



Minto Explorations Ltd.

A SUBSIDIARY OF CAPSTONE MINING LTD.

APPENDIX D

Preliminary Phase IV

Waste Management Plan

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Attention: Mr. Jaime Delgado

**Subject: Revision 1: Phase IV Development Preliminary Waste Management Plan
Minto Mine, YT**

1.0 INTRODUCTION

Minto Explorations Ltd. (Minto) is proposing to expand its current operations at the Minto Mine site, located north of Carmacks, YT. This expansion, referred to as Phase IV, includes development of the Area 2 and Area 118 open pits and associated underground workings as well as associated waste management and other ancillary activities. Minto requested that EBA Engineering Consultants Ltd. (EBA) complete geotechnical designs for the earthworks structures required for the expansion and prepare a Waste Management Plan for Phase IV development. This report summarizes the planned waste management activities and associated components that will be required for Phase IV development. The attached Figure WMP-01 shows the Phase IV development and the footprints of the planned waste management components. For the purposes of this report, waste refers to overburden and waste rock removed during mining operations. This document does not address open pit development or tailings management.

1.1 SUPPORTING DOCUMENTATION

This document should be reviewed in conjunction with the following documents:

- Phase IV Tailings Management Plan;
- Phase IV Water Management Plan; and
- Phase IV Closure Plan.

2.0 WASTE GENERATION

2.1 TYPES OF WASTE

During mining operations at the Minto Mine site, three types of solid waste are generated: overburden, waste rock, and tailings. Tailings consist of material left from processed ore. Overburden is the unconsolidated soil above the bedrock. Waste rock consists of rock that is mined from the pit that has less than the cut-off percent of copper. For Minto's Phase IV development,

the cut-off is 0.64 % copper; that is to say that rock that contains greater than 0.64 % copper is considered ore and rock that contains less than 0.64 % copper is considered waste. Tailings management is discussed in a separate document: "Phase IV Tailings Management Plan Minto Mine, YT".

2.2 EXPECTED WASTE VOLUMES

The total expected volume of overburden waste from the Area 2 and Area 118 Open Pits for Phase IV development is 2.78 M m³. The overburden waste schedule can be seen on Figure WMP-02.

The total expected volume of waste rock from the Area 2 and Area 118 open pits and underground for Phase IV development is 11.68 M m³. The waste rock and disposal area schedule can be seen on Figure WMP-03. The expected grade of the waste rock has been estimated based on a block model constructed from exploration data. The total expected volume of waste rock by grade bin is shown in Table 1.

TABLE 1: SUMMARY OF WASTE ROCK VOLUMES BY GRADE BIN	
Grade Bin (% Copper)	Total Expected Volume (M m ³)
0.00	8.77
0.00-0.05	0.18
0.05-0.10	0.18
0.10-0.20	0.44
0.20-0.64	2.11
Total	11.68

The data in Table 1 can be seen graphically on Figure WMP-04. It is expected that any potentially acid generating (PAG) waste rock will also contain at least 0.10 % copper.

3.0 WASTE MANAGEMENT PLAN COMPONENTS

3.1 GENERAL

The waste management plan consists of five disposal locations:

- The Area 1 Open Pit buttress;
- The Mill Valley Fill Expansion;
- The Grade Bin 0.10 – 0.64 Disposal Area;
- The Southwest Waste Dump Expansion; and
- The Area 118 Open Pit.

Dump and structure footprints can be seen on Figure WMP-01. In addition to these facilities, some Grade Bin 0.10 – 0.64 waste material will be co-disposed in the Area 1 Open Pit, as discussed in Section 3.3.3 and the Tailings Management Plan.

Table 2 shows the design volumes, material sources and schedule for each dump and structure.

TABLE 2: WASTE MANAGEMENT COMPONENT SUMMARY					
Structure/Dump	Design Volume (M m³)	Grade Bin (% Cu)	Material Source	Waste Type	Schedule
Area 1 Open Pit Buttress	1.30	0.00 – 0.64	Area 2 Open Pit	Waste rock	February to July 2011
Mill Valley Fill Expansion	1.30	0.00	Area 2 Open Pit	Waste rock	July to October 2011
Grade Bin 0.10 to 0.64 Disposal Area	0.93 (maximum)	0.10 – 0.64	Area 2 and Area 118 Open Pits and Underground	Waste rock	July 2011 to September 2013
Simultaneous Disposal with Tailings in Area 1 Open Pit	1.38 (minimum)	0.10 – 0.64	Area 2 and Area 118 Open Pits and Underground	Waste Rock	July 2011 to September 2013
Southwest Waste Dump and Southwest Dump Expansion	6.44	0.00 – 0.10	Area 2 and Area 118 Open Pits	Waste rock	July 2011 to October 2013
Southwest Waste Dump Expansion (Overburden Area)	2.78	N/A	Area 2 and Area 118 Open Pits	Overburden	February 2011 to April 2013
Area 118 Open Pit	0.30	0.00 – 0.10	Area 2 Open Pit , Area 2 and Area 118 Underground	Waste Rock	July 2012
Total	14.47 M	-	-	-	-

3.2 DUMP STABILITY RATING SCHEME

In the guidelines prepared by the BC Mine and Waste Rock Pile Research Committee, it is recommended that waste dumps be evaluated and assigned a stability rating based on several criteria. The Southwest Waste Dump Expansion and the Mill Valley Fill Expansion have been evaluated using these criteria. The results can be seen in the attached Table 3 (see Tables section of report).

