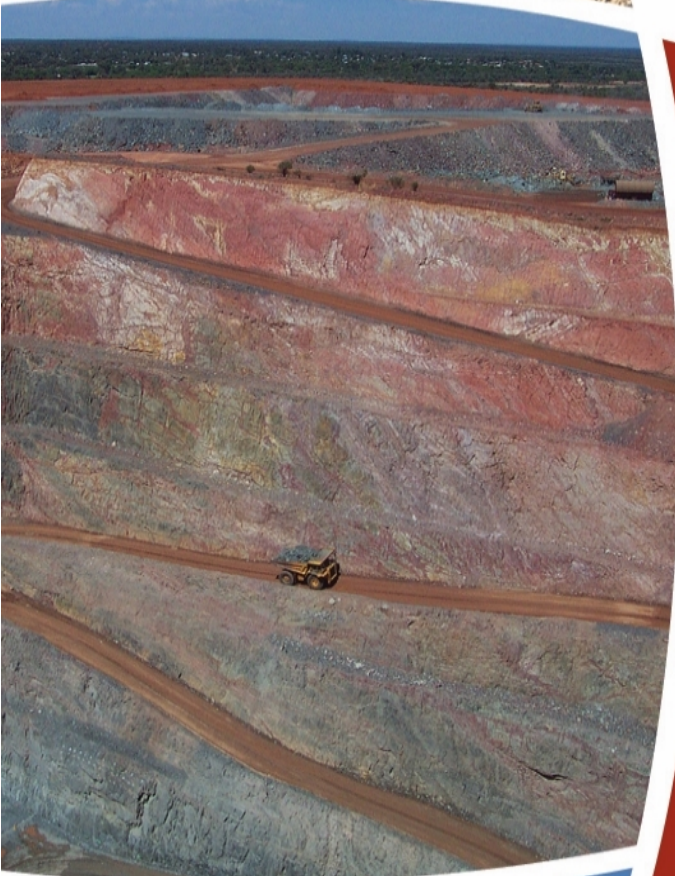




CSA Global
Mining Industry Consultants



NI 43-101 TECHNICAL REPORT

Kudz Ze Kayah Property Yukon Territory, Canada

**CSA Global Report N° R103.2017
Effective Date: 31 May 2017**

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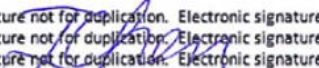

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Certificates


Certificate of Qualified Person – Karl van Olden

As a Qualified Person of this Technical Report covering the Property named as the Prefeasibility Study Technical Report for the Kudz Ze Kayah Project Yukon Territory, Canada, of BMC Minerals (No. 1) Limited, I, Karl van Olden do hereby certify that:

- 1) I am a Principal Mining Engineer with CSA Global Pty Ltd at its head office at Level 2, 3 Ord Street, West Perth, WA 6005, Australia.
- 2) I am a professional mining engineer having graduated with a BSc (Eng) Mining from the University of the Witwatersrand, Johannesburg (1993), a Graduate Diploma in Engineering (Mineral Economics) (1995) and a Masters in Business Administration, Latrobe University (2005).
- 3) I am a Fellow of the Australasian Institute of Mining and Metallurgy.
- 4) I have practised my profession as a Mining Engineer for the past 24 years in the mineral resources sector and engaged in the assessment, development and operation of numerous mineral projects both within Australia and overseas.
- 5) I have read the definition of “Qualified Person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a “Qualified Person” for the purposes of NI 43-101.
- 6) I am responsible for coordinating the Technical Report from contributions of identified authors and for Sections 1 to 6, 15, 16, 18 (except 18.2, 18.3, 18.7, 18.10), 19 and 21 to 26.
- 7) I personally visited the property that is the subject of the Technical Report from 15 to 18 August 2016.
- 8) I am independent of the issuer as described in Section 1.5 of NI 43-101.
- 9) I have had no prior involvement with the properties that are the subject of the Report.
- 10) I have read NI 43-101, and the Technical Reports has been prepared in compliance with NI 43-101.
- 11) As of the date of this certificate, the Technical Report, to the best of my knowledge, information, and belief, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed Date: 31 May 2017

Effective Date: 31 May 2017



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Karl van Olden, BSc (Eng), GDE, MBA, FAusIMM.
Manager Mining and Principal Mining Engineer
CSA Global Pty Ltd.

Certificate of Qualified Person – Aaron Green

As a Qualified Person of this Technical Report covering the Property named as the Kudz-Ze-Kayah Project, Yukon Territory, Canada, of BMC Minerals (No. 1) Limited, I, Aaron Green do hereby certify that:

- 1) I am a Principal Resource Geologist with CSA Global Pty Ltd at its head office at Level 2, 3 Ord Street, West Perth, WA 6005, Australia.
- 2) I am a professional geologist having graduated with a BSc (Hons) in Geology from La Trobe University, Melbourne (1993) and a Graduate Diploma in Applied Finance and Investment (2003).
- 3) I am a Member of the Australian Institute of Geoscientists.
- 4) I have practised my profession as a geologist for the past 22 years in the mineral resources sector and engaged in the assessment, development and operation of mineral projects both within Australia and overseas.
- 5) I have read the definition of “Qualified Person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a “Qualified Person” for the purposes of NI 43-101.
- 6) I am responsible for Sections 7 to 12 and 14 of this Technical Report.
- 7) I personally visited the property that is the subject of the Technical Report from 11 to 13 October 2015.
- 8) I am independent of the issuer as described in Section 1.5 of NI 43-101.
- 9) I have had no prior involvement with the properties that are the subject of the Report.
- 10) I have read NI 43-101, and the Technical Reports has been prepared in compliance with NI 43-101.
- 11) As of the date of this certificate, the Technical Report, to the best of my knowledge, information, and belief, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed Date: 31 May 2017.

Effective Date: 31 May 2017



Aaron Green BSc (Hons), MAIG, GradDipAppFin
Director and Principal Resource Geologist
CSA Global Pty Ltd

Certificate of Qualified Person – Eri Boye

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CERTIFICATE OF AMUTHOR

I, Eri Boye M.Sc., P.Geo (APEGBC), do hereby certify that:

1. I am currently employed as a Principal, Geoscientist with Core Geoscience Services Inc. (Coregeo) with an office at 11 Dolly Varden Dr., Whitehorse, Yukon, Canada, Y1A 6A1;
2. This certificate applies to the technical report titled "NI 43-101 Prefeasibility Study Technical Report for the Kudz Ze Kayah Project, Yukon Territory, Canada", with an effective date of May 31, 2017, (the "Technical Report") prepared for BMC Minerals (No.1) Ltd. ("the Issuer");
3. I am a Professional Geoscientist (#151660) registered with the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC).

Below is a short list of relevant professional projects completed within the applied geochemistry, mine site reclamation and permitting fields:

- Technical Contributor; Flame & Moth Geochemical Characterization Program; Alexco Resource Corp.; Keno City, Yukon; 2013 – 2015
- Scientific Co-leader; Tatchun Creek Bridge Riprap Geochemical Characterization and Water Licence Support; Yukon Government Highways and Public Works; Tatchun Creek Bridge, Carmacks, Yukon; 2014
- Project Lead and Technical Contributor; Brewery Creek Reactivation Project; Golden Predator Corp.; Dawson City, Yukon; 2014 – 2015
- Scientific Co-leader; Burwash Landing Rock Quarry (Riprap) Geochemical ARD/ML Characterization; Yukon Government Highways and Public Works; Burwash Landing, Yukon; 2014
- Project Co-Lead and Technical Principal Co-Author; Coffee Gold Project; Initial Geochemical Characterization Program; Kaminak Gold Corp; White Gold District, Yukon; 2013

4. I have read the definition of "Qualified Person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of NI 43-101;

5. I have not visited the Kudz Ze Kayah site;

6. I am responsible for Section 20.3 Metal Leaching and Acid Rock Drainage including; Section 20.3.1 Historical Geochemical Assessment of the Technical Report and Section 20.3.2 Current Metal Leaching and Acid Rock Drainage Program;

7. I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101;

8. I have had prior involvement with the property in the role of a project co-lead and 3rd party technical reviewer for the Conceptual Reclamation and Closure Plan (CRCP) for BMC (No. 1) Ltd. – Kudz Ze Kayah Property; Yukon, 2016;

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Whitehorse, Yukon, Canada Y1A 6A1
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9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1;

10. As of the effective date of the Technical Report and the date of this certificate, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible for contain all the scientific and technical information required to be disclosed to make the report not misleading.

Effective Date: May 31, 2017

Signing Date: May 31, 2017

Sincerely,



Eri Boye, M.Sc., P. Geo (APEGBC)
Principal, Geoscientist

Certificate of Qualified Person – Jeff Holm



CERTIFICATE OF AUTHOR

I, Jeff Holm, PEng, do hereby certify that:

1. I am currently employed as Senior Manager Infrastructure and Civil Engineer with Allnorth Consultants Limited with an office at #301 – 7 West St. Paul Street, Kamloops, BC V2C 1E9;
2. This certificate applies to the technical report titled "NI 43-101 Technical Report for the Kudz Ze Kayah, Yukon Territory, Canada", with an effective date of May 31, 2017, (the "Technical Report") prepared for BMC Minerals (NO.1) Ltd.. ("the Issuer");
3. I am a Professional Engineer (PEng), Registered with the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC), registration number 20304.

I am a graduate Bachelor of Applied Science (BASc), in civil engineering, from the University of British Columbia (UBC). I have 30 years of experience as a Civil Engineer. My engineering design experience includes land and resource development infrastructure concerning grading, drainage and roads as well as water and sewer works. In addition, I am experienced in overall project management and project support in discipline lead roles and discipline assistance with feasibility, conceptual and detail design projects.

4. I have read the definition of "Qualified Person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
5. I have not visited the Kudz Ze Kayah site;
6. I am responsible for Section numbers 18.7 and 18.10 of the Technical Report;
7. I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101;
8. I have not had prior involvement with the property that is the subject of the Technical Report;
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1;

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allnorth.com

Page 1





10. As of the effective date of the Technical Report and the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading;

Effective Date: May 31, 2017

Signing Date: May 30, 2017

Allnorth Consultants Limited



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ou=Kamloops,
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c=CA
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Jeff Holm, PEng, FEC
Senior Infrastructure Manager

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Page 2

Certificate of Qualified Person – John Fleay

CERTIFICATE OF AUTHOR

I, John Fleay, do hereby certify that:

- 1) I am currently employed as Manager of Metallurgy with Minnovo Pty Ltd with an office at Level 1, 632 Newcastle Street, Leederville WA 6007.
- 2) This certificate applies to the technical report titled “NI 43-101 Prefeasibility Study Technical Report for the Kudz Ze Kayah Project, Yukon Territory, Canada”, with an effective date of 31 March 2017, (the “Technical Report”) prepared for BMC Minerals (No. 1) Limited (“the Issuer”).
- 3) I am a Fellow of the Australasian Institute of Mining and Metallurgy (3208472). I have had over 20 years relevant experience in operational, engineering and management roles in the mineral industry.
- 4) I have read the definition of “Qualified Person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a “Qualified Person” for the purposes of NI 43-101.
- 5) I have not visited the Kudz Ze Kayah site.
- 6) I am responsible for Sections 13 and 17 of the Technical Report.
- 7) I am independent of the Issuer and related companies applying all the tests in Section 1.5 of the NI 43-101.
- 8) I have not had prior involvement with the property that is the subject of the Technical Report.
- 9) I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
- 10) As of the effective date of the Technical Report and the date of this certificate, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible for contain all scientific and technical information required to be disclosed to make the report not misleading.

As explanation of my Involvement on the Kudz Ze Kayah Project Prefeasibility Study:

- I was the Lead Process Engineer for Minnovo responsible for the process sections in the “Kudz Ze Kayah Prefeasibility Study, Dry Stacking Tailings Option”, 19 October 2016, produced by Allnorth and Minnovo for BMC.
- As part of this Prefeasibility Study, I reviewed historical testwork conducted prior to 2000 and recent testwork conducted and managed by BMC in 2016.
- The outcomes of this testwork formed the basis for the plant design, operating costs and recovery predictions, which are detailed in the above Allnorth/Minnovo report.
- Recommended further testwork and study work for the next Definitive Feasibility Study was provided as part of these services.
- This report was summarised and converted into a NI 43-101 format report by CSA Global on behalf of BMC. I reviewed Sections 1, 13, 17 and 26 to ensure they represented an accurate summary of the above Allnorth/Minnovo report.
- More detailed commentary and explanation of the testwork review, process plant design and recovery predictions are included in the above referenced Allnorth/Minnovo PFS report.

Effective Date: 31 May 2017

Signing Date: 31 May 2017

A handwritten signature in blue ink, appearing to be 'JF', written over a faint, larger version of the same signature.

John Fleay

CONSENT OF QUALIFIED PERSON

I, John Fleay, do hereby consent to the public filing of the technical report titled “NI 43-101 Prefeasibility Study Technical Report for the Kudz Ze Kayah Project, Yukon Territory, Canada” (the Technical Report) and dated 31 March 2017, to any extracts from or a summary of the Technical Report under the National Instrument 43-101 disclosure of BMC Minerals (No. 1) Limited, and to the filing of the Technical Report with any securities regulatory authorities.

I confirm that I have read the Technical Report and that it fairly and accurately represents the information in the Technical Report that I am responsible for.

Dated this 31st day of May 2017.

A handwritten signature in blue ink, appearing to be 'JF', written over a faint, larger version of the same signature.

JOHN FLEAY


Manager Metallurgy

Minново Pty Ltd

Certificate of Qualified Person – Les Galbraith

Knight Piésold
CONSULTING

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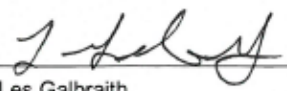

FS 84825
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CERTIFICATE OF AUTHOR

I, Les Galbraith, P.Eng., do hereby certify that:

1. I am currently employed as Specialist Engineer - Associate with Knight Piésold Ltd. with an office at 1400-750 West Pender St. Vancouver British Columbia.
2. This certificate applies to the technical report titled "NI 43-101 Prefeasibility Study Technical Report for the Kudz Ze Kayah Project, Yukon Territory, Canada", with an effective date of May 31, 2017, (the "Technical Report") prepared for BMC Minerals (No.1) Ltd. ("the Issuer");
3. I am a Professional Engineer registered with:
 - o The Association of Professional Engineers and Geoscientists BC
 - o Association of Professional Engineers Yukon, and
 - o Northwest Territories Association of Professional Engineers and Geoscientists.
4. I have a Bachelor of Applied Science degree in Civil Engineering from the University of British Columbia (1995). I have 21 years of experience in providing civil and geotechnical engineering support to mining projects. Experience includes site investigations, design of water dams, tailings embankments, and heap leach pads, cold regions engineering, seepage and stability modelling, foundation assessments, hydrology, and project management.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I have visited the Kudz Ze Kayah Project site (May 9 -12, 2016).
7. I am responsible for Sections 18.2 and 18.3 of the Technical Report.
8. I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the NI 43-101.
9. I have not had prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
11. As of the effective date of the Technical Report and the date of this certificate, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible for contain all scientific and technical information required to be disclosed to make the report not misleading.

Effective Date: May 31, 2017
Signing Date: May 31, 2017



Les Galbraith

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1 Summary

1.1 Introduction

BMC Minerals (No. 1) Limited (BMC) commissioned CSA Global Pty Ltd (CSA Global) to compile a Technical Report on the Kudz Ze Kayah Property (“KZK Project” or “KZK Property”) in the Yukon Territory, Canada. This report is to comply with disclosure and reporting requirements set forth in National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101), Companion Policy 43-101CP, and Form 43-101F1.

This Technical Report discloses material changes to the Property including:

- An updated Mineral Resource estimate (MRE) for the ABM polymetallic deposit
- A maiden Mineral Reserve estimate of the ABM polymetallic deposit
- Results of the KZK prefeasibility study (PFS).

1.2 Property Description and Location

The KZK Property (formerly known as the TAG Property) is located on the northern flank of the Pelly Mountain Range, 260 km northwest of Watson Lake and 115 km southeast of Ross River, Yukon. The project area lies approximately 23 km south of Finlayson Lake and 25 km west of the Wolverine Mine.

BMC has acquired a total of 1,301 Mineral Claims that make up the KZK Project. It is centred at 61°31’N latitude and 130°33’W longitude (416000E 6817000N, NAD83, UTM Zone 9) on NTS map sheets 105G/7–10, within the Watson Lake Mining District. BMC owns 100% of the Property.

The KZK Property lies within the traditional territory of the Kaska First Nation. Portions of the KZK Property are covered by a SEPA that includes all Kaska First Nations.

1.3 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Property is accessed by the gravel, all-weather Robert Campbell Highway which links the towns of Watson Lake and Carmacks and is one of the two major routes into the Yukon. A 24 km-long gated tote road extends from the highway to the ABM deposit. The GP4F deposit is located approximately 5 km southeast of the ABM deposit and is accessed via unsealed tracks from the main KZK Exploration Camp.

The ABM deposit is located at approximately 1,400 m elevation in a broad, gently sloping, U-shaped valley, covered by 2–30 m of glacial overburden. A north-flowing tributary to Finlayson Creek, Geona Creek, drains several small ponds which, in part, overlie the deposit. The GP4F deposit is located on a hillside 5 km to the southeast.

The weather in the area is typically sub-arctic, characterised by cold winter temperatures (–40°C to –50°C) and low snowfall. Summer is generally mild with temperatures averaging around 15°C to 20°C. Rainfall peaks during the summer months with July and August being the wettest months.

The KZK Property is remote and limited infrastructure services are available. The Robert Campbell Highway is 24 km to the north of the ABM deposit and is the major transport route between local centres. The Finlayson airstrip is located adjacent to the highway a short distance from the KZK Project tote road.

The closest grid power is at Faro, approximately 150 km to the northwest. The nearest year-round deep-water ports for concentrate shipment are 870 km by road to the southwest at Skagway (Alaska) and 911 km by road to the south at Stewart (British Columbia).

1.4 Project History

Cominco conducted a geochemical survey in 1977 across the Finlayson Lake area, however the survey was too wide-spaced to reveal evidence of any volcanogenic-hosted massive sulphide (VHMS) deposits. Cominco's interest in the area was reignited in 1992 when soil and silt geochemical sample results from a Cominco reconnaissance program confirmed and expanded upon an anomalous silt sample released in the Geological Survey of Canada's regional geochemistry silt survey for NTS map sheet 105G, Open File 1648 (Hornebrooke and Friske, 1988).

In 1993, a small follow-up program within the anomalous drainage resulted in the location of a well mineralised, layered sulphide cobble by A.B. Mawer. At the same time potential host rocks for the mineralised float were recognised. A reconnaissance transient electromagnetic (UTEM) geophysical survey was immediately implemented over the projected trace of the prospective units where they disappear beneath quaternary cover in the valley floor. This survey identified an electromagnetic (EM) feature representing a possible source for the mineralised float. The first TAG claims were subsequently staked and recorded on 20 August 1993 to cover the geophysical anomaly. A magnetic survey was also carried out during staking. Further magnetic, horizontal loop electromagnetic (HLEM) and soil surveys were completed later that fall and successfully defined a drill target.

The target was drilled in April 1994 with the first hole completed on 20 April intersecting 22.5 m of sulphide rock in two zones. Three additional holes were drilled in April; each intersecting mineralisation over significant widths. The weighted average grade of sulphides in the discovery hole was 0.5% Cu, 2.8% Pb, 10.0% Zn, 278 g/t Ag and 2.9 g/t Au. The sulphide body was named the ABM Zone by the exploration team in recognition of A.B. Mawer's contribution towards the discovery and a distinguished career with Cominco.

In 1995, an additional 133 drillholes totalling 16,178 m were completed at the ABM deposit and on regional targets. Additional exploration soil sampling, minor geological mapping and ground geophysical surveys were completed. Geotechnical investigations, detailed engineering/mine planning, bulk metallurgical sampling, environmental monitoring and archaeological studies were well underway or completed, as well as the construction of a 24 km all-weather tote road from the Robert Campbell Highway. A PFS was completed in July 1995.

The 1996 exploration program involved regional 1:20,000 scale geological mapping outside the immediate ABM deposit area, ground geophysical surveys and soil geochemistry over the northeast part of the TAG Property. Minor structural mapping and core logging was completed at the ABM deposit.

By the end of 1997, a total of 168 exploration drillholes and 15 metallurgical holes had been completed in the immediate ABM deposit area and another 20 drillholes were completed elsewhere on the property. Other deposit-related work has involved considerable ground and airborne geophysical surveys, detailed geological mapping in the vicinity of the deposit, regional and detailed exploration geochemistry and baseline environmental sampling. Additional geotechnical and metallurgical studies were also undertaken to what at the time was a feasibility study (FS) level.

In 1997, the Fault Creek Zone was discovered within a kilometre of the ABM deposit. It is a high-grade VHMS zone with a subtle geochemical and geophysical response.

Cominco's 1998 exploration program resulted in the delineation of a second deposit; GP4F, located approximately 5 km to the southeast of the ABM deposit.

In March 2000, Cominco announced an agreement in principal to sell the KZK Project including the ABM and GP4F deposits to Expatriate Resources Ltd (Expatriate). This agreement resulted in Expatriate controlling most of the favourable stratigraphy in the Finlayson Lake District. Expatriate amalgamated the ABM, GP4F and the neighbouring 60% owned Wolverine deposits into the "Finlayson Project". A positive

feasibility study was completed by Hatch Pty Ltd (Hatch) and additional drilling was completed by Expatriate on the Wolverine deposit.

In September 2001, Expatriate terminated the acquisition agreement with Teck Cominco (formed from the merger of Teck Resources and Cominco) for the KZK Project.

BMC acquired the KZK Project from Teck on 24 January 2015.

1.5 Geology and Mineralisation

The KZK Project lies within the Yukon-Tanana Terrane near the centre of the Finlayson Lake area. The Yukon-Tanana Terrane contains pre-Devonian continental basement and upper Palaeozoic volcano-stratigraphic sequences, the product of periodic continental arc and rift magmatism.

The ABM and GP4F deposits are VHMS deposits hosted by a thick sequence of Devonian-Mississippian felsic volcanic pyroclastic rocks comprising quartz and feldspar crystal tuffs, fine lapilli ash tuffs and ash tuffs with lesser rhyolite flows or sills – the Kudz Ze Kayah Formation.

The ABM deposit comprises a continuous zone of VHMS mineralisation within a thick felsic tuff and sill/flow complex. The ABM Zone mineralisation occurs under 2–20 m of glacial overburden and is up to ~30 m in true thickness, whereas the Krakatoa Zone occurs under ~30 m of overburden and is up to ~22 m in true thickness. The deposit extends for approximately 900 m in an east-west direction.

Sulphide mineralisation at ABM is dominated by pyrite, sphalerite, pyrrhotite, galena and chalcopyrite, with gangue minerals consisting of chlorite, magnetite, quartz, Fe-carbonate, sericite, cordierite, albite and barite.

The smaller southern part of the mineralisation, referred to as the Fault Creek Zone, has also been down-thrown by faulting (Fault Creek Fault). Immediately above the deposit are felsic pyroclastic rocks which are intensely deformed and altered to quartz-muscovite-carbonate schists containing fine pyrite and quartz veinlets.

Like the ABM deposit, the GP4F deposit is hosted by a thick sequence of Devonian-Mississippian felsic volcanic pyroclastic rocks (the Kudz Ze Kayah Formation) comprising quartz and feldspar crystal tuffs, fine lapilli ash tuffs and ash tuffs with lesser rhyolite flows or sills.

The GP4F mineralisation comprises thin lenses of semi-massive to massive sulphide hosted within a much larger, tabular body of disseminated mineralisation which is typically 5–10 m thick that dips to the north at 30° to 35°. The lens has a strike length of 300 m, extends greater than 500 m down dip, and remains open down dip and to the west. The alteration and mineralisation are texturally and mineralogically similar to the ABM deposit.

1.6 Exploration

Exploration at the Property has been undertaken by Cominco, between 1993 and 1998, and BMC in 2015 and 2016.

Exploration programs undertaken by Cominco included soil sampling, geological mapping, ground geophysical surveys, diamond core drilling (171 holes for 24,928 m), as well as evaluation programs including geotechnical investigations, engineering/mine planning, bulk metallurgical sampling, environmental monitoring, archaeological studies and a detailed PFS (1995).

Following project acquisition and prior to the beginning of the field season, BMC conducted extensive data validation, particularly focussed on the previously defined ABM and GP4F deposits.

Throughout 2015 and 2016, BMC conducted a multi-faceted exploration program at the ABM deposit and across the KZK Project including extensive diamond drilling, geophysical surveys, as well as relogging and

resampling of archived historical drill core. Drilling programs undertaken by BMC have comprised exploration, hydrogeological, metallurgical, resource confirmation/infill, and geotechnical drillholes (148 holes for 25,966 m in 2015 and 84 holes for 19,210 m in 2016).

1.7 Data Verification, Sampling Preparation, Analysis and Security

The Qualified Person has verified the data disclosed, which underpins the disclosure of the MRE contained in this Technical Report and is of the opinion that data collection and verification procedures adequately support the integrity of the database.

1.8 Mineral Resource Estimates

BMC commissioned CSA Global to undertake an independent, updated MRE for the ABM deposit based on historical datasets and more recent 2015 and 2016 drilling.

The ABM deposit MRE is reported in Table 1 (open pit) and Table 2 (underground).

Table 1: ABM deposit MRE – open pit (at NSR cut-off grade of C\$25)

| Zone | Category | Tonnes (Mt) | NSR (C\$/t) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) | Cu metal (kt) | Pb metal (kt) | Zn metal (kt) | Au (koz) | Ag (Moz) |
|----------|-----------|-------------|-------------|--------|--------|--------|----------|----------|---------------|---------------|---------------|----------|----------|
| ABM | Indicated | 14.6 | 358 | 1.0 | 1.6 | 6.1 | 1.3 | 132 | 140.9 | 229.1 | 886.6 | 614.0 | 62.1 |
| | Inferred | 0.3 | 334 | 1.5 | 1.5 | 4.5 | 1.1 | 115 | 4.7 | 4.9 | 14.4 | 10.9 | 1.2 |
| Krakatoa | Indicated | 3.5 | 443 | 0.6 | 3.2 | 7.2 | 1.8 | 213 | 21.4 | 113.2 | 255.5 | 204.0 | 24.3 |
| | Inferred | 0.1 | 347 | 0.6 | 2.3 | 6.3 | 1.3 | 142 | 0.1 | 2.1 | 5.9 | 3.8 | 0.4 |

Table 2: ABM deposit MRE – underground (at NSR cut-off grade of C\$95)

| Zone | Category | Tonnes (Mt) | NSR (C\$/t) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) | Cu metal (kt) | Pb metal (kt) | Zn metal (kt) | Au (koz) | Ag (Moz) |
|----------|-----------|-------------|-------------|--------|--------|--------|----------|----------|---------------|---------------|---------------|----------|----------|
| Krakatoa | Indicated | 0.2 | 397 | 1.0 | 2.0 | 6.1 | 1.7 | 170 | 1.7 | 3.5 | 10.5 | 9.2 | 0.9 |
| | Inferred | 0.4 | 447 | 0.8 | 1.6 | 9.5 | 1.2 | 165 | 3.2 | 6.3 | 37.5 | 14.9 | 2.1 |

Notes:

- The Mineral Resources in this disclosure were estimated by Aaron Green, MAIG.
- The effective date of this Mineral Resource is 31 May 2017.
- Numbers have been rounded to reflect the precision of an Indicated and Inferred MRE.
- The Mineral Resources were estimated using current CIM standards, definitions and guidelines.
- The optimal transition from open pit to underground for the Krakatoa Zone has not been considered when reporting the Mineral Resource. Key modifying factors in determining this transition have been factored into reporting of the Mineral Reserve as part of the PFS.

Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.

A total of 335 diamond drillholes define the ABM deposit for 55,782 m of drilling; 241 assayed drillholes intersect the interpreted mineralisation zones. The ABM Zone was sampled using diamond drillholes at nominal 50 m spacing on 25 m north-south oriented sections extending out to 100 m on the peripheries of the deposit. The Krakatoa Zone is sampled targeting pierce points of 25–60 m in the central portion of the deposit to 100 m on the peripheries.

ABM Zone holes were generally angled (–30° to –90°) towards grid south with dip angles set to optimally intersect the mineralised horizon. Approximately 20% of the holes have been drilled vertically. Krakatoa Zone holes were mostly drilled grid southwest and angled at –30° to –90° to avoid the bounding faults.

Only one hole was drilled vertically. The orientation of the ABM holes is broadly perpendicular to the mineralisation.

A number of geological features including the glacial overburden contact surface, top of fresh rock surface, interpreted faults, mafic and rhyolite intrusive units, carbonaceous mudstone and the Wind Lake Formation cover sequence were modelled for the ABM deposit using drillhole information to assist with resource estimation. Mineralisation wireframes were defined primarily by lithological logging of sulphide units and to a lesser extent by Cu, Pb, Zn, Au and Ag assays. Separate mineralisation wireframes were defined: 24 wireframes for the ABM Zone and 10 wireframes for the Krakatoa Zone.

Block models constrained by the interpreted mineralised envelopes and geological boundary surfaces were constructed. For the ABM and Krakatoa zones, a parent cell size of 10 m(E) by 10(m)N by 5 m(RL) was adopted with standard sub-celling to 5 m(E) by 5 m(N) by 2.5 m(RL). Sub-celling was used to maintain the resolution of the mineralised lenses whilst restricting the overall size of the models. Samples composited to 1.5 m (ABM Zone) and 1.0 m (Krakatoa Zone) length were used to interpolate Cu, Pb, Zn, Au, Ag, As, Ba, Bi, Hg, S, Sb and Se grades into the block models using ordinary kriging (OK) interpolation. Block grades were validated both visually and statistically. All modelling was completed using Surpac V6.6 software.

For the ABM deposit, fixed density values were assigned to the block models for each regolith and lithological unit. Fresh felsic rock was assigned a value of 2.76 t/m³, mafic intrusive rock was assigned a value of 2.80 t/m³, the mudstone and Wind Lake Formation was assigned a value of 2.74 t/m³, 2.68 t/m³ was adopted for the rhyolite intrusive (RHYi), and 2.00 t/m³ for overburden. For the mineralised zones, a tiered approach to the selection of a preferred bulk density value was adopted, and then the bulk density was interpolated into the block model using OK for the mineralised zones and inverse distance cubed (ID3) for the dilution skin. The average bulk densities determined for the ABM stockwork and massive sulphide mineralisation were 3.44 t/m³ and 4.19 t/m³ respectively, while the average bulk density values for the Krakatoa Zone were 3.86 t/m³ and 4.09 t/m³ respectively.

In-ground net smelter return (NSR) values were calculated using assumed metal prices, metallurgical recoveries, smelter terms (including payable factors, concentrate costs and refining charges) and government royalties. No penalties were included. Metal price assumptions were: US\$3.50/lb copper, US\$1.50/lb zinc, US\$1.05/lb lead, US\$1,300/oz gold and US\$20/oz silver, and an exchange rate of US\$0.75 = C\$1.00. Metal recovery assumptions 92% for copper, 90% for zinc, 70% for lead, 75% for gold (whereby 30% is recovered from copper concentrate, 30% is recovered from lead concentrate and 15% is recovered from zinc concentrate) and 85% for silver (40% from copper concentrate, 30% from lead concentrate and 15% from zinc concentrate). Based on these assumptions the formula for the NSR on each block was calculated as:

$$\text{NSR US\$/t} = (52.84 * \text{cu_cut}) + (9.56 * \text{pb_cut}) + (19.13 * \text{zn_cut}) + (24.41 * \text{au_cut}) + (0.41 * \text{ag_cut})$$

The US dollar NSR was converted to Canadian dollars using the formula:

$$\text{NSR C\$/t} = (\text{NSR US\$/t}) / 0.75$$

Based on the results of the Mineral Reserve estimate outlined in Section 15, potential open pit resources were reported above a cut-off NSR of C\$25/t and potential underground resources reported above C\$95/t.

To determine the reporting of ABM deposit Mineral Resources as either “open pit” or “underground”, a Whittle™ pit optimisation was undertaken. Parameters used for the optimisation included:

- Base case metal price assumptions were: US\$3.50/lb copper, US\$1.50/lb zinc, US\$1.05/lb lead, US\$1,300/oz gold and US\$20/oz silver
- An exchange rate of US\$0.75 = C\$1.00

- Mining recovery of 97%
- Minimum mining width of 25 m
- Overall slope angle of 50°
- Total processing costs (fresh) of C\$30.60/t
- Plant throughput of 2 million tonnes per annum (Mt/a).

For the ABM Zone, only material reporting inside the selected pit shell (Revenue Factor = 1.00) has been reported above the NSR cut-off of C\$25/t. For the Krakatoa Zone, mineralised material inside the pit shell has been reported above the NSR cut-off of C\$25/t, whilst the remainder has been designated as “underground” resource and reported above a cut-off NSR of C\$95/t.

The ABM Mineral Resource has been classified as Indicated and Inferred and is reported in accordance with the terms set out by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by the CIM council, as amended. The classification level is based upon an assessment of geological understanding of the deposit, geological and grade continuity, drillhole spacing, quality control results, search and interpolation parameters, and an analysis of available density information.

No Mineral Resource has been reported for the GP4F deposit.

1.9 Mineral Reserve Estimate

A maiden Mineral Reserve estimate was prepared for the ABM deposit following the completion of a PFS in 2017. This reserve estimate has been determined and reported in accordance with NI 43-101 “Standards of Disclosure for Mineral Projects” (the “Instrument”, June 2011) and the classifications adopted by the CIM Council in November 2014.

The Mineral Resource is stated inclusive of the Mineral Reserve.

All Mineral Reserves (Table 3) are classified as Probable Reserves, as no Measured Resources have been defined for the ABM deposit.

Table 3: ABM Mineral Reserve estimate

| Zone/Mine | Category | Ore (Mt) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) |
|----------------------------|-----------------|-------------|------------|------------|------------|------------|------------|
| ABM Zone Open Pit | Probable | 14.7 | 0.9 | 1.4 | 5.5 | 1.2 | 120 |
| Krakatoa Zone Open Pit | Probable | 0.9 | 0.4 | 3.1 | 6.1 | 1.8 | 222 |
| Subtotal – Open Pit | Probable | 15.5 | 0.9 | 1.5 | 5.5 | 1.2 | 126 |
| Krakatoa Underground | Probable | 2.1 | 0.5 | 2.4 | 5.6 | 1.3 | 156 |
| TOTAL – KZK PROJECT | Probable | 17.6 | 0.8 | 1.6 | 5.5 | 1.2 | 130 |

The Mineral Reserve estimate includes material extracted from the designed open pit and underground excavations that is sourced from Indicated Mineral Resources and has a block value greater than the designated NSR for the relevant type of mining. All open pit reserves are reported to a cut-off NSR value of C\$29.33/t, while underground reserves are reported to cut off NSR values of C\$117.05/t for cut and fill stoping and C\$98.63/t for longhole stoping. NSR values have been calculated from 2016 consensus metal prices of US\$2.87/lb copper, US\$1.00/lb zinc, US\$0.94/lb lead, US\$1,291/oz gold, US\$19.38/oz silver and an exchange rate of US\$0.80:C\$1.00.

Reporting and modelling of financial results was completed in May 2017 using current long-term consensus metal prices of US\$2.95/lb copper, US\$1.07/lb zinc, US\$0.94/lb lead, US\$1,292/oz gold, US\$19.31/oz silver and an exchange rate of US\$0.79:C\$1.00. The Mineral Reserve estimate was reviewed

under the revised metal price and exchange rate settings and no adjustments to the estimated Mineral Reserves were necessary.

The Mineral Reserve estimates take into consideration on-site operating costs, selling costs, geotechnical analysis, metallurgical recoveries, allowances for mining recovery and dilution and overall economic viability as detailed in this Technical Report.

1.10 Mining Methods

The ABM deposit will be mined by open pit mining and underground mining methods. Open pit mining of the ABM Zone will be staged into three separate phases to manage overall waste stripping requirements and the adjoining Krakatoa Zone will be mined as a single phase. Underground mining of the Krakatoa Zone, beneath the pit, will be predominantly via cut and fill mining methods.

Open pit mining is planned over a period of 10.25 years, including a 15-month pre-production period to provide construction materials and build ore stockpiles to maintain continuity of ore to the processing plant. A total of 15.5 Mt of ore will be mined by open pit mining methods. 275,000 tonnes of Inferred mineralisation will be mined from the pit, which has been treated as waste in the mine plan.

The underground mine is planned to commence at the end of year 2 of the mine plan when the ABM Zone pit has been advanced sufficiently to access the planned in pit portal locations. The underground mine is planned to finish prior to completion of open pit. A total of 2.1 Mt of ore will be mined by underground mining methods.

1.11 Recovery Methods

A large volume of metallurgical testwork was completed by Cominco in the 1990s and by BMC in 2016. The results of the testwork were used as the basis of the process plant design presented in the Technical Report and to develop relationships for concentrate grade and recovery to ore head grade.

Run of mine (ROM) ore, at a nominal rate of 2.0 Mt/a, will be crushed and ground with sequential flotation utilised to produce separate copper, lead and zinc concentrates with precious metal credits. Concentrates will be thickened, filtered and stockpiled on site prior to being loaded onto trucks for transport to third party smelters. The flotation tailings will be dewatered by thickening and filtration before the tailings are transported either for disposal at the Class A Waste Storage Facility or combined with cement to produce underground backfill paste.

Predicted average processing recoveries over the life of mine (LOM) are shown in Table 4. Average concentrate grades over the LOM are predicted to be 22.8% copper, 56.0% lead and 51.5% zinc for copper, lead and zinc concentrates respectively.

Table 4: Average LOM processing recoveries

| Concentrate | Copper (%) | Lead (%) | Zinc (%) | Gold (%) | Silver (%) |
|--------------------|-------------------|-----------------|-----------------|-----------------|-------------------|
| Copper | 81.5% | 6.5% | 3.4% | 41.9% | 42.6% |
| Lead | 1.2% | 58.7% | 1.3% | 18.4% | 25.1% |
| Zinc | 5.6% | 16.3% | 85.9% | 8.7% | 14.6% |

1.12 Project Infrastructure

Both onsite and offsite infrastructure will be required for the KZK Project. Key Items of infrastructure include:

- Open pit and underground mines.
- Processing facility and onsite laboratory.
- Paste backfill plant.

- ROM and low-grade stockpile facilities.
- Three waste storage facilities for tailings and waste rock. Waste rock will be placed in different storage facilities based on the assessed potential for generation of acidic drainage and metal leaching.
- Overburden and topsoil stockpiles that will be reclaimed during operations and on closure.
- Camp facilities.
- Water management infrastructure, including a pit rim pond for mine dewatering, collection ponds, water management ponds and surface water diversion ditches.
- General mine infrastructure including administration offices, explosives storage facilities, workshops, warehouses, fuel facilities and core storage area.

The existing tote road, linking the project to the Robert Campbell Highway, and the airstrip at Finlayson Lake will require upgrading.

Concentrate storage facilities will be constructed at the Stewart Port for storage of copper and zinc bulk concentrates. Storage capacity requirements have been estimated at 40,000 tonnes. Additional infrastructure for concentrate handling includes a truck tipper for unloading bulk copper and zinc concentrates and a rotating spreader for handling containerised lead concentrate.

1.13 Market Studies and Contracts

General concentrate terms and the associated penalties, based on current industry demands, have been used in the study. Direct marketing has not been completed and BMC has not entered into any contracts for the sale of concentrate.

The sales terms for copper, zinc and lead concentrates are reasonably standard in nature. Variability is introduced depending on concentrate quality but even then, some principles of concentrate sales such as deductibles for zinc content in zinc concentrates are universally adopted in contract terms.

1.14 Environmental Studies, Permitting, and Social or Community Impact

Baseline environmental and socio-economic studies for the Project were completed by Cominco in 1994 and 1995 to support their Initial Environmental Evaluation. These studies included evaluations of: climate and hydrology; surface water and groundwater quality; stream sediment quality; aquatic resources (fish, benthic invertebrate and zooplankton characterisation); vegetation and terrain mapping; wildlife; archaeological investigation; and socio-economic data collection. Additional monitoring and data collection were completed in the following 20 years to meet water licence requirements. BMC initiated a new baseline studies program in April 2015 and the program has been ongoing through 2016.

The Project is subject to an environmental and socio-economic assessment under the *Yukon Environmental and Socio-economic Assessment Act* (YESAA), administered by the Yukon Environmental and Socio-economic Assessment Board (YESAB). BMC submitted a Project Proposal to YESAB on 17 March 2017. The Project Proposal documents the potential environmental and socio-economic effects of the Project by evaluating baseline information, the proposed mine plan and by consulting widely with governments, First Nations, communities, stakeholders, experts and the public. It also outlines mitigation measures and management plans to be employed to minimise or eliminate possible negative effects resulting from the Project, while maximising or enhancing possible beneficial effects. At the time of report compilation, the Project Proposal was in the Adequacy Review stage of the assessment process.

Given the ore production capacity is greater than 1,500 tonnes per day, assessment of the Project will be at the Executive Committee level. Under the YESAA, the YESAB has an obligation to make a decision on the Project Proposal within 16 months of submission of documentation.

Once the adequacy review of the Project Proposal is completed by YESAB, BMC will submit an application for a Water License from the Yukon Water Board, a Quartz Mining Licence under the *Quartz Mining Land Use Regulation*, and other authorisations as required to advance construction and development of the Project.

BMC is building on its strong existing relationship with stakeholders and interested parties. BMC's consultation and engagement efforts commenced prior to purchase of the Project and subsequently have been maintained through consultation with stakeholders and interested parties during the preparation of the exploration permit application and initiation of the environmental and socio-economic baseline studies.

BMC has initiated consultation and engagement with government agencies, First Nations, various stakeholder groups, and interested parties to introduce the company and to engage and consult these parties regarding the proposed Project. This has consisted of numerous meetings with appropriate agencies and Ross River Dena Council leadership, several community meetings in Ross River, and two community meetings in each of the towns of Faro, Whitehorse and Watson Lake. BMC has also produced a quarterly newsletter to keep the local communities abreast of the Project's activities.

1.15 Capital and Operating Costs

Pre-production capital costs have been estimated to be C\$379 million (US\$298 million) and sustaining capital costs were C\$151 million (US\$119 million), as summarised in Table 5. Total capital over the LOM has been estimated to be C\$530 million (US\$417 million). The capital cost estimate is considered accurate to $\pm 20\%$ with a basis of Q3 2016. Cost escalation has not been applied after this date.

Table 5: LOM capital cost summary

| Capital cost summary | Pre-production (C\$M) | Sustaining (C\$M) | Total (C\$M) |
|---------------------------|-----------------------|-------------------|--------------|
| Open pit mining | \$50 | \$17 | \$67 |
| Underground mining | \$0 | \$36 | \$36 |
| Processing | \$132 | \$7 | \$139 |
| Infrastructure | \$119 | \$1 | \$120 |
| Owners and indirects | \$50 | \$0 | \$50 |
| Closure | \$0 | \$89 | \$89 |
| Subtotal | \$351 | \$150 | \$501 |
| Contingency | \$27 | \$1 | \$29 |
| TOTAL CAPITAL COST | \$379 | \$151 | \$530 |

The operating cost estimate is based on a combination of experience, reference projects, first principle calculations, budgetary quotes and factors as appropriate for a PFS. The total LOM costs are summarised in Table 6 and are considered accurate to $\pm 15\%$ with a base date of Q3 2016. The costs presented exclude pre-production mining costs that were capitalised.

Table 6: LOM operating cost summary

| Operating cost summary | LOM total (C\$M) | Unit cost (C\$/t processed) | LOM total (US\$M) | Unit cost (US\$/t processed) |
|-----------------------------|------------------|-----------------------------|-------------------|------------------------------|
| Open pit mining | \$545 | \$31.00 | \$431 | \$24.50 |
| Underground mining | \$187 | \$10.70 | \$148 | \$8.40 |
| Processing | \$389 | \$22.10 | \$307 | \$17.50 |
| Administration | \$168 | \$9.60 | \$133 | \$7.60 |
| Operating leases | \$42 | \$2.40 | \$33 | \$1.90 |
| Royalties | \$247 | \$14.10 | \$195 | \$11.10 |
| Total operating cost | \$1,578 | \$89.90 | \$1,247 | \$71.00 |

1.16 Economic Analysis

The technical study demonstrates that the Project will be a robust, high-margin project with Base Case key indicators as follows:

- Forecast LOM Gross Revenue of US\$4,214 million
- Forecast LOM Cash Flow from Operations of US\$2,090 million
- Pre-production Capital Expenditure of US\$297.7 million (including owners' costs and contingency)
- Net LOM Project Cash Flow of US\$1,015.6 million (after tax)
- Net Present Value (NPV) (7% discount rate) of US\$582.6 million (after tax)
- An Internal Rate of Return (IRR) of 38% (after tax).

The Base Case results are based on the following metal price assumptions:

- LOM copper price of US\$2.95/lb
- LOM zinc price of US\$1.07/lb
- LOM lead price of US\$0.94/lb
- LOM gold price of US\$1,292/oz
- LOM silver price of US\$19.31/oz.

1.17 Conclusions

The KZK Property is located in a region known to contain significant VHMS deposits. The project comprises a wide range of base metal exploration targets from near grass-roots geochemical anomalies, conceptual geological and geophysical targets to drill ready targets (Fault Creek Zone, northwest ABM, Krakatoa extensions, GP4F) and advanced stage targets consisting of Inferred and Indicated Mineral Resources (ABM, Krakatoa). In addition to this, large sections of ground within the KZK Property remain under-explored.

The 2015 exploration program undertaken by BMC at the ABM deposit was an outstanding success, highlighted by the discovery of the Krakatoa VHMS Zone in the fault offset block southeast of the ABM Zone. This discovery, coupled with additional mineralisation identified in extension drilling at the ABM Zone and confirmation of historical results, resulted in a significant (47%) increase in reported tonnage for the deposit. Additional drilling during the 2016 field season, particularly at the Krakatoa Zone, resulted in an improved understanding of the controls on mineralisation despite the slight reduction in reported tonnage. The increased drilling information and improved confidence allowed 18.3 Mt or 96% of the ABM deposit Mineral Resource to be classified in the Indicated category.

The 2015 and 2016 exploration programs undertaken by BMC at the GP4F deposit were successful in expanding the known mineralised horizon and resulted in an improved understanding of the controls on mineralisation.

CSA Global considers that data collection techniques are consistent with industry good practice and suitable for use in the preparation of MREs to be reported in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves. QC data supports the integrity of the analytical data which has been utilised.

The modelling was based on cross-sectional interpretations which were digitised and “snapped” to drillholes based on logged lithologies and chemical assays. Wireframes were generated for the polymetallic (Cu-Pb-Zn-Au-Ag) massive sulphide/stockwork/disseminated mineralisation and overburden surface. Additionally within the ABM Zone, various key geological units (mafic intrusive, rhyolite intrusive, mudstones, Wind Lake Formation) and interpreted faults were generated.

Three-dimensional (3D) block models representing the mineralisation have been created using Surpac software. High-quality diamond core samples were used interpolate grades and bulk density into blocks using OK. The block models were validated visually and statistically.

Both the ABM and GP4F deposits remain open (at least partially) and additional drilling is required to fully define the extents of mineralisation.

The recently completed KZK PFS concludes that the Project is financially robust, delivering a high-margin base case economic result, that is technically and environmentally viable.

The Project, as detailed in the PFS, presents a viable development scenario of mining the ABM deposit primarily by open pit mining methods, with a smaller underground mine incorporated to mine the deeper section of the Krakatoa Zone. Mining will be completed over a nominal 10-year period. Metallurgical testwork has confirmed that conventional flotation techniques are appropriate for processing ore to produce separate copper, lead and zinc concentrates. The concentrates will also contain significant precious metal credits.

Management of tailings, waste rock and water has been an integral component of the design of the proposed mine.

Waste rock will be stored in separate facilities according to expected acid generation and metal leaching potential, with long term closure planning considered from the outset. Tailings from ore processing will be produced as a filtered tailing product that will be deposited in the Class A (defined as potentially acid generating and metal leaching in the near term) Waste Storage Facility together with Class A waste rock.

A low permeability layer will be constructed at the base of storage facilities that have the potential for acid generation and metal leaching characteristics. Progressive reclamation will be implemented to cover waste storage facilities as they are developed to minimise exposure to oxygen and water as well as promote active revegetation of the facilities.

All infrastructure has been designed to be situated within a single watershed to minimise impacts on the broader environment. Water that does not come into contact with the Project footprint will be diverted around the site for discharge. Contact water not requiring chemical treatment for discharge will be kept separate from water that does to minimize chemical treatment requirements. Reuse of water within the mining and processing facilities has also been planned to limit the amount of water that will require treatment prior to discharge from the site. A water treatment plant will be constructed to treat water to meet site discharge quality measures.

1.18 Recommendations

CSA Global recommends the following actions are completed to support the ongoing exploration and evaluation effort:

- Complete a full FS for the ABM deposit (ABM and Krakatoa zones). In support of preparing an industry standard feasibility study, CSA Global has identified some specific points that are recommended to be addressed in the study (see Section 1.18.1 for the AMB Zone and Section 1.18.2 for the Krakatoa Zone).

1.18.1 ABM Zone

- In order for the Project to progress to higher Mineral Resource classification levels (Measured and Indicated), further infill drilling will be required.
- Additional analysis should be undertaken on the existing ABM and Krakatoa Zone data to try and delineate underlying syn-mineralisation structural controls which may have acted as hydrothermal fluid conduits during ore deposition. Targeting along these trends outside of the existing resource envelope may identify additional ore lenses down-dip/down-plunge out of the range of surface and

airborne geophysics. It may also identify transgressive mineralised “feeder zones” which may not have been intersected with drilling due to drillhole orientation.

- Detailed structural and geochemical analysis is undertaken on the ABM deposit to understand the timing of mineralisation, stratigraphy and geological controls. Improved understanding of the deposit controls will aid in more regional exploration efforts across BMC’s vast tenement package.
- Complete more detailed analysis of the open pit mine design and schedule to optimise timing of mining to reduce pre-production mining requirements while continuing to meet requirements for supply of construction materials.
- Complete a trade-off study between open pit and underground mining options to determine whether a smaller open pit, larger underground scenario is of benefit to the Project.
- Complete more detailed planning of open pit mine designs to reduce haul distances, assess the opportunity of placing Class A and B waste rock and tailing in the pit as part of the mining process.
- The concentrate grade/recovery relationship together with the project economics should be analysed and optimised.
- Additional economic analysis should be undertaken to quantify the overall impact of any low-grade material on the Project.
- Complete the evaluation of the benefits of including a gravity gold circuit in the process plant design.
- Continue metallurgical testwork to further optimise the plant design, operating parameters and performance.
- Complete assessment of water treatment requirements to meet water quality limits for discharge.
- Complete the design of the proposed water treatment facility.

1.18.2 Krakatoa Zone

- Additional resource definition drilling (infill and extension) is required at the Krakatoa Zone to upgrade the resource classification. The zone remains open down dip below hole K16-369. Additional drilling targeting the down-plunge extension is highly recommended as it has the potential to add significant tonnage to the current resource base.
- Complete paste backfill testwork to define appropriate paste backfill design, as well as paste reticulation design.
- Dedicated geotechnical drilling program should be carried out to obtain representative geotechnical information for the underground mine as all available geotechnical data was collected from the available exploration holes.
- Complete additional geotechnical work to further define the underground design parameters including the crown and other pillar sizes, excavation stability, backfill strength requirements, and recommended stand-off distance.
- Complete a more detailed underground mine design and schedule based on the finding of the recommended additional testwork and studies.

2 Introduction

2.1 Issuer

BMC Minerals (No. 1) Limited (BMC) commissioned CSA Global Pty Ltd (CSA Global) to compile a Technical Report on the Kudz Ze Kayah Property (“KZK Project” or “KZK Property”) in the Yukon Territory, Canada. This report is to comply with disclosure and reporting requirements set forth in National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101), Companion Policy 43-101CP, and Form 43-101F1.

BMC is a private company with its headquarters located in Vancouver, British Columbia. CSA Global is a privately-owned consulting company that has been operating from Perth, Western Australia for more than 30 years.

The principal author of this report is Karl van Olden, CSA Global Mining Manager. Mr van Olden has more than five years’ experience in the field of Mineral Reserve estimation and is a Qualified Person according to NI 43-101 standards.

2.2 Terms of Reference

This Technical Report discloses material changes to the KZK Property including:

- An updated Mineral Resource estimate (MRE) for the ABM polymetallic deposit
- A maiden Mineral Reserve estimate of the ABM deposit
- Results of the KZK prefeasibility study (PFS).

The PFS is based on mining and processing of the ABM deposit; a polymetallic volcanogenic-hosted massive sulphide (VHMS) deposit containing economic concentrations of copper, lead, zinc, gold and silver. Mining is planned to be conducted via both open pit and underground mining methods, with ore processed into separate copper, lead and zinc concentrates via sequential flotation through a nominal 2.0 million tonnes per annum (Mt/a) processing plant. Tailings will be deposited in a dry stack tailings facility, while waste rock will be stored according to acid generation and metal leaching potential.

The mine is planned to operate for approximately 10 years, producing approximately 185,000 dry tonnes zinc concentrate, 60,000 dry tonnes copper concentrate and 35,000 dry tonnes lead concentrate each year. Concentrate will be transported to the port of Stewart in British Columbia for sale to market.

2.2.1 Independence

Neither CSA Global, nor the authors of this report, has any material present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. The report has been prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this report. No member or employee of CSA Global is, or is intended to be, a director, officer or other direct employee of BMC. No member or employee of CSA Global has, or has had, any shareholding in BMC. There is no formal agreement between CSA Global and BMC regarding CSA Global undertaking further work for BMC.

2.2.2 Notice to Third Parties

CSA Global has prepared this report having regard to the particular needs and interests of our client, and in accordance with their instructions and in compliance with NI 43-101 Technical Reporting. This report is not designed for any other person’s particular needs or interests. Third party needs and interests may be distinctly different to BMC’s needs and interests, and the report may not be sufficient, fit or appropriate for the purpose of the third party, other than its prescription in relation to NI 43-101.

2.2.3 Results are Estimates and Subject to Change

The ability of any person to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond CSA Global's control and that CSA Global cannot anticipate. These factors include, but are not limited to, site-specific mining and geological conditions, management and personnel capabilities, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, unforeseen changes in legislation and new industry developments. Any of these factors may substantially alter the performance of any mining operation.

2.2.4 Element of Risk

The interpretations and conclusions reached in this report are based on current geological theory and the best evidence available to the author at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for absolute certainty. Any economic decisions which might be taken on the basis of interpretations or conclusions contained in this report will therefore carry an element of risk.

2.3 Principal Sources of Information

The preparation of the Technical Report has been coordinated and completed by CSA Global largely based on information provided by the Issuer (BMC) in conjunction with various specialist, independent consultants required to complete all aspects of the PFS. These consultants included:

- CSA Global – Estimation of Mineral Resources
- Entech Mining Limited (Entech) – Open pit and underground mine design and scheduling, with budget costs sourced from mining contractors
- Rockland Limited (Rockland) – Mining geotechnical assessment
- SRK Consulting Canada Inc (SRK) – Underground mining geotechnical assessment
- Mineral Processing Metallurgy and Mineralogy (MPMM) – Metallurgical testwork supervision
- Allnorth Consultants Ltd (Allnorth) – Process plant and associated site services and facilities engineering design and capital and operating cost estimation
- Minnovo Pty Ltd (Minnovo) – Sub-consultant to Allnorth specifically responsible for the process plant design
- Knight Piesold Ltd (Knight Piesold) – Tailings and waste rock storage engineering design, surface water management engineering design and capital and operating cost estimation;
- Alexco Environmental Group (AEG) – Environmental baseline monitoring, geochemical assessment of waste rock and tailings and environmental management
- Tetra Tech Inc. (Tetra Tech) – Groundwater monitoring and socio-economic baseline evaluation
- Ecofor Consulting Ltd (Ecofor) – Heritage assessment
- On Site Engineering (OSE) – Engineering design and cost estimate to upgrade Tote Road to a Mine Access Road.

A full listing of the principal sources of information is included in Section 27 of this report.

2.4 Qualified Person Section Responsibility

This report was prepared by or under the supervision of the Qualified Persons identified in Table 7 for each of the sections of this report.

Table 7: Qualified Person section responsibility

| Section | Section Title | Qualified Person |
|-------------------------------------|--|------------------|
| 1 | Summary | Karl van Olden |
| 2 | Introduction | Karl van Olden |
| 3 | Reliance on other experts | Karl van Olden |
| 4 | Property description and location | Karl van Olden |
| 5 | Accessibility, climate, local resources, infrastructure and physiography | Karl van Olden |
| 6 | History | Karl van Olden |
| 7 | Geological setting and mineralisation | Aaron Green |
| 8 | Deposit types | Aaron Green |
| 9 | Exploration | Aaron Green |
| 10 | Drilling | Aaron Green |
| 11 | Sample preparation analyses and security | Aaron Green |
| 12 | Data verification | Aaron Green |
| 13 | Mineral processing and metallurgical testing | John Fleay |
| 14 | Mineral Resource estimates | Aaron Green |
| 15 | Mineral Reserve estimates | Karl van Olden |
| 16 | Mining methods | Karl van Olden |
| 17 | Recovery methods | John Fleay |
| 18 (except 18.2, 18.3, 18.7, 18.10) | Project infrastructure | Karl van Olden |
| 18.2, 18.3 | Tailings and waste rock storage facilities, Water management | Les Galbraith |
| 18.7, 18.10 | Camp, Water supply | Jeff Holm |
| 19 | Market studies and contracts | Karl van Olden |
| 20 (except 20.3) | Environmental studies, permitting, and social or community impact | Karl van Olden |
| 20.3 | Metal leaching and acid rock drainage | Eri Boye |
| 21 | Capital and operating costs | Karl van Olden |
| 22 | Economic analysis | Karl van Olden |
| 23 | Adjacent properties | Karl van Olden |
| 24 | Other relevant data and information | Karl van Olden |
| 25 | Interpretation and conclusions | Karl van Olden |
| 26 | Recommendations | Karl van Olden |
| 27 | References | |
| 27 | Abbreviations and Acronyms | |

2.5 Qualified Person Site Inspections

A site visit was conducted by Aaron Green (Qualified Person) and Neil Martin (BMC (UK) Limited – Technical Director) from 11 to 13 October 2015. The purpose of the site visit was to:

- Inspect operating drill rigs
- Review current drilling and sampling procedures
- Verify the location of selected drill collars and downhole surveys
- Inspect site geological data collection systems (mapping, logging etc)
- Review site geology
- Review sample storage facilities including historical core storage farm
- Discuss quality assurance with geological personnel
- Discuss data storage and review the drillhole database.

Site sample storage facilities and the analytical laboratory in Vancouver (SGS) were also inspected by Aaron Green and Dennis Arne of CSA Global (Vancouver), and Robin Black (BMC – Exploration Manager) on Thursday, 22 October 2015.

A site visit was conducted by Karl van Olden (Qualified Person) and Jim Newton (Chief Mining Engineer – BMC) from 15 to 18 August 2016. The site visit achieved the following:

- Inspect the proposed mine site.
- Inspect:
 - the site layout
 - access to site
 - proposed mining, processing plant and infrastructure locations and key local features.
- Discuss geological and geotechnical data and interpretation with the on-site technical personnel.
- Discuss environmental and social elements of the Project.
- Discuss mine planning considerations with the BMC technical staff and consultants.

There were no negative outcomes from any of the above inspections, and all samples and geological data, proposed locations and local features and project planning were deemed fit for use in the PFS.

3 Reliance on Other Experts

The Qualified Persons have prepared this Technical Report from a range of sources including their personal work, contributions from other CSA Global and BMC personnel, and from a range of external consultants. Where input has been received from these sources, the Qualified Persons have reviewed and verified the contained assumptions and conclusions. The Qualified Persons do not disclaim responsibility for this information.

With regard to environmental matters reported on in Section 20 (excluding Section 20.3), the primary Author and Qualified Person (Karl van Olden) has relied upon the opinion and information provided by Ms. Kelli Bergh of GTK Environmental Management Ltd.

CSA Global has not reviewed the status of BMC's tenure agreements pertaining to the Property and has relied on information provided by BMC with regard to the legal title to the mineral concessions.

Neither CSA Global, nor the author of this report, is qualified to provide comment on any legal issues associated with the KZK Project. Assessment and reporting of these aspects relies on information provided by BMC and has not been independently verified by CSA Global.

No warranty or guarantee, be it express or implied, is made by CSA Global or the Author with respect to the completeness or accuracy of the legal aspects of the KZK Project. Neither CSA Global nor the author accepts any responsibility or liability in any way whatsoever to any person or entity in respect to these parts of this document, or any errors in or omissions from it, whether arising from negligence or any other basis in law whatsoever.

4 Property Description and Location

4.1 Project Location

The KZK Project area (formerly known as the TAG Property) is located on the northern flank of the Pelly Mountain Range, 260 km northwest of Watson Lake and 115 km southeast of Ross River, Yukon (Figure 1). The Project area lies approximately 23 km south of Finlayson Lake and 25 km west of the Wolverine Mine (Figure 2). The area is accessed by the gravel, all-weather Robert Campbell Highway which links the towns of Watson Lake and Carmacks and is one of the two major routes into the Yukon.

The Property is centred at 61°31'N latitude and 130°33'W longitude (416000E 6817000N, NAD83, UTM Zone 9) on NTS map sheets 105G/7–10, within the Watson Lake Mining District.



Figure 1: Location of the KZK Project

4.2 Mineral Tenure and Surface Rights

BMC has acquired a total of 1,301 Mineral Claims that make up the KZK Project. The KZK Mineral Claims are shown in Figure 2 and listed in Appendix A. The KZK Property lies within the traditional territory of the Kaska First Nation. Portions of the Property are covered by a SEPA that includes all Kaska First Nations.

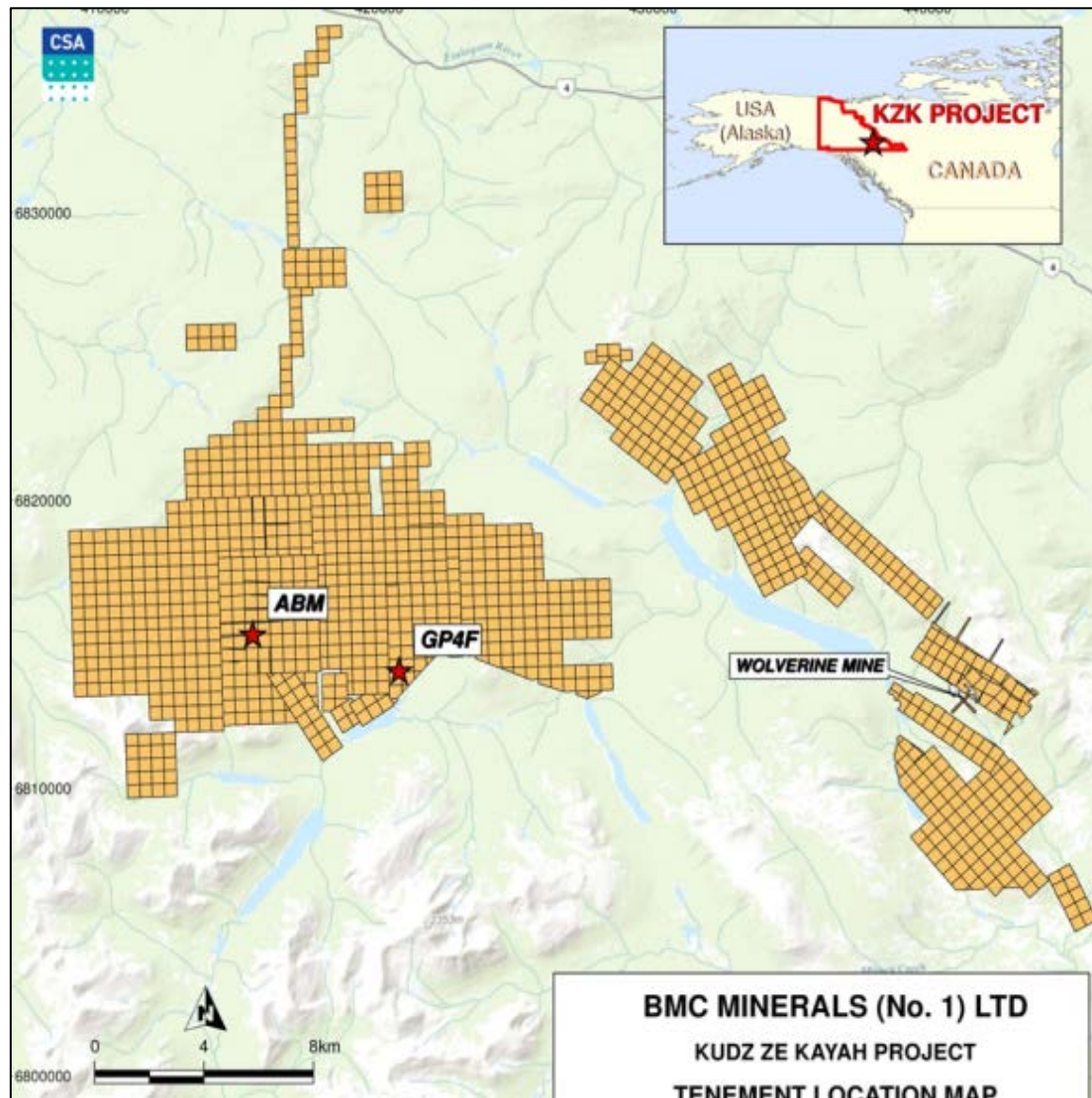


Figure 2: Location of the BMC Mineral Claims and the ABM and GP4F deposits

Mineral claims confer title to hard rock mineral tenure only. Surface rights are held by the Crown, as administered by the Yukon Territory. Trapping rights over the western portion of the KZK Property are held by the Ross River Dena Council under Group Trapline #405, while trapping rights over the rest of the Property are held under Single Holder Trapline #250. KZK overlaps with part of Outfitter Concession #20, held by Yukon Big Game Outfitters. There are several parcels of land in the vicinity of the KZK Property which have been reserved for a future land claim settlement with the Ross River Dena Council. Currently, staking is not permitted within a large area surrounding the KZK Property due to a government moratorium.

Yukon law requires eligible assessment expenditures of C\$100/claim/year on the KZK Property to extend tenure ownership past the current expiry dates. Five claim groupings, containing a maximum of 750 contiguous claims, making up the KZK Property were filed with EMR to allow the representation of work done on one or more claims to be distributed to other claims where work was not done.

4.3 Datum and Projection

All grid coordinates reported here (unless otherwise specified) use Universal Transverse Mercator System Projection (UTM), Zone 9 NAD83.

4.4 Royalties

A 1.2% NSR royalty is jointly held by Teck and Nyrstar NV over the mineral claims ON20-85, ON87-101, ON104-113, ON116-125 ON162-173 and ON197-198. These claims do not cover the resources described in this report.

4.5 Permitting

A Class A Water Licence (QZ97-026-1), granted for a period of 20 years on 17 September 1998 and assigned to BMC in January 2015, is held over an area including the ABM and GP4F deposits. This licence expires on 28 September 2018.

A Class 3 Exploration Permit (LQ00424), covering the area around the ABM and GP4F deposits, was granted to BMC for a five-year period from an effective date of 29 June 2015. Lease 105G07-001, granted for a five-year period commencing 1 May 2015, relates to the parcel of land that covers the KZK tote road.

CSA Global is not aware of any permitting issues associated with the Project.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

The ABM deposit is located in the upper end of the Geona Creek valley. Road access to the site is via a 24 km-long, 4 m-wide, all weather road connecting the deposit to the Robert Campbell Highway.

The GP4F deposit is located approximately 5 km southeast of the ABM deposit and is accessed via unsealed tracks as far as the ABM deposit, and then on foot or by helicopter (Figure 3).



Figure 3: View over the GP4F deposit with drill rig in the top left corner (looking north)

5.2 Climate and Physiography

The Property topography is moderately rugged, and typical of mountainous terrain. Elevations range from 1,000 m near Finlayson Lake to over 2,000 m at the peaks of the mountains southwest of the ABM deposit.

The ABM deposit is located at approximately 1,400 m elevation in a broad, gently sloping, U-shaped valley, covered by 2–30 m of glacial overburden. A north-flowing tributary to Finlayson Creek, Geona Creek, drains several small ponds which, in part, overlie the deposit (Figure 4). The GP4F deposit is located on a hillside 5 km to the southeast.

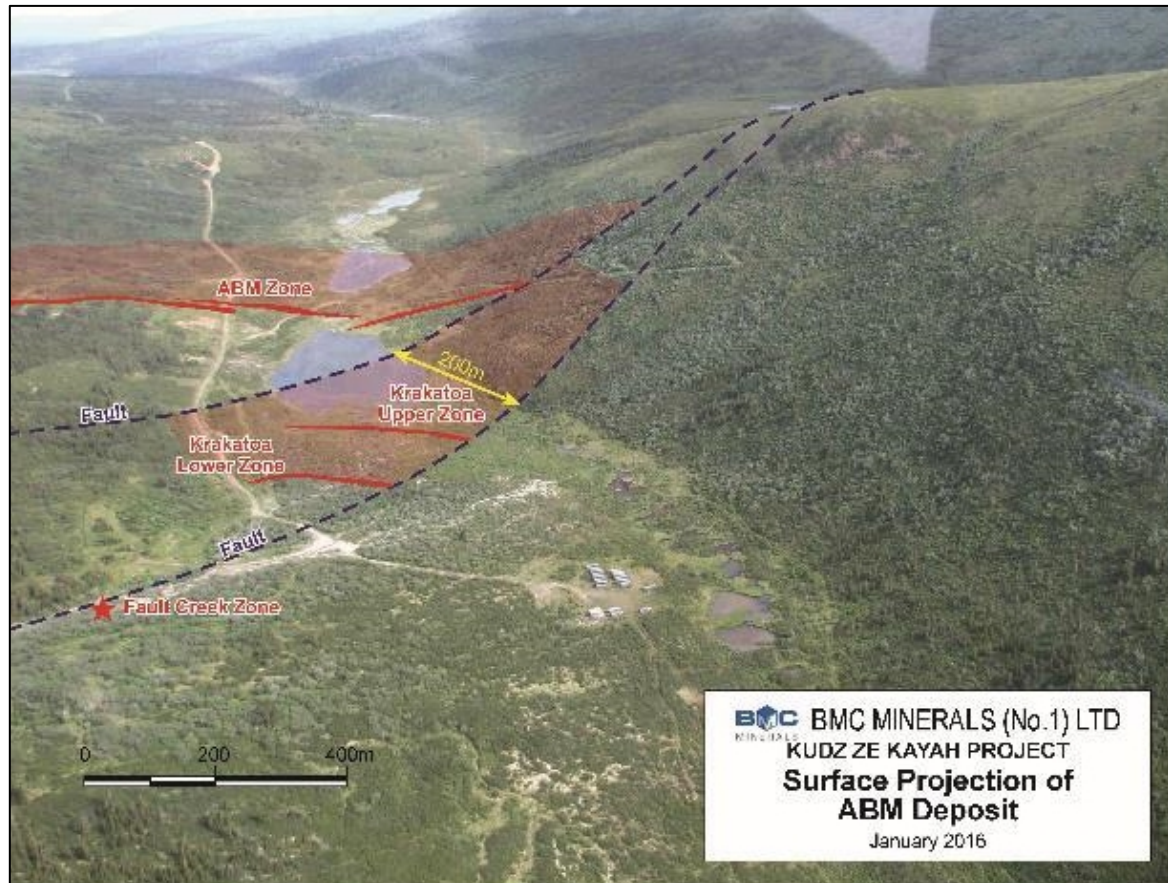


Figure 4: Aerial view of the ABM deposit projected to surface and tote road from the exploration camp, with the old Cominco core yard in the foreground

Source: BMC, 2016

Below the tree line (1,350–1,500 m), white and black spruce are the most common tree types. Black spruce is usually dominant in wetter areas whereas white spruce predominates in drier areas. Paper birch, aspen, balsam and lodgepole pine are also present. Alpine fir grows near the tree line. In dense coniferous stands, feather moss dominates the understory, but in more open areas willows and heath-like shrubs become prevalent.

Sedge or sphagnum tussocks are common in wetlands and under black spruce. Shrub birch and willow occur in the subalpine and extend well above the tree line. The region has intermittent permafrost with moist depressions comprising peat plateaus, patterned fen and bog complexes.

The weather in the area is typically sub-arctic, characterised by cold winter temperatures (–40°C to –50°C) and low snowfall (Figure 5). Summer is generally mild with temperatures averaging around 15°C to 20°C. Precipitation falls fairly evenly throughout the year, predominantly as rain from May through September, and snow for the balance of the year. The mean annual precipitation is 655 mm.

Groundwork on the Property is possible from May until October; however, snow may cover parts of higher elevations late into the summer. Drilling can be conducted year-round by using heated water for drilling.



Figure 5: View of the valley hosting the ABM deposit along the tote road (looking north)

Source: A. Green, 2015b

5.3 Local Resources and Infrastructure

The Project area is remote and limited infrastructure services are available. The Robert Campbell Highway is 24 km to the north of the ABM deposit and is the major transport route between local centres. The Finlayson airstrip is located adjacent to the highway a short distance from the KZK Project tote road. The Project lies 25 km west of the Wolverine Mine which was placed on care and maintenance in January 2015.

The closest grid power is at Faro, approximately 150 km to the northwest. The nearest year-round deep-water ports for concentrate shipment are 870 km by road to the southwest at Skagway (Alaska) and 911 km by road to the south at Stewart (British Columbia).

A range of service providers are available through the Ross River and Watson Lake communities, including earthmoving, fuel and field supplies. BMC also currently employ qualified local workers from these communities for field-related activities.

6 History

6.1 Project and Exploration History

Cominco conducted a geochemical survey in 1977 across the Finlayson Lake area; however, the survey was too wide-spaced to reveal evidence of any VHMS deposits.

Cominco's interest in the area was reignited in 1992 when soil and silt geochemical sample results from a Cominco reconnaissance program confirmed and expanded upon an anomalous silt sample released in the Geological Survey of Canada's regional geochemistry silt survey for NTS map sheet 105G, Open File 1648 (Hornebrooke and Friske, 1988).

In 1993, a small follow-up program within the anomalous drainage resulted in the location of a well mineralised, layered sulphide cobble by A.B. Mawer. At the same time potential host rocks for the mineralised float were recognised. A reconnaissance transient electromagnetic (UTEM) geophysical survey was immediately implemented over the projected trace of the prospective units where they disappear beneath quaternary cover in the valley floor. This survey identified an electromagnetic (EM) feature representing a possible source for the mineralised float. The first TAG claims were subsequently staked and recorded on 20 August 1993 to cover the geophysical anomaly. A magnetic survey was also carried out during staking. Further magnetic, horizontal loop EM (HLEM) and soil surveys were completed later that fall and successfully defined a drill target.

The target was drilled in April 1994 with the first hole completed on 20 April intersecting 22.5 m of sulphide rock in two zones. Three additional holes were drilled in April; each intersecting mineralisation over significant widths. The weighted average grade of sulphides in the discovery hole was 0.5% Cu, 2.8% Pb, 10.0% Zn, 278 g/t Ag and 2.9 g/t Au. The sulphide body was named the ABM Zone by the exploration team in recognition of A.B. Mawer's contribution towards the discovery and a distinguished career with Cominco.

In 1995, an additional 133 drillholes totalling 16,178 m were completed at the ABM deposit and on regional targets. Additional exploration soil sampling, minor geological mapping and ground geophysical surveys were completed. Geotechnical investigations, detailed engineering/mine planning, bulk metallurgical sampling, environmental monitoring and archaeological studies were well underway or completed, as well as the construction of a 24 km all-weather tote road from the Robert Campbell Highway. A PFS was completed in July 1995.

The 1996 exploration program involved regional 1:20,000 scale geological mapping outside the immediate ABM deposit area, ground geophysical surveys and soil geochemistry over the northeast part of the TAG Property. Minor structural mapping and core logging was completed at the ABM deposit and geotechnical and metallurgical test work was undertaken.

At the end of 1997, a total of 168 exploration drillholes and 15 metallurgical holes had been completed in the immediate ABM deposit area and another 20 drillholes were completed elsewhere on the property. Other deposit-related work has involved considerable ground and airborne geophysical surveys, detailed geological mapping in the vicinity of the deposit, regional and detailed exploration geochemistry and baseline environmental sampling.

In 1997, the Fault Creek Zone was discovered within a kilometre of the ABM deposit. It is a sub-cropping, high-grade VHMS zone with a subtle geochemical and geophysical response. A preliminary non-compliant "resource" of 50,000 tonnes grading 7.1% Zn, 1.0% Pb, 4.7% Cu, 130 g/t Ag and 2.0 g/t Au was calculated (Expatriate presentation, 2000). A Qualified Person has not done sufficient work to classify the historical estimate as a current Mineral Resource and CSA Global does not treat the historical estimate as a current Mineral Resource.

Cominco's 1998 exploration program resulted in the delineation of a second deposit; GP4F, located approximately 5 km to the southeast of the ABM deposit. The prospect was first drilled in 1995 by Cominco (DDH K95-167) to follow up a HLEM/MAG geophysical anomaly; however, the hole was completed without intersecting significant mineralisation (approximately 15–20 m above the GP4F mineralised horizon). Nine diamond holes were drilled in the 1998 program and all intersected the GP4F mineralised horizon.

Cominco (1998) reported an Inferred MRE for the GP4F deposit of 1.5 Mt grading 6.4% Zn, 3.10% Pb, 0.10% Cu, 90 g/t Ag and 2.0 g/t Au and confirmed the potential for other VHMS deposits in the area (Expatriate, 1999 Annual Report). A Qualified Person has not done sufficient work to classify the historical estimate as a current Mineral Resource and CSA Global does not treat the historical estimate as a current Mineral Resource.

In March 2000, Cominco announced an agreement in principal to sell the KZK Project including the ABM and GP4F deposits to Expatriate Resources Ltd (Expatriate). This agreement resulted in Expatriate controlling most of the favourable stratigraphy in the Finlayson Lake District. Expatriate amalgamated the ABM, GP4F and the neighbouring 60% owned Wolverine deposits into the "Finlayson Project". A positive feasibility study (FS) was completed by Hatch Pty Ltd (Hatch) and additional drilling was completed by Expatriate on the Wolverine deposit.

In September 2001, Expatriate terminated the acquisition agreement with Teck Cominco (formed from the merger of Teck Resources and Cominco) for the KZK Project.

BMC acquired the KZK Project from Teck on 24 January 2015.

6.2 Previous Mineral Resource Estimates

CSA Global and the Company (BMC) are not treating these historical resources as current Mineral Resources as the Qualified Person has not done sufficient work to classify the historical resources, or comment on the reliability of the estimates. The current MRE for the ABM deposit presented in this report supersedes all past estimates and benefit from the additional information summarised in Section 14.18.3.

Numerous historical MREs for the ABM/KZK deposit were completed "in-house" by Cominco. Very little documentation describing the estimation methodology has been identified. It appears that the major difference between the reported tonnages of the early estimates relates to different bulk density values applied to the ore zone, whether the resource was reported as "global" or "in pit", and in part whether the peripheral resource defined by widely-spaced drilling (~100 m) was included or not.

MREs prepared by Cominco in 1995 were conducted during the PFS and were described as 'mineable in-pit' resources, hence the lower reported tonnages. Subsequent resource estimates were also reported according to NI 43-101 standards by Teck Cominco in 2001 and 2006. It is likely that the 2001 and 2006 resource estimates reported by Teck Cominco are restatements of the Cominco resource estimate completed in 1998.

CSA Global completed an MRE in 2014 as part of BMC's due diligence process. This MRE was subsequently publicly reported on 18 January 2016. Following the 2015 field season, an updated MRE undertaken by CSA Global was reported by BMC on the 22 January 2016.

Table 8 summarises the previous ABM resource estimates.

Table 8: Summary of previous ABM MREs (no cut-off)

| Company | Method | Classification | Tonnes (Mt) | Cu (%) | Pb (%) | Zn (%) | Ag (g/t) | Au (g/t) |
|----------------------------|-----------|----------------|-------------|--------|--------|--------|----------|----------|
| Cominco (November 1994) | Sectional | - | 14.04 | 0.88 | 1.33 | 5.61 | 125.0 | 1.17 |
| Cominco (November 1994) | ID2 | - | 13.85 | 0.97 | 1.30 | 5.45 | 126.9 | 1.19 |
| Cominco (April 1995) | ID2? | - | 13.7 | 0.98 | 1.3 | 5.5 | 128 | 1.24 |
| Cominco (June 1995) | ID2? | - | 11.4 | 1.01 | 1.64 | 6.4 | 143 | 1.46 |
| Cominco (1998) | ID2? | - | 11.3 | 0.90 | 1.50 | 5.90 | 133 | 1.30 |
| Teck Cominco (2001) | ID2? | - | 11.3 | 0.90 | 1.50 | 5.90 | - | 1.30 |
| Teck Cominco (2006) | ID2? | - | 11.3 | 0.90 | 1.50 | 5.90 | - | 1.30 |
| CSA Global (2014) | ID2 | Inferred | 13.68 | 0.93 | 1.56 | 6.09 | 140.1 | 1.39 |
| CSA Global (January 2016)* | OK | Indicated | 16.7 | 0.9 | 1.8 | 6.2 | 144 | 1.4 |
| | | Inferred | 3.4 | 0.7 | 2.8 | 7.1 | 191 | 1.5 |

**Includes Krakatoa Zone.*

6.3 Historical Production

No mining has occurred at the KZK Property.

7 Geological Setting and Mineralisation

7.1 Regional Geology

The KZK Project is located with the Finlayson Lake District, a crescent-shaped area approximately 300 km-long and 50 km-wide that extends from Ross River in the north to Watson Lake in the south (Figure 6).

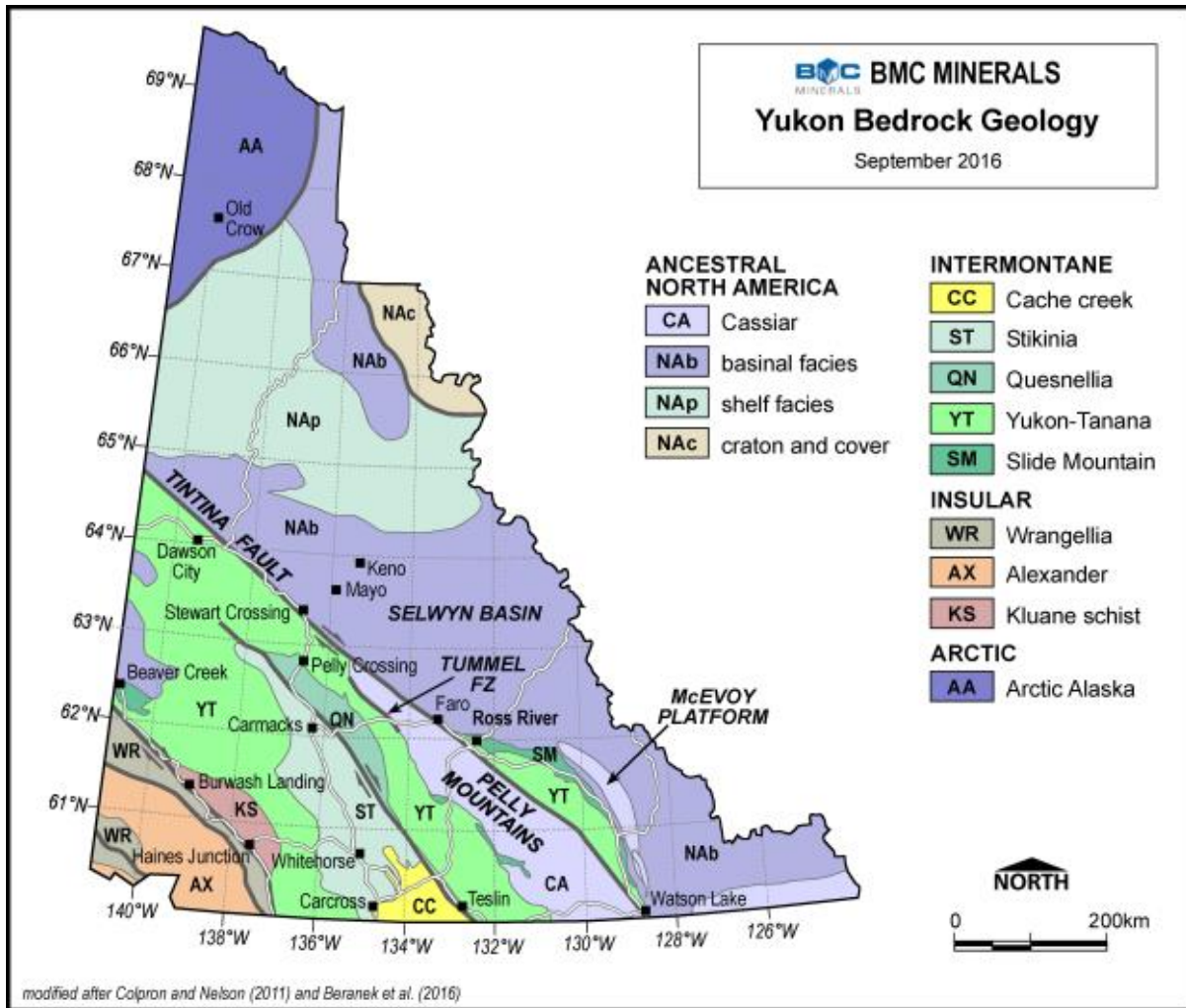


Figure 6: Yukon bedrock geology and terrane map

Modified after Colpron and Nelson (2011) and Beranek et al. (2016)

The Finlayson Lake District comprises Devonian to Lower Carboniferous (Mississippian) volcanic, intrusive, and sedimentary rocks separated from the Proterozoic and Palaeozoic strata of the ancient North American continental margin to the southwest by the Tintina Fault. The combined Yukon-Tanana and Slide Mountain terranes are separated from the ancient continental strata to the northeast by the Inconnu Thrust (Mortensen and Jilson, 1985; Plint and Gordon, 1996; Tempelman-Kluit, 1979; Figure 7). Within the Finlayson Lake District the Jules Creek Fault separates the Yukon-Tanana Terrane from the Slide Mountain Terrane. The Yukon-Tanana Terrane of the Finlayson Lake District is contiguous with the main part of the Yukon-Tanana Terrane, which underlies most of west central Yukon, after restoration of approximately 425 km of Late Cretaceous right-lateral, strike-slip movement along the Tintina Fault (e.g. Mortensen, 1992; Peter *et al.*, 2007).

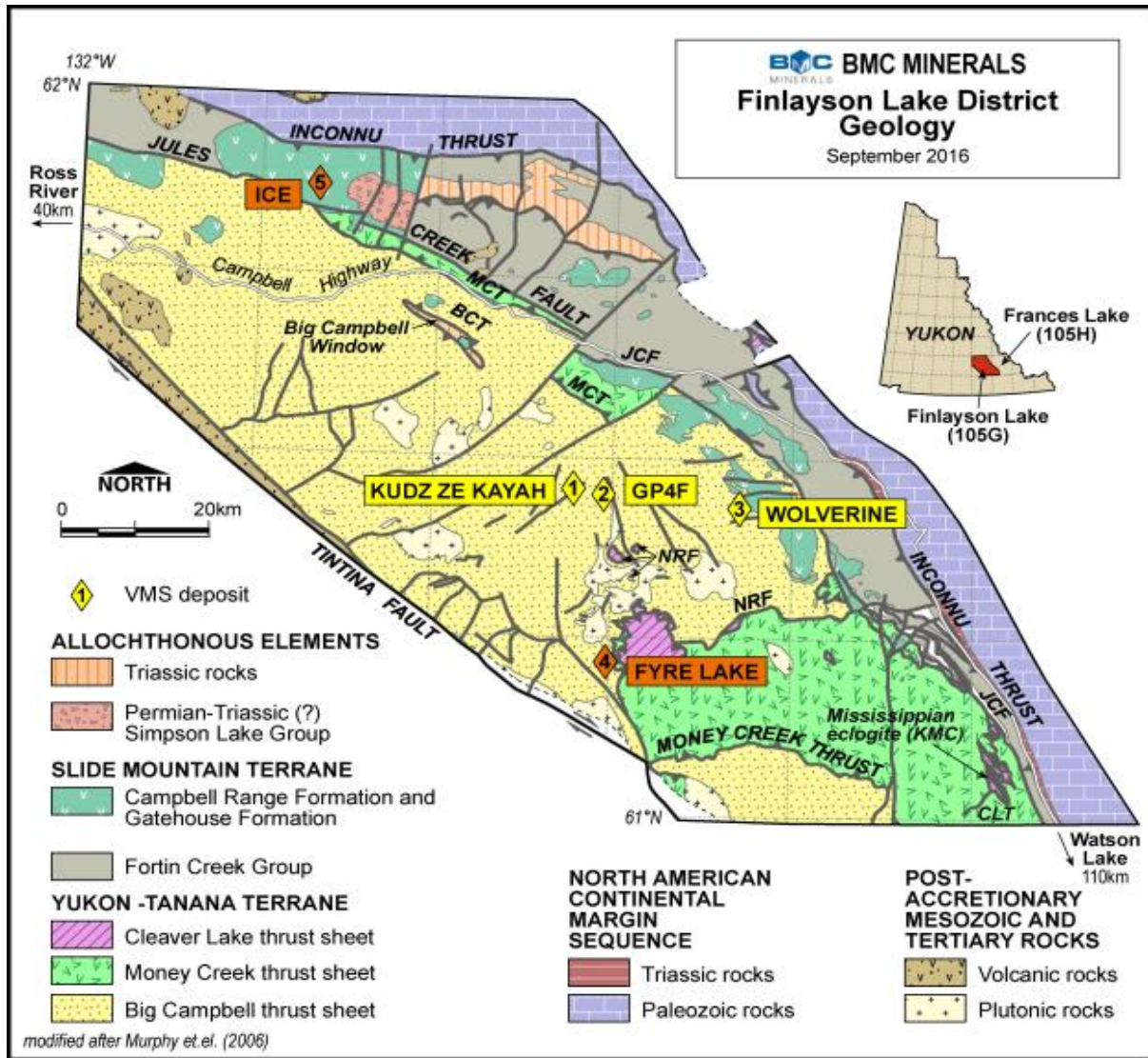


Figure 7: Tectonostratigraphic subdivisions of the Finlayson Lake District

Source: Murphy et al. (2006)

Rocks of the Finlayson Lake District comprise several fault- and unconformity-bound groups and formations of early Mississippian to Early Permian age (Murphy *et al.*, 2006) (Figure 7 and Figure 8). Massive sulphide deposits have been identified primarily within the Big Campbell thrust sheet (Figure 7 and Figure 8), with the exception of the Ice deposit which is hosted by basalts of the Campbell Range Formation within the Slide Mountain Terrane.

Rocks of the Big Campbell thrust sheet include Pre-Late Devonian quartz-rich sedimentary rocks of the North River Formation; mafic and felsic volcanic, and carbonaceous clastic rocks of the Upper Devonian Grass Lakes Group; Late Devonian to Early Mississippian granitic rocks of the Grass Lakes plutonic suite; carbonaceous clastic and mafic and felsic volcanic rocks of the Lower Mississippian Wolverine Lake Group; and carbonaceous clastic rocks and chert of the Lower Permian Money Creek Formation (Murphy *et al.*, 2006) (Figure 8).

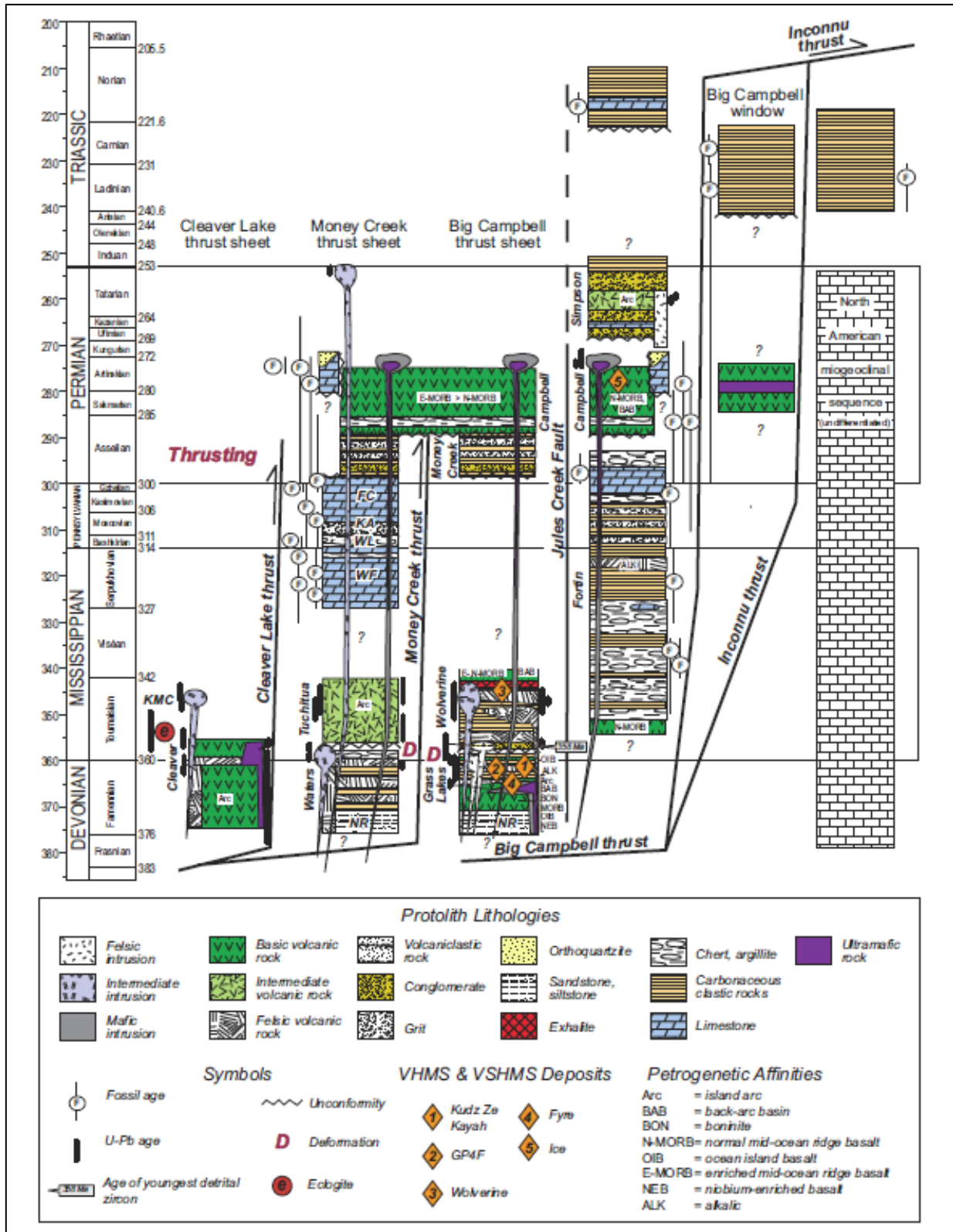


Figure 8: Structural and stratigraphic relationships in the Finlayson Lake District

Abbreviations are as follows: FC=Finlayson Creek limestone; KA=King Arctic Formation; KMC=Klatsa metamorphic complex; NR=North River Formation; WF=Whitefish limestone; WL=White Lake Formation.

Source: Peter et al. (2007) modified after Murphy et al. (2006)

The Grass Lakes Group comprises strongly foliated and lineated layered sedimentary and volcanic rocks positioned in a roof setting above and between bodies of Early Mississippian granitic orthogneiss and weakly foliated mid-Cretaceous granite (Murphy, 1997). The Grass Lakes Group has been subdivided into three formations which, from oldest to youngest, are the Fire Lake Formation, Kudz Ze Kayah Formation, and the Wind Lake Formation (Peter *et al.*, 2007). Each formation is described below:

- The Upper Devonian (c. 365 Ma) Fire Lake Formation is a mafic volcanic sequence comprising mainly chloritic phyllite with some carbonaceous phyllite and rare muscovite-quartz phyllite of probable felsic volcanic protolith. Intrusions and sills of mafic and serpentinized ultramafic plutonic rocks occur within the Fire Lake Formation (Peter *et al.*, 2007).
- Stratigraphically overlying the Fire Lake Formation is the Kudz Ze Kayah Formation, a Late Devonian (c. 360–356 Ma) sequence dominated by felsic volcanic and volcanoclastic and sedimentary rocks. It predominantly comprises feldspar-muscovite-quartz phyllite and augen phyllite of probable felsic volcanic and volcanoclastic origin, and lesser fine-grained carbonaceous and siliciclastic sedimentary rocks (Peter *et al.*, 2007).
- The Wind Lake Formation forms the uppermost unit of the Grass Lakes Group and comprises carbonaceous phyllite, quartzite, and chloritic phyllite of probable alkalic mafic volcanic and intrusive protolith (Peter *et al.*, 2007).

