructing a drillhole database for the deposit. The resulting database contains all available drilling and sampling data for the project. Key fields within these critical drillhole database data files are validated for potential numeric and alpha-numeric errors. Data validation cross-referencing collar, survey, assay and geology files was performed to confirm drillhole depths, inconsistent or missing sample/logging intervals and survey data. The data was validated – checked for logical or transcription errors such as overlapping intervals.

The Author has reviewed sample collection methodologies adopted by Fireweed and previous operators and is satisfied that they are of a standard that allow the estimation of resources under CIM guidelines and that mineral resource databases for the Tom and Jason deposits fairly represent the primary information available to Fireweed.

14.2.2 Historical Collar Location Maps

Drillhole plan maps generated by previous operators were georeferenced and cross-checked against collar traces plotted from database records. At Tom, historical hole TS88-004W is recorded as having a downhole depth of 641 m, which is the same as TS88-004. Yet lithology logs only extend to a depth of 372.80 m and a surface plan map generated by Hudbay in 1993 shows TS88-004W with a much shorter drillhole trace. On the balance of probabilities, it is more likely that this hole does not intercept the mineralized horizon. The un-sampled interval in this hole is ignored.

14.2.3 Topography

At Jason a digital elevation model (DEM) with a lateral resolution of 5 m and vertical resolution +/- 1 m was provided by Fireweed. The DEM was generated by an airborne LiDAR survey completed in 2017. At Tom a DEM was generated from contour strings spaced at 10 m intervals, provided by Fireweed in a ArcGIS Shape file.

14.2.4 Model of Historical Workings

A three-dimensional model of underground workings at the Tom project in DXF format was provided by Fireweed. The model represents exploratory underground development and aligns with projected mineralized intervals throughout the Tom West and East deposits and aligns with underground drillhole collar positions. The digital model of underground workings supports the drillhole database information. The position of historical mine workings with interpreted mineralisation domains is shown in Figure 38 on page 64.

14.3 Geological Interpretation

14.3.1 Preliminary Statistical Assessment

Descriptive statistical analysis of assay data was undertaken for the identification of assay populations that may represent separate styles of mineralization. Specifically, this analysis was undertaken to estimate the natural cut-off grades that define mineralized units and to determine the distribution parameters for zinc, lead and silver.

At the Tom deposit:

- Zinc grades (Figure 35) have a negatively skewed distribution. Above a grade of approximately 2% Zn, there is a well-defined higher-grade population representing Tom West and East mineralised horizons and a tail of low zinc grades representing wall rock and interstitial waste samples.
- Lead grades (Figure 36) at Tom show multiple overlapping populations, low grades are associated with wall rock and interstitial waste samples, and higher grade associated with Tom East and the core of Tom West.

- Silver grade populations are not well defined (Figure 37); a peak at 1 g/t Ag is associated with the lower limit of detection.

At the Jason deposit:

- • Zinc grades are bimodal, with apparently overlapping populations. There is with a well-defined higher-grade population above 1% Zn. Relative to samples at Tom, the larger lower-grade population at Jason results from a more wall rock samples and sampling of low-grade mineralisation zones at Jason South.
- Lead grades show a similar distribution to zinc, with the addition of a high-grade lead population above a grade of 10% Pb associated with the “massive pyrite” facies encountered at Jason South.
- Silver grades show a positively skewed distribution with a long high-grade tail.

At Tom, assayed zinc, lead and silver grade populations can be related to sequences identified by Goodfellow, 1991 and discussed in Section 7, specifically: vent facies (15–30% Pb+Zn, Ag between 150 g/t and 200 g/t); pink facies (ranging from 10–30% combined Pb and Zn); gray facies (range 4–5% Pb+Zn); and black facies (4–10% Pb+Zn). At both deposits, a population boundary between mineralised and wall rock sample populations might be discerned between 0.5% to 1.0% Zn and Pb. At both deposits, it is not possible to determine a geologically representative modelling cut-off grade for zinc, lead and silver, due to the presence of mixed mineralisation facies.

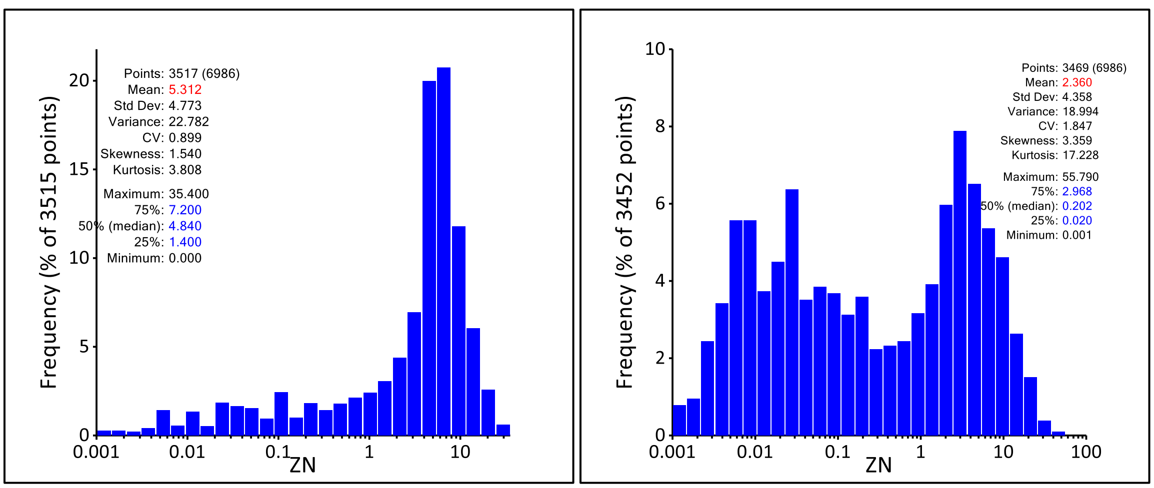

Figure 35: Histogram of raw zinc assay data (% Zn) from the Tom deposit (L) and Jason deposit (R)

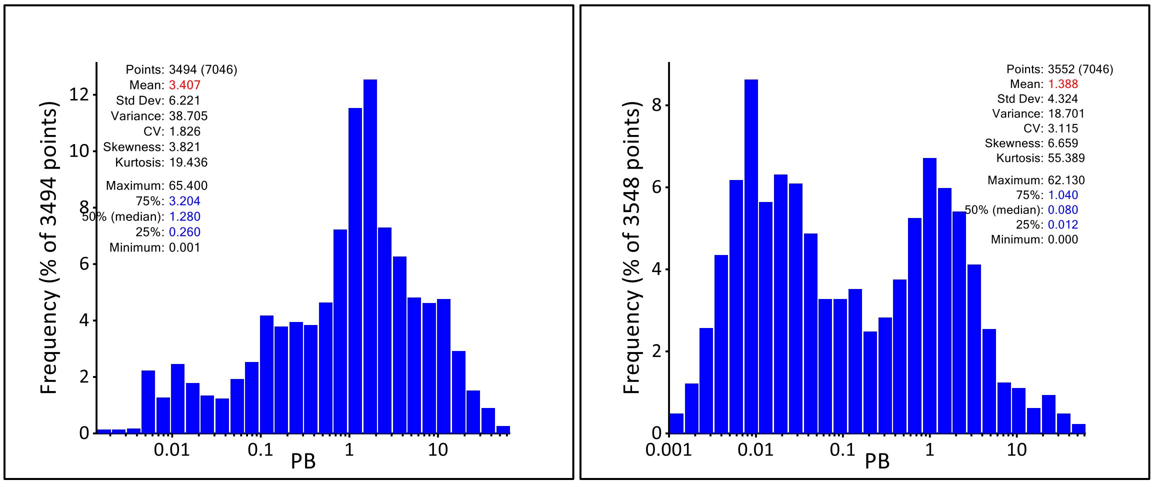

Figure 36: Histogram of raw lead assay data (% Pb) from the Tom deposit (L) and Jason deposit (R)

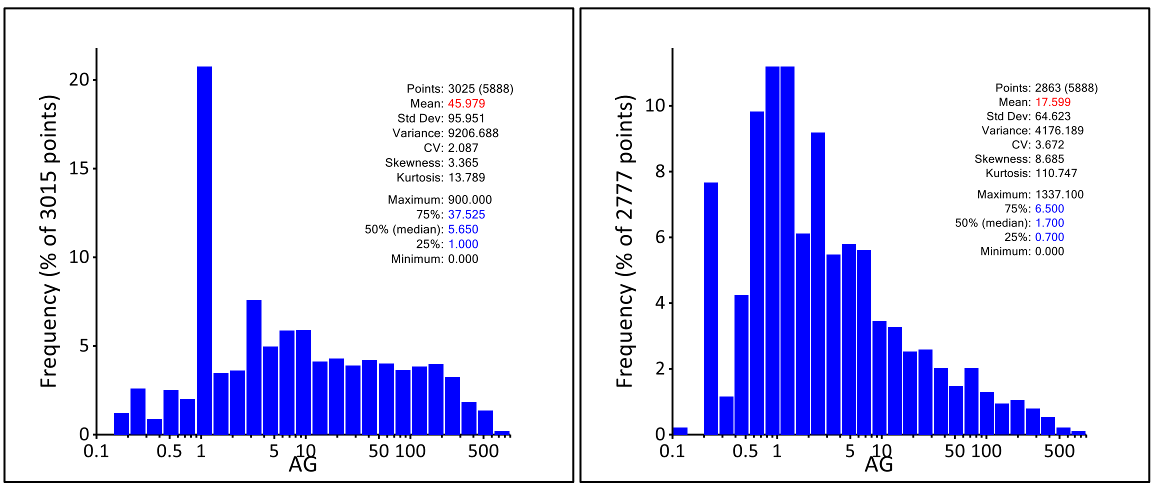

Figure 37: Histogram of raw silver assay data (g/t Au) from the Tom deposit (L) and Jason deposit (R)

14.3.2 Lithology and Mineralisation Modelling

Lithological and structural features were defined from logged and interpreted geology.

At both deposits, cross section views were displayed in Micromine software together with drillhole traces colour-coded according to lithology codes and annotated with zinc, silver and lead grades.

Domains were modelled based on mineralised horizon intervals coded as "Exhalite" or sulphide units in 2011 and 2017 logs, "Ore Zone" in historical logs, or intervals with the lithology qualifier code "mineralised". At present, it is not possible to model the individual mineralisation facies described in Section 7 using logged geology.

Interpretation outlines were generated for the Tom West and Tom East deposits on sections spaced at 30 m and orientated towards 335°. Interpretation outlines were generated for Tom Southeast on sections spaced at 30 m and orientated towards 65°.

At Jason Main Zone and Jason South interpretation outlines were generated on section at 12.5 m to 25 m spacings orientated to 285°.

The following techniques were employed whilst interpreting the mineralisation:

- Each cross section was displayed on screen with a clipping window equal to a half distance from the adjacent sections.
- All interpreted strings were snapped to drillhole intervals.
- Internal waste within the mineralised envelopes was not interpreted and modelled. It was included in the interpreted envelopes or split using bifurcation techniques where supported by surrounding drill information.
- If a mineralised envelope did not extend to the adjacent drillhole section, it was projected halfway to the next section, and terminated. The general direction and dip of the envelopes was maintained, although the lens thickness was reduced from the last known intersection.
- Where no drillhole was present down dip, the mineralisation was extended up to 150 m down dip.
- If a mineralised horizon extended to the topography surface, it was extended, at the same width as the last drillhole, above the surface to ensure there would not be any gaps between the horizon and the topography surface when the block model was built.

Interpreted polygons were used to generate three-dimensional solid wireframes for the mineralised envelopes. To reduce the incidence of irregularly shaped (long and thin) and orientated triangles, wireframes are constructed using an equiangular triangulation method. Additional nodes were added to polygons to generate regularly spaced wireframe triangles with edges of 30 m to 60 m.

At Tom, three domains were modelled with variable volumes and drill densities.

Tom West:

- Modelled as a single mineralised horizon ranging in thickness from 10 m to 60 m, with a strike of 340° and a dip of 60°. Logged mineralised horizons typically have a grade greater than 2% Zn. Where shoulder intervals of argillite or mudstone had grades above 2% Zn, polylines were extended to incorporate this material.
- The horizon undulates along strike and down dip.
- Northern model extent is limited by insufficient drilling north of 7,004,230 mN, beyond which the mineralised horizon continues for a further 500 m becoming thinner with lower metal grades.
- Southern model extent at surface is limited to 7,003,800 mN, below which the limit of the model plunges southward at an angle of 65°. This plunging trend is exhibited by logged "sulphide" intervals associated with vent proximal facies and high lead and silver grades above 10% and 200 g/t respectively.
- To the south below a depth of 350 m, the deposit is folded about the Tom anticline. Turning northward the mineralised horizon is intercepted by a small number of deep Cominco holes.
- The horizon is unconstrained at depth along the entire modelled strike extent.

Tom Southeast:

- Interpreted to be a thinner continuation of the Tom horizon northward from the Tom West domain. The Tom Southeast domain ranges in thickness from 1.5 m to 5 m, with a strike of 15° and a dip of 45°.
- The northern extent of the horizon is limited to 7,003,850 mN, where the horizon become thinner and lower grade and is constrained by drillhole TS082.
- The southern extent of the Tom Southeast horizon is constrained by barren intervals in drillholes TS90-011 and TS89-005. The horizon is unconstrained at depth.

Tom East:

- Modelled as a single lens shaped sequence of folded and sheared mineralised horizons ranging in thickness from 5 m to 30 m. The lens has a strike of 340°, a dip of 60°, and plunges 55° to the north.
- Logged mineralised horizons typically have a grade greater than 2% Zn, 2% Pb and 10 g/t Ag and show a contrasting character to Tom West.
- The deposit is open in the up-plunge direction but is constrained by drilling in all other directions.

Modelled units at Tom are listed in Table 11 with dimensions and approximate drillhole spacing. Figure 38 shows Tom modelled domains in a 3D view to the northwest.

Table 11: Tom Domain details

Domain name	Code	Volume (m^3)	Planar area (m^2)	Strike extent (m)	Down dip extent (m)	Average thickness (m)	No. of drillholes	No. of samples	Average drillhole spacing (m)
Tom									
Tom West	TMZ	11,060,000	460,000	1300	700	24.00	93	2,066	70
Tom East	TEA	810,000	70,000	350	375	11.00	9	45	90
Tom Southeast	TSE	580,000	190,000	300	700	3.00	32	555	75

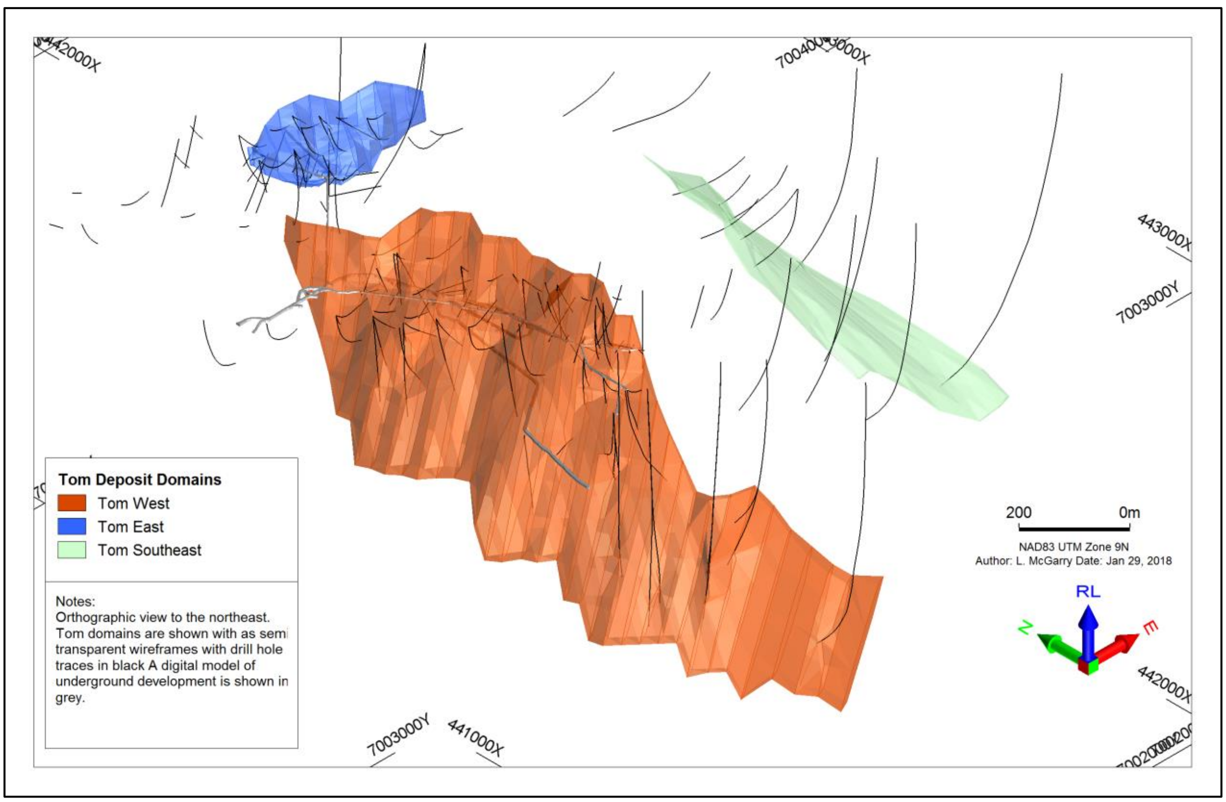

Figure 38: Tom wireframe domains - orthographic view to the northeast

At Jason, three domains were modelled with variable volumes and drill densities.

Jason Main Zone:

- Modelled as a vertical mineralised horizon ranging in thickness from 5 m to 20 m, with a strike of 285°.
- Divided by an offset at 437,000 mE, east of which, the horizon is interpreted to dip southward with lower average zinc grades (<5% Zn).

- The western extent of Jason Main Zone model is limited to 436,000 mE by barren hole JS79-049. Jason horizon is encountered 3 km further to the west-northwest but was not is not modelled in this study.
- The horizon is unconstrained at depth along the entire modeled strike extent.

