KUDZ ZE KAYAH MINE PROJECT

CONCEPTUAL CONSTRUCTION PLAN

February 2017

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Prepared for:

BMC MINERALS (NO.1) LTD.

LIST OF ACRONYMS

KZK	Kudz Ze Kayah
NRCan	Natural Resources Canada
PFS	Prefeasibility Study
ROM	Run of Mine

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1 CONSTRUCTION PHASE

1.1 OVERVIEW

This document describes the components, facilities and activities that are anticipated in the Construction Phase (Year -2 to Year 1). In general, most construction activities for the Project will occur over a period of two years though some construction activities will occur during the operation phase. Similarly, some Project components such as the Run of Mine (ROM) pad will be constructed and operational during the construction phase of the Project. Prior to the start of the construction phase, personnel will utilize existing infrastructure, to the extent possible, including:

- Existing Kudz Ze Kayah (KZK) exploration camp;
- Water supply, sewage treatment facility and power supply;
- Finlayson Lake airstrip;
- Existing Tote Road;
- Laydown areas; and
- Existing Fuel storage.

The upgrading of the existing Tote Road and lengthening of the Finlayson Lake airstrip will be given the highest priority to enable personnel and materials to be transported to the construction site. Throughout the entire construction phase, the ability of the all-weather access road to allow transport of supplies and equipment will be vital.

Primary activities during the construction phase will include:

- Tote Road upgrade to Access Road;
- Finlayson Lake airstrip upgrade;
- Build Construction Camp;
- Build Waste Management Facility;
- Fault Creek Diversion;
- Construction of site roads;
- Construction of Site Water Diversion Channels;
- Construction of Water Management and Sediment Control Ponds;
- Construct Pit Rim Pond and Receiving Environment;
- Overburden Dewatering;
- Pre-stripping of ABM Open Pit for construction Materials;
- Preproduction stripping of ABM Open Pit;

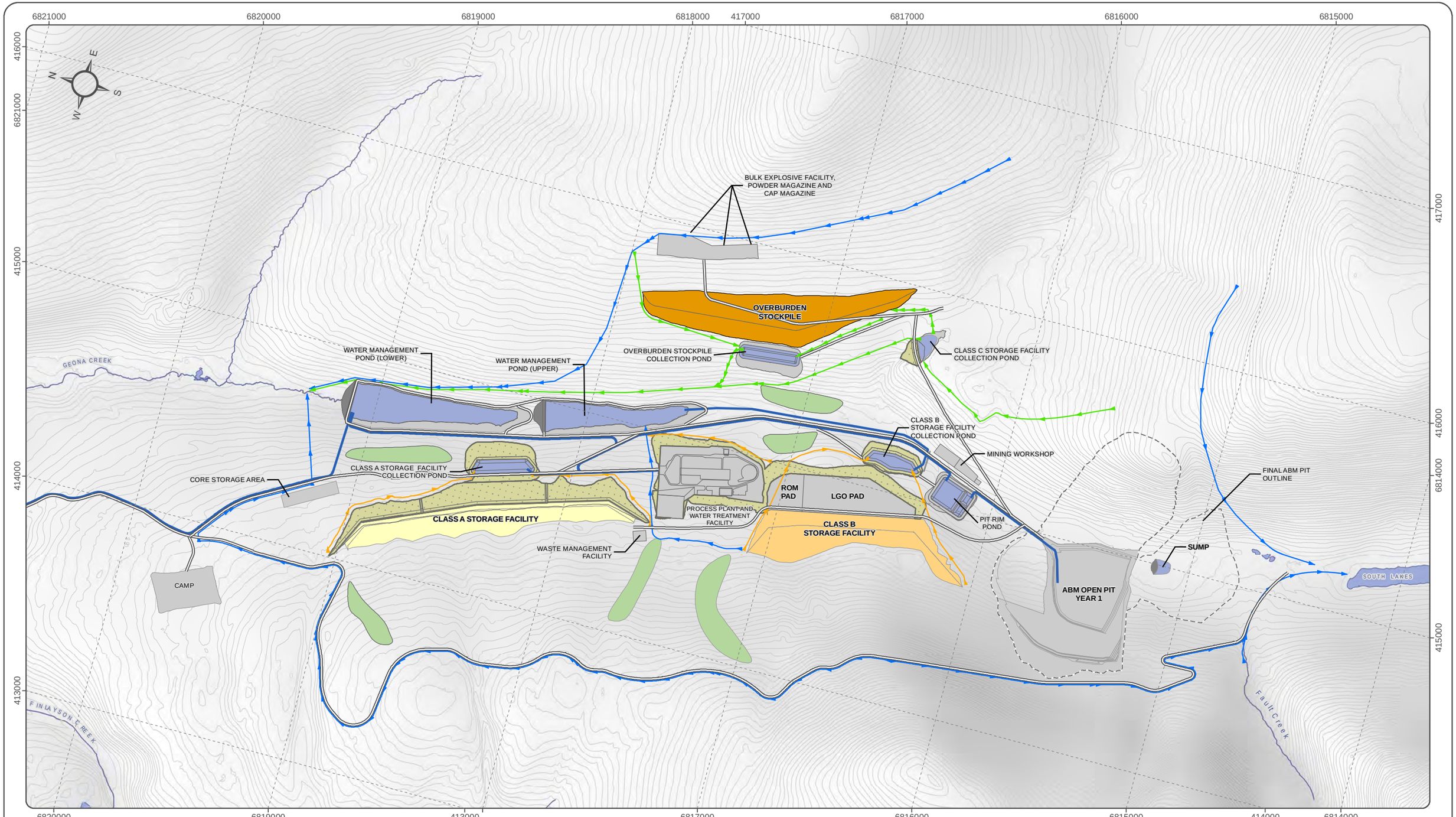
- Construction of Waste Storage Facilities sufficient for the commencement of production;
- Construction of ancillary buildings (bulk explosives facility, mine shop and warehouse, fuel and lubricant storage facilities and office facilities);
- Construction of the main power plant;
- Construction of the Process Plant facilities (crushers, conveyors, ore loading, grinding, flotation, thickeners, filtration, reagents and concentrate storage and loadout);
- Construction of the Run of Mine (ROM) Pad;
- Construction of haul roads.