Coeval with the Kudz Ze Kayah and Wind Lake formations are peraluminous plutonic granitoids of the Grass Lakes Suite which are interpreted as the subvolcanic intrusive equivalents to the felsic volcanic host rocks of the Kudz Ze Kayah deposit, and are as old as 363 ± 3.3 Ma (Mortensen, 1992). These rocks are deformed and were intruded by younger, late-kinematic plutonic rocks prior to deposition of the Wolverine Lake Group (Peter *et al.*, 2007).

The Grass Lakes Group is unconformably overlain by rocks of the Wolverine Lake Group (Figure 8), and comprises a basal unit of conglomerate, grit, sandstone, and carbonaceous argillite, a middle unit of quartz-feldspar phyric felsic volcanic rocks, rare chert and sandstone, and an upper unit of aphyric rhyolite, argillite, magnetite iron formation, and mafic volcanic and intrusive rocks (Murphy *et al.*, 2006; Peter *et al.*, 2007).

A second unconformity separates the Wolverine Lake Group from the overlying carbonaceous clastic rocks (carbonaceous phyllite, chert-pebble conglomerate, quartzofeldspathic sandstone to pebble conglomerate, and locally, matrix-supported diamictite) and dark grey to black chert of the Lower Permian Money Creek Formation (Peter *et al.*, 2007).

Both the Grass Lakes Group and Wolverine Lake Group occur in the footwall of the Money Creek thrust and record two cycles in the evolution of a Late Devonian to early Mississippian ensialic back-arc (Murphy and Piercey, 2000; Piercey *et al.*, 2001, 2006). The unconformity separating these groups marks a period of deformation, uplift, and erosion (Peter *et al.*, 2007).

Uranium-lead geochronology places an upper age limit of 356.9 ± 0.5 Ma for the host rocks to the Wolverine deposit (Mortensen, 1992; Piercey *et al.*, in press), and the immediate stratigraphic hangingwall is dated at 346 ± 2.2 Ma (Piercey, 2001), indicating that Wolverine is younger than Kudz Ze Kayah (Peter *et al.*, 2007).

The Campbell Range Formation is a mafic-dominated sequence comprising basalt, chert, and argillite which unconformably overlies rocks of the Wolverine Lake Group. Radiolarians and c. 273–274 Ma U-Pb ages on gabbros and plagiogranites indicate a Pennsylvanian to Permian age (Murphy *et al.*, 2006; Peter *et al.*, 2007).

The rocks of the Finlayson Lake District indicate formation and emplacement in a variety of tectonic settings, including rifted frontal arc, continental back-arc, and oceanic back-arc that range in age from 365 Ma to 275 Ma (Peter *et al.*, 2007).

7.1.1 Regional Mineralisation

The Finlayson Lake District hosts numerous base metal sulphide deposits that collectively contain in excess of 45 Mt of base and precious-metal rich sulphide mineralisation (Green, 2016; Traynor, 2005; Tucker *et al.*, 1997). The main deposits and their tectonic setting (Figure 9) are summarised below:

- The Besshi-type Fyre Lake (Kona) massive sulphide deposit is stratigraphically lowest and occurs in mafic volcanic rocks of the Devonian to Mississippian Grass Lakes succession. Fyre Lake is situated at the transition from mafic volcanic rocks to overlying turbiditic sedimentary rocks emplaced in a fore-arc setting (Hunt, 2002; Peter *et al.*, 2007).
- The Kuroko-type ABM and GP4F massive sulphide deposits both occur within the Devonian to Mississippian succession stratigraphically above Fyre Lake, hosted within felsic and to a lesser extent mafic volcanic rocks.
- The Bathurst-type Wolverine massive sulphide deposit is hosted by Carboniferous rhyolitic volcanic rocks and carbonaceous argillite of the Wolverine succession at a position stratigraphically higher than both the ABM and GP4F deposits (Hunt, 2002; Tucker *et al.*, 1997). As the deposit is hosted by graphitic shales and felsic volcanic and volcanoclastic rocks, it may be classified as a volcanic-sediment-hosted massive sulphide (VSHMS) deposit (Peter *et al.*, 2007).
- The Cyprus-type Ice massive sulphide deposit occurs highest in the stratigraphy and is hosted within late Palaeozoic mafic volcanic and associated sedimentary rocks of the Campbell Range succession (Hunt, 2002; Peter *et al.*, 2007).

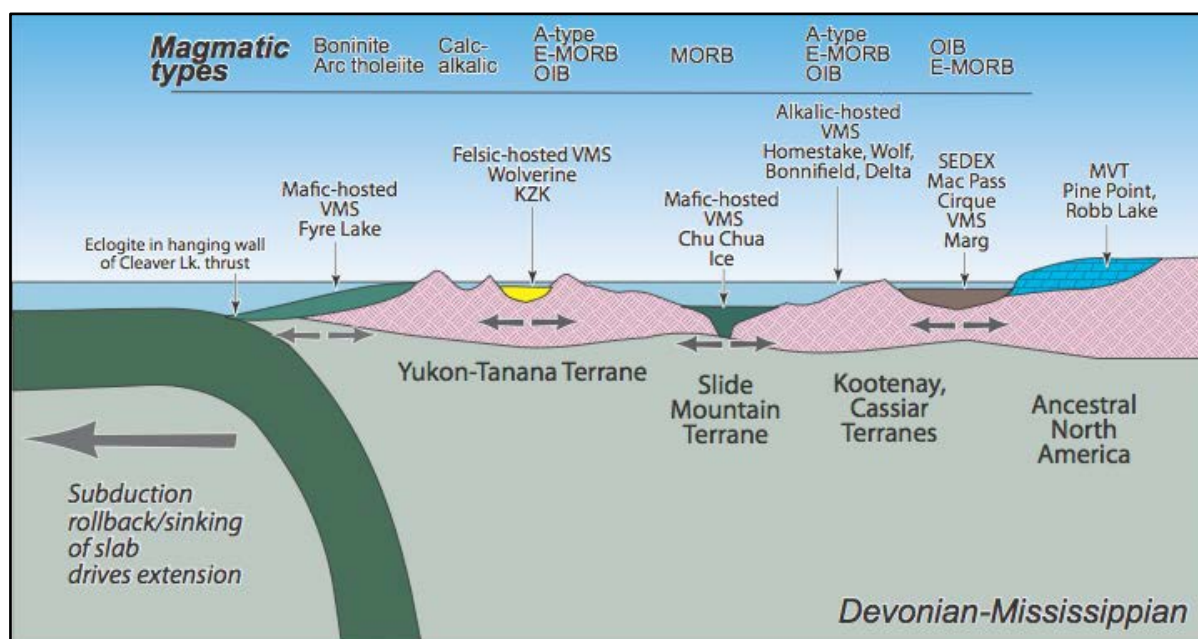


Figure 9: Interpreted tectonic setting of Devonian-Mississippian ore deposits in the Yukon-Tanana and adjacent terranes

Source: Piercey, 2015

7.2 Property Geology

The KZK Project area was mapped by Cominco in 1996 at 1:20,000 scale (Schultz & Hall, 1997), but since that time no detailed, property-wide geological mapping has been undertaken. The Project area encompasses rocks of Devonian-Mississippian age with the Big Campbell thrust sheet that host the ABM, GP4F and Wolverine deposits.

The KZK Project tenements overlap with mapped bedrock geology from the Yukon Geological Survey are shown in Figure 10.

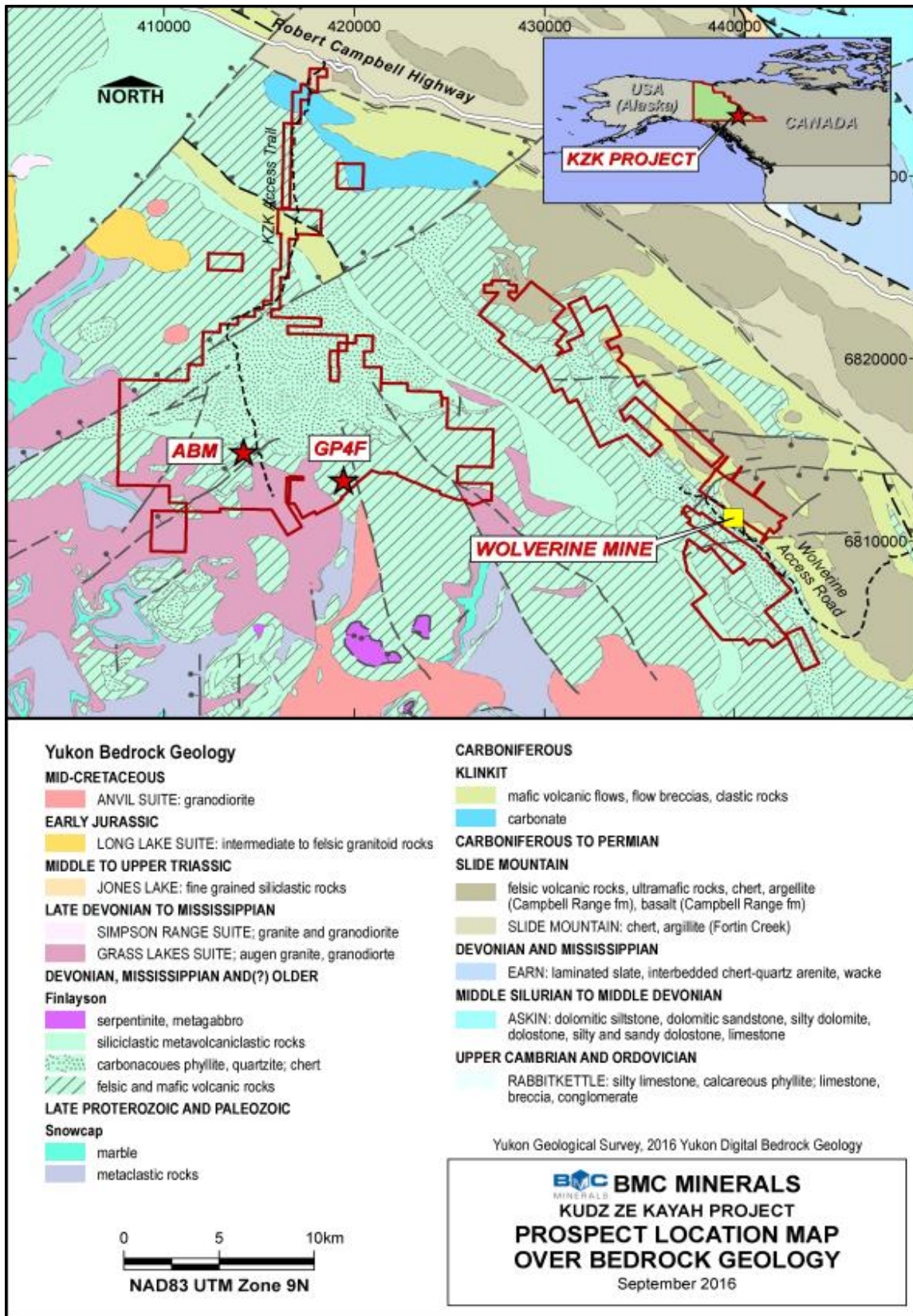


Figure 10: Property scale bedrock geology map

Modified from Yukon Geological Survey, 2003

7.3 Deposit Geology

7.3.1 Summary

The ABM (comprising the ABM Zone and Krakatoa Zone) and GP4F deposits consist of continuous, shallow-dipping VHMS mineralisation within a thick felsic tuff and sill/flow complex – the Kudz Ze Kayah Formation (Figure 11). The ABM Zone is primarily hosted within a felsic volcanic package, whereas the Krakatoa Zone is predominantly hosted within a pre-mineralisation mafic sill that intruded the felsic volcanic package. Mineralisation also occurs in the hangingwall to the mafic sill at Krakatoa in what is interpreted to be the equivalent of the ABM mineralised position. Only minor mineralisation occurs in the mafic unit stratigraphically beneath the ABM Zone.

The upper limits of the ABM and Krakatoa Zones are truncated near surface and overlain by glacial sediments. The massive sulphide mineralisation at ABM occurs under ~2 m to 20 m of glacial overburden and is up to ~30 m in true thickness, whereas the Krakatoa Zone occurs under ~30 m of glacial overburden and is up to ~22 m in true thickness. The down-dip margin of the ABM Zone appears to transition into a mixed volcano-sedimentary package, whereas the Krakatoa Zone remains open at depth.

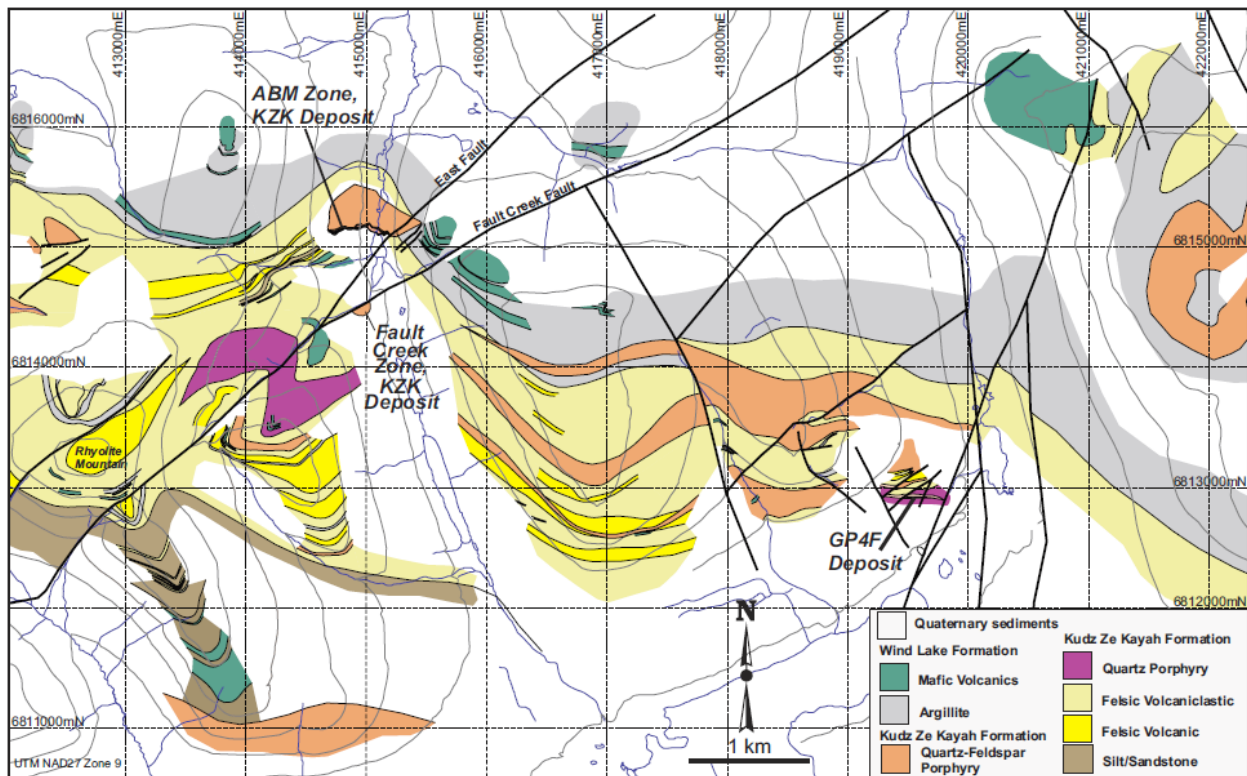


Figure 11: Surface geological map of the Kudz Ze Kayah and GP4F deposit area

Source: Peter et al. (2007) after Cominco Ltd., unpublished data (1997)

A post-mineralisation brittle fault zone (East Fault) offsets the ABM and Krakatoa Zones, and angular clasts of sulphide are to be found within the fault zone breccias (Figure 12). The south-eastern margin of Krakatoa is cut by another late brittle fault zone of the same generation (Fault Creek Fault) on the south-eastern side of which there is considered to be a significant exploration target which may comprise the fault-offset extension of the known deposit (Figure 13). A schematic geological cross-section through both the ABM and Krakatoa Zones (Section B-B' in Figure 13) is shown in Figure 14.



Figure 12: Angular to sub-rounded primary sulphide and sulphidised clasts within East Fault breccia (hole K15-292)

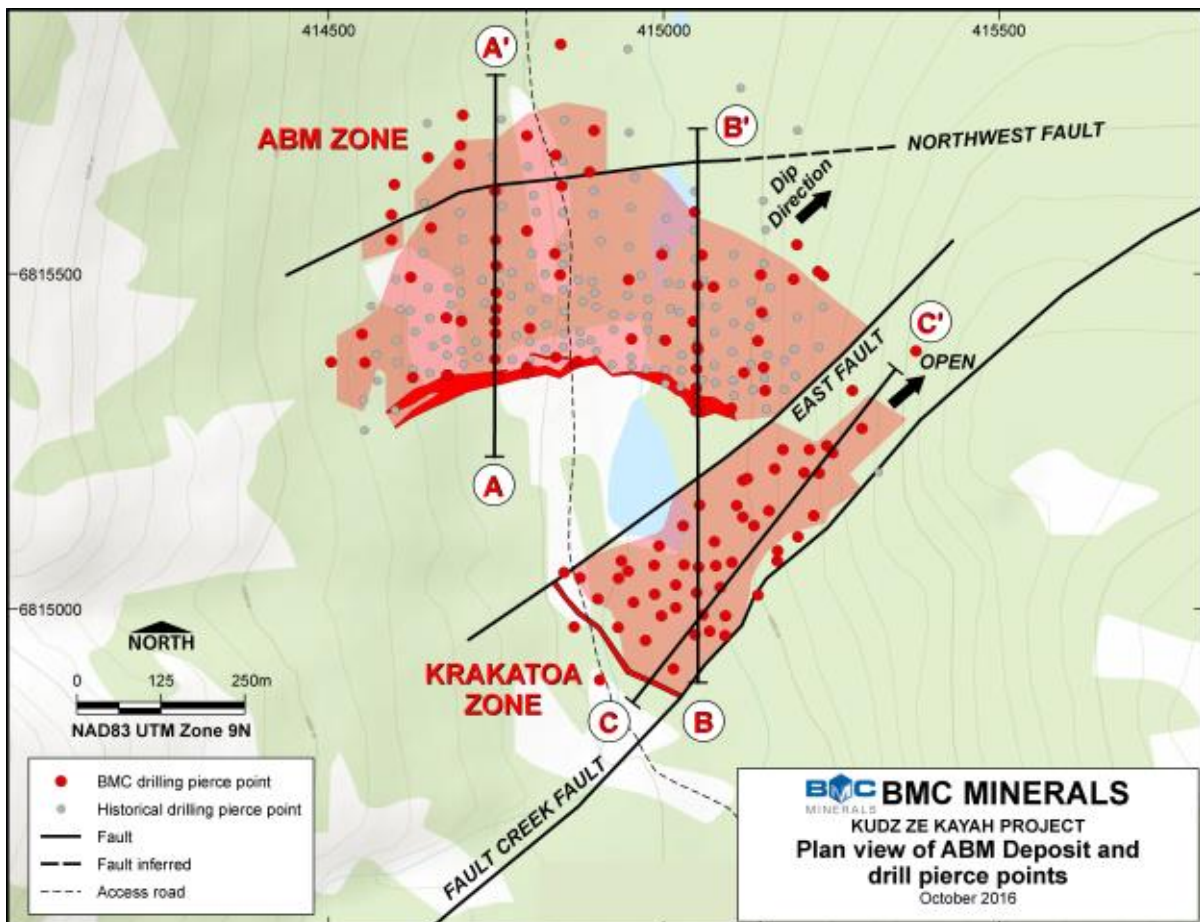


Figure 13: Plan view of ABM deposit showing both ABM and Krakatoa zones

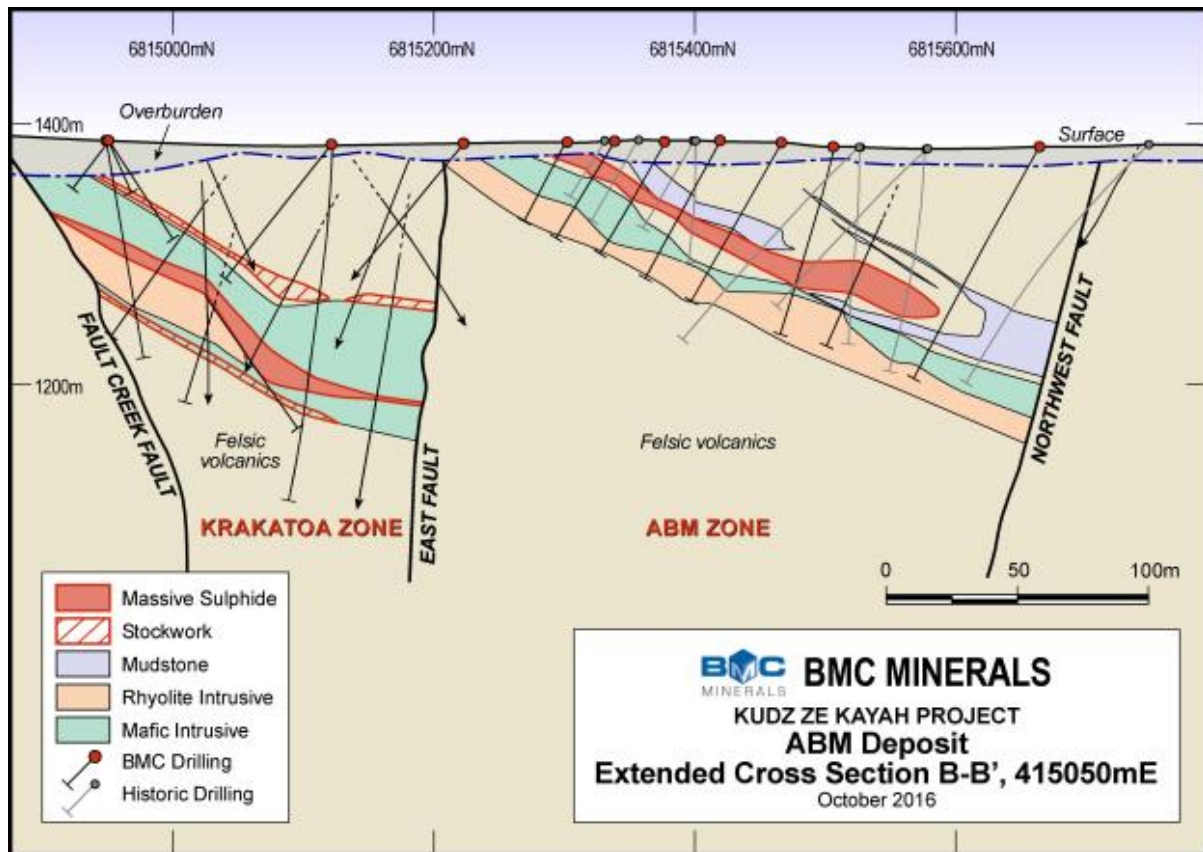


Figure 14: Schematic cross-section view looking west through both the ABM and Krakatoa Zones showing their spatial relationship

Note: BMC drill traces shown in black and Cominco/Teck drill traces in grey. Section B-B' in Figure 13.

Although the Krakatoa Zone can be observed in data derived from the 2015 versatile time domain electromagnetic (VTEM) survey undertaken by BMC (VTEM was not used initially by BMC, in part as the data was not processed by the time drilling began), the discovery was made on the basis of geological targeting which permitted the Krakatoa Zone to be intersected in only the second hole drilled by BMC to the east of the East Fault. The VTEM did however permit the refinement of drill targeting closer to surface. In retrospect, the earlier Cominco ground EM also showed a low-level response in roughly the same area defining the Krakatoa Zone near surface.

The GP4F deposit comprises thin lenses of massive and semi-massive sulphide hosted within a much larger, tabular body of disseminated mineralisation and alteration referred to as the “GP4F Zone”. The GP4F Zone is typically 5–10 m thick and is best-developed in a “central area” (the area of most drilling) that measures greater than 500 m in a north-south direction and 300 m from east to west. The same mineralised zone appears to be weakly defined within a drillhole 400 m to the west of the central area (Jones, 2016). A second mineralised zone recognised during 2015, the “Lower Zone”, occurs structurally below the GP4F Zone (Jones, 2016). The alteration and mineralisation is texturally and mineralogically similar to the ABM deposit.

A representative cross section for the GP4F deposit is shown in Figure 15.

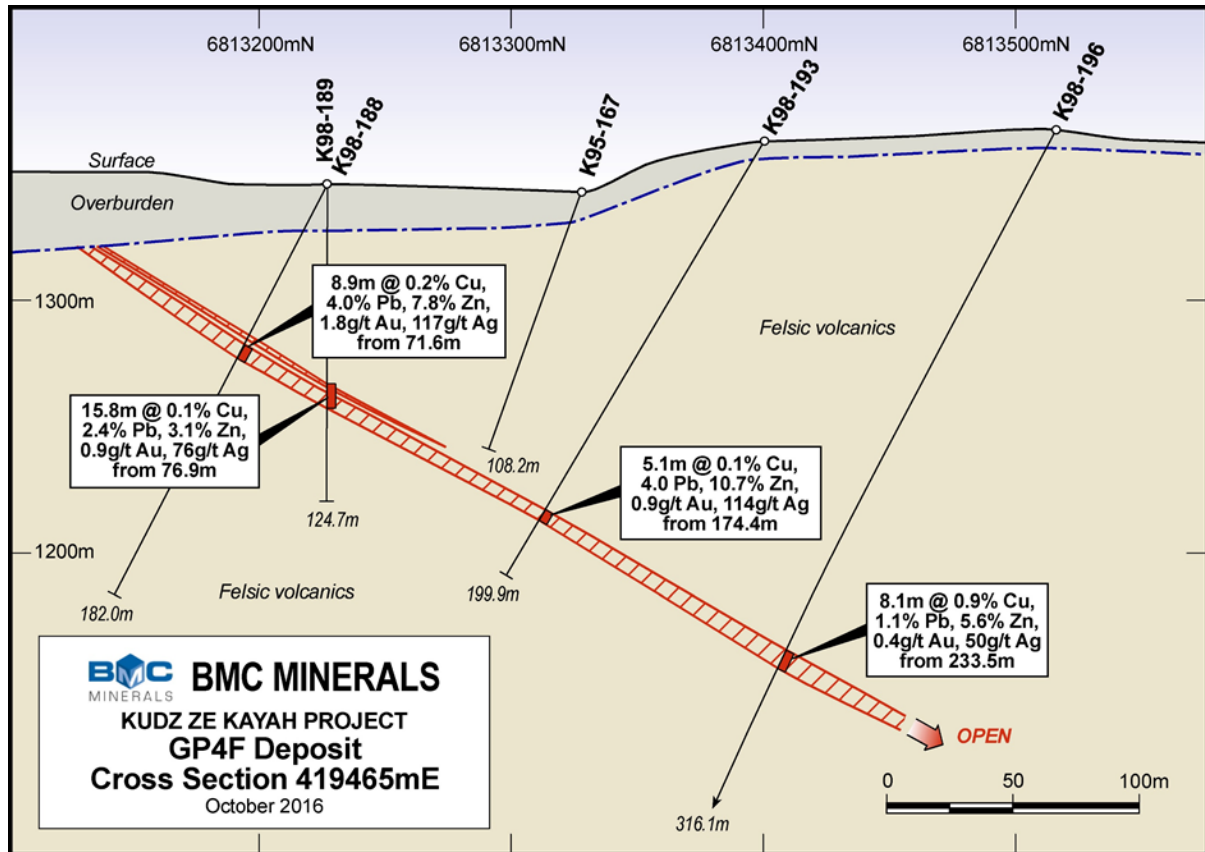


Figure 15: Schematic cross-section view looking west through the GP4F Zone (419,465 m E)

7.3.2 Stratigraphy

7.3.2.1 ABM Deposit

Geological logging of diamond drill core and field mapping undertaken at the ABM deposit, both historically by Cominco and more recently by BMC, has focused on providing a broad lithological framework for future mining activities rather than for the generation of a detailed stratigraphic model. General results of this work are summarised below, and principal component lithologies are summarised in Table 9.

Table 9: ABM deposit lithological units (BMC, 2016)

| Stratigraphic unit | Geology detail code | Geology detail sub-code | Lithology | Description |
|-------------------------|---------------------|-------------------------|-----------------------------------|---|
| | OVBN | - | Overburden | Unconsolidated overburden |
| Windlake Formation | MAFt | - | Mafic volcanoclastic | Confined to Upper Sedimentary and Mafic Volcanic Sequence |
| | MDU | - | Mudstone and tuffaceous mudstone | Calcareous carbonaceous and mafic tuffaceous mudstones of the Upper Sedimentary and Mafic Volcanic Sequence |
| Kudz Ze Kayah Formation | SED | - | Undifferentiated sedimentary rock | Variable; includes locally calcareous sandstone, wacke, recrystallized limestone |
| | MDS | - | Mudstone, tuff and rhyolite | Undifferentiated carbonaceous mudstone, tuffaceous mudstone and carbonaceous coherent rhyolite |
| | | MDSt | - | Rhyolite tuff-dominant mudstone |

| Stratigraphic unit | Geology detail code | Geology detail sub-code | Lithology | Description | |
|--------------------|---------------------|-------------------------|--|---|---|
| | | MDS _c | Carbonaceous mudstone | >15% carbonaceous component, weakly heterolithic to semi-massive mudstone with slaty cleavage | |
| | | MDS _w | Coherent rhyolite with minor carbonaceous mudstone | <15% carbonaceous component, laminae of mudstone intercalated with coherent rhyolite | |
| | PEL | - | Pelite | Interpreted sedimentary protolith. Biotite rich rock with quartz, feldspar and/or calcite | |
| | | PEL _c | Calcite-rich pelite | Biotite and calcite dominant sedimentary rock | |
| | | PEL _q | Quartz-rich pelite | Biotite and quartz dominant sedimentary rock | |
| | CHT | - | Chert | | |
| | | CHT _c | Chert with interlayered carbonaceous mudstone | | |
| | | | OA | Magnetite-bearing massive sulphide | Massive sulphide with abundant disseminated euhedral medium-grained magnetite or laminated magnetite. Commonly includes PY+MG+SP+GL±CP±PO |
| | | | OB | Wispy laminate, fine buckshot textured, non-magnetite bearing massive sulphide | Fine to coarse-grained massive sulphide consisting of PY+SP+GL±CP±PO±MG. Magnetite is typically trace or absent |
| | | | OF | Pyrrhotite-rich sulphide | Massive sulphide with >50% pyrrhotite. Sulphide assemblage of PO+MG±CP±PY±SP±GL |
| | | | OH | Pyrite-rich massive sulphide | Fine-grained, homogeneous pyrite dominated (>80% pyrite) massive sulphide |
| | | | OC | Chalcopyrite + pyrrhotite net-textured massive sulphide | Fine to coarse-grained massive sulphide comprised of dominantly macroscopic CP+PO comprising >10% to <50% |
| | | | OD | Brecciated sulphide | Sulphide with crackle breccia to mosaic breccia texture. Sulphide assemblage of PY+SP+GL±CP±PO±MG |
| | | | OG | Chalcopyrite-rich sulphide | Semi-massive to massive sulphide with >30% CP. Typical sulphide assemblage of CP+PO+PY+SP±GL±MG |
| | | | OI | Heavily disseminated sulphide in schistose host rock | Stringer and disseminated sulphide to semi-massive sulphide mineralisation with >20% sulphide |
| | | | OJ | Heavily disseminated sulphide in proximal altered rock | Stringer sulphide to semi-massive sulphide hosted within altered rocks with an alteration assemblage of CL+CI Sulphide assemblage of PY+CP+SP±PO±GL |
| | | | OK | Heavily disseminated sulphide and/or stringer style mineralisation associated with silicate gangue | Heavily disseminated sulphide and/or stringer style mineralisation associated with barite ± quartz ± carbonate gangue |
| | RHY | - | Undifferentiated rhyolite | Typically altered and difficult to identify | |
| | RHY _c | - | Coherent rhyolite | Undifferentiated coherent rhyolite | |
| | | RHY _{cw} | Curdy-textured and/or flow-banded | Flows or sub-volcanic intrusions with definitive siliceous flow banding or relict flow banding textures | |
| | | RHY _{cf} | Feldspar ± quartz porphyry | Medium to coarse-grained feldspar and quartz porphyritic texture rhyolite | |

| Stratigraphic unit | Geology detail code | Geology detail sub-code | Lithology | Description |
|--------------------|---------------------|-------------------------|--------------------------------|---|
| | | RHYcq | Quartz porphyry | Medium to coarse-grained quartz-phyric texture |
| | RHYi | | Aphanitic rhyolite | Aphyric massive to semi-massive siliceous rhyolite interpreted as intrusive dykes and sills |
| | RHYv | - | Volcaniclastic rhyolite | Undifferentiated fine to medium-grained volcaniclastic |
| | | RHYvl | Lapilli tuff | Heterolithic tuff with >15% lapilli typically in an ash-dominated ground mass |
| | | RHYva | Coarse-grained to ash tuff | Phaneritic ash tuff with >10% of crystals occurring as >1-<2 mm typically in an ash-dominated ground mass |
| | | RHYvx | Quartz ± feldspar crystal tuff | Quartz, ± feldspar-phyric (>10%) in an ash-dominated ground mass |
| | MAFi | - | Mafic intrusions | Chlorite-altered mafic intrusion, primarily in the footwall but also occurs as narrow dykes or sills within the felsic sequence |
| | FLZ | | Fault Zone | |

Abbreviations: PY = pyrite, PO = pyrrhotite, MG = magnetite, CP = chalcopyrite, SP = sphalerite, GL = galena, CL = chlorite, CI = cordierite.

Surficial Geology and Overburden

Regional mapping (Jackson, 1993) delineated the extent of morainal deposits and colluvial aprons on the slopes above the northerly trending Geona Creek valley, and glaciofluvial sediments in the valley floor. The morainal deposits comprise silty to sandy gravels with cobbles and minor boulders and the colluvial aprons comprise granular soils with clastic components to boulder size. Glaciofluvial sediments in the valley bottom comprise predominantly sands and gravels with minor silt.

Investigations of the surficial geology undertaken across the mine project area (summarised in: Golder Associates, 1996; Alexco Environmental Group, 2015) include surface mapping, test pitting, and geotechnical and hydrogeological drilling. Glaciofluvial sediments comprising ablation till have been mapped in the valley floor, locally to 30 m in thickness and progressively thinning up the valley slopes. Several small eskers and a glaciofluvial terrace have also been identified in the project area and may provide a source of construction aggregate.

An active alluvial fan is present at the confluence of Geona and Fault Creeks south of the ABM deposit area. Material in the fan comprises loose to compact gravelly sand with rare cobbles.

Wind Lake Formation

The Wind Lake Formation outcrops on topographic highs to the west, north and east of the ABM deposit (Figure 11) and is encountered in holes collared above the Krakatoa Zone and eastern parts of the ABM Zone where the Wind Lake Formation stratigraphy is juxtaposed against Kudz Ze Kayah Formation by late faulting. The Wind Lake Formation comprises undifferentiated black and grey carbonaceous and calcareous to weakly calcareous mudstone, siliceous siltstone and chert that is locally intercalated with green-grey to olive green fine-grained mafic volcaniclastic units occurring as massive intervals up to 7 m in thickness. The mafic volcaniclastic rocks are interpreted to be epiclastic in nature, derived from a distal mafic volcanic source. The Wind Lake Formation is fissile and typically rubbly in drill core, and the contact with underlying Kudz Ze Kayah Formation appears conformable.

Kudz Ze Kayah Formation

The Kudz Ze Kayah Formation both structurally and stratigraphically underlies the Wind Lake Formation in the vicinity of the ABM deposit and is host to the massive sulphide mineralisation. The Kudz Ze Kayah Formation in the vicinity of ABM comprises a thick sequence of felsic volcanic schist interbedded with variably carbonaceous metasedimentary and calcareous mafic schist units. Primary textures in these rocks have generally been poorly preserved as a result of the effects of hydrothermal alteration, metamorphism, and polyphase deformation.

- Carbonaceous units (MDS):
 - A range of lithologies (MDS) occur within the upper part of the Kudz Ze Kayah Formation sharing the commonality of a carbonaceous component. This includes rhyolite tuff-dominated mudstone, carbonaceous mudstone and coherent rhyolite with minor carbonaceous mudstone. The units have variably undergone widespread isoclinal folding with transposition of minor fold limbs, and where strongly carbonaceous the rock is fissile and rubbly in drill core. These lithologies are not typically mineralised, however where locally the mudstones are in direct contact with massive sulphide they may be partially mineralised over ~1 m from the massive sulphide contact. Near the edges of the deposit, and particularly in the down-dip portions, mudstones and related ash tuffs are interpreted to be lateral equivalents to the massive sulphide horizon on the basis of alteration, mineralisation and structural position.
- Coherent rhyolite:
 - Various units mapped as coherent rhyolite (RHYc) are evident, predominantly comprising quartz-sericite schist for which the protoliths are interpreted to have been rhyolitic flows and shallow intrusions. Flow-banding is locally preserved, as are peperitic and hyaloclastite textures. Variation in the feldspar and quartz phenocryst components of the bodies indicates a multi-phase magmatic emplacement history.
- Aphanitic rhyolite:
 - Massive grey, weakly to un-foliated aphanitic rhyolite (RHYi), which may locally contain quartz and/or feldspar phenocrysts and rare 1–4 mm amygdales, is interpreted as a largely shallow intrusive unit. It is interpreted to have intruded the mafic intrusive in the footwall of the ABM Zone mineralisation, is interpreted in places to have intruded some volcanoclastics post-lithification. To the southeast the unit occurs as intrusive masses with aphanitic interiors that grade outwards into flow-foliated margins displaying peperitic contacts indicative of shallow sub-seafloor emplacement.
 - Much of the unit is mineralised with a fine dusting of pyrite that imparts a grey to dark grey colour, as well as medium to coarse-grained pyrite and rare sphalerite within irregular brittle quartz and/or calcite stringer veins, and this indicates emplacement occurred pre- to syn-mineralisation.
- Volcaniclastic rhyolite:
 - Rhyolitic rocks which are interpreted to be primary fragmental in nature, and now predominantly comprising quartz-sericite schist, have been logged as rhyolitic volcanoclastics (RHYv). The most common volcaniclastic rock identified in logging is lapilli tuff, with well-preserved fragmental texture rarely evident. The upper portion of the Kudz Ze Kayah Formation in the southeast corner of the ABM deposit comprises a significant thickness of massive fine-grained ash tuff with clay-altered lenses that are interpreted as possibly after flattened pumice clasts. Coarse-grained ash tuffs are interpreted elsewhere in the deposit; however, individual units rarely display lateral continuity. Fine-grained volcaniclastic with quartz phenocrysts, and less commonly feldspar phenocrysts, are most abundant in the upper and northwest part of the deposit, stratigraphically below ash tuff in the southeast and beneath the mafic footwall intrusives. The volcaniclastics are likely to be predominantly epiclastic in nature; however, it is not unlikely that a significant

component also comprises hyaloclastite facies equivalents of the coherent rhyolite units. It is also possible that some rocks grouped with the volcanoclastics may in fact be the result of heterogeneous hydrothermal and diagenetic alteration of coherent rhyolite units with subsequent compaction and deformation leading to the development of pseudo-fragmental textures.

- Footwall mafic and other intrusions:
 - Mafic intrusive rocks (MAFi) are present lower in the stratigraphy, comprising numerous ~0.5 m to 5 m thick dykes and sills, with a large (to 50 m thick) and more continuous mafic sill located in the footwall to massive sulphide mineralisation of both the ABM and Krakatoa Zones. The same thick mafic sill also hosts minor sulphide mineralisation beneath the ABM Zone and massive sulphide mineralisation that comprises a significant part of the Krakatoa Zone (Duncan, 2015). Smaller dykes and sills range from aphanitic, green and chlorite-bearing to biotite-rich intrusions that are typically calcareous. Contacts are generally sharp with chilled margins. The mafic bodies are rarely amygdaloidal and in the southeast of the deposit there are some potential examples of peperitic contacts with felsic host rocks.
 - The large footwall sill at Krakatoa varies from a medium-grained, banded, chlorite-biotite-carbonate schist to schist with dark chlorite and/or amphibole-bearing patches that may represent a relict gabbroic texture.
 - The volcanogenic massive sulphide mineralisation hosted by the thick mafic sill, combined with possible peperitic margins and amygdales, would indicate emplacement of the sill into the felsic volcanic pile at a shallow depth below the seafloor prior to mineralisation. The mix of peperitic and sharp mafic contacts would suggest that the felsic pile was variably lithified at the time of emplacement. A lack of pillow textures and reworked mafic clasts would indicate that the thick mafic unit was not emplaced as a flow on the seafloor to any significant degree.

7.3.2.2 GP4F Deposit

The GP4F deposit predominantly lies within felsic metavolcanic rocks within the upper parts of the Kudz Ze Kayah Formation. The host rocks are summarised after Jones (2016) in Table 10.

Table 10: Summary of the stratigraphic sequence hosting the GP4F deposit (after Jones, 2016)

| Formation | Stratigraphic sequence | Features | Comments |
|---------------|----------------------------|--|--|
| Kudz Ze Kayah | Upper Sedimentary Sequence | Metamorphosed felsic and possibly intrusive rocks, biotite and biotite-actinolite-chlorite-rich sediment, carbonaceous sediment, mafic schist | Carbonaceous sediment at base grades up into a thicker section of dominantly felsic units, roughly equivalent to ABM stratigraphy |
| | Upper Felsic Sequence | 120–160 m thick section of dominantly felsic volcanic and intrusive rocks, cut by numerous narrow mafic dykes | Relatively massive and less deformed, feldspar-quartz augen units (porphyry or stretched lapilli?), also rhyolite flow units, overall brown tinge due to pervasive biotite, highly variable strain |
| | Mineralised Sequence | Top is marked by appearance of quartz-eye porphyry unit, schistose tuff and sediment commonly hosts GP4F Zone, quartz and feldspar-quartz porphyry | Main feature is the alteration associated with the GP4F Zone, thickness ranges from 40 m to 60 m |
| | Lower Mineralised Sequence | Mixed sequence of felsic tuff, porphyry and intrusions, minor biotite to biotite-actinolite-chlorite-rich sediment, mafic dykes (biotite schist) | Usually shows fault contact at the base, thickness ranges from 25 m to 70 m |
| | Lower Sedimentary Sequence | Carbonaceous sediment at top underlain by undifferentiated and calcareous sediment; cut by mafic dykes; all rocks generally dark in colour | Strong faulting at upper contact in most holes, carbonaceous content is variable |

The rocks have been metamorphosed to upper greenschist to amphibolite facies, and deformation has obliterated most primary volcanic and sedimentary features in the rocks. The sequence is strongly foliated with one dominant S2 foliation (MacRobbie and Holroyd, 2000).

Upper Sequence

The >280 m thick “Upper Sedimentary Sequence” comprises metamorphosed and schistose felsic volcanic and quartz porphyry rocks interleaved with numerous, narrow layers of schistose sedimentary and mafic units, underlain by ~50 m thick, carbonaceous sedimentary unit that returns a strong EM response and, as such, is a prominent marker unit.

The “Upper Felsic Sequence”, ranging from 120 m to 160 m in thickness, comprises fine-grained to quartz porphyritic felsic tuff, locally hosting biotite porphyroblasts and with brownish mottled appearance, interleaved with narrow layers of undifferentiated, brown to green, schistose units of sedimentary origin. Mafic schist units also occur and are commonly calcareous. The lower part comprises thick, relatively massive, weakly to moderately foliated felsic rocks, including minor quartz and feldspar porphyry units. White to cream coloured feldspar augens are widespread and described variably as lapilli and porphyry texture. The massive felsic units are interpreted as possible intrusive bodies which correlate with large sills mapped by Cominco in the area between ABM and GP4F.

Mineralised Sequence

The “Mineralised Sequence” hosts the GP4F deposit and associated alteration zone. The top of the Mineralised Sequence is generally defined by the appearance of a distinctive bluish quartz eye unit followed by altered felsic schist, which appears to either be a rhyolite ash tuff or sedimentary rock. The altered felsic schist is commonly host to mineralisation and, as its name implies, is normally strongly altered. Altered schist is underlain by another porphyritic unit that contains quartz and/or feldspar phenocrysts as well as feldspar augens (lapilli?), similar to those in the Upper Felsic Sequence.

Below the quartz and/or feldspar porphyry unit additional schistose rocks, including undifferentiated sediment, felsic tuff and rhyolite porphyry, form the Lower Mineralised Sequence. These rocks commonly host the Lower Zone, a narrow mineralised zone with similar alteration and mineralisation to the GP4F Zone.

Weakly deformed, blue quartz-phyric porphyries located immediately below the massive sulphide of the GP4F Zone (refer below) have yielded ages of 347–345 Ma (Murphy *et al.*, 2006), suggesting that they are intrusive and part of the Wolverine suite (Peter *et al.*, 2007).

Lower Sequence

The “Lower Sedimentary Sequence” is poorly known as few drillholes penetrate it to any extent. The upper contact is characterised by the presence of dark, carbonaceous sediment. The longest intercept of the Lower Sedimentary Sequence is from K15-224, which intersected 60–70 m of carbonaceous rock followed by inter-leaved mafic schist, sedimentary units and biotite-bearing calc-silicate (actinolite?) schist. The calc-silicate schist is weakly foliated, massive dark green to brown rock with 2–5 cm-long lenses of lighter coloured material hosting amphibole clots, and was likely derived from calcareous sedimentary protoliths.

7.3.3 Structure and Metamorphism

7.3.3.1 ABM Deposit

Host rocks to the ABM deposit have been deformed and metamorphosed to upper greenschist to lower amphibolite facies (Peter *et al.*, 2007).

S₀ is most commonly recognised as bedding in mudstone and tuff units assigned to the Wind Lake Formation, and locally within the Kudz Ze Kayah Formation overlying and lateral to the ABM deposit. A

foliation observed in or near fold axes and designated S_1 , is oriented parallel to S_0 (MacRobbie, 1995) and may represent a compaction fabric.

The dominant deformation fabric in the ABM deposit area is a penetrative cleavage (S_2) that dips approximately 27° towards 007° and is most intense in areas of increased phyllosilicate alteration. A second localised penetrative foliation (S_3) appears similar to the S_2 foliation albeit with a steeper dip of 46° towards the north. It is possible that S_3 represents a rotated S_2 fabric produced by later brittle faulting, however this remains to be demonstrated unequivocally.

Kink banding present throughout the area (S_4) comprises a conjugate pair of spaced foliations dipping steeply toward west-northwest and south-southeast.

Lineations measured in core and at surface, and interpreted to represent F_2 fold axis, display an average plunge of 18° towards 056° (MacRobbie, 1995).

Although small, presumably parasitic, folds are observable in drill core, no large-scale fold patterns have been identified in the field. Early work on the Kudz Ze Kayah Property by Cominco led to the interpretation that the ABM deposit is overturned, based primarily on the distribution of intense chlorite-cordierite alteration and chalcopyrite-pyrrhotite-rich mineralisation in both hangingwall and footwall, and on the assumption that mineralisation was emplaced on the seafloor. Current work supports the interpreted emplacement of mineralisation in a sub-seafloor position, with which these alteration and mineralisation patterns which would be consistent, but which would also negate the need for folding to explain that distribution.

Several possible growth faults have been identified within Krakatoa Zone, striking west-northwest and dipping steeply north-northeast. These structures have been identified based on apparent offsets and rapid changes in the thickness and extent of coherent mafic and felsic intrusive bodies, rapid changes in the thickness and extent of massive sulphide ore, and localised zones of elevated copper-gold mineralisation and intense chlorite alteration. It is most likely that the growth faults predate mineralisation and were conduits for hydrothermal fluids during emplacement of the ABM mineralisation.

Host rocks, mineralisation and pervasive deformation fabrics are cut by two significant late faults; East Fault and Fault Creek Fault, both which are filled with cataclasite (including sulphide clasts) and gouge (Figure 16). These faults can be traced as trends in aeromagnetic data for kilometres to tens of kilometres. Structures of similar timing and orientation can be identified in regional datasets. The East Fault is sub-vertical, strikes 052° , and is interpreted to truncate and offset the eastern end of the ABM Zone. Using the basal Wind Lake contact, plus the ABM and Krakatoa sulphide deposits as tenuous stratigraphic equivalents, then the East Fault has displaced the Krakatoa Zone at least 200 m downward (i.e. south-block down). Alternatively, an interpreted dextral strike slip movement along East Fault could provide a similar apparent offset.

The Fault Creek Fault intersects the topographic surface approximately 290 m southeast of the East Fault and dips to the northwest at an average of approximately 72° . The near-surface dip is somewhat shallower but steepens with depth. The degree of displacement across the Fault Creek Fault is unclear, however contact between Wind Lake Formation and Kudz Ze Kayah Formation in outcrop and drilling would indicate a potentially negligible offset.

The East Fault and Fault Creek Fault bound a fault-block containing the massive sulphide-bearing volcanic and sedimentary package that comprises the Krakatoa Zone. This fault block is dissected by a number of smaller-scale late-stage faults that do not appear to extend beyond the larger bounding faults and have offsets of less than 20 m. These smaller-scale structures are characterised by up to several metres core length of cataclasite and gouge.

The Wind Lake Formation and Kudz Ze Kayah Formation both display a moderate to intense foliation through all rock types, with increased foliation intensity within rocks with a high phyllosilicate and/or

carbonaceous content. In the upper part of the Kudz Ze Kayah Formation, for example, the units have variably undergone widespread isoclinal folding with transposition of minor fold limbs.

Massive sulphide mineralisation typically displays fine banding at millimetre scale, development of augen and pressure shadows around more competent components, and occasionally durchbewegung textures, all evidence of sulphide deformation. Petrological examination indicates recrystallization of the sulphide minerals, except pyrite, occurred during metamorphism. Overall the massive sulphide lenses behaved as competent bodies in contrast to adjacent phyllosilicate-rich host rocks, principally due to the high pyrite content, resulting in increased strain adjacent to the massive sulphide margins.

At the deposit scale it appears that the stratigraphic sequence is not overturned, and there is no evidence to support the interpretation of large-scale folding of the ABM Zone. Although vein-style/disseminated sulphide mineralisation occurs both in the footwall and hangingwall of the massive sulphide ores, this is not of itself evidence of orebody folding, particularly if the sulphide mineralisation is emplaced below the seafloor. There is no fold repeat of the pre-mineralisation footwall mafic sill at either ABM or Krakatoa, and the down-dip transition from massive sulphide into partially mineralised clastic horizon displaying textures indicative of replacement would indicate that the down-dip extent of ABM Zone is not a fold hinge.



Figure 16: East Fault (D4) characterised by polyolithic fault breccia and minor gouge (K15-262 at ~ 127.2 m)

Source: Hughes and Baknes, 2015

7.3.3.2 GP4F Deposit

At GP4F, the mineralisation and all host rocks, except the mafic dykes, have been metamorphosed to upper greenschist facies, as evidenced by the presence of garnet, biotite, chlorite, albite, and titanite. However, the sulphides at GP4F are significantly less recrystallized than at ABM (Kudz Ze Kayah) due to a lower metamorphic overprint. The GP4F deposit contains trace to minor gahnite, and this mineral is believed to have formed by desulphidation of sphalerite during metamorphism (Spry and Scott, 1986). A major deformation event in the region has obliterated most primary volcanic and sedimentary features in the rocks.

Structurally, the sequence is strongly foliated with 1 dominant foliation (S2). There is only rare evidence of small scale isoclinal folding in drill core; but, as mentioned above, large scale isoclinal folding and foliation parallel faulting is envisioned. One late (?) steep fault with minor vertical offset, is interpreted to cut drillhole K98-190 (MacRobbie and Holroyd, 2000).

A large, well developed, property-scale lineament interpreted as a major “first order” fault structure, similar to the East Fault and Fault Creek Fault occurs just to the east of the presently defined GP4F deposit (Figure 17). The structure appears to limit the eastern extent of the GP4F mineralisation (Voordouw *et al.*, 2016).

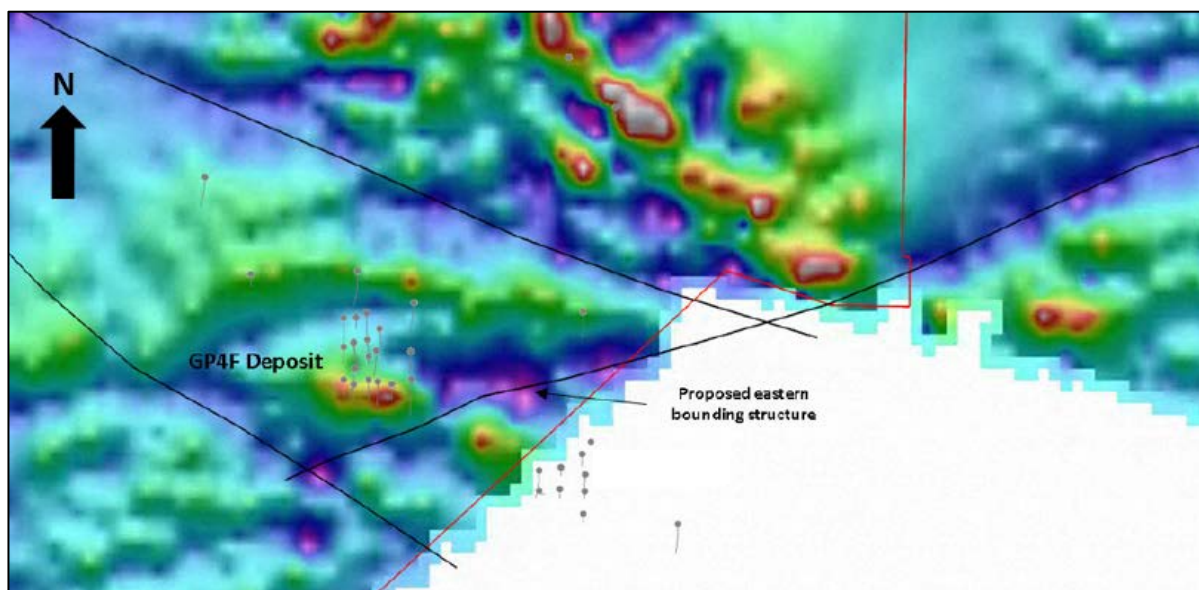


Figure 17: Screen capture of merged 2015 and 2016 airborne magnetic data over the GP4F deposit (first vertical derivative) showing a prominent lineament to the east of the GP4F deposit, interpreted as a major bounding structure

Source: Voordouw *et al.*, 2016

The east-northeast orientation is very similar to the East Fault and Fault Creek Fault structures and represents a structural grain that persists across the KZK Property region. The proposed structure has not been intersected in any drilling to date but it does occur in a location where Cominco geologists interpreted a series of north and northeast striking structures near the GP4F deposit (Voordouw *et al.*, 2016).

7.3.4 Mineralisation

7.3.4.1 ABM Zone

Massive sulphide of the ABM Zone (Figure 14) is up to 39 m thick, extending ~700 m along strike and ~500 m down dip. It dips to the north-northeast at ~35° near surface, transitioning to a dip of ~15° at around 200 m depth below the valley floor. The up-dip extent of the deposit is truncated by erosion and covered by ~2 m to 20 m of overburden.

Massive sulphide mineralisation of the ABM Zone occurs as several stacked massive sulphide lenses to the west, transitioning to a single massive horizon at around 415,025 m E and extending to ~415,250 m E where it is then truncated by the post-mineralisation East Fault. Stockwork and disseminated mineralisation occurs both in the hangingwall and footwall to massive sulphide, and to a much lesser degree between massive sulphide lenses.

Sulphide mineralisation is dominated by pyrite, sphalerite, pyrrhotite (+ marcasite), galena and chalcopyrite, with minor arsenopyrite and a range of sulphosalts predominantly comprising tennantite-tetrahedrite and freibergite (Figure 18). Both the up-dip part of ABM Zone and most of Krakatoa Zone have elevated sulphosalt content relative to the remainder of the ABM deposit.

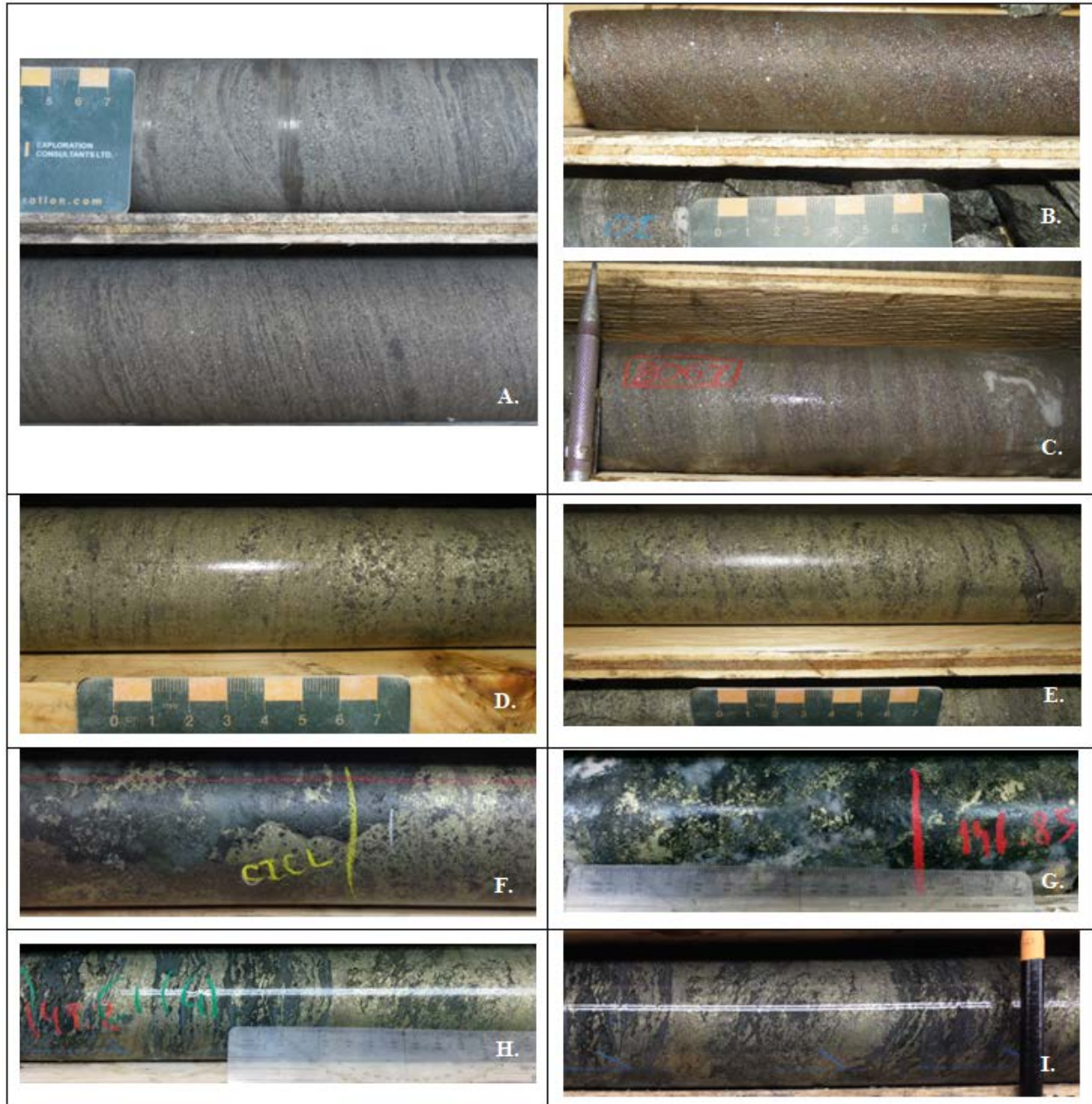


Figure 18: Photographs of ABM deposit massive and disseminated sulphide types

Photo A: OA with medium-grained magnetite forming thin bands within massive pyrite. Photos B and C: OB showing disseminated red-brown sphalerite in medium- to coarse-grained pyrite and quartz-carbonate gangue. Photos D and E: OG consisting of massive chalcopyrite intergrown with clots and narrow bands of pyrrhotite. Photos F and G: Variations of OC showing coarse-grained net-textured chalcopyrite and pyrrhotite associated with strong chlorite alteration and quartz-carbonate gangue. Photos H and I: OJ consisting of deformed stringer-style chalcopyrite-pyrrhotite mineralisation in intense chlorite-cordierite alteration.

Source: Hughes and Baknes, 2015

7.3.4.2 *Krakatoa Zone*

Mineralisation of the Krakatoa Zone (refer Figure 13 and Figure 14) occurs within Kudz Ze Kayah Formation rocks dipping 35° to the north-northeast that are bound to the west by the East Fault and to the east by the Fault Creek Fault. Although of lesser extent, the distribution of mineralisation within the Krakatoa Zone is more spatially complex than the ABM Zone. Massive sulphide mineralisation occurs within three principal mineralised horizons:

- 1) The “Upper lens”, broadly interpreted as the stratigraphic equivalent to the ABM lens.
- 2) The “Main lens”, the major component of Krakatoa Zone in terms of sulphide mineralisation with a true thickness up to 22 m.
- 3) A less pronounced and semi-continuous “Lower lens”.

Mineralisation is broadly concordant with stratigraphic layering of the host rocks, extending over ~200 m of strike, at least 500 m down-dip, and up-dip to the base of glacial overburden of 20–30 m thickness.

Several pre- to syn-mineralisation growth faults are thought to influence the massive sulphide bodies at Krakatoa in terms of offsets and changes in massive sulphide thickness. Both the large coherent mafic and aphanitic rhyolite bodies appear to have an influence on the spatial distribution of sulphide ore. As these bodies are themselves mineralised, it is likely that these coherent bodies acted as fluid aquacludes during ore formation.

Host rock types and alteration styles of Krakatoa Zone mineralisation are for the most part similar to those encountered in the ABM Zone. The key difference is the degree of mineralisation associated with the mafic sill, which below ABM Zone is only poorly mineralised. The Main lens comprises the bulk of mineralisation at Krakatoa, with massive sulphide occurring both within the felsic volcanics immediately beneath the mafic sill, and within the mafic sill after replacement of enclaves of felsic volcanoclastics and/or replacement of the mafic sill itself.

7.3.4.3 *GP4F Deposit*

Mineralisation of the GP4F Zone comprises narrow, high-grade lenses of massive sulphide (pyrite-pyrrhotite-sphalerite-galena) within an envelope of stringer and disseminated sphalerite-pyrite ± pyrrhotite-galena-chalcopyrite mineralisation between sections 419,350 m E and 491,560 m E (Jones, 2016).

More typically, the GP4F Zone comprises stringer and disseminated-style sulphide mineralisation within strongly chlorite-biotite altered host rocks (Figure 19). Sulphide mineralisation typically comprises 0.1 cm to 1 cm wide sulphide stringers and 1 cm to 4 cm wide bands of 5–40% sphalerite ± galena, and pyrrhotite-pyrite-chalcopyrite and various combinations of the same. Chalcopyrite also occurs in fractures, commonly with pyrrhotite or pyrite (Jones, 2016). There is some evidence of the sulphides overprinting the altered groundmass (Boulton, 2002), indicative of a replacement-style of sulphide mineralisation. Alternatively, the lack of banding and preferred orientations for sulphide could also be the result of recrystallization through regional metamorphism.

The Lower Zone, 1.5 m to 20 m thick and located 15–40 m below GP4F Zone, comprises thin semi-massive to massive sulphide (pyrrhotite-sphalerite-pyrite) associated with deformed quartz veins and stringer to disseminated sulphide mineralisation similar to the GP4F Zone. In some places the Lower Zone only comprises stringer to disseminated sulphide mineralisation. The Lower Zone is characterised by variable weak to strong alteration (Jones, 2016).

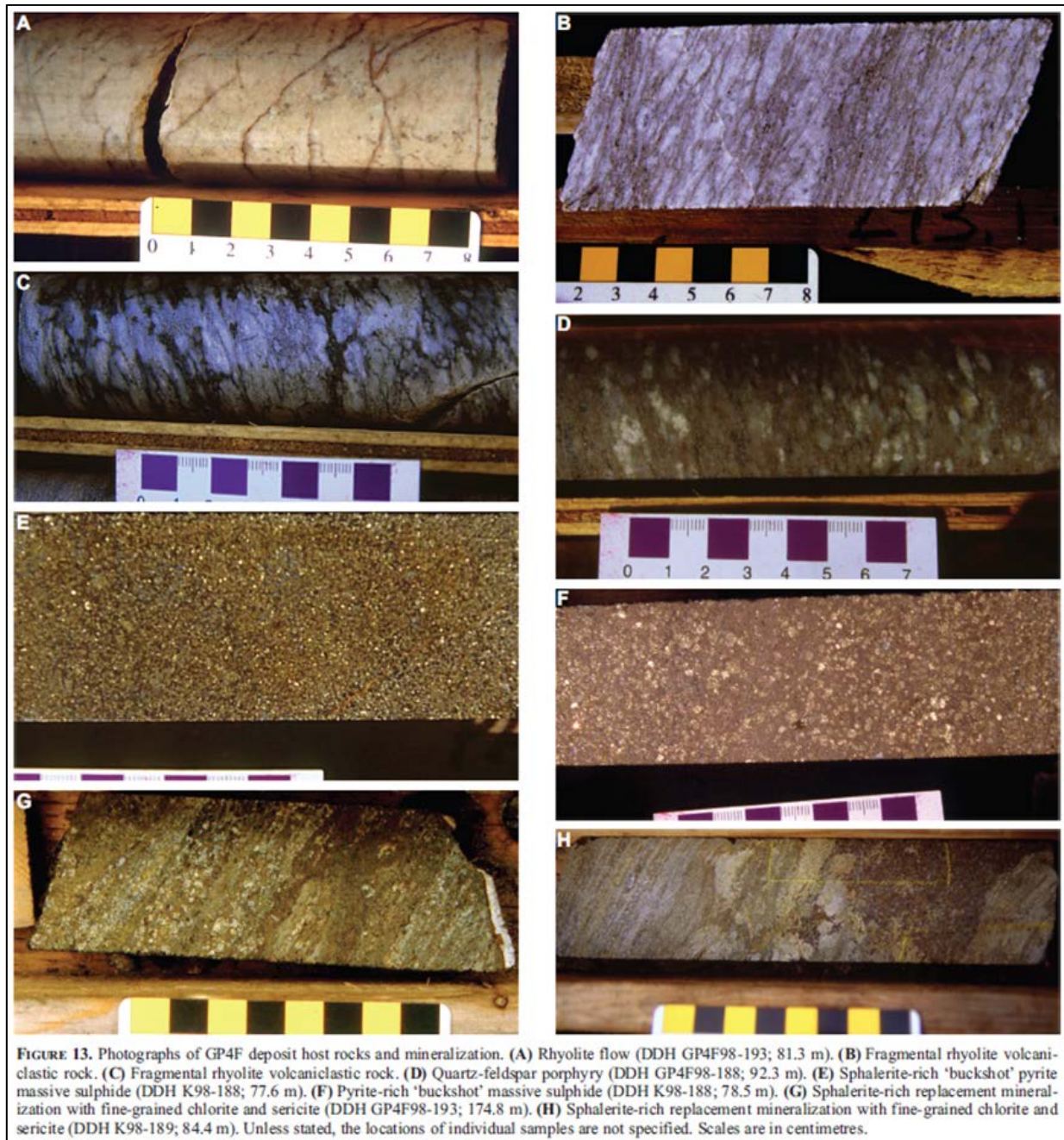


Figure 19: Photographs of GP4F deposit host rocks and mineralisation

Source: Peter et al, 2007

7.3.5 Alteration

7.3.5.1 ABM Deposit

The following description is an extract from Peter *et al.* (2007).

The VHMS deposits of the Finlayson Lake area are associated with hydrothermally altered host rocks. In the stratigraphic footwalls, alteration styles varying from chlorite (Fyre Lake, ABM, Wolverine, Ice), sericite (ABM, GP4F, Wolverine), silica/quartz (ABM, Wolverine), carbonate (Wolverine) and albite (ABM). Feeder zones/stringer veins are present at the Fyre Lake, ABM, Wolverine and Ice deposits. Hangingwall alteration is present at Fyre Lake (weak chlorite) and Wolverine (weak sericite).

At ABM, structural hangingwall (stratigraphic footwall?) rocks have been hydrothermally altered to sericite, chlorite, and albite, and distributed in discrete zones; with alteration intensity increasing with proximity to sulphides. The most proximal alteration at the immediate base of the massive sulphides is dominated by albite (Figure 20 L), presumably because of intense replacement of detrital sedimentary and volcanoclastic rocks. This gives way to Fe chlorite-dominated alteration (Figure 20 J) that is commonly associated with chalcopyrite and pyrrhotite blebs and disseminations, and pyrrhotite ± chalcopyrite ± pyrite ± sphalerite ± galena veins in the feeder zone. This, in turn gives way to a more distal sericite-dominated (±disseminated pyrite and/or pyrrhotite) alteration in the outermost zones (Figure 20 K).

Silicification is developed only locally in a few places in the chlorite zone associated with sulphide replacement and feeder veins. Ankerite and siderite are ubiquitously developed in almost all of the host rocks in and around the deposit and occurs as Fe carbonate disseminations that have preferentially replaced felsic clasts in volcanoclastic rocks (Figure 20 M). Structural footwall rocks, however, are not visibly hydrothermally altered.

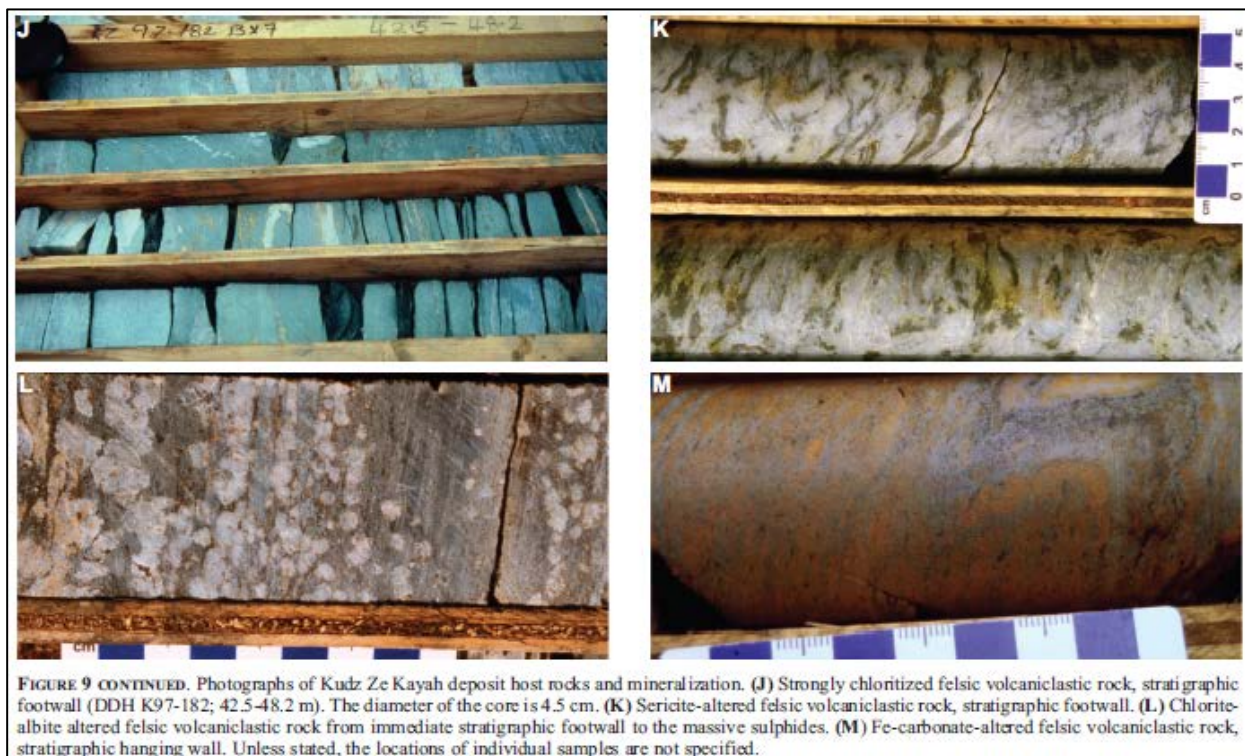


Figure 20: Photographs of ABM deposit host rocks and alteration

Source: Peter et al., 2007

7.3.5.2 GP4F Deposit

The dominant alteration type in the GP4F Zone is similar to the “proximal” alteration found at the ABM deposit (Hughes and Baknes, 2015), characterised by chlorite, cordierite and minor biotite. The key differences are the presence garnet porphyroblasts, modal biotite dominant over chlorite, and gahnite (Boulton, 2002). The gahnite, present in trace to minor quantities, is interpreted to have formed by desulphidation of sphalerite during metamorphism (Spry and Scott, 1986). Alteration is typically strongest above the massive sulphide lenses of the GP4F deposit. Muscovite commonly occurs peripheral to more intense alteration and mineralisation, as it does at ABM, although in somewhat lower abundance.

7.3.6 Metallurgical Domains

Aside from the stringer/disseminated sulphide style, the massive sulphide can be broadly separated into that with a significant pyrrhotite-magnetite component and that which is essentially pyrite dominant. Reconciliation of geochemical data modelled as part of the resource estimate work (Green, 2016) against the metallurgical domains based on field logging demonstrates a clear geochemical differentiation.

- MET2-4: elevated Cu, Fe, Bi, Se; moderate Pb, Zn, Sb; reduced Ag, Au, As, Ba, Hg
- MET5-7: elevated Ag, Au, As, Ba, Hg, Sb; moderate Fe, Pb, Zn, Bi, Se; reduced Cu
- MET8: elevated Cu; and low Ag, Au, Fe, Pb, Zn, As, Ba, Bi, Hg, Sb and Se.

However, when the data is normalised with respect to Fe content it can be seen that sulphide mineralisation in MET8 is in fact characterised by elevated Cu, Bi, Se and moderate Ag, Au, Pb, Zn, As, Ba, Hg, Sb (Table 11).

Table 11: Geochemical data for MET2-4 (magnetite), MET5-7 (massive sulphide) and MET8 (stockwork) domains, inclusive of all ABM and Krakatoa Zone ores

| Met domain | Statistic | Ag ppm | Au ppm | Cu % | Fe % | Pb % | S % | Zn % | As ppm | Ba ppm | Bi ppm | Hg ppm | Sb ppm | Se ppm |
|------------------|-------------|---------------|-------------|-------------|--------------|-------------|--------------|-------------|--------------|---------------|--------------|--------------|------------|------------|
| Massive sulphide | Number | 1,823 | 1,812 | 1,823 | 1,823 | 1,823 | 866 | 1,823 | 1,807 | 1,725 | 1,807 | 1,043 | 1,806 | 1,447 |
| | Minimum | -0.30 | -0.07 | -0.01 | 0.76 | -0.01 | -1.00 | -0.01 | -1 | -1 | -1.00 | -1.00 | -1 | -1 |
| | Maximum | 1,181.50 | 19.16 | 18.00 | 49.50 | 14.90 | 49.20 | 29.60 | 39,740 | 256,805 | 608.00 | 248.00 | 9,927 | 1,290 |
| | Mean | 164.76 | 1.63 | 0.92 | 29.96 | 1.97 | 31.32 | 6.55 | 3,077 | 17,981 | 50.63 | 24.08 | 596 | 109 |
| | SD | 113.72 | 1.27 | 1.82 | 10.91 | 1.53 | 13.70 | 3.89 | 3,464 | 32,412 | 54.80 | 27.23 | 726 | 170 |
| | CV | 0.69 | 0.78 | 1.99 | 0.36 | 0.78 | 0.44 | 0.59 | 1.13 | 1.8 | 1.08 | 1.13 | 1.22 | 1.56 |
| Stockwork | Number | 449 | 438 | 450 | 449 | 450 | 139 | 450 | 416 | 343 | 416 | 205 | 416 | 250 |
| | Minimum | -0.30 | -0.07 | -0.01 | 1.50 | -0.01 | -1.00 | 0.00 | -1 | -1 | -1.00 | -1.00 | -1 | -1 |
| | Maximum | 619.20 | 4.65 | 12.60 | 48.00 | 8.35 | 44.45 | 17.35 | 17,892 | 104,896 | 367.00 | 80.10 | 4,146 | 799 |
| | Mean | 68.48 | 0.63 | 1.08 | 16.45 | 0.63 | 9.65 | 2.59 | 1,025 | 5,600 | 45.08 | 6.13 | 164 | 87 |
| | SD | 79.39 | 0.72 | 1.41 | 10.42 | 1.04 | 10.59 | 3.22 | 2,194 | 10,376 | 44.33 | 11.47 | 422 | 144 |
| | CV | 1.16 | 1.14 | 1.3 | 0.63 | 1.64 | 1.1 | 1.24 | 2.14 | 1.85 | 0.98 | 1.87 | 2.57 | 1.66 |
| Magnetite | Number | 576 | 576 | 570 | 576 | 576 | 576 | 195 | 566 | 524 | 566 | 340 | 566 | 397 |
| | Minimum | 1.60 | 0.02 | -0.01 | 1.90 | -0.01 | -1.00 | 0.04 | -1 | 2 | -1.00 | -1.00 | -1 | -1 |
| | Maximum | 859.00 | 5.83 | 10.78 | 49.80 | 6.83 | 48.80 | 18.40 | 20,322 | 70,000 | 696.00 | 66.70 | 3,760 | 1,840 |
| | Mean | 89.41 | 0.95 | 1.09 | 38.83 | 1.11 | 33.81 | 6.43 | 1,508 | 2,864 | 79.67 | 6.54 | 203 | 149 |
| | SD | 70.65 | 0.78 | 1.17 | 7.20 | 1.13 | 11.23 | 3.70 | 2,500 | 7,718 | 55.60 | 6.86 | 361 | 223 |
| | CV | 0.79 | 0.82 | 1.08 | 0.19 | 1.02 | 0.33 | 0.57 | 1.66 | 2.69 | 0.7 | 1.05 | 1.78 | 1.5 |

Abbreviations: SD = standard deviation; CV = coefficient of variation.

Petrographic studies (Macleod, 1994a-b; 1995a-d; Macleod 1997; Macleod, 1999; Townend & Townend, 2015) reveal that ABM Zone sulphide mineralisation above ~1,340 m RL transitions to significantly higher sulphosalt content, a feature also evident in most of the Krakatoa Zone sulphide mineralisation. In both cases the predominant ore type is MET5-7. On this basis the ABM ores were divided into four principal ore types for the purpose of metallurgical testwork.

- Magnetite-pyrrhotite-rich massive sulphide (MET2-4):
 - Pyrrhotite often partially replaced by marcasite
 - Low galena, sulphosalt and arsenopyrite content.
- Pyrite-rich massive sulphide (MET5-7), often with barite:
 - Elevated galena, sulphosalt and arsenopyrite content
 - Visible gold/electrum in thin section.

- Stringer/disseminated sulphide (MET8), typically with chlorite-rich gangue:
 - Broadly similar to MET2-4 mineralogy.
- Sulphosalt-rich ores (MET+1340mRL, Krakatoa):
 - Elevated tetrahedrite (MET+1340mRL) and freibergite (Krakatoa) content
 - Predominantly comprises MET5-7, with minor MET2-4 and MET8 ore types.

A summary of the relative proportion of the metallurgical domains by tonnage, derived from the January 2016 resource estimate, is summarised in Table 12.

Table 12: Summary of proportion of metallurgical domains for the ABM deposit

| Zone | MET2-4 | MET5-7 | MET8 | Comment |
|-----------------------|---|--------|------|---------------------------------|
| ABM Zone (All) | 20% | 65% | 15% | Comprises 100% of ABM Zone |
| ABM (above 1340 m RL) | 18% | 75% | 7% | Comprises 26% of ABM Zone |
| ABM (below 1340 m RL) | 20% | 61% | 19% | Comprises 74% of ABM Zone |
| Krakatoa Zone (All) | 9% | 80% | 11% | Comprises 100% of Krakatoa Zone |
| ABM + Krakatoa (All) | 17% | 69% | 14% | 100% of ABM + Krakatoa zones |
| | <i>MET + 1,340 mRL comprises 16% of combined ABM + Krakatoa zones</i> | | | |

7.3.7 Oxidation

Evidence of oxidation along fractures and faults in the host rock at ABM, such as iron-staining, typically extends to ~18 m vertical depth below surface and in places to ~50 m vertical depth.

A total of 132 core samples from 12 drillholes along the full strike of the ABM deposit to a vertical depth of ~60 m were submitted for ethylene diamine tetra acetic acid (EDTA) analysis. No soluble Cu or Zn was identified, but a level of soluble Pb is present (maximum 668 mg/l, median 140 mg/l). A further 26 samples were also taken from the deepest part of the ABM Zone and analysed by the same method, returning no evidence of soluble Cu or Zn, but also revealing a similar level of soluble Pb (maximum 534 mg/l, median 197 mg/l).

This result is interpreted to indicate that the soluble lead at shallow depths is probably not the result of weathering but may instead be related to a mineralogical characteristic of the Pb-rich component of the ores. It appears unlikely that oxidation of the sulphide ore has extended to any significant depth below the overburden.

7.3.8 Proposed Genetic Model (ABM Deposit)

The following geological description is an extract from Hughes and Baknes (2015).

A genetic model for ABM should acknowledge the strong spatial association between mineralisation and the mafic footwall, which appear to have almost identical footprints in plan view. A genetic model, summarised as a sequence of events, is listed below:

- Rhyolitic volcanism – coherent flows, coarser-grained volcanoclastic deposits and finer-grained volcanoclastic and epiclastic deposits (including quartz-phenocryst bearing units).
- Emplacement of mafic sill complex (i.e. mafic footwall), likely from feeder dykes that occupied the same growth fault that was the locus of felsic volcanism. Note that the thickness and number of individual sills is greatest in the vent region, and that these mafic sills thin outward in association within thickening volcanoclastic ± sedimentary rock.
- Re-initiation of felsic activity as subvolcanic intrusions (RHYi) emanating from the vent complex, forming irregular bodies above, inside and beneath the mafic sill, but also intruding wet and unconsolidated volcanoclastic deposits to form peperitic contacts.

-
- Felsic-mafic-felsic magmatism is followed by the onset of metalliferous hydrothermal activity, also focused on the volcanic vent/growth fault.
 - The majority of these metalliferous fluids are channelled along the footwall mafic sill and contacts of the coherent rhyolite, replacing permeable volcanoclastic and sedimentary units to form the ABM deposit. Mineralising fluids also focused along permeable zones between mafic sills proximal to the vent forming the Krakatoa deposit.
 - In areas beyond the mafic sill, fluid flow becomes diffuse resulting in weaker mineralisation and alteration (down-dip edge?).
 - It is likely that the felsic and mafic volcanism was coeval, although there is no direct field evidence of this. Mineralisation will have formed within 400 m and most likely within 200 m of the seafloor (Doyle & Allen; 2003).

8 Deposit Types

8.1 Deposit Style

ABM and GPF4 are VHMS deposits hosted by a thick sequence of Devonian-Mississippian felsic volcanic pyroclastic rocks. The region is known to host numerous other VHMS deposits including Wolverine, Ice and Fyre Lake.

VHMS deposits are a type of metal sulphide ore deposit, comprising mainly Cu, Zn and Pb (\pm Au, Ag). They are associated with and created by volcanic-associated hydrothermal events in submarine environments (Figure 21). VHMS deposits are both ancient and modern deposits; they are still forming today on the seafloor around undersea volcanoes along many ocean ridges, and within back-arc basins and forearc rifts (Ruijter *et al.*, 2012).

VHMS deposits are predominantly layered accumulations of sulphide minerals that precipitate from hydrothermal fluids on or beneath the seafloor. In modern oceans they are synonymous with sulfurous plumes called “black smokers”. Other distinct deposit features include widespread alteration in rocks adjacent and often contemporaneous to chloritization, silicification and pyritization. Deposit specific features can be found such as sulphide-rich sediments adjacent to the deposit, accumulations of sulphate minerals such as barite and anhydrite, or collapsed areas containing silicious sinter cones (Ruijter *et al.*, 2012).

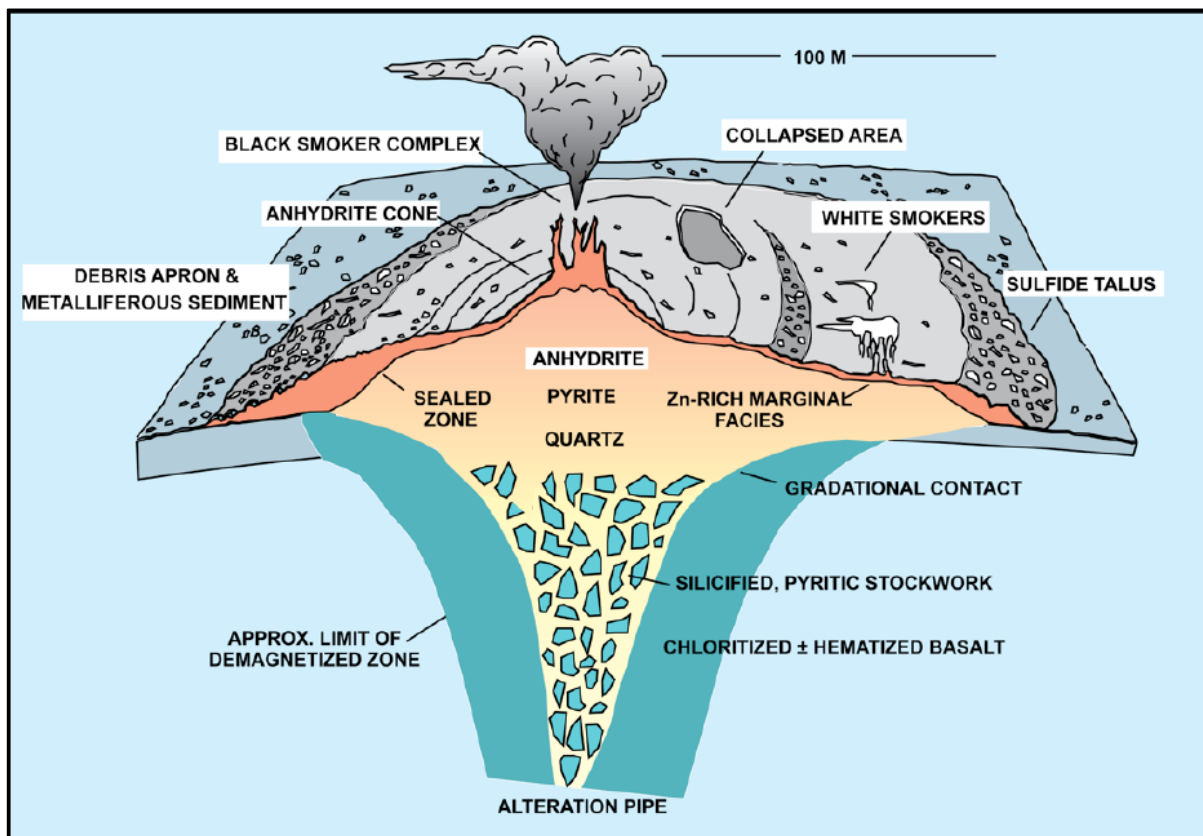


Figure 21: Generalised section showing the volcanic components of a VHMS deposit

Source: Ruijter *et al.*, 2012

8.2 Concepts Underpinning Exploration

Exploration to date has primarily included geological mapping, soil and silt geochemical surveys, magnetic and EM geophysical surveys and drilling.

Geochemical and geophysical surveys have been used to generate targets for drill testing, with all drilling completed using diamond methods.

Drilling has been completed in a staged manner, with drilling of regional targets followed by closer-spaced Mineral Resource definition drilling.

Drilling has resulted in nominal 50 m spacings on 25 m north-south oriented sections extending out to 100 m centres on the peripheries at the ABM deposit. The Krakatoa Zone is sampled targeting pierce points of 25–60 m in the central portion of the deposit to 100 m on the peripheries. At GP4F, drilling has resulted in nominal 50–75 m spacings on 50 m north-south oriented sections extending out to greater than 100 m on the peripheries of the deposit.

Additional analysis should be undertaken on the existing ABM data to try and delineate underlying syn-mineralisation structural controls which may have acted as hydrothermal fluid conduits during ore deposition. Targeting along these trends outside of the existing resource envelope may identify additional ore lenses down-dip/down-plunge out of the range of surface and airborne geophysics. It may also identify transgressive mineralised “feeder zones” which may not have been intersected with drilling due to drillhole orientation.

9 Exploration

Exploration at the KZK Property has been undertaken in two distinct phases:

- 1) Cominco (1993–1998).
- 2) BMC (2015–2016).

9.1 Cominco

As outlined in Section 6.1, early stage exploration by Cominco in 1994 resulted in the discovery of the ABM deposit. Subsequent diamond core drilling delineated a substantial resource at ABM which led to initial mining studies throughout 1995.

Majority of the work by Cominco post-dating discovery of the ABM deposit was focused on mining studies and support for permitting. At the same time additional exploration work was being undertaken to identify additional resources nearby. From the period 1994 to 1999, Cominco completed 12,362 line kilometres (lkm) of DIGHEM airborne surveys, 286.0 lkm of UTEM, 53.7 lkm of HLEM, 35.8 lkm of gravity and 45.1 lkm of ground magnetic surveys in addition to the collection of 2,856 soil samples and property wide mapping at 1:20,000 scale (Holroyd, 1994; Vanderkly, 1995; Schultz, 1996). Several areas were identified as targets and followed up with limited diamond drilling. The most significant of these areas was the GP4F target located 5 km southeast of the ABM deposit that was defined by a coincident magnetic, EM and weak base metal-in-soil anomaly.

The HLEM surveys were carried out using an Apex MaxMin I-10 system, with a 100 m coil separation. The HLEM readings were taken at 25 m intervals along the lines and four frequencies (440 Hz, 880 Hz, 1760 Hz and 3520 Hz) were recorded.

The magnetics survey was carried out using GEM GSM-19 magnetometers. A base station was established at the KZK camp and the total field magnetic readings were corrected for diurnal variations. The base and field magnetometers were synchronised to record simultaneously. Total field magnetic readings were taken at 12.5 m intervals along the grid lines.

Gravity readings were taken with a LaCoste Romberg gravity meter, Model “G”, S/N 494. Base stations were established on the grid and by utilising base station readings (at least two per day), all gravity readings were corrected for diurnal drift and levelled to this common base. Gravity readings were corrected for latitude and elevation (including both free-air and Bouguer corrections). The data was then processed for a Bouguer density of 2.67 g/cc.

All soil and silt samples were analysed for Cu, Pb, Zn, Ag, As, Cd, Co, Ni, Fe, Mo, Cr, Bi, Sb, V, Sn, W, Sr, Y, La, Mn, Mg, Ti, Al, Ca, Na and K by I.C.P. Selected samples were analysed for Au by aqua regia decomposition/atomic absorption spectrophotometry (AAS) and Ba by x-ray fluorescence (XRF) at Cominco Exploration Research Laboratory (CERL) in Vancouver. Samples were typically collected at 100 m spacing in either contour or wide-spaced grid lines.

In 2000, the KZK Property was optioned to Expatriate (Schultze, 2001). Expatriate carried out ground geophysical surveys (UTEM, magnetics) in the area south of the ABM deposit, extending their survey south of the Fault Creek target. Expatriate allowed the option to lapse in late 2001 and no significant results were encountered.

9.2 BMC

Following project acquisition and prior to the beginning of the field season, extensive data validation was undertaken, particularly focused on the previously defined ABM and GP4F deposits. Using this information, CSA Global reported a maiden Inferred Mineral Resource for the ABM deposit (Table 8).

Throughout 2015 and 2016, the majority of the work at the KZK project was focused on future development of the ABM deposit but did include modest exploration programs near the ABM deposit with the aim to add resources to the mine plan. Elsewhere on the property, exploration built on the work completed previously by Cominco by expanding the property wide data for developing targets.

In 2015, BMC contracted Geotech to fly a 267 line km Versatile Time Domain Electromagnetic (VTEM_{TM}) survey over the Kudz Ze Kayah formation on the KZK property (Figure 22). The survey lines were flown at an azimuth of 015° with a traverse line spacing of 150 m and tie lines were flown perpendicular to the traverse lines at a spacing of 1500 m. Subsequent modelling of the 2015 VTEM_{TM} data developed 24 plates of varying size and orientation. The modelled plates are not necessarily the result of mineralization and hence follow up drilling is required to test the targets.

In 2016, BMC expanded the VTEM_{TM} coverage by 902 line km to cover the entire KZK property using the same survey parameters and procedures used in the 2015 survey (Figure 22). Results from the expanded survey indicate broad formational responses, especially for the Wind Lake Formation and structurally influenced magnetic lows. Subsequent modelling of the 2016 VTEM_{TM} data resulted in a further 45 plates for follow up and integration into property wide target ranking which is ongoing.

In addition to the VTEM_{TM} survey, BMC completed a ground gravity survey in 2015 collecting 1734 readings over a 6 km x 2 km area extending from the ABM deposit to the southeast along a portion of the same prospective stratigraphy that was the focus of the VTEM_{TM} survey (Figure 22). Gravity readings were collected every 50 m along lines spaced 200 m to 300 m apart and trending at an azimuth of 015°. No significant targets derived from the gravity data were deemed worthy of immediate follow up. However, the gravity data will be useful for future detailed structural and stratigraphic interpretation.

To date, two targets that incorporate modelled plates from the VTEM_{TM} survey have been drill tested. These include the Santorini target located approximately 300 m south of and in the footwall to the ABM zone and the Rhyolite Peak (Tarawera) target located 1000 m west-southwest of the ABM zone. Two modelled VTEM_{TM} plates are located in the Santorini target area, however only one has been tested. Hole K15-327 returned intercepts of 2.65 m of 0.6 % copper, 1.5 % lead, 3.3 % zinc, 30 g/t silver starting at 65.3 m downhole and 1.1 m of 0.6 % copper, 0.2 % lead, 5.5 % zinc 30 g/t silver starting at 83.0 m downhole. A second hole, hole K15-328 returned 0.8 m of 0.15 % copper, 0.06 % lead 2.6 % zinc and 8 g/t silver starting at 84.7 m downhole. In the Rhyolite Peak (Tarawera) target area, a single hole K16-415, tested a shallow, moderately north dipping VTEM_{TM} modelled plate and returned 0.52 m of 0.8 % copper, 0.3 % lead, 9.0 % zinc and 26 g/t silver starting at 46.5 m depth.

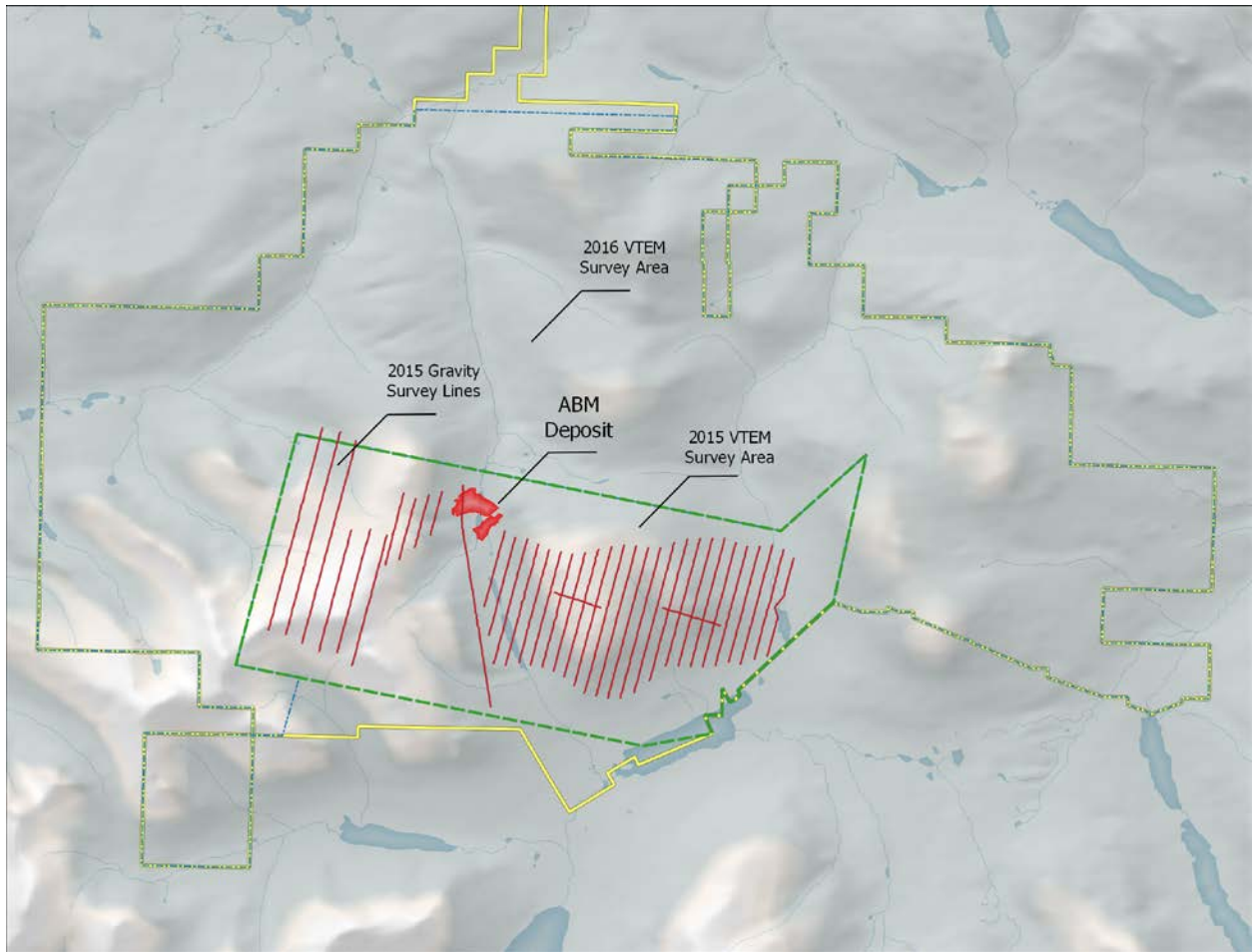


Figure 22: Location of 2015 and 2016 BMC Geophysical Surveys relative to the ABM deposit

10 Drilling

10.1 Drilling Summary

10.1.1 Historical (Pre-2015)

The ABM and GP4F deposits have been sampled using diamond drilling (DD) only.