Jason South:

- Modelled as two lens shaped horizons ranging in thickness from 5 m at deposit edges to 40 m.
- At depth horizons are gently folded about the Jason syncline. Turning northward, mineralised horizons are interpreted to continue toward the Jason Main Zone on the northern limb of the Jason syncline.
- Horizons are bisected by the north-south trending, steeply dipping Jason Fault, resulting in two in the footwall domains and two hangingwall domains.
- Within the two footwall horizons approaching the fault, lead and silver grades increase. Possibly associated with a separate style of lead silver-rich mineralisation also encountered to the south in holes JS82-086 and JS82-086W1. An area unconstrained by drilling and not included in the resource model.

Modelled units at Jason are listed in Table 12 with dimensions and approximate drillhole spacing. Figure 39 shows Jason modelled domains in a 3D view to the northwest.

Table 12: Jason Domain details

Domain name	Code	Volume (m^3)	Planar area (m^2)	Strike extent (m)	Down dip extent (m)	Average thickness (m)	No. of drillholes	No. of samples	Average drillhole spacing (m)
Jason									
Jason Main Zone	JMZ (201)	3,660,000	360,000	980	600	10.00	31	570	110
Jason Main Zone East	JMZ (201)	360,000	50,000	175	400	7.00	5	42	100
Jason Sth Hor. 1 HW	H2H (211)	560,000	50,000	125	400	10.50	7	136	85
Jason Sth Hor. 1 FW	H2F (210)	1,170,000	70,000	300	300	18.00	9	273	90
Jason Sth Hor. 2 HW	H1H (213)	650,000	80,000	150	620	7.75	10	251	90
Jason Sth Hor. 2 FW	H1F (212)	1,140,000	80,000	300	475	13.75	11	121	85

Figure 39: Jason wireframe domains – orthographic view to the north

14.4 Dry Bulk Density

Dry bulk density values were derived for each sample that contained Zn, Pb Ba and values. Bulk Density = (0.0301 x (%Zn + %Pb + %Ba + %Fe)) + 2.4353.

The formula was provided in the "Technical Report on the Tom and Jason Deposits, Yukon Territory, Canada. Prepared for Hudbay Minerals Inc. by RPA Scott Wilson Roscoe Postle Associates" in May 2007.

Additional bulk density determinations, obtained in 2017 and 2011 were compiled by Fireweed and were used to check the RPA regression equation which was found to be appropriate for use in this study.

14.5 Sample Compositing

14.5.1 Sample Length Analyses

To generate representative length-weighted composites a sample length analysis was conducted. As shown in Figure 40, of the 2,666 assays that fall within Tom wireframe models, 32 % of samples are 1 m in length, and 30% are 1.5 m long. Of the 1,393 assays that fall within Jason wireframe models, 28 % of samples are 1 m in length.

To ensure equal sample support, and to avoid splitting assay intervals, a composite interval length of 1 m was selected. This length is equal to the most common assay interval for domained Tom and Jason samples. Domained assays were regularized using the length-weighted averages of zinc, lead and silver grades and density values.

Composites that were less than 0.3 m in length were discarded to not introduce a short sample bias into the estimation process.

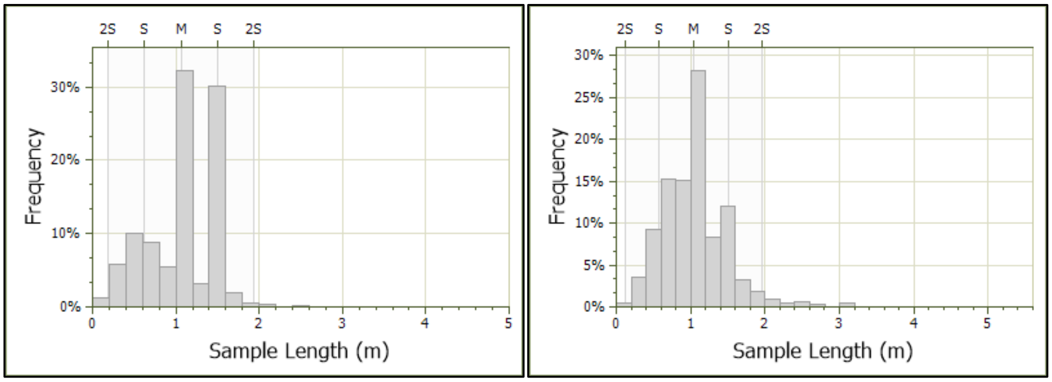

Figure 40: Histogram of sample lengths on Tom domains (left) and Jason domains (right)

14.5.2 Treatment of Unsampled Intervals

Within mineralised horizons, historical underground drillholes of Ax core diameter regularly contained 1 m to 10 m intervals of no recovery. Recoveries for recent drilling were much better.

Unrecovered core was perceived as mineralised material by past operators. Historically at Tom, Hudbay assigned an average of preceding and subsequent sample grades to an unrecovered interval within mineralised horizons.

The Author elected to treat these intervals as null and exclude them from the composite file rather than assigned a zero grade. This approach is in line with how intervals of no recovery were treated by Hudbay who drilled and logged the holes.

14.6 Statistical Analyses

Before undertaking the resource estimate, univariate statistical assessment of composited assay data was undertaken. Exploration sample data were statistically reviewed, and variograms were calculated to determine spatial continuity for composited sample zinc, lead, silver values and density values.

Statistical analysis was carried out using Snowden Supervisor 8.7 software.

14.6.1 Summary Statistics – Sample Assays

Histograms for the major Tom deposits are presented in Figure 41 to Figure 43. Statistics for each Tom domain are presented in Table 15 on page 72. The following features are observed:

- The Tom West domain has a mean grade of 6.11% Zn, 2.62% Pb and 30.34 g/t Ag. Zinc and lead both have coefficient of variation values below one ("CV" is the ratio of the standard deviation to the mean). Zinc and lead populations show a tendency to a negatively skewed distribution. Silver grades shows a positively skewed distribution of mixed grade populations and greater variability with a CV of 2.02. A large CV indicates a large spread of values about the mean and that capping of high values samples may be required.
  - The linear correlation between zinc and lead or silver grades is not strong with coefficients of 0.35 and 0.43 respectively. However, silver and lead show a strong correlation with coefficient of 0.90, suggestive of a separate style of mineralisation compared to zinc.

- Zinc, lead and silver grades have a positive correlation with sample easting coordinates; for zinc the coefficient is low at 0.25. For lead and silver, correlation increases to 0.38 and 0.34 representing a stronger spatial control to grades, which are higher in the eastern, shallow and southern edges, of the deposit.

- The Tom East domain has a mean grade of 8.59% Zn, 9.77% Pb and 128.85 g/t Ag. Lead and silver have CV values close to one. Zinc, lead and silver populations show positively skewed distributions.
  - There is no strong linear correlation between zinc and lead or silver grades with coefficients of 0.40 and 0.50 respectively. However, silver and lead show a strong correlation with a correlation coefficient of 0.90.
  - There is no clear spatial control to metal grades within the domain.
- The Tom Southeast domain has comparable average metal grades to the Tom West deposit. The limited number of samples for this domain prevent a detailed statistical analysis.

Histograms for the major Jason deposits are presented in Figure 44 to Figure 46. Statistics for each Tom domain are presented in Table 16. The following features are observed:

- The Jason Main Zone domain has a mean grade of 6.57% Zn, 1.31% Pb and 2.20 g/t Ag. Zinc and lead populations show a tendency to a negatively skewed logarithmic distribution with CVs of 0.7 and 1.03 respectively. Silver grades show a positively skewed distribution toward lower silver grades with a CV of 2.59.
  - The linear correlation between zinc and lead show a strong correlation with coefficient of 0.60. Silver shows a poor linear correlation with both lead and silver.
- The Jason South domains have a mean zinc grades that range from of 1.97% Zn to 6.06% Zn, lead grades that range from of 1.68% Pb to 5.71% Pb and silver grades that range from of 13.00 g/t Ag to 99.42 g/t Ag. As shown in Table 16, CVs at Jason South are higher than other deposits indicating the presence of mixed grade populations and mineralisation styles. Domains in the footwall of the Jason Fault tend to have higher average lead and silver grades.
  - There is no strong linear correlation between zinc and lead or silver grades with correlation coefficients of 0.21 and 0.28 respectively. However as with other domains, silver and lead show a stronger correlation with a correlation coefficient of 0.83.

14.6.2 Summary Statistics – Densities

Summary statistics for Tom are presented in Table 13 and for Jason in Table 14. Density values range from a minimum of 1.37 t/m^3 at Tom West to 5.01 t/m^3 at Jason Main Zone. The application of a lower limit to density values was investigated. After consideration of the occasionally porous nature of rock at the deposits it was decided to retain untreated composite values.

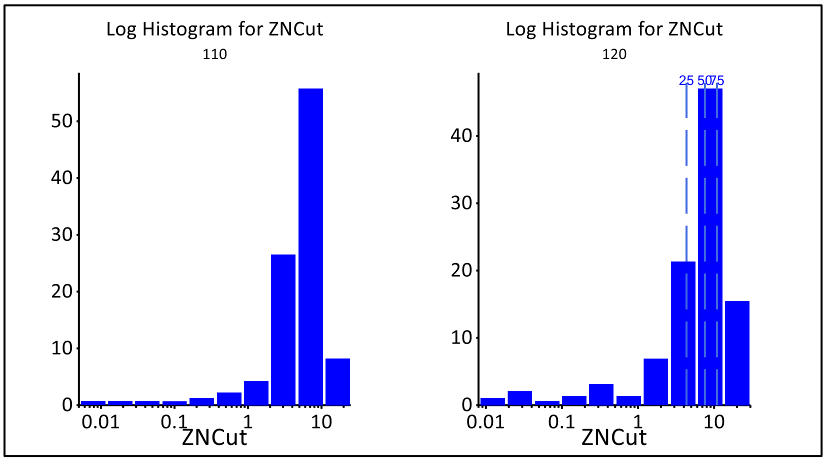

Figure 41: Histogram of capped composite zinc grades for Tom West (left) and Tom East (right)

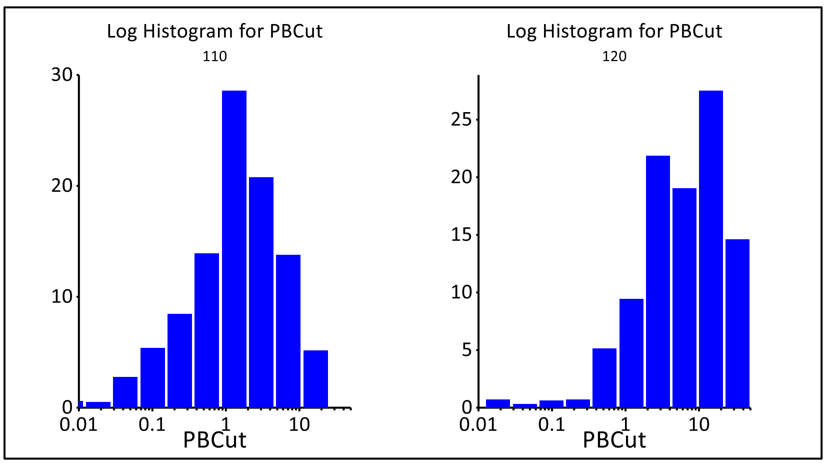

Figure 42: Histogram of capped composite lead grades for Tom West (left) and Tom East (right)

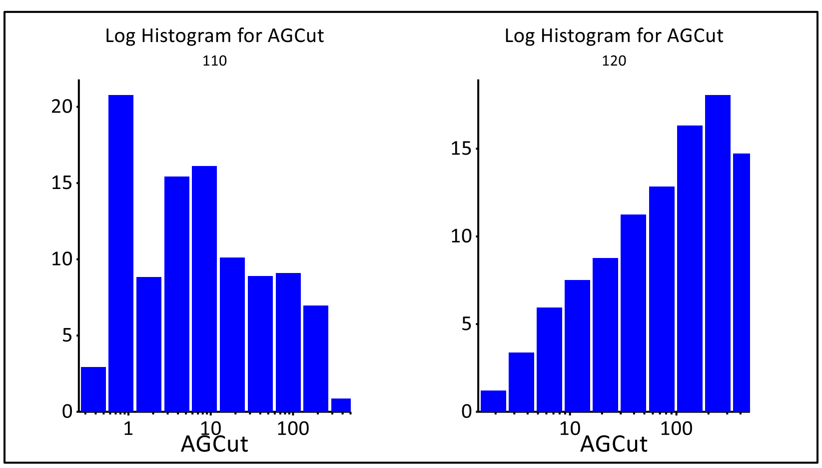

Figure 43: Histogram of capped composite silver grades for Tom West (left) and Tom East (right)

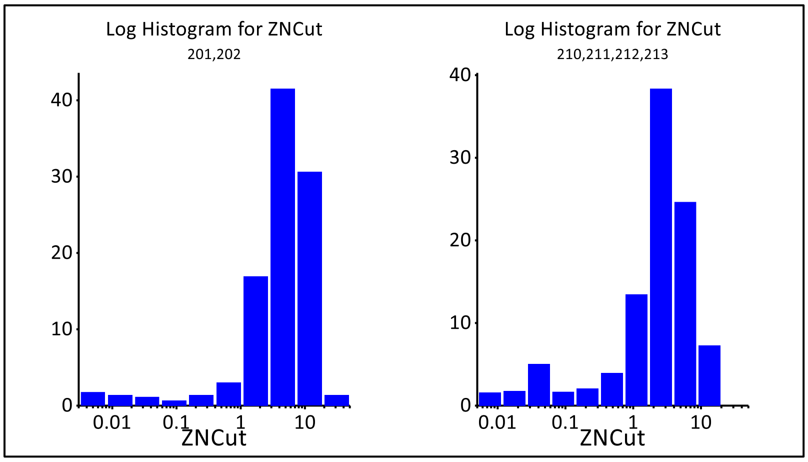

Figure 44: Histogram of capped composite zinc grades for Jason Main (right) and Jason South (left)

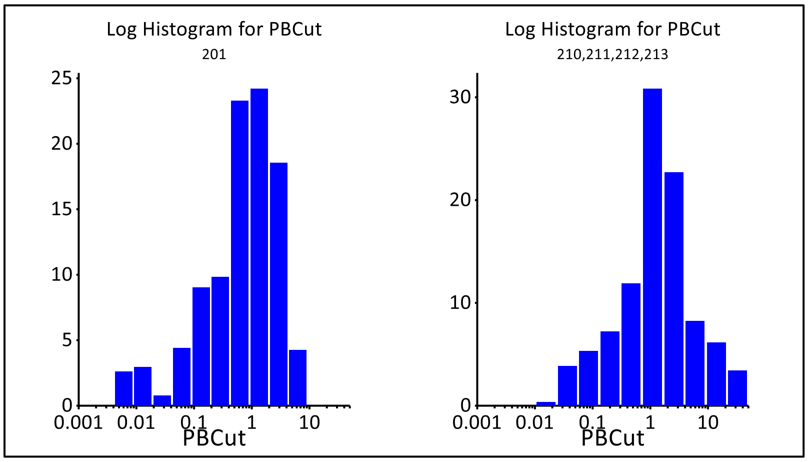

Figure 45: Histogram of capped composite lead grades for Jason Main (right) and Jason South (left)

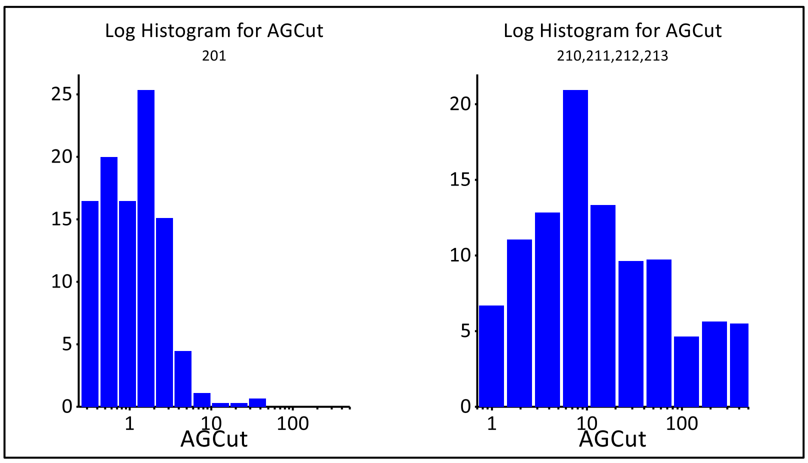

Figure 46: Histogram of capped composite silver grades for Jason Main (right) and Jason South (left)

Table 13: Tom density summary

Domain	Count	Minimum	Maximum	Mean	Standard deviation	Uncut CV
TMZ	1138	1.37	4.73	3.37	0.38	0.11
TEA	239	1.61	4.98	3.13	0.52	0.17
TSE	24	2.59	3.36	2.92	0.21	0.07

Table 14: Jason density summary

Domain	Count	Minimum	Maximum	Mean	Standard deviation	Uncut CV
JMZ	647	1.89	4.65	3.18	0.55	0.17
H1H	96	2.53	4.30	3.29	0.46	0.14
H1F	274	2.61	5.01	3.44	0.51	0.15
H2F	273	2.70	4.51	3.42	0.38	0.11
H2H	140	2.48	3.88	3.22	0.33	0.10

14.6.3 Grade Capping

A review of high-grade samples was undertaken to ensure that extreme grades were treated appropriately during grade interpolation. Although extreme grade outliers within the grade populations of variables are real, they are potentially not representative of the volume they inform during estimation. If these values are not capped, they have the potential to result in significant grade over-estimation on a local basis.

In general, very high-grades (at the Tom and Jason deposits these are typically greater than 20% Zn and Pb and 500 g/t Ag) are located within the higher-grade portions of the deposit and their influence is well constrained by surrounding samples. Accordingly, a relaxed approach to the application of capping values was taken.

The capping strategy was applied based on the following method:

- Probability plots were reviewed to identify inflection points at the upper end of zinc and lead grade distributions on a domain by domain basis
- Inflection points were rounded to the nearest 5% zinc and lead interval to identify a capping value
- A capping value of 600 g/t Ag was applied to all domains.