Figure 1-1 shows the KZK Project at the close of the construction phase with all the required facilities locations.

Table 1-1 shows the sequencing of construction phase activities leading to production (Year 1).

The following factors are factored into the construction schedule planning and execution:

- Seasonal conditions (temperature and precipitation as well as daylight hours);
- Remoteness of the KZK Project site; and
- Construction on discontinuous permafrost.



Datum: NAD 83; Map Projection: UTM Zone 9N

AEG

1:17,000 (when printed on 11 x17 inch paper)

0 250 500 750 Metres

- Class A Storage Facility
- Class B Storage Facility
- Overburden Stockpile
- Topsoil Stockpile
- Progressive Reclamation
- Pond/Water
- Non Contact Diversion
- Contact Class A & B Diversion
- Contact Class C Diversion
- Pipeline
- Final ABM Open Pit Outline
- Proposed Mine Road

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KUDZ ZE KAYAH PROJECT

FIGURE 1-1

PROJECT MINE SITE LAYOUT (YEAR 1)

FEBRUARY 2017

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Table 1-1: Construction Schedule for Kudz Ze Kayah Project

Project Component	Pre-Construction	Construction								Operations			
		Year -2				Year -1				Year 1			
		Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring
Receive Permits													
Engineering, Design and Construction Planning													
Procurement of Long Lead Items													
Tote Road upgrade to Access Road													
Finlayson Lake airstrip upgrade													
Communications Repeater construction													
Site earthworks													
Construction Camp, Waste Management Facility													
Operations Camp													
Site grading, including soil and overburden removal and stockpiling													
Site Works													
Fault Creek Diversion													
Geona Ponds Dewatering													
Pit Rim Pond Construction													
Overburden Dewatering													
Site Diversion Channels													
Water collection and Sediment Control Ponds													
Mine workshop, Explosives Facility and Fuel storage													
Pre-stripping for Construction materials													
Infrastructure Construction													
Power Plant													
Class A Buttress													
ROM Pad													
Upper and Lower Water Management Ponds													
Process plant Construction													
Process Plant Commissioning													
Production													

1.2 CONSTRUCTION EQUIPMENT

The construction equipment requirements for the Project will be sized and estimated taking into account the construction schedule and project execution plan developed for the Project, prior to the Project commencement. Heavy equipment will be required during the construction phase of the Project to perform the following duties:

- Clearing and grubbing;
- Strip and remove overburden;
- General site earthworks;
- Preproduction mining of ABM pit to provide construction materials;
- Special transport requirements (e.g., heavy lift cranes and transporters); and
- Steel/building erection and equipment assembly.