All drilling at the KZK Project prior to 2015 was completed by Cominco.

DD completed by Cominco in 1994 and 1995 targeting the ABM deposit was carried out by DJ Drilling of Surrey, British Columbia. In 1994, helicopter movable Boyles 25A and Longyear LF70 rigs were used, whilst in 1995 two Longyear 38 drill rigs were operating. Drilling in 1997 and 1998 appears to have also been conducted by DJ Drilling, although details of the drill rigs have not yet been located. The majority of drilling conducted in 1998 was situated at the GP4F deposit.

Historical DD drilling by Cominco is NQ size. Core was generally sampled at 1.5 m lengths across all drilling programs.

10.1.2 BMC (2015 Onwards)

The 2015 and 2016 ABM drilling programs comprised hydrogeological, metallurgical, resource confirmation/infill, and geotechnical drillholes (Table 13 and Source: OMI database

Table 14). Some drillholes were designed to test several program objectives.

Table 13: Summary of the 2015 KZK Project drilling program

| Drilling type | No. of holes | Total metres | Comments |
|---------------------------|--------------|---------------|-------------------------------------|
| Exploration | 21 | 6,548 | GP4F, ABM, FCZ, Santorini, Krakatoa |
| Hydrogeological | 11 | 325 | |
| Metallurgical | 29 | 3,406 | Incl. twin and wedge holes |
| Resource definition | 78 | 14,732 | ABM, Krakatoa, GP4F |
| Geotechnical | 9 | 955 | ABM |
| Total 2015 Program | 148 | 25,966 | |

Source: OMI database

Table 14: Summary of the 2016 KZK Project drilling program

| Drilling type | No. of Holes | Total metres | Comments |
|---------------------------|--------------|---------------|---------------------------------|
| Exploration | 16 | 8,155 | ABM, Krakatoa, Sebesi, Tarawera |
| Hydrogeological | 9 | 267 | Site infrastructure |
| Metallurgical | 7 | 1,055 | ABM, Krakatoa |
| Resource definition | 37 | 8,462 | ABM, Krakatoa, GP4F |
| Geotechnical | 15 | 1,270 | Krakatoa, Site infrastructure |
| Total 2016 Program | 84 | 19,210 | |

Source: OMI database

Most 2015 drilling was completed by Geotech Drilling Ltd of Prince George, British Columbia, utilising three skid-mounted diamond drill rigs (one Zinex A5 and two Hydrocore 2000 machines). The remaining hydrogeological holes were completed by Midnight Sun Drilling of Whitehorse, Yukon (Hughes and Baknes, 2015).

The majority of drilling in the 2016 field season was completed by Hytech Drilling Ltd of Smithers, British Columbia, utilising skid-mounted Tech 5000 diamond drill rigs. The remaining holes were completed by New Age Drilling Solutions of Whitehorse, Yukon.

A summary of all drilling within the ABM deposit is provided in Table 15.

Table 15: Summary of drilling at the ABM deposit – ABM and Krakatoa zones

| Year | Type | No. of holes | Metres |
|--------------|------|--------------|---------------|
| 1994 | DD | 51 | 8,382 |
| 1995 | DD | 112 | 14,046 |
| 1997 | DD | 8 | 2,501 |
| 2015 | DD | 124 | 21,546 |
| 2016 | DD | 40 | 9,308 |
| Total | | 335 | 55,782 |

Source: OMI database

The 2015 GP4F infill drilling program consisted of ten holes for a total of 3,291 m. Infill and extension drilling was designed to reduce the drill spacing to nominal 50–75 m pierce points and to test the variability in mineralisation between widely spaced historical drillholes. The program was also designed to expand the GP4F deposit to the east and down-dip of the historically-defined resource, in an effort to add to the mineral inventory.

The 2016 GP4F drilling program consisted of seven holes for a total of 1,554 m. Two holes (K16-393 and K16-400) were designed to test the up-dip extension of the main mineralised horizon. The remaining holes were drilled as infill holes.

A summary of all drilling programs undertaken at the GP4F deposit is shown in Table 16.

Table 16: Summary of GP4F deposit drilling programs (Source: OMI database)

| Year | Company | No. of holes | Total metres | Hole IDs |
|--------------|---------|--------------|--------------|---|
| 1995 | Cominco | 1 | 108 | K95-167 |
| 1998 | Cominco | 9 | 1,560 | K98-188 to K98-198 |
| 2015 | BMC | 10 | 3,291 | K15-224, -234, -247, -261, -268, -280, -285, -294, -302, -306 |
| 2016 | BMC | 7 | 1,554 | K16-380, -388, -393, -396, -400, -403, -407 |
| Total | | 27 | 6,513 | |

Source: OMI database

Drill core was HQ3, HQ and NQ3 size. Mineralised samples had a nominal sample length of 1.0 m adjusted to geological boundaries to a minimum sample length of 0.3 m, with barren or poorly mineralised host rock samples typically having maximum and minimum sample lengths of 1.5 m and 0.5 m respectively.

Figure 23 shows a Geotech Drilling Hydracore 2000 skid-mounted rig drilling at the ABM Zone in 2015. Figure 24 shows resource drilling being completed at the GP4F deposit in 2015.



Figure 23: Geotech Drilling HC2000 drill rig at the ABM Zone on hole K15-291

Source: A. Green, 2015b



Figure 24: Geotech Drilling HC2000 drill rig at the GP4F deposit during the 2015 field season

Source: A. Green, 2015a

10.2 Collar Surveying

Many of the early drillholes appear to have been drilled on a truncated regional grid (with first few digits removed for ease of use). Following completion, the 1994 Cominco drillhole collars were surveyed by qualified surveyors, McElhanney Consulting Services Limited of Vancouver, British Columbia. The holes were surveyed using static global positioning system (GPS) vectors and adjusted by least squares to within two decimal places and are considered accurate; this is supported by differential GPS pickups of many of the historical collars during the 2015 field season (Figure 25).

Details of surveying for post-1994 (but pre-2015) drilling have not been identified; however, the majority of these holes were located and resurveyed during the 2015 field season.

A total of 84 Cominco collars (66 from ABM) were located, verified and surveyed by Challenger Geomatics (Challenger) of Whitehorse, Yukon in 2015 using Leica Viva real-time kinematic (RTK) GNSS resulting in location accuracy of 0.25 m.

A total of 158 holes drilled in the 2015 and 2016 field seasons by BMC at ABM were surveyed by Challenger using Leica Viva (RTK) GNSS resulting in location accuracy of 0.25 m. This survey was completed with an RTK differential GPS with radio base stations set up in proximity to drilling sites to provide real time kinematic corrections. The remaining six drillholes were located via an Azimuth Positioning System (APS) for X and Y coordinates and Z from a DEM derived from a light detection and ranging (LiDAR) survey. The APS unit is capable of accuracy down to less than 1 m and the vertical precision of the LiDAR survey is 0.1 m.

During the 2016 field program, BMC resurveyed all Cominco collar locations at GP4F, with the exception of K95-167, using a RTK-GPS system the results of which confirmed the accuracy and location of the historical surveys. The single 1995 hole, K95-167, was surveyed at the collar and end-of-hole using a “single shot” survey.

BMC drilling indicates no significant major issue with Cominco drillhole survey data.

All surveys were completed in UTM Zone 9 NAD83.



Figure 25: Historical drill collar (left) and 2015 collar (right) at the ABM deposit

Source: A. Green, 2015b

10.3 Downhole Surveying

10.3.1 ABM Deposit

Based on the supplied database, it would appear that the majority of historical holes used “single-shot”, acid-etch style surveys taken approximately every 30 m downhole. Exact details of the historical downhole survey methods for the various drilling programs have not been located.

For the 2015 drilling, the drill rig was aligned to the planned azimuth with the help of a Reflex APS. The APS is a GPS based compass that is not affected by local magnetic interference (natural or manmade) and produces true north azimuth measurements to within 0.5° with good GPS integrity.

Downhole surveys were completed using a Reflex EZ-Shot system, a “single-shot” high precision magnetic instrument that measures the drillhole azimuth relative to magnetic north as well as the drillhole dip and magnetic field strength. Magnetic north azimuth readings are corrected to grid north azimuths by adding 22.5°. The first downhole survey was completed once the drillhole had penetrated several metres into bedrock, followed by 25 m intervals for the rest of the hole. Downhole surveys were not accepted if the corrected azimuth was significantly different from the azimuths on either side of it, which is usually a result of localised magnetic field interference. In general, magnetic field strengths of 5600–6000 nT were accepted whereas those below 5600 nT and above 6000 nT indicated magnetic interference (Hughes and Baknes, 2015).

In 2016, 30 holes were surveyed using a Reflex Gyro non-magnetic Instrument upon completion of the holes.

10.3.2 GP4F Deposit

Based on the supplied database, it would appear that the majority of historical holes used “single-shot”, acid-etch style surveys taken approximately every 30 m downhole. Exact details of the historical downhole survey methods for the various drilling programs have not been located.

For the 2015 drilling, the drill rig was aligned to the planned azimuth with the help of a Reflex APS. The APS is a GPS based compass that is not affected by local magnetic interference (natural or manmade) and produces true north azimuth measurements to within 0.5° with good GPS integrity.

Downhole surveys were completed using a Reflex EZ-Shot system, a “single-shot” high precision magnetic instrument that measures the drillhole azimuth relative to magnetic north as well as the drillhole dip and magnetic field strength. Magnetic north azimuth readings are corrected to grid north azimuths by adding 22.5°. The first downhole survey was completed once the drillhole had penetrated several metres into bedrock, followed by 25 m intervals for the rest of the hole. Downhole surveys were not accepted if the corrected azimuth was significantly different from the azimuths on either side of it, which is usually a result of localised magnetic field interference. In general, magnetic field strengths of 5600–6000 nT were accepted whereas those below 5600 nT and above 6000 nT indicated magnetic interference (Hughes and Baknes, 2015).

10.4 Drilling Orientation

10.4.1 ABM Deposit

The ABM Zone was drilled towards grid south at angles ranging from –30° to vertical (–90°) to intersect the mineralised zones close to perpendicular for the bulk of the deposit.

The Krakatoa Zone was drilled towards grid southwest at varying angles to obtain close to true width intersections. This drilling orientation was also selected to avoid drilling down the bounding faults, an issue that occurred in the 1997 drilling program which caused abandonment of at least one drillhole and

contributed to missing some drill targets. It is evidence that once a drill string has entered the faults at an oblique angle, the drill string will remain within the bounds of the fault zone.

10.4.2 GP4F Deposit

GP4F drillholes were generally angled (-45° to -90°) towards grid south with dip angles set to optimally intersect the mineralised horizon. Of the 27 holes drilled at GP4F, two were drilled vertically.

10.5 Drill Sample Recovery

10.5.1 Historical (Pre-2015)

The drilling database only contains sample recovery data for holes drilled in 1998. Significant core loss has been recorded over some mineralised intervals, although the weighted average recovery recorded for all recorded intervals was 93%.

The 1995 PFS document reported:

- “Preliminary rock quality data interpreted from drill core, indicates that the western and central portions of the deposit yield fair (50–75%) to good (75–90%) RQD values while the eastern portion yields poor (25–50%) to fair (50–75%) RQD values. Artesian conditions were encountered at depth in several boreholes though the deposit area.”

Recovery records for the remaining holes are not in the database.

10.5.2 BMC (2015 Onwards)

During the 2015 and 2016 drilling programs, recovery and rock quality designation (RQD) was recorded for all holes. Rock quality was good with recovery values averaging greater than 90% and RQD values confirm the same distribution delineated in the historical data. Special attention was paid to recovery through mineralised intervals. Several mineralised intervals were redrilled to achieve better recoveries.

10.6 Logging

10.6.1 Historical (Pre-2015)

Mineralisation and host rock lithologies were logged in detail in 1994 to develop a legend suitable for coding in GEORES (database software for resource modelling) format. Special attention was paid to defining variations in sulphide ore types within the mineralised intervals and to describing immediate hangingwall and footwall units (Cominco, 1995).

All core from the 1994 drill program, with the exception of the first eight holes, was photographed prior to sampling. Logging procedures for post-1994 holes were not recorded. In 2015, BMC scanned the historical core photographs (generally incomplete sets) and re-photographed key zones (wet and dry) from the historical core. Both datasets were stored as digital “jpg” files.

Logging procedures for post-1994 holes have not been recorded in the information provided to date, however it is assumed they were logged in detail according to methods adopted in earlier programs. Summary logs for all 1998 drillholes are presented in MacRobbie and Holroyd (2000).

10.6.2 BMC (2015 Onwards)

Geological drillhole data was captured by the geologists’ using GeoSpark software, a Microsoft Access-based relational database system that stores drillhole and geological data in individual data tables.

For the ABM drilling program, it was necessary that geological information was logged at the appropriate resolution for resource modelling and geo-metallurgical interpretations. Attention was paid to identifying mineralisation types (principally based on the original Cominco logging of “ore” types), deposit alteration

types, hangingwall and footwall lithology as well as sulphide minerals, carbonate content and oxidation intensity for use in potential acid generating (PAG) geodomain interpretations (Baker, 2015b).

All drill core was photographed (wet and dry) prior to sampling and stored as digital “jpg” files. Core logging facilities are shown in Figure 26.



Figure 26: Core logging facilities at the BMC KZK Exploration Camp

Source: A. Green, 2015b

10.6.3 Historical Relogging Program

A relogging program of archived drill core from all historical holes at the ABM and GP4F deposits were undertaken ahead of and during the 2015 drilling program. The program sought to design a system of standardised logging for both relogging and new drilling, bringing all historical logs up to the new simplified standard and allow for the creation of a new geological model (Voordouw *et al.*, 2016). Relogging was accomplished from a fly camp established adjacent to the historical core archive (Figure 27).

The relogging program also included selective sampling of massive sulphides and adjacent host rock to confirm historical grades such that historical analytical data could be included in new resource estimates and future reserves.



Figure 27: Historical Cominco core storage yard at KZK Exploration Camp

Source: A. Green, 2015b

A total of 174 holes were relogged for a total of 24,953 m, comprising most of the historical ABM and Fault Creek Zone drilling as well as two holes from the GP4F deposit. Six ABM holes were not re-logged, including three holes that could not be located (K94-001, K94-002, K95-169), one hole that was abandoned at 10 m depth (K97-183A), one hole with too much missing core (K95-168) and one hole that was found but inadvertently not logged (K97-176). An additional 19 holes fell outside of the ABM deposit area and were also not relogged. Besides relogging drill core, the 2015 program also included logging the footage (core) blocks, relabelling with aluminium tags, completing an inventory of boxes and creating a map of the core storage area (Baknes, 2015).

The program was completed in October 2015 and all logs were combined with new drill logs into a complete standardised dataset.

10.7 Significant Intercepts

Some significant intercepts from the 2015 drilling campaign are shown on the schematic cross-sections below (Figure 28 to Figure 30).

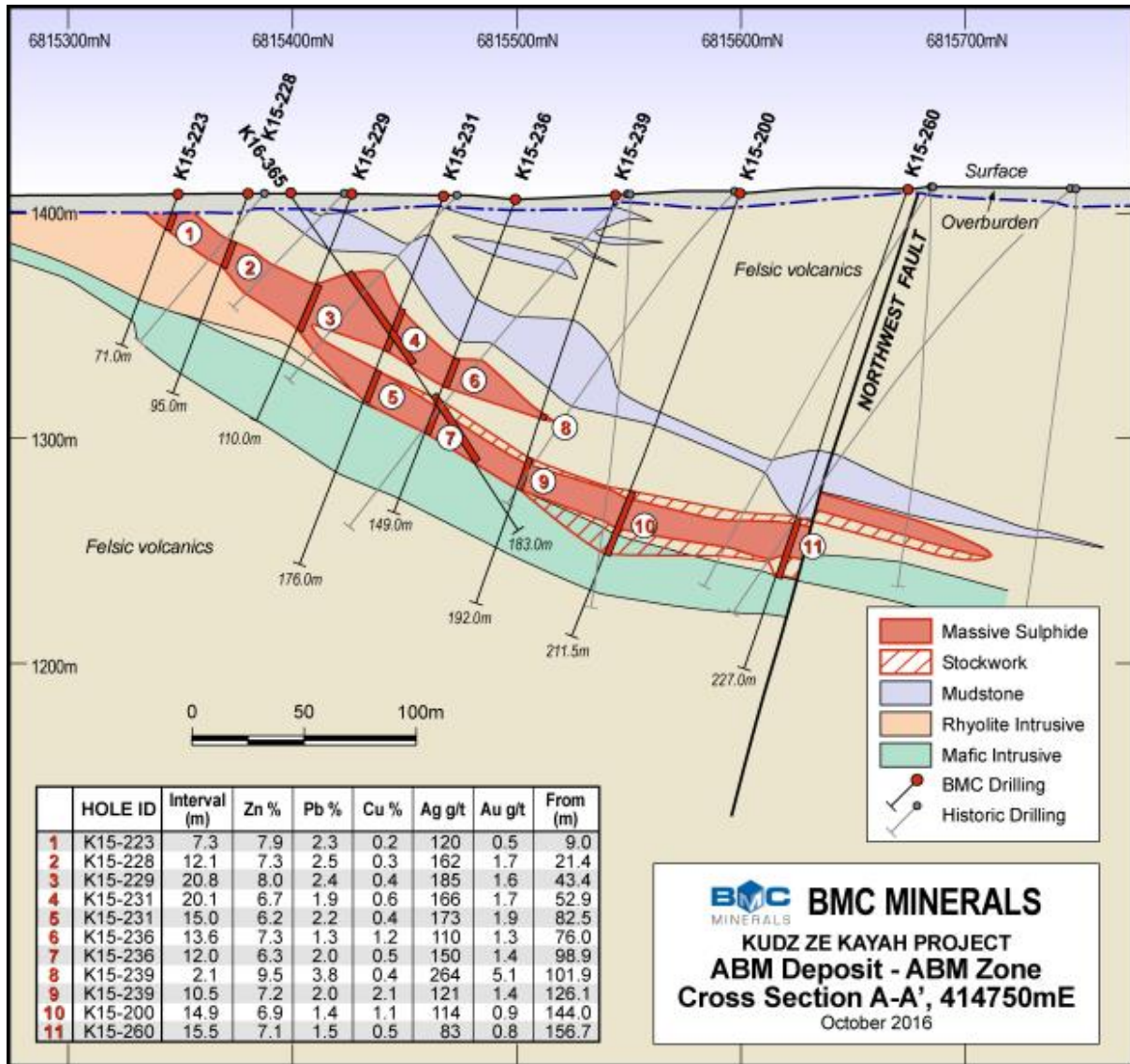


Figure 28: Schematic cross-section 414,750 m E looking west through the ABM Zone with selected 2015 intercepts

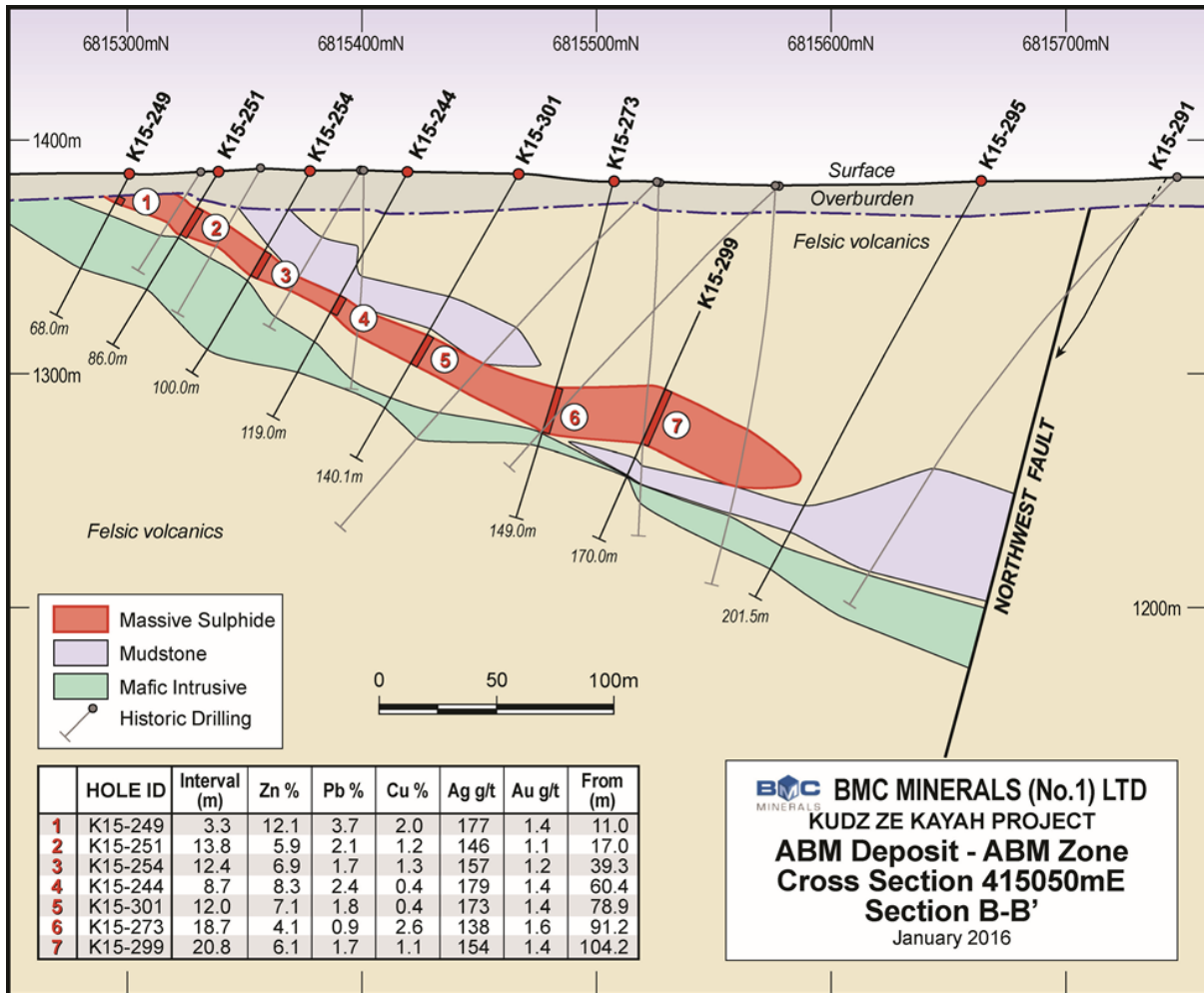


Figure 29: Schematic cross-section 415,050 m E looking west through the ABM Zone with selected 2015 intercepts

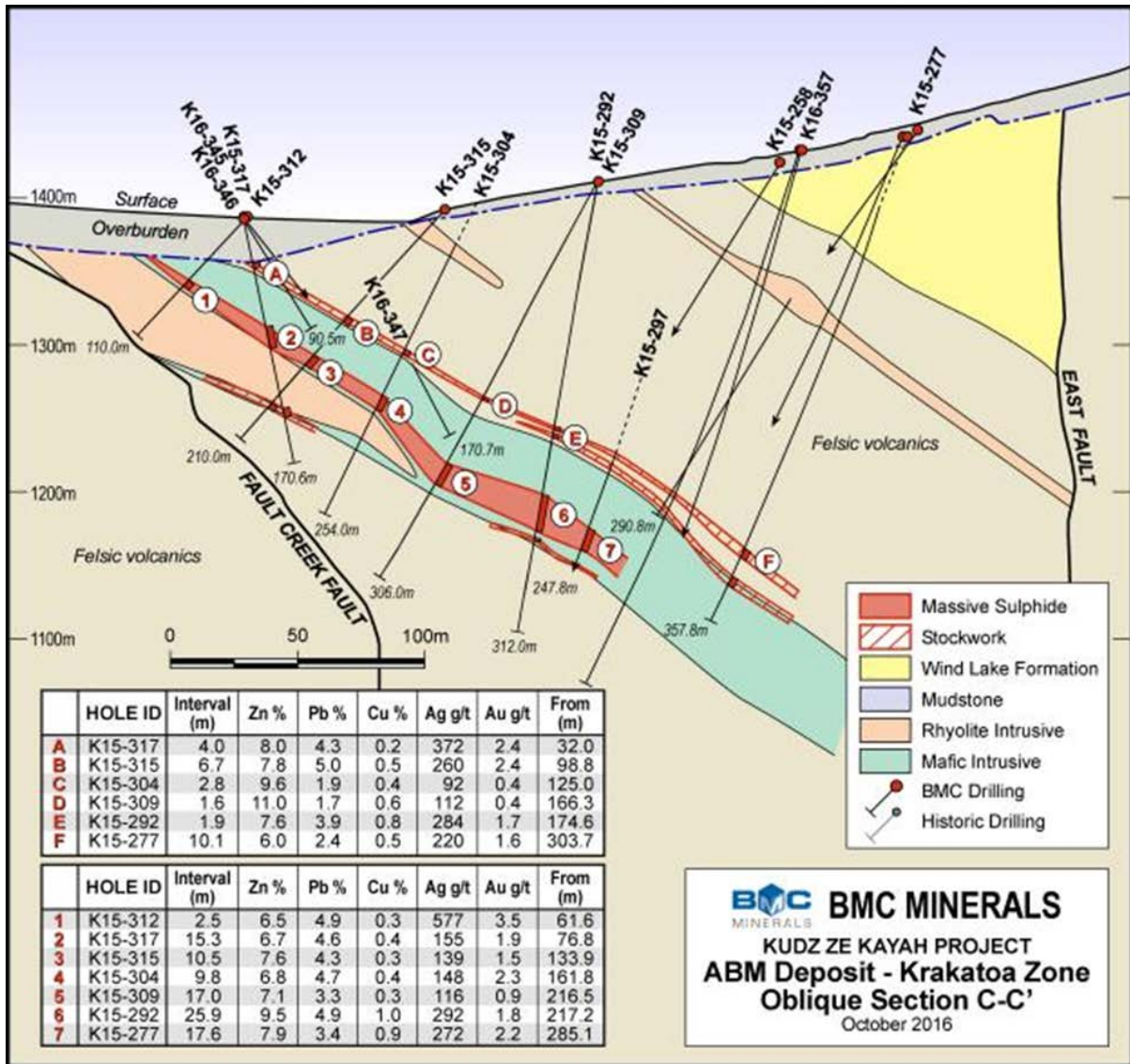


Figure 30: Schematic oblique cross-section looking northwest through Krakatoa Zone (parallel to bounding faults)

11 Sampling Preparation, Analysis and Security

11.1 Sampling Techniques

11.1.1 Historical (Pre-2015)

The ABM and GP4F deposits have been sampled using DD only. Historical DD drilling by Cominco is NQ size.

Cominco sampling practices are detailed in the pre-feasibility study document (1995) for all drilling prior to June 1995. Subsequent Cominco drilling programs were reported in the annual “Year End” reports although minimal detail was provided on drilling and sampling techniques.

In 1994, all sulphide intersections were sawn with an open circulation rock saw, typically into 1.5 m long samples, and sent to CERL in Vancouver. Samples were subjected to a three-stage crushing procedure, pulverised, and screened to –150 mesh prior to aqua regia digestion (and solvent extraction in the case of Au) and assaying.

In 1995, all samples were split by hydraulic splitter, typically to 1.5 m lengths, and subject to the same preparation and analytical procedures as described above.

Details of the post-1995 sampling and preparation procedures have not been located but the Qualified Person considers that it is reasonable to assume that similar procedures have been followed to those used previously.

11.1.2 BMC (2015 Onwards)

The 2015 ABM deposit resource confirmation and infill drilling program consisted of 58 holes for a total of 9,972 m. Resource confirmation drillholes were designed to twin mineralised intersections to confirm the existence and tenor of massive sulphide in historical holes on sections 414,750 m E, 414,850 m E and 415,050 m E, and to permit resampling of the historic core on these sections for geochemical analysis as an aid to establishing the veracity of the historical geochemical dataset.

Resource confirmation drill core was HQ3, HQ and NQ3 size. Geologists identified all core samples with a unique sample identification number and marked all sample intervals with sample tags in the core box. All mineralised intersections were sampled, including approximately 10 m of the immediate hangingwall and footwall host rock in an effort to characterise waste rock dilution that could be encountered during mining. Primary core samples conformed to lithological boundaries where possible, with core loggers making an attempt to constrain alteration and mineralisation features within the lithological boundaries as well. Mineralised samples had a nominal sample length of 1.0 m and a minimum length of 0.3 m with barren or poorly mineralised host rock samples typically having maximum and minimum sample lengths of 1.5 m and 0.5 m respectively.

Drill core samples were cut using an open circulation rock saw. Split core was consistently sampled from the same side and placed into labelled plastic sample bags that were sealed with a plastic zip-tie and shipped in labelled rice bags sealed with individually numbered security tags. A list of required quartz washes was submitted to the analysis laboratory that would follow suspected high-grade samples in order to avoid contaminating adjacent lower grade samples. These quartz washes were completed at the crush and pulverising stage of sample preparation (Hughes and Baknes, 2015).

GP4F deposit drilling used the same sampling techniques as for the ABM deposit.

11.2 Sample Security

No information was available for historical Cominco drilling sample security.

For 2015 and 2016 drilling, sample chain of custody is managed wholly by BMC. All samples were placed in poly sample bags labelled with unique sample numbers and equivalent bar-coded sample tags included in the bag. Samples were then packaged in lots of five to 10 in white poly rice sacks. The rice sacks were sealed using fibre tape and uniquely numbered non reusable security seals. Sacks were then palletised and shrink wrapped for shipment to the laboratory. Tracking numbers, bag inventory and security tag information is then provided to the laboratory with instructions to notify upon receipt and of any compromised bags.

All remaining core samples are stored in trays and racks in the core yard at the Exploration Camp (Figure 31). Access to the camp and core yard is provided by a single gated tote road that is manned throughout the field season and locked during winter.



Figure 31: Core storage yard for BMC drilling at KZK Exploration Camp

Source: K. van Olden, 2016

11.3 Dry Bulk Density Determinations

11.3.1 Methodology

In 1994, bulk density determinations were completed on the first 40 drillholes within the ABM deposit outline. A representative 10 cm long sample was selected from each assayed interval (usually 1.5 m) of “ore” and flanking or intervening waste. Each sample was suspended from a metric balance and weighed in air and again immersed in water (“water immersion method”) (Cominco, 1995). No historical bulk density measurements were taken by Cominco from GP4F drill core.

Bulk densities from the ABM and GP4F deposits were measured in the field by BMC staff on new core samples over the entire length of the sample interval using the water immersion method. This approach differed from that employed by Teck in the past, which used only a portion of the drill core from a sample interval and therefore may not produce representative data. For this reason, only bulk densities measured during the 2015 and 2016 field season as part of the current drill program were used for resource modelling, after culling of data that were clearly erroneous.

Individual measurements were completed on the entire half-core sample submitted for analysis and on representative 10–15 cm long whole-core samples of various hangingwall and footwall host rock lithologies. The entire half-core samples ranged in weight from as little as 0.14 kg to as much as 9.61 kg, with a median value of 2.15 kg.

Each sample was weighed in air on a metric balance and then suspended below the balance and weighed whilst immersed in water (i.e. the “water immersion method”). When half-core samples were either too friable or broken, bulk density measurements were not completed as material could be lost and would not be representative.

In 2015, calibration readings were taken on a 20 cm long piece of metal rebar approximately every 10th reading and as the last measurement for each drillhole. These calibrations were recorded in sequence with the bulk density measurements. However, the metal rebar was replaced for the 2016 field season with two samples: sealed massive sulphide and sealed rhyolite.

Bulk density determinations for 8,393 ABM samples were originally included in the final database, including repeat analyses of known rock types and a standard reference material. Removal of quality control (QC) samples left 7,556 samples for analysis. Bulk density determinations for 568 GP4F samples were included in the final database, of which 99 samples were situated within the mineralised envelopes.

11.3.2 Results

11.3.2.1 ABM Deposit

In order to create a reliable bulk density dataset for estimation, different methods were evaluated to predict bulk densities for samples from the ABM Zone (Arne, 2015a). A tiered approach to the selection of a preferred bulk density value was adopted using the following order of preference:

- 1) Field bulk measurements, following the removal of statistical outliers.
- 2) Pycnometer data where no field measurement was available (two samples).
- 3) Bulk densities calculated by multiple regression (MR) analysis using S data, where available, optimised for the highest coefficient of determination.
- 4) Where S data were absent, bulk densities were calculated using weighted Fe-Cu-Pb-Zn data with the simple exponential regression $(1.0 * \text{Cu}\%) + (1.81 * \text{Pb}\%) + (0.97 * \text{Zn}\%) + (1.20 * \text{Fe}\%)$. This was completed for the cleaned bulk densities for zone 8 and for samples having a bulk density $< 2.75 \text{ g/cm}^3$ in zones 5, 6 and 7.

Based on the parameters detailed above, calculated bulk densities were derived for 1,027 core samples from 54 holes at ABM, and 1,121 core samples from 24 holes at Krakatoa for interpolation (Arne, 2015a).

For Krakatoa data, measured bulk densities were available for all samples within the mineralisation wireframes.

For the mineralised domains, bulk density was estimated using OK, utilising variogram parameters that were derived for Fe in order to honor the relationship between density and Fe. The average bulk densities determined for the ABM stockwork and massive sulphide mineralisation were 3.44 t/m^3 and 4.19 t/m^3 respectively, while the average bulk density values for the Krakatoa Zone were 3.86 t/m^3 and 4.09 t/m^3 respectively.

Fixed density values were assigned into the block model for each regolith and lithological unit, setting fresh felsic material to 2.76 t/m^3 (based on the median of the normal histogram from the measured bulk density dataset), 2.80 t/m^3 for the mafic intrusive rock, 2.74 t/m^3 for the mudstone and Wind Lake Formation, 2.68 t/m^3 for the rhyolite intrusive (RHYi), and 2.00 t/m^3 for overburden.

11.3.3 Quality Assurance – Density

Detailed analysis of the 2015 QC results for bulk density were outlined in Arne (2015b) and summarised in Green (2016). The following sections only report on the 2016 quality assurance/quality control (QAQC) program.

Details in this section below are taken from Arne (2016a).

A previous recommendation by CSA Global was to identify one or two suitable rock samples that could be used routinely for QC on the measurement of bulk density in the field. Two such samples were identified and analyzed repeatedly at the beginning of the 2016 drilling program. These included a sample of massive sulphide (MXSX) with an average bulk density of 4.63 g/cm³ that was painted to prevent oxidation, and a sample of rhyolite having an average density of 2.65 g/cm³.

It is not possible to define a standard deviation for the measurement of these standards until sufficient data had been collected using a variety of analysts under different conditions. Standard deviations were determined from 82 analyses of the MXSX standard and 250 determinations of the rhyolite standard, and are 0.058 g/cm³ and 0.015 g/cm³, respectively. These provide a basis upon which to establish control limits for future quality assurance (QA) of bulk density measurements in the field.

The results of plotting the bulk densities for the standards are given in Figure 32 and Figure 33. The bulk density determinations show good repeatability throughout the 2016 field season, but there are two clear failures that indicate an error in measurement. These represent a very small proportion of the analyses (<1%).

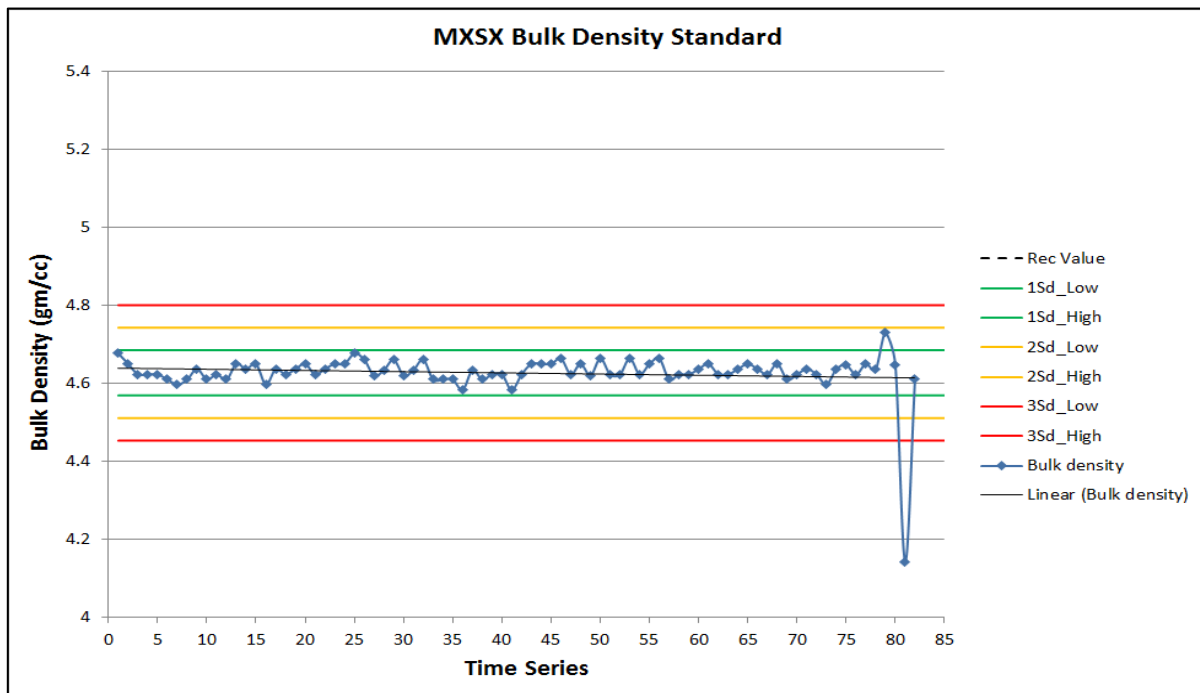


Figure 32: Control chart for bulk density determinations of a massive sulphide standard throughout 2016

Source: Arne, 2016a

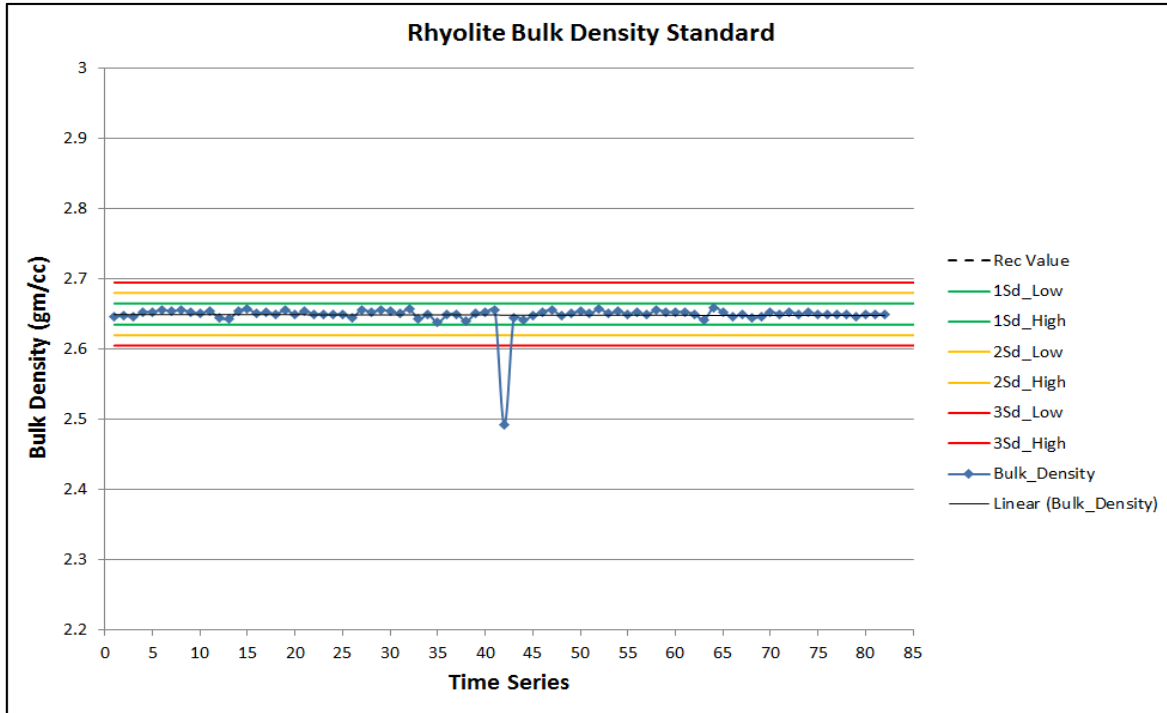


Figure 33: Control chart for bulk density determinations of a rhyolite standard throughout 2016

Source: Arne, 2016a

Overall, the QC data show good accuracy and precision and are considered to be more than adequate to support the assay and bulk density data used for the Mineral Resource update of the ABM deposit.

11.4 Sample Analysis

11.4.1 Historical (Pre-2015)

Following aqua regia digestion (and solvent extraction in the case of Au), all 1994 samples were analysed by AAS for Cu, Pb, Zn, Ag, Au and Fe. Base metals and Fe were then determined using standard wet chemical assay procedures and precious metals were fire assayed. If the sample recorded above the upper detection limit, a second “ore grade” analysis was undertaken through dilution of aliquots.

Ba was determined by pressed pellet/XRF. All samples were also analysed by multi-element inductively coupled plasma (ICP).

Similar assaying procedures were used in 1995, although Ba and Fe were not assayed.

In 1997, a total of 349 core samples were collected. Of these, 320 were analysed for 27 elements by ICP, Au by aqua regia decomposition/AAS and Ba by XRF, in addition to whole rock major and minor oxides by XRF and trace elements Zr and Y by pressed pellet AAS at CERL in Vancouver (MacRobbie, 1998).

For drilling conducted in 1998, a total of 197 core samples were collected and were analysed for Cu, Pb, Zn, Ag, As, Cd, Co, Ni, Fe, Mo, Cr, Bi, Sb, V, Sn, W, Sr, Y, La, Mn, Mg, Ti, Al, Ca, Na and K by ICP, Au by aqua regia decomposition/AAS and Ba by XRF at CERL in Vancouver. Intervals with greater than 1% Pb, Zn or Cu were assayed for Cu, Pb, Zn, Fe (total), Ag (AAS), Au (fire assay with AA and gravimetric finish) and Se by ICP and XRF.

11.4.2 BMC (2015 Onwards)

A total of 2,906 ABM deposit samples were collected and analysed for Cu, Pb, Zn, Ag, Au, Fe; 2,256 samples for Ba and 2,315 samples analysed for S using a Na-peroxide fusion and ICP-AES finish. The Na-

peroxide fusion is considered to be a complete digestion. 1,145 were analysed for As, Bi, Hg, Sb and Se using aqua regia digest with ICP-MS finish.

From BMC drilling at GP4F, a total of 579 samples were collected and analysed for Cu, Pb, Zn, Ag, Au, Fe, Ba and S using a Na-peroxide fusion and ICP-AES finish. The Na-peroxide fusion is considered to be a complete digestion. All samples were analysed for As, Bi, Hg, Sb and Se using aqua regia digestion with ICP-MS finish.

Au was analysed by 30 g fire assay with an AAS finish and Ag analysed by ICP with an AAS finish on a 2 g two-acid digest aliquot. Samples that returned >4% Ba were analysed by XRF. Au and Ag over-limits were triggered at Au >5 g/t and Ag >150 g/t respectively, resulting in re-analysis using a 30 g fire assay with gravimetric finish.

All samples were analysed at SGS (Vancouver). Detection limits for each analytical method used are shown in Table 17.

Table 17: Analytical methods and range for the ABM deposit drilling by BMC

| Element | Analytical Method | Analytical range |
|---------|--|------------------|
| Au | 30 g fire assay/AAS finish | 0.005–10 ppm |
| | Au over limit (>5 g/t): 30 g fire assay/gravimetric finish | 0.5–3,000 ppm |
| Ag | 2 g two-acid digest/ICP-AAS | 0.3–300 ppm |
| | Ag over limit (>150 ppm): 30 g fire assay/gravimetric finish | 10–5,000 ppm |
| Cu | Na peroxide fusion/ICP-AES | 0.01–30% |
| Pb | Na peroxide fusion/ICP-AES | 0.01–30% |
| Zn | Na peroxide fusion/ICP-AES | 0.01–30% |
| Fe | Na peroxide fusion/ICP-AES | 0.05–30% |

11.4.3 EDTA Analysis

In an effort to characterise surface oxidation of sulphide minerals at ABM, 90 sample pulps of shallow (<50 m) sulphide mineralisation from the 2015 sampling program were submitted for EDTA leach analysis. EDTA provides a quantitative measure of the degree of oxidation by forming complexes with the oxidation products of sulphide minerals (Bicak and Ekmekci, 2012). Later in the 2015 program, a second set of 68 sample pulps taken at depth within the ABM resource envelope were analysed by EDTA leach analysis.

Results of all EDTA analyses indicate no significant soluble Cu or Zn; however, a soluble Pb component is present. Discussion with the consultant metallurgist undertaking testwork on ABM mineralisation indicates that this can be managed during mineral processing. The EDTA analyses indicated no significant weathering effects near surface.

11.5 Quality Control/Quality Assurance

11.5.1 Methodology

No documented QA procedures have been located for the Cominco drilling programs. Detailed and systematic programs do not appear to have been in place during the Cominco drilling; however, it may be that the documentation has not yet been located.

To check for assay accuracy, one in 10 samples from the 1995 drill program were selected for “umpire” analysis by Chemex Laboratories using the same assay methods. Au assays compared well up to 3 g/t; however, 32 of 133 analyses above this threshold showed some scatter. Ag showed good correlation at all levels (Cominco, 1995).

The BMC field QAQC program entailed submission of coarse blank material every 20th sample and Certified Reference Material (CRM) every 20th sample. CRMs were selected with the aim of covering a wide range of base and precious metal grades and with a matrix similar to the mineralogy of the ABM deposit.

Approximately 3% of samples analysed in 2015 and 2016 were submitted to ALS Minerals for umpire analyses via Na peroxide fusion and ICP-OES finish.

Additional quartz wash was inserted in the pulverising stage where high-grade mineralisation was suspected. Quartz wash residues were retained for possible later analyses. Wet screen analyses was completed every 50th sample to ensure consistent crush size.

In addition, as part of the relogging program, a total of 417 half-core samples drilled by Cominco within the resource area were resampled by BMC.

Detailed analysis of the 2015 QC results were outlined in Arne (2015b) and summarised in Green (2016).

11.5.2 Blanks

Cross contamination of samples has been monitored using coarse garden stone (“blank”) sourced from Premier Tech Home & Garden in Brantford, Ontario containing negligible base and precious metals.

Data from 149 coarse blanks have been evaluated using two threshold values — three times the lower limit of detection (3xDL) and 10 times the lower limit of detection (10xDL) (Figure 34). The 3xDL threshold is appropriate for exploration programs where low-level regional geochemical anomalies are sought. The higher threshold value of 10xDL has been employed in this review. There is only one clear case of probable cross contamination involving Zn, with a blank giving a value of 0.12% (Figure 35). Overall the percentage of samples potentially affected by cross contamination is less than 1% (Arne, 2015b).

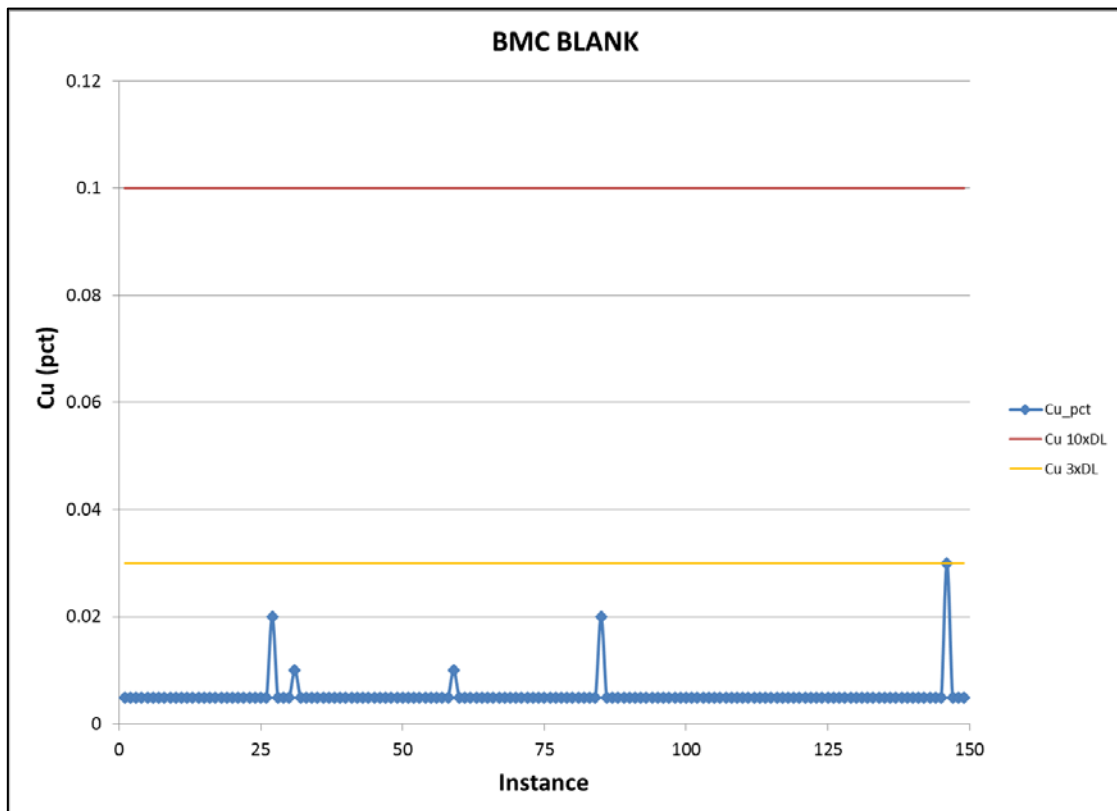


Figure 34: Blank control chart for Cu (%)

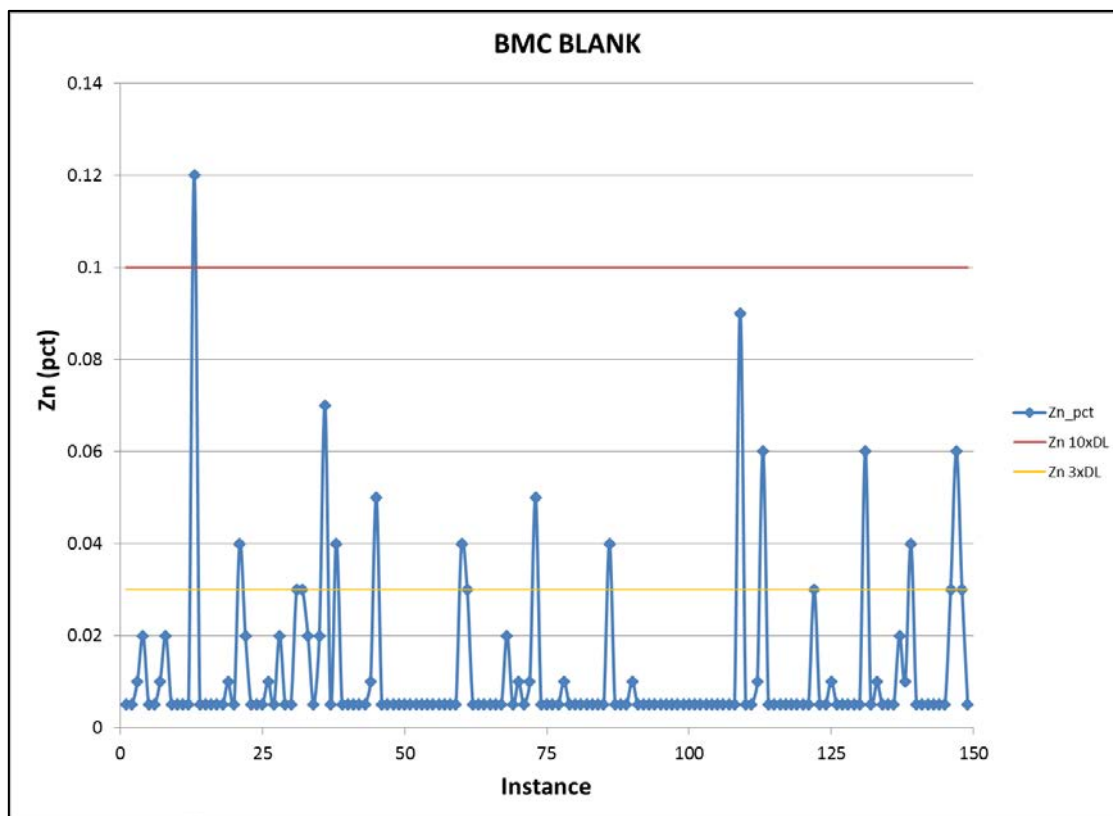


Figure 35: Blank control chart for Zn (%)

11.5.3 Certified Reference Materials

CRM selection aimed to get coverage over a range of base and precious metal grades reflected from historic assay datasets with a minimal number of CRMs. CRM selection was significantly hampered by what was commercially available through a range of international suppliers.

11.5.3.1 BMC 2015

Details in this section are taken from Arne (2015b).

Data from a total of six CRMs inserted into the sample stream by BMC were reviewed. There is a clear positive bias in data from five of the CRMs certified for Zn and for four certified for Pb (Table 18). In contrast, data for Cu, Ag and Au show negative biases, although this is not consistent across all CRMs certified for these elements (Table 18). There is no relationship between grade and Pb or Zn bias.

The base metal CRMs used by BMC are largely derived from VHMS deposits and so are considered to be matrix appropriate for the KZK Project. Ag was analysed following a two-acid digestion whereas CDN-ME-1311 and OREAS 113 are certified for Ag by a four-acid digestion only, and the analytical method used from GBM310-16 is not described. This may in part explain the negative bias for Ag, which is particularly pronounced in these CRMs.

CDN-ME-1311 has a high SiO₂ content which would likely lend itself to having a component of the certified metals “locked up” as inclusions in the silicates that would not be accessible with a two-acid digest. This may explain in part the negative bias for this standard. Petrographic work consistently shows that the ABM deposit has a much lower silicate content and a significant carbonate content, which is in contrast to the CRM.

Table 18: Summary of average biases from CRMs for 2015 program (Arne, 2015b)

| CRM | CRM recommended values | | | | | | Average bias (%) | | | | | | |
|---------------------|------------------------|----------|----------|-------|-------|-------|------------------|--------------|--------------|--------------|-------------|-------------|-------------|
| | Element | Ag (ppm) | Au (ppm) | Cu % | Pb % | Zn % | Fe % | Ag | Au | Cu | Pb | Zn | Fe |
| CDN-ME-1311 | | 44.90 | 0.84 | 0.47 | 0.30 | 1.12 | n/a | -1.89 | -1.44 | -2.44 | 0.89 | 1.88 | n/a |
| OREAS 623 | | 20.40 | 0.83 | 1.73 | 0.25 | 1.03 | 13.5 | -1.23 | -4.69 | 0.36 | 3.91 | 3.45 | 1.01 |
| OREAS 621 | | 68.00 | 1.25 | 0.37 | 1.33 | 5.22 | 3.71 | 1.28 | 0.25 | -1.49 | 2.58 | 1.69 | 2.25 |
| GBM310-16 | | 314.30 | n/a | 0.35 | 11.26 | 17.02 | n/a | -1.88 | n/a | -2.37 | 0.42 | 4.49 | n/a |
| OREAS 113 | | 22.60 | n/a | 13.30 | 0.02 | 0.42 | 28 | -6.57 | n/a | 1.07 | n/a | 2.38 | -2.4 |
| G312-4 | | n/a | 5.30 | n/a | n/a | n/a | n/a | n/a | -4.50 | n/a | n/a | n/a | n/a |
| Overall bias | | | | | | | | -2.06 | -2.60 | -0.97 | 1.95 | 2.78 | 0.29 |

*n/a – not applicable.
 Source: Arne, 2015b

Subsequently it was discovered that Pb was under-reporting by the Na-peroxide fusion employed where the samples contained >1% Ba, as barite was precipitating out of the fusion and taking Pb with it. The difference was significant enough that these samples have been re-assayed using a reduced aliquot weight.

Typical control charts are presented in Figure 36 and Figure 37 below.

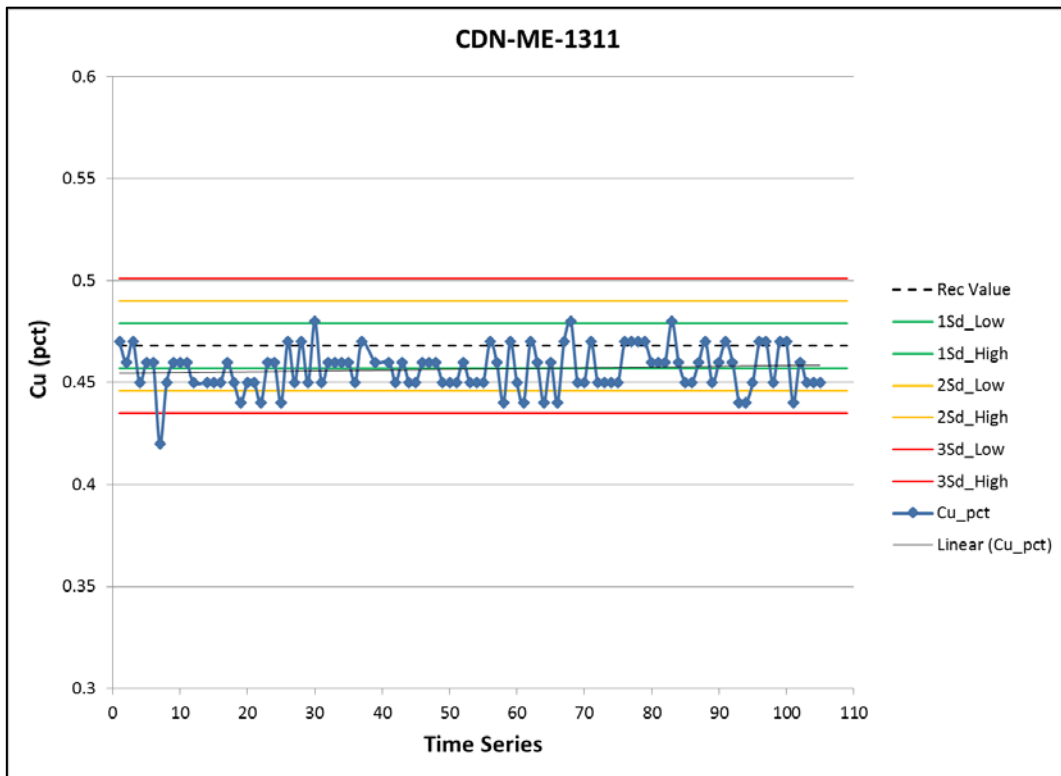


Figure 36: 2015 CRM (CDN-ME-1311) control chart for Cu (%) showing negative bias

Note: 1Sd = 1 Standard Deviation, 2Sd = 2 Standard Deviations, 3Sd = 3 Standard Deviations as defined for the individual CRM.

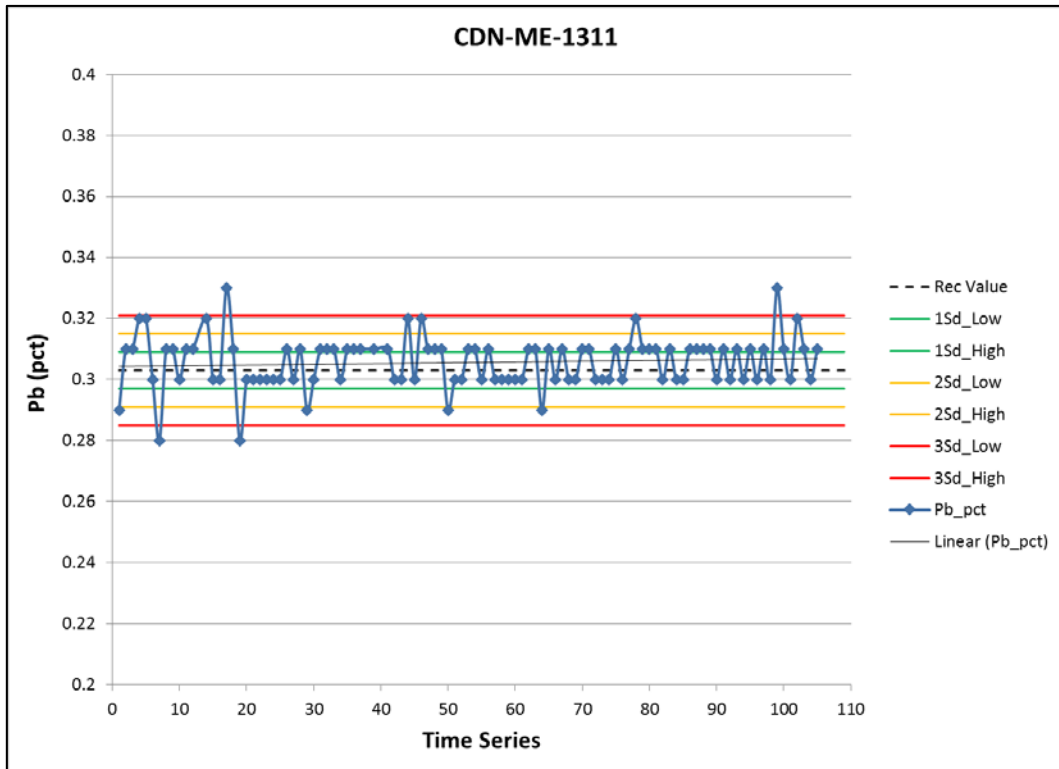


Figure 37: 2015 CRM (CDN-ME-1311) control chart for Pb (%) showing slight positive bias

Note: 1Sd = 1 Standard Deviation, 2Sd = 2 Standard Deviations, 3Sd = 3 Standard Deviations as defined for the individual CRM.

11.5.3.2 BMC 2016

Details in this section are taken from Arne (2016a).

ABM Deposit

Data accuracy has been assessed using data for Au, Ag, Cu, Pb, Z, S and Fe from three CRMs, CDN-ME-1311, OREAS 621 and OREAS 623. Aside from Cu data from OREAS 621, all average biases are within 2% of the certified values (Table 19). While Pb and Zn both show slight positive biases, these are lower than those previously displayed by the same CRMs in the 2015 data (Arne, 2015b). Cu data in OREAS 621 show negative biases similar to those shown by the same CRMs in the 2015 QC data.

The negative bias previously noted in the 2015 Ag data for CRM OREAS 623 is not apparent in the 2016 data because the four-acid certification results have been used. The method description provided for the Ag analyses (GE-AAS12E) incorrectly stated that aqua regia digestion was being used, when in fact SGS uses a reverse aqua regia digestion consisting of 3:1 HCl : HNO₃ designed to provide a more aggressive attack of sulphides in the sample. The four-acid digestion certified value is less than the aqua regia for OREAS 623 and more in line with the analyses generated by SGS.

The 2016 CRM data for the ABM Zone are illustrated in Figure 38, Figure 39 and Figure 40 for CRMs CDN-ME-1311, OREAS 621 and OREAS 623 respectively, using Z-scores. Z-scores are calculated using the following formula:

$$Z - Score = \frac{\text{Difference between observed and certified value}}{\text{Standard deviation of certified value from certificate}}$$

Z-score values typically vary between 1 and -1, and so most data lie within one standard deviation of the certified value for each element.

In conclusion, the data are considered to be very accurate based on the CRMs inserted by BMC with the 2016 samples from ABM. Overall average relative biases are all less than 2%.

Table 19: Summary of average biases from ABM deposit CRMs for 2016 program

| CRM | Element | N | CRM recommended values | | | | | Average bias (%) | | | | | | |
|--------------|---------|----|------------------------|----------|------|------|------|------------------|-------|-------|-------|------|------|------|
| | | | Ag (ppm) | Au (ppm) | Cu % | Pb % | Zn % | Fe % | Ag | Au | Cu | Pb | Zn | Fe |
| CDN-ME-1311 | | 40 | 44.90 | 0.84 | 0.47 | 0.30 | 1.12 | n/a | -0.22 | 1.54 | -0.75 | 1.65 | 1.58 | n/a |
| OREAS 623 | | 24 | 20.40 | 0.83 | 1.73 | 0.25 | 1.03 | 13.5 | -0.49 | -0.57 | -0.55 | 1.51 | 1.09 | 0.57 |
| OREAS 621 | | 24 | 68.00 | 1.25 | 0.37 | 1.33 | 5.22 | 3.71 | -0.18 | 1.73 | -2.24 | 1.24 | 0.18 | 0.49 |
| Overall bias | | | | | | | | | -0.30 | 0.90 | -1.18 | 1.47 | 0.49 | 0.28 |

**n/a – not applicable*
Source: Arne, 2016a

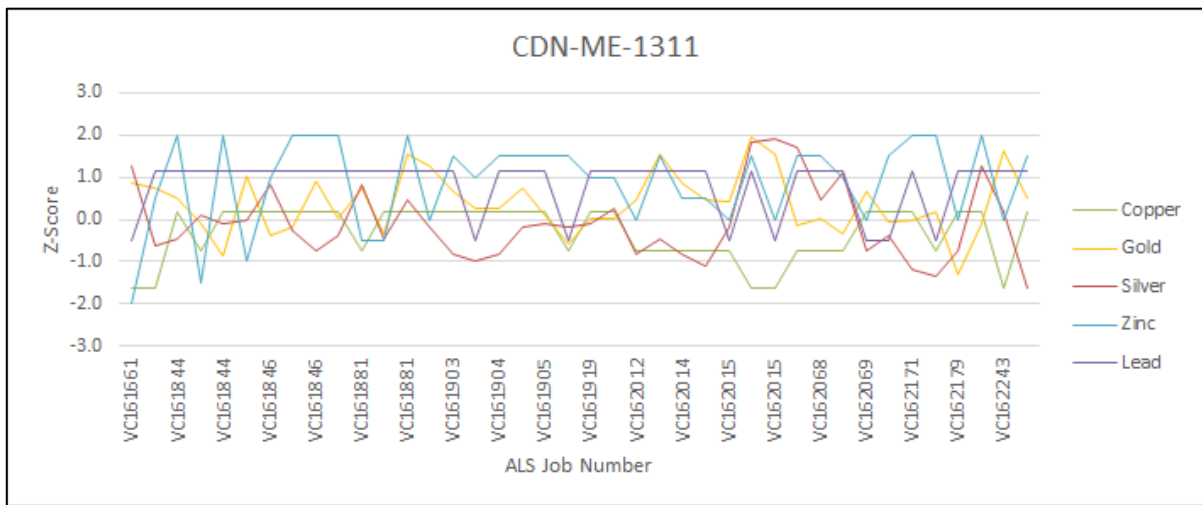


Figure 38: 2016 ABM Zone summary of Z-score for CDN-ME-1311

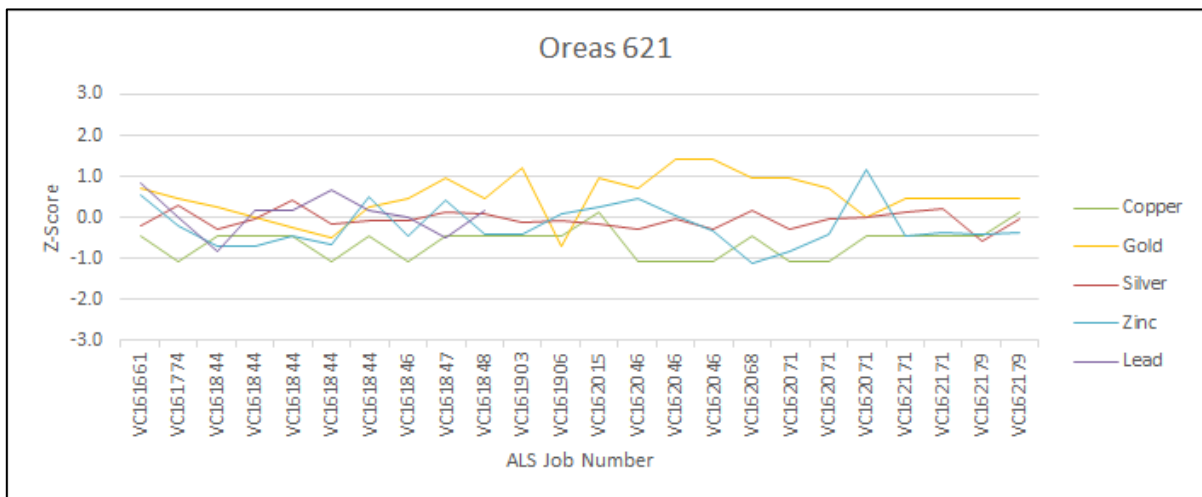


Figure 39: 2016 ABM Zone summary of Z-score for OREAS 621

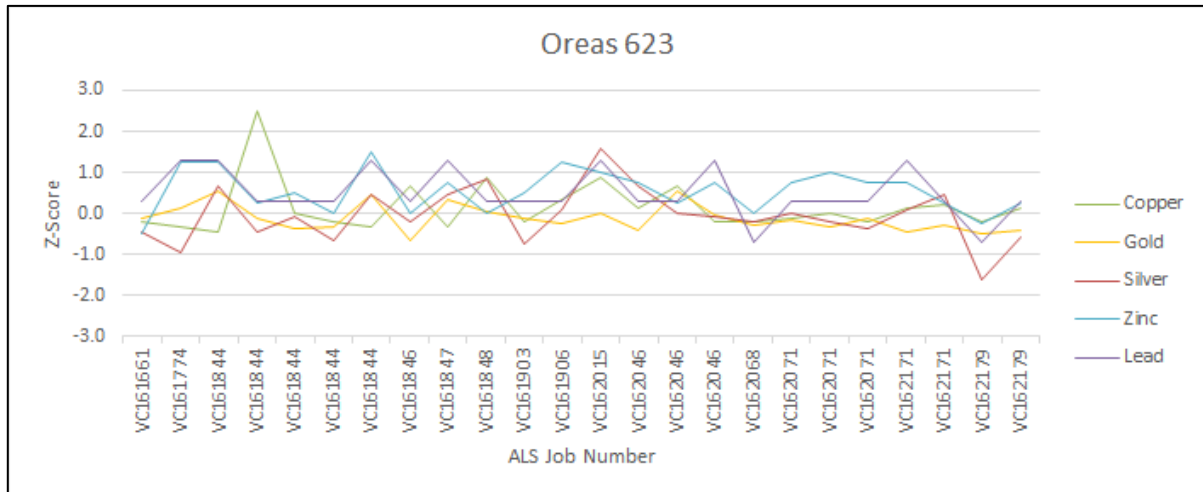


Figure 40: 2016 ABM Zone summary of Z-score for OREAS 623

GP4F Deposit

Data from 27 analyses of CRM CDN-ME-1311, inserted into the sample stream by BMC during the 2016 drilling program at the GP4F Zone, have been reviewed (Table 20). Data from an additional six sample each of OREAS 621 and OREAS 623, as well as a single sample of GBM 310-16, have also been reviewed.

The 2016 CRM data for the GP4F Zone from CDN-ME-1311 are illustrated in Figure 41 using Z-scores.

In conclusion, the data are considered to be very accurate based on the CRMs inserted by BMC with the 2016 samples from the GP4F Zone. The average relative biases are all less than 2%, except for Ag, which is underreporting by approximately 2%.

Table 20: Summary of average biases from GP4F deposit CRMs for 2016 program

| CRM | N | CRM recommended values | | | | | | Average bias (%) | | | | | |
|-------------|----|------------------------|----------|------|------|------|------|------------------|-------|-------|------|------|------|
| | | Ag (ppm) | Au (ppm) | Cu % | Pb % | Zn % | Fe % | Ag | Au | Cu | Pb | Zn | Fe |
| CDN-ME-1311 | 27 | 44.9 | 0.84 | 0.47 | 0.30 | 1.12 | n/a* | -0.02 | -0.11 | -1.3 | 1.21 | 0.46 | n/a |
| OREAS 623 | 6 | 20.40 | 0.83 | 1.73 | 0.25 | 1.03 | 13.5 | -8.44 | -0.82 | 4.72 | 0.54 | 1.46 | 0.87 |
| OREAS 621 | 6 | 68.00 | 1.25 | 0.37 | 1.33 | 5.22 | 3.71 | 0.29 | 0.93 | -2.24 | 1.50 | 0.54 | 2.29 |
| Average | | | | | | | | -2.72 | -0.62 | 0.39 | 1.08 | 0.82 | 1.58 |

*n/a – not applicable
 Source: Arne, 2016b

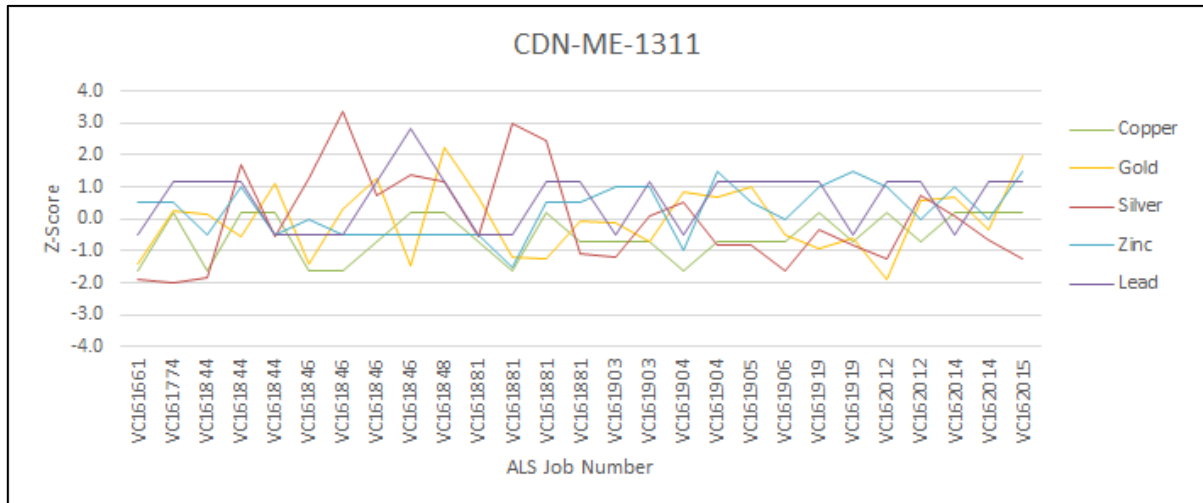


Figure 41: 2016 GP4F Zone summary of Z-score for CDN-ME-1311

11.5.4 Empire Laboratory Results

11.5.4.1 BMC 2015

Details in this section are taken from Arne (2015b).

Pulps from a total of 150 samples from the 2015 program were submitted to ALS (Vancouver) for check assay using the same analytical methods as those employed at SGS.

The data have been examined using a series of scatter plots with fits to the data obtained by ordinary least squares regression. The data are compared in Table 21 using the coefficient of variation (CV), the correlation coefficient and an estimate of relative bias derived from the percentage difference, i.e. (original assay-check assay)/original assay*100. Negative values in Table 21 indicate that the SGS data have an average negative bias relative to the ALS data from the check assays.

Table 21: Summary of check assay statistics for 2015 program

| Element | CV | Correlation coefficient | SGS bias relative to ALS |
|---------|--------|-------------------------|--------------------------|
| Ag | 7.18 % | 0.99 | +3.31 % |
| Au | 21.3 % | 0.93 | -2.83 %* |
| Cu | 2.79 % | 0.99 | -0.11 % |
| Pb | 7.92 % | 0.95 | -0.44 % |
| Zn | 2.56 % | 0.99 | -1.00 % |

* Data are imprecise and this bias estimate is not considered to be reliable.

Source: Arne, 2015b

Overall, there is very good agreement between Cu and Zn values from SGS and ALS, with SGS values slightly lower than the ALS data and little scatter between the two datasets. Both Pb and Ag show strong positive correlations between the SGS and ALS data, but with much more scatter than the Cu or Zn data (Figure 42). Ag is slightly lower in the ALS samples, on average, whereas Pb is slightly higher in the ALS samples compared to the SGS data (Figure 42). Variability in the Ag data is due in part to the nuggetty distribution of some of the Ag at ABM in fine-grained electrum grains and sulphosalts, as well as slight differences in the strength of aqua regia used at the two laboratories. Lower Pb in the SGS samples probably reflects under-reporting due to the presence of barite, even though both labs used a Na-peroxide digestion for the base metals analyses.

As previously discussed, data for Au is the least precise and this imprecision is reflected in both the high CV and low R values for the two datasets. LA-ICPMS and petrography demonstrate that Au occurs as

electrum grains and within minor arsenopyrite component of the ore, both of which display a heterogenous distribution. Overall, Au is slightly lower in the SGS samples, although this conclusion must be moderated by the poor precision of the combined data.

A total of 15 QC samples were submitted with the check assays, including six blanks, three CDN-ME-1311, four OREAS 621 and three OREAS 623 CRMs. The CRM data all lie within 1SD or 2SD of the recommended values and the blanks are all within acceptable limits. The quality of the ALS data is therefore considered to be acceptable, although it must be borne in mind that there are far fewer QC samples than were submitted to SGS.

However, as was the case with the SGS data, there are clear positive biases in the Pb and Zn data, as well as negative biases in the Cu and Au data for some of the CRMs. These biases are generally similar to or slightly more extreme than those displayed by the SGS data for the BMC CRMs, albeit based on a much smaller dataset. This observation is consistent with the relative biases for Pb and Zn between the SGS and ALS check assays described previously, as well as being consistent with a slight positive bias in the SGS data relative to the historical assays, as discussed in the following section. The Ag assays remain problematic. The ALS Ag data for the BMC CRMs generally show a positive bias, and yet the ALS data are lower, on average, than the SGS data for the check assays. This contradiction may in part lie in the variable nature of the Ag bias observed in SGS assays over time, particularly for CDN-ME-1311, as well as the small number of QC samples available for the check assays.

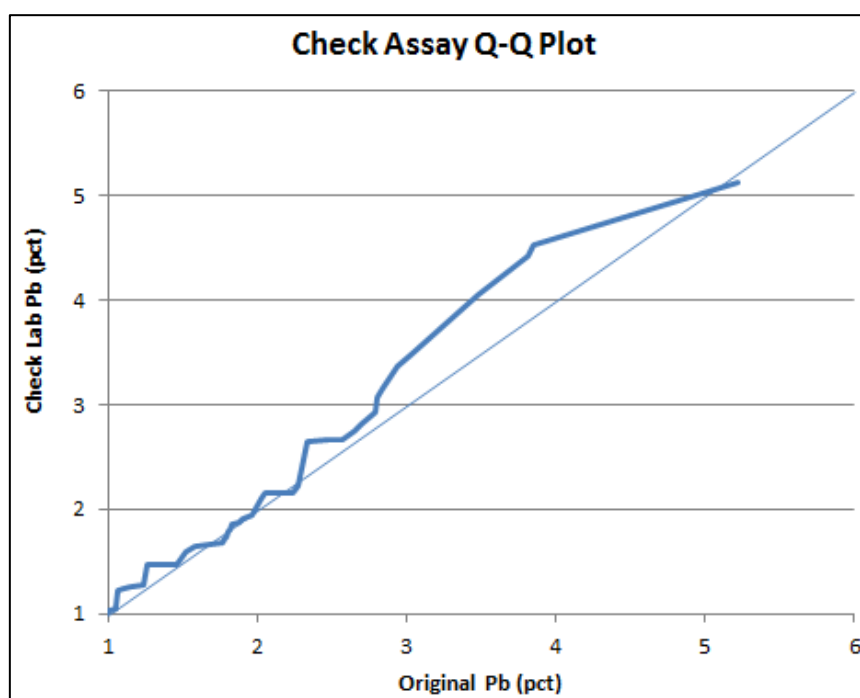


Figure 42: Q-Q plot using each data pair as a quantile and showing different distributions for Pb data from ALS and SGS

Source: Arne, 2015b

11.5.4.2 BMC 2016

Details in this section are taken from Arne (2016a,b).

Pulps from a total of 38 samples from the ABM deposit and 44 samples from the GP4F deposit were submitted to ALS in 2016 for check assay using the same analytical methods as those employed at SGS. The data have been examined using a series of scatterplots with fits to the data obtained by ordinary least squares regression. The data are compared in Table 22 for the ABM deposit and Table 23 for the GP4F

deposit using the CV, the correlation coefficient and an estimate of relative bias derived from the percentage difference (i.e. (original assay-check assay)/original assay*100). Negative values in Table 22 and Table 23 indicate that the SGS data have an average negative bias relative to the ALS data from the check assays.

Table 22: Summary of ABM Deposit check assay statistics for 2016 program (Arne, 2016a)

| Element | CV | Correlation coefficient | SGS bias relative to ALS |
|---------|--------|-------------------------|--------------------------|
| Ag | 8.5 % | 0.99 | 0.6 % |
| Au | 21.3 % | 0.94 | -16.4 %* |
| Cu | 3.6 % | 0.99 | 2.9 % |
| Pb | 3.0 % | 0.99 | 2.5% |
| Zn | 3.2 % | 0.99 | -2.7 % |

* Data are imprecise and this bias estimate is not considered to be reliable.

Source: Arne, 2016a

Table 23: Summary of GP4F Deposit check assay statistics for 2016 program (Arne, 2016b)

| Element | CV | Correlation coefficient | SGS bias relative to ALS |
|---------|--------|-------------------------|--------------------------|
| Ag | 3.1 % | 0.99 | 1.6 % |
| Au | 50.7 % | 0.92 | -25.8 %* |
| Cu | 2.9 % | 0.98 | 1.2 % |
| Pb | 4.1 % | 0.96 | 5.0 % |
| Zn | 2.0 % | 0.99 | 0.2 % |

* Data are imprecise and this bias estimate is not considered to be reliable.

Source: 2016b

For the ABM deposit, there is very good agreement between Ag values from SGS and ALS, which is an improvement from the previous assessment (Arne, 2015b). With the exception of Au, all the data examined show strong positive correlations between the SGS and ALS data, but with a positive bias in the SGS data Cu and Pb data relative to ALS, and a negative bias for Zn. Overall, Au is significantly lower in the SGS samples compared to the previous review of the 2015 data, although this conclusion must be moderated by the poor precision of the combined data. It is worth noting that higher Au grades have been encountered at the ABM deposit during the most recent drilling and these likely indicate the presence of coarse Au in the samples.

For the GP4F deposit, with the exception of Au, all the data examined show strong positive correlations between SGS and ALS data, but with slight positive biases in the SGS Cu, Pb and Zn data relative to ALS. In particular, the ALS data show higher Ag and Pb values relative to the SGS data. This may be in part due to differences in the digestion used for the Ag determinations (SGS use a two-acid rather than an aqua regia digestion), and Pb determinations at SGS by Na peroxide fusion are known to have been underestimated in 2015 in the presence of >1% Ba in the samples.

These biases are not entirely consistent with the biases evident from the assessment of CRMs discussed in a previous section, and so the discrepancy may be due to biases in the ALS data. No CRMs submitted with the ALS check samples have been reviewed, but they are likely to be insufficient in number to adequately constrain bias.

As previously discussed, data for Au is the least precise and this imprecision is reflected in both the high CV and low R² values for the datasets. It is not possible to place any emphasis on average bias estimates from Au data with such a high CV using a least squares regression.

11.5.5 Historical Core Resampling

An important aspect of the historical core re-logging program was to establish the quality of historical assay results so those results could be incorporated into the new resource estimate. Historical core was resampled the same mineralised intervals as Cominco from the remaining half core for all holes on sections 414750E, 414850E and 415050E. Those sections and holes were determined to be representative of mineralisation over the breadth of the ABM deposit. In addition, samples of weakly to unmineralised wall rock were collected from 4.5 m to 6 m outward from the massive sulphide contacts where historical sampling had not been completed (Baknes, 2015).

The following details are taken from Arne (2015b):

Remaining half drill cores for 417 samples previously sampled and analysed by Cominco (CERL) were resampled during the 2015 field program by BMC and analysed by SGS (Vancouver) using the same methods employed on the 2015 drillholes (Na-peroxide digestion with an ICP-OES finish). Historical drill core was stored on site under cover (Figure 27) and no significant oxidation of the core was noted.

No historical core re-sampling was undertaken during 2016.

The historical assays undertaken by CERL involved an aqua regia digestion followed by an AAS or ICP finish. Ore grade material is believed to have been analysed following dilution. Ag and Au were also analysed by fire assay and Ba was analysed by XRF.

Scatterplots and quantile-quantile (Q-Q) plots were generated for each element and an example for Zinc is shown in Figure 43 and Figure 44.

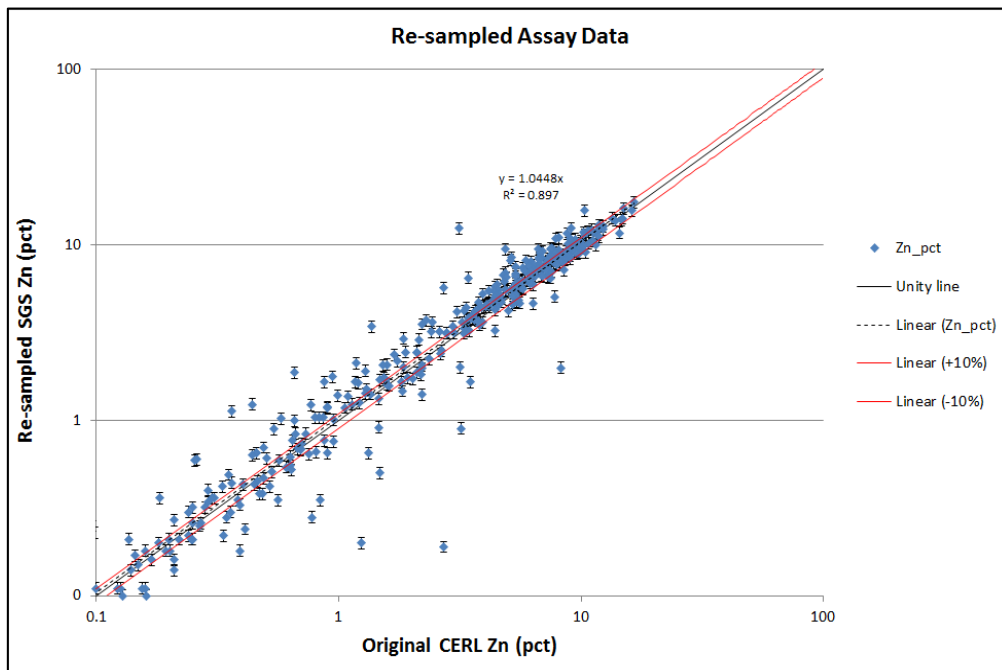


Figure 43: Scatterplot of historical and 2015 data for Zn

Note: Error bars for the SGS data are estimates of precision from preparation duplicate pairs expressed at 2SD.

Source: Arne, 2015b

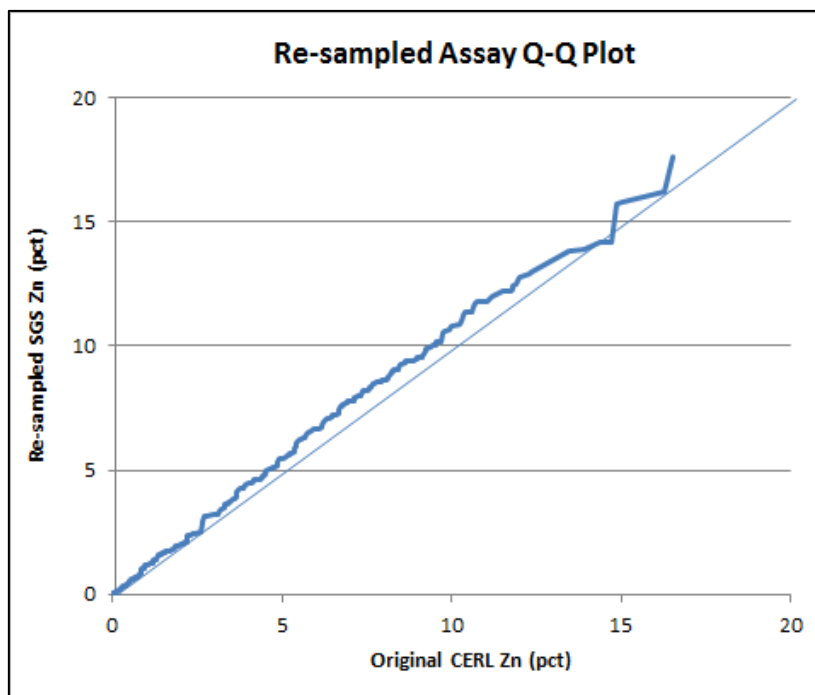


Figure 44: Q-Q plot for historical and 2015 data for Zn

Source: Arne, 2015b

The main conclusions of the comparison of the historical CERL data (1990s era) obtained using an aqua regia digestion for the base metals and the 2015 data obtained from SGS using a sodium peroxide fusion are summarised in point form below.

- 1) Cu – good agreement up to 3%.
- 2) Pb – slight positive bias in SGS data, once samples with >1% Ba were re-assayed.
- 3) Zn – positive bias in SGS data >2.6% to 15%.
- 4) Ag – good agreement to 250 ppm.
- 5) Au – good to fair agreement to 3 ppm.
- 6) Fe – good agreement in the range 8–15%; positive bias in SGS data <8%; negative bias in SGS data between 15% and 20%.

The observed agreement in Cu data up to 3% supports the conclusions reached from a comparison of the SGS and ALS check assays that the Cu data are generally reproducible between laboratories. Positive Zn biases in the SGS Pb and Zn data relative to the CERL data is consistent with positive biases seen in the SGS Pb and Zn data relative to a number of CRMs. The slight positive bias seen in the ALS check Pb and Zn assays relative to the SGS data indicate that ALS would produce an even stronger positive biases relative to the CERL Pb and Zn data. The Ag data are in good agreement to 250 ppm when both SGS and CERL data were obtained using an aqua regia digestion. The agreement breaks down above 250 ppm Ag, close to the upper detection limit of 300 ppm for this method at SGS.

Given the particulate nature of Au observed in petrographic work on ABM, poor agreement between SGS and CERL above 3 ppm Au is not surprising, but the systematic positive bias observed above this value in the CERL data, rather than random scatter, suggests a fundamental difference in the way the samples were prepared and analysed by fire assay.

11.6 Summary Opinion of Qualified Person

Based on an assessment of the historical drilling results and the recent drilling by BMC, the Qualified Person considers the entire dataset to be acceptable for resource estimation with assaying posing minimal risk to the overall confidence level of the MRE.

The Qualified Person considers that adequate procedures are in place to ensure security of drill core and samples from the drill rig to the laboratory.

12 Data Verification

12.1 Site Visit

A site visit was conducted by Aaron Green (Qualified Person) and Neil Martin (BMC (UK) Limited – Technical Director) from 11 to 13 October 2015. The purpose of the site visit was to:

- Inspect operating drill rigs
- Review current drilling and sampling procedures
- Verify the location of selected drill collars and downhole surveys
- Inspect site geological data collection systems (mapping, logging etc)
- Review site geology
- Review sample storage facilities including historical core storage farm
- Discuss QA with geological personnel
- Discuss data storage and review the drillhole database.

Majority of data, drilling and geological records were found to be well maintained by BMC and comprehensive field procedures have been developed. The following conclusions were made from the site visit:

- All drill crews were observed operating to a very high, professional standard and all equipment was presented in excellent condition. All procedures relating to drilling including environmental, safety, sampling and surveying appeared to be followed.
- All staff including the drillers, offsideers, field assistants and geologists seemed to be comfortable with the drilling and sampling procedures.
- Preliminary verification of the drill collar coordinates by CSA Global indicated an acceptable level of accuracy, although further verification will be necessary once a final database is produced. Subsequently, hole collars for all drilling (with the exception of a small number of holes) were surveyed by the end 2016 to a requisite level of accuracy. Confirmation of historical collar locations was achieved to a sensible level.
- The geologists and field assistants seemed to understand QA procedures.

Site sample storage facilities and the analytical laboratory in Vancouver (SGS) were also inspected by Aaron Green and Dennis Arne of CSA Global (Vancouver), and Robin Black (BMC – Exploration Manager) on Thursday, 22 October 2015.

There were no negative outcomes from any of the above inspections, and all samples and geological data were deemed fit for use in the PFS.

12.2 Database Verification and Validation

The drillhole database was managed off site by OMI Pty Ltd (OMI) based on information provided by BMC, Equity Exploration and the laboratories. Original 'hard copy' data was located by BMC and entered by OMI into a Microsoft Access database. Results from the 2015 and 2016 exploration programs were managed by OMI and loaded directly into the master Access database.

CSA Global compared the original "hard copy" data (drill collars, laboratory assay reports, geological logs, downhole surveys) for approximately 10% of the total drillholes with the database provided by OMI. No significant issues were noted.

In addition to checking “hard copy” data, relevant tables from the database were imported into Surpac software. Validation of the final data import by CSA Global included checks for:

- Missing data for entire holes
- Missing collar coordinates
- Overlapping sample intervals
- Samples interval exceeding the hole depth
- Missing sample intervals
- Missing downhole survey data
- Azimuth or dip changes $>5.00^\circ$
- “From” depths greater than or equal to “To” depths
- “From” depth does not start from 0.

The data in the database is comprehensive and of a high standard and all issues noted were minor and were corrected by OMI prior to commencement of the MREs.

12.3 Verification of Sampling and Assaying

12.3.1 Visual Inspection

Historical and 2015 drill core was viewed extensively by the Qualified Person (Aaron Green) and BMC’s Technical Director (Neil Martin) during the October 2015 site visit. Visual validation of mineralisation against assay results was undertaken for several holes and verified the presence of significant sulphide mineralisation as reported. Significant intercepts appear to correlate with the intensity of mineralisation logged in the field.

12.4 Audits and Reviews

A review of the sampling techniques and data was carried out by CSA Global during the October 2015 site visit. Visual validation of the drillhole locations and mineralised intersections was undertaken against hard copy drill sections. Relative to each other and the cross sections provided, the drillholes used as the basis for the MRE update were considered acceptable for classification and reporting under National Instrument (NI) guidelines.

The analytical laboratory, SGS (Vancouver), was inspected by Aaron Green (Qualified Person) and Dennis Arne of CSA Global, and Robin Black (BMC – Exploration Manager) on 22 October 2015. The laboratory visit found no significant issues at SGS with the site well presented, clean and with excellent procedures and equipment in place to produce high-quality assays.

The Qualified Person has verified the data which underpins the resource estimate contained in this Technical Report. The Qualified Person is of the opinion that data verification procedures undertaken on the data adequately support the integrity of the data used in the MRE.

13 Mineral Processing and Metallurgical Testing

13.1 Mineral Processing

The KZK process plant and associated service facilities will process run-of-mine (ROM) ore at a nominal rate of 2.0 Mt/a, to produce separate copper, lead and zinc concentrates and tailings. The process consists of crushing and grinding of the ore, separate sequential pre-float, rougher and cleaner flotation of copper, lead and zinc and regrind of copper, lead and zinc rougher concentrates. Concentrates will be thickened, filtered and stockpiled on site prior to being loaded onto trucks for transport to third party smelters. The flotation tailings will be dewatered by thickening and filtration before the tailings are transported either for disposal at the Class A Waste Storage Facility or combined with cement to produce underground backfill paste.