In addition, sample data were sorted into descending order and several capping scenarios applied to see what effect the capping value would have on the mean, standard deviation and CV, as well as the loss of metal from the sample population.

At Tom, the capping thresholds presented in Table 15 were selected, resulting in the capping of five zinc, two lead and four silver composite assay values prior to estimation.

At Jason, the capping thresholds presented in Table 16 were selected, resulting in the capping of nine zinc, seven lead and three silver composite assay values prior to estimation.

Table 15: Tom deposit composite summary

Domain	Count	Minimum	Maximum	Mean	Standard deviation	Uncut CV	Capping value	No. capped	Capped mean	Capped standard deviation	CV
Zn %											
TMZ	2,283	0.02	26.538	6.11	3.41	0.56	25	5	5.95	3.40	0.56
TEA	590	0.008	35.4	8.59	5.79	0.67	30	2	8.58	5.73	0.67
TSE	38	0.037	15.77	6.04	4.33	0.72	-	0			
Pb %											
TMZ	2,252	0.005	42.358	2.62	3.48	1.33	25	3	2.58	3.40	1.30
TEA	596	0.012	58.204	9.77	10.33	1.06	50	2	9.75	10.26	1.05
TSE	38	0.02	15.12	3.06	4.11	1.34	-	0			
Ag g/t											
TMZ	1,830	0.00	718.87	30.34	61.35	2.02	600	1	28.11	60.68	2.00
TEA	592	1.4	670.6	128.85	137.80	1.07	600	3	128.65	137.07	1.07
TSE	38	0.34	187.01	32.70	44.84	1.37	-	0			

Table 16: Jason deposit composite summary

Domain	Count	Minimum	Maximum	Mean	Standard deviation	Uncut CV	Capping value	No. capped	Capped mean	Capped standard deviation	CV
Zn %											
JMZ	688	0.008	26.284	6.57	4.76	0.72		0			
H1H	106	0.005	37.64	6.06	6.63	1.09	20	5	5.56	4.76	0.86
H1F	274	0.005	55.79	4.88	5.54	1.13	20	4	4.63	4.12	0.89
H2F	263	0.01	8.233	1.97	1.55	0.79		0			
H2H	140	0.235	16.5	3.02	2.61	0.86		0			
Pb %											
JMZ	688	0.008	9.83	1.31	1.36	1.03		0			
H1H	106	0.027	22.85	2.93	4.03	1.38	20	1	2.90	3.91	1.35
H1F	274	0.01	52.18	5.71	9.42	1.65		0			
H2F	273	0.03	46.70	3.39	7.42	2.19	40	2	3.34	7.17	2.15
H2H	140	0.082	9.53	1.68	1.47	0.88		0			
Ag g/t											
JMZ	485	0	66.50	2.20	5.70	2.59		0			
H1H	102	0.7	313.00	33.08	59.74	1.81		0			
H1F	273	0.7	1168.14	99.42	165.46	1.66	600	7	93.28	93.28	1.00
H2F	273	1	360.00	27.80	53.48	1.92		0			
H2H	140	0.7	95.01	13.00	15.61	1.20		0			

14.7 Geostatistics

The Tom West and Tom East and Jason Main Zone domains have a sufficient number of samples to generate meaningful grade variation models for composited and capped zinc, lead and silver grades.

The Tom Southeast domain and individual Jason South domains did not have sufficient data to allow variography. At Tom Southeast, grade variation models were derived from Tom West variation models aligned to the deposit orientation. At Jason South, sample grade variation models were generated from samples within all Jason South domains.

Composite zinc, lead and silver values underwent a normal score transform prior to being assessed for anisotropy, or directional dependence. Maps of zinc, lead and silver value continuity were used to investigate the strike, dip and pitch direction axis of the major mineralisation domains.

The grade variation between sample pairs orientated along each direction axis +/-15° was reviewed using semi-variogram charts. Example zinc, lead and silver semi-variogram charts for the Tom West domain are shown in Figure 47, Figure 48 and Figure 49. Sample pairs are grouped by their separation distance, or "lag interval" on the X-axis. For each lag interval assessed, half of average variance value of paired samples is plotted on the Y-axis. The resulting empirical semi-variogram chart can show if there is a relationship that can be modelled between grade variance and distance along each axis. Normal score variograms are back transformed to give the semi-variogram parameters presented in Table 17.

For all domains, semi-variogram charts for zinc, lead and silver were modelled using two spherical functions. The semi-variogram models described in Table 17 are sufficiently well defined to allow meaningful kriging calculations.

Ellipses were visualised in Micromine and compared with deposit orientations and apparent mineralisation trends. Variogram models are used to define the size of the search ellipse during estimation.

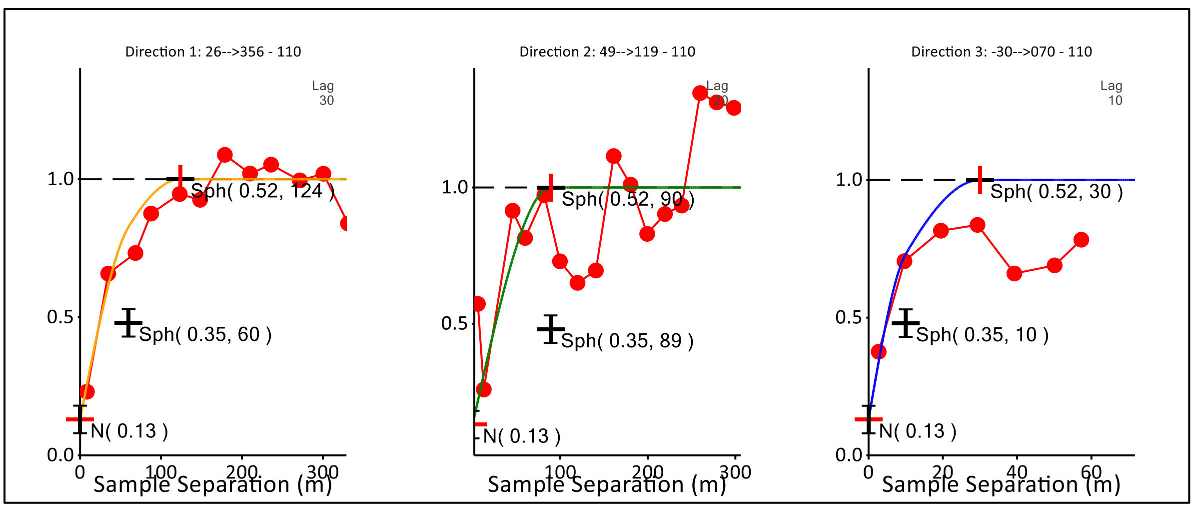

Figure 47: Example major and semi-major and minor axis variograms for zinc at Tom West

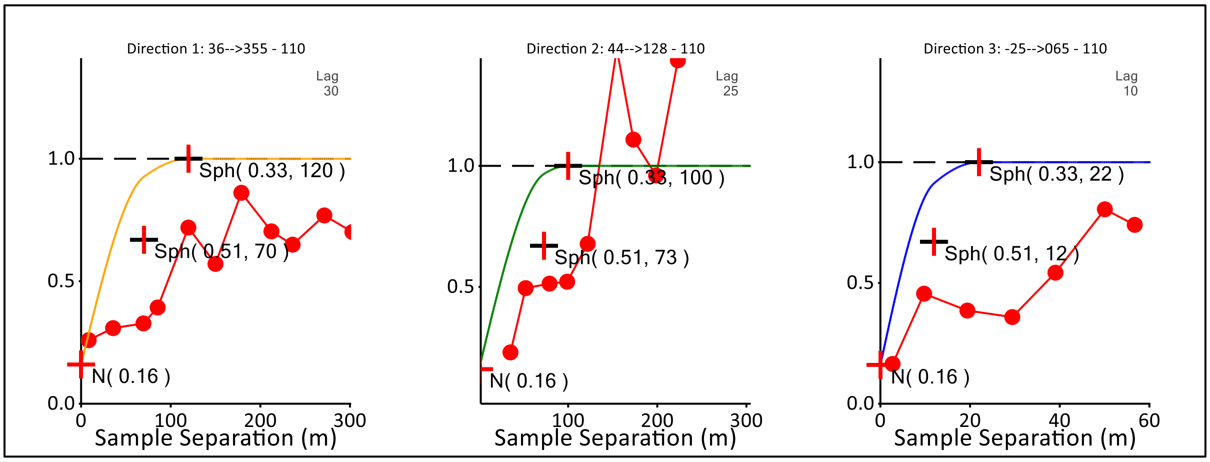

Figure 48: Example major and semi-major and minor axis variograms for lead at Tom West

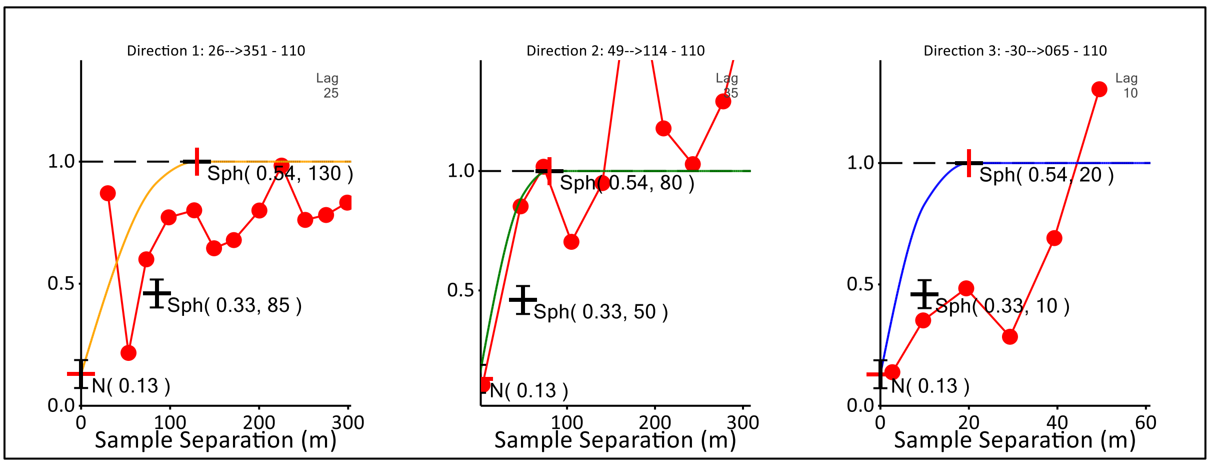

Figure 49: Example major and semi-major and minor axis variograms for silver at Tom West

Table 17: Modelled semi-variogram parameters for Tom deposit grade interpolation

Domain		Ellipse rotation			Nugget value	Partial sill	Range (m)		
		z	y	x			Major	Semi-major	Minor
TMZ	Zn	119	-49	139	0.15	0.38	60	85	10
						0.47	120	90	30
	Pb	128	-44	126	0.21	0.56	70	73	12
						0.23	120	100	22
	Ag	114	-49	139	0.2	0.5	85	50	10
						0.31	130	80	20
TEA	Zn	-71	-49	-41	0.14	0.49	71	30	5
						0.37	75	70	10
	Pb	-66	-45	-45	0.16	0.3	80	70	5
						0.54	90	90	15
	Ag	-61	-48	-51	0.15	0.28	50	30	5
						0.56	70	60	15
TSE	Zn, Pb, Ag	-65	-50	0	0.14	0.48	60	60	5
						0.38	80	80	15

Table 18: Modelled semi-variogram parameters for Jason deposit grade interpolation

Domain		Ellipse Rotation			Nugget value	Partial sill	Range (m)		
		z	y	x			Major	Semi-major	Minor
JMZ	Zn	105	-50	90	0.14	0.46	94	110	10
						0.4	110	105	30
	Pb	105	-50	90	0.15	0.61	60	75	10
						0.24	110	90	30
	Ag	105	-50	90	0.28	0.62	60	75	10
						0.1	110	90	30
JST	Zn	140	0	65	0.21	0.48	30	7	10
						0.31	80	72	20
	Pb	140	0	65	0.22	0.55	30	7	10
						0.23	80	72	20
	Ag	140	0	65	0.16	0.61	30	7	10
						0.23	80	72	20

14.8 Block Model

14.8.1 Block Model Construction

Separate block models were constructed for Tom East, Tom West, Tom Southeast, Jason Main Zone and Jason South deposits using Datamine Studio RM software. Block models encompassed the full extent of each deposit area.

Block models were rotated into the plane of each deposit and use a parent cell size of 15 m in the along strike and down dip directions and 5 m in the across strike direction with sub-celling to 3.75 m x 3.75 m x 1.25 m to maintain the resolution of the mineralised horizons.

The along strike and down dip parent cell size was selected based on approximately one third of the average drill section spacing in better drilled areas of each deposit. The model cell dimensions in the across strike directions was selected to provide sufficient resolution to honour grade variation across the mineralised horizons. Block model parameters are presented in Table 19.

14.8.2 Assignment of Strike and Dip Orientations Dynamic Anisotropy

Model blocks were coded with an estimated strike and dip value representing the orientation of the mineralised horizon at the location of the block. Strike and dip angles are subsequently used to dynamically adjust search ellipse anisotropy for the estimation of each block. In this way, local undulations and folds are represented in the block model and the banded nature of mineralised horizons are preserved.

True strike and dip orientations are extracted from wireframe model triangles. Orientation angles are not extracted from triangles at wireframe edges that are flat or triangles orientated perpendicular to the deposit. Model blocks are assigned strike and dip angles from the five nearest wireframe triangles using the Inverse Distance Weighting (IDW) estimation method for angles using an omni-directional search ellipse with a range of 30 m.

An example of resultant orientation points for the Tom West domain is shown in Figure 50.

Table 19: Block model parameters

Item	X	Y	Z
Model		**Tom West**	
Origin	442167.6	7003284	869.7237
Parent block size	15	15	3
No. of sub-blocks	4	4	4
Rotation around axis	0°	65°	340°
Model		**Tom East**	
Origin	442020.8	7004525	1341.4
Parent block size	15	15	3
No. of sub-blocks	4	4	4
Rotation around axis	0°	70°	150°
Model		**Tom Southeast**	
Origin	442562.7	7003786	1404.9
Parent block size	15	15	3
No. of sub-blocks	4	4	4
Rotation around axis	0°	45°	210°
Model		**Jason Main Zone**	
Origin	437194.2	7002565	682.5
Parent block size	3	15	15
No. of sub-blocks	4	4	4
Rotation around axis	0°	0°	285°
Model		**Jason South**	
Origin	436364.7	7002534	427.9365
Parent block size	15	15	3
No. of sub-blocks	4	4	4
Rotation around axis	0°	65°	120°

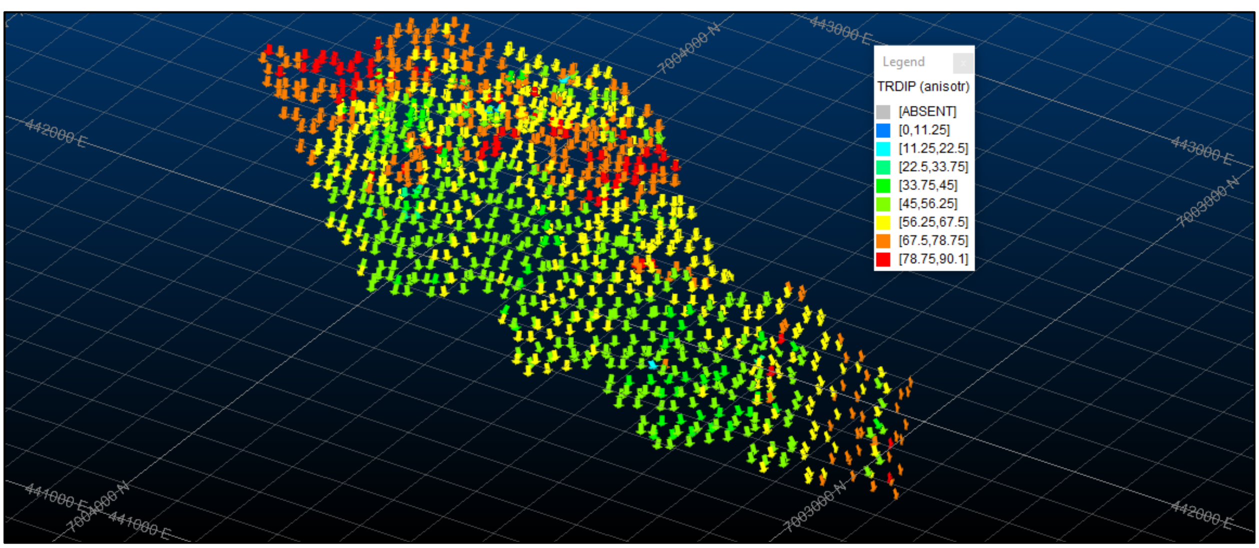

Figure 50: Tom West wireframe orientation points shown as arrows aligned to dip direction and colour coded by dip

14.9 Estimation

14.9.1 Grades

Tom and Jason mineralisation domain shell contacts are interpreted as hard boundaries for grade interpolation, such that zinc, lead and silver grades in one domain cannot inform blocks in another domain.

Both the Ordinary Kriging (OK) method and IDW techniques are considered appropriate methods for estimating block grades at the Tom and Jason Deposits where mineralization has a locally variable nature. In this scenario, the OK method and the utilization of a local mean within the search neighbourhood is preferred. The OK interpolation utilized the variogram models contained in Table 17 for Tom and Table 18 for Jason.

For validation purposes, an Inverse Distance Weighted interpolation was undertaken, whereby samples were weighted proportionally to the inverse of their distance from the block raised by a power of two (IDW^2). The IDW^2 used the same search ellipse and sample constraint parameters as the OK interpolation.

For both OK and IDW^2 estimates the search ellipse and detailed in Table 20 were used. For the estimation of block grades search ellipses were aligned with the dominant orientation of the mineralisation using dynamic anisotropy.