Table 1-2 is a preliminary list of the anticipated equipment requirements for the construction phase. Additional equipment will be required for the airstrip upgrade and the upgrade of the Tote Road.

The exact size and number of units will be determined in conjunction with the selected construction contractors who will obtain and transport them to the mine site. Similarly, equipment for the construction of the site facilities will be selected by the appropriate construction contractors. Typically, the major items of equipment will include; concrete batch plant, concrete mix trucks, concrete pumps, cranes of various sizes, welders, flatbed trucks, fork lifts, and man lifts.

Table 1-2: Kudz Ze Kayah Project Construction Equipment

Mobile Mine Equipment - Construction			
Type	**Description**	**Anticipated Quantity**	
		Year -2	**Year -1**
Backhoe	Backhoe	6	6
Bulldozer	Cat D9T	3	3
Crane	Link Belt ATC-822	4	4
	Link Belt 218 HSL Crawler Crane	1	1
	Grove TMS 870	3	3
Excavator	Cat 374F	2	2
	Cat 6030	1	1
Explosives Truck	MMU	1	1
Grader	Cat 16M3	2	2
Heavy Vehicles	Water/Sand Truck	1	1
	Fuel and Lube Truck	1	1

Mobile Mine Equipment - Construction			
Type	**Description**	**Anticipated Quantity**	
		Year -2	**Year -1**
IT / FEL	Cat IT24F	1	1
Light vehicles	Light vehicles	5	5
Truck	Cat 777G	6	6
	Cat 745C	2	2
Elevated Work Platform	Genie S-80X	6	6
Total		45	45

Note: The equipment descriptions are considered typical and not indicative of the final equipment selection. The exact size, number of units and types will be determined prior to construction of the Project.

1.3 CONSTRUCTION WORKFORCE

The workforce during the construction phase is expected to peak at approximately 350 personnel. Personnel numbers will vary seasonally and during the construction of the various infrastructure components. The construction workforce will comprise of a combination of BMC employees and contractor skilled and unskilled employees. Construction positions are expected to include the following (but not be limited to):

- Heavy and light equipment operators;
- crane operators;
- riggers;
- truck drivers;
- mechanics;
- electricians;
- laborers;
- millwrights;
- carpenters;
- pipefitters;
- boilermakers;
- masons;
- sheet metal workers;
- painters;
- warehousemen;
- construction supervisors;
- catering and services;
- surveyors;
- engineers;
- Management.

The primary work roster expected to be adopted for construction work will be a three week on, one week off roster, common to many construction projects in Western Canada. Variations on this roster allowing for shorter work periods on site may be adopted as required.

1.4 TOTE ROAD UPGRADE TO ACCESS ROAD

The upgrade of the existing Tote Road to a 5 m wide, single lane, all weather access road will be given the highest priority at the commencement of the construction phase.

Road construction will be scheduled to take advantage of seasonal conditions with construction taking place during drier periods in the warmer months. Multiple work areas are planned to be advanced simultaneously to limit total construction time, dependent upon equipment and manpower availability. Construction time is expected to be approximately six weeks.

The existing exploration camp will be used to provide accommodation for road construction personnel, with fuel stored at the existing site facility. Laydowns for equipment and material will be at identified locations along the road alignment.

1.5 FINLAYSON LAKE AIRSTRIP UPGRADE

The Finlayson Lake airstrip extension will have a high priority during the construction period to facilitate the transportation of personnel during the construction phase. Due to the distance from the Project the upgrade will be largely independent of the Project infrastructure with personnel either travelling daily from Ross River or housed at a temporary construction camp at the existing gatehouse.

1.6 CONSTRUCTION CAMP/WASTE MANAGEMENT FACILITY

Site clearing and preparation of the area for the construction camp/operations camp will occur in the same timeframe as the Tote Road upgrade. The modules for the construction camp will be transported as soon as the Access Road is of suitable standard to safely convey the units. The camp will be of modular design with sleeping/washroom units connected to a central hallway which will be connected to the dining room/ kitchen facilities.

Simultaneously preparation of the Waste Management Facility and the sewage disposal system will be undertaken. These will be completed prior to use of the construction camp.

The construction camp will be sized to accommodate 100 personnel initially, with the camp being upgraded to accommodate 350 personnel during the first season of the construction phase. At the commencement of the operations phase the construction camp modules will be removed and the camp will have its ultimate capacity of 250 personnel.