A large volume of metallurgical testwork has been completed for the Project. The results of the current testwork program, in conjunction with data available from historical testwork were used as the basis of the process plant design presented in Section 17 of this Technical Report.

13.2 Metallurgical Testwork

13.2.1 Historical (Pre-2015)

A summary of the metallurgical testwork completed by Cominco in the 1990s is detailed in Table 24. The source of samples for the historical testwork has been described to different levels of detail in the various reports, with several reports not detailing the location of samples used for testwork.

Table 24: Historical metallurgical testwork

| Report date | Laboratory | Report no. | Title |
|-------------|-----------------------|------------|---|
| Oct 1994 | Cominco | 94PR50 | ABM Deposit – Preliminary Metallurgical Test Program |
| Oct 1994 | Lakefield | LR4629 | An Investigation of the Recovery of Copper, Lead, Zinc and Precious Metals from ABM Massive Sulphide Ore, Progress Report No. 1 |
| Jan 1995 | Met Engineers | KM492 | Modal Analysis of Three Ore Composites |
| Mar 1995 | Cominco | 95PR08 | Kudz Ze Kayah Deposit – Characterization of Ore Metallurgy |
| Apr 1995 | Lakefield | LR4701 | An Investigation of the Recovery of Copper, Lead, Zinc and Precious Metals from ABM Massive Sulphide Ore, Progress Report No. 2 |
| Apr 1995 | Cominco | 95PR21 | Kudz Ze Kayah Project – Development of Standard Metallurgy |
| Oct 1995 | PRA | | Flotation Testing on Samples from the Kudz Ze Kayah Deposit |
| Dec 1995 | Lakefield | LR4848 | An Investigation of the Recovery of Copper, Lead and Zinc from Kudz Ze Kayah Samples, Progress Report No. 1 |
| Jul 1996 | Met Engineers | KM633 | Comparative Modal Analysis of Ore Composites |
| Sep 1996 | Met Engineers | KM618 | Flotation Testwork and Modal Analyses Feasibility Study |
| Oct 1996 | G and T Metallurgical | KM652 | Flotation Testwork on Pilot Plant Head Samples |
| Nov 1996 | G and T Metallurgical | KM672 | Preliminary Batch Tests; East and West Composites; Kudz Ze Kayah |
| Jul 1997 | Lakefield | LR4951 | A Pilot Plant Investigation of the Recovery of Copper, Lead and Zinc from Kudz Ze Kayah Project Samples, Progress Report No. 1 |

The results of mineralogical studies that were conducted on various ore lithologies, reportedly representative of the majority of the deposit, suggested a grind size of P₈₀ of 70 µm to 80 µm was sufficient to achieve target concentrate grades. The various stages of testwork culminated in the 1997 Lakefield Pilot Trial as illustrated in the flowsheet shown in Figure 45.

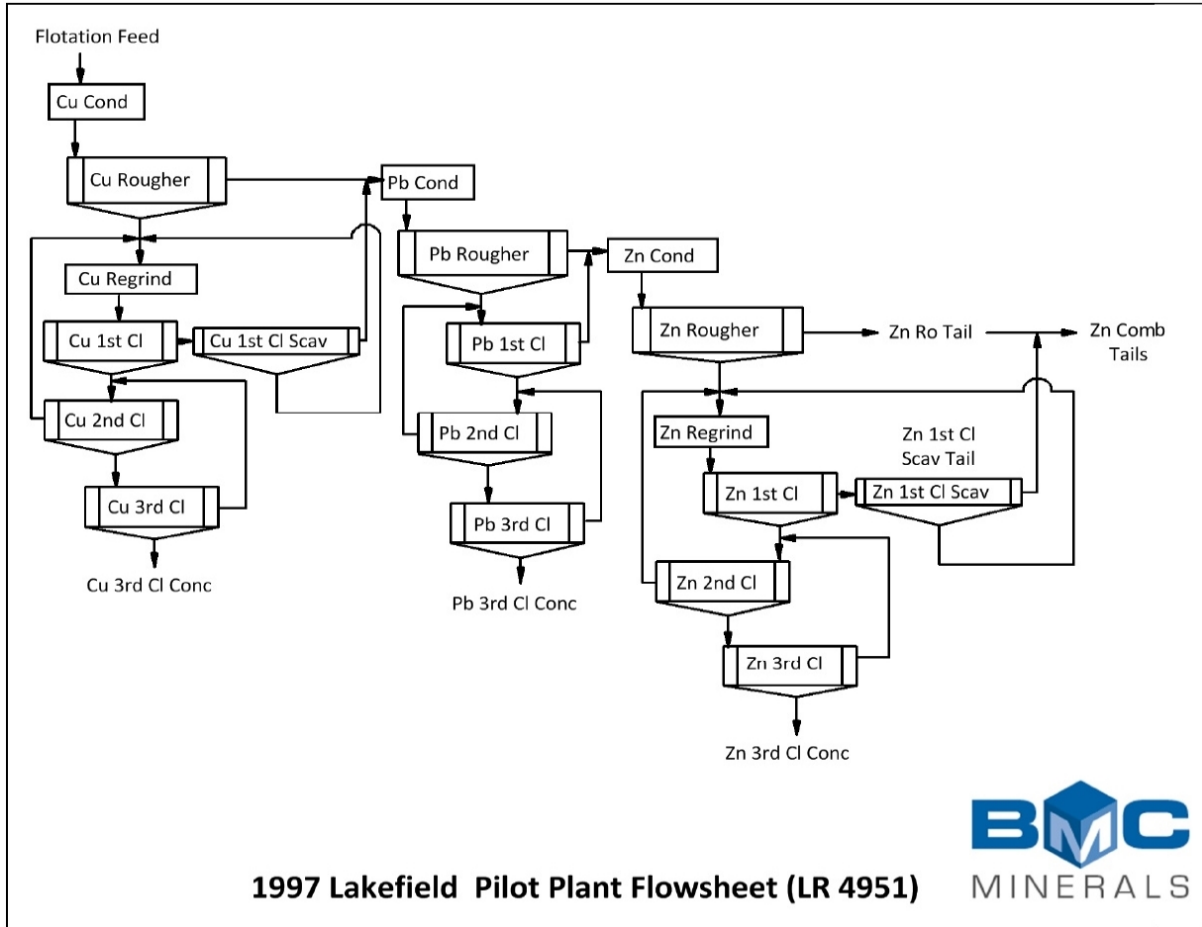


Figure 45: 1997 Pilot Plant Flowsheet

13.2.2 2016 Metallurgical Testwork

The historical metallurgical testwork formed a solid foundation for BMC to initiate a new program of metallurgical testwork. Detailed metallurgical drilling was undertaken during the 2015 BMC exploration campaign to collect representative samples of seven metallurgical “geodomains” interpreted from a desktop study (Hughes *et al.*, 2015). All holes consisted of HQ3 size core to ensure enough material for metallurgical testing and triple tube coring with inner split tubes were used to maximise core recovery (Hughes and Baknes, 2015). In 2016, testwork commenced with SGS, Vancouver and ALS, Perth for process flowsheet development. The 2016 metallurgical testwork was conducted on composites formulated to represent the major geometallurgical ore types as summarised in Table 25.

Table 25: Composite to ore type comparison

| Composite | Description |
|-------------------------|---|
| ABM Master Composite #1 | Composite of ABM metallurgical domains (MET2-4, MET5-7 and MET8), includes ABM+1340RL material |
| ABM Master Composite #2 | Similar to above, for vendor bulk flotation testwork |
| MET 2-4 | ABM Zone magnetite-pyrrhotite-rich massive sulphide metallurgical domain |
| MET 5-7 | ABM Zone pyrite-rich massive sulphide metallurgical domain |
| MET 8 | ABM Zone stockwork/vein style ore metallurgical domain |
| +1340RL | ABM Zone Cu-bearing sulphosalt rich shallow material (above 1,340 mRL) metallurgical domain |
| Krakatoa In Pit Main | Krakatoa Main Lens, within planned open pit |
| Krakatoa In Pit Upper | Krakatoa Upper Lens, within planned open pit |
| Krakatoa -1250RL | Krakatoa Main Lens, below planned open pit |
| LOM Master Composite | Blend of ABM and Krakatoa ore to duplicate distribution of ore sources over the life of the Project |

No metallurgical tests have yet been completed on the GP4F deposit.

13.2.2.1 Comminution Tests

A series of comminution tests were conducted by ALS Kamloops (February 2016), SGS Vancouver (February 2016) and ALS Metallurgy Perth (July 2016) on various ore samples to determine the comminution parameters for design of the primary grinding circuit. Table 26 summarises the results of the tests.

Table 26: Comminution test results

| Sample ID | Interval | BWi (kWh/t) | A x b | Ai (g) | DWi (kWh/t) |
|------------------------------|---------------|-------------|-------|--------|-------------|
| Comm 1 (drillhole K15-205) | 100.6–103.9 m | 8.5 | 78.8 | 0.09 | 4.88 |
| Comm 2 (drillhole K15-205) | 105.2–109.3 m | 6.6 | 88.6 | 0.12 | 5.17 |
| Comm 3 (drillhole K15-205) | 121.8–125.1 m | 7.1 | 73.1 | 0.109 | 5.70 |
| Comm 4 (drillhole K15-278W1) | 141.5–145.3 m | 9.1 | 70.2 | 0.368 | 5.82 |
| Comm 5 (drillhole K15-270) | 138.8–142.4 m | 5.7 | 115.4 | 0.093 | 3.62 |
| Comm 6 (drillhole K15-270) | 144.5–148.4 m | 6.6 | 75.8 | 0.155 | 6.05 |
| Comm 7 (drillhole K15-270) | 158.1–161.9 m | 9.2 | 91.5 | 0.123 | 4.48 |
| Comm 8 (drillhole K15-213) | 32.0–35.5 m | 8.2 | 114.4 | 0.087 | 2.76 |
| Comm 9 (drillhole K15-213) | 48.7–52.5 m | 8.3 | 145.3 | 0.118 | 2.89 |
| Comm 10 (drillhole K15-205) | 118.1–121.8 m | 7.1 | - | - | - |
| Comm 11 (drillhole K15-205) | 135.2–139.3 m | 10.2 | - | - | - |
| ABM Master Comp #1 | - | 9.7 | - | - | - |
| ABM Master Comp #2 | - | 9.9 | - | - | - |
| Krakatoa In-Pit Main | - | 8.8 | - | - | - |
| Krakatoa In-Pit Upper | - | 11.6 | - | - | - |
| Krakatoa 1250RL | - | 10.2 | - | - | - |
| LOM Composite | - | 9.4 | - | - | - |

Comminution test results indicate that the ore is softer than that indicated in the historical testwork (average BWi of 11.3 kWh/t). While this may present an opportunity for reassessment of comminution design in the future, a conservative approach was adopted for the purposes of the Technical Report, and comminution was designed according to the harder ore indicated by historical testwork. A more comprehensive comminution testwork program will be completed at Feasibility level to confirm whether the softer comminution parameters can be supported.

13.2.2.2 Batch Tests

SGS Canada performed a series of 42 total flotation tests on the flotation composites, with mixed results being obtained. Majority of the cleaner tests indicated that while final grade concentrates were being produced, recovery to copper, lead and zinc concentrates was poor. As a result of this, the remainder of the metallurgical test plan was relocated to ALS Metallurgy in Perth, Western Australia for completion of the testwork.

ALS commenced the program with a series of 24 open circuit batch flotation tests, carried out on ABM Master Composite #1 to determine the optimum flotation conditions for subsequent testwork. Using these conditions, optimised batch results for each of the ABM and Krakatoa composites were conducted and are summarised in Table 27.

Table 27: ALS batch flotation test results

| Composite | Description | Test no. | Concentrate grade (%) | | | Recovery (%) | | |
|-------------------------|--|----------|-----------------------|------|------|--------------|------|------|
| | | | Cu | Pb | Zn | Cu | Pb | Zn |
| ABM Master Composite #1 | ABM Total | Test 16 | 25.2 | 46.8 | 52.4 | 83.1 | 75.5 | 86.8 |
| ABM Master Composite #2 | ABM Total | Test 38 | 21.4 | 59.4 | 51.2 | 84.7 | 58.0 | 87.9 |
| MET 2-4 | Magnetite-pyrrhotite-rich massive sulphide | Test 27 | 22.0 | 37.1 | 50.7 | 72.1 | 61.8 | 90.4 |
| MET 5-7 | Pyrite-rich massive sulphide | Test 37 | 26.4 | 55.1 | 52.6 | 65.9 | 70.1 | 92.5 |
| MET 8 | Stockwork/vein style ores | Test 31 | 24.3 | 41.6 | 48.8 | 95.5 | 15.3 | 74.2 |
| +1340RL | Cu-bearing sulphosalt-rich near surface material | Test 36 | 23.5 | 51.5 | 51.4 | 71.8 | 61.0 | 88.5 |
| Krakatoa In Pit Main | Krakatoa In Pit Main | Test 39 | 25.0 | 61.7 | 51.9 | 69.5 | 72.5 | 65.3 |
| Krakatoa In Pit Upper | Krakatoa In Pit Upper | Test 40 | 21.1 | 58.0 | 52.5 | 75.1 | 69.8 | 87.4 |
| Krakatoa -1250RL | Krakatoa -1250 | Test 41 | 25.6 | 62.0 | 49.9 | 68.9 | 61.9 | 93.5 |
| LOM Master Composite | LOM Plant Feed | Test 42 | 24.1 | 53.9 | 52.0 | 82.9 | 64.7 | 92.6 |

The ALS tests confirm historical testwork results that saleable grade copper, lead and zinc concentrates can generally be produced from processing the various different types of ore, as represented by the selected composites. There is a significant amount of variability between the various ore types, which is typical for this type of ore. It would appear head grade and mineralogical characteristics of the near surface material have an effect on flotation performance.

Oxidation has been postulated during the Cominco testwork as a potential contributor to variability in testwork performance. EDTA analysis of samples across the deposit indicates that oxidation is unlikely to be the cause of this and BMC's understanding is that variability is primarily mineralogically related.

The testwork indicated improved results could be achieved with some modifications to the reagent regime and flowsheet, including incorporation of pre-flotation stages and extra regrinding. With these changes, a final grade concentrate could be produced in the pre-float cleaner stage prior to regrinding, which reduced the load on the remainder of the flotation circuit. The addition of lead regrinding appeared to improve results, and the general coarser regrind sizes implemented for copper and zinc produced concentrates that met target concentrate grade and overall recoveries. As a result of this improved performance, the process flowsheet design was updated based on the optimised flotation flowsheet shown in Figure 46.

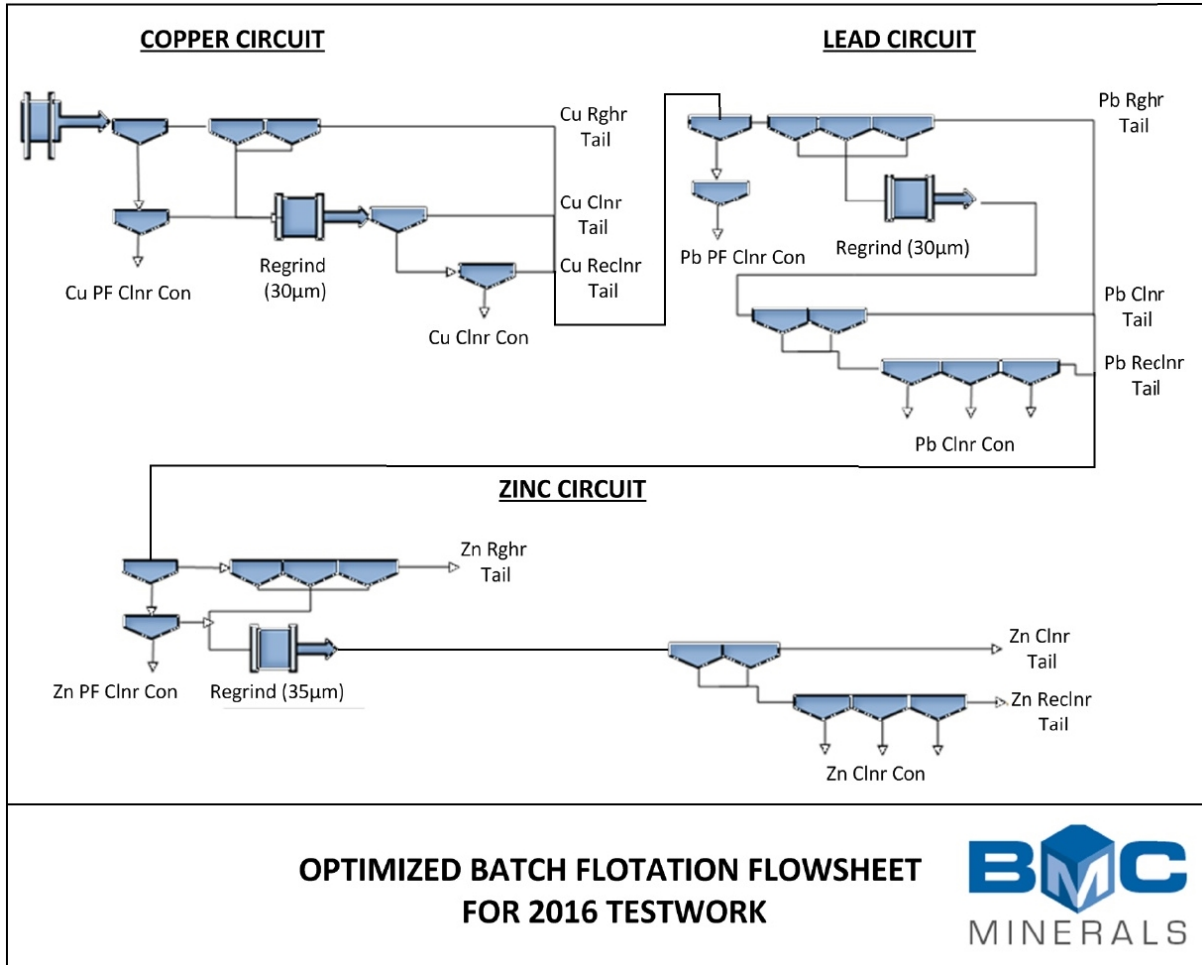


Figure 46: Optimised batch flotation flowsheet

13.2.2.3 Locked Cycle Test Results

Two locked cycle flotation tests were performed on the ABM Master Composite #1, one with Perth tap water and the other using site water. Table 28 details the comparison between the batch flotation test and locked cycle test, both with Perth tap water, for the ABM Master Composite #1. The locked cycle test provided only small increases in recovery at a slightly lower concentrate grade for Cu and Zn, which is typical as a result of recovering material from the intermediate recycle streams. The small recovery increase highlights the very good flotation performance of the KZK ore, with very little material reporting to intermediate streams. However, the lead recovery decreased in the locked cycle test and the lead grade increased, which is unusual. This is thought to be a result of an excessive mass recovery in the batch test lead circuit, and the locked cycle test result is considered a better prediction of metallurgy for this sample.

The data suggests batch testwork results provide a reasonable prediction of metallurgical performance given the very low reporting of metals to the batch test intermediate streams. For the ABM Master Composite #1, the locked cycle test result should be used to predict recovery performance given the more appropriate lead concentrate grade produced.

The locked cycle tests used the optimised batch testwork conditions, which confirmed closed circuit operation. The reagent rates were based on the optimum reagent dose rates used for the locked cycle test, summarised in Table 29. The test, utilising site water, required a higher lime dose rate, which may be more accurate based on the predicted acidity of site-specific water.

Table 28: Comparison between locked cycle test and batch flotation test results for ABM Master Composite #1

| Test no. | Concentrate grade (%) | | | Recovery (%) | | |
|-----------------------|-----------------------|------------|-------------|--------------|-------------|------------|
| | Cu | Pb | Zn | Cu | Pb | Zn |
| Batch flotation test | 25.2 | 46.8 | 52.4 | 83.1 | 75.5 | 86.8 |
| Locked cycle test | 23.1 | 50.1 | 51.3 | 85.8 | 67.4 | 88.1 |
| Difference (%) | -2.1 | 3.3 | -1.1 | 2.7 | -8.1 | 1.3 |

Table 29: Optimised reagent scheme

| Description | LCT reagent scheme | |
|-----------------|--------------------|-----------------|
| | Reagent type | Dose rate (g/t) |
| pH Modifier | Lime | 3,110 |
| Cu Depressant | SMBS | 675 |
| Cu Collector | A3894 | 29.5 |
| Pb Depressant 1 | NaCN | 125 |
| Pb Depressant 2 | ZnSO ₄ | 375 |
| Pb Collector | 3418A | 11 |
| Zn Activator | CuSO ₄ | 625 |
| Zn Collector | A208 | 85 |
| Frother | MIBC | 90 |

13.2.2.4 Bulk Flotation Test Results

A series of 20 bulk flotation tests using 10 kg feed charge were conducted on the LOM Master Composite sample. The flotation conditions were based on those used in the batch flotation test for the LOM composite, Test 42. Table 30 compares the average concentrate grades and recoveries achieved for the bulk flotation tests to the single 1 kg batch test performed.

Table 30: Comparison of bulk flotation test results

| Composite | Ore type | Test no. | Concentrate grade (%) | | | Recovery (%) | | |
|-----------------------|----------------|----------------------------------|-----------------------|------------|------------|--------------|------------|-------------|
| | | | Cu | Pb | Zn | Cu | Pb | Zn |
| LOM Master Composite | LOM Plant Feed | Batch Test 42 | 24.1 | 53.9 | 52.0 | 82.9 | 64.7 | 92.6 |
| LOM Master Composite | LOM Plant Feed | Bulk test average – MNI1616-1697 | 25.0 | 57.1 | 52.6 | 82.3 | 67.9 | 90.8 |
| Difference (%) | | | 0.9 | 3.2 | 0.6 | -0.6 | 3.2 | -1.8 |

The concentrates produced from both the batch and bulk tests have comparable grade and recovery results for copper and zinc. The lead performance was improved with the larger scale 10 kg test, with both grade and recovery improving, which was thought to be a result of increased lead cleaner slurry densities improving the froth stability.

13.3 Recovery and Grade Predictions

For a geometallurgical assessment of the testwork results, preliminary relationships were developed for grade and recovery to ore head grade. The preliminary predictive models were applied to the ore makeup and head grades for the three main composites tested (ABM Master Composite #1, ABM Master Composite #2 and LOM Master Composite) with the results then compared to the optimised test results for the composites, to determine the accuracy of the recovery models. A difference was shown in recovery reported by the models versus the actual values, therefore correction factors were applied to the predictive models to remedy the offset.

The final predictive grade and recovery models used in this technical study are detailed below. The maximum recovery value for each of the models is defined by the highest actual recovery result recorded. Given the limited data on some ore types, further testwork will be required for Feasibility level testwork to confirm some of the assumptions and extrapolations made.

13.3.1.1 Copper Concentrate

Copper recovery:

- ABM+1340 ore = $13.4 \times \ln(\%Cu) + 81.4$, Min/Max. recovery = 0% / 95.5%
- All other ore types = $13.4 \times \ln(\%Cu) + 83.8$, Min/Max. recovery = 0% / 95.5%.

Copper concentrate grade:

- All ore types = 22.9% Cu.

Lead recovery:

- All ore types = $9.2 \times (\%Pb)^{-1.46} + 1.8$, Min/Max. recovery = 0% / 49.0%.

Zinc recovery:

- All ore types = $58.0 \times (\%Zn)^{-1.85} + 0.9$, Min/Max. recovery = 0% / 20.2%.

Gold recovery:

- All ore types = 40.7% Au.

Silver recovery:

- All ore types = 43.1% Ag.

13.3.1.2 Lead Concentrate

Lead recovery:

- ABM+1340 ore = $30.0 \times \ln(\%Pb) + 39.4$, Min/Max. recovery = 15.3% / 72.5%
- ABM ore types = $30.0 \times \ln(\%Pb) + 48.3$, Min/Max. recovery = 15.3% / 72.5 %
- Krakatoa ore types = $22.45 \times \ln(\%Pb) + 44.2$, Min/Max. recovery= 15.3% / 72.5%.

Lead concentrate grade:

- ABM ore types = 53.5 % Pb
- Krakatoa ore types = 63.2 % Pb.

Copper recovery:

- All ore types = 1.2% Cu.

Zinc recovery:

- All ore types = 1.3% Zn.

Gold recovery:

- All ore types = 19.1% Au.

Silver recovery:

- All ore types = 24.2% Ag.

13.3.1.3 Zinc Concentrate

Zinc recovery:

- ABM+1340 ore = $12.7 \times \ln(\%Zn) + 63.7$, Min/Max. recovery = 0% / 92.5%

- Krakatoa In Pit (Main and Upper ore) = 77.4%
- Remaining ore types = $12.7 \times \ln(\%Zn) + 66.3$, Min/Max. recovery = 0% / 92.5%.

Zinc concentrate grade:

- All ore types = 51.5% Zn.

Copper rRecovery:

- All ore types = 5.6% Cu.

Lead recovery:

- All ore types = 16.3% Pb.

Gold recovery:

- All ore types = 10.9% Au.

Silver recovery:

- All ore types = 14.3% Ag.

13.4 Deleterious Elements

Concentrates produced by the 2016 metallurgical testwork program were analysed to determine the concentration of key elements. Due to the varying nature of the mineralisation, products from several metallurgical composites were analysed to demonstrate the range of concentrate specifications that will be delivered by the Project (Table 31). Concentrations of elements that are expected to incur penalties in the sale of concentrates are highlighted in bold text.

Table 31: Concentrate specifications and deleterious elements

| Element | Unit | Copper concentrate | | | Lead concentrate | | | Zinc concentrate | | |
|------------------|------|--------------------|--------------|--------------|------------------|--------------|--------------|------------------|-------------|------------|
| | | Composite | | | Composite | | | Composite | | |
| | | +1340 RL | ABM MC#1 | LOM | +1340 RL | ABM MC#1 | LOM | +1340 RL | ABM MC#1 | LOM |
| Cu | % | 23.5 | 23.0 | 25.1 | 0.9 | 0.6 | 0.9 | 0.4 | 0.4 | 0.5 |
| Pb | % | 3.7 | 3.6 | 3.0 | 51.5 | 48.8 | 56.9 | 3.6 | 1.6 | 2.3 |
| Zn | % | 7.3 | 6.0 | 4.6 | 5.3 | 4.3 | 4.1 | 51.4 | 51.7 | 52.6 |
| Au | g/t | 20.7 | 17.7 | 11.9 | 12.6 | 10.6 | 15.4 | 1.7 | 1.1 | 0.8 |
| Ag | g/t | 3,616 | 1,463 | 1,440 | 1,780 | 1,450 | 2,030 | 206 | 129 | 150 |
| Mo | ppm | 60 | 59 | 90 | 60 | 80 | 90 | 100 | 80 | 160 |
| Co | ppm | 30 | 64 | 100 | 30 | 60 | 100 | 20 | 31 | 30 |
| Fe | % | 25.9 | 27.7 | 28.7 | 13.9 | 16.4 | 11.7 | 9.4 | 10.4 | 9.4 |
| S | % | 33.8 | 33.4 | 33.9 | 25.8 | 27.7 | 23.6 | 32.8 | 33.2 | 32.4 |
| SiO ₂ | % | 0.3 | 1.5 | 1.0 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 |
| As | ppm | 11,300 | 3,382 | 2,600 | 5,800 | 4,700 | 6,200 | 2,700 | 1,571 | 1,800 |
| Sb | ppm | 13,000 | 5,036 | 4,600 | 4,600 | 3,700 | 5,000 | 400 | 200 | 200 |
| Se | ppm | 485 | 699 | 830 | 2,660 | 2,745 | 4,040 | 335 | 321 | 515 |
| Sr | ppm | 0.0 | 0.0 | <0.001 | 0.0 | <0.001 | <0.001 | 5 | 0.0 | <0.001 |
| F | ppm | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 |
| Hg | ppm | 36 | 25 | 15 | 19 | 16 | 14 | 145 | 133 | 114 |
| Cd | ppm | 500 | 450 | 300 | 400 | 300 | 260 | 3,200 | 3,388 | 3,300 |
| Al | ppm | 20 | 621 | 60 | 7 | 100 | <0.01 | 15 | 100 | 30 |
| Ba | ppm | 120 | 339 | 300 | 60 | 0 | 300 | 70 | 200 | 300 |
| Be | ppm | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 |
| Bi | ppm | 100 | 32 | 100 | 80 | 930 | 1,100 | 100 | 37 | 100 |
| Ca | ppm | 105 | 1,182 | 1,200 | 51 | 600 | 500 | 170 | 1,726 | 1,400 |
| Cr | ppm | 12 | 139 | 100 | 11 | 300 | 200 | 10 | 156 | 100 |

| Element | Unit | Copper concentrate | | | Lead concentrate | | | Zinc concentrate | | |
|---------|------|--------------------|----------|--------|------------------|----------|--------|------------------|----------|--------|
| | | Composite | | | Composite | | | Composite | | |
| | | +1340 RL | ABM MC#1 | LOM | +1340 RL | ABM MC#1 | LOM | +1340 RL | ABM MC#1 | LOM |
| K | ppm | 20 | <250 | 300 | 10 | <250 | <0.01 | 50 | <250 | 50 |
| Li | ppm | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 |
| Mg | ppm | 75 | 3,767 | 3,000 | 11 | 400 | 500 | 60 | 368 | 900 |
| Mn | ppm | 15 | 161 | 200 | 10 | 100 | <0.01 | 20 | 156 | 200 |
| Na | ppm | - | 120 | <50 | - | 100 | <50 | - | 78 | <50 |
| Ni | ppm | 20 | 100 | <0.01 | 15 | 200 | 200 | 10 | 156 | <0.01 |
| P | ppm | 5 | 100 | <250 | 5 | 100 | <250 | 5 | 100 | <250 |
| Ti | ppm | 5 | 100 | <0.01 | 10 | <0.01 | <0.01 | 10 | 100 | 200 |
| V | ppm | 1 | 10 | <0.001 | 5 | 10 | <0.001 | 5 | 10 | <0.001 |
| Y | ppm | <20 | <100 | <100 | <20 | <100 | <100 | <20 | <100 | <100 |

The +1340RL composite represents material from the upper portion of the ABM Zone and is representative of the concentrate produced in the first 20 months of operation. The ABM MC#1 composite represents an average blend of all metallurgical domains within the ABM Zone, while the LOM composite represents mineralisation from both the ABM and Krakatoa Zones. These last two composites are considered to be representative of the concentrate produced once the initial period of processing upper ABM Zone mineralisation has been completed.

Copper concentrate produced from the +1340RL composite has high levels of arsenic, antimony and mercury due to the presence of sulphosalts. However, offsetting this to some degree, the sulphosalts also result in high gold and silver grades in the copper concentrate. Other deleterious elements that will incur penalties in the sale of concentrates include selenium and bismuth in lead concentrate and mercury in zinc concentrate.

Concentrate assays have been independently reviewed by a concentrate trading firm who has confirmed that they expect that all concentrate produced at the Project will be able to be placed into the market, subject to the penalty costs detailed in Section 19.

14 Mineral Resource Estimates

14.1 Introduction

The updated ABM MRE has an effective date of 31 May 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).

Previous MREs generated for the deposit are described in Section 6.2. The current MRE presented in this report supersedes all past estimates.

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.

The resource estimation methodology for the ABM deposit comprised the following procedures:

- Model mineralised wireframes based on logged lithology and sample grade values
- Generate geological wireframes for the overburden surface, mafic intrusive units and faults based on logged geology and field observations
- Define resource domains
- Verify the drilling data against the LiDAR topographic surface
- Data compositing and declustering for geostatistical analysis, variography and validation
- Application of top-cuts based on geostatistical analysis
- Construct block model following kriging neighbourhood analysis (KNA)
- Grade interpolation using standard techniques such as OK, ID2 or ID3
- Application of a NSR to define a reporting cut-off and provide a basis for "reasonable prospects of economic extraction"
- Resource classification, validation and reporting
- Technical resource report on the MRE.

14.2 Database Cut-Off

The current ABM resource model was prepared using all drilling data available at 11 September 2016. The data included historical drilling results from the KZK Project as well as results from the 2015 and 2016 exploration program. The data was stored in a Microsoft Access database and named "*Kzk_resource_database20160911.mdb*".

14.2.1 Data Excluded

Drillholes were flagged under the "res_inclusion" field of the Collar table of the Microsoft Access database as either "y" (yes) or "n" (no) for inclusion into the resource estimate.

A total of 33 holes were excluded from the ABM MRE dataset (Table 32). Majority of holes excluded were metallurgical holes and/or wedges. Two holes; K95-168 and K95-169, were excluded from the MRE as exact collar locations of these historical, Cominco-drilled holes could not be confirmed and the downhole surveys appeared questionable. These holes were drilled down plunge of the Main Zone and showed poor correlation with surrounding holes.

Table 32: Listing of excluded drillholes from the ABM deposit MRE

| Hole ID | Hole depth (m) | Easting | Northing | Elevation | Reason | Parent hole ID |
|-----------|----------------|------------|-------------|-----------|---------------------|----------------|
| K15-201 | 35 | 414795.321 | 6815362.914 | 1,400.253 | Metallurgical twin | K15-202 |
| K15-205 | 146 | 414849.957 | 6815542.83 | 1,395.479 | Metallurgical twin | K15-203 |
| K15-213 | 99 | 414625.136 | 6815357.987 | 1,436.3 | Metallurgical | |
| K15-216W1 | 182 | 414845.596 | 6815743.656 | 1,394.852 | Metallurgical wedge | K15-216 |
| K15-221 | 44 | 414675.698 | 6815358.001 | 1,424.236 | Metallurgical twin | K15-218 |
| K15-225 | 25 | 414752.728 | 6815351.293 | 1,408.902 | Metallurgical twin | K15-223 |
| K15-226W1 | 182 | 414850.978 | 6815676.392 | 1,396.44 | Metallurgical wedge | K15-226 |
| K15-230 | 41 | 414871.81 | 6815378.906 | 1,390.693 | Metallurgical twin | K15-227 |
| K15-237 | 119 | 414750.629 | 6815496.738 | 1,406.768 | Metallurgical twin | K15-236 |
| K15-238W1 | 194 | 414901.586 | 6815741.065 | 1,388.746 | Metallurgical wedge | K15-238 |
| K15-241 | 35 | 414952.382 | 6815425.373 | 1,383.307 | Metallurgical twin | K15-240 |
| K15-241R | 65 | 414952.057 | 6815422.013 | 1,383.379 | Metallurgical twin | K15-240 |
| K15-243W1 | 200 | 414801.777 | 6815776.435 | 1,403.945 | Metallurgical wedge | K15-243 |
| K15-245 | 70 | 415050.945 | 6815416.155 | 1,386.662 | Metallurgical twin | K15-244 |
| K15-246 | 129 | 415134.011 | 6815441.807 | 1,400.731 | Metallurgical twin | K15-242 |
| K15-252 | 41 | 415048.949 | 6815336.681 | 1,386.143 | Metallurgical twin | K15-251 |
| K15-256 | 32 | 415100.747 | 6815309.079 | 1,393.181 | Metallurgical twin | K15-255 |
| K15-260W1 | 196 | 414749.033 | 6815674.459 | 1,411.257 | Metallurgical wedge | K15-260 |
| K15-262 | 348 | 415101.047 | 6815372.083 | 1,391.439 | Geotech | |
| K15-264W1 | 176.7 | 414800.261 | 6815624.607 | 1,401.87 | Metallurgical wedge | K15-264 |
| k15-266 | 110 | 414698.867 | 6815466.42 | 1,418.903 | Metallurgical twin | K15-272 |
| K15-269 | 72.72 | 414698.872 | 6815466.422 | 1,418.874 | Resource/met | |
| K15-270 | 170 | 415151.29 | 6815552.105 | 1,402.992 | Metallurgical twin | K15-267 |
| K15-275 | 122 | 415051.127 | 6815507.001 | 1,382.274 | Metallurgical twin | K15-273 |
| K15-276 | 110 | 414675.458 | 6815453.463 | 1,425.014 | Metallurgical twin | K15-274 |
| K15-278W1 | 161 | 414625.354 | 6815538.706 | 1,437.145 | Metallurgical wedge | K15-278 |
| K15-281W1 | 199.6 | 414594 | 6815656 | 1,447.51 | Metallurgical wedge | K15-281 |
| K15-283 | 190.7 | 415026.341 | 6815454.157 | 1,382.958 | Metallurgical twin | K15-279 |
| K15-284W1 | 191 | 414653.695 | 6815652.409 | 1,430.397 | Metallurgical wedge | K15-284 |
| K15-288 | 86 | 414800.352 | 6815436.95 | 1,400.507 | Metallurgical twin | K15-287 |
| K95-168 | 171 | 414702.59 | 6815342.8 | 1,418.65 | Drilled down plunge | |
| K95-169 | 157 | 414650.99 | 6815351.12 | 1,430.48 | Drilled down plunge | |

14.3 Preparation of Wireframes

14.3.1 Mineralisation

Each 25 m spaced cross section (or 50 m spaced oblique section for Krakatoa) was displayed in Surpac together with drillhole traces which were colour-coded according to logged lithology and sample grade values. Separate sets of strings were generated for the polymetallic (Cu-Pb-Zn-Au-Ag) massive sulphide, stockwork/disseminated sulphide mineralisation, mafic volcanic footwall unit, overburden surface, top of fresh rock surface and interpreted faults.

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 either lithology and/or assay drillhole intervals.

- Internal waste within the mineralised envelopes was not interpreted and modelled (with the exception of a small internal waste zone in the Krakatoa Zone). 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 approximately 25–40 m down dip (roughly half the drill spacing on section).
- If a mineralised lens extended to the overburden 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 lens and the overburden when the block model was built.

Figure 47 shows an example of an interpreted cross section with mineralisation and geological features.

The interpreted strings were used to generate three-dimensional (3D) solid wireframes for the mineralised envelopes. Every section was displayed on-screen along with the closest interpreted section. If the corresponding envelope did not appear on the next cross section, the former was projected halfway to the next section, where it was terminated.

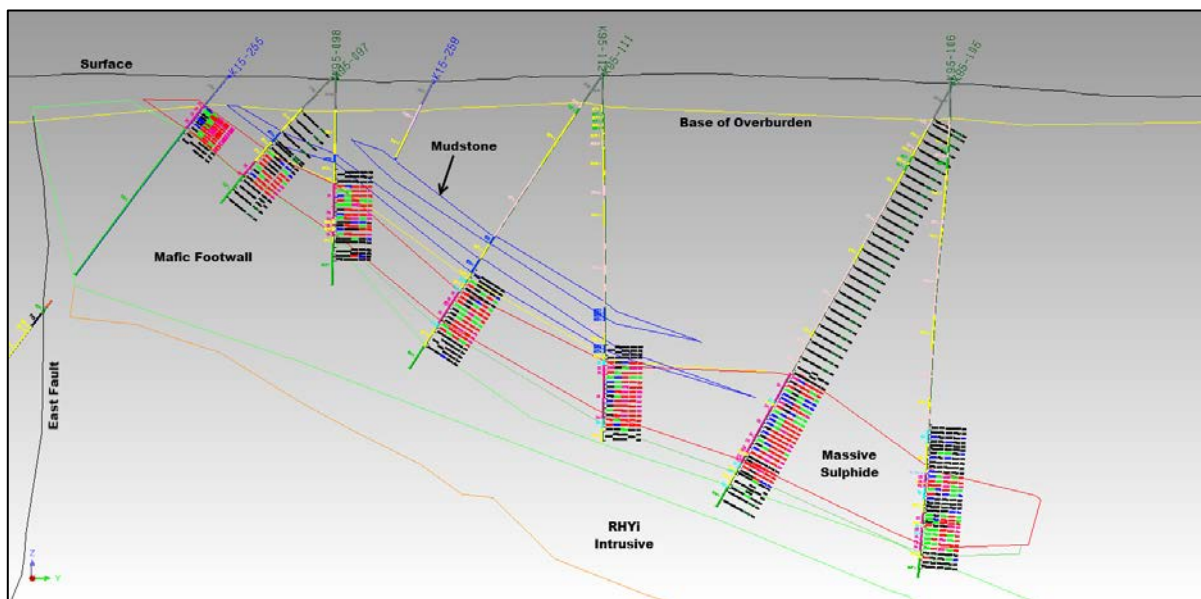


Figure 47: Example of interpretation of ABM mineralisation and geology – Section 415,100 m E

Separate mineralisation wireframes were generated for the ABM and Krakatoa zones and saved to the files “abm_min20160907.dtm” and “Krakatoa_min2016913.dtm” respectively (Figure 48). The wireframes were also separated as either being massive sulphide or stockwork/disseminated mineralisation based on logged geology.

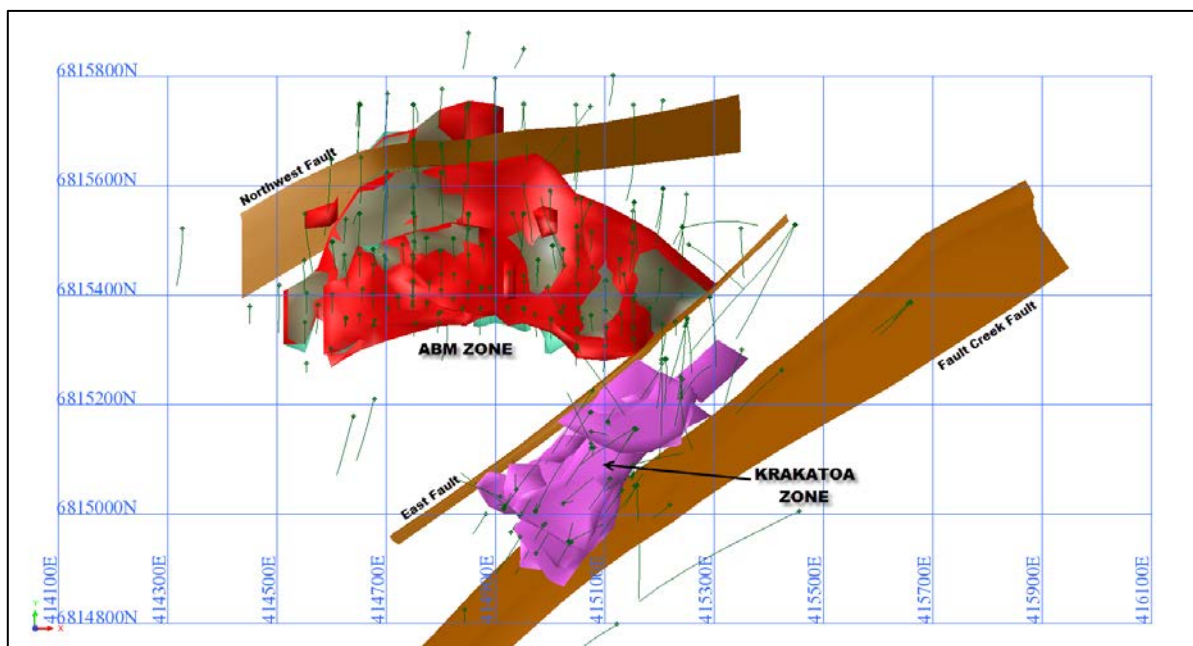


Figure 48: Plan view of the ABM Zone and Krakatoa Zone mineralisation wireframes with fault surfaces

At BMC's request, a dilution skin encompassing all the mineralisation wireframes was also created for mine planning purposes. A minimum 3 m downhole intersection was used for wireframing the dilution skin.

Separate dilution skin wireframes were generated for the ABM and Krakatoa zones and saved to the files "abm_dilution_skin20160907.dtm" and "krakatoa_dilution_skin20160909.dtm" respectively.

14.3.2 Lithology and Structure

Lithological and structural features were defined from logged and interpreted geology. The following features were wireframed in Surpac (and saved as):

- Mafic intrusive (abm_mafic20160915.dtm)
- Rhyolite intrusive (abm_rhyi20160915.dtm)
- Carbonaceous mudstones (abm_mudstone20160920.dtm)
- Wind Lake Formation (abm_windlake20160915.dtm)
- Northwest Fault (nw_fault_trimmed20160115.dtm)
- East Fault (east_fault20160912.dtm)
- Fault Creek Fault (fault_ck_fault20160912.dtm)
- Krakatoa faults (krakatoa_faults20160823.dtm)
- Overburden surface (abm_overburden20160906.dtm).

14.3.3 Weathering

Logging and relogging of current and historical drill core determined no significant weathering profile for the ABM deposit.

As described in Section 11.4.3, EDTA analyses indicated no significant weathering effects near surface at the ABM deposit, which supports removal of the "transition zone" from earlier resource modelling by CSA Global on behalf of BMC.

14.3.4 Acid Rock Drainage

As part of the ongoing feasibility studies for development of the ABM deposit, detailed characterisation of the ABM host rock was undertaken to assist in planning for acid rock drainage (ARD) and metal leaching (ML) parameters. This work was undertaken by Equity Exploration geologists during relogging of the historical core and logging of the 2015 and 2016 drill core as outlined in Section 10.6.3.

Cross-sectional interpretations were undertaken by Equity Exploration geologists and provided to CSA Global for wireframing and incorporation into the block model. Wireframes were updated and generated for the ABM and Krakatoa Zones and saved to the files “abm_ard20160920.dtm” and “krakatoa_ard20160920.dtm” respectively (Figure 49).

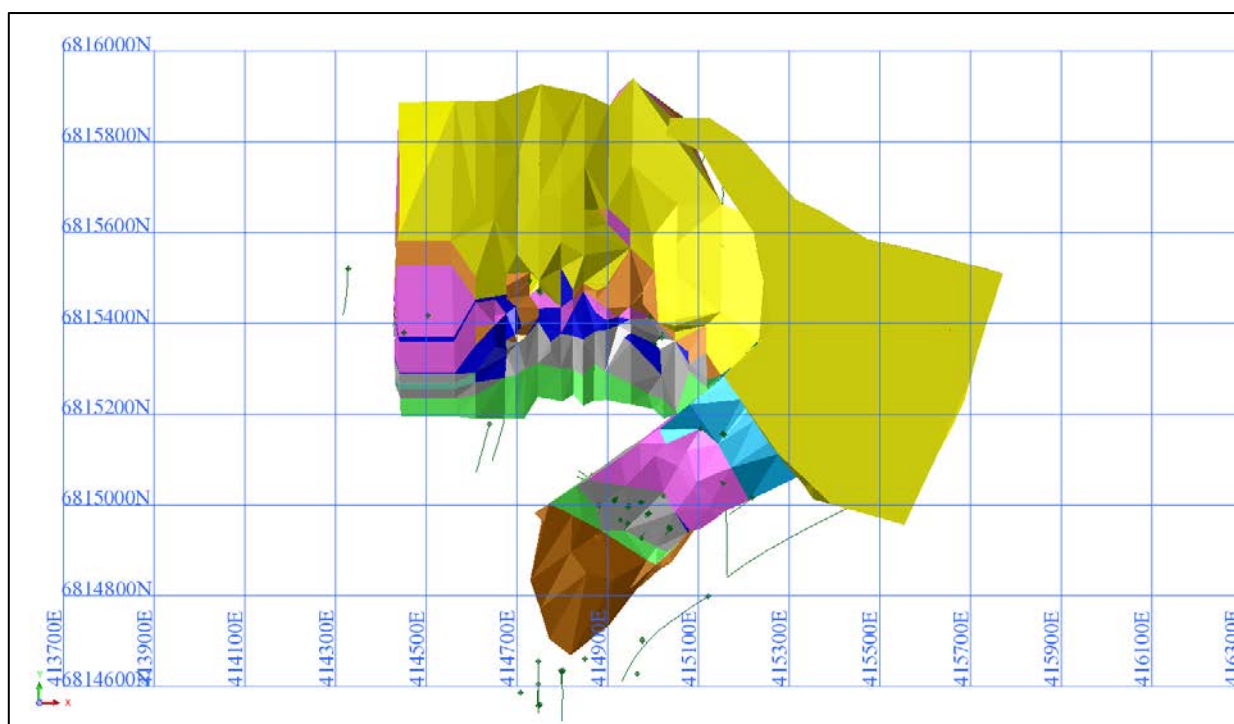


Figure 49: Plan view of the ABM and Krakatoa ARD domain wireframes (colours represent different ARD domains)

14.4 Topography

In late 2015, BMC contracted Challenger Geomatics Ltd of Whitehorse, Yukon to complete a detailed LiDAR survey over the key sectors of the KZK Project. The survey focussed over the ABM deposit area and potential infrastructure sites.

The survey was undertaken in September 2015 using a Leica ALS70 LiDAR system with a stated horizontal accuracy of 35 cm and vertical accuracy of 15 cm. The coordinate system for the survey was UTM Zone 9 NAD83.

Given the size of the LiDAR topography surface file, a smaller subset was “cookie-cut” using Surpac software for the MRE and saved as “kzk_trimmed_topo20151222.dtm”, as shown in Figure 50.

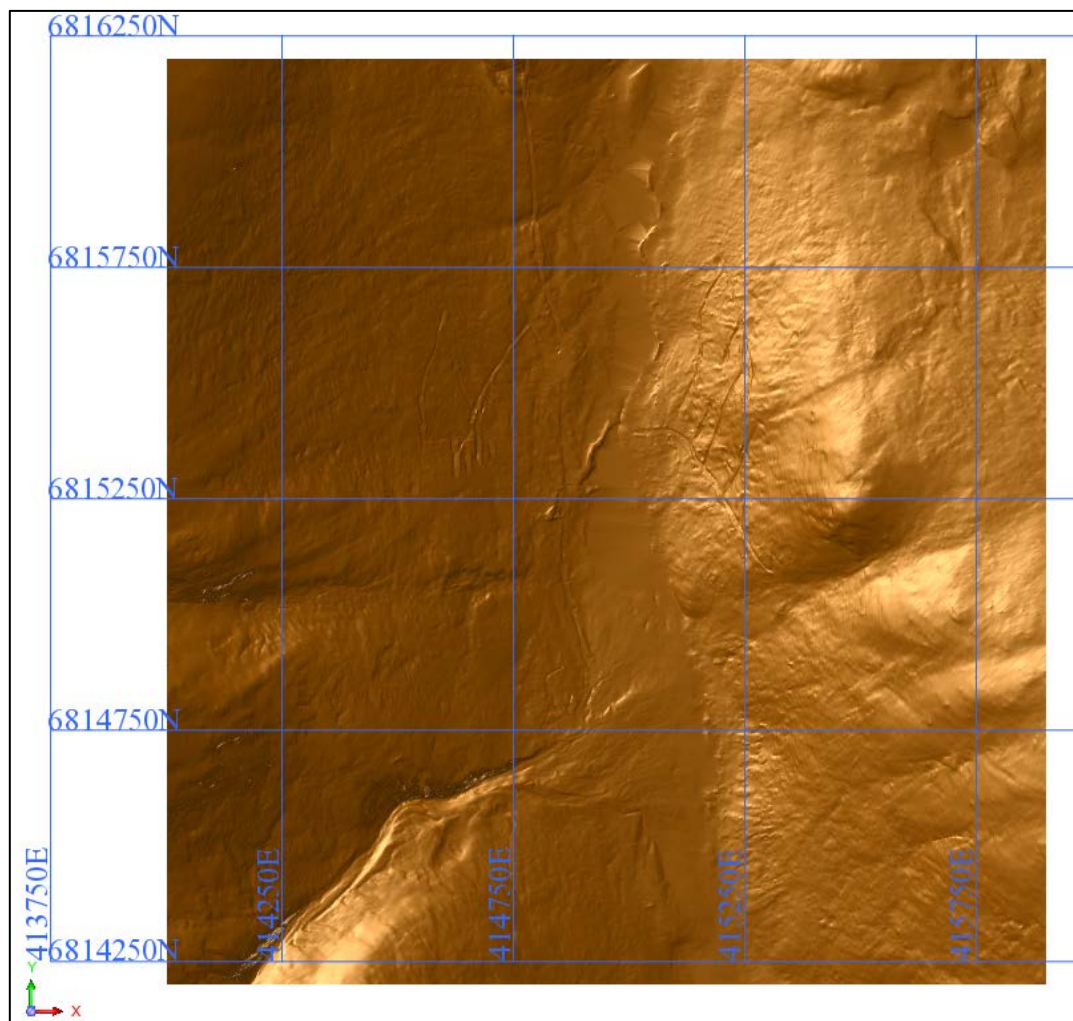


Figure 50: Plan view of the LiDAR topographic survey DTM over the immediate ABM deposit area

14.5 Statistical Analysis

Before undertaking the estimate, data was first analysed in order to understand how the estimate should be accomplished. Exploration samples were statistically reviewed, and variograms were calculated to determine spatial continuity for Cu, Pb, Zn, Au, Ag and Fe, as well as As, Ba, Bi, Hg, S, Sb and Se. Analysis was completed for all zones in the ABM deposit (ABM and Krakatoa Zones).

Statistical analysis was carried out by CSA Global using Supervisor v8.4™ and GeoAccess Professional™ software packages.

14.6 Drillhole Coding

Drillhole coding is a standard procedure which ensures that the correct samples are used in classical statistical and geostatistical analyses, and grade interpolation. For this purpose, solid wireframes for each mineralised envelope were used to select drillhole samples. Samples were then selected for individual mineralised envelopes and flagged for each mineralisation zone and geological domain using Surpac software.

Lithological and mineralisation wireframes were used to select drillhole samples, and the data was assigned a code in the field “POD”. A summary of the POD codes used to distinguish the data during geostatistical analysis and estimation is shown in Table 33.

Table 33: POD field and description for the ABM deposit

| POD | Zone | Description |
|---|----------|------------------|
| 2 | ABM | Dilution |
| 219 | Krakatoa | Dilution |
| 4, 13, 23, 33, 43, 53, 63, 73, 83, 93, 103, 113, 123, 133, 143, 153 | ABM | Stockwork |
| 202 | Krakatoa | Stockwork |
| 8, 17, 27, 37, 47, 57, 67 | ABM | Massive sulphide |
| 208, 209, 217, 218, 228, 238, 248, 258 | Krakatoa | Massive sulphide |

14.7 Sample Length Analysis

Based on the drillhole coding, samples from within the resource wireframes were used to conduct a sample length analysis.

Majority of raw sample intervals are 1.5 m in length for ABM (Figure 51) and 1.0 m in length for Krakatoa (Figure 52). Composites were initially extracted at 1.0 m intervals for the ABM Zone; however, this split many >1 m historical samples, which produced an overly “smoothed” set of variogram models with very low nuggets. Therefore 1.5 m and 1.0 m were selected as the composite lengths for ABM and Krakatoa respectively, as these lengths reflects majority of sample intervals within each of these deposits and are a suitable scale for the width of the resource wireframes.

Surpac software was then used to extract downhole composites using the “best-fit” algorithm within the mineralisation intervals.

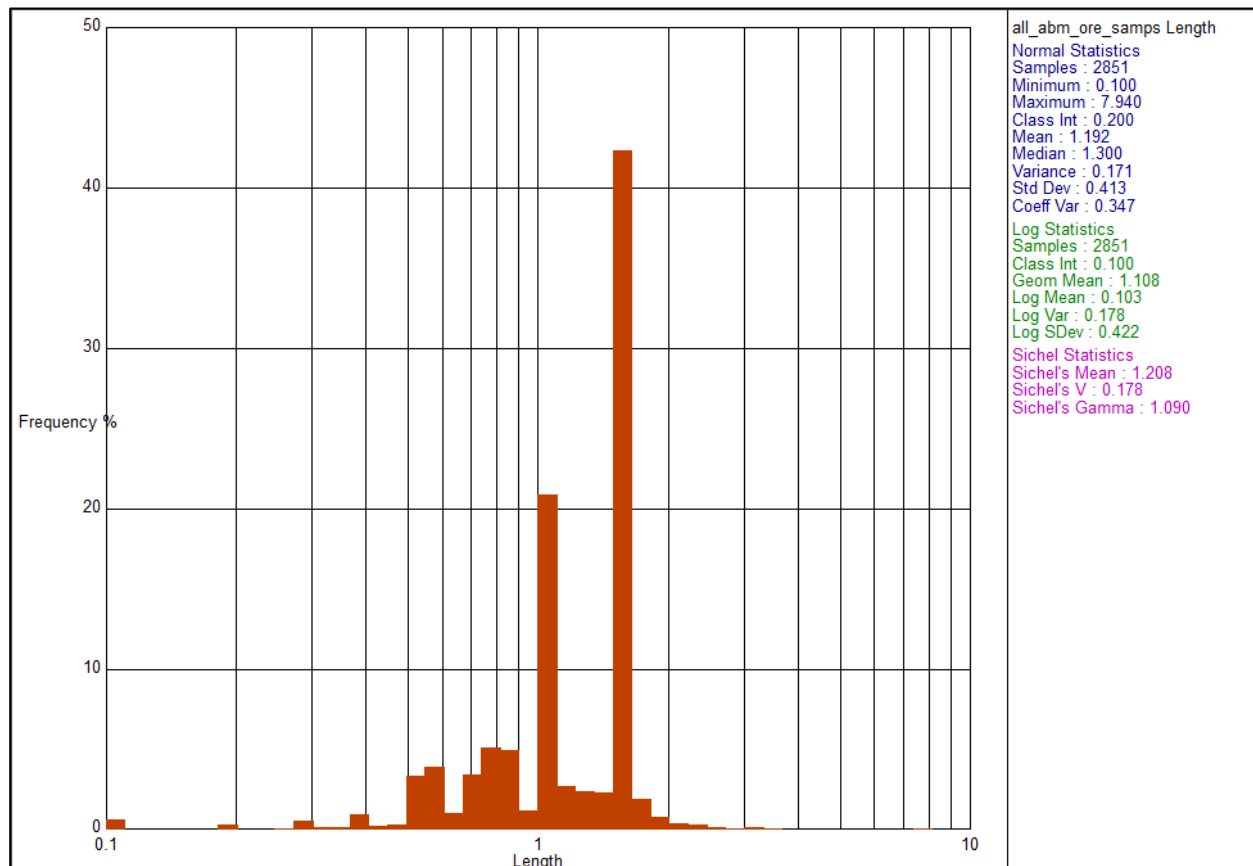


Figure 51: Normal histogram analysis of sample lengths in ABM database

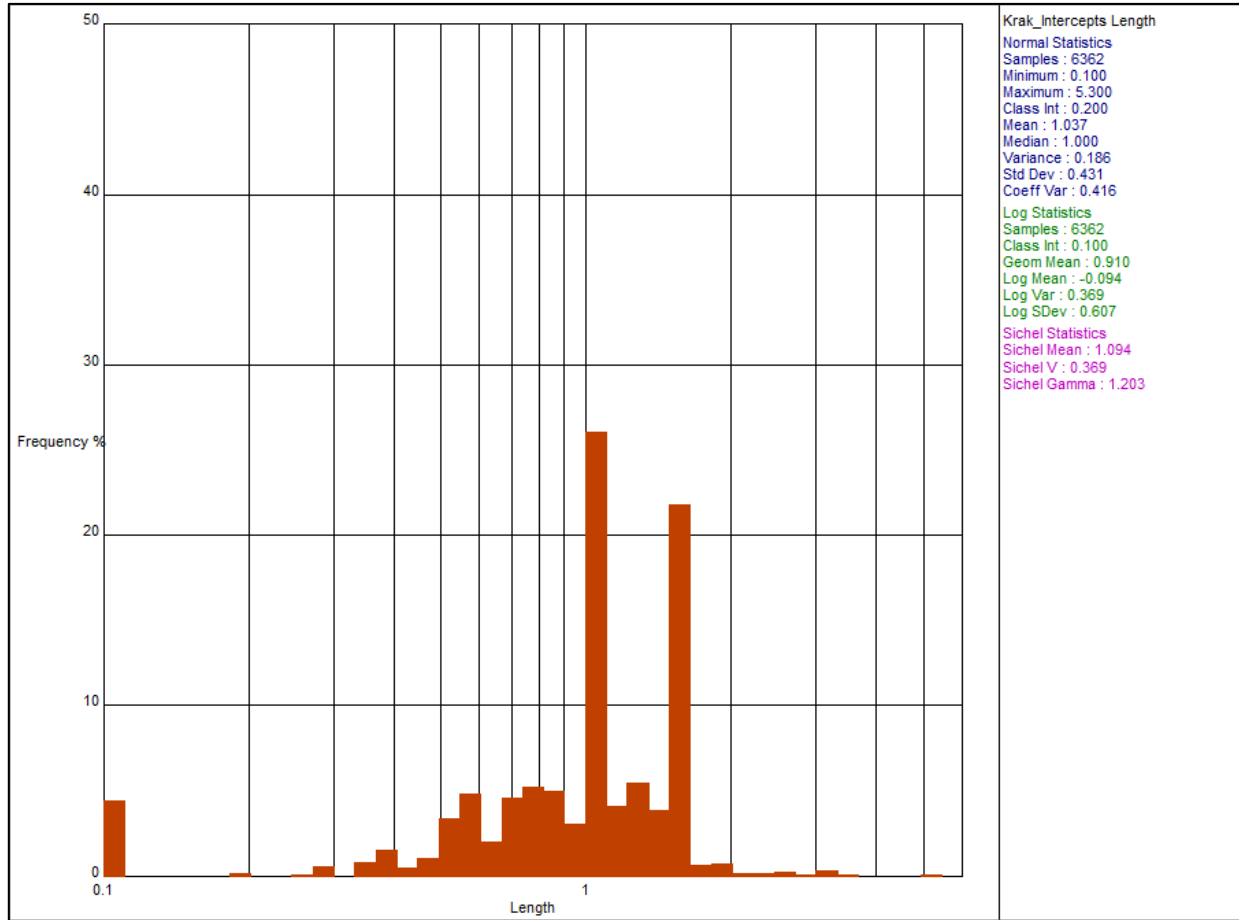


Figure 52: Normal histogram analysis of sample lengths in Krakatoa database

14.8 Compositing

Samples were composited at 1.5 m and 1.0 m intervals for the ABM and Krakatoa zones respectively. Basic statistical parameters were obtained for the composited data. Composites that were less or equal to 40% of the composite length were excluded from the geostatistical analysis and the estimate. This will limit any potential bias in the sample support during kriging.

14.9 Variables

Statistical analysis was carried out for the major elements Cu, Pb, Zn, Au, Ag and Fe, as well as As, Ba, Bi, Hg, S, Sb and Se. Analysis was completed for both the ABM and Krakatoa zones.

14.10 Global

For the purpose of reporting statistical analyses, the interpreted mineralised massive sulphide and stockwork domains were grouped into global domains for the ABM and Krakatoa zones. The global statistical domains are summarised in Table 34.

Table 34: Compilation of global statistical and reporting domains

| Global domain | POD | Description |
|---------------|--|--------------------------------|
| ABM | 8, 17, 27, 37, 47, 57, 67 4, 13, 23, 33, 43, 53, 63, 73, 83, 93, 103, 113, 123, 133, 143, 153 | Massive sulphide and stockwork |
| Krakatoa | 202, 208, 217, 218, 228, 238, 248, 258 | Massive sulphide and stockwork |

The log histograms for the major elements are shown in Figure 53 and Figure 54. These plots are overlain with the log cumulative distribution function (CDF) plots.

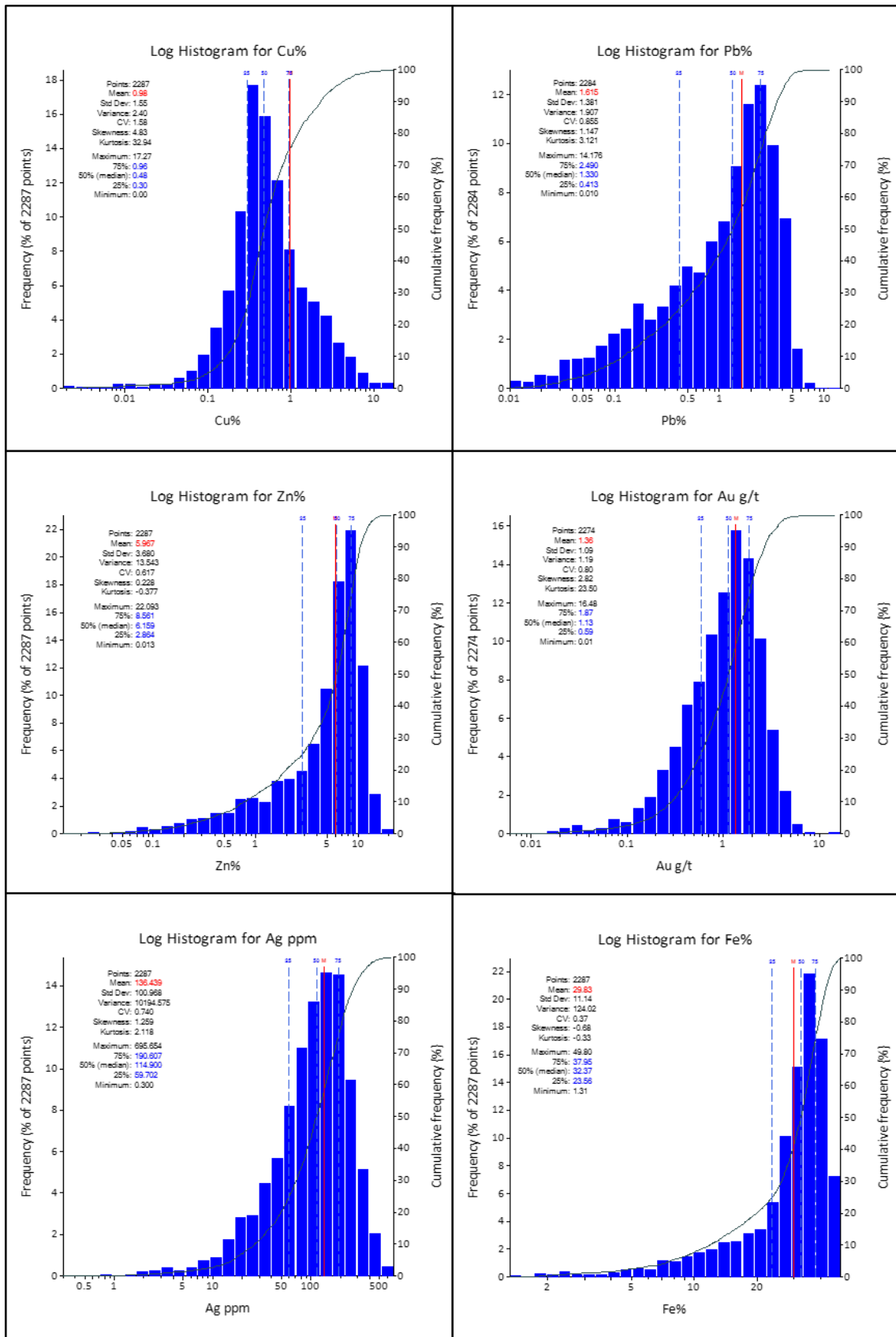


Figure 53: ABM Zone – global sample distribution for major elements (clustered, composited and uncut)

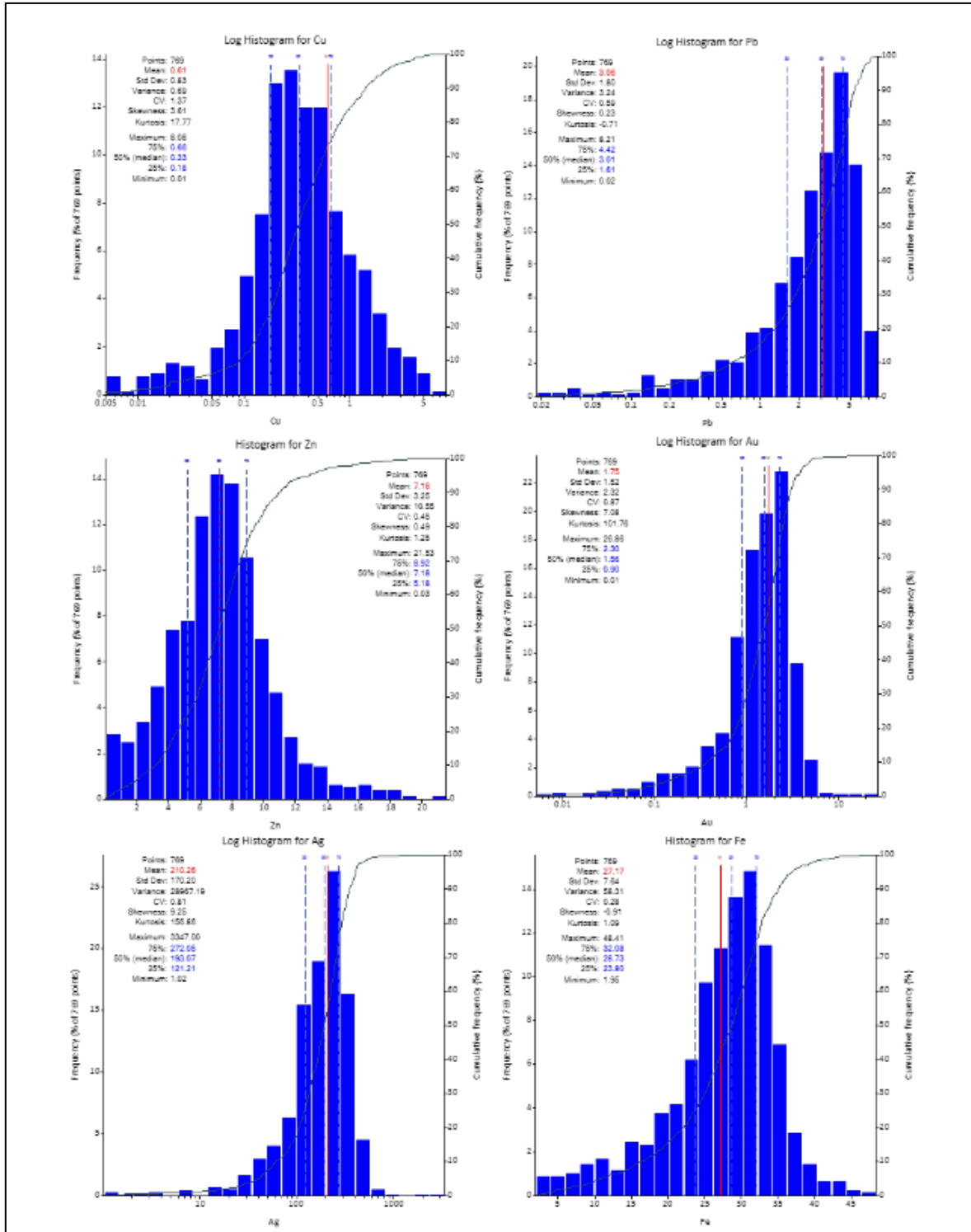


Figure 54: Krakatoa Zone – global sample distribution for major elements (clustered, composited and uncut)

Global statistics for the clustered, composited and un-cut major elements for the ABM and Krakatoa zones are shown in Table 35 and Table 36 respectively. Global statistics for the clustered, composited and uncut minor elements for the ABM and Krakatoa zones are shown in Table 37 and Table 38 respectively. Cu% was characterised by a higher CV (dispersion of grade around the mean grade) than the rest of the major elements.

Table 35: Major elements global statistics for ABM Zone

| ABM | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) | Fe (%) |
|--------------------|--------|--------|--------|----------|----------|--------|
| Total samples | 2,287 | 2,284 | 2,287 | 2,274 | 2,287 | 2,287 |
| Minimum | 0.002 | 0.01 | 0.01 | 0.01 | 0.30 | 1.31 |
| Maximum | 17.27 | 14.18 | 22.09 | 16.48 | 695.65 | 49.80 |
| Mean | 0.98 | 1.62 | 5.97 | 1.36 | 136.44 | 29.83 |
| Median | 0.48 | 1.33 | 6.16 | 1.13 | 114.90 | 32.37 |
| Variance | 2.40 | 1.91 | 13.54 | 1.19 | 10,195 | 124.02 |
| Standard deviation | 1.55 | 1.38 | 3.68 | 1.09 | 100.97 | 11.14 |
| CV | 1.58 | 0.86 | 0.62 | 0.80 | 0.74 | 0.37 |

Note: Clustered, composited and uncut.

Table 36: Major elements global statistics for Krakatoa Zone

| Krakatoa | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) | Fe (%) |
|--------------------|--------|--------|--------|----------|----------|--------|
| Total samples | 769 | 769 | 769 | 769 | 769 | 769 |
| Minimum | 0.005 | 0.02 | 0.03 | 0.005 | 1.02 | 1.95 |
| Maximum | 8.08 | 8.21 | 21.53 | 26.86 | 3,347 | 48.41 |
| Mean | 0.61 | 3.06 | 7.18 | 1.75 | 210 | 0.61 |
| Median | 0.33 | 3.01 | 7.18 | 1.56 | 193 | 0.33 |
| Variance | 0.69 | 3.24 | 10.55 | 2.32 | 28,967 | 0.69 |
| Standard deviation | 0.83 | 1.80 | 3.25 | 1.52 | 170 | 0.83 |
| CV | 1.37 | 0.59 | 0.45 | 0.87 | 0.81 | 1.37 |

Note: Clustered, composited and un-cut.

Table 37: Minor elements global statistics for ABM Zone

| ABM | As (ppm) | Ba (ppm) | Bi (ppm) | Hg (ppm) | S (%) | Sb (ppm) | Se (ppm) |
|--------------------|-----------|-------------|----------|----------|--------|----------|----------|
| Total samples | 2,253 | 2,147 | 2,253 | 1,118 | 862 | 2,253 | 1,607 |
| Minimum | 1.00 | 2.00 | 0.01 | 0.01 | 0.04 | 0.05 | 0.50 |
| Maximum | 39,740 | 255,085 | 608 | 182 | 48.70 | 7,112 | 1,425 |
| Mean | 2,458 | 13,450 | 56 | 18 | 28.72 | 460 | 114 |
| Median | 1,384 | 2,700 | 44 | 10 | 34.90 | 228 | 0.50 |
| Variance | 9,494,791 | 686,884,819 | 2,562 | 532 | 197.31 | 388,538 | 28,690 |
| Standard deviation | 3,081 | 26,208 | 51 | 23 | 14.05 | 623 | 169 |
| CV | 1.25 | 1.95 | 0.91 | 1.26 | 0.49 | 1.35 | 1.49 |

Note: Clustered, composited and uncut.

Table 38: Minor elements global statistics for Krakatoa Zone

| Krakatoa | As ppm | Ba ppm | Bi ppm | Hg ppm | S% | Sb ppm | Se ppm |
|--------------------|------------|----------|--------|--------|--------|-----------|--------|
| Total samples | 763 | 662 | 761 | 751 | 759 | 760 | 751 |
| Minimum | 11.42 | 100 | 0.083 | 0.098 | 0.2 | 5 | 1.82 |
| Maximum | 46,000 | 358,560 | 477 | 110 | 48.6 | 33,200 | 1,900 |
| Mean | 4,512 | 24,486 | 39 | 20 | 30.195 | 620 | 198 |
| Median | 2,839 | 1,200 | 24 | 15 | 32.168 | 372 | 144 |
| Variance | 27,137,516 | 3.38E+09 | 2,138 | 305 | 87.012 | 2,117,514 | 46,596 |
| Standard deviation | 5,209 | 58,120 | 46 | 17 | 9.33 | 1,455 | 216 |
| CV | 1.155 | 2.37 | 1.18 | 0.87 | 0.31 | 2.35 | 1.09 |

Note: Clustered, composited and uncut.

14.11 Correlations

Scatterplots were created for the global domains for the ABM deposit by plotting the clustered, composited and uncut variables against one another to assess relationships and possible correlations. Table 39 and Table 43 show the correlation matrices and Figure 55 and Figure 56 show selected scatterplots of variables with lines of regression where the correlation coefficient ('R') ≥ 0.70 .

Review of the scatterplots show strong correlations between Ag and Au, Ag and Sb and Fe and S for the ABM Zone and between Ag and Au, Au and Sb, Ag and Sb and Fe and S for the Krakatoa Zone.

Table 39: Correlation matrix for ABM Zone

| Indep/Dep | Cu % | Pb % | Zn % | Au g/t | Ag ppm | Fe % | As ppm | Ba ppm | Bi ppm | Hg ppm | S % | Sb ppm | Se ppm |
|-----------|-------|-------|-------|--------|--------|-------|--------|--------|--------|--------|-------|--------|--------|
| Cu % | 1 | -0.27 | -0.23 | 0.23 | 0.10 | 0.12 | -0.17 | -0.16 | 0.60 | -0.20 | -0.09 | -0.16 | 0.23 |
| Pb % | -0.27 | 1 | 0.70 | 0.44 | 0.70 | 0.13 | 0.42 | 0.30 | -0.23 | 0.44 | 0.36 | 0.50 | -0.16 |
| Zn % | -0.23 | 0.70 | 1 | 0.25 | 0.45 | 0.38 | 0.31 | 0.11 | -0.04 | 0.34 | 0.54 | 0.31 | -0.07 |
| Au g/t | 0.23 | 0.44 | 0.25 | 1 | 0.78 | 0.16 | 0.54 | 0.27 | 0.06 | 0.41 | 0.21 | 0.67 | -0.10 |
| Ag ppm | 0.10 | 0.70 | 0.45 | 0.78 | 1 | 0.12 | 0.46 | 0.36 | -0.02 | 0.54 | 0.23 | 0.74 | -0.13 |
| Fe % | 0.12 | 0.13 | 0.38 | 0.16 | 0.12 | 1 | 0.14 | -0.16 | 0.37 | 0.04 | 0.83 | 0.00 | 0.15 |
| As ppm | -0.17 | 0.42 | 0.31 | 0.54 | 0.46 | 0.14 | 1 | 0.13 | -0.14 | 0.41 | 0.31 | 0.53 | -0.15 |
| Ba ppm | -0.16 | 0.30 | 0.11 | 0.27 | 0.36 | -0.16 | 0.13 | 1 | -0.23 | 0.40 | 0.08 | 0.34 | -0.12 |
| Bi ppm | 0.60 | -0.23 | -0.04 | 0.06 | -0.02 | 0.37 | -0.14 | -0.23 | 1 | -0.21 | 0.15 | -0.18 | 0.27 |
| Hg ppm | -0.20 | 0.44 | 0.34 | 0.41 | 0.54 | 0.04 | 0.41 | 0.40 | -0.21 | 1 | 0.28 | 0.61 | -0.23 |
| S % | -0.09 | 0.36 | 0.54 | 0.21 | 0.23 | 0.83 | 0.31 | 0.08 | 0.15 | 0.28 | 1 | 0.17 | 0.32 |
| Sb ppm | -0.16 | 0.50 | 0.31 | 0.67 | 0.74 | 0.00 | 0.53 | 0.34 | -0.18 | 0.61 | 0.17 | 1 | -0.18 |
| Se ppm | 0.23 | -0.16 | -0.07 | -0.10 | -0.13 | 0.15 | -0.15 | -0.12 | 0.27 | -0.23 | 0.32 | -0.18 | 1 |

Table 40: Correlation matrix for Krakatoa Zone

| Indep/Dep | Cu % | Pb % | Zn % | Au g/t | Ag ppm | Fe % | As ppm | Ba ppm | Bi ppm | Hg ppm | S % | Sb ppm | Se ppm |
|-----------|-------|-------|-------|--------|--------|-------|--------|--------|--------|--------|-------|--------|--------|
| Cu % | 1 | -0.03 | 0.25 | 0.36 | 0.31 | 0.05 | -0.13 | -0.17 | 0.52 | -0.03 | -0.07 | 0.25 | 0.13 |
| Pb % | -0.03 | 1 | 0.57 | 0.14 | 0.26 | 0.32 | 0.21 | 0.05 | -0.07 | 0.12 | 0.38 | -0.01 | -0.04 |
| Zn % | 0.25 | 0.57 | 1 | 0.03 | 0.12 | 0.50 | 0.03 | -0.23 | 0.53 | 0.22 | 0.55 | -0.11 | 0.32 |
| Au g/t | 0.36 | 0.14 | 0.03 | 1 | 0.90 | -0.14 | 0.27 | 0.17 | -0.08 | 0.24 | -0.04 | 0.88 | -0.13 |
| Ag ppm | 0.31 | 0.26 | 0.12 | 0.90 | 1 | -0.13 | 0.11 | 0.16 | -0.07 | 0.30 | -0.02 | 0.88 | -0.03 |
| Fe % | 0.05 | 0.32 | 0.50 | -0.14 | -0.13 | 1 | 0.12 | -0.27 | 0.27 | 0.07 | 0.85 | -0.22 | 0.34 |
| As ppm | -0.13 | 0.21 | 0.03 | 0.27 | 0.11 | 0.12 | 1 | 0.18 | -0.10 | 0.27 | 0.17 | 0.10 | -0.01 |
| Ba ppm | -0.17 | 0.05 | -0.23 | 0.17 | 0.16 | -0.27 | 0.18 | 1 | -0.28 | 0.03 | -0.07 | 0.10 | -0.27 |
| Bi ppm | 0.52 | -0.07 | 0.53 | -0.08 | -0.07 | 0.27 | -0.10 | -0.28 | 1 | -0.05 | 0.19 | -0.12 | 0.29 |
| Hg ppm | -0.03 | 0.12 | 0.22 | 0.24 | 0.30 | 0.07 | 0.27 | 0.03 | -0.05 | 1 | 0.21 | 0.11 | 0.14 |
| S % | -0.07 | 0.38 | 0.55 | -0.04 | -0.02 | 0.85 | 0.17 | -0.07 | 0.19 | 0.21 | 1 | -0.18 | 0.31 |
| Sb ppm | 0.25 | -0.01 | -0.11 | 0.88 | 0.88 | -0.22 | 0.10 | 0.10 | -0.12 | 0.11 | -0.18 | 1 | -0.14 |
| Se ppm | 0.13 | -0.04 | 0.32 | -0.13 | -0.03 | 0.34 | -0.01 | -0.27 | 0.29 | 0.14 | 0.31 | -0.14 | 1 |

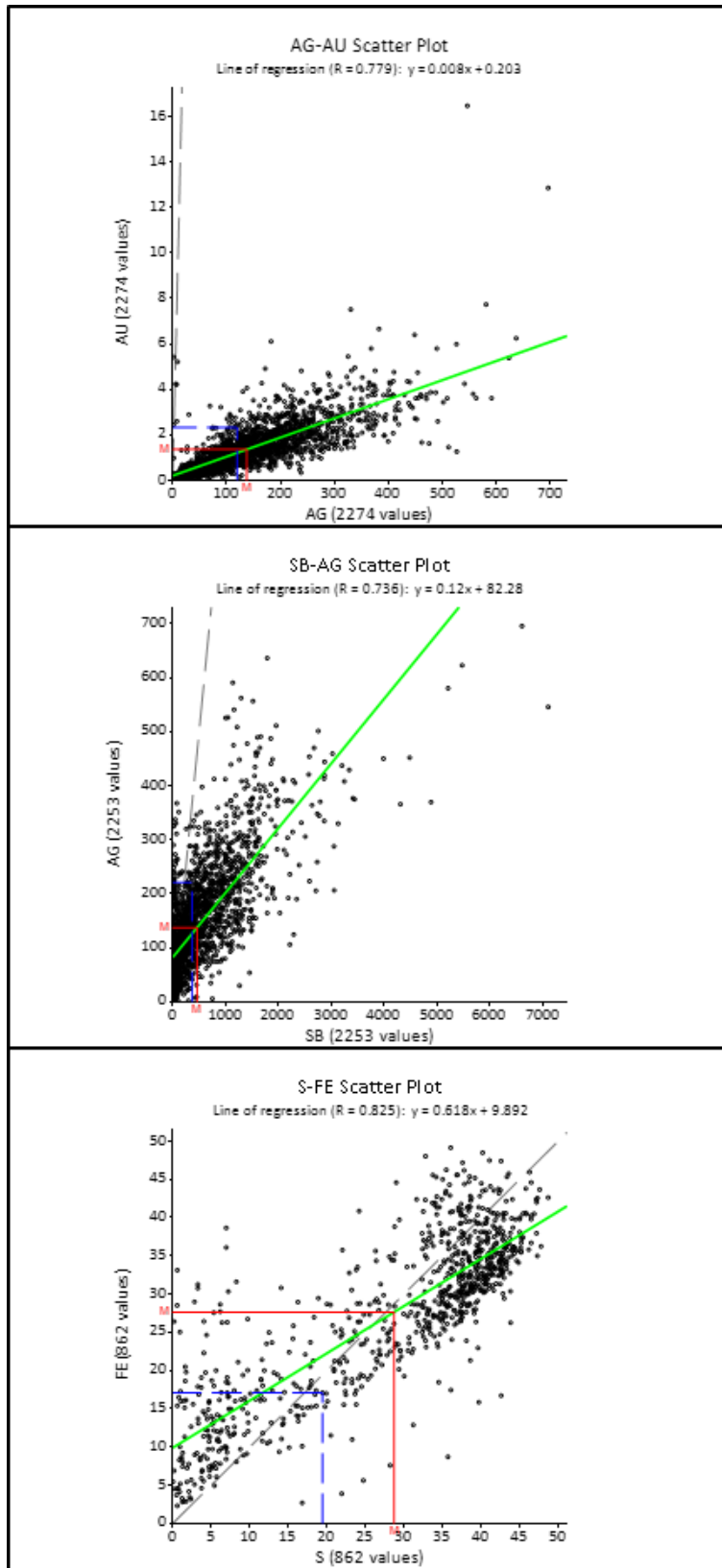


Figure 55: ABM Zone – scattergram correlation plots for variables with line of regression ≥ 0.70

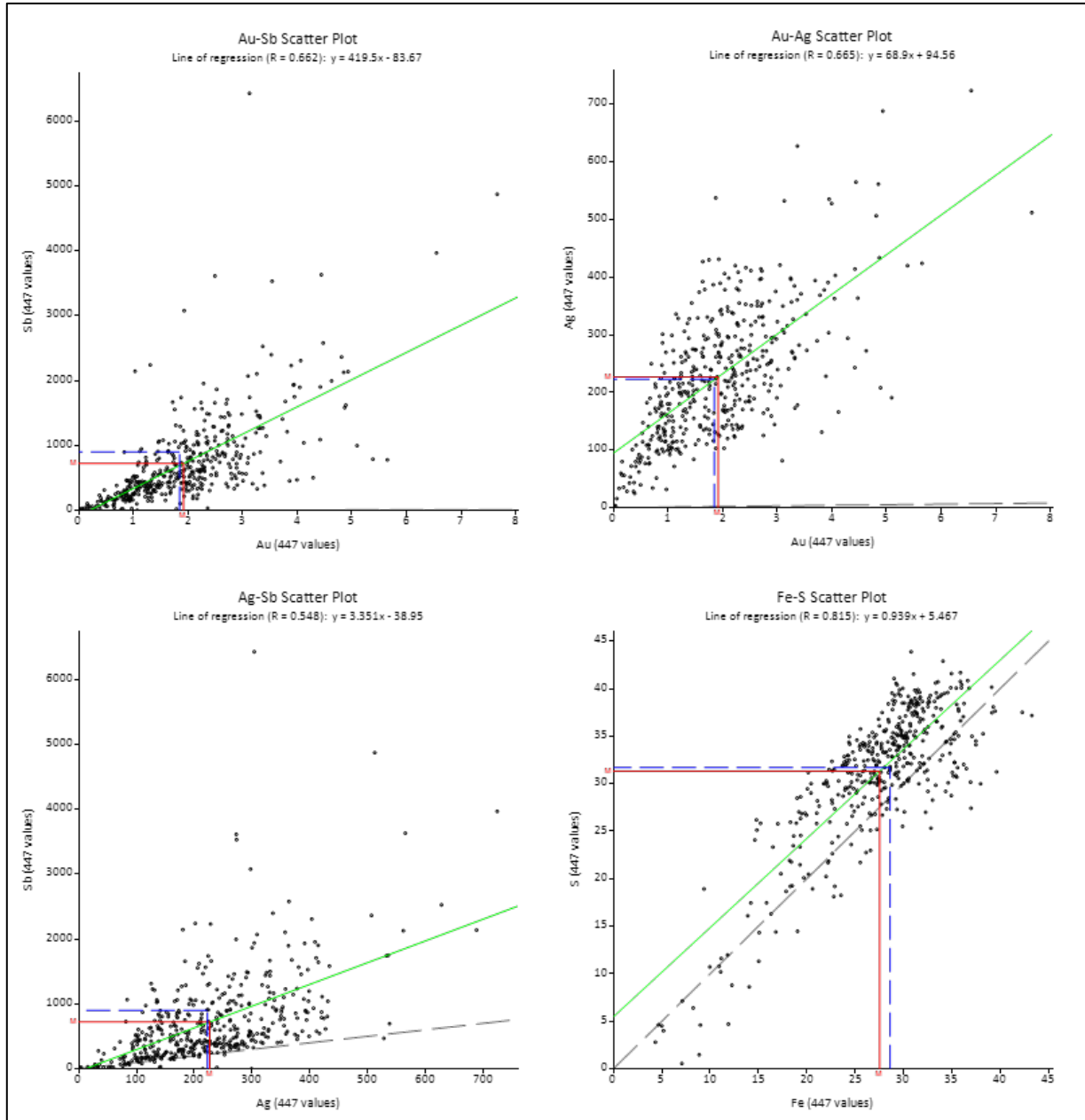


Figure 56: Krakatoa Zone – scattergram correlation plots for variables with line of regression ≥ 0.70

Cutting of Au (10 g/t), Ag (1,500 g/t) and Sb (6,000 ppm) for the Krakatoa Zone results in a relative drop in correlations for Au:Ag (0.86 to 0.74), Au:Sb (0.81 to 0.69) and Ag:Sb (0.85 to 0.65). Scatterplots showing the results of top-cuts on the data are shown in Figure 57.

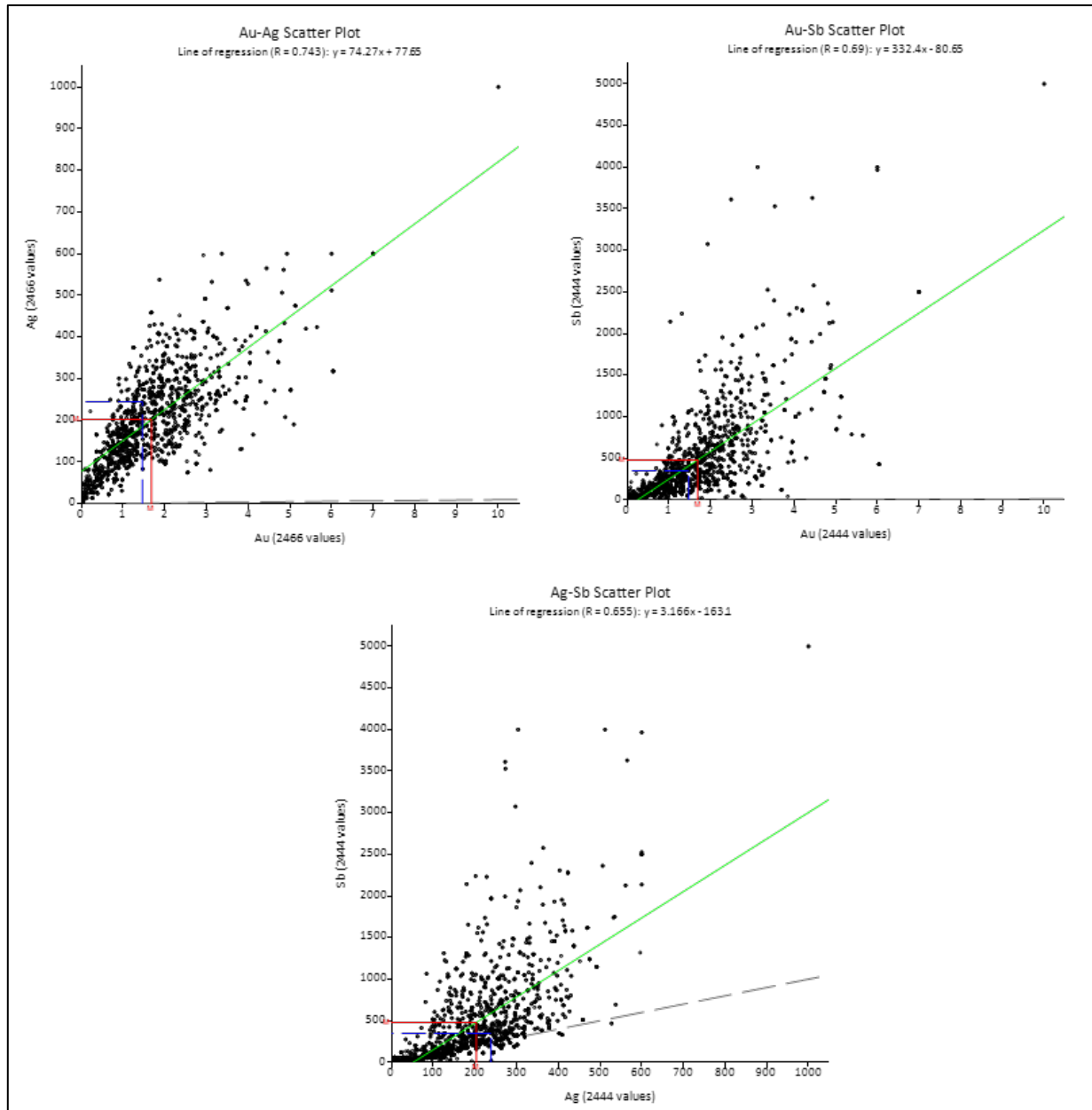


Figure 57: Krakatoa Zone – scattergram correlation plots for cut variables

14.12 Treatment of Outliers (Top-Cuts)

A review of grade outliers was undertaken to ensure that extreme grades are 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 cut, they have the potential to result in significant grade over-estimation on a local basis.

Top-cuts were selected following statistical review of the sample population. The cutting strategy was applied following review of the following:

- Skewness of the data
- Probability plots
- Spatial position of extreme grades.

To determine the top-cuts, histograms and probability plots were reviewed for the major elements (Cu, Pb, Zn, Au, Ag and Fe) and minor elements (As, Ba, Bi, Hg, S, Sb and Se). The plots were compiled based

on the 1.5 m and 1.0 m composites for each mineralised zone (POD) for the ABM and Krakatoa zones respectively (some examples are provided in Figure 58 to Figure 60).