The Area 1 Open Pit Buttress was not evaluated, as it is confined by the Area 1 Open Pit. The Grade Bin 0.10 to 0.64 Disposal Area was also not evaluated as the final geometry of the dump will change at closure when this material will be disposed sub-aqueously in the Area 1 Open Pit.

The evaluation indicates that the Mill Valley Fill Expansion has a Dump Stability Rating of 250 and a Dump Stability Class of I. The Southwest Waste Dump Expansion has a Dump Stability Rating of 400 and a Dump Stability Class of II.

Information regarding the dump stability class and associated recommended level of effort for investigation, design and construction is found in Table 4.

TABLE 4: DUMP STABILITY CLASSES AND RECOMMENDED LEVEL OF EFFORT*			
Dump Stability Class	Failure Hazard	Recommended Level of Investigation, Design and Construction	Range of Dump Rating
I	Negligible	<ul style="list-style-type: none"> • Basic site reconnaissance, baseline documentation • Minimal lab testing • Routine check of stability, possibly using charts • Minimal restrictions on construction • Visual monitoring only 	<300
II	Low	<ul style="list-style-type: none"> • Thorough site investigation • Test pits, sampling may be required • Limited lab index testing • Stability may or may not influence design • Basic stability analysis required • Limited restrictions on construction • Routine visual and instrument monitoring 	300 - 600

* - Table 4 is taken from Table 5.2 in the Mined Rock and Overburden Piles Investigation and Design Manual Interim Guidelines, 1991, prepared by the British Columbia Mine Waste Rock Pile Research Committee.

3.3 WASTE MANAGEMENT PLAN COMPONENTS CONCEPTUAL DESIGN

Design considerations for each component are discussed in the following sections.

3.3.1 Area 1 Open Pit Buttress

The Area 1 Open Pit Buttress was designed by SRK Consulting Engineers and Scientists (SRK). The location of the proposed buttress can be seen on Figures WMP-01 and WMP-05. A typical section can be seen on Figure WMP-06. The purpose of the Area 1 Open Pit Buttress is to mitigate slope instability of the south wall in Area 1 Open Pit.

3.3.1.1 Area 1 South Wall Buttress Risks and Mitigations

The risks and mitigations for the Area 1 South Wall Buttress are summarized in Table 5.

TABLE 5: AREA 1 SOUTH WALL BUTTRESS RISK AND MITIGATION SUMMARY TABLE

Risk	Design Constraint	Mitigation	Discussion
Deep seated slope failure	Minimum FS = 1.3 (static); 1.0 (pseudo-static 1:500 year event)	The facility is designed to the applicable guidelines.	Probability of exceedance of the design seismic event is 10% in 50 years.
Surface slope failure	Minimum FS = 1.1 (static)	Maintenance will be required during operation.	Surface failures can be repaired without major effort. The catchment benches should catch sloughed material.
Sloughing material	Reduce risk of sloughing material causing damage	Construct benches.	Benches will act as catchments for surface slough.
Failure of overburden material in the south wall of the pit	Minimize the risk of failure.	Construction Area 1 South Wall Buttress.	If the buttress is not constructed, the risk of failure of the south wall of the Area 1 Open Pit increases. ¹
Transportation of metals	Minimize transportation of metals	Buttress will be constructed in the Area 1 Open Pit footprint.	Mitigation efforts will be reduced because the material will be sub-aqueous at closure.

¹ – If Phase IV development is not completed, the Area 1 South Wall Buttress should be constructed using available rock fill prior to or during closure activities.

3.3.1.2 Area 1 South Wall Buttress Closure Plan

The Area 1 South Wall Buttress will be left in place at closure. The Area 1 Open Pit will be used to store tailings generated during Phase IV operations. It is expected that the majority of the Area 1 South Wall Buttress will be covered by placed tailings at the end of the mine life. The exposed sections of the buttress can be pushed into the pit at closure, if required.

3.3.2 Mill Valley Fill Expansion

The Mill Valley Fill (MVF) Expansion was designed by EBA as an area for camp expansion. The MVF Expansion consists of two fills: an extension of the existing MVF (referred to as MVF Extension) and an expansion of the existing camp pad. The extent of the expansion can be seen on Figures WMP-01 and WMP-07, and a typical section can be seen on Figure WMP-08. The MVF Expansion will be constructed of Grade Bin 0.00 material to reduce the potential for transportation of metals. The design volume of the MVF Expansion is 1.3 M m³.