1.7 SITE GRADING, INCLUDING SOIL AND OVERBURDEN REMOVAL AND STOCKPILING

Vegetation and topsoil will be scraped off each facility with appropriate machinery and stockpiled in strategic locations around the project area. Transport of this material will be kept to a minimum and the resulting stockpiles will be revegetated to enhance stability.

The Class A and Class B Storage Facilities will have their relatively thin layer of overburden removed and used for construction or stockpiled in the Overburden Storage Facility on the east slope of Geona valley. Open Pit overburden will be removed and will be used for construction materials or similarly stockpiled for later use.

1.8 OFF SITE TRAFFIC

Construction equipment and materials delivery amounts during the construction phase will vary dependent upon the stage of construction of various facilities. It is anticipated that there will be an average delivery of seven loads a day over the construction period. This traffic will likely come in surges with a high rate of traffic one week and then minimal traffic in following periods.

1.9 ON SITE TRAFFIC

Two categories of roads will be developed on the KZK Project site. Mine haul roads will be designed for, and used by, construction vehicles (e.g., mine haul trucks) and will link the ABM Open Pit to the Process Plant, the Class A, B, and C Waste Storage Facilities and the Overburden Storage Facility. Access and service roads will link all operating areas of the Project and will be constructed to handle light duty and commercial vehicles.

Traffic along all site roads will be managed in accordance with the Site Traffic Management Plan. Site access will be controlled by staffing the existing gatehouse 24 hours a day and limiting entry to Project specific traffic.

1.10 OPEN PIT DEVELOPMENT (INCLUDING DEWATERING AND FAULT CREEK DIVERSION)

Pre-Development of the open pit will commence in Year -2 with the initial emphasis being on dewatering of the overburden in the area to be mined. Year -2 will see the commencement of the pre-production stripping period with 2.8 Mt of Class C waste being mined and 1.3 Mt of overburden, during a 17 month period. Mining equipment used is included in Section 1.2 and the fleet is conventional for a mine of this size. Preproduction mining of waste will be completed with a 260 to 300 t class excavator, with a bucket capacity of 15 to 17 m^3 and 100 t haul trucks will be used to transport the material to the required destinations.

The diversion of Fault creek to the south will be undertaken prior to the dewatering of the ABM Open Pit area. The diversion will use the effects of the existing topography to minimise the physical size of the diversion berm required. The channel will have an anchored HDPE liner and will be operational throughout the construction and operation phases.

Geona ponds dewatering will occur after the construction of the Fault Creek Diversion. The water will be suitable for direct discharge and will be pumped or channelled to the receiving environment in Geona Creek.

The Pit Rim Pond will be constructed prior to the commencement of dewatering operations of the overburden in the ABM Open Pit area.

The Pit Rim Pond will consist of a minimum of three separate cells with embankments consisting of compacted Class C material. All the cells, and the embankments, will be lined with a compacted layer of glacial till and an HDPE liner. The cells will be connected with spillways and or other flow mechanisms to enable progressive settling and decanting of the inflows prior to usage, or discharge.

A fence will surround the Pit Rim Pond to limit wildlife access and egresses will be constructed in the unlikely event of wildlife access. The facility will include a pipe-line of sufficient capacity to transport the water to a suitably prepared receiving environment, downstream of the ultimate position of the Lower Water Management Pond.

The Pit Rim Pond will be designed so that a minimum of two primary cells will decant into the main storage cell and the primary cells can be isolated independently, and cleaned of accumulations of settled solids.

Site Diversion Ditches will be constructed as required to divert non-contact water away from project facilities. Non-contact water will be directed either north to return to Geona Creek, below the site of the Lower Water Management Pond, or south to flow in the existing stream bed to the North Lakes.

Dewatering of overburden will commence after the completion of construction of the Pit Rim Pond. Several dewatering wells will be drilled to target local fault structures and an initial sump will be excavated in the northern area of the proposed ABM Open Pit, through the overburden to bedrock. Water from the wells and the sump will be pumped to the Pit Rim Pond for settling before discharge. As water flow into the sump decreases, due to draw down of the surrounding overburden, the sump will be extended to the south with periodic extension required to maintain maximum required flows. A separate sump may also be excavated in the Krakatoa Zone area to enhance drainage of the overburden material in advance of the extension of the sump from the north.