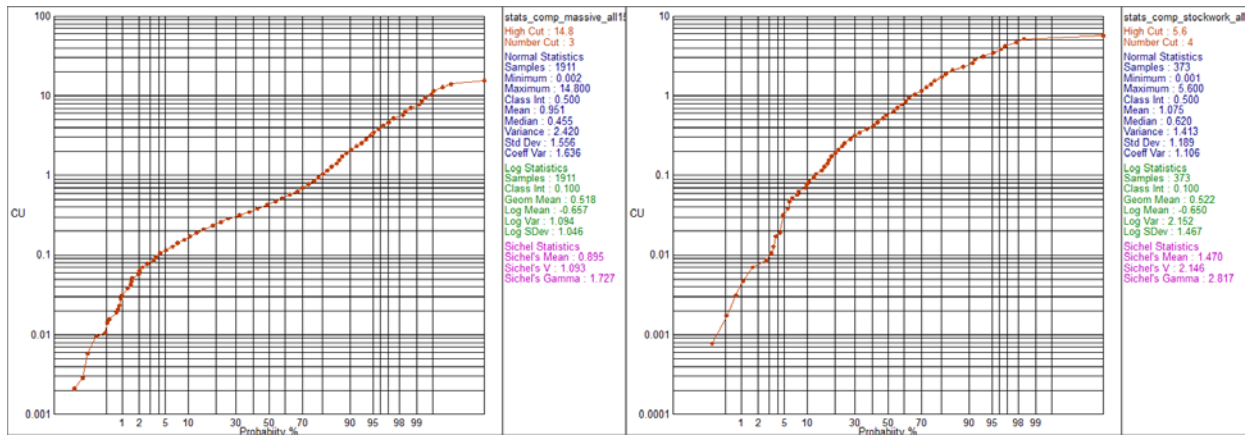


Figure 58: ABM Zone – log probability plots for massive and stockwork Cu

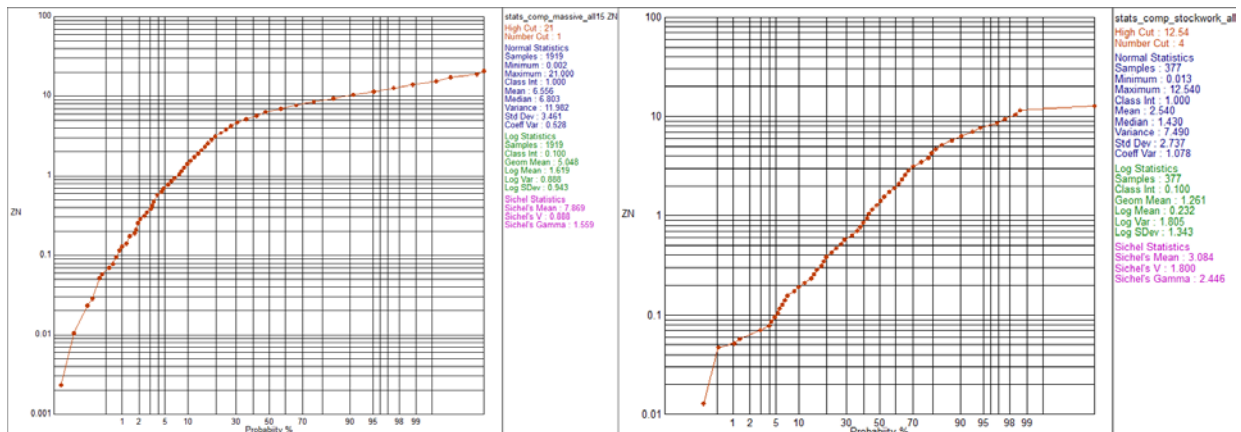


Figure 59: ABM Zone – log probability plots for massive and stockwork Zn

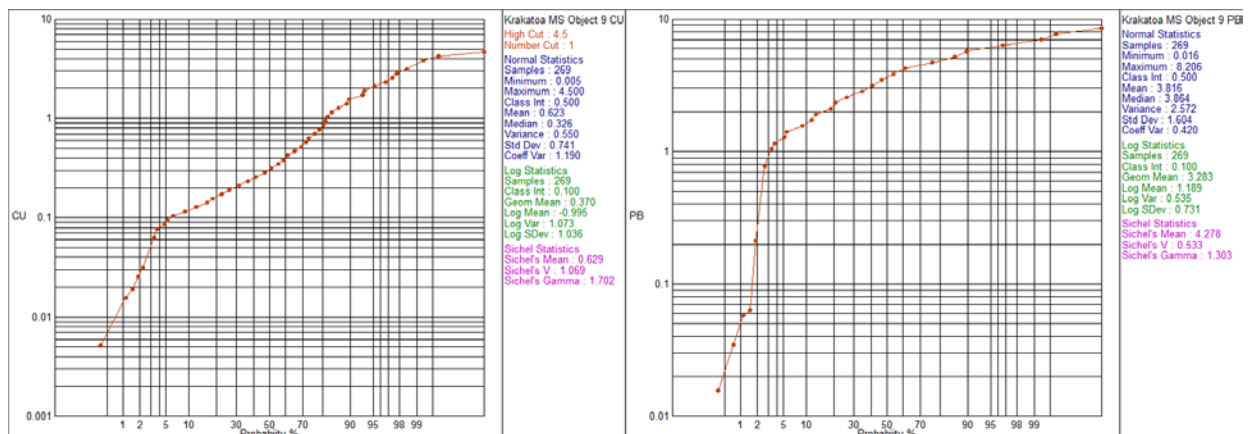


Figure 60: ABM Zone – log probability plots for massive Cu (left) and Pb (right)

Table 41 and Table 42 show the top-cuts applied to each POD of the ABM and Krakatoa Zones for all variables. Where no top cut is specified, none was applied. All samples that were greater than the top-cut value were reset to the top-cut value. The top-cut grades were applied to the composited samples.

Table 41: Top-cuts for the ABM Zone per POD

| POD | Style | Cu % | Pb % | Zn % | Au g/t | Ag g/t | Fe % | As ppm | Ba ppm | Bi ppm | Hg ppm | S % | Sb ppm | Se ppm |
|-----|-------|------|------|-------|--------|--------|------|--------|---------|--------|--------|-----|--------|--------|
| 4 | STW | 5.6 | 5.00 | 12.54 | | 370 | | 6,000 | | | | | | |
| 8 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | 25,000 | 150,000 | 350 | | | | |
| 13 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | 60,000 | | | | 100 | |
| 17 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | 4,000 | 20,000 | | | | 1,000 | |
| 23 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 27 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | | | | | | | |
| 33 | STW | 5.6 | 5.00 | 12.54 | | 370 | | 1,000 | | | | | 30 | |
| 37 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | | 50,000 | | | | 300 | |
| 43 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 47 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | | | | | | | |
| 53 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | 350 | |
| 57 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | | 8,000 | | | | 400 | |
| 63 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 67 | MS | 14.8 | 7.52 | 21.00 | 7.75 | | | | | | | | | |
| 73 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 83 | STW | 5.6 | 5.00 | 12.54 | | 370 | | 700 | 25,000 | | 10 | | 100 | 400 |
| 93 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 103 | STW | 5.6 | 5.00 | 12.54 | | 370 | | 2,000 | | | 20 | | | |
| 113 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | 65,000 | | | | | |
| 123 | STW | 5.6 | 5.00 | 12.54 | | 370 | | 1,000 | | | | | 100 | |
| 133 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 143 | STW | 5.6 | 5.00 | 12.54 | | 370 | | | | | | | | |
| 153 | STW | 5.6 | 5.00 | 12.54 | | 370 | | 4,000 | | 150 | | | | |

Note: Where no top-cut is defined, none was applied. STW = Stockwork mineralisation, MS = Massive sulphide.

Table 42: Top-cuts for the Krakatoa Zone per POD

| POD | Style | Cu % | Pb % | Zn % | Au g/t | Ag g/t | Fe % | As ppm | Ba ppm | Bi ppm | Hg ppm | S % | Sb ppm | Se ppm |
|-----|-------|------|------|------|--------|--------|------|--------|--------|--------|--------|-----|--------|--------|
| 202 | MS | 8 | | 12 | | 600 | | 6,000 | 25,000 | | | 100 | 5,000 | |
| 208 | MS | 4.5 | | | 6 | 600 | | 22,000 | 28,000 | 300 | 85 | | 4,000 | 500 |
| 209 | STW | 1.8 | | | 7 | 600 | | 25,000 | 90,000 | | | | | 1,500 |
| 217 | MS | 4.5 | | | 6 | 600 | | 22,000 | 28,000 | 300 | 85 | | 4,000 | 500 |
| 218 | STW | 1.8 | | | 7 | 600 | | 25,000 | 90,000 | | | | | 1,500 |
| 228 | STW | 1.8 | | | 7 | 600 | | 25,000 | 90,000 | | | | | 1,500 |
| 238 | STW | 1.8 | | | 7 | 600 | | 25,000 | 90,000 | | | | | 1,500 |
| 248 | STW | 1.8 | | | 7 | 600 | | 25,000 | 90,000 | | | | | 1,500 |

Note: Where no top-cut is defined, none was applied. STW = Stockwork mineralisation, MS = Massive sulphide.

14.13 Geostatistical Analysis – Kriging Neighbourhood Analysis

KNA was completed using Supervisor v8.4™ software, adopting the relevant variogram models for the estimation domains. KNA was completed for each of the variables, based on the combined massive sulphide dataset of the ABM Zone and the updated massive sulphide dataset of the Krakatoa Zone, respectively. Variography was attempted on stockwork mineralisation, however the data was patchy and structures poor. As such, it was not used.

The following was reviewed for each of the variables per selected domain:

- Slope of regression (SOR) and kriging efficiency (KE) statistics for a well-informed block for different block sizes.
- On choosing a block size (10 m(E) by 10 m(N) by 5 m RL), optimum minimum and maximum samples were chosen. The maximum was set at the lowest number of samples from which consistently good SOR and KE could be achieved. The minimum was defined as the lowest minimum from which moderate to good statistics could be derived.
- On choosing the minimum/maximum samples, search ellipse ranges were defined. The quality of the statistics was least sensitive to this parameter. The ranges chosen for Pass 1 approximated two-thirds of the range of the first structure of the variogram. For Pass 2, the ranges equated to the full range in the variogram model for the major direction.
- Negative weights were reviewed at each stage to ensure the parameters chosen were not leading to excessive negative weights (sample redundancy).
- Discretization was defined at 5 by 5 by 3 (X by Y by Z).
- Maximum number of samples allowed per each individual drillhole, per estimate, was set to 3.

The KNA results show that the search parameters and block sizes selected are suitable for use in the MRE and adequately take drill spacing, geology and practicality into account.

The number of composites used for the major and potential deleterious element grade estimations in the ABM and Krakatoa Zones is presented in Table 43 and Table 44 respectively.

The modelled variogram parameters together with the selected estimation panel size and number of samples was used to determine the appropriate search ellipses for the primary search pass. These are also presented in Table 43 and Table 44.

Table 43: Search neighbourhood parameters for the major elements for ABM and Krakatoa zones

| Zone | Element | Rotation (Surpac ZXY Convention) | | | Search Range (SVOL1) | | | Search Range 2 (SVOL2) | | | Search Range 3 (SVOL3) | | | Composites | |
|----------|---------|----------------------------------|--------|------|----------------------|-------|-------|------------------------|-------|-------|------------------------|-------|-------|------------|-----|
| | | Bearing | Plunge | Dip | Major | Semi | Minor | Major | Semi | Minor | Major | Semi | Minor | Min | Max |
| ABM | cu_cut | 10 | -35 | 0 | 115 | 1.28 | 11.50 | 175 | 1.35 | 17.50 | 350 | 1.35 | 17.50 | 6 | 24 |
| | pb_cut | 10 | -30 | 0 | 100 | 1.33 | 10.00 | 150 | 1.36 | 10.00 | 300 | 1.36 | 10.00 | 6 | 24 |
| | zn_cut | 20 | -30 | 0 | 85 | 1.42 | 8.50 | 130 | 1.53 | 8.67 | 260 | 1.53 | 8.67 | 6 | 21 |
| | au_cut | 20 | -30 | 0 | 150 | 1.43 | 15.00 | 225 | 1.45 | 15.00 | 450 | 1.45 | 15.00 | 6 | 24 |
| | ag_cut | 0 | -30 | 0 | 125 | 1.67 | 8.33 | 185 | 1.68 | 9.25 | 370 | 1.68 | 9.25 | 6 | 27 |
| | fe_cut | 0 | -30 | 0 | 55 | 0.61 | 3.67 | 80 | 0.62 | 4.00 | 160 | 0.62 | 4.00 | 6 | 21 |
| Krakatoa | cu_cut | 12.24 | 8.74 | 1.2 | 52.14 | 7.2 | 1 | 79 | 7.2 | 1 | 158 | 7.2 | 1 | 6 | 20 |
| | pb_cut | -9.6 | 39.02 | 1.56 | 51.48 | 3.9 | 1 | 78 | 3.9 | 1 | 156 | 3.9 | 1 | 4 | 24 |
| | zn_cut | -42.15 | 39.32 | 1.79 | 186.78 | 16.65 | 2 | 283 | 16.65 | 2 | 566 | 16.65 | 2 | 4 | 26 |
| | au_cut | -11.31 | -33.34 | 1.29 | 71.94 | 7.78 | 1 | 109 | 7.78 | 1 | 218 | 7.78 | 1 | 4 | 24 |
| | ag_cut | -45.19 | 44.81 | 3.5 | 85.14 | 1.74 | 1 | 129 | 1.74 | 1 | 258 | 1.74 | 1 | 4 | 24 |
| | fe_cut | -15.19 | -13.17 | 1.12 | 101.64 | 5.5 | 2 | 154 | 5.5 | 2 | 308 | 5.5 | 2 | 4 | 24 |

Table 44: Search neighbourhood parameters for the deleterious elements for ABM and Krakatoa Zones

| Zone | Element | Rotation (Surpac ZXY Convention) | | | Search Range (SVOL1) | | | Search Range 2 (SVOL2) | | | Search Range 3 (SVOL3) | | | Composites | |
|----------|---------|----------------------------------|--------|--------|----------------------|-------|--------|------------------------|-------|--------|------------------------|-------|--------|------------|-----|
| | | Bearing | Plunge | Dip | Major | Semi | Minor | Major | Semi | Minor | Major | Semi | Minor | Min | Max |
| ABM | as_cut | 90 | 0 | 30 | 145 | 1.45 | 14.5 | 220 | 1.45 | 14.5 | 435 | 1.45 | 14.5 | 6 | 21 |
| | ba_cut | 90 | 0 | 30 | 90 | 1.125 | 9 | 140 | 1.125 | 9 | 270 | 1.125 | 9 | 6 | 21 |
| | bi_cut | 90 | 0 | 30 | 85 | 1.545 | 8.500 | 125 | 1.545 | 8.500 | 255 | 1.545 | 8.500 | 6 | 21 |
| | hg_cut | 100 | 0 | 30 | 100 | 1.053 | 10.000 | 155 | 1.053 | 10.000 | 300 | 1.053 | 10.000 | 6 | 21 |
| | s_cut | 90 | 0 | 30 | 60 | 0.522 | 6.000 | 85 | 0.522 | 6.000 | 180 | 0.522 | 6.000 | 6 | 21 |
| | sb_cut | 90 | 0 | 30 | 130 | 1.300 | 13.000 | 195 | 1.300 | 13.000 | 390 | 1.300 | 13.000 | 6 | 21 |
| | se_cut | 90 | 0 | 30 | 95 | 1.267 | 9.500 | 145 | 1.267 | 9.500 | 250 | 1.267 | 9.500 | 6 | 21 |
| Krakatoa | as_cut | 320.36 | -22.5 | -45.9 | 72.6 | 1.2 | 5.78 | 110 | 1.2 | 5.78 | 220 | 1.2 | 5.78 | 6 | 26 |
| | ba_cut | 165 | 0 | 30 | 36.96 | 0.49 | 2.94 | 56 | 0.49 | 2.94 | 112 | 0.49 | 2.94 | 4 | 24 |
| | bi_cut | 302.3 | 24.4 | -32.73 | 61.38 | 2.44 | 4.04 | 93 | 2.44 | 4.04 | 186 | 2.44 | 4.04 | 4 | 22 |
| | hg_cut | 117.5 | 21.47 | 13.12 | 39.6 | 1 | 4 | 60 | 1 | 4 | 120 | 1 | 4 | 4 | 24 |
| | s_cut | 129.96 | 0.87 | 4.92 | 22.57 | 1.26 | 2.85 | 34.2 | 1.26 | 2.85 | 68.4 | 1.26 | 2.85 | 4 | 20 |
| | sb_cut | 339.02 | -44.14 | 9.85 | 49.5 | 2.21 | 2.59 | 75 | 2.21 | 2.59 | 150 | 2.21 | 2.59 | 4 | 26 |
| | se_cut | 275.77 | 13.57 | -6.46 | 42.9 | 1 | 4.33 | 65 | 1 | 4.33 | 130 | 1 | 4.33 | 4 | 24 |

The search ranges in the ABM Zone are larger than that of the Krakatoa Zone. This is a reflection of the continuity shown in the data analysis and variography. Smoothing of grades in the areas of closely spaced drillhole data will be reduced by limiting the maximum number of samples used in the estimate.

Initial estimation runs indicated that for some of the smaller domains, the minimum number of samples was required to be reduced in order to adequately perform the estimation. In addition, search volumes for the third estimation pass were also increased in some cases to allow the estimation of all blocks in some of the smaller domains.

14.14 Block Modelling

A Surpac block model (*abm_ok_20160921_full.mdl*) was created to encompass the full extent of the ABM deposit. A list of block model parameters is displayed in Table 45 and a list of block model attributes is displayed in Table 46.

The block model used a parent cell size of 10 m(E) by 10 m(N) by 5 m(RL) with standard sub-celling to 5 m(E) by 5 m(N) by 2.5 m(RL) to maintain the resolution of the mineralised lenses. The northing parent cell size was selected based on approximately half of the average drill section spacing in better drilled areas of the deposit. The model cell dimensions in other directions were selected to provide sufficient resolution to the block model in the across-strike and down-dip directions.

Table 45: Block model parameters – ABM deposit

| Axis | Extent (m) | | Block size (m) | Maximum sub-celling (m) |
|----------|------------|-----------|----------------|-------------------------|
| | Minimum | Maximum | | |
| Easting | 414,200 | 415,700 | 10 | 5 |
| Northing | 6,814,600 | 6,816,000 | 10 | 5 |
| RL | 1,000 | 1,700 | 5 | 2.5 |

Table 46: Block model attributes – ABM deposit

| Attribute | Description |
|-----------|--|
| cu_uncut | Uncut Cu (copper) grade in percent (%) |
| pb_uncut | Uncut Pb (lead) grade in percent (%) |
| zn_uncut | Uncut Zn (zinc) grade in percent (%) |
| au_uncut | Uncut Au (gold) grade in parts per million (ppm) |
| ag_uncut | Uncut Ag (silver) grade in parts per million (ppm) |
| fe_uncut | Uncut Fe (iron) grade in percent (%) |
| cu_cut | Cut Cu grade in percent (%) |

| Attribute | Description |
|------------------|---|
| pb_cut | Cut Pb grade in percent (%) |
| zn_cut | Cut Zn grade in percent (%) |
| au_cut | Cut Au grade in parts per million (ppm) |
| ag_cut | Cut Ag grade in parts per million (ppm) |
| fe_cut | Cut Fe grade in percent (%) |
| class | measured, indicated, inferred, unclassified |
| class_code | 1=measured, 2=indicated, 3=inferred, 4=unclassified |
| lithology | mafic, felsic, massive sulphide, air |
| type | fresh, overburden, air |
| pod | Wireframe object number |
| bd | bulk density in t/m ³ |
| bdpass | Bulk Density estimation pass |
| min_dis_cu_uncut | Minimum Distance Cu |
| ave_dis_cu_uncut | Average Distance Cu |
| num_sam_cu_uncut | Number of Informing Samples Cu |
| bv_cu_uncut | Block Variance Cu |
| ke_cu_uncut | Kriging Efficiency Cu |
| kv_cu_uncut | Kriging Variance Cu |
| lag_cu_uncut | Lagrange Multiplier Cu |
| slope_cu_uncut | Slope of Regression Cu |
| negwt_cu_uncut | Sum of Negative Weights Cu |
| min_dis_pb_uncut | Minimum Distance Pb |
| ave_dis_pb_uncut | Average Distance Pb |
| num_sam_pb_uncut | Number of Informing Samples Pb |
| bv_pb_uncut | Block Variance Pb |
| ke_pb_uncut | Kriging Efficiency Pb |
| kv_pb_uncut | Kriging Variance Pb |
| lag_pb_uncut | Lagrange Multiplier Pb |
| slope_pb_uncut | Slope of Regression Pb |
| negwt_pb_uncut | Sum of Negative Weights Pb |
| min_dis_zn_uncut | Minimum Distance Zn |
| ave_dis_zn_uncut | Average Distance Zn |
| num_sam_zn_uncut | Number of Informing Samples Zn |
| bv_zn_uncut | Block Variance Zn |
| ke_zn_uncut | Kriging Efficiency Zn |
| kv_zn_uncut | Kriging Variance Zn |
| lag_zn_uncut | Lagrange Multiplier Zn |
| slope_zn_uncut | Slope of Regression Zn |
| negwt_zn_uncut | Sum of Negative Weights Zn |
| min_dis_au_uncut | Minimum Distance Au |
| ave_dis_au_uncut | Average Distance Au |
| num_sam_au_uncut | Number of Informing Samples Au |
| bv_au_uncut | Block Variance Au |
| ke_au_uncut | Kriging Efficiency Au |
| kv_au_uncut | Kriging Variance Au |
| lag_au_uncut | Lagrange Multiplier Au |
| slope_au_uncut | Slope of Regression Au |

| Attribute | Description |
|---------------------|--------------------------------|
| negwt_au_uncut | Sum of Negative Weights Au |
| min_dis_ag_uncut | Minimum Distance Ag |
| ave_dis_ag_uncut | Average Distance Ag |
| num_sam_ag_uncut | Number of Informing Samples Ag |
| bv_ag_uncut | Block Variance Ag |
| ke_ag_uncut | Kriging Efficiency Ag |
| Kriging Variance Ag | |
| lag_ag_uncut | Lagrange Multiplier Ag |
| slope_ag_uncut | Slope of Regression Ag |
| negwt_ag_uncut | Sum of Negative Weights Ag |
| min_dis_fe_uncut | Minimum Distance Fe |
| ave_dis_fe_uncut | Average Distance Fe |
| num_sam_fe_uncut | Number of Informing Samples Fe |
| bv_fe_uncut | Block Variance Fe |
| ke_fe_uncut | Kriging Efficiency Fe |
| kv_fe_uncut | Kriging Variance Fe |
| lag_fe_uncut | Lagrange Multiplier Fe |
| slope_fe_uncut | Slope of Regression Fe |
| negwt_fe_uncut | Sum of Negative Weights Fe |
| min_dis_cu_cut | Minimum Distance Cu |
| ave_dis_cu_cut | Average Distance Cu |
| num_sam_cu_cut | Number of Informing Samples Cu |
| bv_cu_cut | Block Variance Cu |
| ke_cu_cut | Kriging Efficiency Cu |
| kv_cu_cut | Kriging Variance Cu |
| lag_cu_cut | Lagrange Multiplier Cu |
| slope_cu_cut | Slope of Regression Cu |
| negwt_cu_cut | Sum of Negative Weights Cu |
| min_dis_pb_cut | Minimum Distance Pb |
| ave_dis_pb_cut | Average Distance Pb |
| num_sam_pb_cut | Number of Informing Samples Pb |
| bv_pb_cut | Block Variance Pb |
| ke_pb_cut | Kriging Efficiency Pb |
| kv_pb_cut | Kriging Variance Pb |
| lag_pb_cut | Lagrange Multiplier Pb |
| slope_pb_cut | Slope of Regression Pb |
| negwt_pb_cut | Sum of Negative Weights Pb |
| min_dis_zn_cut | Minimum Distance Zn |
| ave_dis_zn_cut | Average Distance Zn |
| num_sam_zn_cut | Number of Informing Samples Zn |
| bv_zn_cut | Block Variance Zn |
| ke_zn_cut | Kriging Efficiency Zn |
| kv_zn_cut | Kriging Variance Zn |
| lag_zn_cut | Lagrange Multiplier Zn |
| slope_pb_cut | Slope of Regression Zn |
| negwt_pb_cut | Sum of Negative Weights Zn |
| min_dis_au_cut | Minimum Distance Au |

| Attribute | Description |
|---------------------|--|
| ave_dis_au_cut | Average Distance Au |
| num_sam_au_cut | Number of Informing Samples Au |
| bv_au_cut | Block Variance Au |
| ke_au_cut | Kriging Efficiency Au |
| Kriging Variance Au | |
| lag_au_cut | Lagrange Multiplier Au |
| slope_au_cut | Slope of Regression Au |
| negwt_au_cut | Sum of Negative Weights Au |
| min_dis_ag_cut | Minimum Distance Ag |
| ave_dis_ag_cut | Average Distance Ag |
| num_sam_ag_cut | Number of Informing Samples Ag |
| bv_ag_cut | Block Variance Ag |
| ke_ag_cut | Kriging Efficiency Ag |
| kv_ag_cut | Kriging Variance Ag |
| lag_ag_cut | Lagrange Multiplier Ag |
| slope_ag_cut | Slope of Regression Ag |
| negwt_ag_cut | Sum of Negative Weights Ag |
| min_dis_fe_cut | Minimum Distance Fe |
| ave_dis_fe_cut | Average Distance Fe |
| num_sam_fe_cut | Number of Informing Samples Fe |
| bv_fe_cut | Block Variance Fe |
| ke_fe_cut | Kriging Efficiency Fe |
| kv_fe_cut | Kriging Variance Fe |
| lag_fe_cut | Lagrange Multiplier Fe |
| slope_fe_cut | Slope of Regression Fe |
| negwt_fe_cut | Sum of Negative Weights Fe |
| pass | Estimation pass |
| ard | Acid Rock Drainage domains |
| zone | Waste, ABM, or Krakatoa |
| as_uncut | Uncut As (arsenic) grade in parts per million (ppm) |
| ba_uncut | Uncut Ba (barium) grade in parts per million (ppm) |
| bi_uncut | Uncut Bi (bismuth) grade in parts per million (ppm) |
| hg_uncut | Uncut Hg (mercury) grade in parts per million (ppm) |
| s_uncut | Uncut S (sulphur) grade in percent (%) |
| sb_uncut | Uncut Sb (antimony) grade in parts per million (ppm) |
| se_uncut | Uncut Se (selenium) grade in parts per million (ppm) |
| as_cut | Cut As grade in parts per million (ppm) |
| ba_cut | Cut Ba grade in parts per million (ppm) |
| bi_cut | Cut Bi grade in parts per million (ppm) |
| hg_cut | Cut Hg grade in parts per million (ppm) |
| s_cut | Cut S grade in percent (%) |
| sb_cut | Cut Sb grade in parts per million (ppm) |
| se_cut | Cut Se grade in parts per million (ppm) |

A comparison of the wireframe volumes to the block model volume for each of the resource zones is shown in Table 47 below. The comparison shows that the resolution of the block model sub-celling is satisfactory.

Table 47: Volume comparison between mineralisation wireframes and block model pods – ABM and Krakatoa zones

| Zone | POD | Wireframe volume | Block model volume | Difference (%) |
|--------------|-----------------|------------------|--------------------|------------------|
| ABM | 4 | 149,750 | 148,563 | 99% |
| | 8 | 2,868,565 | 2,846,688 | 99% |
| | 13 | 65,575 | 64,188 | 98% |
| | 17 | 6,771 | 6,750 | 100% |
| | 23 | 16,824 | 17,063 | 101% |
| | 27 | 8,347 | 7,750 | 93% |
| | 33 | 59,574 | 59,250 | 99% |
| | 37 | 82,136 | 82,125 | 100% |
| | 43 | 15,547 | 15,563 | 100% |
| | 47 | 34,806 | 35,063 | 101% |
| | 53 | 37,912 | 38,188 | 101% |
| | 57 | 25,760 | 25,688 | 100% |
| | 63 | 42,169 | 44,125 | 105% |
| | 67 | 3,913 | 4,063 | 104% |
| | 73 | 18,980 | 19,500 | 103% |
| | 83 | 125,652 | 126,250 | 100% |
| | 93 | 6,012 | 6,188 | 103% |
| | 103 | 21,005 | 20,938 | 100% |
| | 113 | 19,251 | 20,313 | 106% |
| | 123 | 26,080 | 25,938 | 99% |
| 133 | 4,278 | 4,313 | 101% | |
| 143 | 14,826 | 14,625 | 99% | |
| 153 | 85,466 | 85,813 | 100% | |
| | Subtotal | 3,739,199 | 3,718,945 | 99% |
| Krakatoa | 202 | 82,805 | 84,250 | 102% |
| | 217 | 91,590 | 90,813 | 99% |
| | 218 | 150,364 | 150,063 | 100% |
| | 208 | 610,402 | 608,750 | 100% |
| | 209 | 34,130 | 34,250 | 100% |
| | 228 | 59,671 | 61,438 | 103% |
| | 238 | 6,081 | 6,063 | 100% |
| | 248 | 9,261 | 9,188 | 99% |
| | 258 | 8,677 | 8,563 | 99% |
| | | Subtotal | 1,052,981 | 1,053,378 |
| TOTAL | | 4,792,180 | 4,772,373 | 100% |

14.15 Grade Interpolation

For all except five of the mineralised zones in the ABM deposit, the wireframe objects were used as hard boundaries in grade interpolation. That is, only grades inside each wireframe object were used to interpolate the blocks inside the object. This process reflects field observations around the mineralisation contacts. For the other five mineralised zones (objects 17, 27, 43, 67, 93), semi-soft boundaries were introduced, whereby samples from a neighbouring large domain were used in the estimation of the smaller domain, but not vice-versa. Semi-soft boundaries were required for these five zones due to lack of supporting data to reliably inform the estimate for each domain. All mineralised zones at the Krakatoa deposit were estimated using hard boundaries.

OK was selected for grade interpolation in the mineralised zones, whilst Inverse Distance Cubed (ID3) was used in the estimation of the dilution skin. OK was selected to allow a degree of smoothing within the model based on the measured variability from the variograms. It is considered by the Qualified Person to be appropriate for this style of deposit. ID3 was chosen over ID2 for the dilution skin as it further restricted the influence of individual high-grade samples, approximating a nearest neighbour approach.

An orientated “ellipsoid” search was used to select data for interpolation. An “anisotropic in the plane” ellipse (different major and semi-major distances) was oriented according to the rotations derived from the variography. Estimation parameters at ABM were calculated using all data, as the domains at ABM are deemed to be similar enough to be treated as a single domain for statistical purposes. In the Krakatoa area, this was thought not to be the case, and estimation parameters were calculated using the data from the largest domain only, which was subsequently applied to all other domains.

A three-pass estimation search was used to complete estimation for Cu, Pb, Zn, Au, Ag, Fe, As, Ba, Bi, Hg, S, Sb and Se. Approximately 99% of the blocks were informed in the first two estimation passes for the mineralisation estimate. A third expanded estimation pass was used to inform remaining un-estimated blocks.

14.16 Bulk Density Assignment

For the mineralised material, including that which falls within the dilution skin, a combination of methods was utilised to assign bulk density. A clean dataset of bulk density values was constructed based on a hierarchy of confidence, for interpolation into the block model. The bulk density value for the ABM Zone was determined according to the following priorities:

- Clean measured bulk density value was used where available.
- Pycnometer specific gravity was used where there was no measured bulk density. This only accounts for two samples in the dataset.
- Bulk densities were calculated using multiple regression, using sulphur data where available, optimised for the highest coefficient of determination.
- Where S data were absent, bulk densities were calculated using weighted Fe-Cu-Pb-Zn data with the simple exponential regression $(1.0 * \text{Cu}\%) + (1.81 * \text{Pb}\%) + (0.97 * \text{Zn}\%) + (1.20 * \text{Fe}\%)$. This was completed for the cleaned bulk densities for zone 8 and for samples having a bulk density $< 2.75 \text{ g/cm}^3$ in zones 5, 6 and 7.

For Krakatoa data, measured bulk densities were available for all samples within the mineralisation wireframes.

Bulk density was estimated into the block model using OK for the mineralised zones, and ID3 for the dilution skin. Estimation parameters were duplicated from those used in the estimation of Fe; this ensured that the relationship between bulk density and Fe was maintained.

Approximately 96% of the blocks were informed in the first two estimation passes for the bulk density estimate.

The swath plots shown in Figure 61 and Figure 62 demonstrate that the estimated bulk densities in the model correspond well with the input samples for the main zone at ABM and Krakatoa Zone respectively.

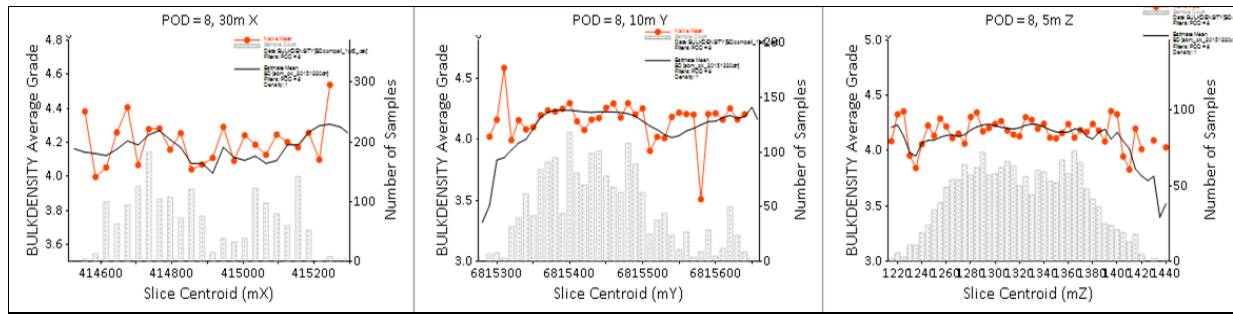


Figure 61: Swath plot by 30 m easting, 10 m northing, and 5 m bench, for main zone at ABM (pod 8) – bulk density

Note: The drop off in estimated bulk density in relation to sample values seen south of 6,815,350 m N and above 1,420 m RL is related to assigned bulk densities in the overburden portion of object 8, which do not have corresponding bulk density samples.

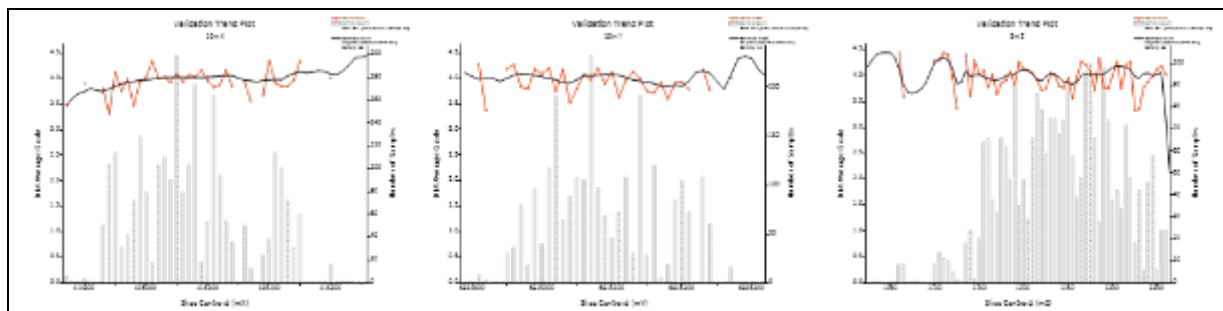


Figure 62: Swath plot by 30 m easting, 10 m northing, and 5 m bench, for the Krakatoa Zone – bulk density

The bulk density values used for the ABM MRE are displayed in Table 48.

Table 48: Bulk density values applied to ABM MRE

| Material type | Bulk density (t/m ³) | Description |
|-----------------------------|----------------------------------|---|
| Air | 0.00 | Above topographic surface |
| Overburden | 2.00 | Topographic surface to base of overburden |
| Felsic volcanics | 2.76 | Assigned directly to host rock based on measured average |
| Mafic intrusive (MAFi) | 2.80 | Assigned directly to mafic wireframes and based on measured average |
| Rhyolite intrusive (RHYi) | 2.68 | Assigned directly to RHYi wireframes and based on measured average |
| Carbonaceous mudstone (MDS) | 2.74 | Assigned directly to mudstone wireframes and based on measured average |
| Wind Lake Formation | 2.74 | Assigned directly to Wind Lake Formation wireframes and based on measured average |
| ABM – Stockwork | 3.44 | Estimated, mean value |
| Krakatoa – Stockwork | 3.86 | Estimated, mean value |
| ABM – Massive Sulphide | 4.19 | Estimated, mean value |
| Krakatoa – Massive Sulphide | 4.09 | Estimated, mean value |

14.17 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 categorised 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). The ABM MRE was prepared by, or under the supervision of Aaron Green, CSA Global Principal Resource Geologist and Qualified Person for the reporting of Mineral Resources as defined by NI 43-101.

14.17.1 Reasonable Prospects for 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 assist in defining reasonable prospects of economic extraction the in-ground value of each block was calculated using estimated factors for: assumed metal prices, metallurgical recoveries, smelter terms

(including payable factors, concentrate costs and refining charges) and government royalties. These factors were provided by BMC. No penalties were included. Key factors determining the NSR were:

- Metal price assumptions were: US\$3.50/lb copper, US\$1.50/lb zinc, US\$1.05/lb lead, US\$1,300/oz gold and US\$20/oz silver.
- An exchange rate of US\$0.75 = C\$1.00.
- Three separate concentrates recovered – Cu, Pb and Zn with precious metals (Au and Ag) reporting to all concentrates at varying recoveries from 15% to 40%.
- Metal recovery assumptions were: 92% for copper, 90% for zinc, 70% for lead, 75% for gold (whereby 30% is recovered from copper concentrate, 30% is recovered from lead concentrate and 15% is recovered from zinc concentrate) and 85% for silver (40% from copper concentrate, 30% from lead concentrate and 15% from zinc concentrate).

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

$$\text{NSR US\$/t} = (52.84 * \text{cu_cut}) + (9.56 * \text{pb_cut}) + (19.13 * \text{zn_cut}) + (24.41 * \text{au_cut}) + (0.41 * \text{ag_cut})$$

The US dollar NSR was then converted to Canadian dollars:

$$\text{NSR C\$/t} = (\text{NSR US\$/t}) / 0.75$$

Based on the results of the Mineral Reserve estimate outlined in Section 15, potential open pitable resources were reported above a cut-off NSR of C\$25/t and potential underground resources reported above C\$95/t.

To determine the reporting of ABM deposit Mineral Resources as either open pit or underground, a Whittle™ pit optimisation was undertaken. Parameters used for the optimisation included:

- Base case metal price assumptions were: US\$3.50/lb copper, US\$1.50/lb zinc, US\$1.05/lb lead, US\$1,300/oz gold and US\$20/oz silver
- An exchange rate of US\$0.75 = C\$1.00
- Mining recovery of 97%
- Minimum mining width of 25 m
- Overall slope angle of 50°
- Total processing costs (fresh) of C\$30.60/t
- Plant throughput of 2 Mt/a.

For the ABM Zone, only material reporting inside the selected pit shell (Revenue Factor = 1.00) has been reported above the NSR cut-off of C\$25/t. For the Krakatoa Zone, mineralised material inside the pit shell has been reported above the NSR cut-off of C\$25/t, whilst the remainder has been designated as “underground” resource and reported above a cut-off NSR of C\$95/t (Figure 63).

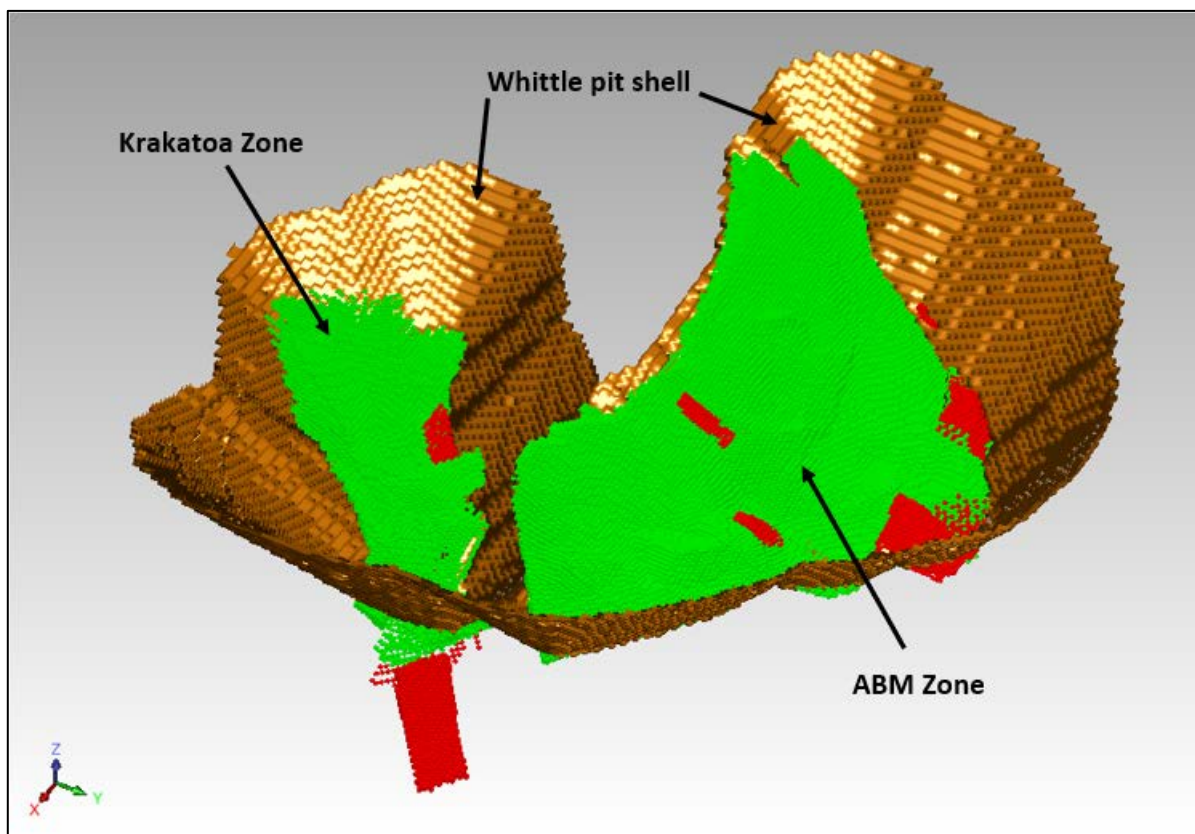


Figure 63: ABM deposit Mineral Resource classification inside optimised pit shell looking southwest (red = Inferred, green = Indicated)

14.17.2 Resource Classification Parameters

The ABM deposit (ABM and Krakatoa Zones) MRE is classified in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves, adopted by the CIM Council on 10 May 2014. The classification level is based upon an assessment of geological understanding of the deposit, geological and grade continuity, drillhole spacing, quality control results, search and interpolation parameters, and an analysis of available density information.

The ABM deposit shows excellent continuity of mineralisation within well-defined geological constraints. Drillholes are located at a nominal spacing of 50 m on 25 m north-south oriented sections extending out to 100 m on the peripheries of the deposit. The drill spacing is sufficient to allow the geology and mineralisation zones to be modelled into coherent wireframes for each domain. Reasonable consistency is evident in the orientations, thickness and grades of the mineralised zones.

The 2015 BMC exploration program included re-drilling of several sections within the ABM Zone, “twinning” historical holes, re-logging and re-sampling of historical core, and re-surveying historical drill collars. This work validated the historical work undertaken by Cominco and improved the confidence level in the historical data and, along with the additional infill drilling, has largely confirmed the continuity of the geology and known mineralisation.

The Mineral Resource is classified as Indicated where, in the Qualified Person’s opinion, sufficient data exists to assume geological and mineralisation continuity. For areas with more limited data density and limited along-strike or down-dip continuity, there is sufficient evidence to imply but not verify geological and grade continuity and these areas are classified as Inferred.

The resource classification strategy is illustrated in Figure 64.

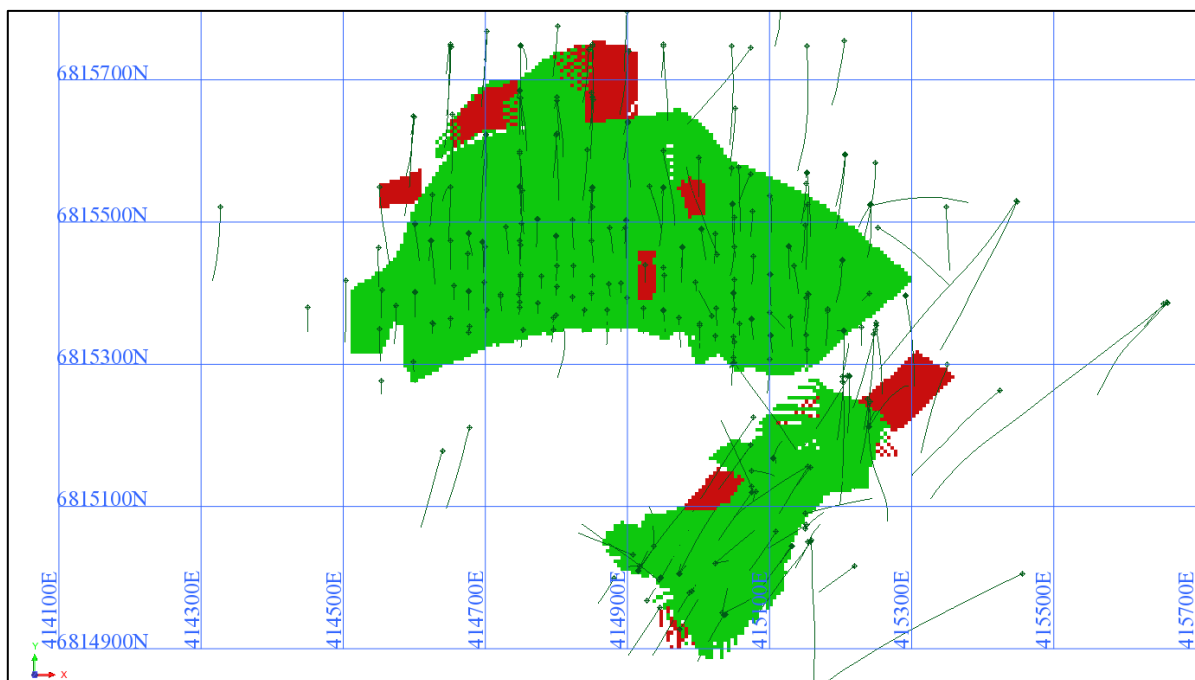


Figure 64: ABM deposit Mineral Resource classification in plan view (red = Inferred, green = Indicated)

14.18 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).

14.18.1 Results

The ABM deposit MRE is reported in Table 49 (open pitable) and Table 50 (underground).

Table 49: ABM deposit MRE – open pitable (at NSR cut-off grade of C\$25)

| Zone | Category | Tonnes (Mt) | NSR (C\$/t) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) | Cu metal (kt) | Pb metal (kt) | Zn metal (kt) | Au (koz) | Ag (Moz) |
|----------|-----------|-------------|-------------|--------|--------|--------|----------|----------|---------------|---------------|---------------|----------|----------|
| ABM | Indicated | 14.6 | 358 | 1.0 | 1.6 | 6.1 | 1.3 | 132 | 140.9 | 229.1 | 886.6 | 614.0 | 62.1 |
| | Inferred | 0.3 | 334 | 1.5 | 1.5 | 4.5 | 1.1 | 115 | 4.7 | 4.9 | 14.4 | 10.9 | 1.2 |
| Krakatoa | Indicated | 3.5 | 443 | 0.6 | 3.2 | 7.2 | 1.8 | 213 | 21.4 | 113.2 | 255.5 | 204.0 | 24.3 |
| | Inferred | 0.1 | 347 | 0.6 | 2.3 | 6.3 | 1.3 | 142 | 0.1 | 2.1 | 5.9 | 3.8 | 0.4 |

Table 50: ABM deposit MRE – underground (at NSR cut-off grade of C\$95)

| Zone | Category | Tonnes (Mt) | NSR (C\$/t) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) | Cu metal (kt) | Pb metal (kt) | Zn metal (kt) | Au (koz) | Ag (Moz) |
|----------|-----------|-------------|-------------|--------|--------|--------|----------|----------|---------------|---------------|---------------|----------|----------|
| Krakatoa | Indicated | 0.2 | 397 | 1.0 | 2.0 | 6.1 | 1.7 | 170 | 1.7 | 3.5 | 10.5 | 9.2 | 0.9 |
| | Inferred | 0.4 | 447 | 0.8 | 1.6 | 9.5 | 1.2 | 165 | 3.2 | 6.3 | 37.5 | 14.9 | 2.1 |

Notes:

- The Mineral Resources in this disclosure were estimated by Aaron Green, MAIG.
- The effective date of this Mineral Resource is 31 May 2017.
- Numbers have been rounded to reflect the precision of an Indicated and Inferred 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 Mineral Resources were estimated using current CIM standards, definitions and guidelines.
- The ABM database was audited in its entirety and contains a total of 335 diamond drillholes defining the ABM deposit for 55,782 m of drilling. 241 assayed drillholes intersect the interpreted mineralisation zones. There are also 8,393 bulk density samples from the ABM deposit in the database, including 837 samples used for quality control.
- 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 the ABM deposit demonstrate the analytical data are of sufficient quality to be used in estimating Mineral Resources.
- The ABM Zone was sampled using diamond drillholes at nominal 50 m spacing on 25 m north-south oriented sections extending out to 100 m on the peripheries of the deposit. The Krakatoa Zone is sampled targeting pierce points of 25–60 m in the central portion of the deposit to 100 m on the peripheries.
- A total of 34 mineral domains were modelled (10 at Krakatoa Zone and 24 at ABM Zone) including two “dilution skin” domains., Assays were regularised within each domain to 1.5 m and 1.0 m intervals for ABM and Krakatoa Zones respectively. Grade capping was applied to all grades estimated based on statistical analysis by domain. KNA was completed using Supervisor v8.4™ software, adopting the relevant variogram models for the estimation domains. KNA was completed for each of the variables, based on the combined massive sulphide dataset of the ABM Zone and the updated massive sulphide dataset of the Krakatoa Zone, respectively.
- OK was selected for grade interpolation in the mineralised zones, whilst ID3 was used in the estimation of the dilution skin. A three-pass estimation search was used to complete estimation for Cu, Pb, Zn, Au, Ag, Fe, As, Ba, Bi, Hg, S, Sb and Se.
- Fixed density values were assigned to the block models for each regolith and lithological unit ranging from 2.00 t/m³ for overburden to 2.80 t/m³ for the mafic intrusive rock. For the mineralised zones, a tiered approach to the selection of a preferred bulk density value was adopted, and then the bulk density was interpolated into the block model using OK for the mineralised zones and ID3 for the dilution skin. The average bulk densities determined for the ABM stockwork and massive sulphide mineralisation were 3.44 t/m³ and 4.19 t/m³ respectively, while the average bulk density values for the Krakatoa Zone were 3.86 t/m³ and 4.09 t/m³ respectively.
- The Mineral Resource is classified as Indicated where, in the Qualified Person’s opinion, sufficient data exists to assume geological and mineralisation continuity (generally 50 m spaced holes on 25 m spaced sections). For areas with more limited data density and limited along-strike or down-dip continuity, there is sufficient evidence to imply but not verify geological and grade continuity and these areas are classified as Inferred.
- The in-ground NSR values were calculated using assumed metal prices, metallurgical recoveries, smelter terms (including payable factors, concentrate costs and refining charges) and government royalties. No penalties were included. Metal price assumptions were: US\$3.50/lb copper, US\$1.50/lb zinc, US\$1.05/lb lead, US\$1,300/oz gold and US\$20/oz silver, and an exchange rate of US\$0.75 = C\$1.00. Metal recovery assumptions 92% for copper, 90% for zinc, 70% for lead, 75% for gold (whereby 30% is recovered from copper concentrate, 30% is recovered from lead concentrate and 15% is recovered from zinc concentrate) and 85% for silver (40% from copper concentrate, 30% from lead concentrate and 15% from zinc concentrate). Based on these assumptions the formula for the NSR on each block was calculated as: $NSR\ US\$/t = (52.84 * cu_cut) + (9.56 * pb_cut) + (19.13 * zn_cut) + (24.41 * au_cut) + (0.41 * ag_cut)$.
- The US dollar NSR was converted to Canadian dollars using the formula: $NSR\ C\$/t = (NSR\ US\$/t) / 0.75$.
- Based on the results of the Mineral Reserve estimate outlined in Section 15, potential open pit resources were reported above a cut-off NSR of C\$25/t and potential underground resources reported above C\$95/t.
- To determine the reporting of ABM deposit Mineral Resources as either open pit or underground, a Whittle™ pit optimisation was undertaken. Parameters used for the optimisation included base case metal price assumptions of: US\$3.50/lb copper, US\$1.50/lb zinc, US\$1.05/lb lead, US\$1,300/oz gold and US\$20/oz silver, an exchange rate of US\$0.75 = C\$1.00, a mining recovery of 97%, an overall pit wall slope angle of 50°, total processing costs (fresh) of C\$30.60/t and plant throughput of 2 Mt/a. For the ABM Zone, only material reporting inside the selected pit shell (Revenue Factor = 1.00) has been reported above the NSR cut-off of C\$25/t. For the Krakatoa Zone, mineralised material inside the pit shell has been reported above the NSR cut-off of C\$25/t, whilst the remainder has been designated as “underground” resource and reported above a cut-off NSR of C\$95/t.
- The optimal transition from open pit to underground for the Krakatoa Zone has not been considered when reporting the Mineral Resource. Key modifying factors in determining this transition have been factored into reporting of the Mineral Reserve as part of the PFS.

Grade-tonnage tables have been generated for Cu, Pb, Zn, Au and Ag. The global ABM deposit grade tonnage curves for Cu, Pb and Zn are shown in Figure 65.

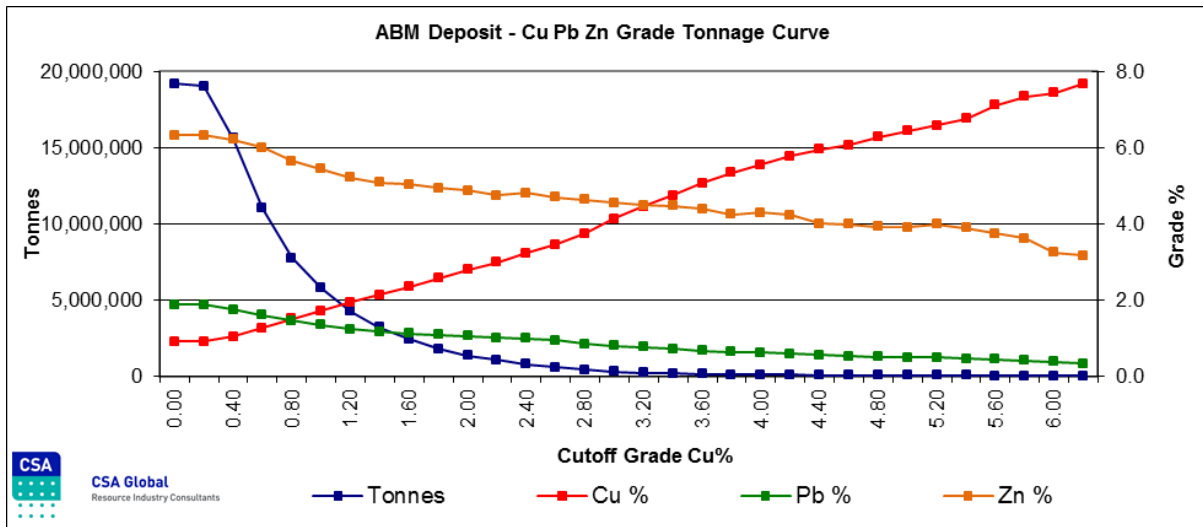


Figure 65: ABM deposit global grade-tonnage curve for Cu%, Pb% and Zn%

Figure 66 to Figure 71 show the block model for the ABM and Krakatoa Zones coloured according to Zn, Pb, Cu, Au, Ag and Fe respectively.

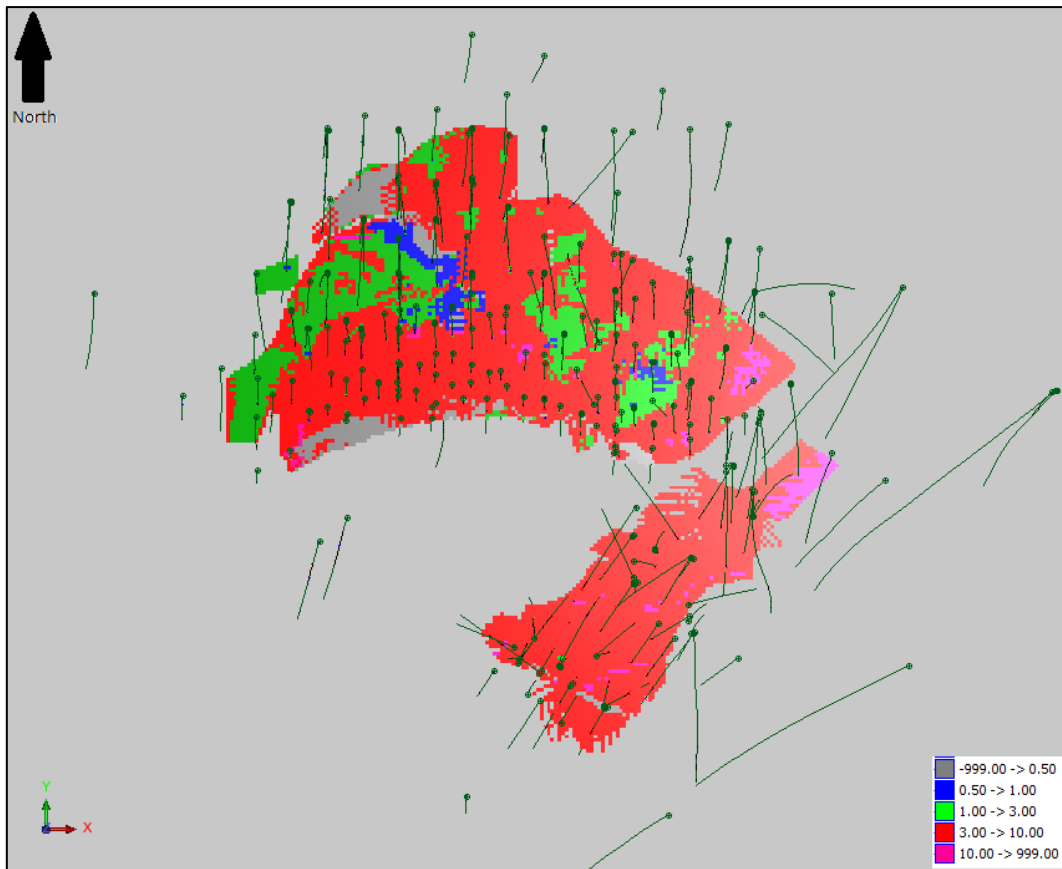


Figure 66: ABM-Krakatoa block model showing Zn grades (%) (plan view)

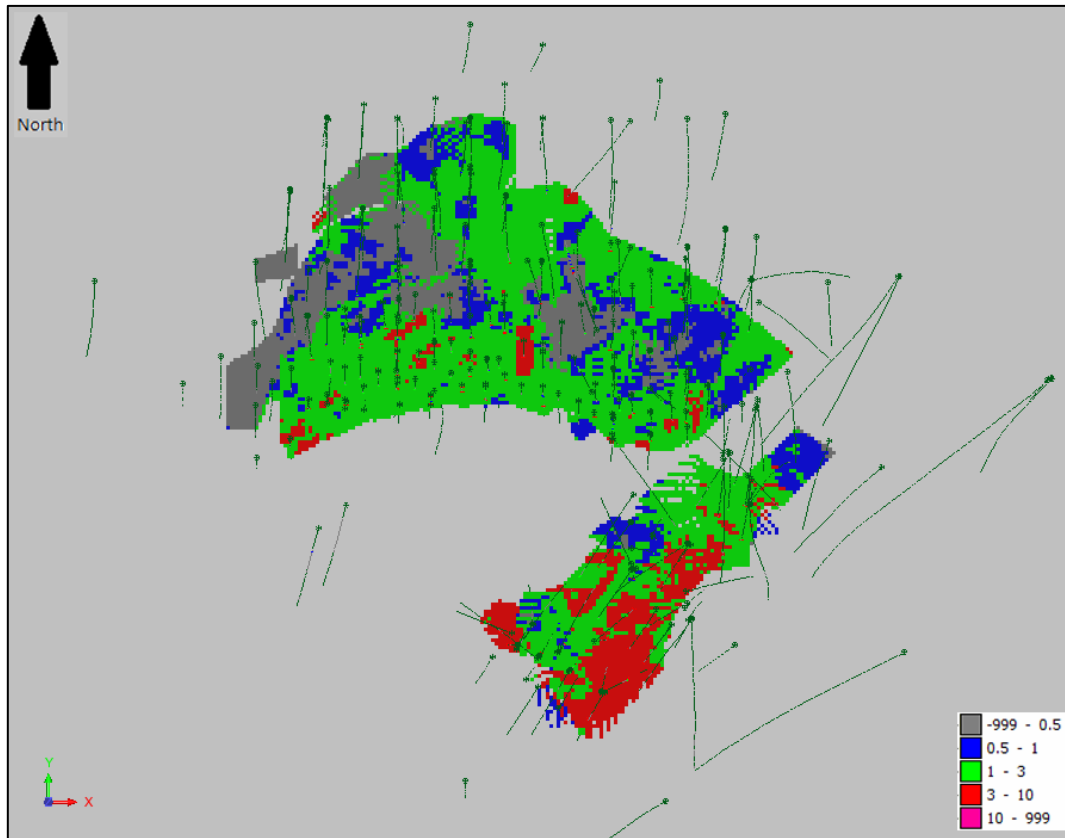


Figure 67: ABM-Krakatoa block model showing Pb grades (%) (plan view)

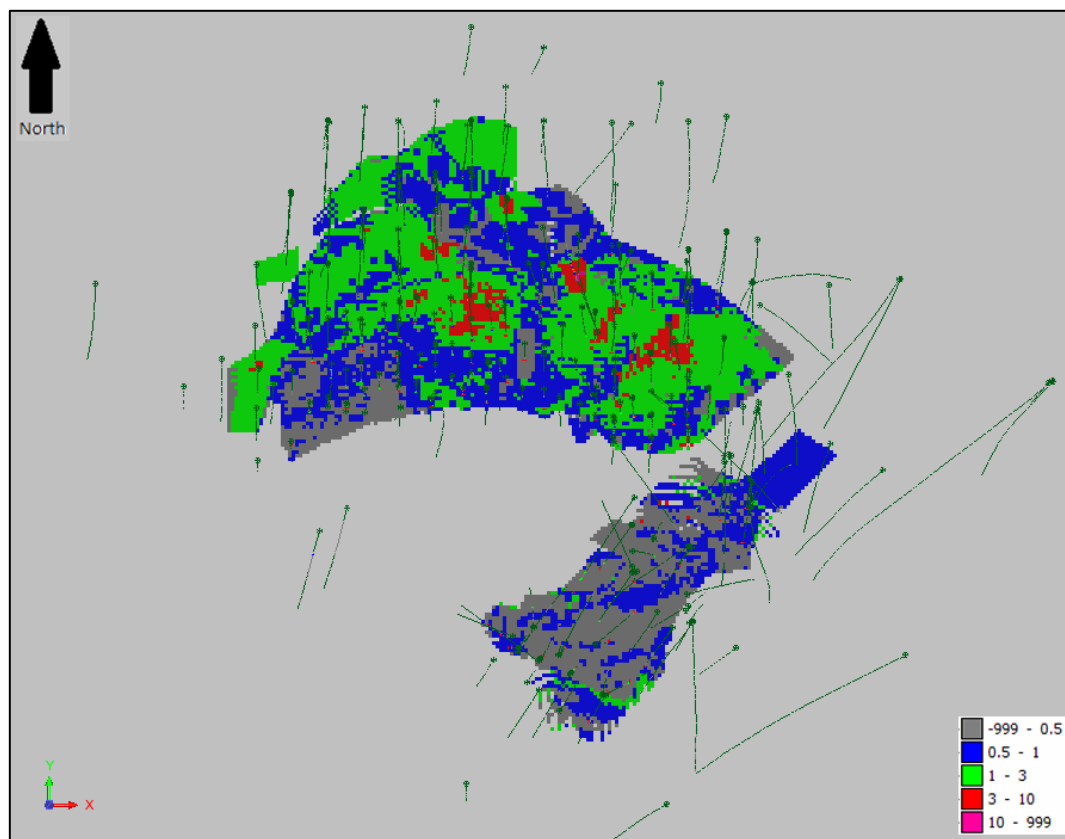


Figure 68: ABM-Krakatoa block model showing Cu grades (%) (plan view)

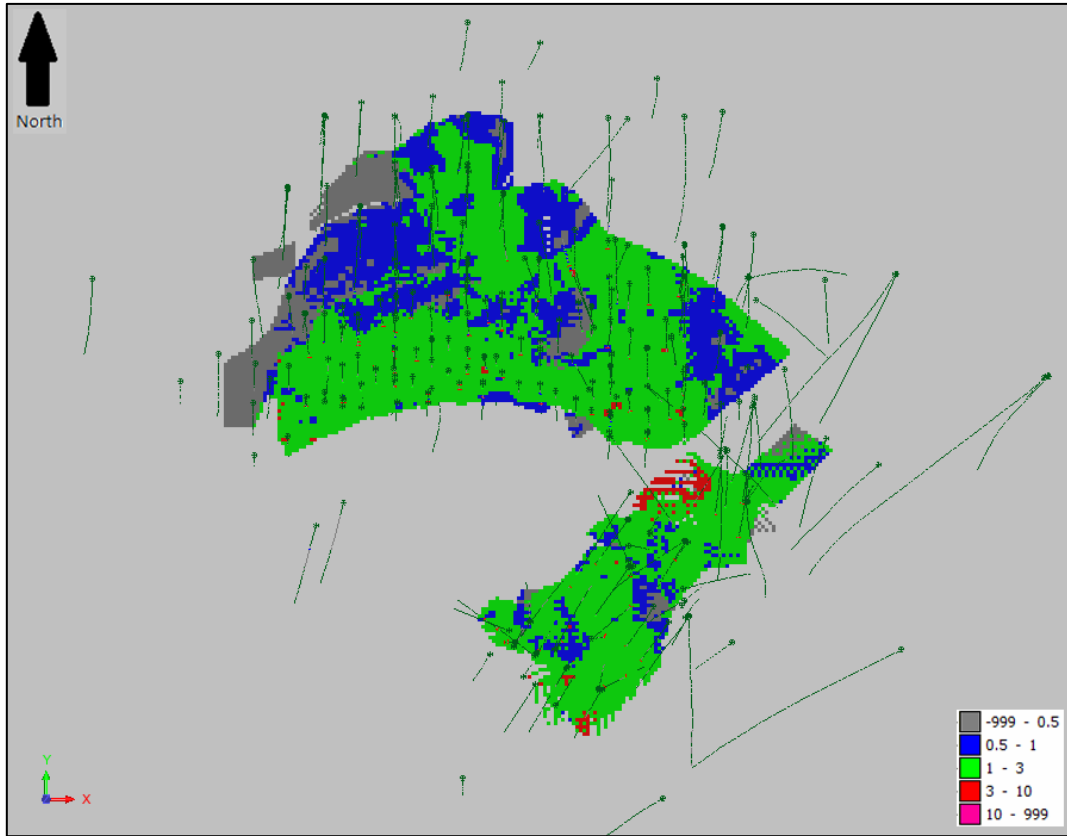


Figure 69: ABM-Krakatoa block model showing Au grades (g/t) (plan view)

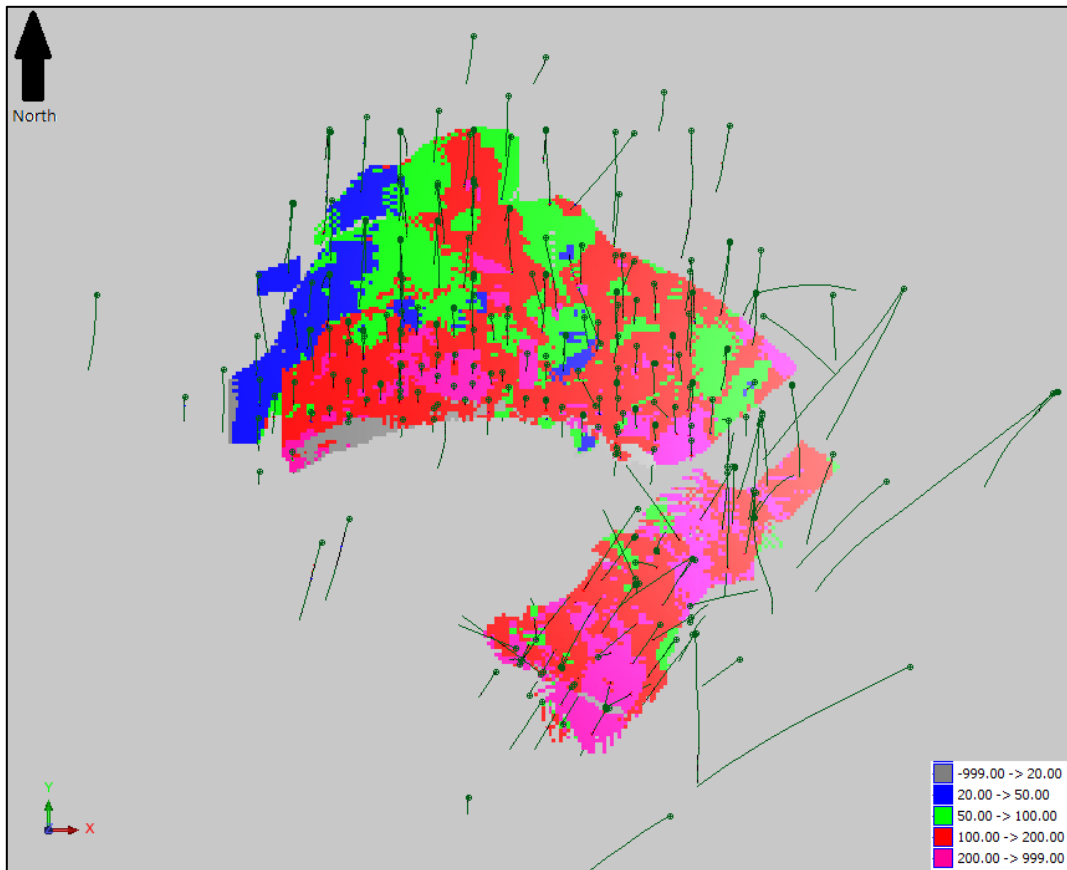


Figure 70: ABM-Krakatoa block model showing Ag grades (g/t) (plan view)

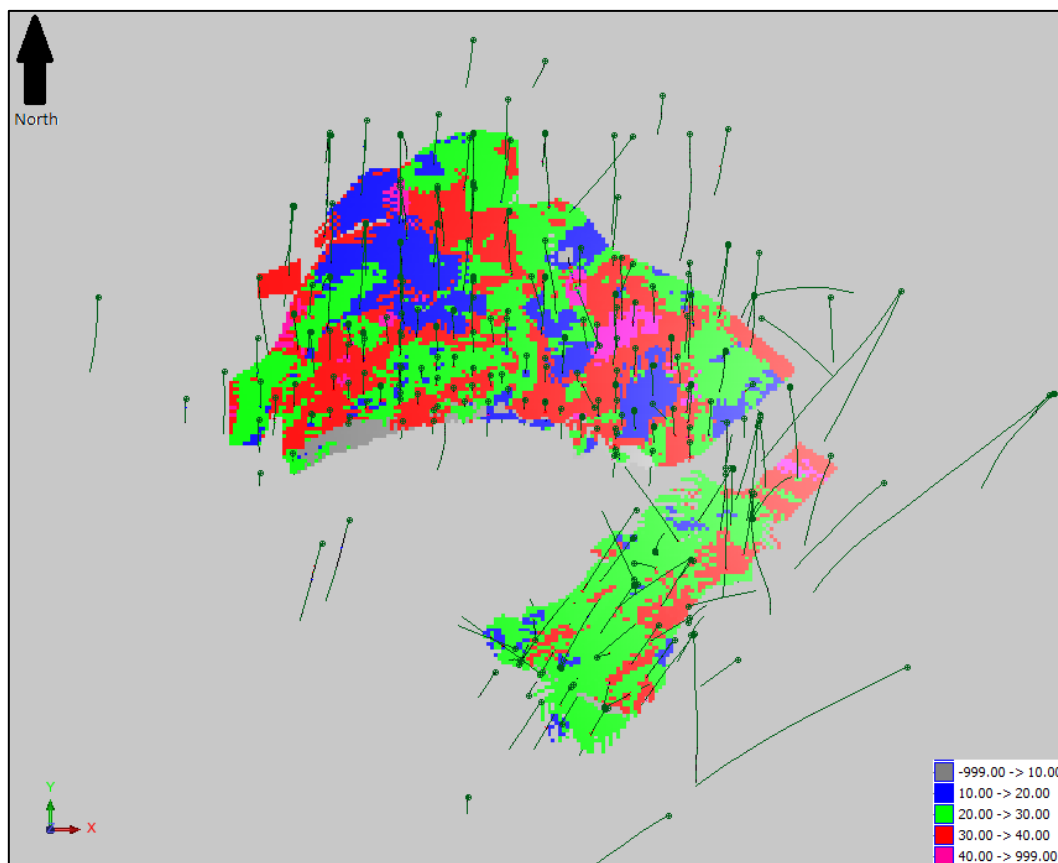


Figure 71: ABM-Krakatoa block model showing Fe grades (%) (plan view)

No Mineral Resource has been reported for the GP4F deposit.

14.18.2 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 the MRE. The reported Mineral Resource may be affected by future mining studies, processing, environmental, permitting, taxation, socio-economic and other factors.

Additional technical factors which may affect the MRE 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. dykes 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.

14.18.3 Comparison with Previous Estimates

The reported Mineral Resource is comparable with the previous MRE reported by CSA Global in January 2016 in terms of both tonnage and grade (Table 8). However, the key differences were the upgrading of Inferred material to Indicated at Krakatoa Zone with infill drilling (2.1 Mt to 3.7 Mt) at slightly lower

average grades, and the decrease in overall tonnage at the Krakatoa Zone (5.1 Mt to 4.2 Mt) as a result of drilling to the west (towards the East Fault) failing to intersect significant mineralisation in the Main lens. No significant change was reported to the ABM Zone resource.

With respect to more historical estimates undertaken by Cominco (1995 and 1998), and Teck (2001 and 2006), comparing the ABM Zone only, the reported MRE is comparable in size and grade with minimal differences. Differences can be attributed to changes in estimation techniques, bulk density values, minor adjustments to resource wireframes with increased drilling (both extensional and infill) and prior reporting of resources as “mineral inventory” following mining evaluation studies. On a global basis, the 2016 CSA Global models report significantly more tonnes at higher average grades due to the incorporation of the Krakatoa Zone.

Unfortunately, a more thorough investigation of the differences between the MRE outlined in this document and historical estimates is not possible at this stage, given the lack of detailed documentation of the historical estimates.

14.19 Risk

The drilling, surveying, sampling and analytical methods, and QA processes implemented by BMC during the exploration and resource drilling campaigns are suitable and adequate for the style of deposit under consideration.

The ABM deposit remains open (at least partially) and infill and extension drilling are required to fully define the mineralisation extents and upgrade the current Mineral Resource classifications.

OK is an appropriate interpolation method for the ABM deposit at the current level of advancement of the Project, in the light of data currently available. KNA tests undertaken by CSA Global confirm reliable block estimates were achieved sufficiently to enable the resources to be classified as Indicated and Inferred.

There are no known environmental, permitting, legal, title, taxation, social-economic, marketing, political factors that could materially affect the MRE.

14.20 Audits and Reviews

An internal audit was completed by CSA Global which verified the technical inputs, methodology, parameters and results of the estimate.

No external audits have been undertaken of either the September 2016 CSA Global MRE for the ABM deposit.

15 Mineral Reserves

15.1 Introduction

15.1.1 ABM Deposit

The PFS focused on mining and processing of the ABM deposit. Mining is planned to be conducted via both open pit and underground mining methods extracting ore from the ABM and Krakatoa zones of the ABM deposit. Ore will be processed into separate copper, lead and zinc concentrates via sequential flotation through a 2.0 Mt/a processing plant. Concentrate will be transported to the port of Stewart in British Columbia for sale to market. Tailings will be deposited in a dry stack tailings facility, while waste rock will be stored according to acid generation and metal leaching potential.

The Mineral Reserves for the ABM deposit are based on the September 2016 MRE. All reserves are classified as Probable Reserve (Table 51), as no Measured Resources have been defined for the Project. The Mineral Reserves for the ABM deposit are stated at an effective date of 31 May 2017.

The Mineral Resource is stated inclusive of the Mineral Reserve.

The Mineral Reserve estimate includes material extracted from the designed open pit and underground excavations that is sourced from Indicated Mineral Resources and has a block value greater than the designated NSR for the relevant type of mining. All open pit reserves are reported to a cut off NSR value of C\$29.33/t, while underground reserves are reported to cut-off NSR values of C\$117.05/t for cut and fill stoping and C\$98.63/t for longhole stoping. NSR values have been calculated from 2016 consensus metal prices of US\$2.87/lb copper, US\$1.00/lb zinc, US\$0.94/lb lead, US\$1,291/oz gold, US\$19.38/oz silver and an exchange rate of US\$0.80:C\$1.00.

Reporting and modelling of financial results was completed in May 2017 using relevant long term consensus metal prices of US\$2.95/lb copper, US\$1.07/lb zinc, US\$0.94/lb lead, US\$1,292/oz gold, US\$19.31/oz silver and an exchange rate of US\$0.79:C\$1.00. The Mineral Reserve estimate was reviewed under the revised metal price and exchange rate settings and no adjustments to the calculated Mineral Reserves were necessary.

The Mineral Reserve estimate take into consideration on-site operating costs, selling costs, geotechnical analysis, metallurgical recoveries, allowances for mining recovery and dilution and overall economic viability as detailed in this Technical Report (Table 51).

Table 51: ABM Mineral Reserve estimate

| Zone/Mine | Category | Ore (Mt) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) |
|----------------------------|-----------------|-------------|------------|------------|------------|------------|------------|
| ABM Zone Open Pit | Probable | 14.7 | 0.9 | 1.4 | 5.5 | 1.2 | 120 |
| Krakatoa Zone Open Pit | Probable | 0.9 | 0.4 | 3.1 | 6.1 | 1.8 | 222 |
| Subtotal – Open Pit | Probable | 15.5 | 0.9 | 1.5 | 5.5 | 1.2 | 126 |
| Krakatoa Underground | Probable | 2.1 | 0.5 | 2.4 | 5.6 | 1.3 | 156 |
| TOTAL – KZK Project | Probable | 17.6 | 0.8 | 1.6 | 5.5 | 1.2 | 130 |

15.2 Application of Key Modifying Factors

This section includes discussion and detail of the key assumptions and parameters that comprise the modifying factors used to convert Mineral Resources to Mineral Reserves.

Majority of the ABM deposit will be mined by open pit mining methods. A single pit will be mined, with mining of the ABM Zone staged into three separate phases to manage overall waste stripping requirements and the Krakatoa Zone mined in a single phase. All open pit mining is planned to be

completed by a mining contractor over a period of 10.25 years, including a 15-month pre-production period to provide construction materials and build ore stockpiles to maintain continuity of ore to the processing plant. A total of 15.5 Mt of ore will be mined by open pit mining methods.

Extraction of the remainder of the ABM deposit will be by underground mining methods and will occur in the Krakatoa Zone of the deposit. All underground mining is planned to be completed by a mining contractor. The primary mining method planned for the underground mine is overhand cut and fill. Long hole stoping with fill will be used for mining the smaller lenses in the hangingwall and footwall of the Main lens. All underground stope voids will be filled with paste backfill. The underground mine is planned to commence at the end of year 2 of the mine plan when the ABM Zone stage 1 open pit has been advanced sufficiently to access the planned in pit portal locations. The underground mine is planned to finish prior to completion of open pit. A total of 2.1 Mt of ore will be mined by underground mining methods.

15.2.1 ABM Zone

15.2.1.1 Geotechnical Assessment

Cominco engaged Golder Associates (Golder) to complete a feasibility level geotechnical assessment of open pit mining the ABM Zone in 1996. The resulting report “Feasibility Level Mining Geotechnical Design Criteria for the ABM deposit, Kudz Ze Kayah Project” has formed the basis for geotechnical design elements of the ABM Zone pit design. The following is a summary of the findings and recommendations of the report. A new review of the ABM pit design recommendations was not specifically undertaken for the current PFS; however, the geotechnical data presented in the 1996 Golder report has been reviewed for both Krakatoa open pit and underground geotechnical assessments and no concerns on the data were raised during this work.

Overburden in the vicinity of the ABM Zone was assessed to range from between 1.5 m to 12 m along the western margin of the valley and 6 m to 12 m along the eastern margin. In general, poorly sorted loose to compact sand and gravel deposits of colluvial origin are deposited along the eastern and western valley walls. Through the valley base, a thick sequence of apparent glacio-lacustrine sediments occurs. These consist of dense sandy silt, silty sand and gravel, with cobbles and boulders.

The area of the open pit was divided into three separate domains (West, Central and East). Stereonets of average orientations of fault and joint discontinuities for each of the domains (with subdivisions of domains into North, Central and South as appropriate) were prepared to assess the geotechnical characteristics of the area.

Faulting through the deposit area is interpreted to generally trend in a northeast-southwest direction. The fault zones are comprised of numerous subparallel normal fault surfaces dipping moderately steeply to the southeast. The rocks show variation in the degree of natural fracturing as a result of the nature and extent of faulting. In the West and Central domains, the average RQD of all core logged was in the order of 65%. In the East domain, the rock is more fractured, with an average RQD of 45%, with several holes showing a mean RQD of less than 25% over the entire length of the hole.

Point load index testing was conducted at 5 m intervals on core from geotechnical holes. The results of the test work are shown in Table 52. Comparisons were made with laboratory testing of Uniaxial Compressive Strength (UCS). In general, the results of the equivalent point load index testing compressive strengths tended to be greater than the laboratory results. However nearly all samples tested in the laboratory failed along shear surfaces or foliation planes at an angle to the applied load and may be lower than the actual UCS of the intact rock mass.

The results indicate that the various lithologies, with the possible exception of argillite, to be competent and strong to very strong.

Table 52: Comparison of average Equivalent Point Load Testing (EPLT) compressive strengths with average laboratory unconfined compressive strengths

| Rock type | Average laboratory UCS (MPa) | Average EPLT compressive strength (MPa) | Distribution (EPLT) | Standard deviation (EPLT) |
|----------------------|------------------------------|---|---------------------|---------------------------|
| Sediments; Argillite | 30.7 | 43.7 | Lognormal | -34.3 / +55.9 |
| Sediments; Wacke | 63.7 | 141.2 | Lognormal | -109.8 / +181.5 |
| Felsic Volcanics | 64.1 | 110.1 | Normal | ± 42.9 |
| Mafic Volcanics | 46.6 | 87.3 | Normal | ± 50.4 |
| Ore | 142.0 | 129.0 | Normal | ± 59.2 |
| Altered Rock | No data | 107.7 | Normal | ± 43.0 |

Note: Equivalent Point Load Compressive Strength based on $UCS = (14+0.15De) \times Is(50)$ from p52 Hoek and Brown (1980).

Recommended slope angles for the overburden in the valley floor was determined to be 25°, resulting in a Factor of Safety of 1.3 under static conditions and 1.2 under seismic loading conditions. Along the western and eastern valley walls, slope angles can be increased to 30°. A minimum 5 m wide bench at the pit crest is required to catch any material ravelling down the slopes.

Slope angles for mining in rock are presented in Table 53. As the initial benches are mined, they should be mapped in detail to confirm whether the data that the designs are based on is representative of mining conditions and if not adjustments to design recommendations can be made prior to excavation of the final pit walls.

Table 53: Proposed slope configurations by wall sector for ABM Zone

| Range in wall sector azimuth | Wall designation | Bench face angle (°) | Catch bench width (m) | Vertical bench separation (m) | Inter-ramp angle (°) |
|------------------------------|------------------|---|-----------------------|-------------------------------|----------------------|
| 210–340 | West Endwall | 70 | 8 | 20 | 52.5 |
| 340–020 | North Highwall | 65 | 8 | 20 | 49 |
| 020–070 | East Cutwall | 70 | 10 | 20 | 49 |
| 070–150 | East Endwall | 70 | 8 | 10 | 41 |
| 150–210 | South Wall | Determined by deposit orientation; bench faces parallel to orebody footwall must not undercut the foliation and associated shears | | | |

15.2.1.2 Pit Optimisation Assessment

Pit optimisation assessment of the ABM Zone was undertaken by Entech using GEOVIA Whittle™ pit optimisation software, producing a series of “nested” pit shells.

Economic input applied to the optimisation algorithm is necessarily preliminary as it is one of the first steps in the development of the mine plan. The pit shell geometries should be considered approximate as they do not assure access or working room. The important result of the pit shells is the relative change in geometry between shells of increasing metal prices. Lower metal prices result in smaller pits containing material with higher margins, which provides guidance to the selection of the initial pit phase. The change in pit geometry as metal prices are increased indicates the best directions for the succeeding phase expansions to the ultimate open pit limit.

Pit shells were generated using the recovery and cost data shown in Table 54 to Table 60. Costs used for optimisation assessments were based on a combination of budgetary and internally estimated costs based on preliminary prefeasibility assessments of the Project and benchmarked data from comparable projects. The data in these tables was incorporated into an NSR calculation to enable the economic contribution of each block to the overall shell to be determined. The resulting NSR contributions from each element are shown in Table 60. Mining dilution and recovery was estimated to be 10% and 95% respectively.

Table 54: Process recoveries for pit optimisation (based on metallurgical testwork)

| | Cu concentrate | Pb concentrate | Zn concentrate |
|------------------------------|----------------|----------------|----------------|
| Cu recovery | 81.6% | | |
| Pb recovery | | 70.0% | |
| Zn recovery | | | 86.9% |
| Au recovery | 43.3% | 18.6% | 8.9% |
| Ag recovery | 44.7% | 25.2% | 14.8% |
| Concentrate grade | 22.9% Cu | 52.2% Pb | 51.5% Zn |
| Concentrate moisture content | 9.0% | 10.0% | 9.0% |

Table 55: Concentrate payabilities for pit optimisation

| Concentrate | Payable metal | Metal payability |
|-------------|---------------|---|
| Copper | Copper | 96.5% with a minimum deduction of 1.0 unit |
| | Silver | 90% if above 30 g/dmt; nil below 30 g/dmt |
| | Gold | 95% if above 5 g/dmt 93% 3–5 g/dmt 90% 1–3 g/dmt Nil less than 1 g/dmt |
| Lead | Lead | 95% with a minimum deduction of 3.0 units |
| | Silver | 95% with a minimum deduction of 50 g/dmt |
| | Gold | 95% with a minimum deduction of 1 g/dmt |
| Zinc | Zinc | 85% with a minimum deduction of 8.0 units |
| | Silver | 70% of the silver content less 3.0 oz/dmt |
| | Gold | 70% of the gold content less 1.0 g/dmt |

Table 56: Concentrate treatment and refining charges for pit optimisation

| Concentrate | Parameter | Cost |
|-------------|------------------------|-----------------------|
| Copper | Treatment charge | US\$87.40/dmt |
| | Copper refining charge | US\$0.0874/payable lb |
| | Silver refining charge | US\$0.50/payable oz |
| | Gold refining charge | US\$5.00/payable oz |
| | Penalties | US\$57.60/dmt |
| Lead | Treatment charge | US\$166/dmt |
| | Silver refining charge | US\$1.50/payable oz |
| | Gold refining charge | US\$8.00/payable oz |
| | Penalties | US\$63.90/dmt |
| Zinc | Treatment charge | US\$192.93/dmt |
| | Penalties | US\$9.75/dmt |

Table 57: Metal prices and exchange rate for pit optimisation

| Parameter | Value |
|-----------|------------------|
| Copper | US\$2.87/lb |
| Lead | US\$0.94/lb |
| Zinc | US\$1.00/lb |
| Gold | US\$1,291/oz |
| Silver | US\$19.38/oz |
| FX | US\$0.80:C\$1.00 |

Consensus Analyst Data at 15 August 2016

Table 58: Concentrate transportation and handling costs for pit optimisation

| Parameter | Cost |
|--------------------------|--------------|
| Road freight | C\$140/wmt |
| Stevedoring and handling | C\$17.50/wmt |
| Ocean freight | US\$50/wmt |
| Port charges | C\$1.00/wmt |
| Refereeing charges | US\$5.00/dmt |
| Insurance | US\$5.00/dmt |

Table 59: Site costs for pit optimisation

| Parameter | Cost |
|---------------------------------------|----------------------------|
| Mining reference cost (load and haul) | C\$1.95/t mined |
| Mining incremental cost | C\$0.022/t mined/5 m bench |
| Drill and blast costs | C\$0.80/t mined |
| General mining costs | C\$0.20/t mined |
| Dewatering costs | C\$0.01/t mined |
| BMC mine supervision costs | C\$0.17/t mined |
| Grade control costs | C\$0.30/t ore |
| Processing cost | C\$21.26/t ore |
| General and Administration cost | C\$7.77/t ore |
| Yukon Government mining royalty | 5% NSR (approximated) |

Table 60: Calculated NSR contribution of each metal

| Metal | NSR contribution |
|--------|-----------------------|
| Copper | C\$42.06 per 1.0% Cu |
| Lead | C\$7.56 per 1.0% Pb |
| Zinc | C\$11.06 per 1.0% Zn |
| Gold | C\$24.46 per 1 g/t Au |
| Silver | C\$0.48 per 1 g/t Ag |

Three optimisation scenarios were assessed for scenario planning purposes:

- 1) An ABM Zone Base Case optimisation considering ABM Zone indicated mineralisation only.
- 2) A comparison case, considering optimisation of the full ABM deposit, with indicated mineralisation only.
- 3) A third optimisation case, considering Krakatoa Zone indicated mineralisation only was also completed.

The results of the ABM Zone Base Case optimisation are shown in Figure 72, and the comparison case, considering the full ABM deposit are shown in Figure 73.

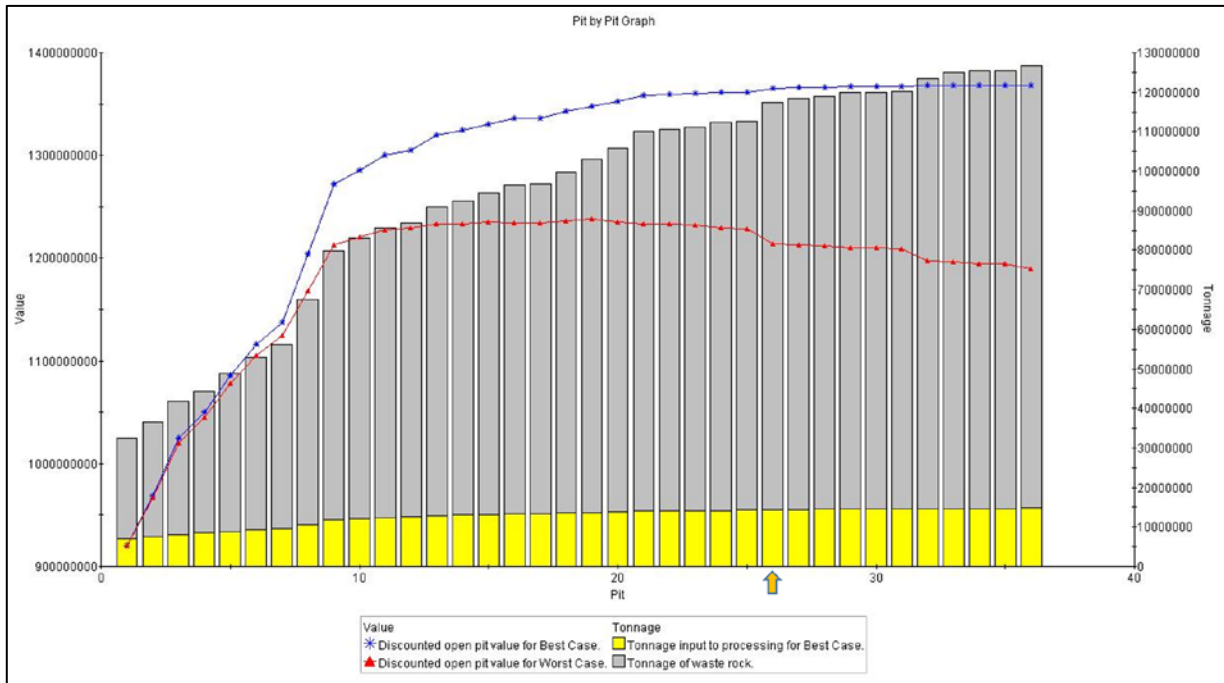


Figure 72: ABM Zone Base Case pit optimisation results

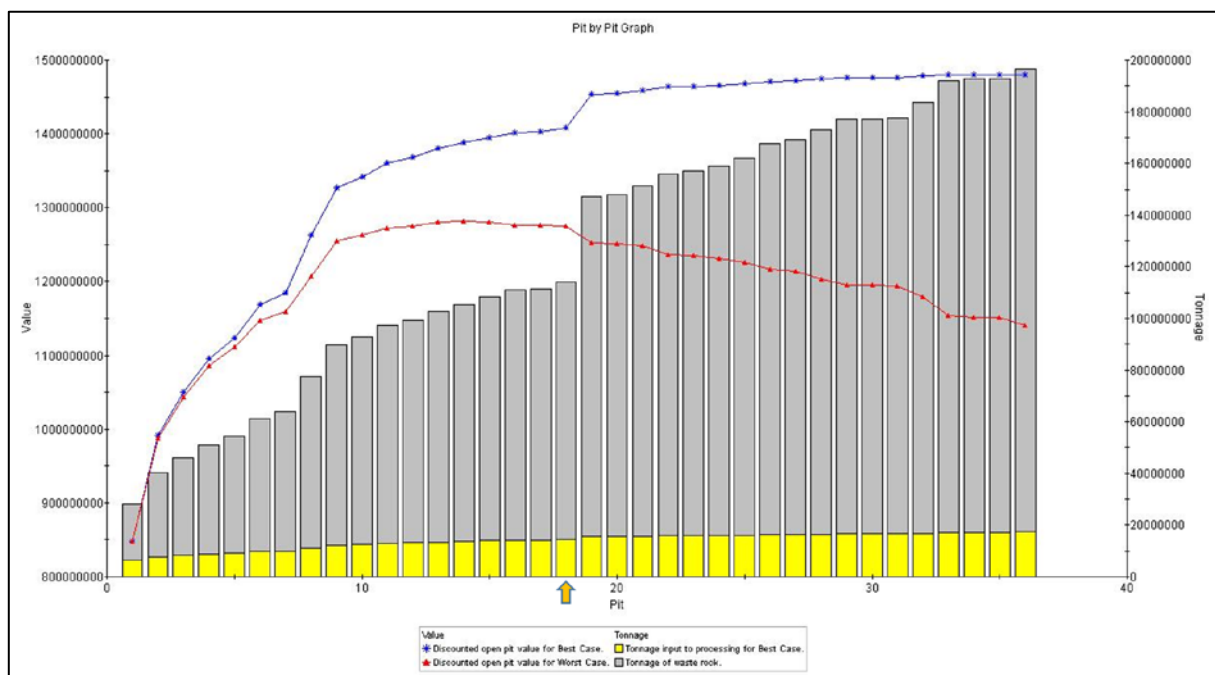


Figure 73: ABM deposit pit optimisation results

Pit shell 26 of the Base Case ABM Zone optimisation corresponding to a revenue factor of 0.80 was selected as the pit limit for design purposes. It generated the maximum pit value (discounted at 7%). The large amount of additional waste mined in pit shells larger than this generated low quantities of additional ore that was not considered beneficial to mine.

Comparing with the ABM deposit optimisation, shell 18 was assessed as producing the optimal result. While this does not correspond to the greatest value pit shell, selecting shells larger than shell 18 committed the Project to mining a minimum of an additional 35 Mt of waste. Mining of this waste would necessitate pushing back the eastern wall of the open pit, increasing the vertical exposure of the eastern valley wall and is considered undesirable. In addition, optimisation of the ABM deposit as a whole was not

able to facilitate identification of smaller optimisation shells within the Krakatoa Zone and therefore the Base Case ABM Zone optimisation results were considered most appropriate for pit shell selection.

The physical quantities for the ABM Zone pit shell 26 are detailed in Table 61.

Table 61: ABM Zone pit shell 26 optimisation results

| Description | Unit | Value |
|--------------|------|-------|
| Ore | Mt | 14.4 |
| Waste | Mt | 103.1 |
| Strip Ratio | 1:n | 7.1 |
| Copper Grade | % | 0.9 |
| Lead Grade | % | 1.4 |
| Zinc Grade | % | 5.5 |
| Gold Grade | g/t | 1.2 |
| Silver Grade | g/t | 121 |

15.2.1.3 Pit Phase Selection and Design

A smaller shell was selected as a starter pit for design purposes, producing sufficient ore for the first three years of operation and capturing a significant portion of the overall value of the ultimate pit. One additional intermediate phase was included to split pit development into nominally western and eastern development, as shown in Figure 74 to Figure 76.