Table 20: Estimation search ellipse ranges

Domain	Major (m)	Semi-major (m)	Minor (m)
TMZ – Zn, Pb, Ag	60	60	15
TEA – Zn, Pb, Ag	40	40	15
TSE – Zn, Pb, Ag	60	60	15
JMZ – Zn, Pb, Ag	60	60	15
JST – Zn, Pb, Ag	40	40	20
ALL – BD	60	60	20

Grades were interpolated in three passes at half, one and two times the variogram ellipse range.

Table 21: Estimation run parameters

Interpolation run #	1	2	3
Search radii	1 × range	2 × range	4 × range
No. of sectors	1	1	1
Minimum no. of drillholes	2	2	2
Maximum no. of samples per hole	4	4	4
Minimum no. of samples (total)	8*[1]	8*[1]	8*[1,2]
Maximum no. of samples (total)	12	12	12
Discretization	3×3×3	3×3×3	3×3×3

*[1] Minimum of 6 for the Tom Southeast Domain. *[2] Minimum of 4 for density estimates.*

Data used to interpolate grade into the Tom and Jason deposit block models contains locally clustered drillhole samples that may unduly influence or bias block grades. To address this issue, a restriction of 12 samples was applied that limits the maximum number of samples used to estimate block grades.

14.9.2 Densities

Densities were estimated from composite intervals using the IDW^2 method. Estimation was undertaken in three runs using a dynamic search ellipse detailed in Table 20 for "BD" and using the parameters described in Table 21.

It was decided not to calculate densities from estimated zinc, lead and barium grades using a regression equation, since the availability of barium assays is limited in many domains. This would result in poor estimates that may significantly affect the accuracy of density estimates on a per block basis.

14.10 Model Validation

Validation of the grade estimates was completed by:

- Visual checks on screen in cross-section and plan view to ensure that block model grades and assigned densities honour the input sample composites
- Comparison of sample and block grades and densities
- Generation of swath plots to compare input and output grades in a semi-local sense, by easting, northing and elevation
- Investigation of the global change in support for metal grades.

14.10.1 Visual Validation

Block grades correlate very well with input sample grades. The distribution and tenor of grades in the composites is well honoured by the block model and is appropriate considering known levels of grade continuity and the variogram. Poorly informed deposit areas with widely spaced samples are more smoothed but expected.

Cross section views of block models coloured by zinc, lead and silver are shown for Tom West in Figure 51, Tom East in Figure 52, Jason Main Zone in Figure 53, and Jason South in Figure 54.

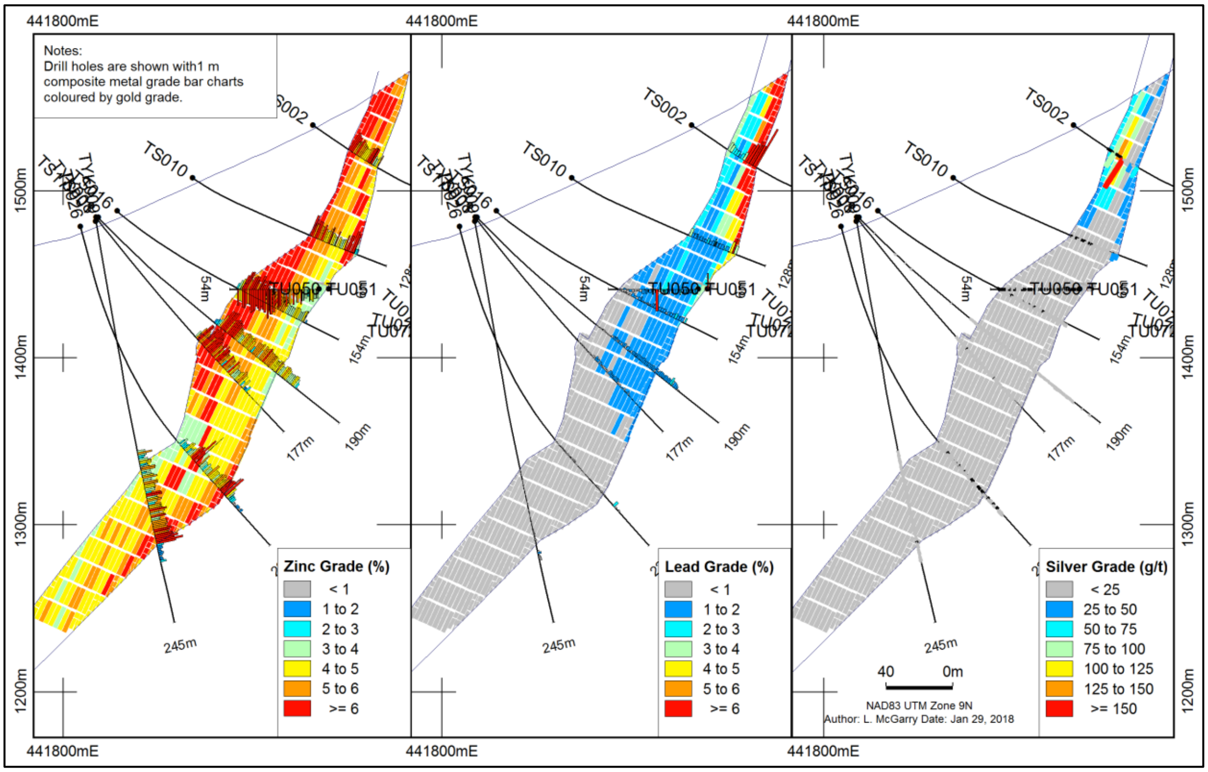

Figure 51: Section plots for zinc, lead and silver at Tom West

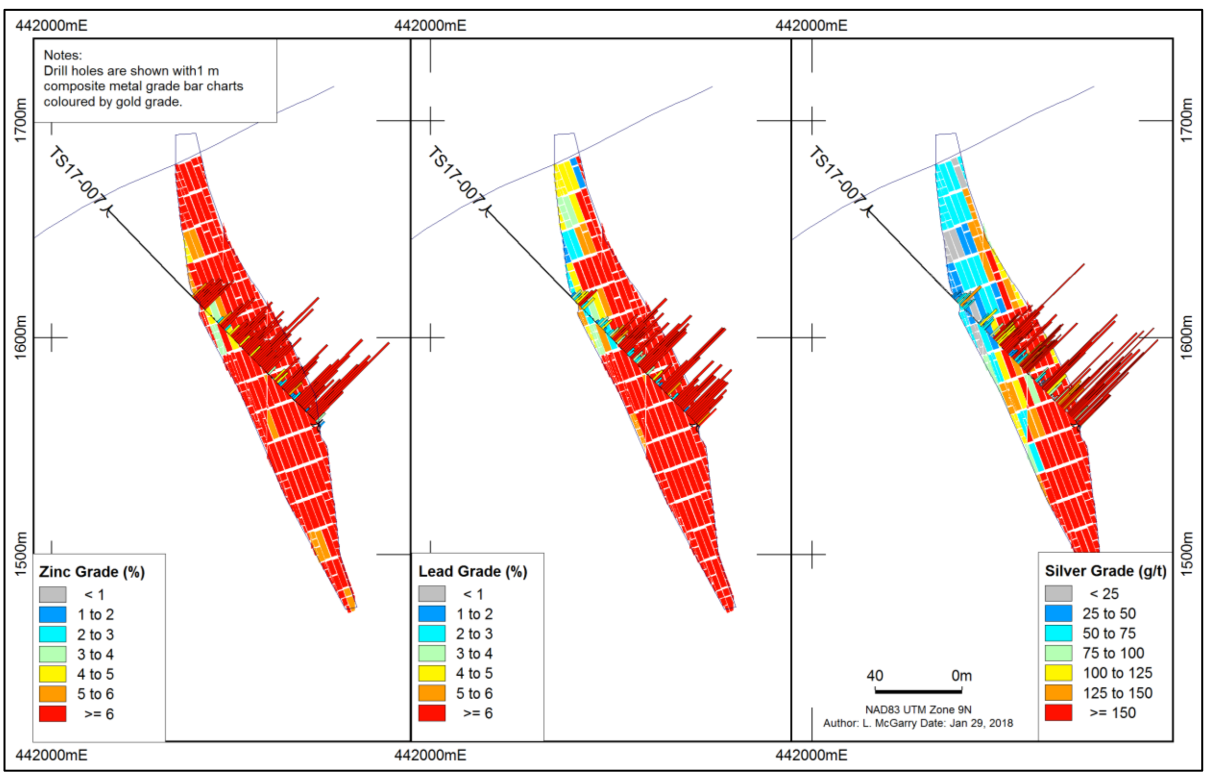

Figure 52: Section plots for zinc, lead and silver at Tom East

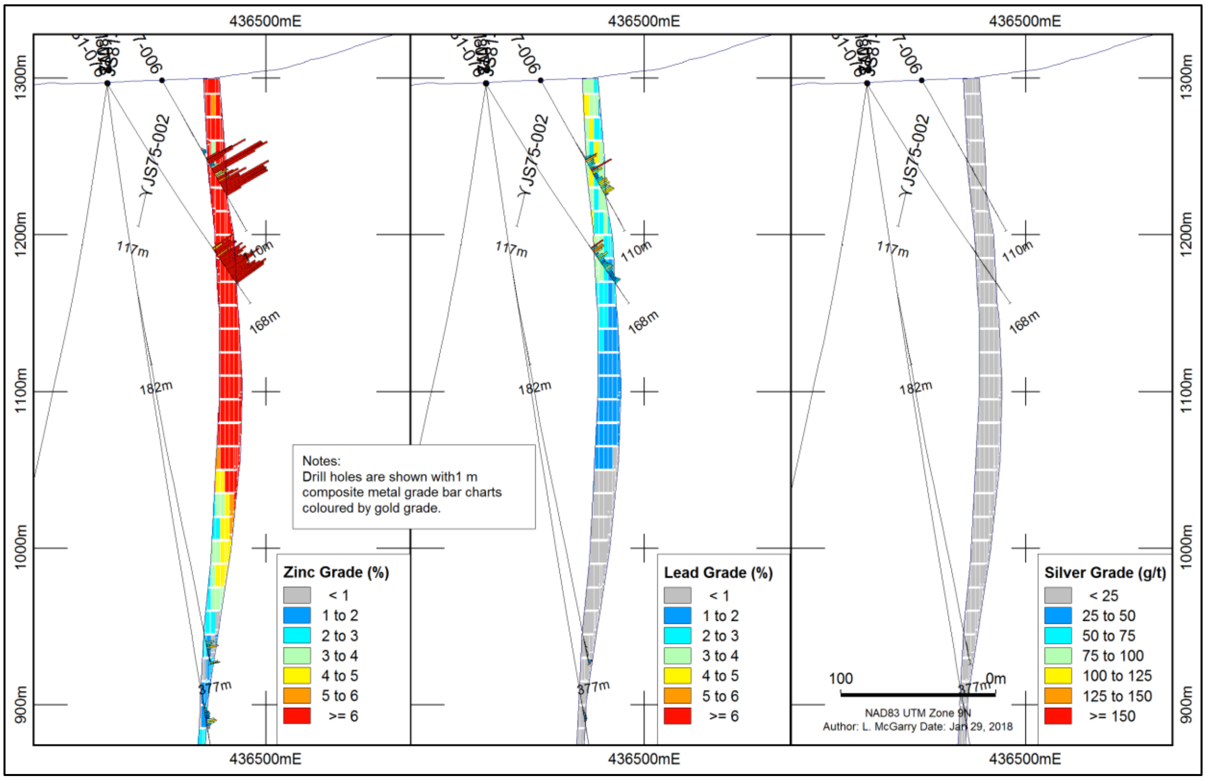

Figure 53: Section plots for zinc, lead and silver at Jason Main Zone

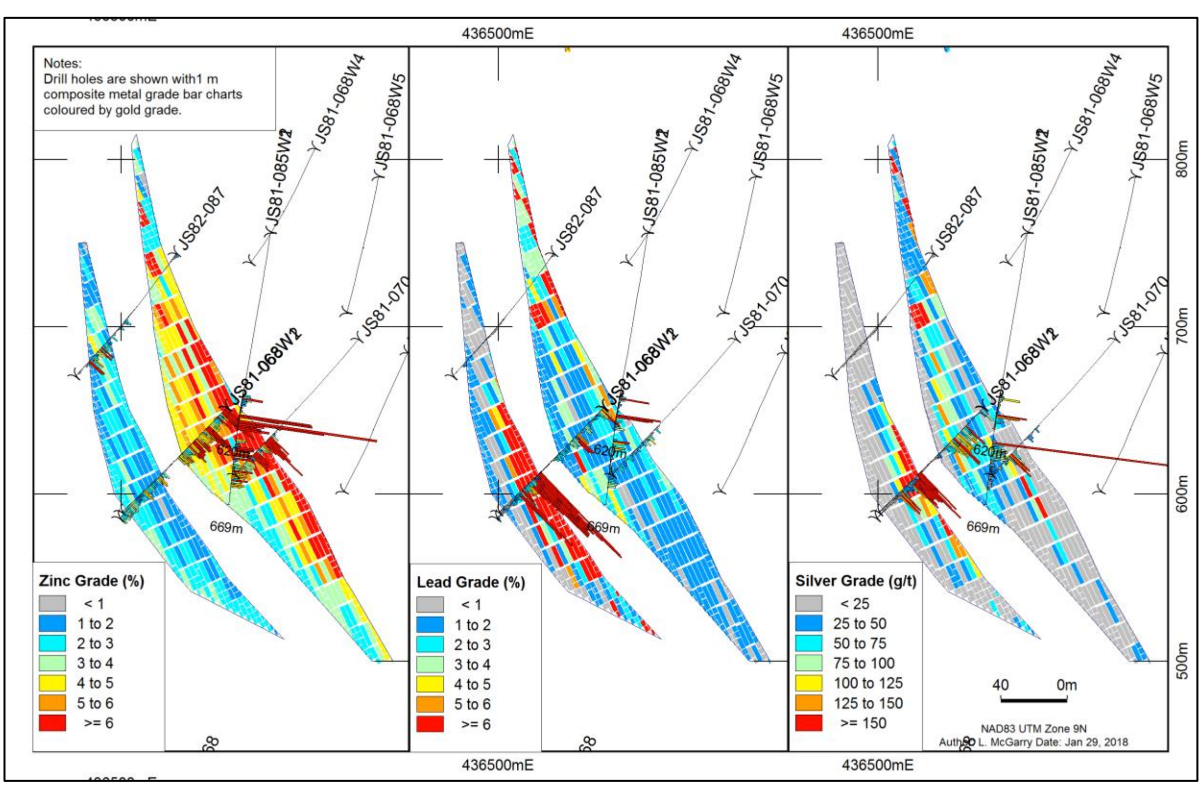

Figure 54: Section plots for zinc, lead and silver at Jason East, H1F and H2F domains

14.10.2 Comparison of Means

A check was conducted to test that the mean of the input data was close to the block model mean. The check compared the average zinc, lead and silver grades in composite drillhole samples and in model blocks for each resource estimate domain. To account for locally clustered sample data, sample data were de-clustered using the procedure explained by Clayton and Journel, 1998, with de-clustering variable cell sizes deduced on a domain by domain basis.

The test demonstrated that the grades for the de-clustered mean input composites and both the OK and IDW block models are comparable as shown in Table 22. Larger differences are seen for domains with greater grade variance, and or fewer samples. The difference between OK and IDW^3 estimates are comparable:

- At Tom West, de-clustered composite and modeled zinc grades show good agreement. Average lead and silver model grades are significantly less than input composites. This is due to a greater drill density in the lead and silver rich shallow and southern edges of the deposit, relative to the lower grade but more extensive deeper and northern portions of the deposit.
- At Tom East, there is reasonable agreement between the de-clustered composite and block model zinc, silver and lead grades which are within 10% of each other.
- At Jason Main Zone, there de-clustered composite and modeled zinc and lead grades show good agreement. For silver, average block model grades are significantly higher than the average grade input composites, due to the high variance of silver assays in this domain where a small number of higher grade samples inform proportionally larger number of blocks than low grade samples.
- At Jason South, there is reasonable agreement between the de-clustered composite and block model zinc grades except for the hangingwall horizon two. For horizon two, repeatability of composite lead and silver grades is also poor.

14.10.3 Swath Plots

Sectional validation plots compare the de-clustered grades of composites (blue line) and OK (black line), IDW^3 (grey line) that fall within 10 m easting, northing and 15 m elevation slices. The plot will identify slices that contain high-grade samples and low-grade blocks, or vice versa, which might indicate a problem with the estimation technique.

For all domains, block grades estimated by OK and IDW^3 have a smoother profile relative to input samples. Where there are more samples, good agreement is seen between the trends of input composites and block grades estimated by each technique. The OK profile is slightly smoother than IDW. Both models reflect drillhole data on a local basis.

Example swath plots for zinc are show for Tom West (Figure 55), Tom East (Figure 56) and Jason Main Zone (Figure 57).