Pre-stripping for construction materials will commence 17 months before the operations phase is scheduled to commence. Initially the waste produced will be primarily overburden which will be used for construction of facilities or trucked to the Overburden Stockpile. Overburden in the ABM Open Pit area is interpreted to be a channel deposit, comprising loose to compact sand, some gravel, trace to some silt, and trace cobbles. The overburden is not anticipated to require blasting prior to loading and hauling. Class C material will be required for construction of the Class A Storage Facility Buttress and ROM pad as well as site haul and access roads. The material will be generated after the overburden has been removed and will require drilling and blasting to break the rock in preparation for haulage. Production will average approximately 400,000 t per month and will be moved directly to the areas where it will be utilized.

1.11 INFRASTRUCTURE CONSTRUCTION

Small quantities of explosives will be required during site preparation for the facilities with larger amounts used once pre-stripping of the ABM Open Pit commences. The explosives will be stored in secure, fenced facilities separate from the main activity areas, adjacent to the Overburden Stockpile. Bulk explosives for open pit blasting purposes will be stored within a bulk explosives compound. A packaged explosive magazine will store all cast boosters and other explosive products required for open pit operations. A separate detonator magazine will be available for storage of all detonators. The explosives magazines will be constructed prior to the use of explosives for development of the ABM Open Pit.

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.

Communications, both on site and with off site will be vital for the safe and efficient operation of the KZK Project and as such will be constructed in Year -2. As part of the required infrastructure, one remote shelter will be built near the KZK Project office and a second at the remote repeater location. The purpose of the remote shelters will be to integrate networking and radio communications through mining and site activities. A 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 and will consist of a channel plan to reflect site requirements and road coverage with base station radios situated in major infrastructure areas and the gatehouse.

Telephony and facsimile services will be integrated through major site and office buildings. Internet and cable television will be provided to each dormitory and at the main accommodation building.

A number of fuel sources will be required for the Project including LNG, diesel, gasoline and propane, with natural gas and diesel being the primary fuel sources (Allnorth, 2016). Fuel storage will vary through the construction period depending on the activity on site and initially will rely on the existing fuel storage at the exploration camp. As infrastructure facilities are developed the associated fuel storage areas will be developed simultaneously, or short term rental of double walled storage facilities may be utilized if that meets project construction requirements more efficiently.

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, at camp, in a single fuel tank within a lined containment berm.

Diesel for mining operations will be stored in a separate facility near the mine workshop. Four 100,000 litre tanks will be required for peak mining activities during the operations phase of the Project. The tanks will be located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume.

For the latter part of the construction phase LNG may be used for power generation. LNG will be stored in two 132,000 litre Type C vacuum insulated tanks. Tanks will be located within a containment berm, lined with an HDPE liner, sized to hold 110% of the tank volume. Diesel fuel will be used as a backup fuel for power generation in the case of LNG supply problems and will be stored in a 700,000 litre facility in purpose built tanks. The storage tanks will be located within a containment berm, lined with an HDPE liner and sized to hold 110% of the tank volume.

1.12 WASTE MANAGEMENT

Several types of solid wastes will be generated during the construction phase of the KZK Project. This section discusses the generation and management of solid wastes other than wastes generated from open pit mining, and ore processing.

Anticipated waste types generated during the construction phase of the Project, and proposed handling and disposal methods are summarized in Table 1-3. Waste handling will be managed initially using the existing infrastructure until the Waste Management Facility is constructed in the first season of Year -2.

Table 1-3: Waste Storage Location and Disposal Method

Type	On Site Storage Location	Disposal
Solid Waste		
Kitchen Waste	Bear-proof containers	Incinerator
Beverage Containers and other recyclables	Recycling Bins	Offsite disposal
Office and Camp Garbage	Garbage Bins/Bear-proof containers	Incinerator
Untreated Wood	Open Burn Area	Open burned
Treated Wood	Waste Management Facility	Incinerator
Heavy Plastics	Waste Management Facility	Incinerator
Light Plastics/Cardboard	Waste Management Facility	Open burned/Incinerator
Steel/Copper/Rubber	Waste Management Facility	Offsite Disposal facility
Ash from Incinerator/Open burn area	Ash Bin	Landfill
Tires	Waste Management Facility	Off Site Disposal
Special Waste		
Waste Oil: used crankcase oil, used automatic transmission fluid, used hydraulic oil, used fuel oils #2, #4 and #5	Storage Tank by Mine Workshop	Waste Oil Burner (used to generate heat for the Mine Workshop)
Batteries	Waste Management Facility	Shipped to licensed recycle or disposal facility on regular basis
Antifreeze (and used containers)	Waste Management Facility	Shipped to licensed recycle or disposal facility on regular basis
Solvents (and used containers)	Waste Management Facility	Shipped to licensed recycle or disposal facility on regular basis
Sewage		
Sewage and Grey water	Sewage treatment plant at camp	Treated water diverted to septic field Bio-solids dried and deposited in the landfill
Contaminated Wastes		
Contaminated Soils and Snow	Waste Management Facility	Land Treatment Facility

1.13 WATER USE AND MANAGEMENT

The objective of construction water management at the KZK mine site is to keep contact water and non-contact water separate, to minimize erosion in disturbed areas, and mitigate the release of sediment laden waters to the receiving environment. Any non-contact water will be diverted to the extent practicable to avoid contact with Project facilities and allowed to re-join its natural watercourse.