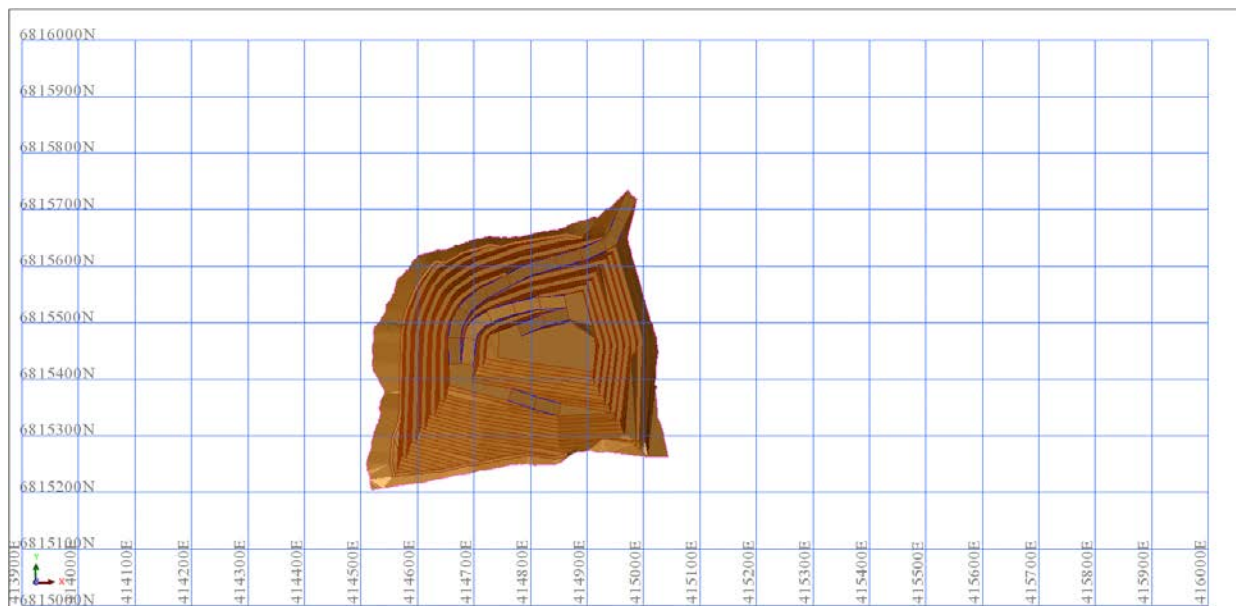


Figure 74: ABM stage 1 pit

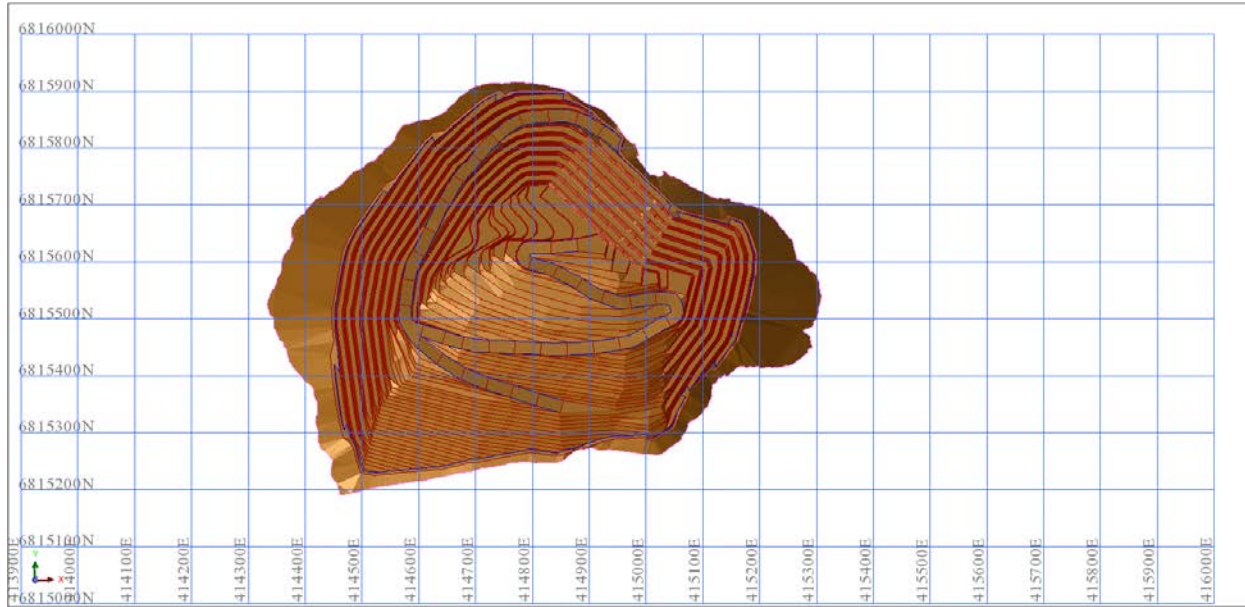


Figure 75: ABM stage 2 pit

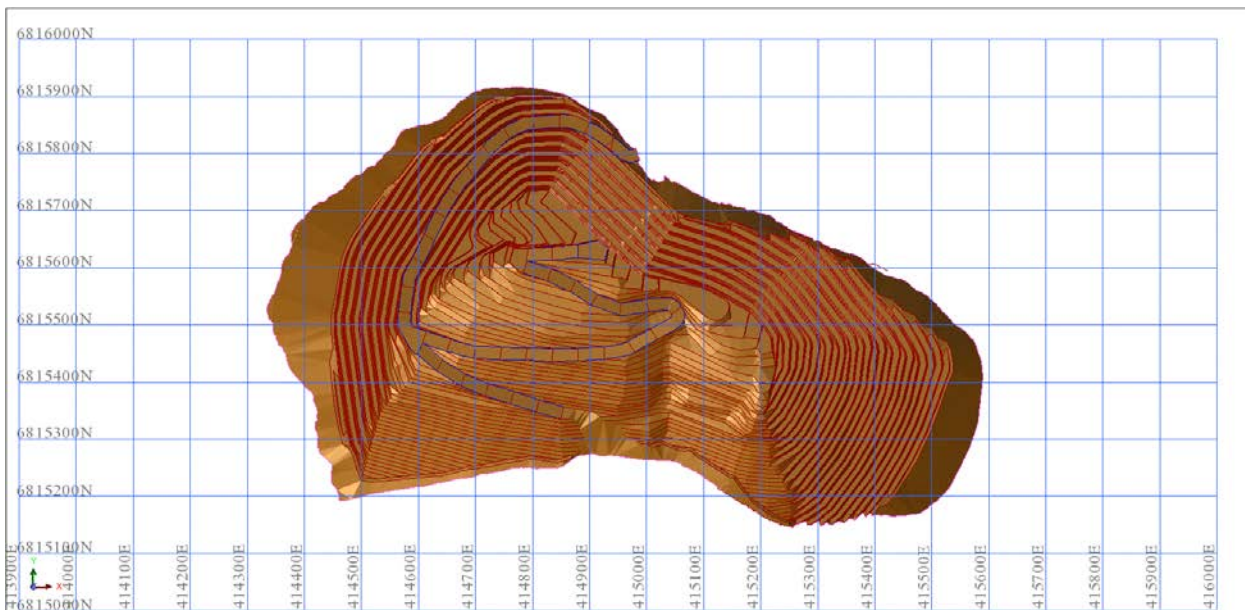


Figure 76: ABM final pit

The main access ramp has been designed to exit the pit to the north, in the base of the valley. Additional ramp access has been included on the southern wall of the ABM pit to permit access to be maintained to the Krakatoa Zone, resulting in the mining of additional waste beyond that indicated in the optimisation results.

All bench berm widths and face angles used in the designs have been in accordance with the geotechnical design parameters detailed in Section 15.2.1. Haul roads have been designed at a maximum gradient of 1:9, with widths to suit the use of 90-tonne class haul trucks (11 m for single lane ramps and 22 m for double lane, inclusive of safety windrows and drains, as illustrated in Figure 77).

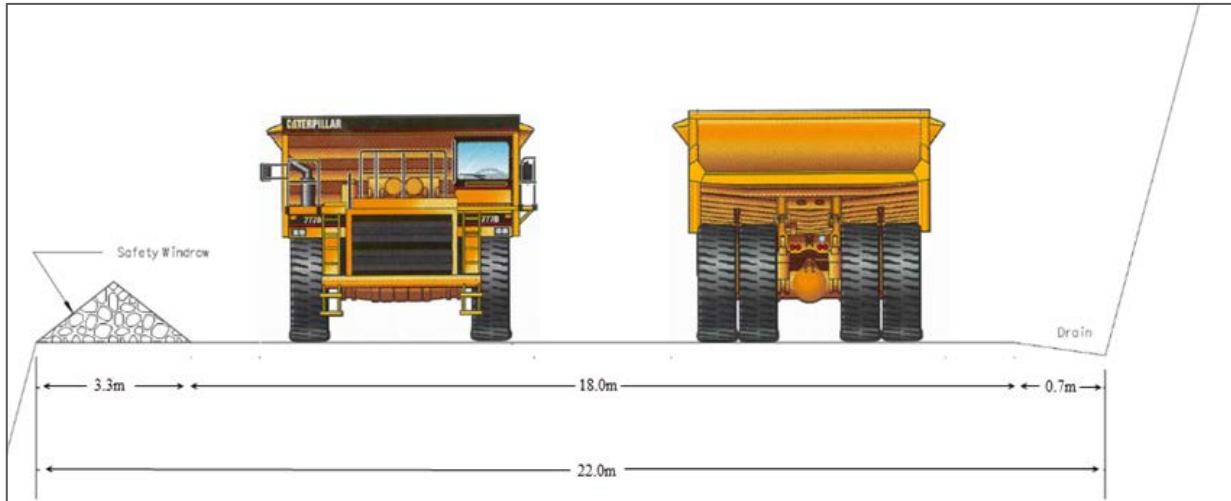


Figure 77: Indicative haul road design

Due to the broad zones of mineralisation evident in the ABM Zone, it is expected that the operational bench height will likely be between 5 m and 10 m when mining mineralised material and 10 m when mining waste. Mining of smaller heights may be required in specific locations such as hangingwall and footwall contacts where greater selectivity is required due to the dip of the mineralisation and/or narrower zones of mineralisation. The minimum mining width is planned to be 50 m for mining of the ABM Zone pit, sufficient for truck turning and loading by excavators. Discrete areas will be mined with less clearance where local conditions dictate.

Examples of the ore distribution within the ABM Zone pit are shown in Figure 78 to Figure 84. In all figures, zones of massive sulphide mineralisation are shaded red and zones of stockwork mineralisation are shaded green.

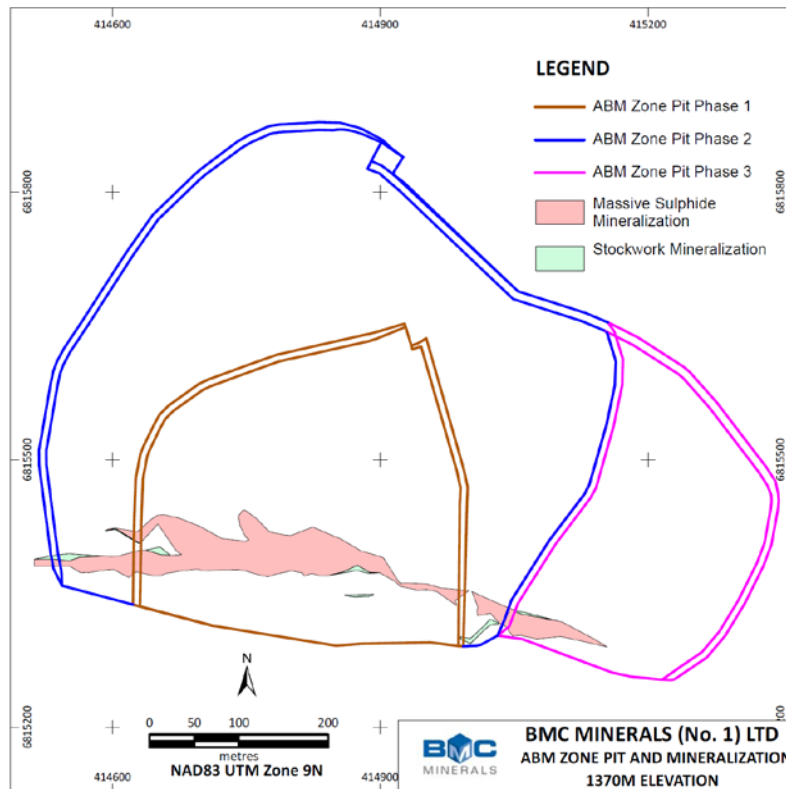


Figure 78: ABM Zone pit, 1,370 mRL

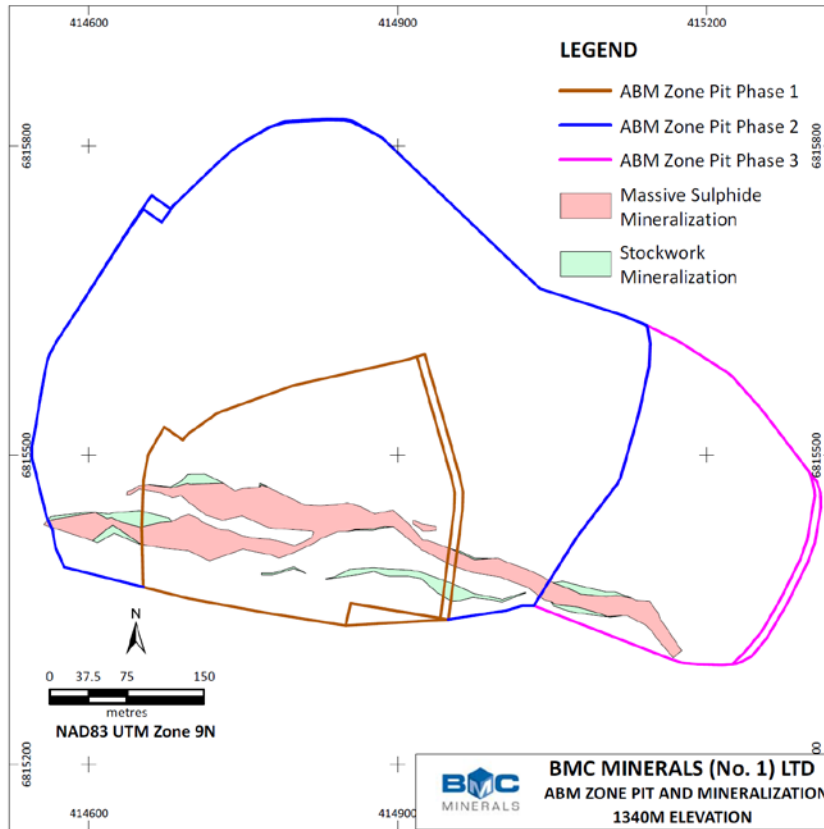


Figure 79: ABM Zone pit, 1,340 mRL

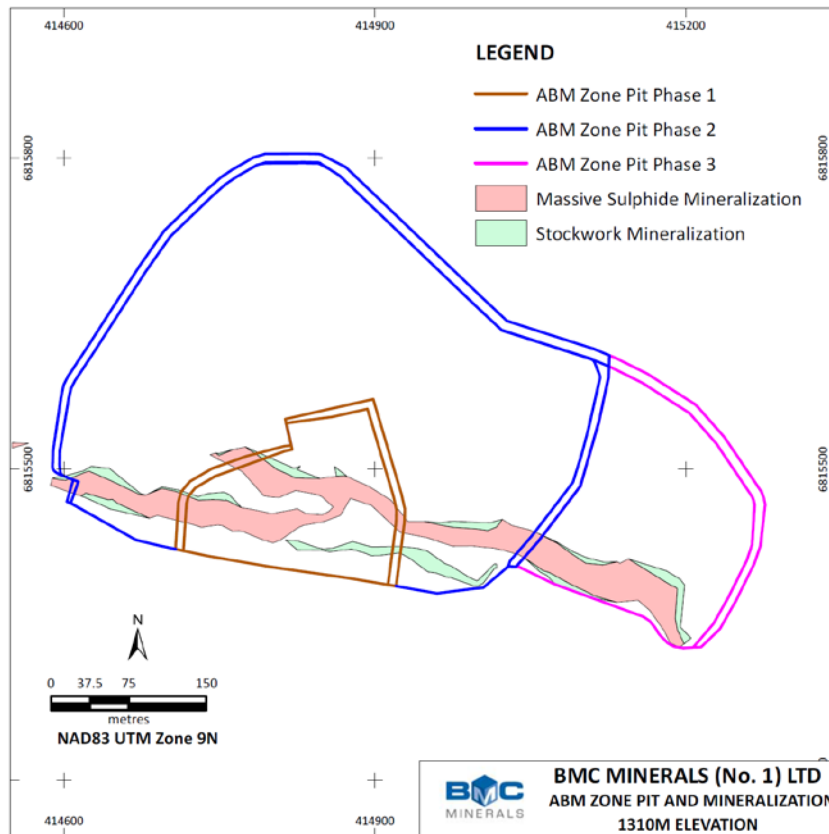


Figure 80: ABM Zone pit, 1,310 mRL

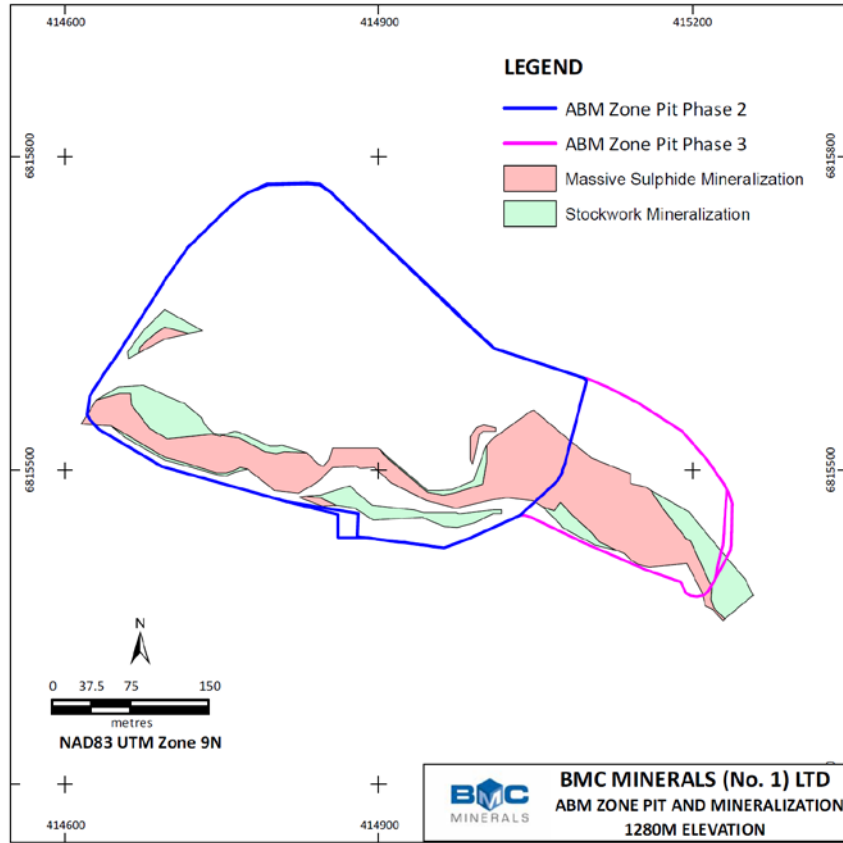


Figure 81: ABM Zone pit, 1,280 mRL

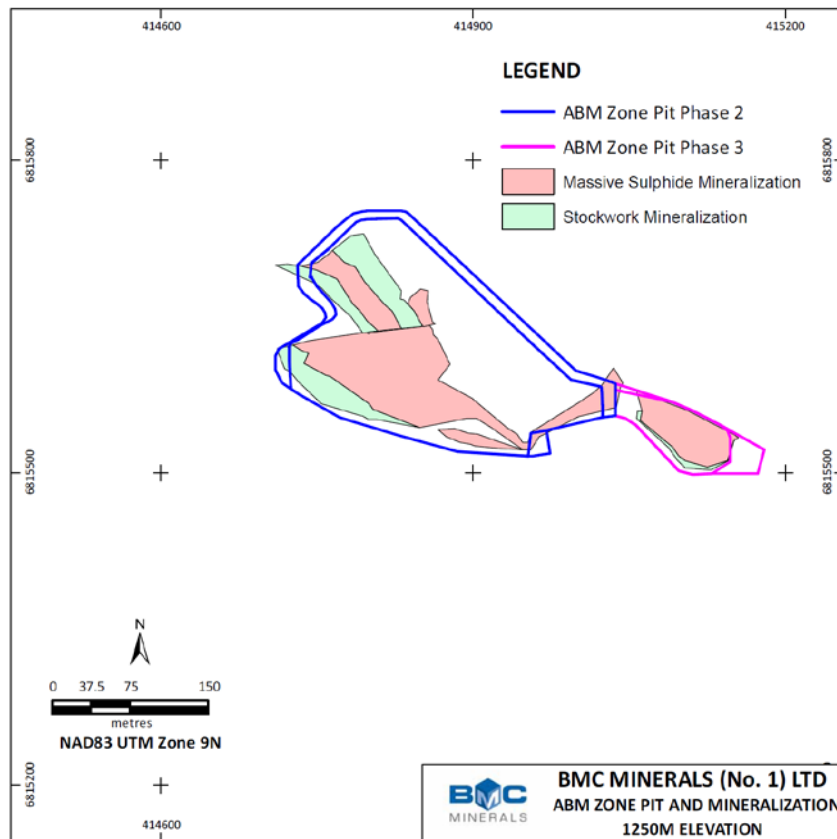


Figure 82: ABM Zone pit, 1,250 mRL

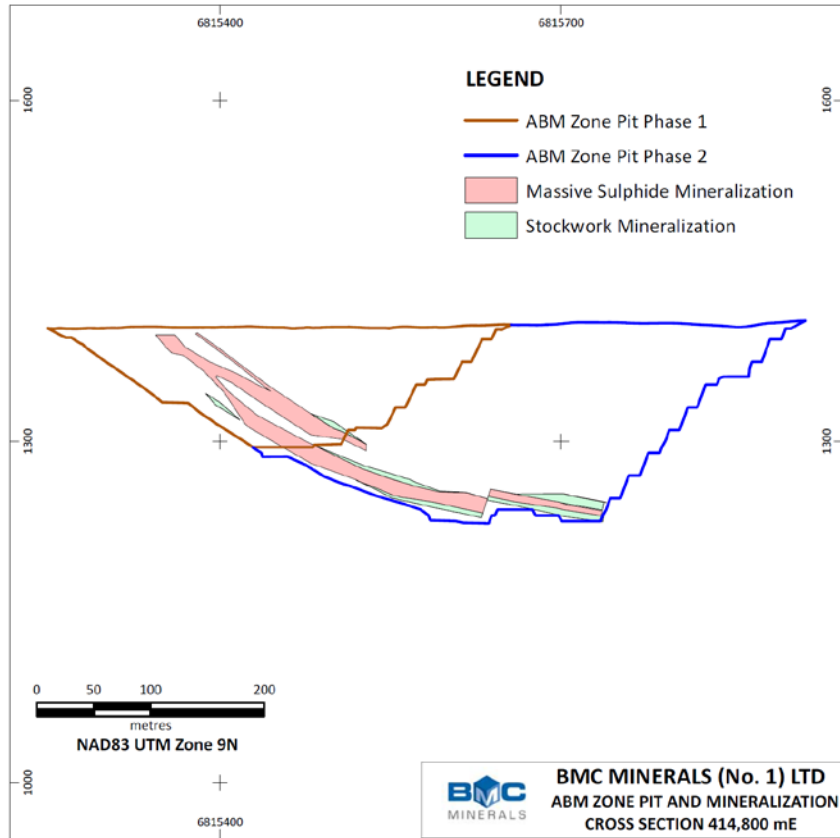


Figure 83: Section through ABM Zone pit, 414,800 mE

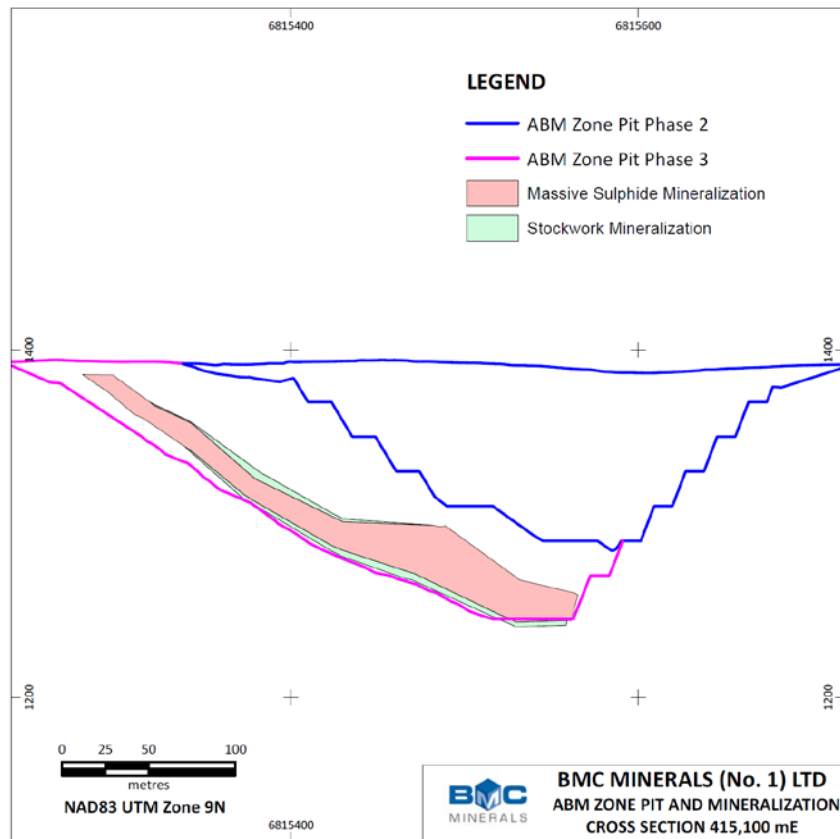


Figure 84: Section through ABM Zone pit, 415,100 mE

15.2.2 Krakatoa Zone

15.2.2.1 Geotechnical Assessment

BMC engaged Rockland Ltd to undertake a geotechnical assessment for open pit mining of the Krakatoa Zone. Overall, the findings of this assessment were consistent with that determined by Golders Associates for the ABM Zone, once local geology was considered.

Four geotechnical holes were drilled in 2016 to gather geotechnical data. Hole designs were based on preliminary open pit design work to target expected final pit wall locations. Data from the geotechnical holes were used for RQD assessment, with rock quality of domains close to the final pit walls considered for pit slope configuration. The rock quality of all walls was assessed as “fair” under the RMR classification system. Geotechnical domains were established based on pit wall orientations as detailed in Table 62.

Table 62: Krakatoa Zone open pit geotechnical domains

| Domain Name | Mean Dip Direction of Wall (°) |
|-------------|--------------------------------|
| Domain 1 | 115 |
| Domain 2 | 205 |
| Domain 3 | 295 |
| Domain 4 | 025 |

Major joint sets were established with each domain using the oriented drillhole data. Kinematic analysis was completed to assess the potential for planar, wedge and toppling failures in each domain. For the purposes of the kinematic analysis it was assumed that dry conditions would be present in consideration of the planned dewatering regime for open pit mining.

Shear strength along the joint sets was assumed to be represented by zero cohesion and a friction angle of 25° for both the joints and foliation sets. Direct shear tests should be completed in feasibility level work to verify the shear strength parameters.

Bench geometry recommendations were developed based on assessment of critical modes of failure and probability of respective failure modes. This process employed 20% and 50% probability as the guideline for failure criteria for recommendation of inter-ramp angles and bench face angles respectively. Recommended slope design parameters for the Krakatoa Zone pit are presented in Table 63, allowing for double benching.

Table 63: Krakatoa Zone open pit slope design parameters

| Sector | Bench face angle (°) | Catch bench width (m) | Vertical bench separation (m) | Inter-ramp angle (°) |
|----------|----------------------|-----------------------|-------------------------------|----------------------|
| Domain 1 | 55 | 8.5 | 20 | 42 |
| Domain 2 | 70 | 8.5 | 20 | 55 |
| Domain 3 | 46 | 8.5 | 20 | 36 |
| Domain 4 | 48 | 8.5 | 20 | 37 |

There are two major fault zones that bound the Krakatoa Zone mineralisation, and where fault damage zones are present vertical bench separation should be reduced to single benching, or 10 m.

Numerical modeling was conducted for dry and partially saturated conditions for the final pit design. The lowest factor of safety of 1.3 when partially saturated indicates a low risk of rock mass failure where slopes are adequately dewatered ignoring the impact of major faults and damage zones.

Slope angles for overburden were assumed to be the same as that determined for the ABM Zone.

15.2.2.2 Pit Optimisation Assessment

The optimisation parameters for the ABM Zone detailed in Section 15.2.1 have generally also been used for optimisation assessment of the Krakatoa Zone. Departures from the ABM optimisation parameters are detailed below.

Pit slope angles used for optimisation work were based on the geotechnical recommendations detailed in Section 15.2.1.

Within the Krakatoa Zone, there is a Main lens that forms the bulk of defined mineralisation. This lens is the thickest (typical width of 15 m) and most continuous of the Krakatoa Zone mineralisation. Mining dilution for the Main lens was assessed to be 10%. There are also a number of narrower (typical width of 3 m), less continuous zones of mineralisation present which for optimisation purposes were assigned a dilution value of 30%. Mining recovery was estimated to be 95% for all mineralisation.

The results of the optimisation results for the Krakatoa Zone only are shown in Figure 85.

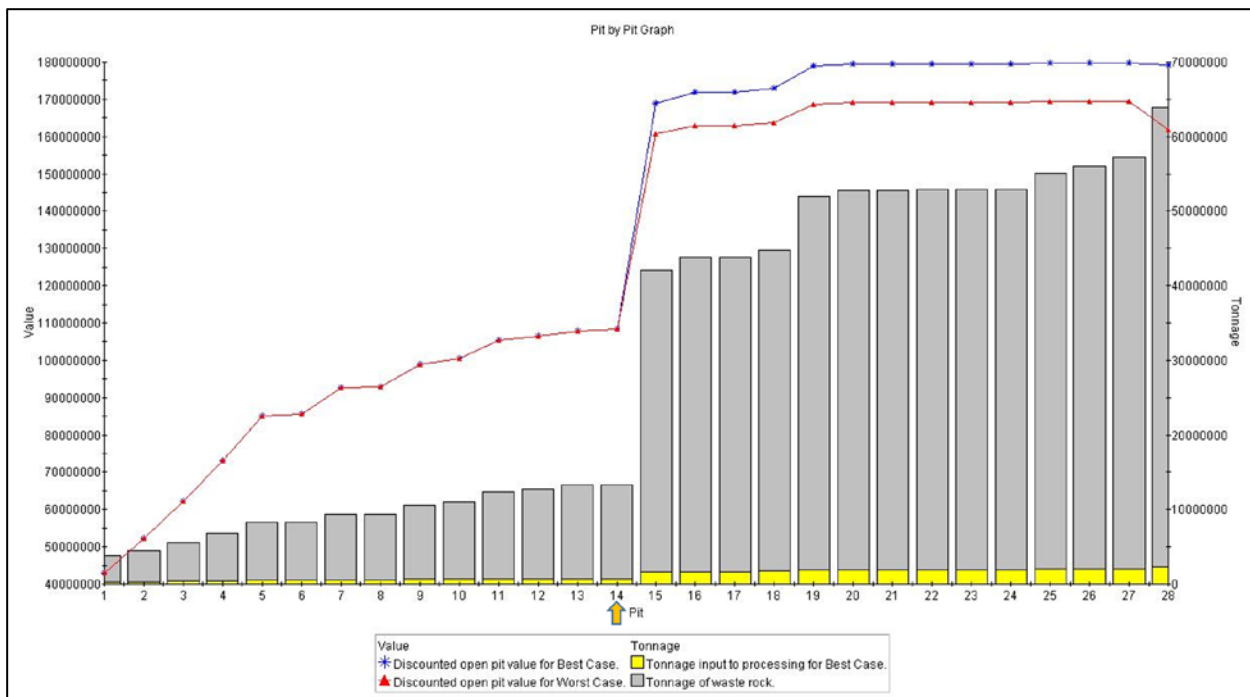


Figure 85: Krakatoa Zone optimisation results

From the Krakatoa Zone only optimisation, shell 14 corresponding to a revenue factor of 0.64 was selected as the pit limit for design purposes. While this shell results in capturing approximately 60% of the maximum discounted pit shell value (at a 7% discount rate), increasing the pit size beyond this was not assessed to be the optimal strategy. Shell 15 introduces a large increase in pit size (215% increase in mined tonnage). While this corresponds with an increase in pit value, the incremental cost per tonne of ore to mine the larger pit was C\$153/t. Costs to mine by underground methods (as discussed in Section 21) have been estimated to be between C\$99/t and C\$117/t, depending on mining method adopted (processing and administration costs included). Therefore, the smaller pit shell 14 is considered the most appropriate shell for pit design purposes, meeting economic criteria as well as reducing the amount of waste rock that potentially will need to be stored on the surface.

The mine optimisation results for the selected shell for the Krakatoa Zone are detailed in Table 64.

Table 64: Krakatoa Zone pit shell 14 optimisation results

| Description | Unit | Value |
|----------------------|------|-------|
| Mineralised material | Mt | 0.8 |
| Waste | Mt | 12.6 |
| Strip ratio | 1:n | 16.0 |
| Copper grade | % | 0.4 |
| Lead grade | % | 3.2 |
| Zinc grade | % | 6.2 |
| Gold grade | g/t | 1.8 |
| Silver grade | g/t | 229 |

15.2.2.3 Pit Phase Selection and Design

Given the size of the selected pit shell, the Krakatoa Zone will be mined as a single phase, utilising the same equipment as the ABM Zone. A smaller excavator will be required for selective mining of the narrower mineralised lenses outside the Main lens.

All design parameters for the Krakatoa Zone open pit are the same as that previously described for the ABM Zone open pit, with the exception of slope design and the minimum mining width being reduced to 25 m to accommodate the tighter pit dimensions compared to that of the ABM Zone pit. To facilitate access from the Krakatoa Zone open pit to the processing plant and waste storage facilities, the pit ramp has been designed to connect through to the ABM pit via the ABM south wall ramp, as shown in Figure 86.

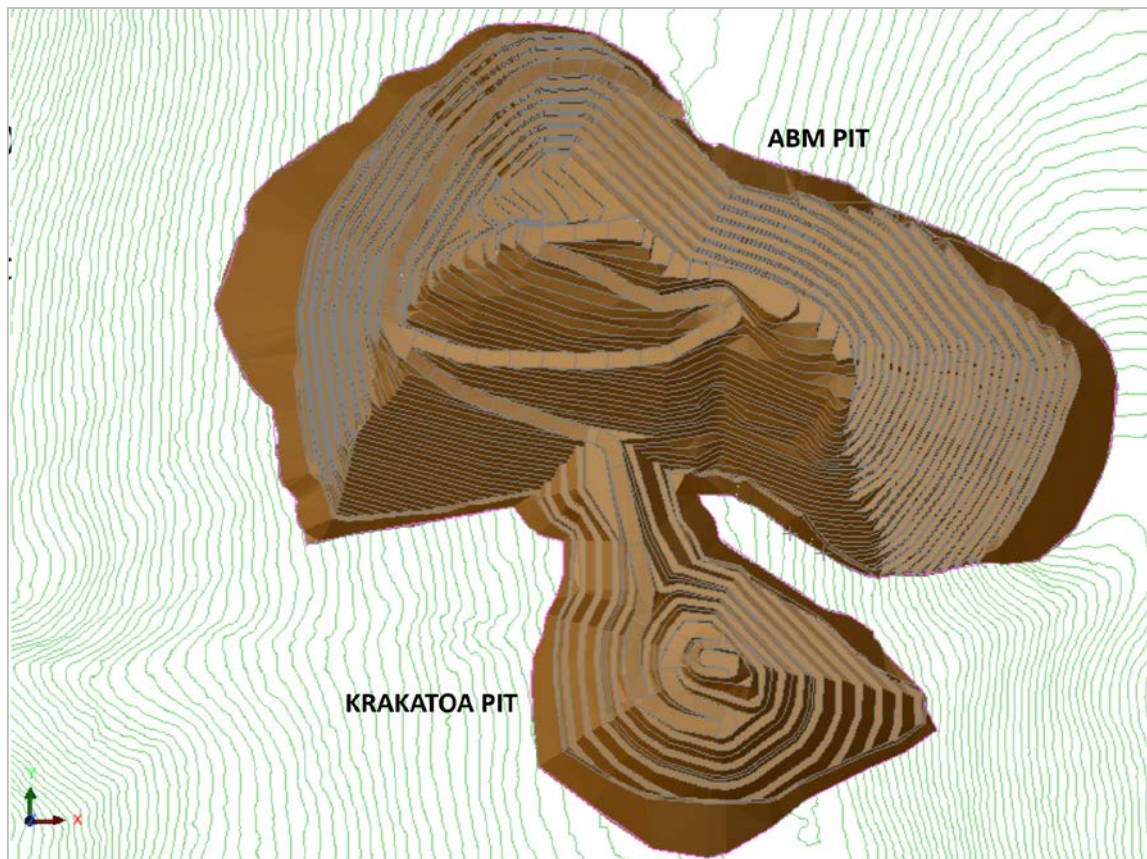


Figure 86: Krakatoa pit design with connection to ABM pit (field of view 1,600 m wide)

Examples of the ore distribution within the Krakatoa Zone pit are shown in Figure 87 to Figure 90. In all figures, the Main lens is shaded blue and all other lenses are shaded grey.

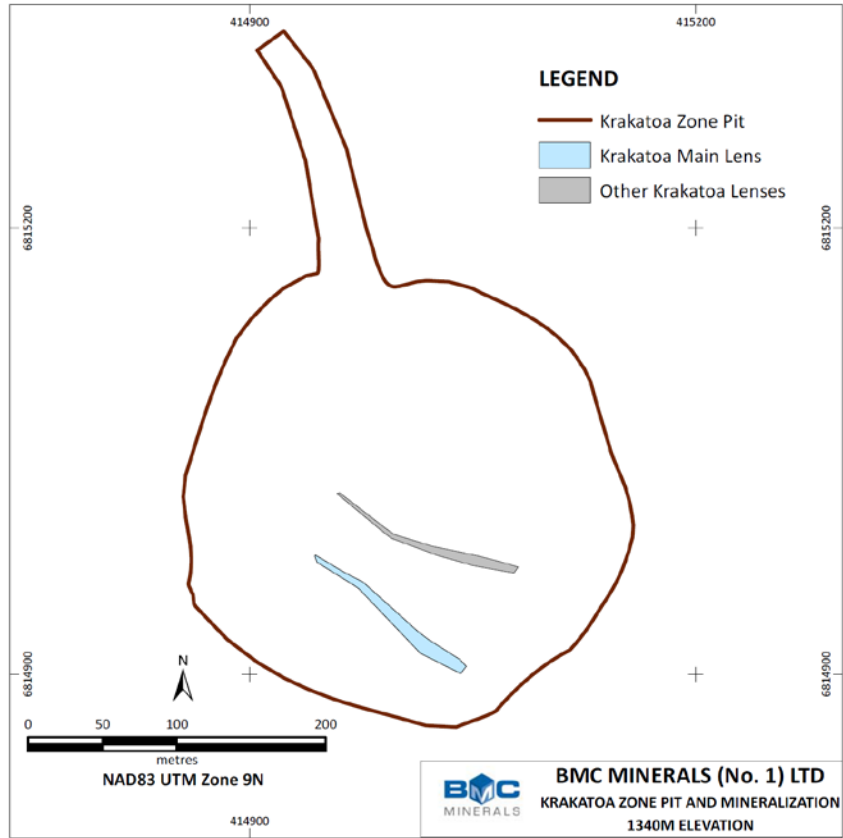


Figure 87: Krakatoa Zone pit, 1,340 mRL

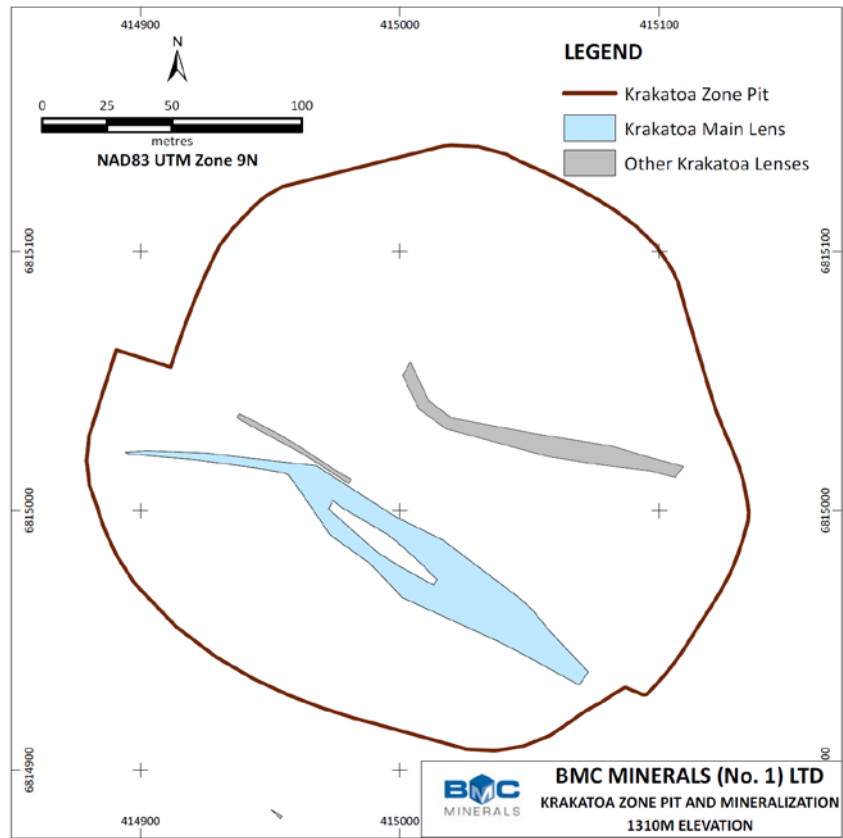


Figure 88: Krakatoa Zone pit, 1,310 mRL

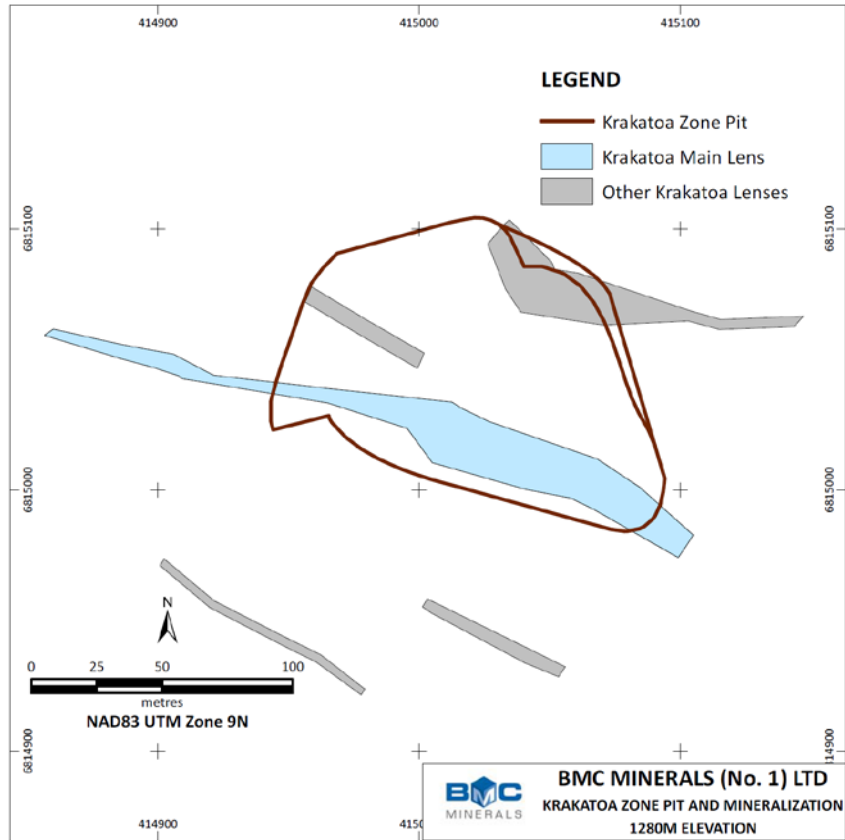


Figure 89: Krakatoa Zone pit, 1,280 mRL

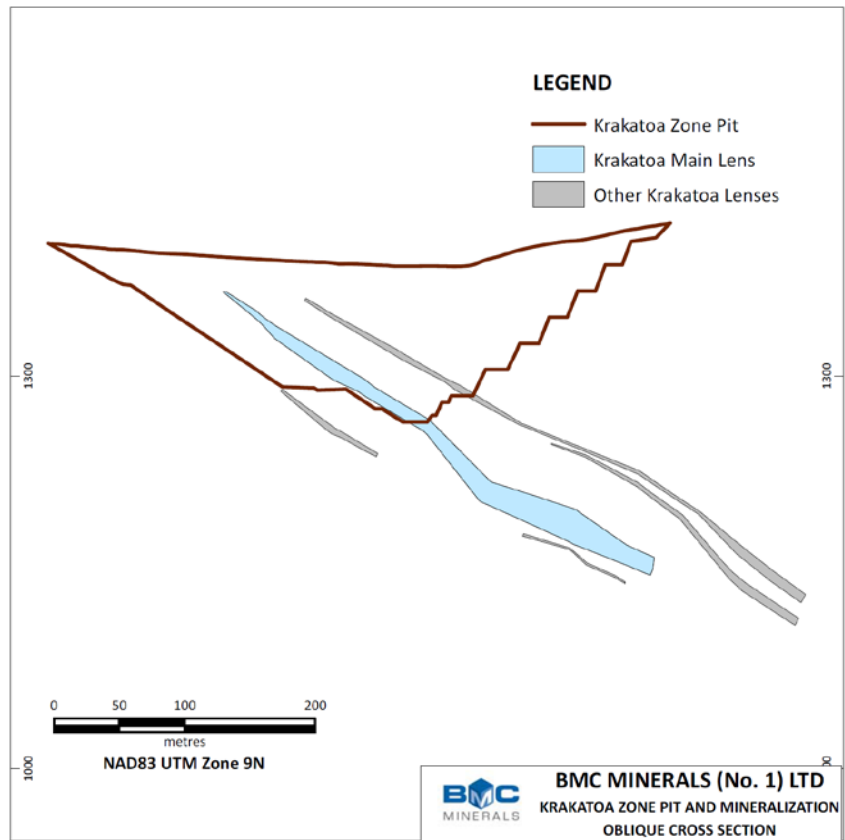


Figure 90: Oblique section through Krakatoa Zone pit

15.2.3 Proposed Open Pit Mining Operation

15.2.3.1 Pioneering Work and Pit Development

Pre-production mining activity will focus on mining overburden and Class C waste rock from stage 2 of the ABM pit for site construction purposes. Insufficient Class C waste is available in the upper benches of the stage one ABM pit to meet construction requirements. Some pre-production stripping activity will also be carried out for the Krakatoa pit to ensure access to the pit is available to meet scheduling requirements.

To facilitate access to the western valley wall for pre-production mining of stage 2 of the ABM pit, temporary access roads will be cut with a dozer to facilitate topsoil and overburden removal, which will be either stockpiled or hauled to construction areas as required. These roads will be used by the mining fleet to establish working benches to progressively expand mining activities.

As processing plant construction nears completion, the focus of mining will shift to the valley floor and stage 1 of the ABM pit to build sufficient ore stocks to commence processing. Topsoil and overburden will be stripped from the pit area and stockpiled for use in reclamation work as required. As mining of stage 1 of the ABM pit progresses, stage 2 of the ABM pit will be reinitiated to ensure continuity of ore supply.

Temporary access roads will also be required to commence mining stage 3 of the ABM pit. Access to the Krakatoa pit will be achieved via the ABM pit ramp.

15.2.3.2 Drill and Blast

Drilling is planned to be completed with medium sized drilling equipment, capable of drilling 102–152 mm diameter holes. Different hole diameters are expected to be required depending on whether ore or waste is blasted. The working bench height will likely be between 5 m and 10 m when mining mineralised material and 10 m when mining waste. At hangingwall and footwall contacts, bench heights for blasting may be reduced to 5 m to enable better control of movement of ore and reduction in dilution and ore loss.

All material is expected to require drilling and blasting except for the overburden, where free digging is expected or very light blasting in some occurrences. The expected drill and blast patterns are shown in Table 65. Pumpable bulk explosive will be used for all blasting applications, with variations in explosives blend determined by hole conditions encountered for each blast. It is expected that up to 30% of all holes will be wet.

Table 65: Standard drill and blast patterns for open pit mining

| Parameter | Ore | Waste |
|------------------------------|------|-------|
| Hole diameter (mm) | 102 | 152 |
| Burden (m) | 3.1 | 5.0 |
| Spacing (m) | 3.6 | 5.8 |
| Bench height (m) | 5.0 | 10.0 |
| Sub-drill (m) | 0.6 | 1.3 |
| Stemming depth (m) | 2.0 | 3.0 |
| Insitu rock density (kg/bcm) | 4.10 | 2.76 |
| Explosives density (g/cc) | 1.25 | 1.25 |
| Powder factor (kg/t) | 0.16 | 0.23 |

Presplit drilling and blasting will also be utilised for wall control to ensure the good profiles are achieved for the final pit walls.

15.2.3.3 Loading

Primary loading of ore and waste will be by excavators in backhoe configuration, to allow improved ability to remove overlying waste from the flat dipping ore as compared to a front shovel configuration. Two different sized excavators will be required, due to the difference in densities between ore and waste, and to allow greater selectivity for mining of ore.

Bulk mining of waste will be completed with a 260–300-tonne class excavator, with a bucket capacity of 15–17 m³. Mining of ore will be completed with a 185–200-tonne class excavator, with a bucket capacity of 7.5–8.0 m³. Utilising a bucket any larger than this is likely to overload the excavator increasing maintenance and associated downtime. The smaller sized bucket will also assist in control of dilution as the bucket will typically be 2.0 m wide.

A 50-tonne class excavator may also be required for more selective mining of the narrower zones of mineralisation at Krakatoa to manage mining dilution. This machine will also be utilised for cleaning of pit walls.

Mining of the hangingwall and footwall contacts will require competent operating practice and supervision to ensure that the introduction of waste dilution is minimised. In principle, each bench will be mined from hangingwall to footwall. Bulk mining of waste in the hangingwall will be permitted to the point where the bottom of the excavation bench is within 3 m of the hangingwall contact. Waste will then be pulled down the bench face by the excavator until the ore contact is exposed, at which point ore mining will progress through to within 3 m of the footwall contact. Ore will then be pulled down the bench face by the excavator until all the ore has been removed for loading into trucks.

Future mine planning work will also investigate where it is appropriate to selectively mine different metallurgical domains within each bench to allow separate stockpiling to optimize processing plant performance.

In addition to the primary loading excavators, a large front-end loader (100-tonne class) will also be available for support activities such as pit floor cleanup and to cover truck loading requirements when excavators are undergoing maintenance.

15.2.3.4 Hauling

All truck haulage will be completed with a 90-tonne class rear dump truck fleet.

There are four primary destinations for hauling material from the pit:

- The ROM pad, a distance of approximately 1.3 km from the pit crest
- Class A waste rock and tailings storage facility, a distance of approximately 2.5 km from the pit crest
- Class B waste rock storage facility, a distance of approximately 1.0 km from the pit crest
- Class C waste rock storage facility, a distance of approximately 1.5 km from the pit crest.

Following completion of mining in either Zone, Class A waste rock may be deposited within the mined-out area where a water cover will be maintained, minimising subsequent oxidation and metal leaching processes.

Class C waste rock will also be utilised for construction purposes during mine development, including the Class A waste rock and tailings storage facility, aggregate for concrete and road base for sheeting haul roads.

Haul roads within the pit have been designed to be 22 m wide at a 1:9 gradient. Surface haul roads have been designed to be nominally flat where possible to maximise hauling productivities. Haul trucks will have right of way on all surface and in-pit haul roads.

15.2.3.5 Ancillary Equipment

Ancillary equipment requirements include graders, dozers and water trucks. A large capacity grader is anticipated to be utilised for the Project, with a blade width of 4.9 m to enable maximum productivity for road maintenance activities. The grader will also manage clearing of snow in the pit and roads during the winter months.

Tracked dozers will be utilised on site for waste storage facility maintenance and in-pit work.

A water truck will be required for dust control in the summer months. This will also provide emergency water supply in the event of scrub fires.

15.2.3.6 Grade Control

Grade control is expected to be conducted via the use of a dedicated reverse circulation (RC) drilling program, instead of blast hole sampling. RC drilling offers a number of advantages including:

- Drilling can be carried out ahead of production, improving planning ability
- Dry representative samples are more likely to be obtained in comparison to blast hole sampling
- RC holes can be angled to perpendicular to the mineralisation, improving interpretation of footwall and hangingwall contacts
- RC drilling can be carried out in campaigns, proving up three to six months of production in advance.

Grade control drilling programs will be campaigned on a three- to six-month basis, with a contractor engaged to complete the drilling and sampling work. Holes will be drilled at a nominal 60° dip (direction dependent on zone) to sample up to 40 m. Drilling grids are expected to be either a staggered 10 m by 5 m or 10 m by 7.5 m pattern, with further assessment required to determine the optimum drill spacing.

Samples of 2.5 m will be collected by BMC's geology technicians on a daily basis and transported to the onsite laboratory for assay. It is expected that typically 50 samples per day will need to be processed by the lab while a grade control drill program is in progress. Results will be used to generate short-term planning grade control models to enable appropriate delineation of ore and waste types.

There will also be a requirement for sampling for management of waste rock with acid generating and metal leaching potential. As discussed in Section 18.2, blast-hole sampling is expected to be utilised to collect samples for sulphur content and neutralisation potential assessment.

15.2.3.7 Water Management

Water management within the open pit operation will be managed by a combination of surface interception, dewatering wells and in-pit sumps and localised drains. Dewatering of overburden material will commence with the construction of water interception trenches. Once the overburden has been effectively drained, these trenches will be mined out by the open pit development, with any recharge of the overburden flowing into the mined open pit excavation.

In parallel with the overburden dewatering trenches, a minimum of three dewatering wells will be constructed to maintain water levels in the three major fault structures within the open pit below the operating pit floor.

Horizontal drains will be utilised within the open pit where required to drain localised water that could affect open pit wall stability, while temporary in-pit sumps will be maintained to ensure that dry conditions are available for the operating pit floor. Water from within the pit will be collected in these sumps and pumped to the Pit Rim Pond for settling of sediments and subsequent reuse, treatment or discharge as may be appropriate. Site water management is discussed in more detail in Section 18.3.

15.2.4 Underground Mining Summary

Underground mining has only been considered for the Krakatoa Zone of the deposit, due to the majority of the ABM Zone being mined by open pit methods. After allowing for a crown pillar beneath the ABM Zone open pit, insufficient mineralisation remained to justify consideration of underground mining for this Zone.

Entech was engaged to assess underground mining potential on the Krakatoa Zone mineralisation. The Krakatoa Zone mineralisation that will be mined by underground mining methods comprises of several separate lenses. The Main lens has a dip of approximately 37° and ranges between 5 m and 25 m in thickness. There are a number of other smaller lenses in both the hangingwall and footwall of the Main lens, which are relatively steeply dipping with thicknesses ranging between 2 m and 15 m. Several potential mining methods were investigated for the Krakatoa lenses, with overhand cut and fill and long hole stoping with fill assessed as being the most suitable. Figure 91 is a long section of the proposed underground mine as discussed below.

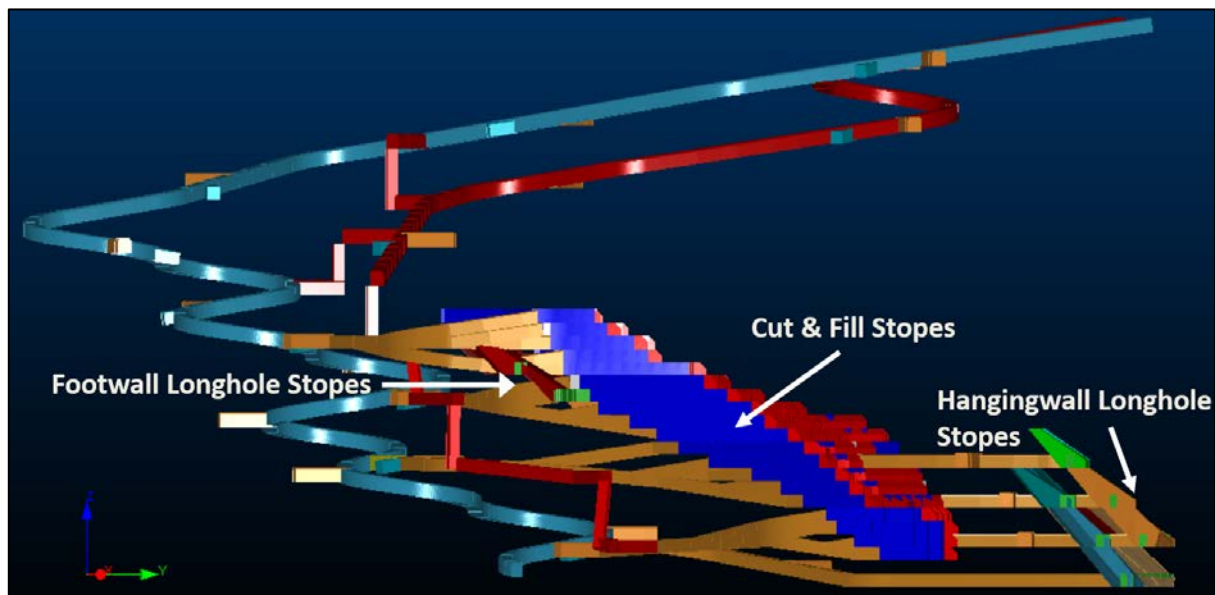


Figure 91: Long section of the underground mine (looking west)

15.2.5 Geotechnical Assessment

SRK prepared an initial underground geotechnical assessment for the KZK Project. Excavation design parameters were considered for both man entry and non-man entry excavation. Support requirements were based on critical spans, function of life of the excavations, and the rock mass quality.

In 2016, Rockland Ltd to undertake additional geotechnical assessment for the Krakatoa underground mine. Recommendations from this work, generally consistent with that determined by SRK, have been determined from empirical methods and Q support guidelines (Rockland, 2016). Primary ground support recommendations (Table 66) were prepared based on required service life, span and height of excavations. Secondary ground support, consisting of longer support elements, will be required at intersections and where large spans are excavated.

Table 66: Recommended ground support

| Domain | Support Recommendations |
|----------------|--|
| HW Weak Domain | Back/walls: 2.4 m long bolts on 1.0 m x 1.0 m spacing 4.1 mm galvanised wire mesh, 100 mm All support installed down to floor If required: 50 to 100 mm shotcrete |
| HW Domain | Back/walls: 2.4 m long bolts on 1.2 m x 1.2 m spacing 4.1 mm galvanised wire mesh, 100 mm All support installed down to 2.0 m from floor |
| Orebody Domain | Back/walls: 2.4 m long bolts on 1.5 m x 1.5 m spacing 4.1 mm galvanised wire mesh, 100 mm All support installed down to 2.0 m from floor |

The crown pillar dimension was evaluated based on the Scaled Crown Span method. An initial pillar thickness of 63 m should be left below the open pit. This pillar can be reduced following completion of mining the Krakatoa stage of the open pit and the underground mine.

These geotechnical assessments and the resulting recommendations were used as inputs into the mine design process.

15.2.6 Mine Access

Access to the underground mine will be via a ramp located within the stage 1 of ABM Zone open pit. Access to the underground portal location will become available in the second half of year 2 of open pit production. Trucks will haul ore and waste out of the mine to dumps adjacent to the portal, where the open pit load and haul fleet will subsequently transfer the underground material to the ROM pad and the waste storage facilities.

A second ramp, located in stage 1 of the ABM Zone open pit is proposed for ventilation purposes and as a second means of egress from the underground workings, should the main ramp become compromised. This second ramp is considered a more feasible return airway option after considering the difficulties likely to be encountered raiseboring or conventional raising a return airway.

The minimum stand-off distance from the ramp to the orebody is 50 m. This distance will minimize any damage to the ramp due to ground stress changes and blasting resulting from stoping. This stand-off distance allows sufficient space between the ramp and the orebody for level accesses, stockpiles and sumps. The ramp is designed at a gradient of 15% with radius of curvature of 25 m for efficient haulage. The selected development profiles used for the underground design are presented in Table 67. As engineering continues through to Feasibility, profiles will be adjusted to meet mining requirements.

Table 67: Development profiles

| Development type | Width (m) | Height (m) |
|--------------------|-----------|------------|
| Ramp | 5.2 | 5.7 |
| Access | 5.2 | 5.7 |
| Stockpile | 5.2 | 5.7 |
| Return air | 5.5 | 5.8 |
| Return air level | 5.0 | 5.0 |
| Sump | 5.0 | 5.0 |
| Ore drive (square) | 5.0 | 5.0 |
| Ore drive (shanty) | 5.0 | 5.0 |
| Ore drive (arch) | 5.0 | 5.0 |
| Paste development | 5.0 | 5.0 |

Development will use standard mechanised mining equipment and methods. Utilities including compressed air, water and waste water pump lines will be installed as the headings progress and electrical cable and paste backfill line will be installed as required.

Ground support for capital development is expected to require wire mesh with 2.4 m rock bolts with the mesh covering the profile down to 1.5 m off the sill. The ramps will intersect the East Fault and Sunda Fault and are expected to require additional localised support. The number of intersections has been minimised and the intersections have been designed to be at 90° to the fault strike, however shotcreting with a minimum thickness of 100 mm is expected to be required. Cable bolts or Super Swellex of appropriate lengths will be used at all drift and ramp intersections. Ground conditions within ore are expected to be good and it is not expected that shotcrete will be required. Intersections will be bolted with long support, either cable bolts or Super Swellex.

15.2.7 Stoping

Mineable stopes were manually designed based on orebody thickness and orientation, considering geotechnical recommendations, the proposed stoping method and the practical limits of the proposed equipment. The stopes were reviewed for economic viability by comparing estimated NSR value to the estimated cut-off requirements, after applying estimated mining factors for dilution and recovery. Those stopes not meeting economic criteria were removed from the stoping inventory.

As paste backfill will be used, production design allowed for full extraction and pillars between stopes were not included. Panel heights were variable due to the orientation of the orebody. Where appropriate, pillars of lower grade material may be left behind.

15.2.7.1 Cut and Fill Stoping

Overhand cut and fill design for each lift is based on a central cable bolted access drift with perpendicular ore drifts coming off the access. Panels were designed for a maximum of five lifts, benched downwards for two lifts and upwards for two lifts, for a total mined panel height of 25 m. The Main lens is planned to be fully extracted, using primary and secondary drifting to maximise productivity and provide local support. At the completion of the first lift, fill with a higher cement content will be placed to allow full drive exposure from underneath.

The extraction sequence is illustrated in Figure 92, progressing from A through to C. The blue and green coloured checkerboards represent different drifts that can be mined simultaneously, with each level within each panel being mined sequentially bottom up.

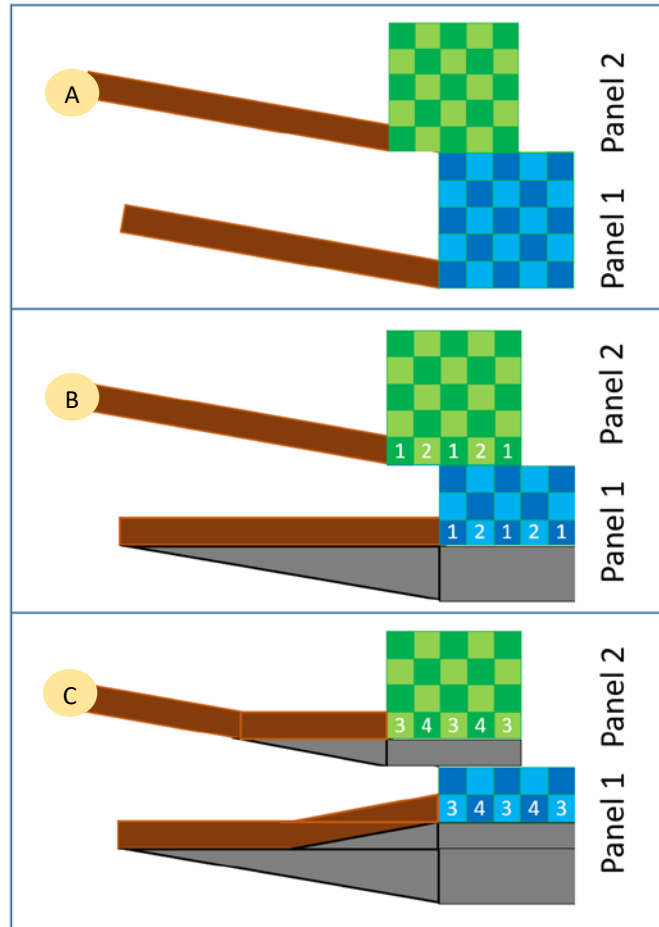


Figure 92: Cut and fill extraction sequence

On completion of mining each drift, they will be filled using paste backfill, reticulated to the underground from surface to provide support and stable pillars to mine out the remaining drifts. Once all drifts in a lift are mined and filled, breasting of the level access will be completed with sufficient fill introduced to enable access to the next lift in the sequence.

Unplanned dilution and mining recovery factors for overhand cut and fill stoping were estimated to be 10% and 90% respectively. The cut-off grade determined for overhand cut and fill stoping was an NSR value of C\$117.05/t.

15.2.7.2 Longhole Stoping

Longhole stopes were designed for a maximum drilling distance of 20 m. After allowing for the dip of the lenses, drift floor to floor spacing of 15 m was selected for stope design layout. Longhole stoping commences with development of an upper and lower sill drift to the limits of the stoping block. A slot rise is then drilled off and excavated to create sufficient void space to allow for blasting the rest of the stoping panel. Once the panel is fully excavated, the void will be filled with paste backfill to allow mining the next stope in the sequence, with 100% extraction of the economic material. The longhole stoping sequence will be bottom up, footwall to hangingwall, in order to minimise the requirement to undercut a span of paste backfill. Figure 93 shows a generalised longhole stoping with fill sequence progressing from A through to F.

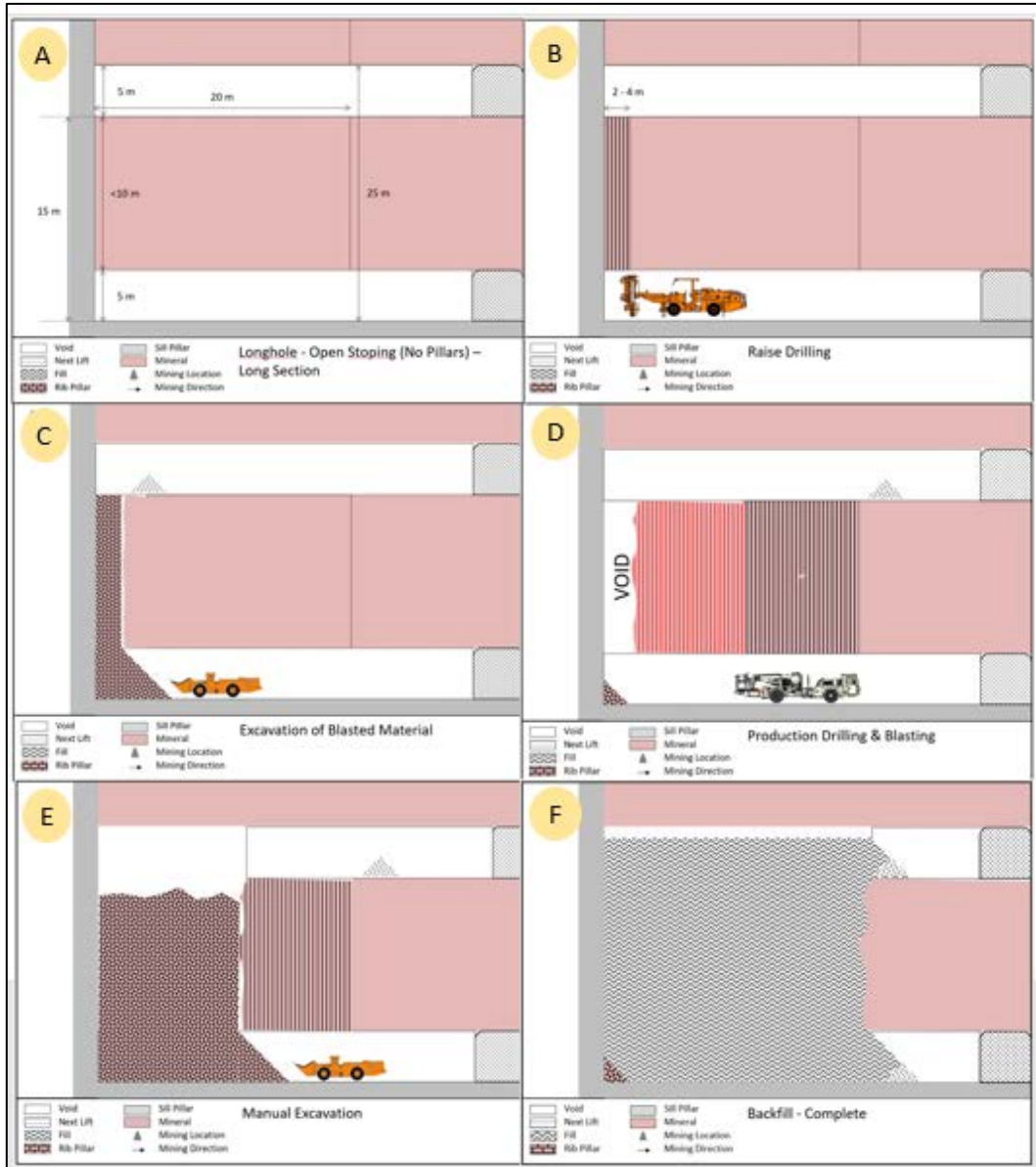


Figure 93: Longhole stope sequence

Unplanned dilution and mining recovery factors for longhole stopping with fill were estimated to be 25% and 80% respectively. The cut-off grade determined for longhole stopping with fill was an NSR value of C\$98.63/t.

15.2.8 Paste Backfill

Paste backfill will be placed in mined stopes to fill voids and assist with ground control and to provide a stable working platform. Paste backfill testwork is in progress at the time of compilation of this report. Conservative assumptions have been made regarding the paste backfill composition, based on similar operations with similar tailings.

The backfill plant will be located to the southwest of the open pit. The selected location allows for delivery of filtered tailings to the backfill plant by trucks, while allowing the paste backfill to hydraulically placed (pumped through pipes) underground. The backfill plant will be constructed in the third year of operations to meet underground backfill schedule requirements, being capable of delivering 1,000 m³ of paste backfill per day.

Delivery of paste backfill to the underground workings will be via an overland pipeline from the backfill plant to the underground portal to connect to the underground ramp system for distribution to production areas.

Paste fill will be contained within the stope by constructing a fill fence in the access as close to the stope as possible. The fill fence will consist of welded wire mesh anchored to the ribs with burlap cloth attached to it. An amount of 200 mm of shotcrete will be applied to the fence. Filling of longhole stopes may be completed in two passes to ensure that head pressure on the fill fence does not become excessive.

15.2.9 Underground Services and Infrastructure

15.2.9.1 Portal Infrastructure

Infrastructure located at the ramp portal will include:

- A basic shelter containing a VHF radio, mine plans and basic emergency procedures for use during emergency/rescue operations
- Tag board
- Indicators to warn of primary ventilation failure
- Stench gas cylinders for the release of stench gas into the ramp in case of emergency
- Intake air heating equipment
- Ore and waste rehandling areas for transfer of ore and waste from the underground mine to the open pit load and haul fleet
- Traffic and miscellaneous safety signage.

15.2.9.2 Water

All underground water will be managed as per the Project's water management plan. Preliminary estimates indicate there will be adequate water produced underground to make underground mining feasible without the addition of water from other sources.

A primary sump system will be created in the main ramp, within 250 m of the main portal. All underground water will report to the main sump. The main sump will act as the main water supply for the underground operations with excess water being pumped directly to the Pit Rim Pond in the Geona Creek Valley.

Below the main sump, the underground dewatering infrastructure will consist of two pump stations and multiple minor sump locations. The cascading pumping system will comprise of pump stations with 2 x WT084 pumps (or similar), in each station where it is expected that only one pump will be required. The system will pump to the primary sump system and is capable of 12.5 l/s per pump, with a maximum capacity of 25 l/s if both pumps are in operation. The minor sumps will have smaller 8 kw pumps (or similar) as needed to meet the water removal requirements of the area.

15.2.9.3 Primary Ventilation

The primary ventilation network for the underground mine will consist of the installation of two primary ventilation fans (72" x 30" 1,200 rpm half-bladed fans or similar) in a bulkhead 20 m inside the exhaust portal to draw fresh air into the mine via the main ramp. The bulkhead will also have a man door to enable it to act as a secondary egress. Internal exhaust raises will be fitted with escape ladderways and will provide a second means of egress in event of the main ramp being compromised.

The Yukon climate requires that the air entering the portals be heated during the coldest part of the year. This will be achieved with a portal fan which heats air using diesel-fired burners and then injects the air into the intake airway using a 75 kW fan.

The capacity of the primary ventilation system has been designed to meet the required ventilation standards, based on the operating equipment detailed in Table 75. A computer (Ventsim) analysis of the primary ventilation circuit confirmed that sufficient airflow will be provided by the ventilation network.

15.2.9.4 Secondary Ventilation

To meet the air flow and distance requirements of the mining areas, 150 HP or similar fans are proposed to provide fresh air to working areas. Two auxiliary ventilation fans (150 HP) per panel will provide fresh airflow to the active headings. Fans will be configured so that one 150 HP fan will provide ventilation to the long hole stopes and the other fan to the cut and fill zones.

15.2.9.5 Compressed Air

Compressed air will be required for shotcreting, refuge chambers, possibly for oilers on the jumbos and bolters and for miscellaneous work where electrical power is not available. A 1,000 cfm compressor will be situated in the upper part of the hangingwall ramp to provide compressed air to the mine. Initially the compressor will be placed near the main ramp portal and will be relocated once the development is sufficiently advanced.

15.2.9.6 Electrical Power

Electrical power will be supplied by the site power station located at the processing facility and will be reticulated underground with cables energised at 4,160 V. Separate 4,160/600 step-down transformers will be used to supply voltages suitable for equipment usage for each mining area.

15.2.9.7 Emergency Facilities

Refuge chambers will be installed in various locations to provide safe refuge for mining personnel when required. All refuge chambers will be fitted with radio communications, drinking water and breathing air sufficient for a minimum of 36 hours of refuge.

Portable four-person refuge chambers will also be provided by the mining contractor for use in single entry headings where the escape route is obstructed by heavy mobile machinery in operation. Twelve-person refuge chambers will be installed in disused ramp stockpiles at various locations to minimise the distance required to travel to refuge chambers from underground working areas. Walking distances to the nearest refuge chamber are not expected to be greater than 750 m.

In addition, a second means of egress (escape route) will be established inside the return air system. This will enable egress from the mine in the case that the main access (the ramp) becomes inaccessible.

16 Mining Methods

This section discusses the proposed mining methods and provides a summary of the information relating to the mining activities after the application of the key modifying factors. This summary establishes the potential amenability of the Mineral Reserve estimate to the application of the proposed mining methods.

16.1 Open Pit Mining

16.1.1 Open Pit Mining Summary

An assessment of open pit mining was completed by Entech. A summary of open pit mining is detailed in Table 68 and Table 69.

Table 68: LOM open pit material movements

| | Volume ('000 BCM) | Tonnes ('000 t) | Density (t/m ³) | Cu (%) | Pb (%) | Zn (%) | Au (g/t) | Ag (g/t) |
|--------------------|-------------------|-----------------|-----------------------------|--------|--------|--------|----------|----------|
| Probable Reserves | 3,838 | 15,503 | 4.0 | 0.9 | 1.5 | 5.5 | 1.2 | 126 |
| Waste | | | | | | | | |
| Class A | 4,314 | 11,595 | 2.7 | | | | | |
| Class B | 17,584 | 47,250 | 2.7 | | | | | |
| Class C | 23,814 | 63,777 | 2.7 | | | | | |
| Overburden | 8,066 | 16,131 | 2.0 | | | | | |
| Total Waste | 53,814 | 138,753 | 2.6 | | | | | |

16.1.2 Open Pit Mining Schedule

The open pit mining schedule was prepared by Entech in Geovia's MineSched software. Open pit mining is scheduled to commence 15 months prior to the commencement of processing to generate overburden and Class C waste rock volumes required for construction purposes. Ore mining from stage one of the ABM pit has been scheduled to commence so that sufficient stocks will be available for processing once plant construction has been completed. A summary of the open pit mining schedule is shown in Table 70 and Table 71.

An open pit mining production rate of 600,000 bcm to 700,000 bcm per month is maintained for the first four years of the open pit mining operation, progressively reducing to a range of 400,000 bcm to 500,000 bcm per month for majority of the remainder of the mine life.

Inferred mineralisation within the designed pit has been treated as waste in the mine plan.

Table 69: Open pit mining summary

| | Units | Total | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|------------------------|---------------|----------------|------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|----------|
| ABM Phase 1 Ore | '000 t | 4,661 | - | 26 | 1,471 | 1,834 | 1,177 | 153 | - | - | - | - | - | - |
| ABM Phase 2 Ore | '000 t | 6,725 | - | - | 114 | 367 | 588 | 1,232 | 1,649 | 1,581 | 1,193 | - | - | - |
| ABM Phase 3 Ore | '000 t | 3,267 | - | - | - | - | - | - | - | 63 | 522 | 1,764 | 918 | - |
| Krakatoa Ore | '000 t | 851 | - | - | - | - | - | - | - | - | - | 33 | 818 | - |
| ABM Phase 1 Waste | '000 t | 21,084 | 3 | 1,393 | 10,085 | 6,808 | 2,575 | 216 | - | - | - | - | - | - |
| ABM Phase 2 Waste | '000 t | 59,377 | 508 | 4,331 | 8,554 | 12,829 | 14,400 | 9,847 | 4,354 | 3,141 | 1,414 | - | - | - |
| ABM Phase 3 Waste | '000 t | 37,055 | - | - | - | - | 1,151 | 5,911 | 9,483 | 8,834 | 7,329 | 3,877 | 469 | - |
| Krakatoa Waste | '000 t | 21,238 | - | - | - | - | - | - | - | 818 | 3,559 | 8,244 | 8,617 | - |
| Total Ore Mined | '000 t | 15,503 | - | 26 | 1,586 | 2,201 | 1,765 | 1,385 | 1,649 | 1,645 | 1,714 | 1,797 | 1,735 | - |
| Cu | % | 0.9 | - | 0.4 | 0.5 | 0.7 | 0.9 | 1.0 | 1.0 | 0.8 | 0.9 | 1.1 | 0.8 | - |
| Pb | % | 1.5 | - | 2.8 | 1.8 | 1.5 | 1.3 | 1.1 | 1.1 | 1.3 | 1.5 | 1.7 | 2.2 | - |
| Zn | % | 5.5 | - | 8.0 | 6.1 | 5.9 | 5.8 | 4.9 | 4.8 | 5.1 | 5.0 | 6.2 | 5.6 | - |
| Au | g/t | 1.2 | - | 2.0 | 1.5 | 1.3 | 1.0 | 1.0 | 1.0 | 1.0 | 1.3 | 1.4 | 1.5 | - |
| Ag | g/t | 126 | - | 225 | 152 | 127 | 105 | 95 | 97 | 100 | 122 | 154 | 173 | - |
| As | ppm | 2,249 | - | 2,957 | 2,814 | 2,483 | 1,853 | 1,688 | 1,489 | 1,244 | 1,968 | 2,975 | 3,475 | - |
| Hg | ppm | 16.2 | - | 15.4 | 20.0 | 19.7 | 16.3 | 13.5 | 12.4 | 10.5 | 15.5 | 19.0 | 16.9 | - |
| Bi | ppm | 49.6 | - | 29.9 | 40.5 | 50.6 | 55.9 | 54.2 | 52.0 | 44.6 | 52.5 | 55.3 | 40.7 | - |
| Sb | ppm | 403 | - | 914 | 605 | 517 | 366 | 281 | 277 | 261 | 279 | 464 | 516 | - |
| Se | ppm | 191 | - | 118 | 142 | 178 | 196 | 179 | 195 | 238 | 230 | 174 | 187 | - |
| Waste | | | | | | | | | | | | | | |
| Class A | '000 t | 11,595 | - | 51 | 1,652 | 1,322 | 1,586 | 1,558 | 1,124 | 965 | 812 | 1,259 | 1,266 | - |
| Class B | '000 t | 47,250 | 67 | 1,810 | 6,487 | 7,328 | 7,029 | 4,868 | 2,884 | 3,236 | 3,666 | 4,702 | 5,172 | - |
| Class C | '000 t | 63,777 | 96 | 2,422 | 8,120 | 9,778 | 8,391 | 6,993 | 8,482 | 7,066 | 5,584 | 4,198 | 2,648 | - |
| Overburden | '000 t | 16,131 | 348 | 1,442 | 2,381 | 1,209 | 1,123 | 2,554 | 1,347 | 1,524 | 2,241 | 1,962 | - | - |
| Total Waste | '000 t | 138,753 | 511 | 5,724 | 18,639 | 19,637 | 18,130 | 15,973 | 13,837 | 12,792 | 12,303 | 12,121 | 9,086 | - |

Table 70: Open pit mine schedule (pre-production and first 12 months)

| | Units | M-15 | M-14 | M-13 | M-12 | M-11 | M-10 | M-9 | M-8 | M-7 | M-6 | M-5 | M-4 | M-3 | M-2 | M-1 | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 | M10 | M11 | M12 |
|-----------------------------------|---------------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Open pit waste | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ABM phase 1 waste | '000 t | - | - | 3 | 9 | 14 | 23 | 28 | 29 | 31 | 202 | 210 | 213 | 212 | 224 | 200 | 239 | 280 | 220 | 955 | 1,066 | 688 | 1,239 | 930 | 1,200 | 995 | 1,034 | 1,240 |
| ABM phase 2 waste | '000 t | 28 | 81 | 399 | 391 | 385 | 377 | 373 | 367 | 369 | 369 | 361 | 342 | 342 | 342 | 313 | 258 | 550 | 775 | 777 | 771 | 776 | 774 | 777 | 778 | 773 | 772 | 773 |
| ABM phase 3 waste | '000 t | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Krakatoa waste | '000 t | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total waste mined | '000 t | 28 | 81 | 402 | 400 | 399 | 400 | 401 | 395 | 399 | 570 | 571 | 555 | 554 | 566 | 513 | 496 | 830 | 995 | 1,732 | 1,837 | 1,463 | 2,014 | 1,707 | 1,978 | 1,767 | 1,805 | 2,013 |
| Open pit high-grade ore | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ABM phase 1 ore | '000 t | - | - | - | - | - | - | - | - | - | - | - | 2 | 18 | - | 5 | 75 | - | 29 | 159 | 182 | 271 | 1 | 324 | - | 256 | 174 | - |
| ABM phase 2 ore | '000 t | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 9 | 15 | 21 | 67 |
| ABM phase 3 ore | '000 t | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Krakatoa ore | '000 t | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total high-grade ore mined | '000 t | - | - | - | - | - | - | - | - | - | - | - | 2 | 18 | - | 5 | 75 | - | 29 | 159 | 182 | 271 | 1 | 326 | 9 | 271 | 195 | 67 |
| Cu | % | - | - | - | - | - | - | - | - | - | - | 0.32 | 0.42 | 0.41 | - | 0.41 | 0.45 | - | 0.46 | 0.43 | 0.42 | 0.42 | 0.53 | 0.51 | 0.80 | 0.55 | 0.64 | 0.67 |
| Pb | % | - | - | - | - | - | - | - | - | - | - | 4.01 | 2.81 | 2.89 | - | 2.56 | 2.26 | - | 2.10 | 2.00 | 1.82 | 1.90 | 1.73 | 1.85 | 1.09 | 1.85 | 1.71 | 0.87 |
| Zn | % | - | - | - | - | - | - | - | - | - | - | 8.99 | 8.35 | 8.17 | - | 7.31 | 6.75 | - | 6.75 | 6.25 | 6.08 | 6.10 | 7.02 | 6.18 | 4.71 | 6.11 | 6.23 | 4.82 |
| Au | g/t | - | - | - | - | - | - | - | - | - | - | 2.46 | 2.13 | 2.01 | - | 1.84 | 1.74 | - | 1.83 | 1.65 | 1.55 | 1.58 | 1.59 | 1.56 | 1.07 | 1.59 | 1.48 | 0.84 |
| Ag | g/t | - | - | - | - | - | - | - | - | - | - | 248 | 255 | 220 | - | 228 | 180 | - | 174 | 168 | 148 | 158 | 149 | 154 | 91 | 150 | 151 | 68 |
| As | ppm | - | - | - | - | - | - | - | - | - | - | 2,315 | 3,372 | 2,638 | - | 3,867 | 3,159 | - | 2,738 | 3,142 | 2,610 | 2,577 | 3,961 | 2,998 | 984 | 3,251 | 2,850 | 677 |
| Hg | ppm | - | - | - | - | - | - | - | - | - | - | 13.2 | 17.3 | 13.9 | - | 20.0 | 16.8 | - | 17.7 | 20.4 | 18.4 | 17.9 | 12.4 | 20.5 | 9.0 | 19.1 | 30.9 | 7.1 |
| Bi | ppm | - | - | - | - | - | - | - | - | - | - | 32.1 | 23.9 | 32.5 | - | 23.7 | 36.5 | - | 34.1 | 33.5 | 40.0 | 35.7 | 41.9 | 41.7 | 43.5 | 46.4 | 46.0 | 38.9 |
| Sb | ppm | - | - | - | - | - | - | - | - | - | - | 1,179 | 860 | 999 | - | 642 | 815 | - | 724 | 649 | 494 | 499 | 440 | 610 | 253 | 589 | 897 | 181 |
| Se | ppm | - | - | - | - | - | - | - | - | - | - | 104 | 124 | 109 | - | 147 | 123 | - | 114 | 129 | 129 | 138 | 237 | 151 | 135 | 140 | 168 | 142 |
| Waste classification | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Class A Waste | '000 t | - | - | - | - | - | - | - | - | - | 2 | 10 | 11 | 16 | 8 | 4 | 35 | 48 | 73 | 158 | 181 | 192 | 149 | 209 | 138 | 120 | 214 | 134 |
| Class B Waste | '000 t | - | - | 67 | 108 | 109 | 122 | 128 | 130 | 136 | 140 | 170 | 189 | 197 | 183 | 198 | 141 | 263 | 419 | 671 | 652 | 653 | 669 | 676 | 565 | 691 | 501 | 587 |
| Class C Waste | '000 t | - | - | 96 | 155 | 157 | 175 | 184 | 187 | 195 | 197 | 224 | 228 | 243 | 248 | 228 | 108 | 324 | 428 | 711 | 815 | 497 | 959 | 654 | 1,084 | 662 | 840 | 1,036 |
| Overburden | '000 t | 28 | 81 | 239 | 137 | 132 | 103 | 90 | 79 | 68 | 231 | 167 | 127 | 98 | 127 | 83 | 212 | 194 | 76 | 192 | 189 | 121 | 237 | 168 | 191 | 295 | 249 | 256 |
| Total waste | '000 t | 28 | 81 | 402 | 400 | 399 | 400 | 401 | 395 | 399 | 570 | 571 | 556 | 554 | 566 | 513 | 496 | 830 | 995 | 1,733 | 1,837 | 1,463 | 2,014 | 1,707 | 1,978 | 1,768 | 1,805 | 2,013 |

Table 71: Mine schedule (annual summary)

| | Units | Total | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|------------------------|---------------|----------------|------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|----------|
| ABM phase 1 ore | '000 t | 4,661 | - | 26 | 1,471 | 1,834 | 1,177 | 153 | - | - | - | - | - | - |
| ABM phase 2 ore | '000 t | 6,725 | - | - | 114 | 367 | 588 | 1,232 | 1,649 | 1,581 | 1,193 | - | - | - |
| ABM phase 3 ore | '000 t | 3,267 | - | - | - | - | - | - | - | 63 | 522 | 1,764 | 918 | - |
| Krakatoa ore | '000 t | 851 | - | - | - | - | - | - | - | - | - | 33 | 818 | - |
| ABM phase 1 waste | '000 t | 21,084 | 3 | 1,393 | 10,085 | 6,808 | 2,578 | 216 | - | - | - | - | - | - |
| ABM phase 2 waste | '000 t | 59,377 | 508 | 4,331 | 8,554 | 12,829 | 14,400 | 9,847 | 4,354 | 3,141 | 1,414 | - | - | - |
| ABM phase 3 waste | '000 t | 37,055 | - | - | - | - | 1,151 | 5,911 | 9,483 | 8,834 | 7,329 | 3,877 | 469 | - |
| Krakatoa waste | '000 t | 21,238 | - | - | - | - | - | - | - | 818 | 3,559 | 8,244 | 8,617 | - |
| Total ore mined | '000 t | 15,503 | - | 26 | 1,586 | 2,201 | 1,765 | 1,385 | 1,649 | 1,645 | 1,714 | 1,797 | 1,735 | - |
| Cu | % | 0.9 | - | 0.4 | 0.5 | 0.7 | 0.9 | 1.0 | 1.0 | 0.8 | 0.9 | 1.1 | 0.8 | - |
| Pb | % | 1.5 | - | 2.8 | 1.8 | 1.5 | 1.3 | 1.1 | 1.1 | 1.3 | 1.5 | 1.7 | 2.2 | - |
| Zn | % | 5.5 | - | 8.0 | 6.1 | 5.9 | 5.8 | 4.9 | 4.8 | 5.1 | 5.0 | 6.2 | 5.6 | - |
| Au | g/t | 1.2 | - | 2.0 | 1.5 | 1.3 | 1.0 | 1.0 | 1.0 | 1.0 | 1.3 | 1.4 | 1.5 | - |
| Ag | g/t | 126 | - | 225 | 152 | 127 | 105 | 95 | 97 | 100 | 122 | 154 | 173 | - |
| As | ppm | 2,249 | - | 2,957 | 2,814 | 2,483 | 1,853 | 1,688 | 1,489 | 1,244 | 1,968 | 2,975 | 3,475 | - |
| Hg | ppm | 16.2 | - | 15.4 | 20.0 | 19.7 | 16.3 | 13.5 | 12.4 | 10.5 | 15.5 | 19.0 | 16.9 | - |
| Bi | ppm | 49.6 | - | 29.9 | 40.5 | 50.6 | 55.9 | 54.2 | 52.0 | 44.6 | 52.5 | 55.3 | 40.7 | - |
| Sb | ppm | 403 | - | 914 | 605 | 517 | 366 | 281 | 277 | 261 | 279 | 464 | 516 | - |
| Se | ppm | 191 | - | 118 | 142 | 178 | 196 | 179 | 195 | 238 | 230 | 174 | 187 | - |
| Waste | | | | | | | | | | | | | | |
| Class A | '000 t | 11,595 | - | 51 | 1,652 | 1,322 | 1,586 | 1,558 | 1,124 | 965 | 812 | 1,259 | 1,266 | - |
| Class B | '000 t | 47,250 | 67 | 1,810 | 6,487 | 7,328 | 7,029 | 4,868 | 2,884 | 3,236 | 3,666 | 4,702 | 5,172 | - |
| Class C | '000 t | 63,777 | 96 | 2,422 | 8,120 | 9,778 | 8,391 | 6,993 | 8,482 | 7,066 | 5,584 | 4,198 | 2,648 | - |
| Overburden | '000 t | 16,131 | 348 | 1,442 | 2,381 | 1,209 | 1,123 | 2,554 | 1,347 | 1,524 | 2,241 | 1,962 | - | - |
| Total waste | '000 t | 138,753 | 511 | 5,724 | 18,639 | 19,637 | 18,130 | 15,973 | 13,837 | 12,792 | 12,303 | 12,121 | 9,086 | - |

16.1.3 Equipment and Labour Schedules

Entech prepared an estimate of mine equipment and labour requirements based on industry experience, contractor consultation and first principles derivation. The projected equipment and labour requirements for the Project detailed in Table 72 and Table 73 respectively are sufficient to complete all planned open pit mining works.

Table 72: LOM open pit equipment requirements

| | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|---------------------------|-----|-----|----|----|----|----|----|----|----|----|----|-----|
| 250-t Hydraulic Excavator | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| 200-t Hydraulic Excavator | - | - | 1 | 1 | 1 | - | - | - | - | - | - | - |
| 50-t Hydraulic Excavator | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - |
| 100-t Front End Loader | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - |
| 90-t Dump Truck | 4 | 5 | 18 | 17 | 16 | 14 | 13 | 11 | 11 | 11 | 10 | - |
| 500-hp Track Dozer | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| 16' Blade Grader | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - |
| Water Truck | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Blast Hole Drill | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | - |
| Presplit Drill | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |

Table 73: LOM open pit labour requirements

| | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| Excavator Operator | 6 | 6 | 9 | 9 | 9 | 6 | 6 | 6 | 6 | 6 | 6 | - |
| Truck Driver | 11 | 14 | 49 | 46 | 44 | 38 | 36 | 30 | 30 | 30 | 27 | - |
| Dozer Operator | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | - |
| Grader/Water Truck Operator | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | - |
| Driller | 3 | 3 | 6 | 6 | 6 | 6 | 6 | 3 | 3 | 3 | 3 | - |
| Front End Loader | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Blast Crew | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | - |
| Subtotal – Operators | 44 | 47 | 88 | 85 | 83 | 74 | 72 | 63 | 63 | 63 | 60 | - |
| Tradesmen – Electric | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Tradesmen – Boilermaker | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | - |
| Tradesmen – Mechanical | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | - |
| Fuel and Lube | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Subtotal – Maintenance | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | - |
| Contractor Manager | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Mining Foreman | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Shift Supervisor | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | - |
| Safety and Training | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Dispatch | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Maintenance Foreman | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Maintenance Supervisor | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Clerk | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - |
| Subtotal – Contractor Staff | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | - |
| Mining Manager | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Open Pit Foreman | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Chief Geologist | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Geologist | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - |
| Grade Control Technician | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Chief Mining Engineer | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Mining Engineer | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Mine Technician | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |

| | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|-----------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|----------|
| Senior Surveyor | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Surveyor | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - |
| Clerk | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - |
| Subtotal – BMC Staff | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | - |
| TOTAL | 111 | 114 | 155 | 152 | 150 | 141 | 139 | 130 | 130 | 130 | 127 | - |

16.2 Underground Mining

16.2.1 Underground Mining Schedule

The underground mine is scheduled to commence at the end of year 2 when the ABM Zone stage 1 open pit has progressed down to the 1,340 mRL bench. The underground schedule will finish just prior to completion of open pit mining at the end of year 9. The underground mine is scheduled to produce at a variable rate over its life, peaking at 620,000 tonnes of ore in year 4.

The objectives adopted in preparing the underground schedule are summarised below:

- Ensure a smooth ramp-up to steady ore production
- Minimise variations in development and production rates to avoid additional project costs due to over and under-utilisation of the contractor’s equipment
- Maintain capital development approximately one full stope block ahead of production to enable capital infrastructure to be established on a “just in-time” basis
- Stope production can only commence once the main return airway and second egress is established
- As access is shared between the longhole stopes and cut and fill production areas, cut and fill production is constrained to allow longhole stoping on the hangingwall to be completed as a priority, followed by the first lift of cut and fill stopes and lastly footwall longhole stopes.

An annual summary of the underground mining schedule is detailed in Table 74.

Table 74: Underground mining schedule

| | Total | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|--------------------------------------|------------------|-----|-----|----|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| Lateral capital (m) | 3,027 | - | - | - | 465 | 2,391 | 171 | - | - | - | - | - | - |
| Lateral operating (m) | 22,831 | - | - | - | - | 587 | 6,634 | 5,610 | 3,643 | 2,151 | 2,290 | 1,916 | - |
| Total lateral development (m) | 25,858 | - | - | - | 465 | 2,978 | 6,805 | 5,610 | 3,643 | 2,151 | 2,290 | 1,916 | - |
| Vertical development (m) | 139 | - | - | - | - | 112 | 26 | - | - | - | - | - | - |
| Longhole drilling (m) | 37,166 | - | - | - | 168 | 1,440 | 20,853 | 9,258 | 1,573 | 3,722 | 48 | 104 | - |
| Paste backfill (m ³) | 555,111 | - | - | - | - | 894 | 157,917 | 109,524 | 84,531 | 49,172 | 45,300 | 107,774 | - |
| Development ore (t) | 1,889,585 | - | - | - | - | 53,903 | 511,913 | 470,750 | 314,404 | 182,915 | 185,824 | 169,877 | - |
| Production (t) | 164,095 | - | - | - | - | - | 107,704 | 37,196 | 5,492 | 13,704 | - | - | - |
| Total ore (t) | 2,053,680 | - | - | - | - | 53,903 | 619,617 | 507,946 | 319,896 | 196,619 | 185,824 | 169,877 | - |
| Waste (t) | 396,312 | - | - | - | 36,922 | 189,052 | 79,238 | 34,735 | 19,595 | 10,523 | 18,915 | 7,333 | - |
| Total mined (t) | 2,449,992 | - | - | - | 36,922 | 242,954 | 698,854 | 542,680 | 339,491 | 207,142 | 204,739 | 177,210 | - |
| Ore grades | | | | | | | | | | | | | |
| Cu (%) | 0.5 | - | - | - | - | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | - |
| Pb (%) | 2.4 | - | - | - | - | 2.1 | 2.2 | 2.3 | 2.3 | 2.5 | 2.8 | 3.0 | - |
| Zn (%) | 5.6 | - | - | - | - | 5.3 | 5.3 | 5.3 | 5.8 | 5.5 | 5.7 | 5.8 | - |
| Au (g/t) | 1.3 | - | - | - | - | 1.0 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 | 1.4 | - |
| Ag (g/t) | 156 | - | - | - | - | 104 | 153 | 163 | 142 | 162 | 167 | 170 | - |

16.2.2 *Underground Mining Personnel and Equipment Requirement*

Mine equipment and labour requirements have been derived from industry experience, contractor consultation and first principals. The listed equipment types have been determined following a review of the mine design and schedule requirements.