Table 22: Comparison of means

Domain	Sample count	Sample data		Block model		% difference	
		Raw	De-clustered	OK mean	IDW³ mean	De-clustered vs OK	De-clustered vs IDW³
Zn %							
TMZ	2283	6.11	5.98	5.87	5.86	-1.7	-1.9
TEA	590	8.58	8.72	9.48	9.48	8.8	8.8
JMZ	688	6.57	6.24	6.38	6.38	2.3	2.2
H1F	274	4.63	4.34	4.54	4.53	4.7	4.4
H1H	106	5.56	6.24	6.02	6.35	-3.6	1.7
H2F	263	1.97	1.85	1.92	1.86	4.1	0.4
H2H	140	3.02	3.17	4.00	3.65	26.4	15.3
Pb%							
TMZ	2252	2.61	2.83	1.95	1.91	-31.0	-32.6
TEA	596	9.76	11.02	11.28	10.90	2.3	-1.1
JMZ	688	1.31	1.21	1.19	1.16	-1.8	-4.0
H1F	274	5.71	7.30	7.89	7.48	8.1	2.5
H1H	106	2.90	3.19	3.58	3.59	12.4	12.7
H2F	273	3.34	2.83	3.79	3.37	34.0	18.9
H2H	140	1.68	1.77	2.04	2.08	15.1	17.3
Ag g/t							
TMZ	1830	30.27	27.41	21.34	21.55	-22.2	-21.4
TEA	592	128.84	146.69	147.46	144.18	0.5	-1.7
JMZ	485	2.20	3.63	4.97	5.09	36.8	40.0
H1F	273	93.28	114.59	119.46	115.08	4.2	0.4
H1H	102	33.11	39.63	40.45	42.01	2.1	6.0
H2F	273	27.88	23.85	31.33	28.71	31.4	20.4
H2H	140	13.00	14.70	16.81	17.65	14.3	20.0

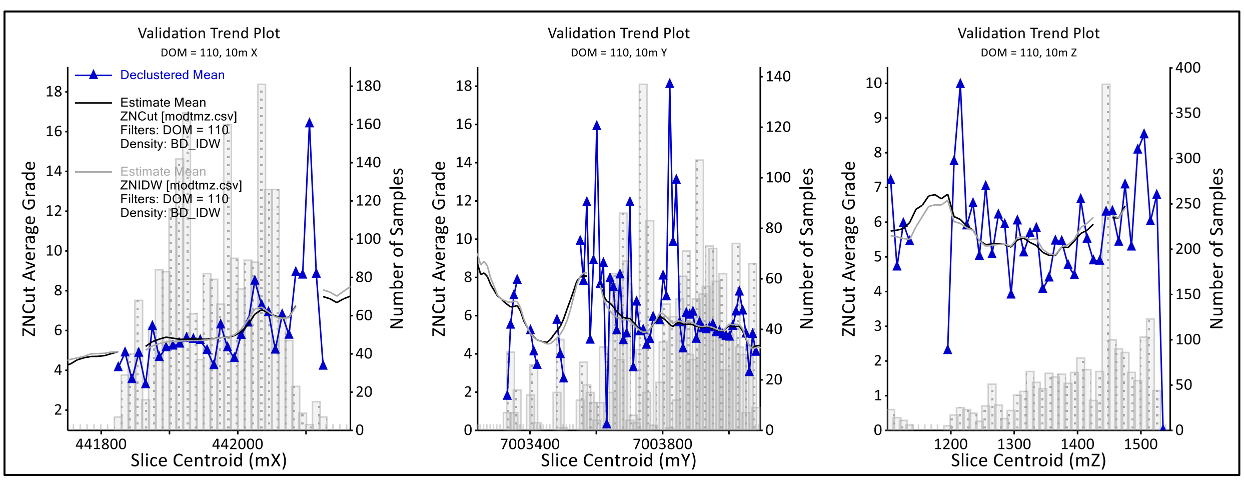

Figure 55: Swath plots for zinc at Tom West

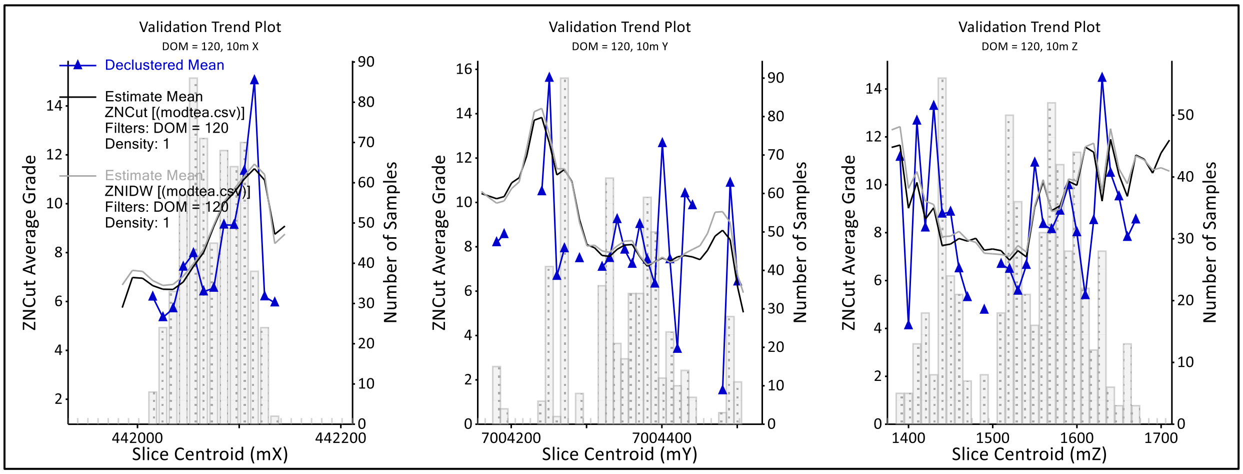

Figure 56: Swath plots for zinc at Tom East

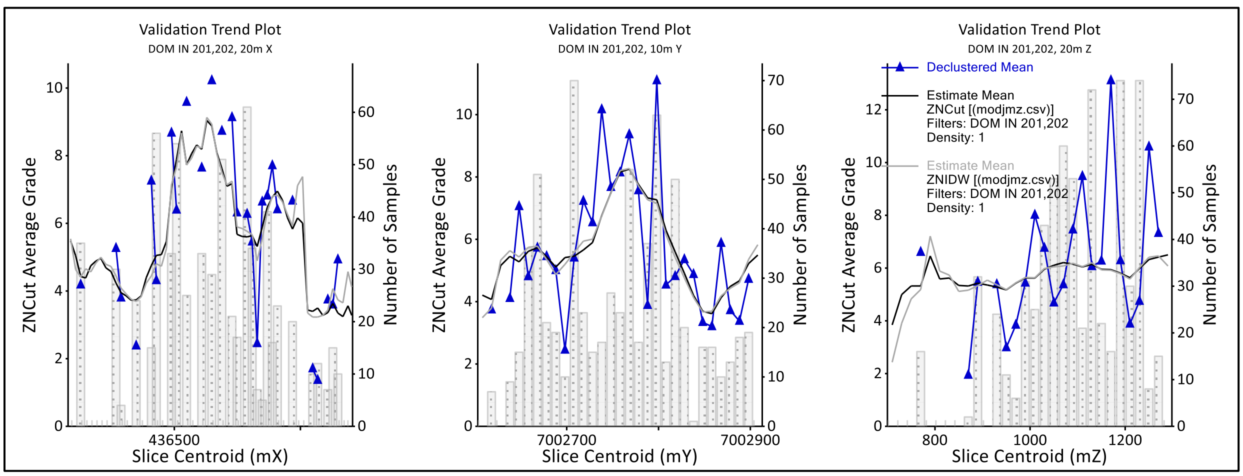

Figure 57: Swath plots for zinc at Jason Main Zone

14.10.4 Global Change of Support

The Global Change of Support (GCOS) assessment compares the estimated block model grade and tonnage curves, to the theoretical grade and tonnage curves deduced from sample distributions. The sample grade and tonnage curves are adjusted to account for the decrease in variability that is expected for grades between Selective Mining Unit (SMU). This decrement in variability is known as support effect. Estimates were validated by comparing global theoretical grade-tonnage curves in SMU support with global theoretical grade-tonnage calculated with OK estimates.

Example zinc grade tonnage curves are shown for the Tom West, Tom East and Jason Main Zone deposits in Figure 58, examples for lead are shown in Figure 58 and examples for silver in Figure 60. Jason South domains had relatively few samples on a domain basis and GCOS was not undertaken for these domains.

The OK estimation technique returns average block grades and tonnages that are similar to theoretical de-clustered SMU grades-tonnage curves and are typically within +/-10% at a nominal cut off of 5% Zn and 5% lead.

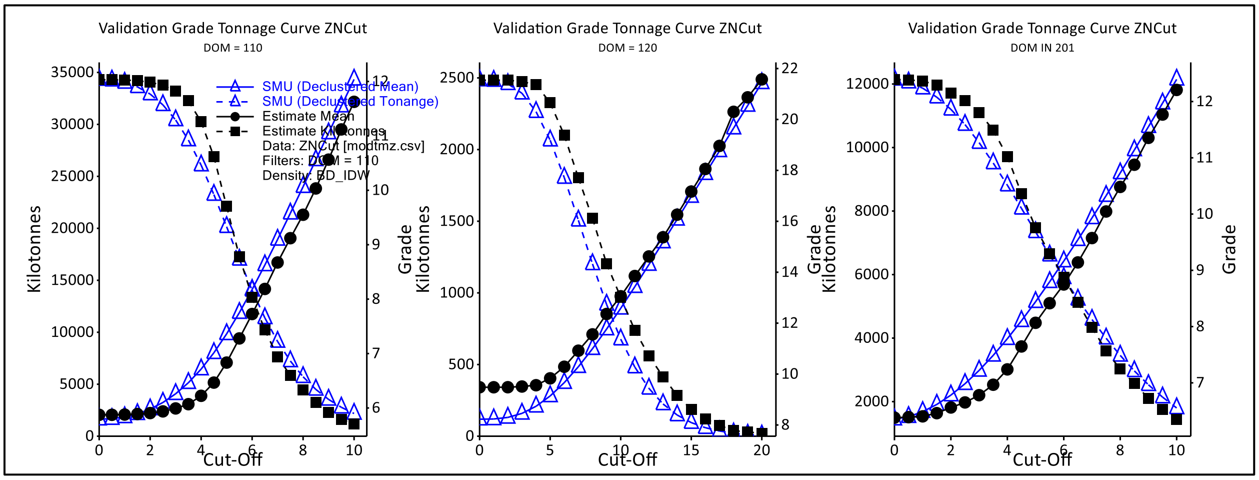

Figure 58: GCOS plots for zinc at the Tom West, Tom East and Jason Main Zone deposits

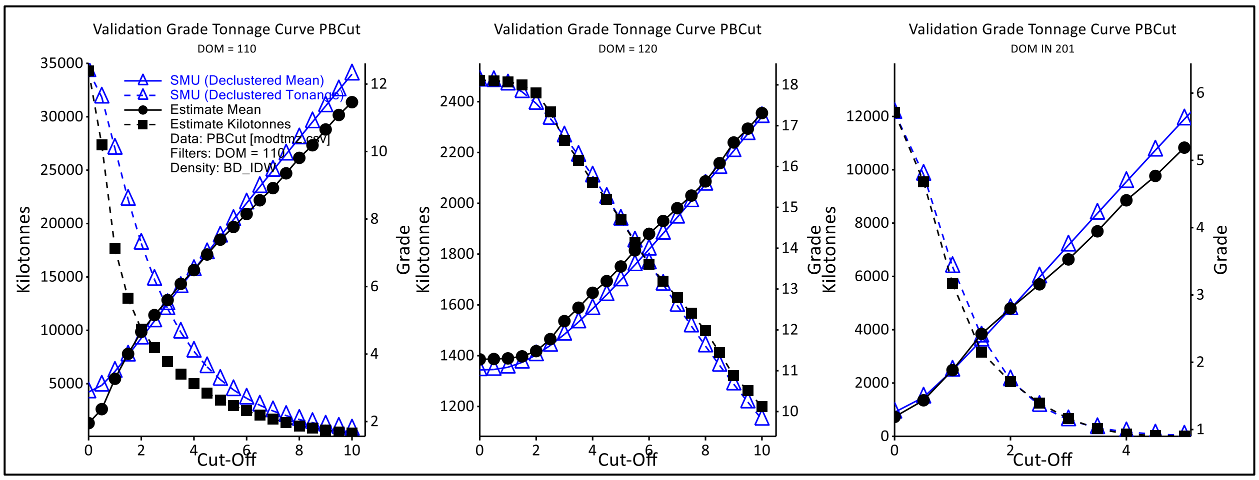

Figure 59: GCOS plots for lead at the Tom West, Tom East and Jason Main Zone deposits

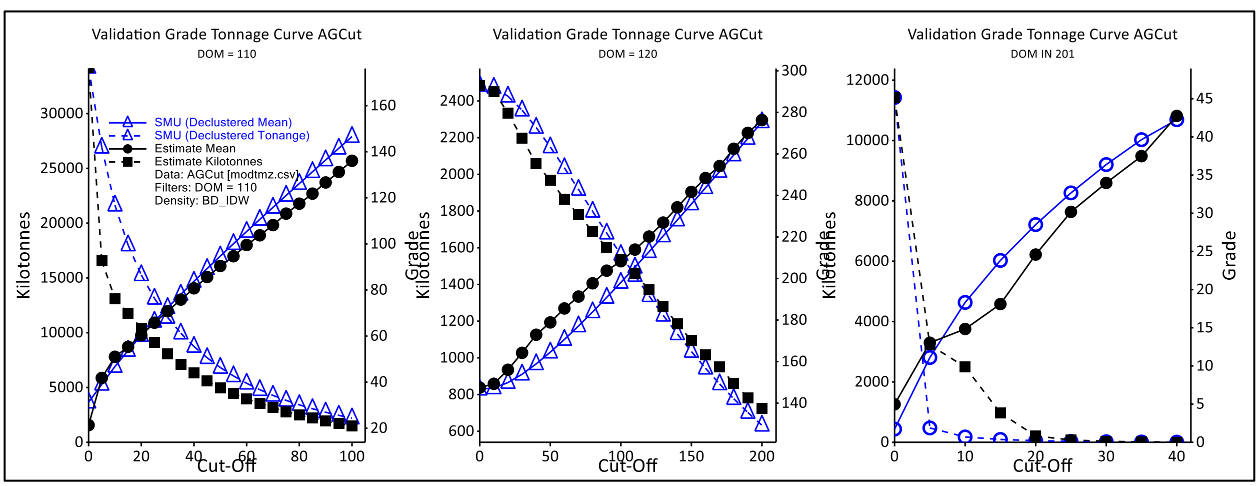

Figure 60: GCOS plots for silver at the Tom West, Tom East and Jason Main Zone deposits

14.10.5 Densities

A check was conducted to test that the mean density of the input data was close to the block model density mean. Results showed that on average composite means densities are within +/-2% for average block model densities.

Table 23: Comparison of means for densities

Domain	Sample count	Raw	De-clustered	Block mean IDW²	De-clustered vs IDW³
TMZ	1069	3.37	3.31	3.32	0.4
TEA	239	3.13	3.19	3.25	1.6
JMZ	593	3.18	3.18	3.19	0.5
H1F	272	3.43	3.46	3.45	-0.4
H1H	96	3.30	3.19	3.24	1.5
H2F	273	3.42	3.34	3.39	1.5
H2H	140	3.22	3.14	3.17	0.8

14.11 Mineral Resource Classification

The resource estimate is prepared in accordance with CIM Definition Standards- For Mineral Resources and Mineral Reserves, adopted by the CIM Council on 10 May 2014 where:

An Inferred Mineral Resource as defined by the CIM Standing Committee is *"that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity*.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration."

An Indicated Mineral Resource has a higher level of confidence than that applying to an Inferred Mineral Resource. It may be converted to a Probable Mineral Reserve. An Indicated Mineral Resource as defined by the CIM Standing Committee is *"that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.*

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve." and,

A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve. A Measured Mineral Resource, as defined by the CIM Standing Committee is *"that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.*

Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.

A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve."

Mineral resources that are not mineral reserves do not account for mineability, selectivity, mining loss and dilution and do not have demonstrated economic viability. These MREs include Inferred mineral resources that are normally considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. There is also no certainty that these Inferred and Indicated mineral resources will be converted to the Indicated and Measured categories through further drilling, or into mineral reserves, once economic considerations are applied.

Classification, or assigning a level of confidence to Mineral Resources, is undertaken in strict adherence to the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM Council, 2014). MREs for the Tom and Jason deposits were prepared by L. McGarry, CSA Senior Resource Geologist and Qualified Person for the reporting of Mineral Resources as defined by NI 43-101.

14.11.1 Reasonable Prospects of Economic Extraction

CIM Definition Standards for Mineral Resources and Mineral Reserves, adopted by the CIM Council on 10 May 2014 require that resources have "reasonable prospects for economic extraction". This generally implies that the quantity and grade estimates meet certain economic thresholds and that the mineral resources are reported at an appropriate cut-off grade taking into account possible extraction scenarios and processing recoveries.

To define reasonable prospects of economic extraction the in-ground value of each block was calculated using estimated factors for: metallurgical recoveries, assumed metal prices and smelter terms including payable factors, treatment charges and refining charges. These factors were estimated by consulting mining engineers retained by Fireweed and deemed by the Author to be reasonable. No penalties were included.

- Metal price assumptions were: US$1.17/lb zinc, US$0.99/lb lead, and US$16.95/oz silver
- An exchange rate of US$1 = C$1.24 was used
- Metal recovery assumptions were: 79% for zinc, 82% for lead and 85% for silver (whereby 12% is recovered from zinc concentrate and 73% is recovered from lead concentrate)) based on metallurgical tests carried out by Hudbay in 2012.

Based on these assumptions the formula for the NSR on each block was calculated as:

NSR $/t CAD =
$16.16 * Zn(%) (Zn NSR from Zn concentrate)
+ $16.08 * Pb(%) (Pb NSR from Pb concentrate)
+ $0.05853 *Ag(g/t) - $61.46 * Zn(%) (Ag NSR from Zn concentrate, only if >0)
+ $0.4470 * Ag(g/t) - $36.07 * Pb(%) (Ag NSR from Pb concentrate, only if >0)

The zinc equivalent (ZnEq) calculation was performed as: ZnEq = NSR/C$16.16.

An NSR cut-off grade of C$65 was selected for the reporting of mineral resource blocks after consideration of potential underground mining costs in the Yukon.

14.11.2 Resource Classification Parameters

The MRE is classified in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves, adopted by the CIM Council on 10 May 2014. Resource classification parameters are based on the validity and robustness of input data and the Qualified Person's judgement with respect to the proximity of resource blocks to sample locations and the kriging variance recorded during grade estimation.

At the Tom and Jason deposits, a sizable proportion of sampling is historical and has undergone variable amounts of QAQC sampling. Overall, sample data is considered to be of reasonable quality. The Authors are confident that core samples and the zinc, lead and silver assays derived from them are representative of the material drilled and can be used in resource estimation studies.