Sediment and erosion control strategies will include establishing diversion and runoff collection ditches, constructing sediment control ponds, and stabilizing disturbed land surfaces to minimize erosion. Water management features that will be established during the construction phase include sediment control structures, pumping systems, and diversion ditches.

Construction phase water supply sources include:

- Groundwater wells at the Project site; and
- Water from the open pit dewatering.

In the construction phase, activities requiring sediment and erosion control will include clearing of vegetation, stripping and stockpiling of topsoil and constructing roads and infrastructure foundations. Sediment mobilization and erosion will be managed for construction activities by:

- Control runoff and manage stormwater (for example rainfall or snow melt) and direct it away from construction areas where excavation, soil placement, and staging activities occur;
- Control site runoff by ditching, grading, sedimentation ponds, check dams, or effective alternatives;
- Incorporate perimeter channels, as required, to catch and transport site runoff from new construction sites and equipment staging areas;
- Install water bars to direct road surface runoff away from access and site roads in a safe manner;
- Maintain ditches along access and site roads, as required, to control surface runoff and sediment transport;
- Water diversion berms/ditches will be constructed upslope of disturbed working areas, as appropriate, to reduce contact water runoff water, as well as reducing erosion and sediment transport;
- Collect the contact runoff generated within the Project area and convey it to sediment ponds before further treatment or discharge to the downstream environment;
- Surface runoff from site will be controlled and directed away from natural areas to reduce potential contamination, sedimentation, and smothering of vegetation;
- Installing sediment controls prior to construction activities;
- Limiting the disturbance to the minimum practical extent;

- Reducing water velocity across the ground, particularly on exposed surfaces and in areas where flow tends to concentrate;
- Progressively rehabilitating disturbed land and constructing drainage controls to improve the stability of rehabilitated land; and
- Protecting natural drainages and watercourses by constructing appropriate sediment control devices such as collection and diversion ditches, sediment traps, and sediment ponds.

All temporary sediment and erosion control features will be regularly maintained and will be reclaimed after achieving soil and sediment stabilization.

1.14 POWER GENERATION

Power requirements for the KZK Project during the construction phase are estimated at less than 3 MW and will vary dependent upon the phase of construction. The operational power plant will be constructed in Year -1 and Project power will be supplied from this LNG/Diesel fuelled 15 MW plant after it is commissioned. Prior to the power plants commissioning, power will be supplied by appropriately sized standalone diesel generators located near power consumption centres.

1.15 WORKER TRANSPORT

Transportation of personnel to the Project site during the construction phase will be via the Finlayson Lake airstrip with transport from there to the Project site using buses. Aircraft will be chartered to transport construction workers to the Project from the Whitehorse Airport on a rotational basis. There will also be buses or vans available for transportation of employees and contractors from the three nearest communities; Ross River, Faro, and Watson Lake.

The number of flights will depend on the amount of personnel employed on site at any one time, and the local hire content, but will approximate an average of six (18 passenger) charter flights per week over the construction period.

1.16 CONSTRUCTION CAMP OPERATION

The construction camp will vary in size, dependent upon the amount of construction activity, increasing to a maximum size of 350 personnel housed on site, during the construction period.

The camp will be operated on a hotel style basis. As employees arrive on site for their scheduled work roster, they will be allocated a room for the duration of their current roster. At the end of the roster, they will be required to vacate the room and remove all personal effects as the room will then be allocated to another person. Secure lockers will be provided for employees to store their personal effects when they check out of their room.

BMC's Camp Manager will be responsible for the overall operation of the camp facility, with a contractor engaged to manage the day to day functions of catering, room cleaning and camp maintenance.

2 REFERENCES

Allnorth Consultants Ltd.,. (2016). *Kudz Ze Kayah Pre-Feasibility Study Dry Stack Tailings Option.* Unpublished Technical Document Submitted to BMC Minerals (No.1) Ltd.