Development and cut and fill stoping will share the same equipment. Drilling will be completed using electric hydraulic two boom Jumbos (Sandvik 421, Atlas Copco 282 or similar). Bolters (Atlas Copco Boltec, Sandvik Robolt or similar), capable of installing all the required ground support will supplement the development drilling fleet. These rubber-tyred machines use diesel engines for tramping and connect to the mine power and water supply for drilling.

A production drill rig (Atlas Copco 1354 Simba or similar) will be required to drill 20 m longholes for the longhole stopes. Hole diameters are expected to range between 76 mm (for production blast-holes) and 203 mm (for void holes).

Emulsion-style explosives will be used for underground blasting, to minimise the propensity for initiating sulphide dust explosions and due its ability to be used in wet holes. The emulsion will be transported and loaded into development or production blast holes with a Getman style “powder truck”.

Haulage will be completed with standard 50-tonne underground haul trucks (Atlas Copco MT 5020 or similar). Trucks will be loaded by 7.2 m³ underground loaders (CAT R2900 or similar) and will muck development headings as required. 5.7 m³ loaders (CAT R1700 or similar) will be primarily used for mucking of production ore and will be fitted with remote capabilities.

A number of additional pieces of equipment will be required for the day-to-day operation of the underground mine. These include:

- **Shotcrete and trans-mixer:** Shotcrete will be used for ground support, if required, and for building paste fill fences.
- **Getman, IT or similar:** Utilities and other service tasks will be completed using a machine capable of lifting personnel to the maximum heights expected (6 m), along with their supplies.
- **Utility or clean up loader:** A small underground loader will be required for various tasks around the mine. These will include cleaning roadways, sumps, removing trash and other tasks as required.
- **Getman with a jib, or similar:** This piece of equipment will move stores from the surface to underground laydowns.
- **Grader:** A grader will be required for underground road maintenance. It is expected that the grader utilised for access road maintenance may be able to fulfil the underground grading requirements.
- **Underground personnel vehicles:** Vehicles will be required to transport personnel and supplies around the mine. These could be tractors, pickups or specially built underground personnel vehicles.

The proposed underground mining fleet and personnel requirement are outlined in Table 75 and Table 76 respectively.

Table 75: Underground mining fleet requirement

| | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|---------------------|-----|-----|----|----|----|----|----|----|----|----|----|-----|
| Trucks | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Scoop | - | - | - | 1 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | - |
| Twin-Boom Jumbo | - | - | - | 1 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | - |
| Longhole Drill | - | - | - | - | - | 1 | 1 | 1 | - | - | - | - |
| Grader | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Bolter | - | - | - | 1 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | - |
| Getman Powder Truck | - | - | - | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | - |
| Light Vehicle | - | - | - | 5 | 8 | 8 | 8 | 8 | 8 | 5 | 5 | - |
| IT | - | - | - | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | - |

Table 76: Underground personnel requirement

| | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|------------------------------------|-----|-----|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| Truck Driver | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Scooper Operator | - | - | - | 3 | 9 | 9 | 9 | 9 | 6 | 3 | 3 | - |
| Twin Boom Jumbo Operator | - | - | - | 3 | 9 | 9 | 9 | 9 | 6 | 3 | 3 | - |
| Longhole Driller | - | - | - | - | - | 3 | 3 | 3 | - | - | - | - |
| Bolter Operator | - | - | - | 3 | 9 | 9 | 9 | 9 | 6 | 3 | 3 | - |
| Getman Blastcrew | - | - | - | 3 | 3 | 6 | 6 | 6 | 3 | 3 | 3 | - |
| Labourers | - | - | - | 6 | 12 | 12 | 12 | 12 | 6 | 6 | 6 | - |
| Subtotal – Operators | - | - | - | 21 | 45 | 51 | 51 | 51 | 30 | 21 | 21 | - |
| Tradesmen – Electrical | - | - | - | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | - |
| Tradesmen – Boilermaker | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Tradesmen – Mechanical | - | - | - | 3 | 3 | 9 | 9 | 9 | 9 | 3 | 3 | - |
| Subtotal – Maintenance | - | - | - | 6 | 13 | 13 | 13 | 13 | 12 | 6 | 6 | - |
| Contractor Manager | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Mining Foreman | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Shift Supervisor | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - |
| Safety and Training | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Maintenance Supervisor | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Clerk | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Subtotal – Contractor Staff | - | - | - | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | - |
| Underground Superintendent | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Underground Foreman | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - |
| Geologist/Sampler | - | - | - | 3 | 6 | 6 | 6 | 6 | 3 | 3 | 3 | - |
| Mining Engineer | - | - | - | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | - |
| Surveyor | - | - | - | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | - |
| Subtotal – BMC Staff | - | - | - | 7 | 12 | 12 | 12 | 12 | 7 | 7 | 7 | - |
| TOTAL | - | - | - | 42 | 78 | 84 | 84 | 84 | 57 | 42 | 42 | - |

16.3 Life of Mine Schedule

The complete LOM schedule, showing production from both open pit and underground sources is shown in Table 77. Ore mined over the LOM plan totals 17.6 Mt at grades of 0.8% copper, 5.5% zinc, 1.6% lead, 1.2 g/t gold and 129 g/t silver.

The LOM schedule has been prepared utilising Probable Reserves to meet process plant feed requirements. Within the pit design approximately 275,000 tonnes of Inferred mineralisation will be mined. The Inferred material has been treated as waste in the mine plan. Future mine development work will investigate the likelihood of bringing this material into the mining reserve. Similarly, the deepest lenses in the Krakatoa Zone are classified as Inferred resources and have not been included in the underground mine plan. Preliminary estimates indicate that, with additional drilling and sampling, these

lenses can be converted to a higher confidence resource category, resulting in an estimated 350,000 to 400,000 tonnes being added to the underground mine plan.

Mineralised waste currently considered uneconomic using the PFS economic and technical parameters and other currently “unclassified” mineralisation has been treated as waste in the mine plan.

Table 77: LOM schedule

| | Units | LOM | Pre-production years | | Production years | | | | | | | | | |
|--------------------------|---------------|----------------|----------------------|--------------|------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|----------|
| | | | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
| Open pit waste mined | '000 t | 138,754 | 511 | 5,724 | 18,639 | 19,636 | 18,130 | 15,974 | 13,837 | 12,792 | 12,303 | 12,121 | 9,086 | - |
| Open pit ore mined | '000 t | 15,503 | - | 26 | 1,586 | 2,201 | 1,765 | 1,385 | 1,649 | 1,645 | 1,714 | 1,797 | 1,735 | - |
| Cu | % | 0.86 | - | 0.41 | 0.50 | 0.74 | 0.92 | 0.99 | 0.99 | 0.77 | 0.91 | 1.08 | 0.85 | - |
| Pb | % | 1.52 | - | 2.83 | 1.83 | 1.53 | 1.29 | 1.09 | 1.14 | 1.30 | 1.49 | 1.70 | 2.20 | - |
| Zn | % | 5.54 | - | 8.02 | 6.13 | 5.93 | 5.78 | 4.92 | 4.83 | 5.11 | 5.02 | 6.21 | 5.59 | - |
| Au | g/t | 1.23 | - | 1.99 | 1.55 | 1.29 | 1.04 | 0.98 | 0.97 | 0.96 | 1.29 | 1.39 | 1.51 | - |
| Ag | g/t | 126 | - | 225 | 152 | 127 | 105 | 95 | 97 | 100 | 122 | 154 | 173 | - |
| Underground waste mined | '000 t | 396 | - | - | - | 37 | 189 | 79 | 35 | 20 | 11 | 19 | 7 | - |
| Underground ore mined | '000 t | 2,054 | - | - | - | - | 54 | 620 | 508 | 320 | 197 | 186 | 170 | - |
| Cu | % | 0.50 | - | - | - | - | 0.18 | 0.49 | 0.52 | 0.44 | 0.56 | 0.55 | 0.57 | - |
| Pb | % | 2.36 | - | - | - | - | 0.65 | 2.22 | 2.27 | 2.55 | 2.34 | 2.70 | 3.02 | - |
| Zn | % | 5.49 | - | - | - | - | 1.87 | 5.39 | 5.89 | 5.55 | 5.33 | 5.63 | 5.76 | - |
| Au | g/t | 1.30 | - | - | - | - | 0.32 | 1.29 | 1.29 | 1.30 | 1.36 | 1.45 | 1.41 | - |
| Ag | g/t | 153 | - | - | - | - | 35 | 151 | 164 | 142 | 161 | 164 | 165 | - |
| Total waste mined | '000 t | 139,150 | 511 | 5,724 | 18,639 | 19,673 | 18,319 | 16,053 | 13,872 | 12,812 | 12,313 | 12,140 | 9,094 | - |
| Total ore mined | '000 t | 17,557 | - | 26 | 1,586 | 2,201 | 1,819 | 2,004 | 2,157 | 1,965 | 1,911 | 1,983 | 1,905 | - |
| Cu | % | 0.82 | - | 0.41 | 0.50 | 0.74 | 0.90 | 0.84 | 0.88 | 0.72 | 0.87 | 1.03 | 0.82 | - |
| Pb | % | 1.62 | - | 2.83 | 1.83 | 1.53 | 1.27 | 1.44 | 1.41 | 1.50 | 1.58 | 1.79 | 2.28 | - |
| Zn | % | 5.53 | - | 8.02 | 6.13 | 5.93 | 5.66 | 5.06 | 5.08 | 5.18 | 5.05 | 6.16 | 5.60 | - |
| Au | g/t | 1.24 | - | 1.99 | 1.55 | 1.29 | 1.02 | 1.08 | 1.04 | 1.02 | 1.30 | 1.40 | 1.50 | - |
| Ag | g/t | 129 | - | 225 | 152 | 127 | 103 | 113 | 113 | 107 | 126 | 155 | 172 | - |

17 Recovery Methods

17.1 Introduction

The KZK process plant and associated service facilities will process ROM ore at a nominal rate of 2.0 Mt/a, to produce separate copper, lead and zinc concentrates and tailings. The process consists of crushing and grinding of the ore, separate sequential pre-float, rougher and cleaner flotation of copper, lead and zinc and regrind of copper, lead and zinc rougher concentrates. Concentrates will be thickened, filtered and stockpiled on site prior to being loaded onto trucks for transport to third party smelters. The flotation tailings will be dewatered by thickening and vacuum filtration before the tailings are transported either for disposal at the Class A Waste Storage Facility or combined with cement to produce underground backfill paste.

Allowances for gravity gold and silver recovery have not been included in recovery estimates for the purposes of this Technical Report as additional work is required to improve circuit recovery predictions, although a gravity circuit is shown on the process flowsheet due to the expectation that it will be shown to be economically viable in the future. The proposed flowsheet is summarised in Figure 94.

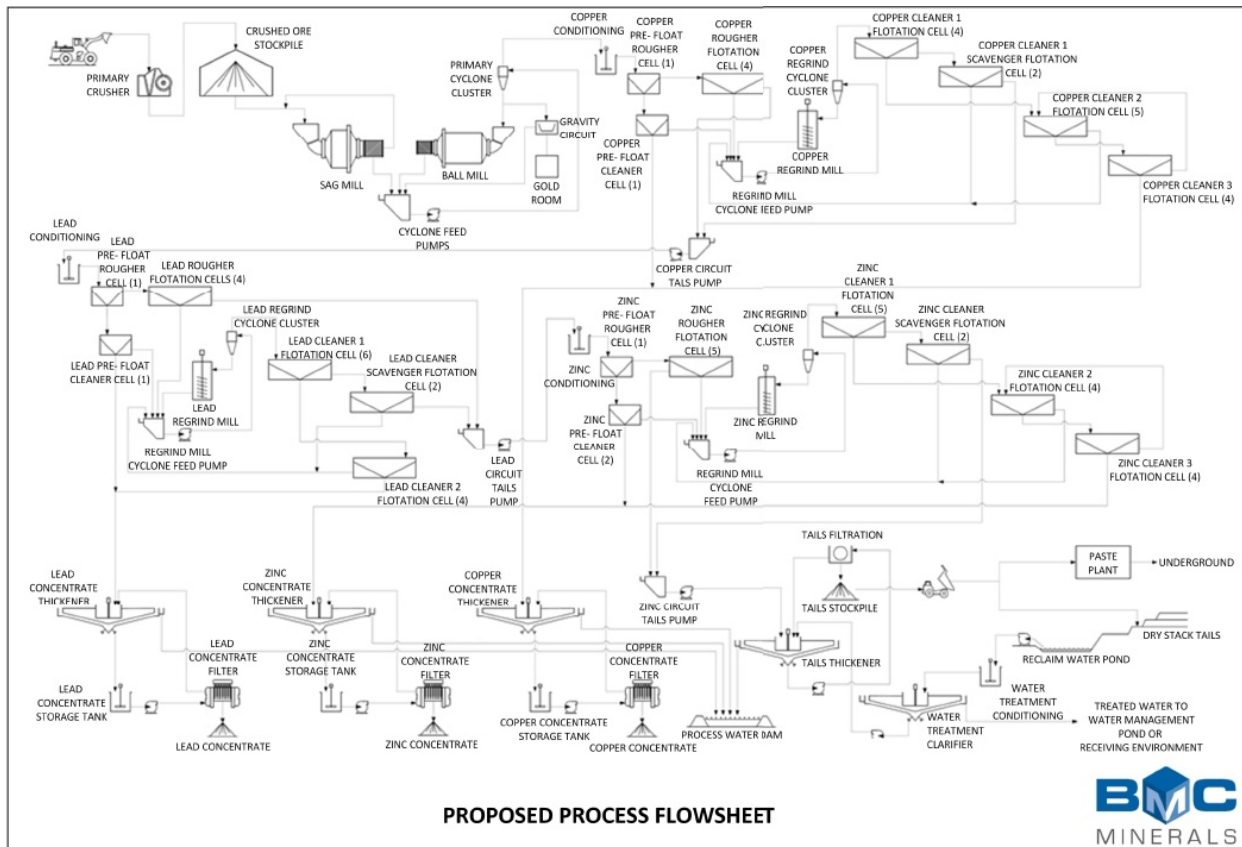


Figure 94: Process flowsheet

Predicted average processing recoveries over the LOM are shown in Table 78. Average concentrate grades over the LOM are predicted to be 22.8% copper, 56.0% lead and 51.5% zinc for copper, lead and zinc concentrates respectively.

Table 78: Average LOM processing recoveries

| Concentrate | Copper (%) | Lead (%) | Zinc (%) | Gold (%) | Silver (%) |
|-------------|------------|----------|----------|----------|------------|
| Copper | 81.5% | 6.5% | 3.4% | 41.9% | 42.6% |
| Lead | 1.2% | 58.7% | 1.3% | 18.4% | 25.1% |
| Zinc | 5.6% | 16.3% | 85.9% | 8.7% | 14.6% |

17.2 Process Plant

Detailed process design criteria have been prepared incorporating the process mass balance, engineering design criteria and key design criteria derived from the results of the metallurgical testwork program. The proposed process plant design and control are based on unit operations that are well proven in the base metals industry.

17.2.1 Crushing

Ore will be transported from the open pit and underground mines to the ROM pad stockpiles by mine haul trucks. ROM ore will be reclaimed from the stockpiles by front-end loader and fed into a 100-tonne ROM bin that will provide 20 minutes live capacity. ROM ore will be withdrawn from the bin by an apron feeder.

The primary crusher will be a 1,400 mm x 1,070 mm open circuit jaw crusher capable of handling an ore top size of 900 mm. The Primary Crusher will have a Closed Side Setting (CSS) of 125 mm and reduce material to nominally P₈₀ 90 mm based on the soft nature of the ore.

A dust suppression system with baghouse filter will be installed in the crushing system and discharge conveying system to minimise dust. Spray nozzles will also be used around the ROM bin and transfer points.

The primary crusher will have an availability of 75% based on similar installations, giving a nominal crushing rate of 304 tonnes per hour (t/h). The primary crusher will discharge onto a conveyor then onto a stockpile feed conveyor. Tramp material (waste metal that has entered the ore stream; e.g. bucket teeth and bolts) will be removed from the crushed ore stream at the conveyor transfer point between the primary crusher discharge conveyor and the crushed ore stockpile feed conveyor by a fixed self-cleaning magnet. Allowance has been made for a diverter gate at the conveyor transfer point to allow for material to be diverted to a future Heavy Media Separation (HMS) plant.

The crushed ore stockpile will provide a minimum of 3,000 tonnes of live storage with two reclaim apron feeders located in an under-pile tunnel. The stockpile will provide 12 hours storage capacity at the nominal semi-autogenous grinding (SAG) mill feed rate. Each apron feeder will provide the nominal SAG mill feed rate of 245 t/h. The stockpile will be conical in shape and covered to minimise dust generation.

17.2.2 Milling

The grinding circuit will comprise a single open circuit SAG mill and single ball mill in closed circuit with cyclones to produce a final product of P₈₀ 70 µm at 245 t/h. The SAG mill will be a 6.4 m diameter x 3.7 m effective grinding length (EGL), grate discharge, steel-lined mill, driven by a 2.5 MW single pinion drive. The mill will be driven by a variable speed drive with a range of 60% to 80% of critical speed. The mill will operate with a nominal ball charge of 10% and a total charge of 30% of mill volume.

The SAG mill will discharge over a 12 mm aperture trommel screen. Trommel oversize (pebbles and steel scats) will be returned to the mill feed conveyor via three return conveyors. A tramp metal magnet will remove steel scats from the transfer point between the first and second return conveyors to minimise the amount of undersize steel in the SAG mill.

The ball mill will be a 4.7 m diameter x 7.2 m EGL, overflow discharge, rubber-lined mill driven by a 2.5 MW single pinion drive. The mill will be driven by a fixed speed drive and will operate at nominally 75% of critical speed. The mill will operate with a nominal ball charge of 30% of mill volume. The ball mill will discharge over a 10 mm aperture trommel screen, with the oversize discharging into a bunker for regular collection and disposal by a front-end loader or skidsteer loader. The trommel screen undersize will gravitate into the combined mill discharge hopper.

The SAG mill trommel screen undersize will also gravitate to the mill discharge hopper, where the combined mill discharge will be diluted with process water and pumped via duty/standby pumps to a hydrocyclone cluster for classification. The cluster will consist of four 660 mm diameter cyclones with three operating and one standby. The overflow from the cluster will flow by gravity to the flotation feed trash screen, to remove any trash prior to flotation. The cyclone underflow will gravitate to a splitter box, with part of the underflow reporting to a gravity circuit for recovery of free gold prior to reporting to the ball mill with the balance of the cyclone underflow stream for further grinding.

The total recirculating load for the circuit will be 300%, to allow for 250% which is typical of SAB circuits, plus 50% for the return of the gravity circuit tails to the mill discharge hopper. A portion of the cyclone underflow can be directed to the SAG mill to facilitate balancing of the grinding in the SAG and ball mills as the SAG mill will generally have spare capacity on most ore types.

A common liner handler will be used to facilitate removal and installation of the SAG and ball mill liners during planned mill relines.

An overhead gantry crane will be provided for maintenance of the mills and cyclones. Monorails will be provided where access is denied to the gantry crane.

17.2.3 Flotation

The ball mill cyclone overflow will be pumped to the first of two agitated conditioning tanks. Plant air will be added to the first of the conditioning tanks to provide aeration; reagents will be added to the second tank. A total of 10.5 minutes residence time will be provided by the two tanks. The flotation circuit will be a sequential circuit, with copper, lead and zinc recovered from the circuit in that order. All flotation cells will be agitated, forced air conventional cells.

17.2.3.1 Copper Flotation Circuit

Conditioned slurry will flow by gravity to the first of five 38 m³ flotation cells in series, with concentrate removed from the first cell as a pre-float rougher stage. This concentrate will be pumped to a single 8 m³ pre-float cleaner cell, where the concentrate will be upgraded and directed straight to the final concentrate hopper. Tailings will flow by gravity, where they will be combined with the copper rougher concentrate collected from the subsequent four rougher cells and pumped via duty/standby pumps to the copper regrind cyclone cluster for classification and regrinding. Tailings from the copper rougher cells will flow by gravity to the copper flotation tails hopper.

Combined copper rougher flotation concentrate and pre-float cleaner tailings will be classified in a cluster of four 250 mm cyclones, with the cyclone overflow having a P₈₀ of 30 µm. Cyclone overflow will gravitate to the copper cleaning circuit, while the underflow will gravitate to the copper regrind mill. The copper regrind mill will be a Metso Stirred Media Detritor (SMD) and will draw approximately 190 kW of the 355 kW installed power.

Regrind copper concentrate will flow by gravity to a copper cleaning circuit. The copper cleaner flotation circuit will consist of three stages of cleaning, with cleaner scavenging on the first stage.

The first copper cleaning stage will consist of four 8 m³ cells in series. Concentrate from the first copper cleaning stage will be pumped to the second copper cleaning stage, with tailings flowing by gravity to two

8 m³ copper cleaner-scavenger cells in series. Concentrate from the copper cleaner scavenger cells will be pumped to the copper rougher flotation concentrate hopper for regrinding. Tails from the copper cleaner-scavenger cells will flow by gravity to a conditioning tank, where lead flotation reagents will be added. The overflow from the conditioning tank will flow by gravity to the copper flotation tails hopper, where it will be combined with the copper rougher tailings and pumped to the lead flotation circuit.

The second stage of copper cleaning flotation will consist of five 4.3 m³ cells in series. Concentrate from the second copper cleaner stage will be pumped to the third copper cleaning stage, with tailings pumped to the copper rougher flotation concentrate hopper for regrinding.

The third stage of copper cleaning flotation will consist of four 4.3 m³ cells in series. Concentrate from the third copper cleaner stage will be pumped to the final concentrate hopper, where it will be combined with the copper pre-float cleaner concentrate before pumping to concentrate dewatering. Tailings will flow by gravity to the second stage of copper cleaning flotation.

17.2.3.2 Lead Flotation Circuit

Tails from the copper flotation circuit will be pumped to the first of two agitated lead conditioning tanks, where reagents will be added. A total of six minutes residence time will be provided by the two tanks. Conditioned slurry will flow by gravity to the first of five 38 m³ lead flotation cells in series, with concentrate removed from the first cell as a pre-float rougher stage. This concentrate will be pumped to a single 8 m³ pre-float cleaner cell, where the concentrate will be upgraded and directed straight to the final concentrate hopper. Tailings will flow by gravity, where they will be combined with the lead rougher concentrate collected from the subsequent four 38 m³ rougher cells and pumped via duty/standby pumps to the lead regrind cyclone cluster for classification and regrinding. Tailings from the lead rougher cells will flow by gravity to the lead flotation tails hopper.

Combined lead rougher flotation concentrate and pre-float cleaner tails will be classified in a cluster of four 250 mm cyclones, with the cyclone overflow having a P₈₀ of 30 µm. Cyclone overflow will gravitate to the lead cleaning circuit, while the underflow will gravitate to the lead regrind mill. The lead regrind mill will be a Metso SMD and will draw approximately 190 kW of the 355 kW installed power. This unit is the same size as the copper regrind mill, allowing commonality of spares.

Re-ground rougher lead concentrate will flow by gravity to a lead cleaning circuit. The lead cleaner flotation circuit will consist of two stages of cleaning, with cleaner scavenging on the first stage.

The first lead cleaning stage will consist of six 8 m³ cells in series. Concentrate from the first lead cleaning stage will be pumped to the second lead cleaning stage for recleaning, and tailings will flow by gravity to two 8 m³ lead cleaner-scavenger cells in series. Concentrate from the lead cleaner-scavenger cells will be pumped to the lead rougher flotation concentrate hopper for regrinding. Tails from the lead cleaner-scavenger cells will flow by gravity to the lead flotation tails hopper, where they will be combined with the lead rougher tails and pumped to the zinc flotation circuit.

The second stage of lead cleaning flotation will consist of four 4.3 m³ cells in series. Concentrate from the second stage will be pumped to the final concentrate hopper, where it will be combined with the lead pre-float cleaner concentrate before pumping to concentrate dewatering. Tailings will be pumped to the lead rougher flotation concentrate hopper for regrinding.

17.2.3.3 Zinc Flotation Circuit

Tails from the lead flotation circuit will be pumped to the first of two agitated zinc conditioning tanks, where reagents will be added. A total of 7.5 minutes residence time will be provided by the two tanks.

Conditioned slurry will flow by gravity to the first of six 38 m³ zinc flotation cells in series, with concentrate removed from the first cell as a pre-float rougher stage. This concentrate will be pumped to two 16 m³

pre-float cleaner cells, where the concentrate will be upgraded and directed straight to the final concentrate hopper. Tailings will flow by gravity, where they will be combined with the zinc rougher concentrate collected from the subsequent five rougher cells and pumped via duty/stand-by pumps to the zinc regrind cyclone cluster for classification and regrinding. Tailings from the zinc rougher cells will flow by gravity to the tails hopper.

Combined zinc rougher flotation concentrate and pre-float cleaner tails will be classified in a cluster of six 380 mm cyclones, with the cyclone overflow having a P_{80} of 35 μm . Cyclone overflow will gravitate to the zinc cleaning circuit, while the underflow will gravitate to the zinc regrind mill. The zinc regrind mill will be a Metso SMD and will draw 340 kW of the installed 355 kW. This unit will be the same size as the copper and lead regrind mills, allowing commonality of spares.

Re-ground zinc concentrate will flow by gravity to a zinc cleaning circuit. The zinc cleaner flotation circuit will consist of three stages of cleaning, with cleaner scavenging on the first stage.

The first zinc cleaning stage will consist of five 16 m³ cells in series. Concentrate from the first zinc cleaning stage will be pumped to the second zinc cleaning stage, with tailings flowing by gravity to two 16 m³ zinc cleaner-scavenger cells in series. Concentrate from the zinc cleaner scavenger cells will be pumped to the zinc rougher flotation concentrate hopper for regrinding. Tails from the zinc cleaner scavenger cells will flow by gravity to the tails hopper.

The second stage of zinc cleaning flotation will consist of four 16 m³ cells in series. Concentrate from the second zinc cleaner stage will be pumped to the third zinc cleaning stage, and tailings will be pumped to the zinc rougher flotation concentrate hopper for regrinding.

The third stage of zinc cleaning flotation will consist of four 16 m³ cells in series. Concentrate from the third zinc cleaner stage will be pumped to concentrate dewatering, and tailings flow by gravity to the second stage of zinc cleaning flotation.

17.2.4 Sampling and Analysis

Flotation feed, concentrates and tailings streams as well as copper, lead and zinc regrind cyclone overflow streams will be sampled and pumped to the OSA area.

An online analyser will provide continuous sampling and assay of the 14 selected streams. Final concentrate streams will be pumped to the respective concentrate thickener and low-grade sample streams will be pumped back to the respective flotation feed.

A Particle Size Analyser will provide grind size data on the ball mill cyclone overflow and copper, lead and zinc regrind mill cyclone overflow streams.

17.2.5 Concentrate Area

Copper, lead and zinc final concentrates will be thickened in purpose designed thickeners. The overflow from each thickener will flow to a common thickener overflow tank, where the streams will be combined and pumped to the process water pond. Thickened concentrates, at nominally 60% solids w/w will be stored in agitated storage tanks providing 24 hours of residence time.

Thickened concentrates will be dewatered using vacuum or pressure filters to nominally 9% moisture. A common size 42 m² filter will be used for all three duties, with single filters required for copper and lead and two filters required for the zinc duty. Filtered concentrates will be dumped into bunkers directly below the respective filter.

Filtered concentrate will be removed by front-end loader and stacked inside a storage shed, with nominally seven days storage capacity for each concentrate. Copper and zinc concentrate will be bulk loaded into trucks and lead into 30-tonne sealed containers for transport off site for further processing.

17.2.6 Tailings Dewatering and Disposal

Zinc flotation tailings will be collected in a tails hopper before the tailings are pumped to a purpose designed thickener for dewatering. The thickener overflow will flow by gravity to the process water pond for reuse. Thickener underflow, that has been dewatered to nominally 60% solids w/w, will be fed to a splitter box which evenly distributes the flow between two 750 m³ agitated filtration feed tanks. Each filtration tank will feed a 176 m² vacuum disc filter which dewateres the tailings to a produce a filter cake with a moisture content of 15% with the assistance of flocculant. The filtrate will flow by gravity back to the tailings thickener, while the filter cake will be stockpiled for reclaim and transport by truck to either the Class A Waste Storage Facility or the paste plant.

17.2.7 Paste Fill Plant

Dry tailings will be transported from the process plant to the paste plant site and stockpiled for producing backfill paste. The volume of paste required per annum is 250,000 m³. At this paste plant production rate, a paste plant utilisation of 43% is required.

When the paste plant is in operation, the dry tailings will be reclaimed by front-end loader into a dump hopper, which will feed the tails to a pug type paste mixer. The tails filter cake will be combined with cement and/or binder before being transferred into a paste collection hopper for delivery underground by gravity via an overland pipeline.

17.2.8 Process Control Philosophy

The plant will be appropriately automated to reduce the need for operator intervention on a continuous basis. Moderate levels of process and engineering data collection and equipment monitoring will be provided.

Field instruments will provide inputs to a set of programmable logic controllers (PLCs). Process control cubicles will be located in the motor control centres, and contain the PLC hardware, power supplies, and input/output cards for instrument monitoring and loop control.

The PLCs will perform the control functions by:

- collecting status information of drives, instruments, and packaged equipment
- providing drive control and process interlocking
- providing proportional-integral-derivative (PID) control for process control loops.

The plant will have a central control room from which the status of major electrical and mechanical equipment can be monitored and major regulatory control loops can be monitored and adjusted. Additional control stations will be located in the crusher control room and the filter area. Standard personal computers will be located in the main control room and the crusher control room. The personal computers will be networked to the PLCs and operate a supervisory control and data acquisition (SCADA) system that will provide an interface to the PLCs for control and monitoring of the plant.

The SCADA system will be configured to provide outputs to alarms, control the function of process equipment, and provide logging and trending facilities to assist in analysis of plant operations.

17.2.9 Water Treatment

Water use for processing operations is predicted to be a closed system, without any requirement for water from the processing circuit to leave the plant site. In normal operation, no additional water will be required to supplement the plant process water apart from fresh water for reagents and specific duties requiring fresh water. Should the scenario arise where excess water exists within the processing circuit, excess water will be diverted to the water treatment plant for treatment.

The water treatment plant has been designed to have capacity for water treatment for a 1:50 wet year event. Peak water treatment plant throughput will be 319 m³/h in this scenario. When surplus capacity is available in the water treatment plant water from mine dewatering activities may be diverted to the plant on an as required basis. The average monthly throughput including allowance for treatment of water from mining operations is approximately 160 m³/h.

The water treatment plant feed will be dosed with lime slurry in two agitated tanks to adjust the pH. The overflow from the second tank will flow by gravity to a 16 m clarifier to allow any precipitated heavy metals to be removed via the underflow. The underflow stream will be pumped to the tailings thickener and the clarified overflow stream will be collected in a tank, to be pumped to the Lower WMP for disposal to the environment.

Additional water treatment processes may be required as understanding of dissolved metals requiring treatment improves. Water treatment plant designs will be adjusted as required to enable the project to meet approved water quality requirements.

Allowance has been made for sumps that collect the surface run-off water from the ROM pad, low grade pad and processing plant site, and pump the water to the water treatment plant. Future design work will include an assessment of the opportunity for site grading to direct runoff water to a common point for collection and pumping to the water treatment plant.

17.2.10 Reagents

Reagents requiring handling, mixing, and distribution systems are summarised in Table 79.

Dry reagents will be stored under cover, then mixed in reagent tanks and transferred to distribution tanks for process use. The reagent storage shed will be a steel framed structure with metal roofing; metal siding will be installed to keep reagents dry and protected from the sun. The floors will be slab-on-grade concrete with concrete containment walls to capture spills.

Table 79: Process plant reagents

| Reagent | Use in plant | Storage location | Delivered product size |
|-----------------|---------------------------|----------------------|-------------------------|
| Lime | pH modifier | Lime silo | 40 t bulk delivery |
| SMBS | Copper circuit depressant | Reagent storage shed | 1,000 kg bulk bags |
| Zinc sulphate | Lead circuit depressant | Reagent storage shed | 1,200 kg bulk bags |
| 3418A | Lead circuit collector | Reagent storage shed | 1,000 l bulk liquid box |
| Copper sulphate | Zinc circuit activator | Reagent storage shed | 1,200 kg bulk bags |
| A208 | Zinc circuit collector | Reagent storage shed | 1,000 l bulk liquid box |
| Flocculant | Flocculant | Reagent storage shed | 750 kg bulk bags |
| Sodium cyanide | Lead circuit depressant | Reagent storage shed | 1,000 kg bulk bags |
| A3894 | Copper circuit collector | Reagent storage shed | 1,000 l bulk liquid box |
| MIBC | Frother | Reagent storage shed | 1,000 l bulk liquid box |

17.2.11 Plant Services

17.2.11.1 Plant and Instrument Air Services

A duty and standby screw type compressors will supply compressed air to the plant air receiver. All plant air will be dried in duty/standby dessicant-type dryers. A dedicated instrument air receiver will provide instrument air for critical items of equipment.

17.2.11.2 Flotation Air Services

Two duty and one standby low-pressure blowers will supply low pressure air at 50–75 kPa to the flotation circuits.

17.2.11.3 Process Water

Concentrate thickener overflow, treated decant return water and raw water make-up (when required) will be stored in a process water pond. The pond will provide nominally 120 minutes storage capacity, with the pond size minimised to avoid potential freezing issues. Duty/standby centrifugal slurry pumps will reticulate process water to the plant.

17.2.11.4 Gland Water

Process water will be utilised as gland water to eliminate the need to discharge water from the processing plant circuit. Process water will be directed from the process water pump discharge to a multimedia filtration plant to reduce the solids concentration in the water stream. Subsequently, the water will be stored in a tank for distribution by designated vertical multi-stage pumps.

17.2.11.5 Raw and Fire Water

Raw water will be stored in a raw water tank that will provide 12 hours storage capacity plus additional capacity for firefighting water, which will come from the bottom portion of the tank. Duty and standby pumps will reticulate raw water to the plant, with a booster pump required to provide raw water to the crushing plant.

Fire water will be provided by a skid mounted system incorporating an electric main pump and jockey pump and diesel backup pump.

A portion of the raw water will be pumped to the process plant potable water treatment plant. Water from the plant will be stored in a tank providing 24 hours storage capacity, an electric heater will be provided on a recirculation line to prevent the water from freezing. Potable water will be reticulated around the plant and into the safety shower ring main.

As the Paste Plant is located remotely, a separate set of raw water and potable water tanks have been included. Each raw water tank allows for a nominal one-hour capacity, which will be sufficient due to the expected continuous supply of raw water from the Well Water Supply and the infrequent operation of the Paste Plant. The potable water tank will be filled intermittently by truck.

17.3 Processing Schedule

The processing schedule has been prepared on the basis of a nominal processing plant capacity of 2.0 Mt/a. Processing plant availability has been designed to be 93%, with allowance for standby equipment in most areas to achieve this. From commissioning, processing throughput has been assumed to progressively increase as plant operators become more familiar with the processing plant and the specific characteristics of the ore and plant operation stabilises. At the same time, processing recoveries and concentrate grades produced are also scheduled to progressively increase until the performance indicated by the metallurgical testwork program is realised.

The progressive increase in throughput rates, processing recoveries and concentrate grades adopted in the processing schedule are detailed in Table 80.

Table 80: Progressive increase in throughput, recovery and concentrate grade

| Month of processing | Throughput (% of design) | Recoveries | | | Concentrate grade | | |
|---------------------|--------------------------|------------|-------|-------|-------------------|-------|-------|
| | | Copper | Lead | Zinc | Copper | Lead | Zinc |
| 1 | 5.0% | 0.01% | 0.01% | 0.01% | 13.0% | 30.0% | 40.0% |
| 2 | 15.0% | 50.0% | 25.0% | 40.0% | 15.0% | 35.0% | 45.0% |
| 3 | 30.0% | 55.0% | 35.0% | 50.0% | 17.0% | 40.0% | 48.0% |
| 4 | 55.0% | 60.0% | 45.0% | 60.0% | 19.0% | 45.0% | 50.0% |
| 5 | 80.0% | 65.0% | 50.0% | 70.0% | 20.0% | 47.0% | 50.0% |
| 6 | 90.0% | 70.0% | 55.0% | 75.0% | 20.5% | 49.0% | 50.5% |
| 7 | 94.0% | 71.0% | 55.5% | 80.0% | 21.0% | 50.0% | 51.0% |
| 8 | 97.5% | 71.5% | 56.0% | 85.0% | 21.5% | 51.0% | 51.0% |
| 9 | 100.0% | 72.0% | 56.5% | 86.0% | 22.0% | 52.0% | 51.5% |
| 10 | 100.0% | 72.3% | 57.0% | 86.5% | 22.5% | 53.0% | 51.5% |
| 11 | 100.0% | 72.5% | 57.9% | 86.7% | 22.9% | 53.5% | 51.5% |
| 12 | 100.0% | 72.5% | 57.9% | 86.7% | 22.9% | 53.5% | 51.5% |
| Design (Yr1) | 100.0% | 72.5% | 57.9% | 86.7% | 22.9% | 53.5% | 51.5% |

The annual processing recoveries and concentrate grades adopted in the processing schedule are detailed in Table 81.

Table 81: Annual processing recovery and concentrate performance

| Year | Recoveries | | | Concentrate grade | | |
|--------------------|--------------|--------------|--------------|-------------------|--------------|--------------|
| | Copper | Lead | Zinc | Copper | Lead | Zinc |
| 1 | 69.4% | 53.3% | 78.4% | 21.4% | 50.1% | 50.9% |
| 2 | 77.8% | 54.0% | 86.6% | 22.9% | 53.5% | 51.5% |
| 3 | 82.1% | 55.3% | 88.0% | 22.9% | 53.9% | 51.5% |
| 4 | 82.1% | 56.1% | 86.9% | 22.9% | 58.4% | 51.5% |
| 5 | 82.7% | 56.4% | 86.9% | 22.9% | 57.8% | 51.5% |
| 6 | 80.6% | 57.9% | 87.0% | 22.9% | 56.5% | 51.5% |
| 7 | 81.9% | 59.1% | 86.4% | 22.9% | 55.1% | 51.5% |
| 8 | 84.7% | 63.8% | 88.8% | 22.9% | 55.2% | 51.5% |
| 9 | 83.4% | 65.4% | 83.3% | 22.9% | 60.3% | 51.5% |
| 10 | 83.8% | 65.0% | 82.7% | 22.9% | 59.9% | 51.5% |
| LOM average | 81.5% | 58.6% | 86.0% | 22.8% | 56.0% | 51.5% |

The annual processing schedule, ore mined and ROM stocks are detailed in Table 82. Sufficient room has been allowed for with the ROM pad (and low-grade stockpile if necessary) to facilitate stockpile management. Opportunities may exist to batch treat specific metallurgical domains through the plant to optimise grade recovery performance. In particular, the high copper recoveries and concentrate grade demonstrated in metallurgical testwork of the MET8 domain is expected to warrant separate stockpiling and treatment of this domain. Low-grade and mineralised waste that has been mined and accumulated in the low-grade stockpile can be processed at the end of mine life. The treatment of low-grade material has not been considered in this Technical Report.

Table 82: Annual processing schedule

| | Units | LOM | Pre-production years | | Production years | | | | | | | | | |
|----------------------|---------------|---------------|----------------------|-----------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|
| | | | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
| Ore mined | '000 t | 17,577 | - | 26 | 1,586 | 2,201 | 1,819 | 2,004 | 2,157 | 1,965 | 1,911 | 1,983 | 1,905 | - |
| Cu | % | 0.82 | - | 0.41 | 0.50 | 0.74 | 0.91 | 0.83 | 0.88 | 0.72 | 0.87 | 1.03 | 0.82 | - |
| Pb | % | 1.62 | - | 2.83 | 1.83 | 1.53 | 1.32 | 1.42 | 1.41 | 1.50 | 1.59 | 1.80 | 2.27 | - |
| Zn | % | 5.54 | - | 8.02 | 6.13 | 5.93 | 5.76 | 5.05 | 5.06 | 5.21 | 5.07 | 6.16 | 5.61 | - |
| Au | g/t | 1.24 | - | 1.99 | 1.55 | 1.29 | 1.04 | 1.08 | 1.05 | 1.02 | 1.30 | 1.40 | 1.51 | - |
| Ag | g/t | 1.30 | - | 225 | 152 | 127 | 105 | 113 | 112 | 107 | 126 | 155 | 172 | - |
| Ore processed | '000 t | 17,557 | - | - | 1,444 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 113 |
| Cu | % | 0.82 | - | - | 0.49 | 0.71 | 0.89 | 0.83 | 0.88 | 0.76 | 0.83 | 1.03 | 0.86 | 0.41 |
| Pb | % | 1.62 | - | - | 1.88 | 1.57 | 1.31 | 1.42 | 1.41 | 1.58 | 1.56 | 1.79 | 2.16 | 3.19 |
| Zn | % | 5.54 | - | - | 6.19 | 5.92 | 5.78 | 5.14 | 5.03 | 5.21 | 5.07 | 6.07 | 5.65 | 5.87 |
| Au | g/t | 2.24 | - | - | 1.57 | 1.33 | 1.05 | 1.07 | 1.06 | 1.00 | 1.27 | 1.40 | 1.47 | 1.86 |
| Ag | g/t | 130 | - | - | 155 | 130 | 106 | 112 | 114 | 106 | 122 | 153 | 169 | 199 |
| ROM stocks | '000 t | - | - | 26 | 168 | 369 | 190 | 193 | 349 | 314 | 225 | 208 | 113 | - |
| Cu | % | - | - | 0.41 | 0.60 | 0.82 | 1.16 | 0.97 | 0.90 | 0.65 | 0.97 | 1.00 | 0.43 | - |
| Pb | % | - | - | 2.83 | 1.61 | 1.37 | 1.25 | 1.44 | 1.40 | 1.50 | 1.70 | 1.71 | 3.19 | - |
| Zn | % | - | - | 8.02 | 5.90 | 5.97 | 5.43 | 5.02 | 5.22 | 5.22 | 5.31 | 6.16 | 5.87 | - |
| Au | g/t | - | - | 1.99 | 1.40 | 1.11 | 0.99 | 1.11 | 0.98 | 1.12 | 1.32 | 1.37 | 1.86 | - |
| Ag | g/t | - | - | 225 | 134 | 111 | 103 | 118 | 106 | 109 | 135 | 152 | 199 | - |

17.4 Labour Schedule

Planned labour requirements for the effective day-to-day operation of the processing plant is detailed in Table 83. The paste plant operators will only be required from year 3 once the paste plant is brought into operation.

Table 83: Processing labour requirements

| Area | Position | Roster | No. of people |
|------------------------------|---|--------|---------------|
| Processing | Treatment Plant Manager | 9:5 | 1 |
| | Plant Superintendent | 2:1 | 2 |
| | Trainer | 9:5 | 1 |
| | Shift Supervisor | 2:1 | 3 |
| | Control Room Operators | 2:1 | 3 |
| | Operator: Crushing and Loading | 2:1 | 3 |
| | Operator: Stockpile and Milling | 2:1 | 3 |
| | Operator: Concentrator | 2:1 | 3 |
| | Operator: Dewatering | 2:1 | 3 |
| | Operator: Tails Filters | 2:1 | 3 |
| | Operator: Tailings Front-End Loader | 2:1 | 3 |
| | Operator: Tailings Dozer/Paste Plant Front-End Loader | 2:1 | 3 |
| | Operator: Tailings Truck Operators | 2:1 | 6 |
| | Operator: Sampling and Reagents | 2:1 | 3 |
| | Operator: Paste Plant | 2:1 | 3 |
| | Processing Administrator | 9:5 | 1 |
| Subtotal – Processing | | | 44 |
| Metallurgy | Senior Metallurgist | 2:1 | 1 |
| | Metallurgist | 2:1 | 2 |
| | Subtotal – Metallurgy | | |
| Laboratory | Senior Chemist | 9:5 | 1 |
| | Chemist | 2:1 | 2 |
| | Sample Preparation | 2:1 | 3 |
| | Subtotal – Laboratory | | |
| Maintenance | Maintenance Manager | 9:5 | 1 |
| | Maintenance Planner | 9:5 | 2 |
| | Maintenance Supervisor (Mechanical) | 9:5 | 1 |
| | Maintenance Supervisor (Electrical) | 9:5 | 1 |
| | Fitter | 2:1 | 6 |
| | Boilermaker | 2:1 | 2 |
| | Electrician | 2:1 | 3 |
| | Trades Assistant | 2:1 | 1 |
| | Instrument Technician | 2:1 | 1 |
| | Refrigeration/HVAC | 2:1 | 2 |
| | Light Vehicle Mechanic | 2:1 | 1 |
| | Subtotal – Maintenance | | |
| TOTAL – PROCESSING | | | 74 |

18 Project Infrastructure

18.1 Introduction

The general arrangement of the KZK Project is shown in Figure 95. Key items of infrastructure include:

- Open pit and underground mines.
- Processing facility and associated ROM and low-grade stockpile facilities.
- Paste backfill plant.
- Three waste storage facilities for tailings and waste rock. Waste rock will be placed in different storage facilities based on the assessed potential for generation of acidic drainage and metal leaching.
- Overburden and topsoil stockpiles that will be used for site reclamation during operations and closure.
- Water management infrastructure, including a pit rim pond for mine dewatering, collection ponds, water management ponds and surface water diversion ditches.
- Camp facilities.
- General mine infrastructure including explosives facilities, workshops, fuel facilities and core storage area.

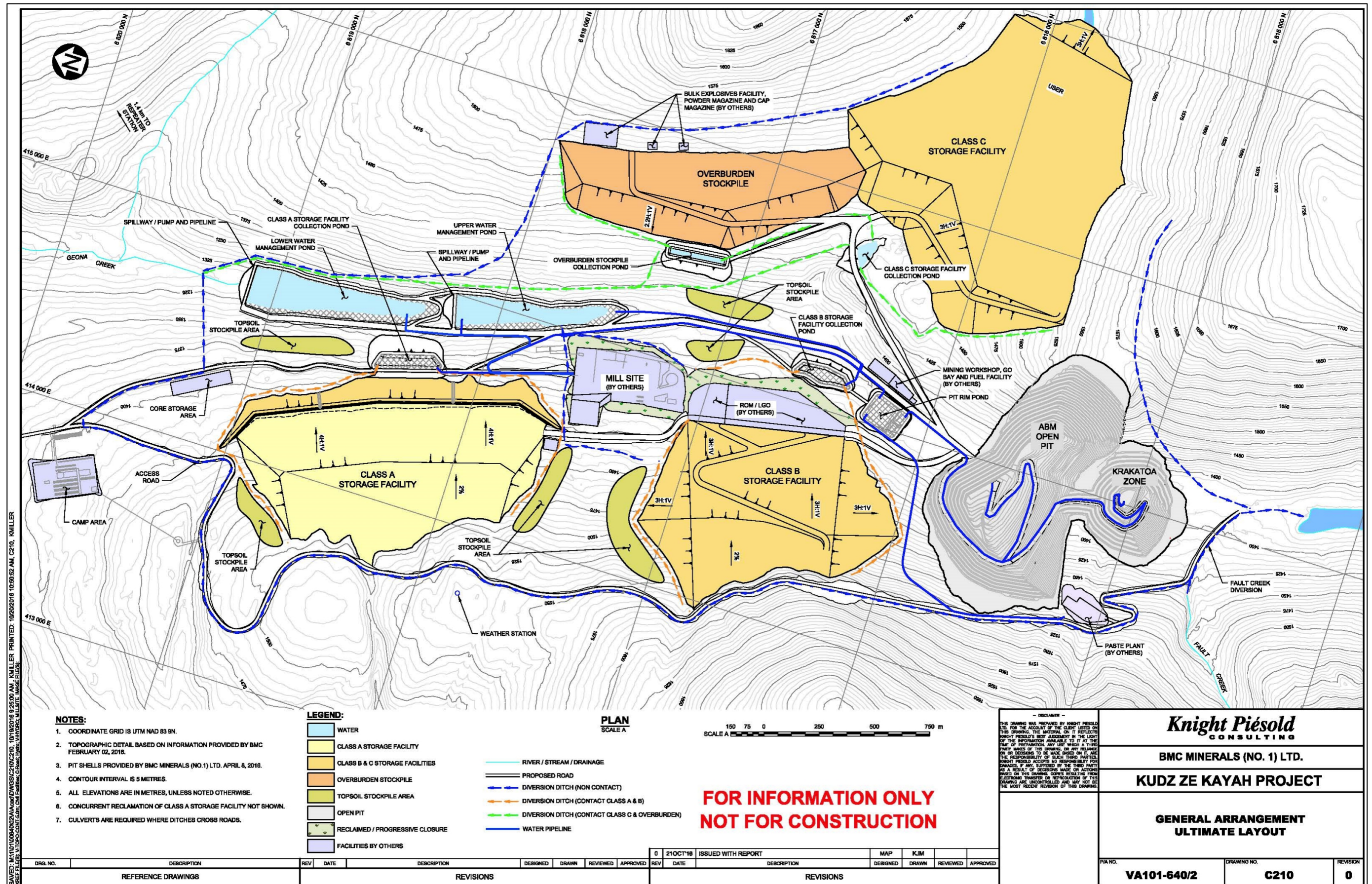


Figure 95: KZK Project general arrangement

18.2 Tailings and Waste Rock Storage Facilities

18.2.1 Tailings Storage Facilities

Tailings are defined as the fraction of processed ore that is produced at the processing plant that is not considered to be economically valuable. Tailings are managed as a waste material and require a geotechnically and geochemically stable storage option that will manage the tailings throughout the mine life and after closure.

After consideration of the various tailings storage methodologies together with potential storage sites, filtered tailings storage was selected as the preferred storage method. Tailings will be mechanically dewatered, through a vacuum and pressure filtration processes, to a point where they behave as a soil. The filtered tailings will then be hauled and placed in the Class A Waste Storage Facility together with Class A waste rock.

18.2.2 Waste Rock Storage Facilities

BMC will pursue every opportunity (where practical) that presents itself over the life of the project to use mined waste and tailings as fill within the mined voids. However, as these opportunities cannot be fully defined at this stage BMC has ensured that the designated waste storage facilities have been designed to cater for the maximum production of each material type from the mining and processing operation.

Waste rock will be classified as Class A, B or C, based on its potential to produce acid drainage and metal leaching characteristics once placed in a waste storage facility over short and long term time periods. The identification of the waste rock Class will be based on site laboratory analysis for sulphur content and neutralisation potential.

Class A waste rock is defined as potentially acid generating and metal leaching in the near term. This material will be placed in a storage facility with controlled drainage during operations and will be reclaimed (encapsulated) as the waste storage facility is developed to minimise contact with oxygen and water.

Class B waste rock is defined as potentially acid generating with metal leaching potential over the longer term (after cessation of mining activities). Storage of this material will require controlled drainage during operations, and although encapsulation during operations will not be required due to the lower reactivity of the rock in comparison to Class A waste rock, progressive reclamation will be implemented during operations for storage of this material where conditions allow. Encapsulation will be required after cessation of mining as part of the reclamation plan.

Class C waste rock is defined as potentially not being acid generating; it is potentially acid consuming and has low metal leaching potential. This material is suitable for construction purposes around the site as well as capping material for progressive reclamation during operations and for closure.

A summary of the waste rock produced by open pit and underground mining activities over the LOM is presented in Table 84. The proportions of Class A, B and C waste rock that BMC expects to produce over the LOM are 9%, 38% and 52% respectively. The distribution between the different waste rock classes will continue to be assessed and updated as ongoing geochemical testwork progresses.

Table 84: Waste rock produced by class

| | Units | Total | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|-------------|--------|---------|-----|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-----|
| Class A | '000 t | 11,629 | 0 | 51 | 1,652 | 1,324 | 1,605 | 1,564 | 1,126 | 966 | 813 | 1,261 | 1,267 | - |
| Class B | '000 t | 47,342 | 67 | 1,810 | 6,487 | 7,338 | 7,086 | 4,881 | 2,888 | 3,239 | 3,667 | 4,705 | 5,174 | - |
| Class C | '000 t | 64,048 | 96 | 2,422 | 8,120 | 9,802 | 8,505 | 7,054 | 8,511 | 7,082 | 5,592 | 4,212 | 2,652 | - |
| Overburden | '000 t | 16,131 | 348 | 1,442 | 2,381 | 1,209 | 1,123 | 2,554 | 1,347 | 1,524 | 2,241 | 1,962 | - | - |
| Total Waste | '000 t | 139,150 | 511 | 5,725 | 18,640 | 19,673 | 18,319 | 16,053 | 13,872 | 12,811 | 12,313 | 12,140 | 9,093 | - |

18.2.2.1 Class A Waste Storage Facility

This facility is located on the western hillside of Geona Creek, north of the processing plant. The footprint of the Class A Waste Storage Facility will be cleared of trees and topsoil stripped, exposing the relatively thin layer of glacial till overburden and weathered bedrock. A 1 m layer of glacial till will be placed and compacted in thin lifts, to provide a low permeability seepage barrier beneath the facility.

Basin underdrains will be constructed from Class C material on top of the low permeability seepage barrier to provide a pathway for seepage beneath the low permeability tailings material. The facility will be graded to collect and convey flows to the Class A Collection Pond. A Class C material buttress will be constructed for confinement at the downstream slope of the Class A Waste Storage Facility which improves the overall factor of safety of the facility.

Tailings material will be placed and compacted in controlled lifts. The facility will be constructed at an overall slope of 4H:1V and will be progressively reclaimed with a 1 m layer of compacted low permeability cover material, and approximately 3–5 m of Class C material for frost protection. Topsoil will be spread over this and the facility will be revegetated up to a predetermined elevation to mimic the current site conditions.

The Class A Waste Storage Facility has been designed to have a capacity of 15 Mm³. This will be sufficient for storage of all tailings (8 Mm³) and Class A waste rock (7 Mm³). Consideration has been given to potential variations in actual volumes that may be encountered in operations as practical experience is gained in the identification and management of the different classes of waste rock.

At commencement of operations the Class A Waste Storage Facility will have a size of approximately 1,400 m x 110 m, increasing each year to a size of approximately 1,330 m x 580 m at the end of mine life. Progressive reclamation of the Waste Storage Facility will be implemented from year 3 to keep the quantity of tailings and waste rock exposed to the environment to a reasonable level.

18.2.2.2 Class B Waste Storage Facility

This facility is located north of the open pit, along the western slope of Geona Creek. The Class B Waste Storage Facility footprint will be cleared of trees and topsoil stripped, exposing the relatively thin layer of glacial till overburden and weathered bedrock. A 1 m layer of glacial till will be placed and compacted, to provide a seepage barrier beneath the facility. The foundation will be graded to collect and convey waste rock seepage to the Class B Collection Pond.

The Class B Waste Storage Facility will be constructed at an overall slope of 3H:1V for long-term physical stability and to allow for recontouring for closure and reclamation. The facility will be progressively reclaimed with a compacted 1 m layer of glacial till material, 3 m of Class C material for frost protection and topsoil material for revegetation.

The Class B Waste Storage Facility has been designed to have a capacity of 25 Mm³, sufficient for storage of all Class B waste rock. Similar to the Class A Waste Storage Facility, additional capacity has been allowed to consider variations in Class B waste rock volumes that may be experienced during operations and understanding and identification of the different classes of waste rock grows.

At commencement of operations the Class B Waste Storage Facility will have a size of approximately 850 m x 140 m, increasing each year to a size of approximately 1,080 m x 670 m at the end of mine life. Progressive reclamation of the Waste Storage Facility will commence during operations where conditions allow.

18.2.2.3 Class C Waste Storage Facility

The Class C Waste Storage Facility is located in a hanging valley along the east side of the Project area. The footprint of the facility will be cleared, and topsoil stripped for use in reclamation. The facility will be

constructed at an overall slope of 3H:1V for long-term physical stability and to allow for recontouring for closure and reclamation. The facility will be progressively reclaimed with overburden material and topsoil to promote revegetation of the slopes.

The Class C Waste Storage Facility has been designed to have a capacity of 34 Mm³, sufficient for storage of all Class C waste rock. At commencement of operations the Class C Waste Storage Facility will not have any waste stored within it, due to the use of this material for site construction purposes. By the end of the mine life, the Class C Waste Storage Facility will be approximately 1,450 m x 950 m. Progressive reclamation of the Waste Storage Facility will commence during operations where conditions allow.

18.2.2.4 *Overburden Stockpile*

Overburden from the open pit will be excavated and stockpiled. Glacial till material will be selectively sourced from the stockpile and used as the low permeability foundation and closure cover layers for the Class A and Class B Waste Storage Facilities, and for construction of the Water Management and Collection Ponds.

The stockpile will be located north of the Class C Waste Storage Facility, along the eastern slope of the Project area. The footprint of the facility will be cleared and topsoil removed. The stockpile is a temporary structure and will be constructed at a slope of 2.2H:1V.

The overburden stockpile has been designed to have a capacity of 9 Mm³. It will be utilised during the mine life for reclamation material. Any material remaining at the end of mine life will be used for reclamation and closure, such that the stockpile will be fully consumed with closure activities.

18.2.2.5 *Topsoil Stockpiles*

Topsoil will be stripped from the overburden stockpile, Class A, B, and C Waste Storage Facilities and the open pit footprint areas during construction. Topsoil will be used during closure and reclamation to revegetate the Class A, B, and C Waste Storage Facilities and the overburden stockpile area. The average topsoil thickness is approximately 0.2 m thick, although localised variations throughout the Project area show topsoil layers as thick as 0.5 m.

The total estimated volume of topsoil, based on the average thickness, is approximately 1.8 Mm³, which will be placed in localised stockpiles and windrows around site. Material will be placed and contoured to a 4H:1V slope. The stockpile surfaces will be revegetated during operations to stabilise the slope surfaces and control erosion from runoff.

18.3 **Water Management**

Water management planning formed an integral part of the project infrastructure design. BMC's objective for water management is to provide sufficient water to support operating requirements, while mitigating environmental impacts to downstream receiving waters.

A water balance model has been prepared using average case, wet and dry precipitation conditions. Water management assumptions, such as diversion ditch efficiencies, were applied as placeholders and are intended to be refined as the design process advances. The water balance indicates the project is in an annual water surplus.

The water management plan involves collecting and managing site runoff from disturbed areas and maximising the recycle of mining and process water. Surplus water will be stored on site with excess water treated (if required) prior to being released to Geona Creek or pumped to Finlayson Creek.

Erosion and sediment control management strategies will include establishing diversion and collection ditches to manage surface water runoff, constructing sediment control ponds, stabilising disturbed land

surfaces to minimise erosion, establishing temporary vegetative cover and re-establishing vegetation that is similar in structure to natural vegetation where final slopes are created.

During operations, Fault Creek will be diverted south towards the North Lakes, temporarily interrupting flow towards the open pit area. The current design incorporates a lined diversion ditch constructed alongside the access road; however future site investigation of the area may demonstrate that alternative and/or additional measures are required to successfully divert the water in Fault Creek.

Overburden dewatering in the open pit area will occur during the pre-production period to facilitate mining. The overburden dewatering design incorporates a series of trenches and sumps which will be used to collect water for pumping to the Pit Rim Pond where sediment will be allowed to settle out prior to reuse or discharge.

All water in contact with the mine facilities, including the Class A, Class B, Class C, Overburden Storage Facilities, the Open Pit, and the Processing Plant Site and other infrastructure will be collected and conveyed to the Upper and Lower Water Management Ponds and ultimately released to Finlayson Creek and Geona Creek.

A water treatment plant will be constructed at the processing plant to reduce contaminants to acceptable levels to meet project water quality guidelines. It has been assumed that lime dosing will be sufficient for pH adjustment and precipitation of metals. Additional work will be completed to determine if specific treatment methodologies are required to target certain contaminants.

The closure objective for site water management will be to breach diversions around the mine site and return water courses to their natural direction. The Class A and Class B Collection Ponds will be pumped to the Water Treatment Plant until such time that water quality is suitable for passive release from the ponds perpetually. Open pit dewatering will cease, and Fault Creek will be redirected to the open pit to facilitate pit filling once active mining from the pit has ceased. All open pit benches and slopes will be reclaimed in such a manner to prevent erosion and minimise suspension of sediments.

18.4 Access Road

The tote road, originally constructed in 1995, is approximately 25 km in length and extends from the Robert Campbell Highway, south to the Project site, as illustrated in Figure 96.

In its present state, the tote road is not suitable for the vehicle traffic that will be using it during the construction and production phases of the Project. The designed upgrade is for an all-weather, single lane road with pullouts to support two-way traffic travelling at a speed limit of 50 km/h. The time required for the upgrade will be approximately three months and will be completed before mine construction starts. A Class B Water licence will be required for the upgrades as well as an amendment to the existing Tote Road lease.

Access to the Project site is currently controlled with a gatehouse located on the tote road, immediately after turning off the Robert Campbell Highway. This facility will be maintained throughout construction, operations and closure activities.



Figure 96: KZK Tote Road (field of view 26 km wide)

18.5 Airstrip

Safe and efficient travel methods will be essential for the smooth operation of the KZK Project. Air transport is the preferred transport alternative for personnel due to its speed, safety and relative cost effectiveness. Contingency plans will be in place due to the variability of weather which affect flight conditions in the Yukon throughout the year. There are four public airstrips within a 300 km radius of the project. Finlayson airstrip is the closest (40 km away) and is currently used to service the Project.

The gravel, 563 m Finlayson strip is capable of handling small loaded charter aircraft but is not long enough for use by the larger aircraft expected to be used during construction and operations. As part of the Project assessment, an airstrip study was completed and identified three suitable alternatives. BMC's favoured alternative is upgrading the Finlayson airstrip with a 600 m extension to the north east. The upgrade will require an engineered plan, and it is intended to use materials from two borrow pits on the Robert Campbell approximately 2 km from the strip. The following should be noted regarding the proposed upgrade:

- Construction and designs would be signed off by the Yukon Transportation Department
- Ultimately the airstrip is owned and controlled by the Airport Branch of the Yukon Transportation Department
- Construction timing is independent of the KZK Project permitting and could be commenced at any time, once the appropriate permits are in place.

18.6 Onsite Laboratory

An onsite laboratory has been included within the administration and processing plant facilities. The laboratory will be responsible for completing all assay requirements for mine grade control, mine waste classification and the processing plant control. Exploration and environmental assay requirements will be completed by an independent offsite laboratory.

Laboratory equipment is expected to include drying, crushing, splitting and pulverising equipment for sample preparation, furnace and inductively coupled plasma equipment for sample analysis, and other ancillary equipment such as balances.

Grade control samples will be assayed for copper, lead, zinc, gold, silver and iron, while sulphur and neutralisation potential analysis will be required for waste rock classification. Processing plant control samples will assay for a similar suite, with the addition of moisture of each concentrate. Concentrates will also be assayed for penalty elements including arsenic, mercury, bismuth, antimony, cadmium and fluorine.

18.7 Camp

The camp is planned to be located in the vicinity of the current exploration camp. This will ensure that workers who are off shift will not be adversely impacted by the day-to-day operations of the mine and processing facility.

The accommodation facilities will be of modular construction, prefabricated offsite. All modules will be transported to the prepared site via truck and placed on blocking and skirted. Connections between the separate accommodation blocks will be via enclosed “arctic” corridors. Site preparation and infrastructure will consist of providing grading, storm drainage and all-weather surface gravelling. Utility connection will be via underground service including potable and fire protection water, sanitary sewage collection, electrical and communications.

The camp has been designed to accommodate a maximum of 250 people. 40 rooms will be available with ensuite bathroom facilities, while the remaining rooms will utilise shared facilities located within each block of the accommodation facilities.

The camp will be operated on a hotel style basis, with rooms vacated and cleared at the end of each work roster and reallocated to incoming workers to maximise utilisation of the available camp capacity.

Additional facilities within the camp complex include:

- Kitchen and messing facilities
- Administration office
- Recreational facilities, comprising a weight/exercise room and a TV/entertainment room
- Laundry facilities
- Lockers and storage facilities.

18.8 Communications

A study on the integration of communication systems was completed for the development of the Project. A licensed terrestrial microwave communication system was selected as the preferred option. In comparison to the satellite and unlicensed options, advantages include greater speeds and bandwidths, minimal interference and latency, larger channel bandwidths, higher transmitting power, and cost-effective connectivity.

A remote shelter will be built near the administration and processing plant facilities and a second at the remote repeater location to meet infrastructure requirements. The purpose of the remote shelters will

be to integrate networking and radio communications through mining and site activities. A DC generator will be the principal source of power at the repeater to enable communications.

Site radio communications on the property will be linked to the remote repeater proposed through the terrestrial microwave licensed option. The overview of radio coverage consists of a channel plan to reflect site requirements and road coverage, base station radios situated through major infrastructures, and an underground leaky feeder radio system.

Telephony and facsimile services will be integrated through major site and office buildings. Internet and cable television will be provided to the camp.

18.9 Power and Electrical Distribution

In assessing power supply alternatives, the regulatory risk and environmental impacts were considered together with capital and operating costs. The option selected for the site power supply was a site based bi-fuel (natural gas and diesel) fuelled power plant, located adjacent to the processing plant facilities.

The power plant will consist of six 4.2 MW continuous rated generators in an N+2 configuration. The engines will run a variable ratio of natural gas (NG) to diesel ranging from 100% diesel to 99% NG/1% diesel giving great flexibility in fuel usage depending on fuel prices or for times of road closure or supply difficulties. The generators would be rated three-phase, 60 Hz, 4,160 volts.

The generators will be connected to a 5 kV switchgear assembly located in the power plant. The power plant will contain all the equipment required to operate and control each generator. This will include generator governor controls, voltage regulators, synchronisation equipment and annunciator panels.

Full heat recovery from the generators has been included to provide heat to the process plant facilities during winter.

Power requirements for generator auxiliaries on black start operation will be from a 150 kW black start generator. The camp will be equipped with a 1,000 kW emergency generator.

Power will be distributed to surface infrastructure via underground cables from the power plant. Small pumping facilities for surface water collection sumps may be powered by the power plant if site power distribution permits, otherwise small standalone diesel generators will be used.

A summary of the site's projected electrical requirements is detailed in Table 85.

Table 85: Projected electrical requirements

| Area | Installed load (kW) | 24-hour average load (kW) | Annual power consumption (MWh) |
|--------------------------------------|---------------------|---------------------------|--------------------------------|
| Crushing | 337 | 210 | 1,304 |
| Ore storage | 66 | 39 | 296 |
| Grinding | 6,552 | 5,188 | 42,209 |
| Flotation | 3,246 | 1,802 | 13,932 |
| Regrind | 1,593 | 884 | 7,092 |
| Tailings | 246 | 83 | 639 |
| Dewatering | 1,384 | 857 | 6,398 |
| Reagents | 337 | 145 | 847 |
| Services; fuel | 3 | 0 | 9 |
| Services; water | 718 | 260 | 2,067 |
| Services; air | 1,095 | 624 | 4,653 |
| Services; other | 172 | 143 | 552 |
| Subtotal Process Plant | 17,172 | 10,234 | 79,998 |
| Underground mine | 3,181 | 2,076 | 18,186 |
| Paste fill | 1,424 | 1,033 | 7,082 |
| Other surface instructure | 2,142 | 1,014 | 8,149 |
| TOTAL SITE POWER REQUIREMENTS | 22,495 | 14,357 | 113,415 |

18.10 Water Supply

Potable water for the accommodation facility will be sourced from the existing exploration camp supply well. This well may require upgrading to produce 6.3 l/s maximum day demand. Water from the well source will be simply dose treated with chlorine to provide a four-log virus reduction. Treated water will be held in an insulated bolted steel gravity reservoir and distributed to the campsite via gravity.

Potable water requirements for facilities remote from the processing plant, including the mining workshop, paste fill plant and bulk explosives facility will be met via water tanker.

Potable water for the processing plant facility will be drawn from ground wells having near potable quality water. The potable water system at the processing plant will provide water for safety showers around the processing plant facility as well as providing supply to adjacent infrastructure including the mine dry, change houses, washrooms and administration facilities. Approximately 4 l/s will be required to meet demand.

A fire water distribution system will be installed around the processing plant facility with wall hydrants at strategic locations, capable of delivering 400 m³/h of water for a two-hour period. Fire water will be drawn from the raw water tank and will be provided by a skid-mounted system incorporating an electric main pump and jockey pump and diesel back-up pump.

Fire protection water for the accommodation facility will be distributed via gravity pressure pipe. The pipe will be sized to deliver peak demands plus fire hose station flow. Outside yard hose hydrants will be placed to offer additional fire protection.

Raw water for processing requirements will be recycled from the various site water collection facilities, including the Class A and B Collection Ponds, Pit Rim Pond and Upper WMP and pumped into an 800 m³ storage tank located adjacent to the processing plant facility. This tank will store water for the process plant and reagent mixing with the majority being available for fire protection.

Water for mining purposes will be sourced from the pit rim pond. As the underground mine is progressively developed a system of sumps will be established within the underground mine workings to settle solids prior to reuse underground.

18.11 Fuel Storage

A number of fuel sources will be required for the KZK Project, including LNG, diesel, gasoline and propane, with NG and diesel being the primary fuel sources.

NG will be used for power generation. Due to the high capital costs of LNG vaporisation and storage facilities, two days site storage capacity will be available, with diesel available to maintain continuity of power should an interruption to LNG supply arise. LNG will be transported to site via bulk tankers and stored in two 132,000-litre Type C vacuum insulated tanks. Tanks will be located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume. At a 99% LNG/1% diesel fuel mix for power generation, five tankers of LNG will be required to be delivered every two days.

LNG is also proposed to be used at the accommodation facility to fuel the camp boiler and heat common room areas. This facility will be nominally 30,000 litres capacity, located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume

Diesel for power generation will be stored in a facility with a capacity of 700,000 litres, sufficient for 10 days operation at a 0% LNG/100% diesel fuel mix. Diesel consumption is expected to be significantly lower than this with the use of LNG and will be resupplied on an as required basis. The storage tanks will be located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume.

Diesel for mining operations will be stored in a separate facility closer to the mine. Four 100,000-litre tanks will provide sufficient storage capacity for 10 days supply for open pit and underground mining operations. The tanks will be located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume.

Diesel will also be used for heating of air entering the underground mine during the winter months. Diesel for this purpose will be stored in a 5,000-litre tank, located adjacent to the underground mine portals. The tank will be located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume. A simple structure will be constructed around the diesel tank to provide protection from potential fly rock from the open pit operation.

Diesel will be delivered by bulk tanker, nominally in 48,000-litre deliveries. Approximately 18 fuel deliveries will be required each week to meet the mining fuel requirements.

A 30,000-litre gasoline tank will be maintained on site for ancillary gasoline use. Storage will be within a lined containment berm.

A small supply (nominally 5,000 litres) of aviation fuel will be maintained on site for exploration activities requiring helicopter support. It will also serve as a fuel supply for emergency helicopter evacuation should the need arise. Aviation fuel will be stored adjacent to the helipad in a single fuel tank within a lined containment berm.

18.12 Explosives Storage

Explosives will be stored in secure, fenced facilities separate from the main activity areas, adjacent to the overburden stockpile. Bulk explosives will be stored within a bulk explosives compound. A packaged explosive magazine will store all cast boosters and other explosive products as required for the underground mine and the open pit operations. A separate detonator magazine will be available for storage of all detonators.

The design of all storage facilities will meet government regulations and will be located according to required separation distances as regulated by the Explosives Regulatory Division of Natural Resources Canada (NRCan). The minimum separation distance from inhabited buildings has been assessed as 960 m and the selected storage sites exceed this distance.

Bulk ammonium nitrate prill and bulk ammonium nitrate emulsion will be transported to site in 25-tonne bulk transport trailers and 20-tonne tanker trailers respectively. Bulk products will be stored in separate prill and emulsion silos within the bulk explosive compound. The bulk explosive compound will also contain a garage for the explosives loading trucks and a small office for explosives personnel.

Packaged explosives and detonators will be delivered by approved explosives freight trucks.

Explosives will not be manufactured on site; however, the explosives trucks for the open pit operation and the underground mine will be capable of mixing ammonium nitrate prill and emulsion in varying ratios as required to meet the specific requirements of each blast, including the presence of wet holes and variations in explosive density.

18.13 Security

Access to site is currently controlled with a gatehouse located on the tote road, immediately after turning off the Robert Campbell Highway. All vehicles entering the Project are required to stop at this gatehouse and register before continuing into the property. This gatehouse will be maintained during construction and operations as an initial security point for access to site.

A second gatehouse will be established on the access road prior to the arriving at the camp facility and will function as the key access to the operating site. A register of all vehicles and personnel visiting the site will be maintained to ensure that accurate data is available of site numbers in the event of an emergency.

Fencing and gate access will be constructed around the explosives facilities to limit access to authorised personnel.

The incinerator and landfill facility will be fenced to prevent access by wildlife.

18.14 First Aid and Emergency Management Facilities

The Project will have a fully equipped first aid facility within the administration and office complex. It will be staffed by a qualified medic at all times for first aid treatment. An ambulance will be maintained on site for first responder medical treatment.

Serious medical emergencies will be transported to Whitehorse for further medical treatment. The preferred method of transportation will be via helicopter with a helipad located adjacent to the processing plant facility for this event. An alternative to transportation by helicopter is the Finlayson airstrip that is used for regular air commuting.

An emergency response team will be maintained on site, trained in all aspects of mines rescue. Regular training will be provided to ensure that a high standard of emergency preparedness is maintained on site. Where appropriate, reciprocal mine rescue agreements will be established with other mining operations in the district to provide support services on an as required basis.

18.15 Waste Management

All combustible refuse will be segregated and burned daily in an incinerator to limit wildlife attraction associated with the disposal of food and other wastes. The incinerator will be located south of the Class A Storage Facility.

All non-combustible refuse will be buried within an approved land fill, located adjacent to the incinerator facility. Used lubricants will be collected and removed from the site for disposal or recycling.

Sewage from the camp, processing facility and offices will be collected by buried sewers at a 2.0 m cover for insulation. The raw sewage will be gravity fed to a package sewage treatment plant where it will be processed to meet Type C effluent requirements (45 mg/L Biochemical Oxygen Demand, 45 mg/L Total

Suspended Solids). The treated effluent will then be discharged to ground via an onsite in-ground disposal field. The sewage treatment plant will produce a bio-sludge which will require periodic removal. This sludge will require sanitary burial onsite in an approved location.

18.16 Port Facilities

Based on an analysis of the surrounding ports, the Stewart World Port was selected as the preferred option for transportation of metal concentrate to market. Stewart is Canada's most northerly year-round port, located at the head of the Portland Canal, a 150 km fjord that is ice-free throughout the year. The port is accessible via Highway 37A. Direct rail service to the port is not available. The location provides up to a full day advantage to Asian markets compared to transporting to southern ports and has favourable climate, low winds, and good anchorage. Stewart World Port is one of two terminals in Stewart.

Stewart World Port is privately owned and was opened in September 2015. The new facility is being positioned as a bulk and break-bulk gateway for goods and products in and out of northern British Columbia, the Yukon and Northern Alberta markets. Construction of a second phase, including a traveling bulk ship loader is expected in the future. The ship loader is preliminary rated at loading rates of 3,000 tonnes of material per hour.

19 Market Studies and Contracts

Direct marketing has not been completed for the potential Kudz Ze Kayah concentrates; however, after consultation with a number of parties, the following information has been used regarding sale opportunities and potential sale terms:

- The nearby Yukon Zinc owned Wolverine mine has certain published and documented information that is available to BMC.
- Discussions with representatives of Transamine Metals Traders (the current purchaser of the Wolverine Zinc concentrate).
- Discussions with the marketing teams of other independent zinc, copper and lead concentrate producers about marketing terms and qualifiers.
- Discussions with representatives of Louis Dreyfus Metals traders, one of the largest top-tier concentrate trading firms in the world.
- Discussions with representatives of Trafigura, one of the largest concentrate traders in the world.
- Previous experience of the BMC management team in selling of copper and zinc concentrates.
- Referral to data obtained from feasibility studies for other projects in Western Canada.
- Reference to the Cominco Pre-Feasibility Study for KZK.
- Discussion with Hellmann Logistics, Vancouver office. Hellmann are an international shipping and logistics agent with experience in shipping concentrates from Western Canada (and elsewhere) to markets in Asia.
- Discussions with Port operators at Skagway (Alaska) and Stewart (British Columbia).
- Long-term concentrate Treatment Charge forecasts from CRU.

In general, the sales terms for copper, zinc and lead concentrates are reasonably standard in nature. Variability is introduced depending on whether the quality of the concentrate to be sold is non-standard in nature. Even then, some principles of concentrate sales such as deductibles for zinc content in zinc concentrates are universally adopted in contract term sheets.

Based on current industry demands and the quality of the concentrate certain assumptions have been made as follows:

- Copper, zinc and lead concentrates have been assumed to be sold into Asia smelters rather than Canadian smelters. An opportunity does exist for sale of zinc concentrate to the Teck smelter at Trail, Canada and this should be further investigated and trade off studies carried out.
- Whilst potential for sales to Canadian smelters exist, the transport logistics combined with the traditional feed stock for those smelters mean that the terms and costs for Asian delivery can be more accurately and easily calculated.

The commodity prices, general concentrate terms and the associated penalties as shown in Table 86 to Table 90 have been used in the study. These have not been sourced from BMC contracts as no contracts have been entered into. However, they are based on generally accepted industry terms with verification by BMC from previous contracts, entered into over the last six years, and confirmation from metals traders where it was deemed appropriate. Commodity prices used for the PFS are long term consensus prices, established by taking the average long-term price forecasts from a range of financial institutions between January and March 2017.

Table 86: Commodity price

| Commodity | Price |
|-----------|--------------|
| Copper | US\$2.95/lb |
| Zinc | US\$1.07/lb |
| Lead | US\$0.94/lb |
| Gold | US\$1,292/oz |
| Silver | US\$19.31/oz |

Table 87: Copper concentrate terms

| Parameter | Units | Assumed terms | Comment/Source |
|------------------------------|-----------------------|---|--|
| Moisture content | % | 9% (based on testwork) | Standard |
| Copper concentrate payables | % | Copper: 96.65% payable at LME settlement subject to a minimum deduction of 1.0 unit | Industry Std – Transamine |
| | % | Zinc: 0% | |
| | % | Silver: 90% Ag payable at London spot if above 30 g/t. Nil payable if below 30 g/t | Industry Std – Transamine |
| | % | Gold: <1 g/t Nil payment 1–3 g/t 90% 3–5 g/t 93% +5 g/t 95% | Industry Std – Transamine |
| Concentrate treatment charge | US\$/dmt | US\$87.50/dmt | Based on CRU long-term forecast |
| Concentrate refining charges | US\$/payable lb or oz | Copper: US\$0.0875/payable lb of copper | Industry Std ratio to Treatment Charge |
| | | Silver: US\$0.50/payable oz of silver | Industry Std – Transamine |
| | | Gold: US\$5.00/payable oz of gold | Industry Std – Transamine |

Table 88: Zinc concentrate terms

| Parameter | Units | Assumed Terms | Comment/Source |
|------------------------------|----------|---|----------------------------------|
| Moisture Content | % | 9% (based on testwork) | Standard |
| Zinc Concentrate Payables | % | Zinc: 85% of the agreed Zinc content subject to a minimum deduction of 8 units | Industry Std - Transamine |
| | % | Silver: agreed Silver content less 3.0oz/dmt of concentrate, at 70% of the “London Spot” quotation in US Dollars | Indicative terms from Transamine |
| | % | Gold: minimum deduction 1 unit, with 70% of the remainder paid | Advice from Transamine |
| Concentrate Treatment Charge | US\$/dmt | Flat price of 10.4% of LME Zn price, or US\$215/dmt, less US\$20/dmt to reflect provision of a long-term contract | Based on CRU long term forecast |
| Concentrate Refining Charges | | Nil | |

Table 89: Lead concentrate terms

| Parameter | Units | Assumed terms | Comment/Source |
|------------------------------|-----------------------|--|--|
| Moisture content | % | 7% (based on testwork) | Standard |
| Lead concentrate payables | % | Lead: 95% of the agreed lead content subject to a minimum deduction of three units | Indicative industry terms provided by Transamine |
| | % | Silver: 95% of the agreed silver content subject to a minimum deduction of 50 g/dmt | |
| | % | Gold: 95% of the agreed gold content subject to a minimum deduction of 1 g/dmt | |
| | % | Copper: 40% of the agreed copper content subject to a minimum five-unit deduction – as negotiated (no standard exists) | |
| Concentrate treatment charge | US\$/dmt | Flat price of 7.6% of LME Pb price, or US\$157/dmt | Based on CRU long term forecast |
| Concentrate refining charges | US\$/payable lb or oz | Copper: US\$0.10/payable lb of copper | Industry Std – Transamine |
| | | Silver: US\$1.50/payable oz of silver | Industry Std – Transamine |
| | | Gold: US\$8.00/payable oz of gold | Industry Std – Transamine |

Table 90: Concentrate penalty element rates

| Concentrate | Element | Penalty threshold and rate |
|-------------|------------------------|--|
| Copper | Mercury | US\$0.75/ppm above 10 ppm Hg |
| | Arsenic | US\$2.00/0.1% above 0.1% As |
| | Lead and zinc combined | US\$3.00/1.0% above 2.0%; however, depending on other qualities, the combined Pb and Zn penalty limit can be waived up to approximately 5% but may impact achievable concentrate treatment charges |
| | Bismuth | US\$3.00/0.01% above 0.02% Bi |
| | Antimony | US\$3.00/0.1% above 0.05% Sb |
| Lead | Bismuth | US\$2.00/100 ppm over 300 ppm Bi |
| | Selenium | US\$2.00/100 ppm over 300 ppm Se |
| Zinc | Iron | US\$2.00/1.0% above 10.0% Fe |
| | Lead | US\$2.00/1.0% above 3.0% Pb; can be negotiable up to approximately 5.0% Pb |
| | Silica | US\$2.00/1.0% above 4.5% SiO ₂ |
| | Arsenic | Above 5,000 ppm As concentrate cannot be sold into China |
| | Bismuth | US\$2.00/100 ppm above 500 ppm Bi |
| | Cadmium | Above 3,000 ppm Cd concentrate cannot be sold into China |
| | Antimony | No penalties apply below 800 ppm Sb |
| | Mercury | US\$2.00/10 ppm over 100 ppm Hg |

Several additional factors can apply to the penalty levels applicable to the sale of zinc concentrates:

- Standard escalator levels will likely change with the expected increase in zinc prices, but this is yet to be seen in the market
- Zinc penalty rates can be negotiated out depending on zinc grade and treatment charges and as such should be considered as indicative and negotiable
- The presence of copper in the zinc concentrate up to approximately 5% may be seen by certain smelters as a positive with some smelters running copper concentrate circuits prior to zinc extraction; however, notwithstanding this, an upper limit will exist beyond which copper sulphides in the zinc concentrate will be viewed as unfavourable
- Iron levels below 8% will be seen as attractive by smelter owners

- Arsenic levels between 0.5% and 0.8% will become more marketable after 2016 when the current glut of arsenic high zinc concentrate reduces considerably.

20 Environmental Studies, Permitting, and Social or Community Impact

20.1 Summary Environmental Assessment and Permitting

Baseline environmental and socio-economic studies for the Project were completed by Cominco in 1994 and 1995 to support their Initial Environmental Evaluation. These studies included evaluations of: climate and hydrology; surface water and groundwater quality; stream sediment quality; aquatic resources (fish, benthic invertebrate and zooplankton characterisation); vegetation and terrain mapping; wildlife; archaeological investigation; and socio-economic data collection. Additional monitoring and data collection were completed in the following 20 years to meet water licence requirements. BMC initiated a new baseline studies program in April 2015, and the program has been ongoing through 2016.

The Project is subject to an environmental and socio-economic assessment under the *Yukon Environmental and Socio-economic Assessment Act* (YESAA), administered by the Yukon Environmental and Socio-economic Assessment Board (YESAB). BMC submitted a Project Proposal for the Project to YESAB on 17 March 2017. The Project Proposal documents the potential environmental and socio-economic effects of the Project by evaluating baseline information, the proposed mine plan and by consulting widely with governments, First Nations, communities, stakeholders, experts and the public. It also outlines mitigation measures and management plans to be employed to minimise or eliminate possible negative effects resulting from the Project, while maximising or enhancing possible beneficial effects.

Given that the ore production capacity is greater than 1,500 tonnes per day, assessment of the Project will be at the Executive Committee level. Under the YESAA, the YESAB has an obligation to make a decision on the Project Proposal within 16 months of submission of documentation.

Once the adequacy review of the Project Proposal is completed by YESAB, BMC will submit an application for a Type A Water Licence from the Yukon Water Board, a Quartz Mining Licence under the *Quartz Mining Land Use Regulation*, and other authorisations as required to advance construction and development of the Project.

20.2 Climate and Air Quality

Climatic and meteorological conditions at site have been characterised using regional data available through Environment Canada and Environment Yukon. Site specific meteorological data was collected on site in 1995, and is currently being collected at a new meteorological station commissioned in late August 2015.

The mean annual temperature recorded at KZK for the period September 2015 to August 2016 was -0.47°C with minimum and maximum temperatures of -26.28°C and 19.89°C respectively.

The 2015 to 2016 site data returned a reduced diurnal range with temperatures that are warmer in winter (October to April) and cooler in summer (May to September) when compared to both the longer term and recent (2015–2016) regional data.

Total precipitation measured at the Project site for the period 1 September 2015 to 31 August 2016 was 343.3 mm. This is less than the mean of annual precipitation recorded at all regional stations except Ross River and Faro, for a period of record ranging from 10 years to 63 years depending on the station. Some of the additional precipitation measured at KZK relative to the Faro and Ross River stations can be accounted for by the higher elevation of the KZK station. However, other factors such as the geographic position on the northeast side of the Pelly Mountains likely play a greater role in determining the precipitation received on site.

The 2016 snow survey data at five regional stations indicate that 2016 was a below average snow year. Snow water equivalent values in April ranged from 62% to 93% of normal with a mean of 78% compared to the long-term average and in April ranged from 0% to 91% of normal with a mean of 44% of average.

The prevailing wind direction at the Project site is from the northwest to northeast with relatively high average and maximum wind speeds. Relative humidity and barometric pressure at the Project site are generally consistent with regional patterns. Solar radiation peaks in July and is at a minimum in December.

20.3 Metal Leaching and Acid Rock Drainage

20.3.1 Historical Geochemical Assessment

A geochemical characterisation program for the ABM deposit was completed in 1996 by Norecol, Dames and Moore based on diamond drill programs and metallurgical testing conducted by Cominco in 1994 and 1995. The characterisation program consisted of static geochemical characterisation of 273 samples from four diamond drillholes, including acid-base accounting (ABA) (all 273 samples), carbonate speciation (45 of 273 samples) and petrography (101 of 273 samples). Detailed elemental characterisation (ICP analysis) were conducted on 2,400 samples from 37 diamond drillholes. Carbonate speciation and ABA analyses were also conducted on five samples of tailings.

Kinetic testing was also completed on select materials from the four diamond drillholes involved in static testing as well as the tailings samples. A total of 40 kinetic tests were conducted including humidity cell and subaqueous column tests.

Based on the findings of the 1996 geochemical characterisation program, Cominco's mine plan included segregating waste rock into three waste types:

- Strongly Potentially Acid Generating: Rock containing very high concentrations of sulphide minerals and expected to be acid generating, requiring subaqueous disposal in the tailings pond.
- Weakly Potentially Acid Generating: Rock containing lower concentrations of sulphide minerals and not expected to be acid generating in the mine life. This material would be stockpiled during operations and eventually backfilled into the completed pit to be flooded upon closure.
- Potentially Acid Consuming: Rock containing low concentrations of sulphide minerals and not expecting to be acid generating to be disposed of sub-aerially.

Management criteria were developed for the waste rock. Weakly potentially acid generating (PAG) material was differentiated from Strongly PAG material if acid potential (AP) was less than 92 kg CaCO₃/t (or less than 2.9% sulphur) and neutralisation potential (NP) was greater than 18 kg CaCO₃/t. Potentially acid consuming material was differentiated from Weakly PAG material if the neutralisation potential ratio (NP/AP) was greater than 1.7.

20.3.2 Current Metal Leaching and Acid Rock Drainage Program

BMC has initiated a new geochemical characterisation program for the ABM deposit to bolster and expand on the previous work started by Cominco. The program is in progress at the time of report preparation and therefore only the preliminary results and approaches are described below. To date, static testing of 203 samples of new core drilled from the ABM deposit in 2015 has been completed and are undergoing review.

BMC approached the ML and ACD program by defining volumes of rock anticipated to have similar geochemical characteristics as inferred from certain geological features. Ten geodomains (Table 91) were defined that in general, show a similar spatial relationship to the ABM deposit. These geodomains were then used as a basis for sampling and characterisation based on their relative abundance and location relative to proposed mining. The main geological features considered in the geodomain interpretation

include lithology, carbonate content (calcite, ankerite), disseminated sulphide minerals, muscovite and chlorite.

Paste pH analyses of all but one (paste pH 4.8 within the deposit) of the core samples returned circumneutral to alkaline pH values. The lack of acidic paste pH is in line with the very low sulphate-sulphur concentrations (typically ≤ 0.03 wt.%) in the samples excluding the mineralised zones, which indicates limited weathering/oxidation of the rock. Concentrations of total sulphur, present almost exclusively as sulphide-sulphur, and associated acid potential were highest in the CARB MDS/RHY, MU PY RHY, PY RHYc and PY RHYv geodomains (median 0.68–0.72 wt.%), and lowest in the footwall CA CL MAF geodomain.

Table 91: Geodomain characteristics

| Geodomain ID | Features | Comments |
|--------------|---|--|
| AK RHYc | Moderate-strong ankeritic coherent rhyolite | Strong ankeritic zone in upper parts of hangingwall that crosses lithology. |
| AK RHYv | Moderate-strong ankeritic volcaniclastic rhyolite | Strong ankeritic zone in upper parts of hangingwall that crosses lithology. |
| CA CL MAF | Calcite-chlorite mafic intrusive | Distinct unit in footwall of deposit interpreted to be an intrusive. Consistently calcite-bearing. |
| CARB MDS/RHY | Felsic volcanic rock (coherent and volcaniclastic) with carbonaceous material and associated with thin mudstone intervals. Generally with disseminated pyrite and muscovite, locally minor ankerite | Carbonaceous mudstone/rhyolite dominated intervals lumped together. |
| MDS | Upper, thick mudstone package | Within fault offset (down-dropped) block; confined to southeastern corner of deposit. |
| MU PY RHY | Moderate-strong muscovite-altered rhyolite with disseminated pyrite | Generally proximal to massive sulphide, characterised by coarse sericite (muscovite). |
| PY AK RHYc | Moderate-strong ankeritic coherent rhyolite with disseminated pyrite | Below AK RHYc/v in disseminated pyrite halo to deposit. |
| PY AK RHYv | Moderate-strong ankeritic volcaniclastic rhyolite with disseminated pyrite | Below AK RHYc/v in disseminated pyrite halo to deposit. |
| PY CL RHY | Chloritic rhyolite coherent and volcaniclastic rhyolite with disseminated pyrite | Smaller unit proximal to massive sulphide in hanging wall characterised by chlorite. |
| RHYi | Hard, siliceous, fine-grained felsic intrusive typically with 2-3% disseminated pyrite | Largely confined to Krakatoa Zone. This geodomain is present in ABM but well below the mineralisation. |

The dataset NP ranged from 0.2 kg CaCO₃/t to 549 kg CaCO₃/t with a median of 58 kg CaCO₃/t. The highest NP was observed in samples from the MDS and CA CL MAF geodomains, which had a median NP of 142 kg CaCO₃/t and 129 kg CaCO₃/t, respectively. This is consistent with the high calcite content of samples from the MDS and CA CL MAF geodomains identified by x-ray diffraction (XRD). Samples from the RHYi, and to a lesser extent, CARB MDS/RHY, had the lowest NP, with a median NP of 16.6 kg CaCO₃/t and 36 kg CaCO₃/t, respectively. A strong correlation was observed between NP and calcium content likely due to calcium-bearing carbonate minerals providing the bulk of the NP in these samples. The relationship between NP and aqua regia calcium + magnesium concentrations was also investigated since magnesium is likely to be a prominent component of the waste rock carbonate mineral assemblages; however, much greater scatter was observed when compared to only calcium.

The neutralisation potential ratio (NP/AP) is often used as an indicator of the acid generation potential of a material. Price (2009) states that the NP/AP ratio can be used as an initial filter to predict the potential for exposed geological material to generate acidity such that:

- NP/AP < 1 samples are potentially acid generating (PAG)
- 1 < NP/AP < 2 samples are capable of acid generation but with some uncertainty
- NP/AP > 2 samples are not potentially acid generating (non-PAG).

Four of the 10 geodomains analysed had a sizeable majority of samples that returned NP/AP greater than 2 (100% of AK RHYc, 89% CA CL MAF and MDS, and 70% AK RHYv), suggesting they are largely not acid generating. Conversely, 50% or more of samples had a NP/AP less than one from the RHYi (67%), PY CL RHY (56%), CARB MDS/RHY (53%), and MU PY RHY (50%) geodomains, indicating they largely comprise potential acid generating material. The PY AK RHYv and PY AK RHYc geodomains showed a sample distribution between the three NP/AP categories of approximately 50% of samples classified as non-PAG, ~30% of uncertain acid generation potential, and ~20% classed as PAG.

Aqua-regia digestion of the rock samples followed by ICP-MS analysis indicated that arsenic, antimony, bismuth, cadmium, lead, selenium, sulphur, silver, and zinc were present in greater than 5% of samples at concentrations that exceeded 10 times crustal abundance. As such, these elements have been provisionally identified as constituents of potential concern (COPC). Shake flask extraction (SFE) analysis, which gives an indication of the soluble metal(loid)s component of a sample, was performed on 55 rock samples with variable ABA and metal content. SFE leachate concentrations of bismuth and silver were typically below detection, suggesting that these elements may not be particularly mobile.

Of the preliminary list of COPCs, only arsenic, aluminum, antimony, and selenium had more than three samples that returned SFE leachate concentrations in excess of site-specific water quality objectives (SSWQO). The concentrations of cadmium, copper, lead, nickel, silver, uranium and zinc exceeded their respective SSWQO only sporadically (between one and three samples) but have been retained as COPCs at this time. Aluminium exceeded its SSWQO in the majority of SFE samples; SFE aluminium concentrations were positively correlated with SFE pH, suggesting that pH is the controlling factor in aluminium leaching, rather than rock type or metal content. The CARB MDS/RHY, MU PY RHY and PY CL RHY geodomains accounted for the majority of SSWQO exceedances for most elements. CA CL MAF comprised the bulk of the elevated arsenic concentrations in the SFE testing, in line with the elevated arsenic content of this material. Indeed, SFE leachate concentrations of arsenic, antimony, selenium and uranium were positively correlated with the rock metal(loid) content.

Kinetic testing (humidity cell and trickle leach columns) was initiated in February 2016 and is ongoing. Data obtained from kinetic testing will provide a more comprehensive identification of the COPCs. As such, the list of COPCs will be revised as the kinetic testing program progresses.

20.4 Noise Levels

The Project is located in a remote wilderness area and noise levels are assumed to be quiet and dominated by sounds of nature (e.g., wind, rustling of vegetation and chirping birds). There are no residences in the Project area therefore noise from the Project will not cause human disturbance. The camp site will be located approximately 3 km from the open pit which will ensure quiet off-shift and sleeping conditions for employees.

20.5 Hydrology

The Project lies in the Geona Creek watershed central to which is Geona Creek, a north-flowing tributary to Finlayson Creek. Finlayson Creek meets the outflow of Finlayson Lake below the Robert Campbell Highway and flows east to eventually join the Frances River and ultimately the Mackenzie River.

The Geona Creek watershed covers approximately 26 km², has a median elevation of 1,479 m above sea level and spans from the alpine to forested areas at lower elevations. The Finlayson Creek catchment area is approximately 35 km² above the confluence with Geona Creek and expands to 211 km² where it flows under the Robert Campbell Highway and shortly before it joins the outflow of Finlayson Lake. The southern watershed divide between Geona Creek and South Creek is located immediately south of the ABM deposit and is characterised by several small lakes, locally referred to as “South Lakes”.

Fault Creek is the most significant tributary to Geona Creek in the deposit area, emptying into Geona Creek immediately south of the ABM deposit. The small Fault Creek catchment area (2 km², 1,708 m above sea level), to the west of Geona Creek is steeper, with similar vegetation.

Previous local hydrometric data collection occurred in 1995 and was re-initiated in May 2015. The current monitoring network includes several stations that are continuously monitored and provide estimates for various hydrological parameters at Fault Creek, Geona Creek below the Project infrastructure, Geona Creek above the confluence with Finlayson Creek, Finlayson Creek below the confluence with Geona Creek and Finlayson Creek at the Robert Campbell Highway.