The following is considered when classifying resources at Tom:

- Reliable down hole surveys are not available for the majority of historical drilling at Tom. Recent drillholes allow modeling of horizon intercepts with greater spatial accuracy.
- The majority of historical Hudbay drilling utilized small drill core diameters with small sample volumes.
- Intervals of poor drill core recovery were encountered in underground AX drillholes. For the 2011 and 2017 drilling campaigns, high core recoveries provide confidence that core samples, and the assay values derived from them, are representative of the material drilled and suitable for inclusion in resource estimation studies.
- Lithology domain and grade continuity are well established where drill density is greater than 40 m x 40 m; however, there remain portions of the deposit where sample density is insufficient to establish continuity beyond an Inferred level, specifically:
  - at Tom West below a depth of 200 m and in the folded southern portion of the deposit, and where unresolved sub-domains of lead and silver rich vent proximal mineralisation occur
  - at the peripheries of Tom East and below a depth of 100 m to 150 m
  - throughout Tom South East domains.

The following is taken into account when classifying resources at Jason:

- Lithology domain and grade continuity are well established where drill density is greater than 40 m x 40 m; however, there remain portions of the deposit where sample density is insufficient to establish continuity beyond an Inferred level, specifically:
  - at Jason Main Zone below a depth of 250 m and west of 436,450 mE and east of 436,950 mE
  - throughout Jason South, where unresolved fault offsets and sub-domains of lead and silver rich vent proximal mineralisation occur; and where sample numbers on a per domain basis remain low and prevent a comprehensive model validation.

At both deposits:

- Surveying of historic drill collars in 2017, described in Section 12, provided more accurate location data for modeling of resources.
- Check sampling was undertaken on drill core assays from historical drill programs at Tom and Jason. The results presented in Table 9 verified that the historical assays could be used in a MRE.
- Digital lithology files have sufficient information to enable broad interpretations of geology. However, there are many internal dilution zones that are not yet properly defined. Core logging practices and lithology codes for recent drilling are inconsistent with earlier campaigns. It has not been possible to model the separate mineralisation facies identified in Section 7 based on logged geology. Within major

lithological units, statistical evaluation of assay grades indicates the presence of mixed mineralisation styles, particularly at Jason South and in portions of the Tom West deposit.

- The estimation and modelling technique is considered robust after consideration of the validation exercised undertaken as part of this study.

Resource classification was undertaken using classification boundary strings assigned to the block model in a cookie cutter fashion. Strings define a region of blocks that, on average, met the following criteria:

- Indicated Resources are defined by blocks that are within 50 m of composites with density values from drillholes greater than Bx size, completed after 1980 with good downhole survey data. Indicated resource are in well drilled portions of the deposit where blocks are generally less than 40 m from the nearest drillhole and have a Kriging Variance of <60% and good geological continuity in Tom West, Tom East and Jason Main Zones. The extent of Indicated Resources is shown in Figure 61 and Figure 62.
- Inferred Resources are defined by run 2 and run 3 blocks within 100 m of a drillhole (i.e. the typical variogram range) and in areas of poor core recovery, or that are geologically complex. All Tom Southeast and Jason South blocks are classified as Inferred. At Tom Southeast, inferred blocks are constrained to within 60 m of a drillhole. The extent of Inferred resource blocks is shown in Figure 61 and Figure 62.

Measured Resources are not defined. To define Measured Resources, Fireweed should undertake the recommended actions (presented in Section 18).

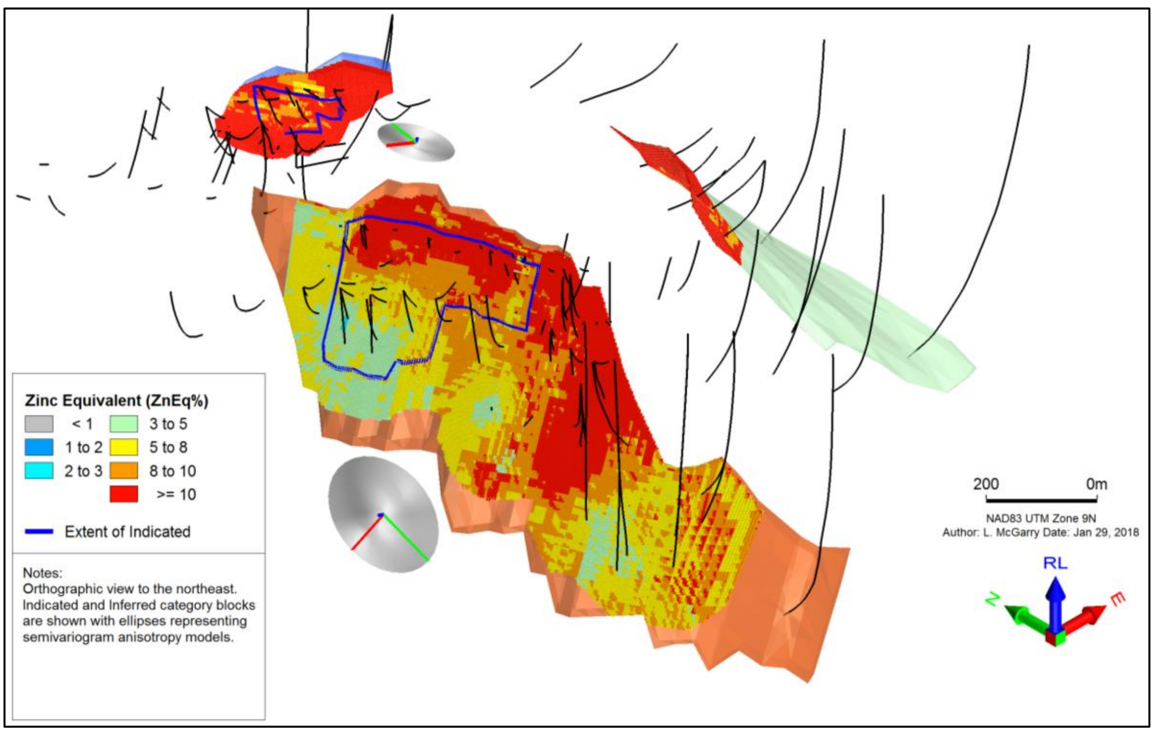

Figure 61: Tom block models – orthographic view to the northeast

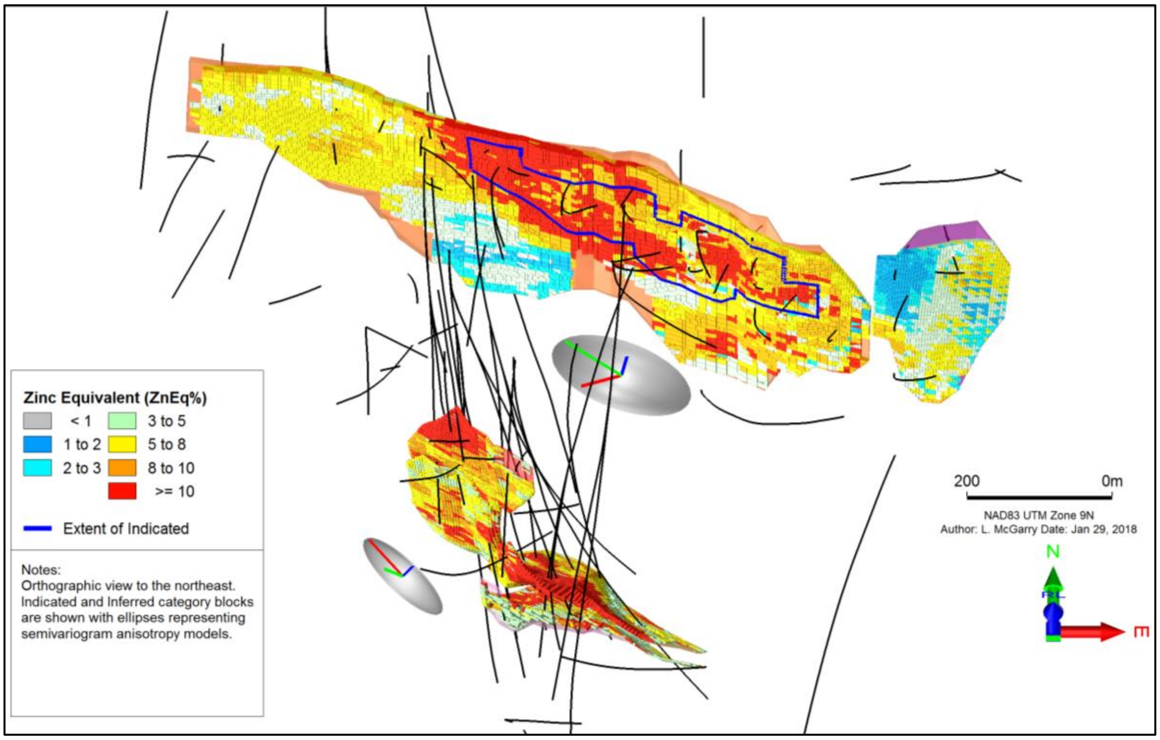

Figure 62: Jason block models – orthographic view to the northeast

14.12 Mineral Resource Reporting

Resources are reported in adherence to NI 43-101 Standards of Disclosure for Mineral Projects (Canadian Securities Administrators, 2011), and to the CIM Definition Standards on Minerals Resources and Reserves (CIM Council, 2014). The MRE is summarised by resource category in Table 24 and by resource domain in Table 25. The Mineral Resource has been reported above an NSR cut-off grade of C$65 and has an effective date of 10 January 2018.

Table 24: Macmillan Pass MRE as at 10 January 2018

	Tonnes	ZnEq %	Zn %	Pb %	Ag g/t	B lbs Zn	B lbs Pb	Moz Ag
Indicated	11.21	9.61	6.59	2.48	21.33	1.63	0.61	7.69
Inferred	39.47	10.00	5.84	3.14	38.15	5.08	2.73	48.41

Notes:

- *The Mineral Resources in this disclosure were estimated by Leon McGarry, P.Geo*
- *The effective date of this Mineral Resource is 10 January 2018.*
- *Numbers have been rounded to reflect the precision of an Inferred and indicated MRE.*
- *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability but are required to have reasonable prospects for eventual economic extraction.*
- *The in-ground NSR values were calculated using estimated metallurgical recoveries, assumed metal prices and smelter terms including payable factors, treatment charges and refining charges. No penalties were included. Metal price assumptions were: US$1.17/lb Zn, US$0.99/lb Pb, and US$16.95/oz Ag and an exchange rate of US$1 = C$1.24. Metal recovery assumptions were: 79% Zn, 82% Pb and 85% Ag (12% to Zn concentrate and 73% to Pb concentrate). Based on these assumptions the formula for the NSR on each block was calculated as: NSR C$/t = $16.16 * Zn(%)+ $16.08 * Pb(%) + $0.05853 *Ag(g/t) - $61.46 * Zn(%) + $0.4470 * Ag(g/t) - $36.07 * Pb(%).*
- *The ZnEq calculation was performed as: ZnEq = NSR/C$16.16.*
- *The Mineral Resources in this news release were estimated using current CIM standards, definitions and guidelines. The Author estimated the resources by OK.*

- *The Tom and Jason database was audited in its entirety and has 6,986 samples assayed for zinc, 7,031 for lead and 5,888 for silver. Samples are collected from 249 exploration drillholes including duplicate and blank samples plus 111 assays from 2017 re-sampled and re-assayed historical drill core. There are also 1,129 samples with density measurements in the database. During that work, CSA Global found the QAQC on the analytical data to support a qualitatively reasonable set of drill data.*
- *QAQC protocols were carried out to assess the quality of the drilling assay results and the confidence that can be placed in the assay data. The QAQC data available for Tom and Jason demonstrate the analytical data are of sufficient quality to be used in estimating mineral resources.*
- *Nine mineral domains were modeled from drillholes spaced at 30 m to 100 m. Within each domain, assays were regularized to 1 m intervals. Capping values between 20% and 50% were applied to zinc and lead grades, and 600 g/t applied to silver grades. Geostatistical analysis identified grade continuity ranges of between 70 m and 120 m within the plane each domain. Metal grades and bulk density values were interpolated into rotated block models with dimensions of 15 m in the along strike and down dip directions and 3 m in the across strike direction.*
- *Indicated Resources are defined in areas that are less than 40 m from the nearest drillhole and within 50 m of samples with assigned density values collected from a drillholes completed after 1980. Inferred Resources are defined within 100 m of a drillhole, and in areas of greater geological complexity or poor core recovery.*

Table 25: Macmillan Pass MRE reported by domain as at 10 January 2018

	Tonnes (Mt)	ZnEq %	Zn %	Pb %	Ag g/t	B lbs Zn	B lbs Pb	Moz Ag
Indicated								
Tom West	7.91	8.39	5.85	2.08	18.31	1.02	0.36	4.65
Tom East	0.81	20.29	8.74	8.62	110.00	0.16	0.15	2.85
Jason Main Zone	2.49	10.04	8.25	1.76	2.22	0.45	0.10	0.19
Indicated Total	**11.21**	**9.61**	**6.59**	**2.48**	**21.33**	**1.63**	**0.61**	**7.69**
Inferred								
Tom West	21.25	8.82	**5.97**	2.17	25.97	2.80	1.02	17.75
Tom East	1.68	27.35	9.86	12.86	170.00	0.37	0.48	9.17
Tom Southeast	0.29	11.51	7.08	3.56	34.84	0.05	0.02	0.33
Jason Main Zone	7.31	7.47	6.23	1.07	6.95	1.00	0.17	1.63
Jason South	8.93	11.56	4.41	5.28	68.01	0.87	1.04	19.53
Inferred Total	**39.47**	**10.00**	**5.84**	**3.14**	**38.15**	**5.08**	**2.73**	**48.41**

Notes: See notes in Table 24.

A series of cut-off grade scenarios are presented in Table 26. The Author considered that each cut-off grade scenario has a reasonable prospect of economic extraction given appropriate variations to metal price and mining cost assumptions identified in the preceding section *"Reasonable Prospects of Economic Extraction*".

Table 26: Macmillan Pass MRE reported by NSR cut-off as at 10 January 2018

NSR cut-off (C$/t)	Tonnes (Mt)	ZnEq %	ZN %	Pb %	Ag g/t
Indicated					
$45	11.43	9.49	6.52	2.44	20.96
$65	**11.21**	**9.61**	**6.59**	**2.48**	**21.33**
$85	10.30	10.04	6.81	2.65	22.92
$105	7.63	11.48	7.49	3.22	29.77
Inferred					
$45	43.14	9.44	5.55	2.95	35.45
$65	**39.47**	**10.00**	**5.84**	**3.14**	**38.15**
$85	33.18	11.01	6.26	3.56	43.99
$105	24.48	12.83	6.82	4.50	56.34

Notes: See notes in Table 24.

14.12.1 Factors that may Affect the Mineral Resource

CSA Global is not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues that could potentially affect this mineral resource estimate. The mineral resources may be affected by a future conceptual study assessment of mining, processing, environmental, permitting, taxation, socio-economic and other factors.

Additional technical factors which may affect the MREs include:

- Metal price and valuation assumptions
- Changes to the technical inputs used to estimate zinc, lead and silver content (e.g. bulk density estimation, and grade model methodology)
- Geological interpretation (revision of vein models and the modeling of internal waste domains e.g. dikes and structural offsets such as faults and shear zones)
- Changes to geotechnical and mining assumptions, including the minimum mining thickness; or the application of alternative mining methods such as open pit mining
- Changes to process plant recovery estimates if the metallurgical recovery in certain domains is lesser or greater than currently assumed.

There is insufficient information at this early stage of study to assess the extent to which the resources might be affected by these factors.

14.12.2 Comparison with Previous Mineral Resource Estimates

These new current MREs represent a substantial increase over the previous historic 2007 publicly reported MREs (see Fireweed news release dated 1 June 2017). The increase is mainly due to:

- Results from an additional 25 drillholes (11 by Hudbay Minerals in 2011 and 14 by Fireweed in 2017 – see Fireweed news release dated 27 December 2017 for details), a number of which cut wider and/or higher-grade intersections than predicted by historic drill results, and others which were step-outs that expand on previous drilling
- More accurate survey coordinates for historic drillholes than were available for the 2007 report
- New bulk density determinations obtained during the 2017 field season that, when coupled with both new and historical assay data, allowed better estimates of rock bulk density than were available for the 2007 report.

Table 27: 2017 Macmillan Pass MRE comparison with 2007 estimate

Domain	2007				Current				Change			
	Mt	Zn (%)	Pb (%)	Ag (g/t)	Mt	Zn (%)	Pb (%)	Ag (g/t)	Mt	Zn (%)	Pb (%)	Ag (g/t)
Indicated												
Tom	4.98	6.64	4.36	47.77	8.7	6.12	2.68	26.80	75%	-8%	-38%	-44%
Jason	1.45	5.25	7.42	86.68	2.5	8.25	1.76	2.22	72%	57%	-76%	-97%
Inferred												
Tom	13.55	6.68	3.1	31.77	23.2	6.27	2.96	36.49	71%	-6%	-5%	15%
Jason	11	6.75	3.96	36.42	16.2	5.23	3.39	40.53	47%	-23%	-14%	11%

The Authors have not verified these historic 2007 resource estimates and are not treating these historical estimates as current mineral resources. While these estimates were prepared in accordance with National Instrument 43-101 and the "Canadian Institute of Mining, Metallurgy and Petroleum Standards on Mineral Resources and Mineral Reserves Definition Guidelines" in effect at the time (2007), *there is no assurance that they are in accordance with current standards, and these historical resource estimates should not be regarded as consistent with current standards or unduly relied upon as such. The Authors include these historical estimates in this report for purposes of comparison to the current resource only.*

15 Adjacent Properties

Adjacent claims are owned by major and junior mining and mineral exploration companies. These claims cover known precious and base metal prospects and anomalies, none of which are at the advanced stage of the Macmillan Pass Project.

16 Other Relevant Data and Information

There are no additional relevant data, information or explanation necessary to make this report understandable and not misleading.

17 Interpretation and Conclusions

The Tom and Jason zinc-lead-silver deposits of the Macmillan Pass Project are located in eastern Yukon near the border with the Northwest Territories. Access to the site is by seasonal gravel road or by air to a gravel airstrip, and there is minimal infrastructure available in the region.