Peak flows typically occur in May in these smaller catchments, and throughout summer months in years when significant snow melt generated peaks are less significant. Low flows occur late winter in March, April or even early May depending on the melt cycles and snowpack in any given year. None of the creeks were observed to freeze completely and some flow was observed in all months of the 2015-2016 monitoring program.

20.6 Groundwater

20.6.1 Monitoring Network and Data Collection

Groundwater monitoring wells were installed at the Project in 1995 by Cominco. Data from these monitoring wells were also used for baseline groundwater characterisation as part of the environmental assessment completed for the Project in the late 1990s.

The network of historical monitoring wells was re-assessed in 2015 for its condition and suitability to meet the current mine design and requirements of a Project Proposal submission under the YESAA. In addition to the upgrade and redevelopment of selected historical wells, 17 new monitoring wells were installed in 2015 and 2016 to provide adequate monitoring locations for conducting a hydrogeological baseline and effects assessment as part of the Project Proposal.

The current network consists of 43 monitoring wells and includes 10 wells completed as nested installations with a shallow piezometer completed in the overburden aquifer and a deeper piezometer completed in bedrock.

All monitoring wells installed between 1995 and 2015 have been sampled quarterly starting in summer 2015 with monthly sampling conducted from May 2015 through to October 2016. To characterise baseline groundwater quality, including seasonal changes, data has been used from the most recent sampling campaigns as well as some sporadic groundwater quality data from 1995.

20.6.2 Hydrogeologic Setting and Aquifer Properties

The local hydrogeological system in the study area consists of two principal aquifers; a bedrock aquifer that is overlain by a valley overburden aquifer across the valley floor.

Hydraulic response tests located in the area of the proposed open pit were conducted on various overburden monitoring wells as well as a 12-hour constant rate pumping test in overburden. These tests indicate that the hydraulic conductivity of the overburden aquifer ranges from about 1×10⁻⁵ m/s to 1×10⁻⁴ m/s.

Results of packer tests conducted in the bedrock aquifer ranged from about 1×10⁻⁶ m/s to 1×10⁻⁵ m/s in weathered and more fractured bedrock to 1×10⁻⁸ m/s to 1×10⁻⁷ m/s in deeper and relatively massive bedrock. In addition, results of a 24-hour constant rate pumping test was conducted in shallow bedrock in the area of the proposed open pit suggested an inferred bedrock hydraulic conductivity of about 2×10⁻⁶ m/s.

20.6.3 Occurrence and Flow

Groundwater elevations relative to the surface are variable across the study area with the water table at or very near surface in the valleys, while beneath the mountains the water table may be greater than 200 m below surface.

The groundwater flow is mainly controlled by the area's topographic features moving from the topographically high mountain tops and slopes on either side of the valley toward discharge zones along the valley floors. This flow regime was confirmed by piezometric elevations collected from nested monitoring wells and vibrating wire piezometers across the study area.

20.6.4 Permafrost Interaction

The Project is located in an area with discontinuous permafrost. Permafrost was observed to be mostly absent on the east facing walls of the Geona Creek valley as well as in the area of the proposed open pit, except for some localised ice lenses. Where present, permafrost acts as a confining layer limiting recharge to the aquifer, pushing the groundwater table deeper on the west facing slopes compared to the east facing slopes, where permafrost is believed to be mostly absent.

20.6.5 Surface Water Interaction

Groundwater discharges to receiving water bodies along the valley floors, Geona Creek is the primary discharge feature in the study area. The amount of baseflow, i.e. groundwater seepage into the creeks, depends on the hydraulic gradient and hydraulic conductivity of the shallow overburden aquifer near the receiving stream.

In general, the fraction of baseflow in the creek will be much larger in the winter when there is little or no surface runoff or shallow subsurface runoff (also referred to as interflow). The baseflow is best estimated from the (late) winter creek discharge as it amounts to nearly 100% of the total discharge observed during this time of the year.

20.6.6 Groundwater Quality

Groundwater quality has been assessed at a total of 43 wells during the 1995 and 2015/2016 field programs, with samples analysed for general chemical parameters, total and dissolved metals, and nutrients.

Groundwater quality varies considerably across the study area, likely due to the large extent of the study area (over five km north to south), multiple groundwater flow systems and recharge sources (east and west of Geona Creek), and the potential for differing chemistry in the vicinity of the ABM deposit.

20.6.6.1 General Chemistry

Background field pH values ranged from 5.7 units to 8.6 units and averaged a slightly alkaline 7.4 in both overburden and bedrock aquifers across the whole study area. Dissolved hardness concentrations are variable across the site, ranging from 78.9 mg/l to 2,108 mg/l. The maximum dissolved hardness concentration was reported in a bedrock well located at the northern end of the study area and was over three times higher than the next highest concentration (in a bedrock well close to the southern end of the site). Average and maximum dissolved hardness concentrations were typically higher in bedrock wells than overburden wells and appear to increase in concentration with depth in the bedrock aquifer.

Groundwater has an average total dissolved solids concentration of 379 mg/l across the study area with an average concentration of 406 mg/l in bedrock wells and 306 mg/l in overburden wells. The highest total dissolved solids (1,960 mg/l) was recorded in a bedrock well at the northern extent of the study area and was over twice as high as the total dissolved solids concentration at any other well in the study area.

Sulfate concentrations averaged 68 mg/l across the study area, with an average of 67 mg/l in overburden wells and 69 mg/l in bedrock wells. Sulphate concentrations were highest in wells in the vicinity of the ABM deposit and showed a general trend of increasing concentration with depth in the vicinity of the ABM deposit. The slightly elevated sulphate concentrations near the mineral deposit relative to the site wide average can likely be attributed to the oxidation of sulphide minerals in the deposit area.

Many monitoring wells showed considerable variability in analytical results over the course of the monitoring program suggesting there may be a seasonal influence on groundwater chemistry. Ongoing groundwater monitoring will provide additional data to characterise seasonal changes in groundwater quality and quantity.

20.6.6.2 *Dissolved Metals*

Zinc, lead and copper are key metals expected to be associated with the massive sulphide ore deposit and consequently, concentrations of these metals may be elevated in areas hydraulically downgradient of where groundwater contacts the deposit. Zinc and lead concentrations were observed to be considerably higher in the vicinity of the deposit than across the rest of the study area. Average zinc and lead concentrations were over 100 times and 25 times higher respectively, close to the ABM deposit area than the average across the rest of the study area. On average, both close to the ABM deposit area and across the study area, zinc and lead concentrations were higher in overburden wells than bedrock wells. Copper concentrations were relatively similar across the study area and concentrations were similar in overburden and bedrock wells.

Dissolved arsenic, cadmium and iron are considered “key parameters” that have been detected at concentrations above guideline values in multiple wells across the site over the monitoring program. The maximum natural arsenic concentration was observed in a deep bedrock well close to the ABM deposit and average arsenic concentrations in the vicinity of the ABM deposit were approximately 20 times higher than average values over the entire study area.

The highest iron concentrations were observed in wells at the northern end of the study area where average concentrations are over twice that observed in the ABM deposit area. Within the central study area, iron concentrations are considerably lower, with average concentrations over 10 times lower than those observed close to the ABM deposit. Across the study area iron concentrations were similar in both bedrock and overburden monitoring wells.

Cadmium concentrations were observed to be highest in wells close to the ABM deposit area. Similar to iron concentrations, cadmium concentrations in wells at the northern extent of the study area displayed average and maximum concentrations higher than the central study area.

20.6.7 *Surface Water Quality*

Baseline studies for surface water quality were undertaken in 1994 and 1995 under the previous property ownership, followed by biannual water quality monitoring conducted as part of Water Licence QZ97-026 between 2002 and 2016. The surface water quality monitoring program was re-evaluated and re-initiated in April 2015, comprising 12 stations sampled on a monthly basis. Natural artesian seeps were also sampled to evaluate their impact on stream water chemistry.

Surface water samples were analyzed for general chemical parameters, as well as total metals, dissolved metals and nutrients. Water quality was compared against the most recently revised water quality guidelines for protection of aquatic life established by the Canadian Council of Ministers of the Environment (CCME) or British Columbia Ministry of the Environment.

Creeks that drain the KZK Project were circumneutral to alkaline (pH 6.8 to 8.7; median 7.8) and had a moderately hard hardness. Dissolved organic carbon ranged from less than 0.5 mg/l to 17.2 mg/l, with the highest concentrations measured in Geona Creek. At all surface water stations, naturally occurring

nitrogen species (nitrate, nitrite, cyanide, ammonia) were all typically below or marginally above the detection limit, with the exception of nitrate-N, which ranged from median concentrations of 0.01 mg/l in East Creek to 0.125 mg/l in Fault Creek. Nitrate peaks coincided with freshet-period sampling; however, no concentrations exceeded the CCME threshold of 3 mg/l.

Water quality guideline exceedances were observed sporadically for a number of constituents including total concentrations of aluminum, arsenic, cadmium, chromium, copper, iron, lead, mercury, selenium, and zinc. Majority of these exceedances coincided with freshet, when TSS concentrations were highest and metal(loid)s were largely transported as particulates.

In general, more water quality guideline exceedances were noted for total metal concentrations than their dissolved counterparts, suggesting that a significant portion of the metals were particulate-bound, especially during freshet and/or other periods characterised by elevated TSS levels. That dissolved metal concentrations exhibited much less frequent water quality guideline exceedances is important since it is the dissolved fraction that is the most bioavailable.

A comparison of the Cominco 1994–1995 water quality dataset with that collected during the more recent baseline water quality monitoring, conducted since 2015, indicated that there were no obvious differences between the two datasets, with the two exceptions of total selenium and total chromium. Total chromium concentrations were typically lower in the 2015–2016 dataset compared to the historical sampling, perhaps due to a preponderance of higher flow sampling events in the historical samples, which may have resulted in higher particulate chromium concentrations. Conversely, total selenium concentrations were generally higher in the recently collected samples compared to the 1994–1995 survey possibly because fewer samples were taken during low flows in the 1994–1995 when selenium concentrations are higher. The differences could also have been a result of differences in laboratory analytical techniques. Selenium concentrations appear to be sensitive to flow conditions, exhibiting minima during periods of high flow (i.e. dilution during freshet and following extended precipitation events) and elevated levels during baseflow winter conditions. The paucity of winter sampling in the 1994–1995 dataset allied with likely high precipitation events in the August 1995 samples, may have low-biased the historical dataset.

Although the detection limits for total chromium and selenium were similar for the 1994–1995 and 2015–2016 datasets, the historical analytical technique included a pre-concentration process to achieve the reported detection limits, albeit with commensurate reduction in analytical precision. As such, this reduced analytical precision may partly explain the observed differences between the 1994–1995 and 2015–2016 chromium and selenium dataset.

20.6.8 Fish

Studies from the 1990s found Geona Creek and the small ponds overlying the ABM deposit generally have low abundances of fish, containing just a few slimy sculpin (*Cottus cognatus*) and young arctic grayling (*Thymallus arcticus*), and further downstream, adult arctic grayling occur in Finlayson Creek. Larger rivers and lakes in the area host grayling, whitefish, lake trout, burbot and Dolly Varden char.

Additional baseline fisheries studies were conducted every other year from 2002 to 2016 (Laberge and Can-Nic-A-Nick, 2014), as per the requirements of Water Licence QZ97-026.

The 2015/2016 fisheries baseline environmental study was primarily focused on Geona Creek and Fault Creek. The results of the 2015/2016 investigations are generally consistent with previous findings. Fish were captured in generally low numbers, with the highest Catch Per Unit Effort near the headwaters of Geona Creek. The only species captured in Geona Creek was arctic grayling (*Thymallus arcticus*), with the exception of one slimy sculpin (*Cottus Cognatus*) captured at the confluence with Finlayson Creek.

20.6.9 Aquatics

20.6.9.1 Sediments

Stream sediments were collected in 1994 and 1995 by Cominco as part of the baseline environmental and socio-economic studies for the Project in support of the Initial Environmental Evaluation (IEE). In addition, Environment Canada's Environmental Protection Branch collected sediment samples in 1995. After regulatory approvals were received in 1998 (Water Licence QZ97-026), subsequent baseline studies including stream sediments have been conducted every two years since 2002 to meet the requirements of the Water Licence. In 2015, stream sediments were collected on Finlayson Creek, Geona Creek and Fault Creek.

The studies have shown that naturally occurring arsenic levels are high throughout the study area, except in South Creek. Similarly, naturally occurring cadmium levels are also elevated throughout the Project area, except in South Creek and East Creek. Chromium and copper levels are generally below the Interim Sediment Quality Guideline, except at the mouth of Geona Creek for chromium and in upper Geona Creek for copper. Lead and mercury show no exceedances of their respective Interim Sediment Quality Guideline, while natural zinc levels are generally naturally elevated with Fault Creek and upper Geona Creek exceeding the Probable Effects Level.

The observed metal concentrations were generally lower in 2015 than historically for most parameters and the magnitude of exceedances was generally lower; however, the parameters showing exceedances are consistent with historical data and indicate that these drainages lie within naturally mineralised zones.

20.6.9.2 Benthic Invertebrates

Benthic invertebrate communities were surveyed and sampled in 1995 in support of the IEE. After regulatory approvals were received in 1997 (IEE) and 1999 (Water Licence QZ97-026), subsequent baseline studies, including benthic invertebrates, have been conducted every two years since 2002 to meet the requirements of the Water Licence. Additional benthic invertebrate samples were collected in 2015 to fill in baseline information gaps (i.e. lack of historical benthic data for Geona and Fault Creeks) that will support the environmental effects assessment, as well as the development of the Fish Offsetting Plan.

Benthic invertebrate density and diversity have been calculated at each sampling station over the various study periods. Metals in benthic invertebrate tissue have also been analysed.

20.6.9.3 Periphyton

Periphyton sampling was undertaken in 2015 as they had not previously been studied. The dominant phylum observed at all sites was Bacillariophyta, with other phyla generally representing less than 1% of the total number of algae.

20.6.9.4 Chlorophyll *a*

Chlorophyll *a* concentrations provide a measure of algae biomass and thus the primary productivity of a given location, chlorophyll *a* samples were collected on Finlayson Creek, Geona Creek and Fault Creek in 2015, as they had not previously been studied. Chlorophyll *a* concentrations in the Project area are generally low which is an indication of low productivity systems.

20.7 Vegetation

The 2015 and 2016 baseline studies included: terrestrial ecosystem descriptions, mapping and survey results for rare plants, invasive plants, baseline metal concentrations in soils and vegetation, wetland assessments, and forest productivity and timber volume estimates. The existing setting for vegetation combines historical information from surveys completed during the initial Project assessment and

licensing process in the 1990s, and information collected during the re-initiation of the Project baseline surveys in 2015–2016 to support re-assessment and relicensing.

The Project area lies in the subalpine and alpine vegetation zones with boreal forest predominant in the lower parts of the property grading into shrub and herb dominated areas at higher elevation. Black spruce and subalpine fir are predominant in forest environments whereas tall shrub vegetation types such as dwarf birch and dwarf willow birch predominate higher up. At the highest elevations, vegetation types consist mostly of dwarf willow and alpine dwarf shrubs, in addition to herb vegetation types. Feathermoss dominates the understory in dense coniferous stands whereas sedge or sphagnum tussocks are common in wetlands and under black spruce.

No rare plants were found during the transect surveys or through incidental observations while performing other vegetation field work; none are anticipated as there are no unique landscape features.

Seven non-native species were detected during the 2015–2016 surveys. Most observations were made along the tote road, especially near the gatehouse and laydown area. BMC has implemented an Invasive Species Management Plan to reduce the potential for the spread of these species.

In 2015–2016, a soil and vegetation tissue sampling program was undertaken to provide a snapshot of metal concentrations in vegetation and soils at the pre-development stage of the Project. Metal concentrations in soil samples were compared to CCME soil guidelines for metal concentrations at industrial sites. Of all the 19 metals in which guidelines have been established, minimal exceedances were occasionally observed for arsenic, copper, selenium and zinc. A total of 40 vegetation samples were collected from six different vegetation types. These were analysed for occurrence of 35 different metals with results showing that concentrations of most metals detected at the Project area were in the range of worldwide background concentrations for similar vegetation types.

During the 2015/2016 baseline studies, timber plots were located along the existing tote road study corridor at the lower elevations where there was adequate forest cover (greater than 10%). In general, the trees measured are of poor timber quality.

20.8 Wildlife

The Finlayson caribou herd is of economically significant to the Kaska First Nations and the local economy. From 1994 to 1995, several detailed population studies of the Finlayson caribou herd were undertaken by Cominco to support the IEE. In 2015, BMC undertook three studies to assess the distribution of the Finlayson caribou herd at different seasonal periods (a late winter aerial survey in March, post-calving in July and rut surveys in October). The studies to date have shown that the herd's range includes the uplands around the Project area from spring to fall and the lowlands of the Pelly River in the winter. The herd is subject to ongoing management and monitoring effort by the Yukon Government.

Moose were monitored using aerial surveys flown in March and November 1995 and in 2015, to document late-winter and post-rut distribution. In 2015 the survey areas for both the late winter and the post-rut were expanded, based on discussions with the Yukon government biologist to include all of Game Management Subzone 10-07. Surveys indicate moose are well dispersed in the Project area during summer and early fall, congregating in post-rut groups in the upper elevations of the Project area. The moose spend early winter in the Project area and may remain into late winter during some years.

Stone's sheep were not formally surveyed in 1995 or in 2015. However, incidental observations made during other wildlife studies in both 1995 and 2015 have been recorded and mapped. The closest siting has been approximately 7 km southeast of the ABM deposit. Grizzly bears (*Ursus arctos*) are listed as a COSEWIC (Committee on the Status of Endangered Wildlife in Canada) Species of Special Concern and are

listed in Schedule 3 of the federal Species at Risk Act (COSEWIC, 2012). No bear den sites were observed during the aerial surveys in 1995 and none were reported during other Project related work in the area.

In 2015, three aerial bear den surveys were conducted. The surveys covered the grizzly bear hibernation emergence period from late April to mid May. Observations included an active bear den with a sow and two yearling cubs, approximately 4.5 km southwest of the ABM deposit; and grizzly tracks, with two tracks in different areas attributed to a single bear in each case.

Black bear were not surveyed. Incidental observations included one mature black bear at the gatehouse in May 2015, and bear scats on the lower portion of the tote road in July 2015.

In 2015, a localised beaver habitat and sign survey was completed for the upper Geona Creek valley. The survey yielded 18 observations of beaver signs. Most of the beaver-built structures were of some age and had been in place long enough to become vegetated or are beginning to deteriorate. Only four locations appeared to have been constructed within the last year or two. The only direct sighting of a beaver took place during the breeding bird survey (at a reference site outside of the Project area).

Collared Pika are a Species of Special Concern (COSEWIC, 2011), but there is no prior data to 2015. In 2015, collared pika and two hoary marmot were observed at one survey site (approximately 2 km south of the ABM deposit). Incidental observations of marmot and pika were also made during the vegetation baseline studies. Neither species are mentioned in the IEE. No species-specific surveys were conducted for any other small ground mammals.

A survey for bats found no bats in the project area. At the elevation of the Project (1,350 m above sea level), it is unlikely that the any bats would be present.

No breeding bird surveys or focal bird species surveys were conducted for the Project or in the regional or local study areas for the IEE. A North American Roadside Breeding Bird Survey route exists for Finlayson Lake (located approximately 30 km northeast of the proposed mine site, and outside the Project study area) provides data applicable for comparison to the Project area. In 2015, a total of 36 species were observed at sites near the proposed mine footprint which is comparable to the 27 species observed on the Finlayson Lake Bird Breeding Survey route.

Overall, the IEE reported that no raptor nest sites or family groups were found in the immediate Project area in 1995. In 2015, a flyover of pre-identified potential habitat areas did not detect any signs of raptors.

All wildlife studies conducted in 2015 as described above have been conducted again in 2016 and the results are very similar to the 2015 observation, with the exception of the bat study. In 2016 bats were detected near the northern end of tote road.

21 Capital and Operating Costs

21.1 Basis of Estimate

The capital and operating cost estimates have been completed to an accuracy of $\pm 20\%$ and $\pm 15\%$ respectively with a base date of Q3 2016. Escalation of costs has not been included after this date. All costs are provided in Canadian currency unless otherwise noted. Exchange rates used to convert vendor pricing to Canadian currency are detailed in Table 92.

Table 92: Foreign exchange rates

| Currency | Exchange rate (per C\$) |
|-----------|-------------------------|
| US dollar | \$0.80 |
| Euro | €0.69 |

A Work Breakdown Structure (WBS) was established for the initial cost estimate. Costs have been classified into the various WBS areas to ensure that the full cost of developing the Project has been captured. The cost estimate was developed by a number of separate parties and consolidated by BMC. The resultant PFS has been independently reviewed by CSA Global and found to be appropriate for the purpose of the study. The cost estimates for the KZK Project are line with equivalent projects and represent a reasonable estimate for the scale and location of the Project.

Responsibilities for preparation of each component of the WBS are detailed in Table 93.

Table 93: Capital cost estimate responsibility matrix

| WBS number and description | | Responsibility | Scope |
|----------------------------|--|----------------|---|
| 1200 | Open Pit Mine Establishment | Entech/BMC | Mine Development and Production Mining Equipment Mine Services and Equipment Haul Roads |
| | | Tetra Tech | Pit Dewatering |
| | | Knight Piesold | Mine Stockpiles Waste Storage Facilities |
| 1300 | Underground Mine Establishment | Entech/BMC | Mine Development and Production Mining Equipment Mine Services and Equipment |
| | | Tetra Tech | Underground Mine Dewatering |
| 1400 | Mine Infrastructure, Services and Facilities | BMC | Mining Utilities Explosives Facility Mine Fuel Facility Mining Power Ancillary Mine Services |
| | | Allnorth | Mine Workshop |
| 2100 | Process Plant | Allnorth | Crushing and Reclaim Grinding and Classification Flotation Regrind Concentrate Handling and Storage Tailings Storage Reagents Paste Fill Plant |

| WBS number and description | | Responsibility | Scope |
|----------------------------|--------------------------------|----------------------------|---|
| 2200 | On Site Services and Utilities | Allnorth | Plant Site Development Plant Roads and Fences Potable Water Plant Services |
| | | Cryopeak | Power Generation |
| | | On Site Engineering | Project Access Road |
| | | Total North Communications | Site Communications |
| | | Knight Piesold | Site Water Management |
| | | BMC | Site Power Distribution |
| 2300 | Plant Infrastructure | Allnorth | Plant Workshop and Warehouse Reagents Storage Administration Facilities Laboratory Gatehouse Weighbridge Control Room First Aid Facilities |
| 2400 | Permanent Camp | Allnorth | Camp Buildings and Facilities |
| 2500 | Mobile Equipment | BMC | Ancillary Mobile Equipment |
| 3100 | Offsite Concentrate Facilities | BMC | Buildings and Equipment |
| 3300 | Vendor Representatives | Allnorth | Vendor Costs |
| 3400 | Off Site Facilities | BMC | Finlayson Airstrip |
| 4000 | EPCM | Allnorth | Process Plant and Related Infrastructure |
| | | BMC | Mining and Other Infrastructure |
| 7000 | Owners Provisions | Allnorth | First Fills Capital Spares |
| | | BMC | Laboratory, Workshop, Warehouse and Miscellaneous Equipment Owners Management |
| 9000 | Contingency | Allnorth | Process Plant and Related Infrastructure |
| | | BMC | Mining and Other Infrastructure |

21.2 Capital Costs

21.2.1 Capital Cost Summary

Capital costs for the PFS were primarily estimated by BMC’s consultants with BMC providing additional input as required. Key contributors to cost estimates include:

- Allnorth Consultants Ltd: Process plant and associated site services and facilities capital costs
- Knight Piesold Ltd: Surface infrastructure and water management capital costs
- Alexco Environmental Group: Reclamation and closure costs
- Cryopeak: Power generation and fuel storage capital costs
- On Site Engineering: Tote Road upgrade capital cost
- Total North Communications: Site communications capital costs
- Stewart World Port: Port facilities capital costs.

A summary of the capital costs over the life of the Project are presented in Table 94. C\$379 million will be required in pre-production capital to bring the mine into production, while an additional C\$151 million of

sustaining capital will be required during operations and closure. A more detailed discussion of capital costs is included in the following sections.

Table 94: LOM capital cost summary

| Capital cost summary | Pre-production (C\$M) | Sustaining (C\$M) | Total (C\$M) |
|---------------------------|-----------------------|-------------------|----------------|
| Open pit mining | \$50.2 | \$16.5 | \$66.8 |
| Underground mining | \$0.0 | \$35.6 | \$35.6 |
| Processing | \$131.7 | \$7.1 | \$138.8 |
| Infrastructure | \$119.3 | \$0.9 | \$120.2 |
| Owners and indirects | \$50.2 | \$0.0 | \$50.2 |
| Closure | \$0.0 | \$89.4 | \$89.4 |
| Subtotal | \$351.5 | \$149.6 | \$501.0 |
| Contingency | \$27.3 | \$1.2 | \$28.5 |
| TOTAL CAPITAL COST | \$378.8 | \$150.8 | \$529.6 |

21.2.2 Open Pit Mining

Open pit pre-production capital costs are detailed in Table 95. Open pit mining has been assumed to be undertaken by a mining contractor, hence no costs have been allowed for open pit mining equipment.

Table 95: Open pit pre-production capital costs

| Open pit mining area | Capital cost (C\$M) |
|---|---------------------|
| Open pit clearing and pre-stripping | \$4.9 |
| Dewatering | \$2.6 |
| Establish mine stockpiles and waste rock storage facilities | \$12.8 |
| Haul roads | \$3.2 |
| Open pit mining equipment | \$0.0 |
| Pre-production mining | \$26.7 |
| Total open pit mining pre-production capital | \$50.2 |

21.2.3 Underground Mining

All underground mining capital costs have all been considered as sustaining capital costs, as the underground mine does not commence until year 3 of the operation and mining has been assumed to be undertaken by a mining contractor. Table 96 is included here to provide a breakdown for underground capital costs incurred, and these costs should not be considered additional to the sustaining capital costs summarised in Section 21.2.8.

Table 96: Underground capital costs (all sustaining capital)

| Underground mining (all sustaining capital) | Capital cost (C\$M) |
|--|---------------------|
| Capital mine development | \$18.0 |
| Underground infrastructure | \$2.8 |
| Paste backfill plant | \$15.8 |
| BMC light vehicles | \$0.2 |
| Total underground mining capital (sustaining capital) | \$36.8 |

21.2.4 Processing

Table 97 summarises the estimated capital costs to construct the processing plant facilities. Costs were estimated by category including civil, structural, mechanical, piping, electrical, controls and instrumentation, and buildings and architectural costs.

Table 97: Processing plant capital cost

| Process plant area | Capital cost (C\$M) |
|---------------------------------------|---------------------|
| Crushing and reclaim | \$21.5 |
| Grinding and classification | \$21.7 |
| Flotation | \$32.7 |
| Regrind | \$6.6 |
| Concentrate handling and storage | \$20.2 |
| Tailings storage | \$18.8 |
| Reagents | \$10.2 |
| Total processing plant capital | \$131.7 |

21.2.5 Infrastructure

A summary of the pre-production infrastructure costs is shown in Table 98. Cost estimates for each area were prepared by the responsible parties.

Table 98: Infrastructure capital cost

| Infrastructure | Capital cost (C\$M) |
|-------------------------------------|---------------------|
| Mining infrastructure | \$8.5 |
| Plant infrastructure | \$32.0 |
| Onsite services and utilities | \$41.5 |
| Power generation and distribution | \$1.1 |
| Site water management | \$6.2 |
| Site communications | \$0.9 |
| Site access road | \$4.5 |
| Permanent camp | \$9.8 |
| Offsite facilities | \$14.7 |
| Total infrastructure capital | \$119.3 |

21.2.6 Owners and Indirect Costs

Owners and indirect costs are summarised in Table 99. Majority of these costs were estimated by Allnorth for construction of the processing plant and other site infrastructure, to which BMC included additional owner's costs to cover site management and oversight during the construction period.

Table 99: Owners and indirect costs

| Owners and indirect costs | Capital cost (C\$M) |
|--|---------------------|
| EPCM | \$27.8 |
| Temporary construction facilities | \$0.6 |
| Construction support | \$2.8 |
| Construction equipment and tools | \$6.4 |
| Construction camp | \$3.2 |
| First fills | \$1.3 |
| Critical spares | \$2.9 |
| Vendor reps | \$0.4 |
| Owners costs | \$4.9 |
| Total owners and indirect costs | \$50.2 |

21.2.7 Contingency

Contingency provisions have been included to cover costs that are not included in the capital cost estimate that can be expected to be incurred during construction. Contingency has been allowed for at the rate of 10% of direct costs, totalling C\$27.3 million.

21.2.8 Sustaining Capital

Sustaining capital costs are detailed in Table 100. Sustaining capital has not been included for the processing plant facilities as these costs have been included in the operating cost estimate. Processing plant sustaining capital shown in Table 100 provides for the replacement of vehicles required for the day-to-day operation of the processing facility. Ongoing clearing and preparation of additional storage capacities within the various waste storage facilities has been included in the open pit mining sustaining capital cost.

Table 100: Sustaining capital costs

| Sustaining capital | Total | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|--------------------|---------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Open pit mining | \$16.5 | \$3.1 | \$2.9 | \$3.8 | \$2.9 | \$2.9 | \$0.7 | \$0.3 | \$0.0 | \$0.0 | \$0.0 |
| Underground mining | \$36.8 | \$0.0 | \$3.3 | \$31.8 | \$1.5 | \$0.0 | \$0.2 | \$0.0 | \$0.0 | \$0.0 | \$0.0 |
| Processing | \$7.1 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.2 | \$1.5 | \$5.3 | \$0.0 | \$0.2 | \$0.0 |
| Administration | \$0.9 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.2 | \$0.4 | \$0.1 | \$0.0 | \$0.2 | \$0.0 |
| Total | \$61.4 | \$3.1 | \$6.2 | \$35.6 | \$4.4 | \$3.2 | \$2.8 | \$5.7 | \$0.0 | \$0.4 | \$0.0 |

21.2.9 Working Capital

Working capital is based on 60 days Accounts Receivable plus Inventory minus 30 days Accounts Payable. Accounts Receivable is based on 10% of 2 MAMA (month after month of arrival).

Working capital requirements commence with commencement of production. The lowest level of working capital of C\$0.2 million occurs during the commissioning period. During steady state production, the working capital requirements range between C\$10 million and C\$20 million, with a peak of C\$26 million.

21.2.10 Closure Costs

Closure costs have been estimated on the basis of progressive reclamation where appropriate from year 3 of operations. It has been estimated that three years of closure activities following the completion of production activities, will be required. Ongoing, post-closure, water treatment and monitoring will be required before the site until the site can be considered closed and returned to the government.

Table 101: Closure cost estimate

| Closure implementation | During operations (C\$M) | Closure (C\$M) | Post-closure (C\$M) | Total cost (C\$M) |
|--|--------------------------|----------------|---------------------|-------------------|
| General & Administration | \$0.0 | \$0.3 | \$3.2 | \$3.5 |
| Closure Planning | \$0.3 | \$0.0 | \$0.0 | \$0.3 |
| Open Pits | \$0.5 | \$1.0 | \$0.0 | \$1.5 |
| Waste Rock and Tailings | \$19.0 | \$21.0 | \$0.0 | \$40.0 |
| Surface Facilities | \$0.0 | \$1.3 | \$0.2 | \$1.5 |
| Water Storage Ponds | \$0.0 | \$0.7 | \$0.1 | \$0.8 |
| Infrastructure | \$0.0 | \$0.4 | \$0.1 | \$0.5 |
| Waste Disposal/Remediation | \$0.0 | \$0.1 | \$0.0 | \$0.1 |
| Roads and Trails | \$0.0 | \$0.100 | \$0.2 | \$0.3 |
| Water and Solutions Management | \$0.0 | \$3.7 | \$7.000 | \$10.7 |
| Quarries and Borrow Pits | \$0.0 | \$0.1 | \$0.0 | \$0.1 |
| Sediment and Erosion Control | \$0.0 | \$0.0 | \$0.1 | \$0.1 |
| Post Closure Care, Maintenance, and Monitoring Costs | \$0.0 | \$0.5 | \$5.1 | \$5.6 |
| Subtotal | \$19.8 | \$29.0 | \$16.0 | \$64.8 |
| Indirect Costs (%) | 15% | 15% | 15% | 15% |
| Indirect Costs | \$3.0 | \$4.4 | \$2.3 | \$9.7 |
| TOTAL CLOSURE IMPLEMENTATION COSTS | \$22.7 | \$33.4 | \$18.4 | \$74.5 |
| Contingency allowance | 20% | 20% | 20% | 20% |
| Contingency amount | \$4.5 | \$6.7 | \$3.7 | \$14.9 |
| TOTAL CLOSURE COST (including Contingency) | \$27.2 | \$40.1 | \$22.1 | \$89.4 |

21.2.11 Leased Assets

Modelling of leasing of certain assets has been included in the PFS. These assets include power generation equipment and associated fuel storage equipment, heavy vehicles associated with processing operations and light vehicles for all departments to bring the Project into production. As lease periods are completed and assets need to be replaced due to completion of the asset's serviceable life, replacement equipment has been modelled as a capital purchase, rather than a continuation of the asset leasing.

21.3 Operating Costs

21.3.1 Operating Cost Summary

Operating costs for the PFS were primarily estimated by BMC's independent consultants. Key contributors to cost estimates include:

- Allnorth Consultants Ltd: Process plant and associated site services and facilities operating costs
- Knight Piesold Ltd: Surface infrastructure and water management operating costs
- Cryopeak: Power generation and fuel storage operating costs
- Total North Communications: Site communications operating costs
- Stewart World Port: Port facilities operating costs
- Mining contracting firms: Budget quotes for open pit and underground mining operating costs
- Other service providers for general costs including air charters, freight and camp services.

The operating costs over the life of the Project, excluding open pit pre-production costs, are detailed in Table 102. Over the life of the Project, total operating costs are expected to be in the order of C\$1,580 million.

Table 102: Operating cost summary

| Operating cost summary | | Total | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|-----------------------------|-------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Open pit mining | C\$M | \$545.1 | \$71.7 | \$78.2 | \$73.8 | \$65.0 | \$57.9 | \$53.3 | \$51.2 | \$51.4 | \$42.6 | \$0.0 |
| Underground mining | C\$M | \$187.0 | \$0.0 | \$0.4 | \$5.7 | \$53.8 | \$42.4 | \$28.8 | \$18.1 | \$17.8 | \$20.0 | \$0.0 |
| Processing | C\$M | \$388.7 | \$34.0 | \$44.0 | \$44.0 | \$44.0 | \$44.0 | \$44.0 | \$44.0 | \$44.0 | \$44.0 | \$2.7 |
| Site G+A | C\$M | \$120.1 | \$12.4 | \$12.7 | \$13.5 | \$13.9 | \$13.8 | \$14.4 | \$13.0 | \$12.8 | \$12.7 | \$0.8 |
| Offsite G+A | C\$M | \$15.4 | \$1.1 | \$1.8 | \$1.8 | \$1.6 | \$1.7 | \$1.7 | \$1.7 | \$1.9 | \$1.8 | \$0.3 |
| First Nations | C\$M | \$32.7 | \$1.0 | \$1.0 | \$1.0 | \$1.0 | \$3.1 | \$4.1 | \$3.9 | \$4.6 | \$5.1 | \$7.9 |
| Operating leases | C\$M | \$42.3 | \$6.4 | \$6.4 | \$7.2 | \$7.2 | \$6.9 | \$6.5 | \$0.8 | \$0.8 | \$0.0 | \$0.0 |
| Royalties | C\$M | \$247.0 | \$12.1 | \$30.2 | \$24.9 | \$17.9 | \$22.6 | \$21.7 | \$29.1 | \$34.6 | \$41.6 | \$12.4 |
| Total operating cost | C\$M | \$1,578.4 | \$138.7 | \$174.6 | \$172.1 | \$204.4 | \$192.5 | \$174.4 | \$161.9 | \$167.9 | \$167.8 | \$24.1 |

Table 103 shows operating costs over the life of the Project on a unit cost basis. Over the LOM, unit operating costs are expected to be C\$89.90/t of ore processed.

Table 103: Operating unit operating cost summary

| Unit operating cost summary | | Average | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|-----------------------------|--------------|----------------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| Open pit mining | C\$/t | \$31.05 | \$49.65 | \$39.08 | \$36.91 | \$32.49 | \$28.97 | \$26.65 | \$25.61 | \$25.68 | \$21.33 | \$0.0 |
| Underground mining | C\$/t | \$10.65 | \$0.0 | \$0.20 | \$2.87 | \$26.91 | \$21.20 | \$14.39 | \$9.06 | \$8.91 | \$9.98 | \$0.0 |
| Processing | C\$/t | \$22.14 | \$23.54 | \$22.00 | \$22.00 | \$22.00 | \$22.00 | \$22.00 | \$22.00 | \$22.00 | \$22.00 | \$23.91 |
| Site G+A | C\$/t | \$6.84 | \$8.60 | \$6.34 | \$6.77 | \$6.93 | \$6.91 | \$7.20 | \$6.50 | \$6.42 | \$6.35 | \$7.04 |
| Offsite G+A | C\$/t | \$0.88 | \$0.77 | \$0.89 | \$0.92 | \$0.81 | \$0.84 | \$0.84 | \$0.84 | \$0.95 | \$0.92 | \$2.86 |
| First Nations | C\$/t | \$1.87 | \$0.69 | \$0.50 | \$0.50 | \$0.50 | \$1.56 | \$2.06 | \$1.97 | \$2.30 | \$2.55 | \$69.83 |
| Operating leases | C\$/t | \$2.41 | \$4.44 | \$3.21 | \$3.62 | \$3.61 | \$3.46 | \$3.23 | \$0.41 | \$0.41 | \$0.0 | \$0.0 |
| Royalties | C\$/t | \$14.07 | \$8.37 | \$15.10 | \$12.46 | \$8.94 | \$11.30 | \$10.85 | \$14.56 | \$17.28 | \$20.78 | \$48.09 |
| Total operating cost | C\$/t | \$89.90 | \$96.06 | \$87.32 | \$86.04 | \$102.18 | \$96.24 | \$87.21 | \$80.95 | \$83.95 | \$83.91 | \$213.61 |

Table 104 shows C1 operating costs over the life of the Project. C1 Costs, net of by-product and selling costs will range between US\$(0.69) and US\$0.27/lb of payable zinc, with the life of mine average being US\$(0.27)/lb payable zinc.

Table 104: C1 operating cost summary

| Operating cost summary | | Average | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|---|------------|----------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| C1 Cost, net of by-product credits and selling cost | US\$/lb Zn | \$(0.27) | \$0.27 | \$(0.26) | \$(0.10) | \$(0.02) | \$(0.22) | \$(0.11) | \$(0.47) | \$(0.29) | \$(0.69) | \$(5.09) |
| AISC, net of by-product credits and selling cost | US\$/lb Zn | \$(0.12) | \$0.35 | \$(0.11) | \$0.15 | \$0.09 | \$(0.09) | \$0.02 | \$(0.30) | \$(0.16) | \$(0.50) | \$(4.46) |
| C1 Coproduct Cost, net of selling cost | US\$/lb Zn | \$0.21 | \$0.31 | \$0.20 | \$0.22 | \$0.29 | \$0.25 | \$0.24 | \$0.19 | \$0.18 | \$0.16 | \$0.05 |
| C1 Coproduct Cost, net of selling cost | US\$/lb Pb | \$0.17 | \$0.24 | \$0.16 | \$0.17 | \$0.23 | \$0.21 | \$0.19 | \$0.15 | \$0.14 | \$0.13 | \$0.04 |
| C1 Coproduct Cost, net of selling cost | US\$/lb Cu | \$0.70 | \$0.93 | \$0.62 | \$0.72 | \$0.96 | \$0.82 | \$0.78 | \$0.62 | \$0.59 | \$0.52 | \$0.17 |
| C1 Coproduct Cost, net of selling cost | US\$/oz Au | \$430 | \$649 | \$397 | \$440 | \$584 | \$501 | \$479 | \$379 | \$357 | \$318 | \$97 |
| C1 Coproduct Cost, net of selling cost | US\$/oz Ag | \$6.20 | \$9.35 | \$5.73 | \$6.32 | \$8.42 | \$7.22 | \$6.91 | \$5.46 | \$5.20 | \$4.58 | \$1.39 |

21.3.2 Open Pit Mining

BMC sourced budget mining cost estimates from two local mining contracting companies to assess expected open pit mining operating costs. An internal cost estimate was also prepared to act as an independent check of the mining contractor costs, which supported the budget cost estimates. The costs presented in Table 105 are based on contract mining costs with additional costs included for BMC management, supervision, technical services and other expenses.

Table 105: Open pit mining operating costs

| Open pit mining summary | | Total | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|-------------------------|-------------|----------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|
| Mining contractor | C\$M | \$533.6 | \$1.6 | \$18.9 | \$68.1 | \$74.4 | \$70.2 | \$61.5 | \$54.4 | \$49.8 | \$47.7 | \$47.8 | \$39.2 | \$0.0 |
| BMC staff | C\$M | \$21.7 | \$0.3 | \$1.2 | \$2.2 | \$2.2 | \$2.2 | \$2.2 | \$2.2 | \$2.2 | \$2.2 | \$2.2 | \$2.2 | \$0.0 |
| BMC vehicles | C\$M | \$1.1 | \$0.0 | \$0.0 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.0 |
| Power | C\$M | \$1.1 | \$0.0 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.0 |
| Dewatering | C\$M | \$1.9 | \$0.1 | \$0.3 | \$0.3 | \$0.2 | \$0.2 | \$0.2 | \$0.2 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.0 |
| Grade control | C\$M | \$4.7 | \$0.0 | \$0.0 | \$0.5 | \$0.7 | \$0.5 | \$0.4 | \$0.5 | \$0.5 | \$0.5 | \$0.5 | \$0.5 | \$0.0 |
| Other expenses | C\$M | \$3.7 | \$0.0 | \$0.2 | \$0.4 | \$0.4 | \$0.4 | \$0.4 | \$0.4 | \$0.4 | \$0.4 | \$0.4 | \$0.4 | \$0.0 |
| Total | C\$M | \$567.7 | \$2.0 | \$20.6 | \$71.7 | \$78.2 | \$73.8 | \$65.0 | \$57.9 | \$53.3 | \$51.2 | \$51.4 | \$42.6 | \$0.0 |
| Unit cost | C\$/t ore | \$35.22 | | | \$45.22 | \$35.51 | \$41.82 | \$46.92 | \$35.15 | \$32.40 | \$29.87 | \$28.58 | \$24.58 | \$0.0 |

Contract mining costs include all operating and maintenance labour and equipment required for drill and blast, load and haul and road and dump maintenance activities and appropriate supervision and administration of these activities. The costs include all operating consumables, including explosives and fuel.

BMC staffing to manage the open pit operation consist of 20 personnel. Pit dewatering requirements vary over the life of the Project as the near field water table is progressively lowered. Electrical power costs allow for the provision of power to the mining workshop and the explosives facility. Grade control costs are based on a provision of \$0.30/t of ore. The general expenses allow for general office consumables, safety equipment and mining software.

21.3.3 Underground Mining

A budget mining cost estimate was sourced from a respected underground contractor with experience operating in northern Canada and the USA. The mining operating costs presented in Table 106 are based on contract mining costs with additional costs for paste backfilling of stopes and BMC management of the underground mining operation.

Table 106: Underground mining operating costs

| Underground mining summary | | Total | Y-2 | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 |
|----------------------------|-----------|---------|-------|-------|-------|-------|----------|---------|---------|---------|---------|---------|----------|-------|
| Mining contractor | C\$M | \$166.4 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$3.1 | \$50.1 | \$38.8 | \$25.6 | \$15.4 | \$15.4 | \$18.1 | \$0.0 |
| BMC staff | C\$M | \$7.9 | \$0.0 | \$0.0 | \$0.0 | \$0.2 | \$1.1 | \$1.4 | \$1.4 | \$1.4 | \$0.9 | \$0.8 | \$0.7 | \$0.0 |
| BMC vehicles | C\$M | \$0.5 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.1 | \$0.0 |
| Power | C\$M | \$12.2 | \$0.0 | \$0.0 | \$0.0 | \$0.2 | \$1.4 | \$2.3 | \$2.2 | \$1.7 | \$1.7 | \$1.6 | \$1.1 | \$0.0 |
| Total | C\$M | \$187.0 | \$0.0 | \$0.0 | \$0.0 | \$0.4 | \$5.7 | \$53.8 | \$42.4 | \$28.8 | \$18.1 | \$17.8 | \$20.0 | \$0.0 |
| Unit cost | C\$/t ore | \$91.07 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$106.31 | \$86.87 | \$83.47 | \$89.94 | \$92.18 | \$95.85 | \$117.50 | \$0.0 |

Contract mining costs include all supervision, operating and maintenance labour and equipment required for all underground development and stoping. The costs include all operating consumables, including explosives, fuel and basic ground support.

BMC management of the underground operations is expected to consist of a maximum of 11 personnel. Underground staff will operate as a satellite of the main technical services office and the large majority of the associated costs are already accounted for within the open pit operating costs.

Transportation of the ore and waste from the underground stockpile outside the portal to the processing plant or waste storage facility by open pit equipment has been included at a rate of C\$2.50/t.

21.3.4 Processing

Processing operating costs were estimated from first principles by Allnorth. A summary of the processing operating costs is detailed in Table 107.

Table 107: Processing plant operating cost summary

| Processing plant summary | C\$M/year | C\$/t |
|--------------------------|---------------|----------------|
| Labour | \$8.0 | \$3.99 |
| Power | \$11.5 | \$5.75 |
| Maintenance materials | \$6.0 | \$2.98 |
| Reagents and consumables | \$16.4 | \$8.20 |
| Miscellaneous | \$2.1 | \$1.07 |
| Total | \$44.0 | \$22.00 |

Labour to manage, operate and maintain the processing plant facility, including the filtered tailings storage facility are expected to consist of 74 personnel. Power costs for the processing plant facility are based on a power consumption of 40 kWh/t of ore treated.

Maintenance consumable costs comprise maintenance materials as well as specialist contract labour costs. Maintenance consumable costs have been estimated as a percentage of the direct installed capital cost, based on Allnorth's experience and data from similar operations. Specialist contract labour has been allowed for mill relines.

Reagent consumptions have been derived from the metallurgical testwork program. Reagent unit costs have been based on quotations received and includes freight to site.

Consumable costs are based on operations with similar ore types and expected consumable service life. Costs have been based on quotations received and includes freight to site.

The miscellaneous processing costs includes:

- Medium and heavy vehicles required around the processing and paste plants and to transport filtered tailings
- Light vehicles for supervision and maintenance
- On site laboratory costs
- External metallurgical testwork and consultants.

21.3.5 Site Administration

A summary of the annual site administration costs is shown in Table 108. Over the life of the Project, the total site administration cost is C\$120 million.

Table 108: Site administration costs

| Administration cost | LOM cost (C\$M) | Unit cost (C\$/t) |
|----------------------------------|------------------------|--------------------------|
| Labour | \$27.5 | \$1.57 |
| Vehicles | \$1.3 | \$0.07 |
| Power | \$9.8 | \$0.56 |
| Administration | \$11.2 | \$0.64 |
| Health and safety | \$1.0 | \$0.06 |
| Transportation, air and freight | \$18.5 | \$1.05 |
| Human resources | \$2.1 | \$0.12 |
| Environmental | \$3.8 | \$0.21 |
| Site services | \$3.8 | \$0.22 |
| Camp accommodation | \$41.0 | \$2.33 |
| Total administration cost | \$120.1 | \$6.84 |

Administration labour requirements, for the operation are expected to consist of 28 personnel. Senior management and certain staff will work a 9-day on/5-day off roster with all other personnel working a 2-week on/1-week off roster. Six light vehicles have been allocated to the administration personnel.

Estimates of the power requirements for the administration facilities were prepared by Allnorth. Costs for minor and major overhauls of the generators were included in year 6 and year 13 respectively.

The general administration cost estimates include allowances for insurance, communications, consultants, First Nation consultation, licences, permits and other general supplies and services. Health and safety costs allow for safety, training and security supplies.

Transportation costs capture the costs associated with transportation of personnel to site via a chartered flight service, bus transportation between the airstrip and site, general freight allowance and provision for emergency medical transportation.

Each department will be responsible for the management of the human resource costs within their own department, inclusive of recruitment, relocation and apprentice training.

Environmental costs include regular environmental monitoring to meet regulatory requirements and operation of the water treatment plant to ensure that water quality standards are met prior to discharge from site.

Site services allows for road maintenance of the site access road and for general costs to maintain the accommodation facility and general site in good condition.

Camp accommodation costs for provision of camp catering and housekeeping services were sourced from local service providers. A cost of C\$65 per man-day has been provided for in the operating cost estimate for this service.

21.3.6 Power Generation

The power costs have been included in the separate operating cost areas are based on the unit cost, detailed in Table 109, for a 99% NG/1% diesel mix as estimated by Cryopeak. At a ratio of 70% NG/30% diesel power costs increase to C\$0.157/kWh. NG costs were estimated to be C\$15.79/GJ delivered to site and the cost of diesel was estimated to be C\$0.985/l delivered to site.

Non-periodic costs for minor and major overhauls of the generators of C\$150,000 and C\$600,000 per generator are separately accounted for in General and Administration costs and not as a unit cost for power generation.

Table 109: Power generation cost estimate

| Power generation | Unit | 99% N : 1% Diesel |
|---------------------------------|----------------|-------------------|
| NG fuel consumption | GJ/year | 981,319 |
| NG fuel cost | C\$M | \$15.5 |
| Diesel fuel consumption | l/year | 245,106 |
| Diesel fuel cost | C\$M | \$0.2 |
| Service and maintenance | C\$M | \$0.1 |
| Lube oil consumption and change | C\$M | \$0.1 |
| Total cost | C\$M | \$15.9 |
| Annual power consumption | MWh | 110,954 |
| Unit power cost | C\$/kWh | \$0.144 |

21.3.7 Offsite Administration

An internal marketing charge of US\$5/dmt of concentrate has been allowed for BMC marketing of concentrates and logistics planning of shipping to final customers. Over the life of the Project, the total offsite administration cost is C\$15.7 million.

21.3.8 First Nations Costs

There are certain obligations within the existing SEPA that will incur operating costs for the Project. With negotiations for an updated SEPA in progress, BMC made an assessment of what these costs may be in a future agreement. For the purposes of this technical study, this cost has been estimated at C\$32.9 million over the life of the Project.

21.3.9 Operating Leases

Certain capital equipment assets for the establishment of the operation were assumed to be provided under an operating lease arrangement. These assets include the power generation plant and associated fuel storage equipment, heavy mobile equipment for the processing facility and light vehicles for all departments to commence operations. Indicative leasing terms were sourced from a Canadian financing provider and are summarised in Table 110. At the conclusion of the leasing period, ownership of the assets is transferred to BMC for a nominal payment of C\$1.

Table 110: Operating lease summary

| Operating leases | Lease term (months) | LOM lease cost (C\$M) |
|------------------------------------|---------------------|-----------------------|
| Power generators and fuel storage | 72 | \$32.2 |
| Processing heavy vehicles | 60 to 72 | \$8.8 |
| Light vehicles | 48 | \$1.3 |
| Total operating lease costs | | \$42.3 |

As the operating leases expire and equipment approaches the end of its serviceable life, replacement assets have been assumed to be purchased as a sustaining capital item, and a new operating lease is not established.

21.3.10 Royalties

No commercial royalties are applicable to the mine plan presented in this technical study.

Yukon mining royalties under the *Quartz Mining Act (QMA)* are payable to the Yukon Government annually. The QMA royalty is a net profits royalty, based on annual mineral production and sales after deduction of eligible expenses and allowances. Total royalties payable under the QMA are forecast to be C\$247 million.

22 Economic Analysis

22.1 Economic Analysis Summary

The technical study demonstrates that the Project will be a robust, high-margin project with Base Case economic results presented in Table 111. These base case results are based on the assumptions detailed in Table 112. The Base Case LOM metal price assumptions and treatment charges used (which are in real dollar terms), include industry consensus metal prices and concentrate charges derived from long-term forecasts. Base Case metal production is shown in Table 113 and annualised Base Case cashflows are shown in

Table 114.

Table 111: Economic result – Base Case

| | Unit | Pre-tax | Post-tax |
|--|--------|---------|----------|
| LOM Operating Margin | US\$/t | 108 | 82 |
| LOM Operating Margin | % | 45% | 34% |
| Free Cashflow | US\$M | 1,488 | 1,016 |
| NPV ⁷ | US\$M | | 583 |
| IRR | % | | 38% |
| Payback period | years | | 2.0 |
| Cashflow from operating activities (steady state yearly average) | US\$M | 237 | |

Table 112: Project assumption – Base Case

| Commodity | Unit | Price \$/lb | Price \$/t | | |
|-----------|---------|-------------|------------|-------------------------|--------------|
| Copper | US\$/lb | \$2.95 | \$6,504 | C\$:US\$ Pre-production | 0.75 to 0.79 |
| Zinc | US\$/lb | \$1.07 | \$2,359 | C\$:US\$ Long Term | 0.79 |
| Lead | US\$/lb | \$0.94 | \$2,072 | NPV Discount Rate | 7% |
| Gold | US\$/oz | \$1,292 | | | |
| Silver | US\$/oz | \$19.31 | | | |

The Base Case economic results are based on metal production as shown in Table 113.

Table 113: Base Case metal production

| | Copper | | Zinc | | Lead | | Gold | Silver |
|-------------------------------------|--------|-------|--------|-------|--------|-------|---------|---------|
| | '000 t | M lbs | '000 t | M lbs | '000 t | M lbs | '000 oz | '000 oz |
| Year 1 production | 5 | 11 | 70 | 155 | 14 | 32 | 39 | 4,316 |
| Production post year 1 average (pa) | 14 | 30 | 92 | 203 | 18 | 40 | 53 | 6,697 |
| LOM production | 117 | 257 | 837 | 1,845 | 167 | 368 | 483 | 60,125 |

Table 114: Base Case cash flow (US\$M)

| | Total | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 to 2035 |
|----------------------------------|--------------|----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|
| Revenue | | | | | | | | | | | | | | | |
| Zinc revenue | 1,667 | 0 | 0 | 0 | 80 | 205 | 205 | 185 | 174 | 174 | 174 | 215 | 185 | 68 | 0 |
| Copper revenue | 726 | 0 | 0 | 0 | 12 | 64 | 85 | 85 | 93 | 78 | 78 | 107 | 107 | 16 | 0 |
| Lead revenue | 327 | 0 | 0 | 0 | 14 | 36 | 32 | 28 | 34 | 28 | 38 | 16 | 45 | 56 | 0 |
| Gold in concentrate revenue | 535 | 0 | 0 | 0 | 20 | 72 | 57 | 53 | 56 | 44 | 63 | 63 | 68 | 38 | 0 |
| Silver in concentrate revenue | 960 | 0 | 0 | 0 | 31 | 118 | 98 | 94 | 103 | 82 | 107 | 109 | 136 | 83 | 0 |
| Total gross revenue | 4,214 | 0 | 0 | 0 | 157 | 495 | 477 | 446 | 460 | 407 | 461 | 510 | 540 | 261 | 0 |
| Selling costs | | | | | | | | | | | | | | | |
| TC/RCs | 496 | 0 | 0 | 0 | 21 | 58 | 59 | 54 | 54 | 50 | 53 | 60 | 60 | 28 | 0 |
| Transport costs to Port | 373 | 0 | 0 | 0 | 18 | 43 | 44 | 40 | 40 | 40 | 39 | 44 | 46 | 19 | 0 |
| Ocean freight | 133 | 0 | 0 | 0 | 6 | 15 | 16 | 15 | 14 | 14 | 14 | 16 | 16 | 7 | 0 |
| Penalties | 66 | 0 | 0 | 0 | 3 | 8 | 8 | 7 | 7 | 6 | 7 | 6 | 9 | 5 | 0 |
| Total selling cost | 1,070 | 0 | 0 | 0 | 48 | 124 | 126 | 115 | 115 | 111 | 114 | 126 | 131 | 59 | 0 |
| Net revenue | 3,145 | 0 | 0 | 0 | 109 | 371 | 351 | 331 | 345 | 296 | 347 | 384 | 409 | 202 | 0 |
| Operating costs | | | | | | | | | | | | | | | |
| Development expenses | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| First Nations milestone payments | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Open pit mining costs | 431 | 0 | 0 | 0 | 40 | 63 | 61 | 52 | 48 | 42 | 41 | 41 | 37 | 6 | 0 |
| Underground mining costs | 148 | 0 | 0 | 0 | 0 | 0 | 2 | 35 | 36 | 27 | 14 | 14 | 15 | 5 | 0 |
| Processing costs | 307 | 0 | 0 | 0 | 18 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 11 | 0 |
| G&A costs | 107 | 0 | 0 | 0 | 8 | 11 | 12 | 12 | 12 | 13 | 12 | 12 | 12 | 4 | 0 |
| First Nations operating costs | 26 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 4 | 5 | 3 |
| Operating leases | 33 | 0 | 0 | 0 | 4 | 5 | 6 | 6 | 6 | 5 | 2 | 1 | 0 | 0 | 0 |
| Total operating costs | 1,055 | 1 | 1 | 1 | 70 | 115 | 116 | 141 | 139 | 124 | 107 | 106 | 102 | 30 | 3 |
| Cash flow from operations | 2,090 | -1 | -1 | -1 | 38 | 256 | 235 | 190 | 206 | 171 | 240 | 278 | 307 | 172 | -3 |
| Other expenses | | | | | | | | | | | | | | | |
| Cash income tax | 462 | 0 | 0 | 0 | 0 | 32 | 52 | 42 | 48 | 41 | 60 | 71 | 77 | 40 | 0 |
| Yukon royalty cash tax | 195 | 0 | 0 | 0 | 0 | 3 | 24 | 21 | 15 | 17 | 13 | 22 | 28 | 34 | 18 |
| Working capital | 0 | 0 | 0 | 0 | 7 | 0 | 3 | -7 | 5 | -6 | 5 | 3 | 2 | -13 | 0 |
| Capitalised opex | 21 | 0 | 0 | 16 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Construction capital | 277 | 3 | 51 | 183 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sustaining capital | 48 | 0 | 0 | 0 | 0 | 2 | 28 | 7 | 3 | 4 | 4 | 0 | 0 | 0 | 0 |
| Reclamation | 71 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 7 | 13 | 39 |
| Total other expenses | 1,093 | 3 | 51 | 199 | 52 | 38 | 109 | 64 | 76 | 61 | 87 | 100 | 117 | 79 | 57 |
| Project cash flow | 1,016 | -5 | -52 | -199 | -14 | 218 | 127 | 126 | 132 | 113 | 155 | 181 | 193 | 97 | -57 |

22.2 Taxation

The following discussion on taxation is based on the “Mining and Metals Tax Guide: Canada” produced by EY (EY 2015).

22.2.1 Fiscal Regime

The fiscal regime that applies to the mining industry in Canada consists of a combination of income taxation at the federal level, and income taxation and mining taxes, duties or royalties at the provincial level.

- Income tax rate:
 - Federal corporate tax is 15%. Yukon corporate tax is 15%.
- Mining taxes, duties or royalties:
 - A progressive mining royalty applies in Yukon, based on annual mineral production and sales after deduction of eligible expenses and allowances.
- Investment incentives:
 - Research and development and mineral exploration tax credits.

22.2.1.1 Corporate Tax

For Canadian income tax purposes, a corporation’s worldwide taxable income is computed in accordance with common principles of business (or accounting) practice, modified by certain statutory provisions in the *Canadian Income Tax Act* (the Act). In general, no special tax regime applies to mining enterprises.

Depreciation, depletion or amortisation recorded for financial statement purposes is not deductible; rather, tax deductible capital cost allowances and deductions as specified in the Act are allowed. The annual tax deductions could vary from 6% to 100% of the capital expenditures depending upon the nature of a capital expenditure.

Mining corporations are taxed at the same rate as other corporations. Corporations are taxed by the Federal Government and by one or more provinces or territories. The basic rate of federal corporate tax is 25%¹, but it is further reduced to 15% by an abatement of 10% on a corporation’s taxable income earned in a province or territory. The Yukon Territory tax rate is added to the federal tax.

No tax consolidation, group relief or profit transfer system applies in Canada. Each corporation computes and pays tax on a separate legal-entity basis. Business losses or noncapital losses may be carried back three years and forward 20 years.

Gains resulting from a disposal of a capital property are subject to income tax. Capital gains or losses are determined by deducting the adjusted cost base of an asset from proceeds of disposition (net of outlays incurred in connection with the disposition). For corporate taxpayers, one half of the capital gain (taxable capital gain) is taxed at normal income tax rates.

Capital losses are exclusively deductible against capital gains and not against other taxable income. However, noncapital losses are deductible against taxable capital gains, which are included in taxable income. Capital losses can be carried back three years and carried forward indefinitely for use in future years, provided an acquisition of control has not occurred. Mining rights and mineral resource properties are not capital properties for purposes of the Act.

¹ 25% is the general federal corporate tax rate (before abatement) for the 2012 calendar year and onward.

22.2.1.2 Mining Taxes, Duties or Royalties

Mining producers are required to pay a levy to the Crown (i.e. the Government) as the holder of the mineral rights on the extraction of minerals. In Canada, majority of the mineral rights are owned by the Crown. Yukon mining royalties are a net profits royalty, based on annual mineral production and sales after deduction of eligible expenses and allowances.

The mining royalty is deductible in determining taxable income.

22.3 Financial Evaluation

22.3.1 Detailed Financial Analysis

Five scenarios have been established for the financial analysis of the Project to consider a range of potential economic scenarios. The underlying assumptions within each scenario, together with the key scenario inputs and financial indicators are shown in Table 115.

Table 115: Summary of key financial indicators and scenario inputs

| Scenario | Price | Consensus FX rate (± %) | Discount rate | Debt interest rate | TCRC (± %) | Shipping (± %) | Opex | NPV (US\$M) | IRR | Revenue (US\$M) | Cost (US\$M) | Payback years |
|--------------------------------|----------------|-------------------------|---------------|--------------------|------------------|------------------|------------------|-------------------|--------------------|-----------------|--------------|---------------|
| Base | Consensus | 0% | 7% | 7% | 0% | 0% | 0% | 583 | 38% | 4,214 | 2,124 | 2.0 |
| Lower metal price environment | Consensus -10% | -5% | 9% | 9% | -5% | -10% | -5% | 424 | 36% | 3,793 | 1,943 | 2.2 |
| Higher metal price environment | Consensus +10% | 5% | 5% | 5% | 5% | 10% | 5% | 775 | 40% | 4,636 | 2,312 | 1.9 |
| CRU metal price | CRU | 5% | 5% | 5% | 5% | 10% | 5% | 536 | 32% | 4,093 | 2,312 | 2.3 |
| Current market | Market | -5% | 9% | 9% | -5% | -10% | -5% | 590 | 45% | 4,249 | 1,943 | 1.7 |
| Scenario | Price | Cu (US\$/t) | Zn (US\$/t) | Pb (US\$/t) | Zn (US\$ TC/dmt) | Pb (US\$ TC/dmt) | Cu (US\$ TC/dmt) | Cu (US\$ TC c/lb) | Total TCRC (US\$M) | | | |
| Base | Consensus | 6,504 | 2,359 | 2,072 | 202.21 | 166.20 | 102.86 | 10.29 | 496 | | | |
| Lower metal price environment | Consensus -10% | 5,853 | 2,123 | 1,865 | 192.10 | 149.58 | 97.72 | 9.77 | 468 | | | |
| Higher metal price environment | Consensus +10% | 7,154 | 2,595 | 2,280 | 212.32 | 182.82 | 108.00 | 10.80 | 525 | | | |
| CRU metal price | CRU | 6,406 | 2,919 | 1,895 | 212.32 | 182.82 | 108.00 | 10.80 | 525 | | | |
| Current market | Market | 5,688 | 2,639 | 2,279 | 192.10 | 149.58 | 97.72 | 9.77 | 468 | | | |

22.4 Sensitivity Analysis

The sensitivity of changes in key Project variables on Project NPV has been determined by simple factoring of these elements. Most variables were assessed on a standard $\pm 10\%$ change. The relative sensitivity to Project NPV, for the most sensitive variables, is shown in Figure 97. The sensitivities are in line with most operations with price and grade being predominant.

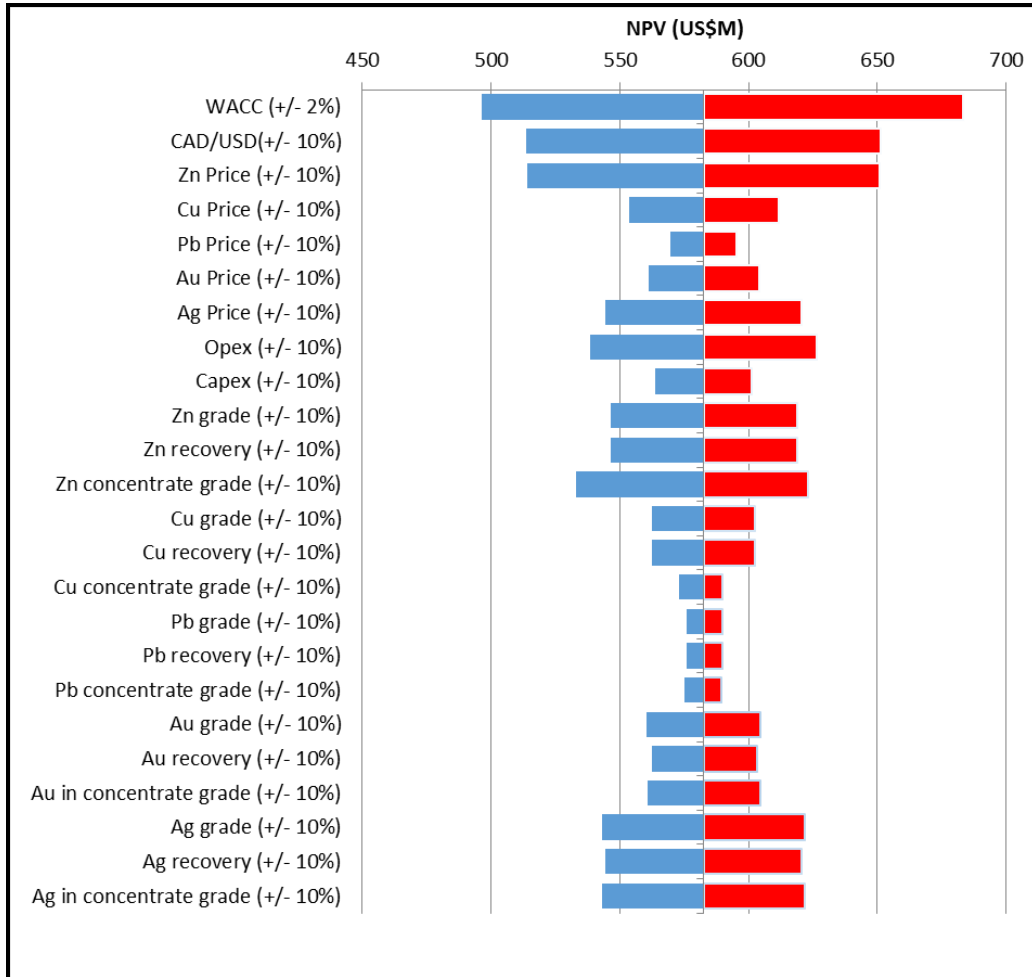


Figure 97: Relative sensitivities

23 Adjacent Properties

Significant VHMS deposits were discovered from 1994 to 1998 in the Finlayson Lake District. To date, at least 41 VHMS occurrences and five deposits have been discovered at different stratigraphic levels within the Finlayson Lake District (Ruijter et al, 2012). The five deposits; ABM, GP4F, Fyre Lake (Kona), Ice and Wolverine, collectively contain in excess of 40 Mt of base metal mineralisation. Only the Wolverine deposit is considered to be an “adjacent property” for this report (Figure 98) as BMC has a beneficial interest in the Fyre Lake deposit.

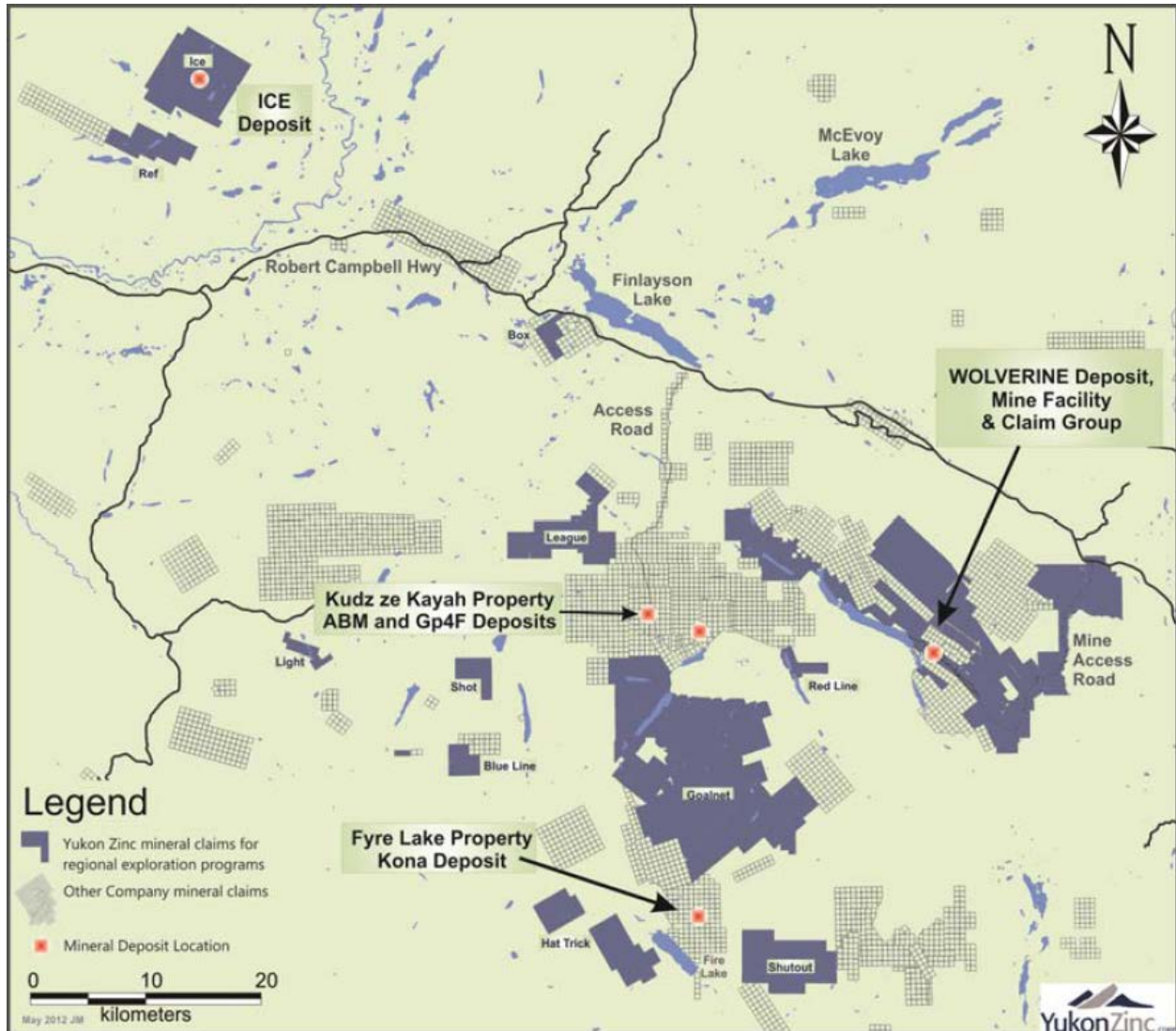


Figure 98: Adjacent property map

Source: Ruijter et al., 2012

23.1 Wolverine

The Qualified Person has not reviewed any technical data or technical reports for the Wolverine Property, and the following comments are based on data sourced from the public domain. The Qualified Person has been unable to verify the information and this information is not necessarily indicative of the mineralisation on the property that is the subject of the technical report.

The Wolverine Mine is situated 30 km east of the ABM deposit. The mine, consisting of underground workings and a 750 kt/a processing facility (Figure 99), is wholly owned by Yukon Zinc Corporation and commenced full commercial production in 2013 with a Canadian NI 43-101 compliant Mineral Reserve (Proven and Probable) of 5.2 Mt @ 9.66% Zn, 0.91% Cu, 1.26% Pb, 281.8 g/t Ag and 1.36 g/t Au. The mine was placed on care and maintenance in January 2015.

The Wolverine deposit was discovered in 1995 and is hosted by graphitic shales and felsic volcanic and volcanoclastic rocks. Sulphide mineralisation occurs at the “Wolverine” and “Lynx” horizons. They are laterally connected by stratabound, semi-massive replacement style Zn-Pb-Ag mineralisation, called the “Saddle” zone. Strike lengths of both the Wolverine and Lynx zones are in the order of 150–250 m long with down-dip extents in excess of 450 m. True thicknesses of the Wolverine and Lynx lenses are typically 3–5 m wide but can reach in excess of 16 m wide. Drilling by Expatriate in 2001 demonstrated that mineralisation extends on to contiguous mineral claims held by BMC.

Remaining Mineral Resources or Mineral Reserves for the Wolverine deposit are unknown.



Figure 99: Overview of the Wolverine Mine and associated infrastructure

Source: A. Green, 2015b

24 Other Relevant Data and Information

There is no other data or information that is relevant to this assessment of the KZK Property that has not been disclosed elsewhere in the document.

25 Interpretation and Conclusions

The KZK Property is located in a region known to contain significant VHMS deposits. The project comprises a wide range of base metal exploration targets from near grass-roots geochemical anomalies, conceptual geological and geophysical targets to drill ready targets (GP4F, Fault Creek Zone, northwest ABM, Krakatoa extensions) and advanced stage targets consisting of Inferred and Indicated Mineral Resources (ABM and Krakatoa Zones). In addition to this, large sections of ground within the KZK Property remain under-explored.

The 2015 exploration program undertaken by BMC at the ABM deposit was an outstanding success, highlighted by the discovery of the Krakatoa VHMS Zone in the fault offset block southeast of the ABM Zone. This discovery, coupled with additional mineralisation identified in extension drilling at the ABM Zone and confirmation of historical results, resulted in a significant (47%) increase in reported tonnage for the deposit. Additional drilling during the 2016 field season, particularly at the Krakatoa Zone, resulted in an improved understanding of the controls on mineralisation despite the slight reduction in reported tonnage. The increased drilling information and improved confidence allowed 18.3 Mt or 96% of the ABM Zone Mineral Resource to be classified in the Indicated category.

The 2015 and 2016 exploration programs undertaken by BMC at the GP4F deposit were successful in expanding the known mineralised horizon and resulted in an improved understanding of the controls on mineralisation.

CSA Global considers that data collection techniques are consistent with industry good practise and suitable for use in the preparation of MREs to be reported in accordance with the CIM Definition Standards on Mineral Resources and Mineral Reserves. QC data supports the integrity of the analytical data which has been utilised.

The modelling was based on cross sectional interpretations which were digitised and “snapped” to drillholes based on logged lithologies and chemical assays. Wireframes were generated for the polymetallic (Cu-Pb-Zn-Au-Ag) massive sulphide/stockwork/disseminated mineralisation and overburden surface. Additionally within the ABM Zone, various key geological units (mafic intrusive, rhyolite intrusive, mudstones, Wind Lake Formation) and interpreted faults were generated.

3D block models representing the mineralization have been created using Surpac software. High-quality diamond core samples were used interpolate grades and bulk density into blocks using OK. The block models were validated visually and statistically.

Both the ABM and GP4F deposits remain open (at least partially) and additional drilling is required to fully define the extents of mineralisation.

The recently completed KZK PFS concludes that the Project is financially robust, delivering a high-margin base case economic result, and is technically and environmentally viable.

The Project as detailed in the PFS presents a viable development scenario of mining the ABM deposit primarily by open pit mining methods, with a smaller underground mine incorporated to mine the deeper section of the Krakatoa Zone. Mining will be completed over a nominal 10-year period. Metallurgical testwork has confirmed that conventional flotation techniques are appropriate for processing ore to produce separate copper, lead and zinc concentrates. The concentrates will also contain significant precious metal credits.

Management of tailings, waste rock and water has been an integral component of the design of the proposed mine.

Waste rock will be stored in separate facilities according to expected acid generation and metal leaching potential, with long term closure planning considered from the outset. Tailings from ore processing will be produced as a filtered tailing product that will be deposited in the Class A (defined as potentially acid generating and metal leaching in the near term) Waste Storage Facility together with Class A waste rock.

A low permeability layer will be constructed at the base of storage facilities that have the potential for acid generation and metal leaching characteristics. Progressive reclamation will be implemented to cover waste storage facilities as they are developed to minimise exposure to oxygen and water as well as promote active revegetation of the facilities.

All infrastructure has been designed to be situated within a single watershed to minimise impacts on the broader environment. Water that does not come into contact with the Project footprint will be diverted around the site for discharge. Contact water not requiring chemical treatment for discharge will be kept separate from water that does to minimise chemical treatment requirements. Reuse of water within the mining and processing facilities has also been planned to limit the amount of water that will require treatment prior to discharge from the site. A water treatment plant will be constructed to treat water to meet site discharge quality measures.

26 Recommendations

CSA Global recommends the following actions are completed to support the ongoing exploration and evaluation effort:

Complete a full FS for the ABM deposit. In support of preparing an industry standard FS, CSA Global has identified some specific points that are recommended to be addressed in the study. An expected cost for this next phase of work is detailed in Table 116.

Table 116: Expected costs for proposed work programs

| Work element | Estimated cost |
|---|--------------------|
| FS | \$2,000,000 |
| Drilling, sampling and testwork program | \$2,000,000 |
| Total | \$4,000,000 |

26.1 ABM Zone

CSA Global’s recommendations specific to the ABM Zone:

- In order for the project to progress to higher Mineral Resource classification levels (Measured and Indicated), further infill drilling will be required.
- Additional analysis should be undertaken on the existing ABM Zone and Krakatoa Zone data to try and delineate underlying syn-mineralisation structural controls which may have acted as hydrothermal fluid conduits during ore deposition. Targeting along these trends outside of the existing resource envelope may identify additional ore lenses down-dip/down-plunge out of the range of surface and airborne geophysics. It may also identify transgressive mineralised “feeder zones” which may not have been intersected with drilling due to drillhole orientation.
- Detailed structural and geochemical analysis is undertaken on the ABM deposit to understand the timing of mineralisation, stratigraphy and geological controls. Improved understanding of the deposit controls will aid in more regional exploration efforts across BMC’s vast tenement package.
- Complete more detailed analysis of the open pit mine design and schedule to optimise timing of mining to reduce pre-production mining requirements while continuing to meet requirements for supply of construction materials.
- Complete a trade-off study between open pit and underground mining options to determine whether a smaller open pit, larger underground scenario is of benefit to the Project.
- Complete more detailed planning of open pit mine designs to reduce haul distances, assess the opportunity of placing Class A and B waste rock and tailing in the pit as part of the mining process.
- The concentrate grade/recovery relationship together with the project economics should be analysed and optimised.
- Additional economic analysis should be undertaken to quantify the overall impact of any low-grade material on the Project.
- Complete the evaluation of the benefits of including a gravity gold circuit in the process plant design.
- Continue metallurgical testwork to further optimize the plant design, operating parameters and performance.
- Complete assessment of water treatment requirements to meet water quality limits for discharge.
- Complete the design of the proposed water treatment facility.

26.2 Krakatoa Zone

CSA Global's recommendations specific to the Krakatoa Zone:

- Additional resource definition drilling (infill and extension) is required at the Krakatoa Zone to upgrade the resource classification. The zone remains open down dip below hole K16-369. Additional drilling targeting the down-plunge extension is highly recommended as it has the potential to add significant tonnage to the current resource base.
- Complete paste backfill testwork to define appropriate paste backfill design, as well as paste reticulation design.
- Dedicated geotechnical drilling program should be carried out to obtain representative geotechnical information for the underground mine as all available geotechnical data was collected from the available exploration holes.
- Complete additional geotechnical work to further define the underground design parameters including the crown and other pillar sizes, excavation stability, backfill strength requirements, and recommended stand-off distance.
- Complete a more detailed underground mine design and schedule based on the finding of the recommended additional testwork and studies.

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28 Abbreviations and Acronyms

| | |
|--------------------|--|
| ° | degrees |
| °C | degrees Celsius |
| 3D | three-dimensional |
| AAS | atomic absorption spectroscopy |
| ABA | acid-base accounting |
| ACD | acid rock drainage |
| AEG | Alexco Environmental Group |
| Allnorth | Allnorth Consultants Ltd |
| AP | acid potential |
| APS | azimuth positioning system |
| BMC | BMC Minerals (No. 1) Limited |
| C\$ | Canadian dollars |
| c. | circa |
| CCME | Canadian Council of Ministers of the Environment |
| CDF | cumulative distribution function |
| CERL | Cominco Exploration Research Laboratory |
| Challenger | Challenger Geomatics |
| CIM | Canadian Institute of Mining, Metallurgy and Petroleum |
| cm | centimetre(s) |
| COPC | constituents of potential concern |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| CRM | certified reference material |
| CSA Global | CSA Global Pty Ltd |
| CSS | closed side setting |
| CV | coefficient of variation |
| DD | diamond drilling |
| Ecofor | Ecofor Consulting Ltd |
| EDTA | ethylene diamine tetra acetic acid |
| EGL | effective grinding length |
| EM | electromagnetic |
| Entech | Entech Mining Limited |
| EPLT | equivalent point load testing |
| Equity Exploration | Equity Exploration Consultants |
| Expatriate | Expatriate Resources Ltd |
| FS | feasibility study |
| g | gram(s) |
| Golder | Golder Associates |
| GPS | global positioning system |
| h | hour(s) |
| Hatch | Hatch Pty Ltd |

| | |
|-----------------|---|
| HLEM | horizontal loop electromagnetic |
| HMS | heavy media separation |
| ICP | inductively coupled plasma |
| ID2 | inverse distance squared |
| ID3 | inverse distance cubed |
| IEE | Initial Environmental Evaluation |
| IRR | internal rate of return |
| KE | kriging efficiency |
| KKZ | Kudz Ze Kayah |
| km | kilometres |
| km ² | square kilometres |
| KNA | kriging neighbourhood analysis |
| Knight Piesold | Knight Piesold Ltd |
| koz | thousand ounces |
| kt | thousand tonnes |
| kt/a | thousand tonnes per annum |
| l/s | litres per second |
| lb | pound(s) |
| LiDAR | light detection and ranging |
| lkm | line kilometres |
| LOM | life of mine |
| LPG | liquefied petroleum gas |
| m | metre(s) |
| M | million(s) |
| m ³ | cubic metre(s) |
| MAMA | month after month of arrival |
| MCR | main control room |
| mg | milligram(s) |
| Minnovo | Minnovo Pty Ltd |
| ML | metal leaching |
| mm | millimetre(s) |
| Moz | million ounces |
| MPMM | Mineral Processing Metallurgy and Mineralogy |
| MR | multiple regression |
| MRE | Mineral Resource estimate |
| Mt/a | million tonnes per annum |
| NG | natural gas |
| NI 43-101 | National Instrument 43-101 – Standards of Disclosure for Mineral Projects |
| NI | National Instrument |
| NP | neutralisation potential |
| NPV | net present value |
| NRCan | Natural Resources Canada |
| NSR | net smelter return |

| | |
|------------------|---|
| OK | ordinary kriging |
| OMI | OMI Pty Ltd |
| OSE | On Site Engineering |
| oz | ounce(s) |
| PAG | potential acid generating |
| PFS | prefeasibility study |
| PID | proportional-integral-derivative |
| PLC | programmable logic controller |
| QA | quality assurance |
| QAQC | quality assurance/quality control |
| QC | quality control |
| QMA | Quartz Mining Act |
| Q-Q | quantile-quantile |
| RC | reverse circulation |
| RHYc | coherent rhyolite |
| RHYi | aphanitic rhyolite |
| RHYi | rhyolite intrusive |
| RHYv | volcaniclastic rhyolite |
| Rockland | Rockland Limited |
| ROM | run of mine |
| RQD | rock quality designation |
| RRK | real-time kinematic |
| SAG | semi-autogenous grinding |
| SCADA | supervisory control and data acquisition |
| SFE | shake flask extraction |
| SMD | Stirred Media Detritor |
| SOR | slope of regression |
| SRK | SRK Consulting Canada Inc. |
| SSWQO | site-specific water quality objectives |
| t | tonne(s) |
| t/h | tonnes per hour |
| t/m ³ | tonnes per cubic metre |
| Tetra Tech | Tetra Tech Inc. |
| UCS | uniaxial compressive strength |
| US\$ | US dollars |
| VHMS | volcanogenic-hosted massive sulphide |
| VSHMS | volcanic-sediment hosted massive sulphide |
| VTEM | versatile time domain electromagnetic |
| WBS | work breakdown structure |
| XRD | x-ray diffraction |
| XRF | x-ray fluorescence |
| YESAA | Yukon Environmental and Socio-Economic Assessment Act |
| YESAB | Yukon Environmental and Socio-Economic Assessment Board |

Appendix A: BMC KZK Project Tenements

| District | Grant no. | Claim name | Claim no. | Claim owner | Operation recording date | Staking date | Claim expiry date | Status | NTS map no. | Ops no. |
|-------------|-----------|------------|-----------|---------------------------------|--------------------------|--------------|-------------------|--------|-------------|------------|
| Watson Lake | YB46227 | TAG | 1 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130232 |
| Watson Lake | YB46228 | TAG | 2 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130233 |
| Watson Lake | YB46229 | TAG | 3 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130234 |
| Watson Lake | YB46230 | TAG | 4 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130235 |
| Watson Lake | YB46231 | TAG | 5 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130236 |
| Watson Lake | YB46232 | TAG | 6 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130237 |
| Watson Lake | YB46233 | TAG | 7 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130238 |
| Watson Lake | YB46234 | TAG | 8 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130239 |
| Watson Lake | YB46235 | TAG | 9 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130240 |
| Watson Lake | YB46236 | TAG | 10 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130241 |
| Watson Lake | YB46237 | TAG | 11 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130242 |
| Watson Lake | YB46238 | TAG | 12 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130243 |
| Watson Lake | YB46239 | TAG | 13 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130244 |
| Watson Lake | YB46240 | TAG | 14 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130245 |
| Watson Lake | YB46241 | TAG | 15 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130246 |
| Watson Lake | YB46242 | TAG | 16 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130247 |
| Watson Lake | YB46243 | TAG | 17 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130248 |
| Watson Lake | YB46244 | TAG | 18 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130249 |
| Watson Lake | YB46245 | TAG | 19 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130250 |
| Watson Lake | YB46246 | TAG | 20 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130251 |
| Watson Lake | YB46247 | TAG | 21 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130252 |
| Watson Lake | YB46248 | TAG | 22 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130253 |
| Watson Lake | YB46249 | TAG | 23 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130254 |
| Watson Lake | YB46250 | TAG | 24 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130255 |
| Watson Lake | YB46251 | TAG | 25 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130256 |
| Watson Lake | YB46252 | TAG | 26 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130257 |
| Watson Lake | YB46253 | TAG | 27 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130258 |
| Watson Lake | YB46254 | TAG | 28 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130259 |
| Watson Lake | YB46255 | TAG | 29 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130260 |
| Watson Lake | YB46256 | TAG | 30 | BMC Minerals (No.1) Ltd. - 100% | 20/08/1993 | 18/08/1993 | 2/04/2028 | Active | 105G07 | 1000130261 |
| Watson Lake | YB46325 | PLATE | 1 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130330 |
| Watson Lake | YB46326 | PLATE | 2 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130331 |
| Watson Lake | YB46327 | PLATE | 3 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130332 |
| Watson Lake | YB46328 | PLATE | 4 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130333 |
| Watson Lake | YB46329 | PLATE | 5 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130334 |
| Watson Lake | YB46330 | PLATE | 6 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130335 |
| Watson Lake | YB46331 | PLATE | 7 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130336 |
| Watson Lake | YB46332 | PLATE | 8 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130337 |
| Watson Lake | YB46333 | PLATE | 9 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130338 |
| Watson Lake | YB46334 | PLATE | 10 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130339 |
| Watson Lake | YB46335 | PLATE | 11 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130340 |
| Watson Lake | YB46336 | PLATE | 12 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130341 |
| Watson Lake | YB46337 | PLATE | 13 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130342 |
| Watson Lake | YB46338 | PLATE | 14 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130343 |
| Watson Lake | YB46339 | PLATE | 15 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130344 |
| Watson Lake | YB46340 | PLATE | 16 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130345 |
| Watson Lake | YB46341 | PLATE | 17 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130346 |
| Watson Lake | YB46342 | PLATE | 18 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130347 |
| Watson Lake | YB46343 | PLATE | 19 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130348 |
| Watson Lake | YB46344 | PLATE | 20 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130349 |
| Watson Lake | YB46345 | PLATE | 21 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130350 |
| Watson Lake | YB46346 | PLATE | 22 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130351 |
| Watson Lake | YB46347 | PLATE | 23 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130352 |
| Watson Lake | YB46348 | PLATE | 24 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130353 |
| Watson Lake | YB46349 | PLATE | 25 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130354 |
| Watson Lake | YB46350 | HOME | 1 | BMC Minerals (No.1) Ltd. - 100% | 29/09/1993 | 15/09/1993 | 2/04/2028 | Active | 105G07 | 1000130355 |

| District | Grant no. | Claim name | Claim no. | Claim owner | Operation recording date | Staking date | Claim expiry date | Status | NTS map no. | Ops no. |
|-------------|-----------|------------|-----------|---------------------------------|--------------------------|--------------|-------------------|--------|-------------|------------|
| Watson Lake | YB84473 | JACK | 13 | BMC Minerals (No.1) Ltd. - 100% | 17/06/1996 | 26/05/1996 | 2/04/2023 | Active | 105G08 | 1000155923 |
| Watson Lake | YB84474 | JACK | 14 | BMC Minerals (No.1) Ltd. - 100% | 17/06/1996 | 26/05/1996 | 2/04/2023 | Active | 105G08 | 1000155924 |
| Watson Lake | YB84475 | JACK | 15 | BMC Minerals (No.1) Ltd. - 100% | 17/06/1996 | 26/05/1996 | 2/04/2023 | Active | 105G08 | 1000155925 |
| Watson Lake | YB84476 | JACK | 16 | BMC Minerals (No.1) Ltd. - 100% | 17/06/1996 | 26/05/1996 | 2/04/2023 | Active | 105G08 | 1000155926 |
| Watson Lake | YB84477 | JACK | 17 | BMC Minerals (No.1) Ltd. - 100% | 17/06/1996 | 26/05/1996 | 2/04/2023 | Active | 105G08 | 1000155927 |
| Watson Lake | YB84478 | JACK | 18 | BMC Minerals (No.1) Ltd. - 100% | 17/06/1996 | 28/05/1996 | 2/04/2023 | Active | 105G08 | 1000155928 |
| Watson Lake | YB85276 | KZK | 1 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156726 |
| Watson Lake | YB85277 | KZK | 2 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156727 |
| Watson Lake | YB85278 | KZK | 3 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156728 |
| Watson Lake | YB85279 | KZK | 4 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156729 |
| Watson Lake | YB85280 | KZK | 5 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156730 |
| Watson Lake | YB85281 | KZK | 6 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156731 |
| Watson Lake | YB85282 | KZK | 7 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156732 |
| Watson Lake | YB85283 | KZK | 8 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156733 |
| Watson Lake | YB85284 | KZK | 9 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156734 |
| Watson Lake | YB85285 | KZK | 10 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156735 |
| Watson Lake | YB85286 | KZK | 11 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156736 |
| Watson Lake | YB85287 | KZK | 12 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156737 |
| Watson Lake | YB85288 | KZK | 13 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156738 |
| Watson Lake | YB85289 | KZK | 14 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156739 |
| Watson Lake | YB85290 | KZK | 15 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156740 |
| Watson Lake | YB85291 | KZK | 16 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156741 |
| Watson Lake | YB85292 | KZK | 17 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156742 |
| Watson Lake | YB85293 | KZK | 18 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156743 |
| Watson Lake | YB85294 | KZK | 19 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156744 |
| Watson Lake | YB85295 | KZK | 20 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156745 |
| Watson Lake | YB85296 | KZK | 21 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156746 |
| Watson Lake | YB85297 | KZK | 22 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156747 |
| Watson Lake | YB85298 | KZK | 23 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156748 |
| Watson Lake | YB85299 | KZK | 24 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156749 |
| Watson Lake | YB85300 | KZK | 25 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156750 |
| Watson Lake | YB85301 | KZK | 26 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156751 |
| Watson Lake | YB85302 | KZK | 27 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156752 |
| Watson Lake | YB85303 | KZK | 28 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156753 |
| Watson Lake | YB85304 | KZK | 29 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 1/07/1996 | 2/04/2026 | Active | 105G07 | 1000156754 |
| Watson Lake | YB85305 | JACK | 19 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156755 |
| Watson Lake | YB85328 | JACK | 20 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156778 |
| Watson Lake | YB85329 | JACK | 21 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156779 |
| Watson Lake | YB85330 | JACK | 22 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156780 |
| Watson Lake | YB85331 | JACK | 23 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156781 |
| Watson Lake | YB85332 | JACK | 24 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156782 |
| Watson Lake | YB85333 | JACK | 25 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156783 |
| Watson Lake | YB85334 | JACK | 26 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156784 |
| Watson Lake | YB85336 | JACK | 28 | BMC Minerals (No.1) Ltd. - 100% | 12/07/1996 | 4/07/1996 | 2/04/2023 | Active | 105G08 | 1000156786 |
| Watson Lake | YB85382 | LOW | 1 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G09 | 1000156832 |
| Watson Lake | YB85383 | LOW | 2 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G09 | 1000156833 |
| Watson Lake | YB85384 | LOW | 3 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G09 | 1000156834 |
| Watson Lake | YB85385 | LOW | 4 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G09 | 1000156835 |
| Watson Lake | YB85386 | LOW | 5 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G09 | 1000156836 |
| Watson Lake | YB85387 | LOW | 6 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G09 | 1000156837 |
| Watson Lake | YB85388 | LOW | 7 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156838 |
| Watson Lake | YB85389 | LOW | 8 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156839 |
| Watson Lake | YB85390 | LOW | 9 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156840 |
| Watson Lake | YB85391 | LOW | 10 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156841 |
| Watson Lake | YB85392 | LOW | 11 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156842 |
| Watson Lake | YB85393 | LOW | 12 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156843 |
| Watson Lake | YB85394 | LOW | 13 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156844 |
| Watson Lake | YB85395 | LOW | 14 | BMC Minerals (No.1) Ltd. - 100% | 16/07/1996 | 28/06/1996 | 2/04/2023 | Active | 105G08 | 1000156845 |
| Watson Lake | YB87487 | JACK | 30 | BMC Minerals (No.1) Ltd. - 100% | 23/09/1996 | 11/09/1996 | 2/04/2023 | Active | 105G08 | 1000158937 |



| District | Grant no. | Claim name | Claim no. | Claim owner | Operation recording date | Staking date | Claim expiry date | Status | NTS map no. | Ops no. |
|-------------|-----------|------------|-----------|---------------------------------|--------------------------|--------------|-------------------|--------|-------------|------------|
| Watson Lake | YB88805 | JACK | 31 | BMC Minerals (No.1) Ltd. - 100% | 6/11/1996 | 12/10/1996 | 2/04/2023 | Active | 105G08 | 1000159255 |
| Watson Lake | YB88806 | JACK | 32 | BMC Minerals (No.1) Ltd. - 100% | 6/11/1996 | 12/10/1996 | 2/04/2023 | Active | 105G08 | 1000159256 |
| Watson Lake | YB88807 | JACK | 33 | BMC Minerals (No.1) Ltd. - 100% | 6/11/1996 | 12/10/1996 | 2/04/2023 | Active | 105G08 | 1000159257 |
| Watson Lake | YB89634 | GO | 125 | BMC Minerals (No.1) Ltd. - 100% | 28/07/1997 | 14/07/1997 | 2/04/2023 | Active | 105G08 | 1000160084 |
| Watson Lake | YB89635 | GO | 126 | BMC Minerals (No.1) Ltd. - 100% | 28/07/1997 | 14/07/1997 | 2/04/2023 | Active | 105G08 | 1000160085 |
| Watson Lake | YB89636 | GO | 127 | BMC Minerals (No.1) Ltd. - 100% | 28/07/1997 | 14/07/1997 | 2/04/2023 | Active | 105G08 | 1000160086 |



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