Tom and Jason are proximal SEDEX deposits formed during Devonian rifting activity in the Selwyn Basin. They were subsequently folded during the transition of the Pacific margin of North America from a passive to convergent plate margin. SEDEX deposits are major sources of lead and zinc globally. Although no SEDEX deposits in the Selwyn Basin are currently in production, the large Anvil SEDEX deposits northwest of Macmillan Pass, were a major producer of zinc, lead and silver in the 1980s and the Selwyn (Howards Pass) SEDEX deposit southeast of Tom Jason is one of the world's largest undeveloped SEDEX zinc-lead-silver resources.

The Tom and Jason properties have seen a significant amount of historical exploration work commencing with the discovery of the Tom West Zone in 1951. By the early 1990s, 128 drillholes were completed on the Jason property for a total of 37,924 m and 201 drillholes were completed on the Tom property for a total of 31,672 m. In addition, an adit with approximately 3,423 m of underground workings including a spiral decline were excavated into the Tom West deposit to assist exploration and bulk sampling. Exploration was effectively suspended on the project after 1992. Since then the GSC released extensive information on the geology, stratigraphy and zinc-lead-barite mineralisation of the Macmillan Pass region which is available to guide future exploration in the area.

Hudbay reported a mineral resource estimate in 2007 that is not to current NI 43-101 standards that is reproduced in Section 14.12.2. and is described in Rennie (2007) and Arne (2017). Hudbay briefly recommenced exploration in 2011 with the drilling of 11 new diamond holes for a total of 1,823 m. These holes were drilled for metallurgical testing and infill purposes in the Tom West Zone.

In 2017, the Issuer carried out an exploration program on the property that included drilling, mapping, sampling, LiDAR topographic mapping and airborne geophysics. Results of the 2017 field work and geophysics survey are still pending but will aid in future exploration of the property. The 2017 drilling was designed with the objectives of verifying historic drill results for use in estimating the new mineral resource reported here, step out drilling to extend zones of known mineralization and collect fresh drill core for use in metallurgical test work (currently in progress). All these objectives were met and locally exceeded with reporting of many very good drill results (see Section 10).

Issues impacting on the potential economic development of the Tom and Jason deposits include the remoteness of the location and a lack of infrastructure except for the airstrip and access road which will need upgrading. These infrastructure issues will be addressed in a Preliminary Economic Assessment report for the project anticipated to be published in the second quarter of 2018 (see Issuer news release dated 18 January 2018). Uncertainties associated with ongoing Native land claim negotiations with the Yukon government, and as such unresolved eventual title, remain a risk for future development of the project although this does not prevent the Issuer from carrying out exploration work on the properties and the Issuer reports good relations with local First Nations during the 2017 work program.

17.1 Mineral Resource Estimates

The Issuer commissioned CSA Global to prepare an independent estimate of Mineral Resources for the project compiled using technical data received up to a cut-off date of 31 December 2017. Table 28 is a summary of the Base Case Mineral Resources for the Tom and Jason deposits stated as at 10 January 2018 (see Section 14 for underlying parameters used, other details and additional tables).

Table 28: Base Case MRE (at NSR cut-off grade of C$65)

Category	Tonnes (Mt)	ZnEq %	Zn %	Pb %	Ag g/t	B lbs Zn	B lbs Pb	Moz Ag
Indicated	11.21	9.61	6.59	2.48	21.33	1.63	0.61	7.69
Inferred	39.47	10.00	5.84	3.14	38.15	5.08	2.73	48.41

18 Recommendations

The Tom and Jason properties are considered by CSA Global to be at an advanced stage of exploration. CSA Global concludes that the Macmillan Pass Project warrants additional expenditures. An exploration budget for the recommended 2018 work program of C$6,500,000 is proposed as detailed in Table 29. Note this budget only includes exploration work and does not include environmental monitoring and other non-exploration activities, such as metallurgical or mining studies.

The main components and objectives of this exploration program and budget are:

- Drilling a minimum of 10,000 m directed towards four goals:
  - Upgrade priority zones to Measured and Indicated resources
  - Step-out drilling to expand known zones
  - Drilling new exploration targets to discover new zinc-lead-silver deposits
  - Obtaining sufficient fresh drill core material for further metallurgical testing.
- Carry out exploration work (geological mapping, geochemistry, geophysics) to identify drill targets for new discoveries.

It is the opinion of the Authors that the property is of sufficient merit that the recommended exploration program and budget as outlined represents a worthwhile and sensible work program if carried out by qualified competent personnel. The Issuer and project manager may make adjustments to this program and budget as circumstances require. This budget does not include any expenditure on metallurgical or mining studies.

Table 29: Recommended 2018 exploration budget for Macmillan Pass Project

Expense category	C$
Drilling (10,000 m)	5,000,000
Planning, data compilation and reporting	150,000
Permitting	100,000
Mapping and geochemistry	500,000
Geophysics	200,000
Air support	200,000
Camp logistics and management	350,000
Total	**6,500,000**

CSA Global further recommends the adoption of an auditable SQL database for the on-going storage of the existing data and for the addition of new data for future programs. Digital assay certificates from the laboratory and logging data from site should be loaded directly into the database and standard verification rules applied to the data on a routine basis. Data entry procedures should be modified to include the collection of quality control data for the measurement of dry bulk density data in the field.

19 References

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Appendix 1: Listing of Claims

APPENDIX 1: MACMILLAN PASS PROJECT CLAIMS LIST

Appendix to “NI43-101 Technical Report on the Macmillan Pass Zinc-Lead-Silver Project, Yukon, Canada” by Dennis Arne, P.Geo. and Leon McGarry, P.Geo.; effective date January 1, 2018

Grant No.	Claim Name	Claim No.	Claim Owner	Renewal Date	Lease
TOM (MINING LEASE) CLAIMS			100% owned by Fireweed Zinc; title in process of being transferred		
60495	TOM	1	Hudbay Minerals Inc. - 100%	2018-10-12	OL00001
60496	TOM	2	Hudbay Minerals Inc. - 100%	2018-10-12	OL00002
60497	TOM	3	Hudbay Minerals Inc. - 100%	2018-10-12	OL00003
60498	TOM	4	Hudbay Minerals Inc. - 100%	2018-10-12	OL00004
60499	TOM	5	Hudbay Minerals Inc. - 100%	2018-10-12	OL00005
60500	TOM	6	Hudbay Minerals Inc. - 100%	2018-10-12	OL00006
60501	TOM	7	Hudbay Minerals Inc. - 100%	2018-10-12	OL00007
60502	TOM	8	Hudbay Minerals Inc. - 100%	2018-10-12	OL00008
60503	TOM	9	Hudbay Minerals Inc. - 100%	2018-10-12	OL00009
60504	TOM	10	Hudbay Minerals Inc. - 100%	2018-10-12	OL00010
60505	TOM	11	Hudbay Minerals Inc. - 100%	2018-10-12	OL00011
60506	TOM	12	Hudbay Minerals Inc. - 100%	2018-10-12	OL00012
60507	TOM	13	Hudbay Minerals Inc. - 100%	2018-10-12	OL00013
60508	TOM	14	Hudbay Minerals Inc. - 100%	2018-10-12	OL00014
60509	TOM	15	Hudbay Minerals Inc. - 100%	2018-10-12	OL00015
60510	TOM	16	Hudbay Minerals Inc. - 100%	2018-10-12	OL00016
60511	TOM	18	Hudbay Minerals Inc. - 100%	2018-10-12	OL00017
60512	TOM	20	Hudbay Minerals Inc. - 100%	2018-10-12	OL00018
60513	TOM	21	Hudbay Minerals Inc. - 100%	2018-10-12	OL00019
60514	TOM	22	Hudbay Minerals Inc. - 100%	2018-10-12	OL00020
60515	TOM	23	Hudbay Minerals Inc. - 100%	2018-10-12	OL00021
60516	TOM	36	Hudbay Minerals Inc. - 100%	2018-10-12	OL00022
60517	TOM	38	Hudbay Minerals Inc. - 100%	2018-10-12	OL00023
60518	TOM	40	Hudbay Minerals Inc. - 100%	2018-10-12	OL00024
60519	TOM	19	Hudbay Minerals Inc. - 100%	2018-10-12	OL00025
60520	TOM	24	Hudbay Minerals Inc. - 100%	2018-10-12	OL00026
60521	TOM	39	Hudbay Minerals Inc. - 100%	2018-10-12	OL00027
60522	TOM	41	Hudbay Minerals Inc. - 100%	2018-10-12	OL00028
60523	TOM	43	Hudbay Minerals Inc. - 100%	2018-10-12	OL00029
60524	TOM	45	Hudbay Minerals Inc. - 100%	2018-10-12	OL00030
60525	TOM	47	Hudbay Minerals Inc. - 100%	2018-10-12	OL00031
60526	TOM	49	Hudbay Minerals Inc. - 100%	2018-10-12	OL00032
60527	TOM	17	Hudbay Minerals Inc. - 100%	2018-10-12	OL00033
60528	TOM	25	Hudbay Minerals Inc. - 100%	2018-10-12	OL00034
60529	TOM	34	Hudbay Minerals Inc. - 100%	2018-10-12	OL00035
60530	TOM	42	Hudbay Minerals Inc. - 100%	2018-10-12	OL00036
60531	TOM	44	Hudbay Minerals Inc. - 100%	2018-10-12	OL00037
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60534	TOM	50	Hudbay Minerals Inc. - 100%	2018-10-12	OL00040

60535	TOM	26	Hudbay Minerals Inc. - 100%	2018-10-12	OL00041
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60537	TOM	27	Hudbay Minerals Inc. - 100%	2018-10-12	OL00043
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63539	TOM	71	Hudbay Minerals Inc. - 100%	2018-10-12	OL00071
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63583	TOM	117	Hudbay Minerals Inc. - 100%	2018-10-12	OL00115
66850	TOM	118	Hudbay Minerals Inc. - 100%	2018-10-12	OL00116
66851	TOM	119	Hudbay Minerals Inc. - 100%	2018-10-12	OL00117
66852	TOM	125	Hudbay Minerals Inc. - 100%	2018-10-12	OL00118
66853	TOM	126	Hudbay Minerals Inc. - 100%	2018-10-12	OL00119
66854	TOM	129	Hudbay Minerals Inc. - 100%	2018-10-12	OL00120
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66856	TOM	131	Hudbay Minerals Inc. - 100%	2018-10-12	OL00122
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66859	TOM	121	Hudbay Minerals Inc. - 100%	2018-10-12	OL00125
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66862	TOM	128	Hudbay Minerals Inc. - 100%	2018-10-12	OL00128
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66865	TOM	141	Hudbay Minerals Inc. - 100%	2018-10-12	OL00131
66866	TOM	122	Hudbay Minerals Inc. - 100%	2018-10-12	OL00132
66867	TOM	123	Hudbay Minerals Inc. - 100%	2018-10-12	OL00133
66868	TOM	135	Hudbay Minerals Inc. - 100%	2018-10-12	OL00134

66869	TOM	136	Hudbay Minerals Inc. - 100%	2018-10-12	OL00135
66870	TOM	137	Hudbay Minerals Inc. - 100%	2018-10-12	OL00136
66871	TOM	138	Hudbay Minerals Inc. - 100%	2018-10-12	OL00137
66872	TOM	139	Hudbay Minerals Inc. - 100%	2018-10-12	OL00138
66873	TOM	140	Hudbay Minerals Inc. - 100%	2018-10-12	OL00139
67415	TOM	142	Hudbay Minerals Inc. - 100%	2018-10-12	OL00140
67416	TOM	143	Hudbay Minerals Inc. - 100%	2018-10-12	OL00141
67417	TOM	144	Hudbay Minerals Inc. - 100%	2018-10-12	OL00142
67418	TOM	145	Hudbay Minerals Inc. - 100%	2018-10-12	OL00143
67419	TOM	146	Hudbay Minerals Inc. - 100%	2018-10-12	OL00144

TOM SURFACE RIGHTS	100% owned by Fireweed Zinc; title in process of being transferred	
105O01-003	Hudbay Minerals Inc. - 100%	28-Feb-22

JASON (QUARTZ) CLAIMS 100% owned by Fireweed Zinc Ltd. but title in process of being transferred

Y 83274	JASON	33	Hudbay Minerals Inc. - 100%	2022-12-31
Y 83275	JASON	34	Hudbay Minerals Inc. - 100%	2022-12-31
Y 83276	JASON	41	Hudbay Minerals Inc. - 100%	2022-12-31
Y 83277	JASON	42	Hudbay Minerals Inc. - 100%	2022-12-31
Y 83278	JASON	43	Hudbay Minerals Inc. - 100%	2022-12-31
Y 83279	JASON	44	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84507	JASON	85	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84508	JASON	86	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84509	JASON	87	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84510	JASON	88	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84511	JASON	89	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84512	JASON	90	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84513	JASON	91	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84514	JASON	92	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84515	JASON	115	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84516	JASON	116	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84517	JASON	123	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84518	JASON	124	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84519	JASON	131	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84520	JASON	132	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84521	JASON	133	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84522	JASON	134	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84525	JASON	137	Hudbay Minerals Inc. - 100%	2022-12-31
Y 84530	JASON	84	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93952	JASON	161	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93953	JASON	162	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93954	JASON	163	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93955	JASON	164	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93956	JASON	165	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93957	JASON	166	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93958	JASON	167	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93959	JASON	168	Hudbay Minerals Inc. - 100%	2022-12-31

Y 93960	JASON	169	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93961	JASON	170	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93962	JASON	171	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93963	JASON	172	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93964	JASON	173	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93965	JASON	174	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93966	JASON	175	Hudbay Minerals Inc. - 100%	2022-12-31
Y 93967	JASON	176	Hudbay Minerals Inc. - 100%	2022-12-31
Y 94471	JASON	135	Hudbay Minerals Inc. - 100%	2022-12-31
Y 96192	Jason	1	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96193	Jason	2	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96194	Jason	3	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96195	Jason	4	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96198	Jason	7	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96199	Jason	8	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96200	Jason	9	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96201	Jason	10	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96202	Jason	11	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96203	Jason	12	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96204	Jason	13	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96205	Jason	14	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96206	Jason	15	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96207	Jason	16	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96208	Jason	17	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96209	Jason	18	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96210	JASON	19	Hudbay Minerals Inc. - 100%	2022-12-31
Y 96211	JASON	20	Hudbay Minerals Inc. - 100%	2022-12-31
Y 96212	Jason	21	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96213	Jason	22	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96214	Jason	23	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96215	Jason	24	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96216	Jason	25	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96217	Jason	26	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96218	Jason	27	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96219	Jason	28	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96220	Jason	29	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96221	Jason	30	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96222	JASON	31	Hudbay Minerals Inc. - 100%	2022-12-31
Y 96223	JASON	32	Hudbay Minerals Inc. - 100%	2022-12-31
Y 96224	Jason	35	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96225	Jason	36	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96226	Jason	37	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96227	Jason	38	Hud Bay Minerals Inc - 100%	2022-12-31
Y 96228	JASON	39	Hudbay Minerals Inc. - 100%	2022-12-31
Y 96229	JASON	40	Hudbay Minerals Inc. - 100%	2022-12-31
Y 97986	Jason	45	Hud Bay Minerals Inc - 100%	2022-12-31
Y 97987	Jason	46	Hud Bay Minerals Inc - 100%	2022-12-31

Y 97988	Jason	47	Hud Bay Minerals Inc - 100%	2022-12-31
Y 97989	Jason	48	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98244	Jason	49	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98245	Jason	50	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98246	Jason	51	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98247	Jason	52	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98248	Jason	53	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98249	Jason	54	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98250	Jason	55	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98251	Jason	56	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98252	Jason	57	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98253	Jason	58	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98254	Jason	59	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98255	Jason	60	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98256	Jason	61	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98257	Jason	62	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98258	Jason	63	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98259	Jason	64	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98260	Jason	65	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98261	Jason	66	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98262	Jason	67	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98263	Jason	68	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98264	Jason	69	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98265	Jason	70	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98266	Jason	71	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98267	Jason	72	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98268	Jason	73	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98269	Jason	74	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98270	Jason	75	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98271	Jason	76	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98272	Jason	77	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98273	Jason	78	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98274	Jason	79	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98275	Jason	80	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98276	Jason	81	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98277	Jason	82	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98278	Jason	93	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98279	Jason	94	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98280	Jason	95	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98281	Jason	96	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98282	Jason	97	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98283	Jason	98	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98284	Jason	99	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98285	Jason	100	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98286	Jason	101	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98287	Jason	102	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98288	Jason	103	Hud Bay Minerals Inc - 100%	2022-12-31

Y 98289	Jason	104	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98290	Jason	105	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98291	Jason	106	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98292	Jason	107	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98293	Jason	108	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98294	Jason	109	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98295	Jason	110	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98296	Jason	111	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98297	Jason	112	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98298	Jason	113	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98299	Jason	114	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98300	Jason	117	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98301	Jason	118	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98302	Jason	119	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98303	Jason	120	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98304	Jason	121	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98305	Jason	122	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98306	Jason	125	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98307	Jason	126	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98308	Jason	127	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98309	Jason	128	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98310	Jason	129	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98311	Jason	130	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98312	Jason	141	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98313	Jason	142	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98314	Jason	143	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98315	Jason	144	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98316	Jason	145	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98317	Jason	146	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98318	Jason	147	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98319	Jason	148	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98320	Jason	149	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98321	Jason	150	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98322	Jason	151	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98323	Jason	152	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98324	Jason	153	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98325	Jason	154	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98326	Jason	155	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98327	Jason	156	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98328	Jason	157	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98329	Jason	158	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98330	Jason	159	Hud Bay Minerals Inc - 100%	2022-12-31
Y 98331	Jason	160	Hud Bay Minerals Inc - 100%	2022-12-31
YA00024	MIKE	1	Hudbay Minerals Inc. - 100%	2022-12-31
YA00025	MIKE	2	Hudbay Minerals Inc. - 100%	2022-12-31
YA00805	MIKE	3	Hudbay Minerals Inc. - 100%	2022-12-31
YA07470	Ace	1	Hud Bay Minerals Inc - 100%	2022-12-31

YA07471	Ace	2	Hud Bay Minerals Inc - 100%	2022-12-31
YA07472	Ace	3	Hud Bay Minerals Inc - 100%	2022-12-31
YA07473	Ace	4	Hud Bay Minerals Inc - 100%	2022-12-31
YA07474	Ace	5	Hud Bay Minerals Inc - 100%	2022-12-31
YA07475	Ace	6	Hud Bay Minerals Inc - 100%	2022-12-31
YA07476	Ace	7	Hud Bay Minerals Inc - 100%	2022-12-31
YA07477	Ace	8	Hud Bay Minerals Inc - 100%	2022-12-31
YA07478	Ace	9	Hud Bay Minerals Inc - 100%	2022-12-31
YA07479	Ace	10	Hud Bay Minerals Inc - 100%	2022-12-31
YA07480	Ace	11	Hud Bay Minerals Inc - 100%	2022-12-31
YA07481	Ace	12	Hud Bay Minerals Inc - 100%	2022-12-31
YA07482	Ace	13	Hud Bay Minerals Inc - 100%	2022-12-31
YA07483	Ace	14	Hud Bay Minerals Inc - 100%	2022-12-31
YA07484	Ace	15	Hud Bay Minerals Inc - 100%	2022-12-31
YA07485	Ace	16	Hud Bay Minerals Inc - 100%	2022-12-31
YA07486	Ace	17	Hud Bay Minerals Inc - 100%	2022-12-31
YA07487	Ace	22	Hud Bay Minerals Inc - 100%	2022-12-31
YA07488	Ace	23	Hud Bay Minerals Inc - 100%	2022-12-31
YA07489	Ace	24	Hud Bay Minerals Inc - 100%	2022-12-31
YA07490	Ace	31	Hud Bay Minerals Inc - 100%	2022-12-31
YA07491	Ace	32	Hud Bay Minerals Inc - 100%	2022-12-31
YA07492	Ace	36	Hud Bay Minerals Inc - 100%	2022-12-31
YA07493	Ace	37	Hud Bay Minerals Inc - 100%	2022-12-31
YA07494	Ace	38	Hud Bay Minerals Inc - 100%	2022-12-31
YA11526	ACE	18	Hudbay Minerals Inc. - 100%	2022-12-31
YA11527	ACE	19	Hudbay Minerals Inc. - 100%	2022-12-31
YA11528	ACE	20	Hudbay Minerals Inc. - 100%	2022-12-31
YA11529	ACE	21	Hudbay Minerals Inc. - 100%	2022-12-31
YA11530	ACE	25	Hudbay Minerals Inc. - 100%	2022-12-31
YA11531	ACE	26	Hudbay Minerals Inc. - 100%	2022-12-31
YA11532	ACE	27	Hudbay Minerals Inc. - 100%	2022-12-31
YA11533	ACE	28	Hudbay Minerals Inc. - 100%	2022-12-31
YA11534	ACE	29	Hudbay Minerals Inc. - 100%	2022-12-31
YA11535	ACE	30	Hudbay Minerals Inc. - 100%	2022-12-31
YA11536	ACE	33	Hudbay Minerals Inc. - 100%	2022-12-31
YA11537	ACE	34	Hudbay Minerals Inc. - 100%	2022-12-31
YA11538	ACE	35	Hudbay Minerals Inc. - 100%	2022-12-31
YA11539	ACE	39	Hudbay Minerals Inc. - 100%	2022-12-31
YA11540	ACE	40	Hudbay Minerals Inc. - 100%	2022-12-31
YA11541	MIKE	4	Hudbay Minerals Inc. - 100%	2022-12-31
YA11542	MIKE	5	Hudbay Minerals Inc. - 100%	2022-12-31
YA11543	MIKE	6	Hudbay Minerals Inc. - 100%	2022-12-31
YA11544	MIKE	7	Hudbay Minerals Inc. - 100%	2022-12-31
YA11545	MIKE	8	Hudbay Minerals Inc. - 100%	2022-12-31
YA11546	MIKE	9	Hudbay Minerals Inc. - 100%	2022-12-31
YA11547	MIKE	10	Hudbay Minerals Inc. - 100%	2022-12-31
YA15148	Jason	189	Hud Bay Minerals Inc - 100%	2022-12-31

YA15149	Jason	190	Hud Bay Minerals Inc - 100%	2022-12-31
YA15150	Jason	191	Hud Bay Minerals Inc - 100%	2022-12-31
YA20135	JASON	177	Hudbay Minerals Inc. - 100%	2022-12-31
YA20136	JASON	178	Hudbay Minerals Inc. - 100%	2022-12-31
YA20137	JASON	179	Hudbay Minerals Inc. - 100%	2022-12-31
YA20138	JASON	180	Hudbay Minerals Inc. - 100%	2022-12-31
YA20139	JASON	181	Hudbay Minerals Inc. - 100%	2022-12-31
YA20140	JASON	182	Hudbay Minerals Inc. - 100%	2022-12-31
YA20141	JASON	183	Hudbay Minerals Inc. - 100%	2022-12-31
YA20142	JASON	184	Hudbay Minerals Inc. - 100%	2022-12-31
YA20143	JASON	185	Hudbay Minerals Inc. - 100%	2022-12-31
YA20144	JASON	186	Hudbay Minerals Inc. - 100%	2022-12-31
YA20145	JASON	187	Hudbay Minerals Inc. - 100%	2022-12-31
YA20146	JASON	188	Hudbay Minerals Inc. - 100%	2022-12-31
YA35586	JASON	192	Hudbay Minerals Inc. - 100%	2022-12-31
YA35587	JASON	193	Hudbay Minerals Inc. - 100%	2022-12-31
YA35588	JASON	194	Hudbay Minerals Inc. - 100%	2022-12-31
YA35589	JASON	195	Hudbay Minerals Inc. - 100%	2022-12-31
YA35590	JASON	196	Hudbay Minerals Inc. - 100%	2022-12-31
YA35591	JASON	197	Hudbay Minerals Inc. - 100%	2022-12-31
YA38265	Jason	198	Hud Bay Minerals Inc - 100%	2022-12-31
YA38266	Jason	199	Hud Bay Minerals Inc - 100%	2022-12-31
YA38267	Jason	200	Hud Bay Minerals Inc - 100%	2022-12-31
YA38268	Jason	201	Hud Bay Minerals Inc - 100%	2022-12-31
YA38269	Jason	202	Hud Bay Minerals Inc - 100%	2022-12-31
YA38270	Jason	203	Hud Bay Minerals Inc - 100%	2022-12-31
YA38271	Jason	204	Hud Bay Minerals Inc - 100%	2022-12-31
YA38272	Jason	205	Hud Bay Minerals Inc - 100%	2022-12-31
YA38273	Jason	206	Hud Bay Minerals Inc - 100%	2022-12-31
YA38274	Jason	207	Hud Bay Minerals Inc - 100%	2022-12-31
YA38275	Jason	208	Hud Bay Minerals Inc - 100%	2022-12-31
YA38276	Jason	209	Hud Bay Minerals Inc - 100%	2022-12-31
YA38277	Jason	210	Hud Bay Minerals Inc - 100%	2022-12-31
YA38278	Jason	211	Hud Bay Minerals Inc - 100%	2022-12-31
YA38279	Jason	212	Hud Bay Minerals Inc - 100%	2022-12-31
YA38280	Jason	213	Hud Bay Minerals Inc - 100%	2022-12-31
YA38281	Jason	214	Hud Bay Minerals Inc - 100%	2022-12-31
YA38282	Jason	215	Hud Bay Minerals Inc - 100%	2022-12-31
YA38283	Jason	216	Hud Bay Minerals Inc - 100%	2022-12-31
YA38284	Jason	217	Hud Bay Minerals Inc - 100%	2022-12-31
YA38285	Jason	218	Hud Bay Minerals Inc - 100%	2022-12-31
YA38286	Jason	219	Hud Bay Minerals Inc - 100%	2022-12-31
YA38287	Jason	220	Hud Bay Minerals Inc - 100%	2022-12-31
YA38288	Jason	221	Hud Bay Minerals Inc - 100%	2022-12-31
YA38289	Jason	222	Hud Bay Minerals Inc - 100%	2022-12-31
YA41288	Jason	223	Hud Bay Minerals Inc - 100%	2022-12-31
YA41289	Jason	224	Hud Bay Minerals Inc - 100%	2022-12-31

YA41290	Jason	225	Hud Bay Minerals Inc - 100%	2022-12-31
YA41291	Jason	226	Hud Bay Minerals Inc - 100%	2022-12-31
YA41292	Jason	227	Hud Bay Minerals Inc - 100%	2022-12-31
YA41293	Jason	228	Hud Bay Minerals Inc - 100%	2022-12-31
YA41294	Jason	229	Hud Bay Minerals Inc - 100%	2022-12-31
YA41295	Jason	230	Hud Bay Minerals Inc - 100%	2022-12-31
YA41296	Jason	231	Hud Bay Minerals Inc - 100%	2022-12-31
YA41297	Jason	232	Hud Bay Minerals Inc - 100%	2022-12-31
YA41298	Jason	233	Hud Bay Minerals Inc - 100%	2022-12-31
YA41299	Jason	234	Hud Bay Minerals Inc - 100%	2022-12-31
YA41300	Jason	235	Hud Bay Minerals Inc - 100%	2022-12-31
YA41301	Jason	236	Hud Bay Minerals Inc - 100%	2022-12-31
YA41302	Jason	237	Hud Bay Minerals Inc - 100%	2022-12-31
YA41303	Jason	238	Hud Bay Minerals Inc - 100%	2022-12-31
YA41304	Jason	239	Hud Bay Minerals Inc - 100%	2022-12-31
YA41305	Jason	240	Hud Bay Minerals Inc - 100%	2022-12-31

MAC (QUARTZ) CLAIMS Owned by Newmont Canada and under option to Fireweed Zinc

YD120158	Mac	1	Newmont Canada Holdings ULC - 100%	2022-12-31
YD120159	Mac	2	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151503	Mac	3	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151504	Mac	4	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151505	Mac	5	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151506	Mac	6	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151507	Mac	7	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151508	Mac	8	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151509	Mac	9	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151510	Mac	10	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151511	Mac	11	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151512	Mac	12	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151513	Mac	13	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151514	Mac	14	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151515	Mac	15	Newmont Canada Holdings ULC - 100%	2022-12-31
YD151516	Mac	16	Newmont Canada Holdings ULC - 100%	2022-12-31
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YD128101	Mac 762a		Newmont Canada Holdings ULC - 100%	2022-12-31

Appendix 2: Glossary of Technical Terms and Abbreviations

%	Percent
3D	Three-dimensional model or data
AAS	Atomic absorption spectrometry – an instrumental method of determining the concentration of an element in solution following an acid digestion
Abermin	Abermin Corporation
ACME	ACMELabs
Ag	Silver
AMD	Acid mine drainage
anticline	A fold in which the stratigraphically oldest rocks occur with the core
aqua regia	A molar ratio of one part nitric acid to three parts hydrochloric acid used to dissolve materials for assays or analyses
arsenopyrite	A metallic mineral containing arsenic, iron and sulphur
ASCII	Digital computer code containing text data
assay	The laboratory determination of elevated values of a particular element of economic interest
Au	Gold
azimuth	Compass direction (from north)
B	Billion
Ba	Barium
barite	A mineral composed of barium and sulphur; the main source of barium
BLEG	Bulk leach extractable gold
Bulk density	A measure of the weight of a material divided by its volume
BV	Bureau Veritas
carbonaceous	Containing a significant amount of carbon
Carlin-style	A style of epigenetic gold deposit found along the Carlin Trend, Nevada
CCME	Canadian Council of Ministers for the Environment
celsian	An uncommon barium feldspar
chalcopyrite	A metallic mineral consisting of copper and sulphur; the main source of copper
cm	centimetre
coefficient of variation (CV)	In statistics, the normalized variation value in a sample population
collar	The top of a drillhole or the entrance to a mine
compositing	In sampling and resource estimation, process designed to carry all samples to certain equal length
core sampling	In exploration, a sampling method of obtaining rock samples from a drillhole core for assay

CRM	Certified Reference Material which is rock sample or powder with precisely known amounts of elements such as Zn, Pb and Ag which is used as a blind control submitted to a laboratory with a rock sample submission to check on the precision of the resulting assays and analyses.
CSA Global	CSA Global Geosciences Canada Ltd
CSV	Digital computer file containing comma-separated text data
d	Diameter
debris flow	The mass movement of sediment, rock and water that such as during a landslide
DEM	Digital elevation model
diamictite	A sedimentary rock consisting of a chaotic collection of clasts within a finer-grained matrix; generally indicative of submarine landslides. Sometimes referred to as debris flow deposits.
digestion	The way a geochemical sample is dissolved for analysis
digital terrain model	Three-dimensional wireframe surface computer model, for example, topography (DTM)
EEC	Equity Exploration Consultants Ltd
exhalative	Material "exhaled" or ejected from a submarine hydrothermal vent, sometimes referred to as "black and white smokers"
fault	A break in rocks along which there has been movement, usually along a roughly planar surface
finish	The final analysis method during assaying or geochemical analysis
fold	The geometric tilting and bending of layered rocks during tectonic compression
FROM	Beginning of a drill interval
g	gram
Galena	A mineral composed of lead and sulphur; the main source of lead
GCOS	Global Change of Support
geochemical sampling	In exploration, the main method of sampling rocks, soils or other natural materials for determination the presence of metals or other elements.
geometallurgy	A system of domaining a mineral deposit based on its geochemical and mineralogical characteristics that have a bearing on mineral processing
GPS	Global Positioning System to determine a location based on a network of geostationary satellites
gravimetric	The determination of the amount of an element or compound based on its weight
growth fault	A normal fault along which movement occurs during the deposition of overlying sediments
GSC	Geological Survey of Canada, a federal government agency which conducts geological mapping, geochemical sampling and other campaigns to generate information for the benefit of the mining industry and academia.
ha	Hectare
histogram	Diagrammatic representation of data distribution by calculating frequency of occurrence
Hudbay	Hudbay Minerals Inc.
hydrothermal	A process of mineral deposit formation involving heated water.

ICP	Inductively-couple plasma – a device used to atomise compound in solution for chemical analysis following an acid digestion.
ICP-OES	Inductively couple plasma – optical emission spectroscopy
IDW	Inverse distance weighting
intrusive	An igneous rock that has been intruded into the Earth's crust
IP	Induced polarisation geophysical survey in which an electrical current is transmitted through the ground and the chargeability of metallic minerals is determined.
kg	Kilogram
km	Kilometre
lbs	Pounds
LLD	Lower limit of detection
lognormal	Relates to the distribution of a variable value, where the logarithm of this variable is a normal distribution
m	Metre
M	Million or mega (10^6)
macro	A set of MICROMINE commands written as a computer program for reading and handling data
mean	Arithmetic mean
median	Number occupying the middle position in a data set
ml	Millilitre
ml/l	Millilitre per litre
mm	Millimetre
MMI	Mobile metal ion; refers to a geochemical method that detects elements that appear to migrate vertically from buried mineral deposits or other metallic sources
monzonite	A coarse-grained intrusive igneous rock containing approximately equal amounts of orthoclase and plagioclase feldspar
MRE	Mineral Resource estimate
MS	Mass spectrometry – the separation of elements in chemical analysis based on mass and charge
Mt	million tonnes
MVT	Mississippi Valley-type
Newmont	Newmont Canada Holdings LLC
NI 43-101	Canadian National Instrument 43-101, a federal regulation governing public disclosure by the mining industry
NSR	Net smelter return
ºC	Celsius degrees
OES	Optical emission spectroscopy - the emission of electromagnetic radiation from elements at a characteristic wavelength
OK	Ordinary kriging
overburden	All material above bedrock

Pb	Lead
percentile	In statistics, one one-hundredth of the data. It is generally used to break a database down into equal hundredths
population	In geostatistics, a population formed from grades having identical or similar geostatistical characteristics. Ideally, one given population is characterized by a linear distribution
ppm	Parts per million
pyrite	A sulphide mineral comprised of iron and sulphur with a characteristic chemical composition and structure
Pyrobitumen	A solid organic material similar in composition to bitumen
pyrrhotite	A sulphide mineral comprised of iron and sulphur
QAQC	Quality assurance/quality control
QMA	(Yukon) Quartz Mining Act
Revelation	Revelation Geoscience Ltd
RL	Elevation of the collar of a drillhole, a trench or a pit bench above a designated datum
RPA	Roscoe Postle Associates
RQD	Rock quality designation
RSD	Relative standard deviation
sample	A piece of material such as a rock or soil collected for chemical analysis
scatter plot	Diagrammatic representation of measurement pairs about an orthogonal axis
SCC	Standards Council of Canada
SEDEX deposits	Sedimentary exhalative zinc-lead-silver deposits also known as Clastic Dominated (CD) zinc-lead-silver deposits
SG	Specific Gravity
silicification	A style of hydrothermal alteration in which silica is added and hardens a rock
SMU	Selective mining unit
sphalerite	A mineral composed of zinc, (iron) and sulphur; the main source of zinc
standard deviation	Statistical value of data dispersion around the mean value
stratigraphy	Refers to the order in which sedimentary and volcanic rocks have been deposited
t	Tonne
t/m^3	Tonne per cubic metre
tetrahedrite	A sulfosalt mineral containing copper, antimony, iron and sulphur
TO	End of a drill interval
TSX-V	TSX-Venture Stock Exchange based in Toronto
turbidites	Sedimentary rocks deposited from submarine landslides as the sediment settles out of the water column
variance	In statistics, the measure of dispersion around the mean value of a dataset
volcanic	An igneous rock that has been erupted onto the Earth's surface
VTEM	Versatile time domain electromagnetic
wireframe model	3D surface defined by triangles

X	Coordinate of the longitude of a drillhole, a trench collar, a pit bench or other item
XRF	X-ray fluorescence; an analytical method
Y	Coordinate of the latitude of a drillhole, a trench collar, a pit bench or other item
YESAA	Yukon Environmental and Socio-Economic Assessment Act
yr	Year
Zn	Zinc
ZnEq	Zinc equivalent

Australia • Canada • Indonesia • Russia
Singapore • South Africa • United Kingdom

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