3.3.2.1 Mill Valley Fill Expansion Design Assumptions

EBA used the following design assumptions in the design of the MVF Expansion:

- Any structures placed on the fill will be temporary structures;
- The waste rock will be a cohesionless soil with a unit weight of 20 kN/m^3 and an internal angle of friction of 35° ;
- The existing soils to 3 m depth will be a thawed cohesionless soil with a unit weight of 10 kN/m^3 and an internal angle of friction of 15° ;
- The existing soils below 3 m depth will be a frozen cohesionless soil with a unit weight of 18 kN/m^3 and an internal angle of friction of 20° that will behave as a thawed soil in terms of shear resistance;
- A design seismic pseudostatic horizontal acceleration of 0.055 g based on a 10% probability of exceedance in 50 years will be used for design;
- Bedrock is 10 m deep at the toe of the expansion; and
- The foundation soils will be thawed to 2.5 to 3 m depth below the fill at the time of placement.

3.3.2.2 Mill Valley Fill Expansion Conceptual Design

The conceptual design of the Mill Valley Fill Expansion involves the construction of drainage systems, excavation and backfill of a toe key with waste rock, placement of a drainage blanket and placement of general waste rock.

Drainage systems for the MVF Expansion will consist of a drainage blanket to prevent the build up of porewater pressures within the fill and to allow water to continue to flow down the Minto Creek valley. The culvert that crosses the haul road from the W-13a sampling point be tied into the drainage blanket. Tie in details will be provided during detailed design; conceptual design options are to extend the culvert to the drainage blanket or construct a french drain from the end of the culvert to the drainage blanket. A similar connection will be required at the W-8a sampling point to convey water from the toe of the Dry Stack Tailings Storage Facility (DSTSF) to the drainage blanket. Tie in details will be provided during detailed design; conceptual design consists of a french drain from the toe of the DSTSF at this location to the drainage blanket.

Conceptual toe key extents are shown on Figure WMP-07. The toe key will extend a minimum of 10 m below the existing ground or to bedrock, whichever is shallowest. The purpose of the toe key is to provide stability against deep seated failure by forcing a failure deeper into the foundation soils. The toe key will be backfilled with general rock fill.

The drainage blanket will be 10 m thick and constructed of select waste rock with minimal fines to allow free drainage. The purpose of the drainage blanket is to create a layer of material that will allow any run-on water to drain from the fill.

Waste rock will be placed by the end dump method and nominally packed with the spreading equipment. The general fill will not meet the specifications for engineered fill; thus, only temporary structures will be constructed on the completed surface of the MVF Expansion.

The MVF Expansion will be graded to drain water from west to east. Surface water management will be addressed during detailed design; conceptual design options are a west-east ditch or swale to drain water to the crest of the fill where a north-south ditch will intercept the water and direct it to the toe of the fill. The fill will be graded at approximately 5% from the crest of the MVF Expansion to the crest of the existing Mill Valley Fill. This grade follows the grade of the existing access road.

The sampling points at W-8 and W-8a can be maintained by installing piezometers once it is shown that the DSTSF movement has been mitigated. The sampling point at W-13a can be maintained by moving the sampling point upstream of its current location or installing a monitoring well. These sampling points are internal and not included in the Water Use License. Design of the monitoring wells will be completed during detailed design. Should it be required in the future, this water could then be diverted around the Minto Creek Detention Structure.

The MVF Extension will be constructed with one 20 m wide bench at elevation 740 m. EBA has assumed that the slopes of the fills will be 33.5° (1.5H:1V). The overall slope of the fill will be 22° (2.5H:1V). The stability of the fill was checked using GeoStudio 2007 Version 7.16. The factors of safety calculated for the MVF Extension and the BC Mine Waste Rock Pile Research Committee guidelines (1991) are summarized in Table 6.

TABLE 6: MILL VALLEY FILL EXPANSION SLOPE STABILITY FACTOR OF SAFETY SUMMARY		
Stability Condition	Factor of Safety	
	Suggested Minimum	Calculated for MVF Expansion
Stability of Surface		
Short Term (during construction)	1.0	1.0
Long-Term (reclamation – abandonment)	1.1	1.3
Deep-Seated Stability		
Short Term (static)	1.1 – 1.3	1.8
Long-Term (static)	1.3	1.8
Pseudo-Static	1.0	1.5

3.3.2.3 Mill Valley Fill Expansion Risks and Mitigations

The risks and mitigations associated with the MVF Expansion are summarized in Table 7.

TABLE 7: MILL VALLEY FILL EXPANSION RISK AND MITIGATION SUMMARY TABLE			
Risk	Design Constraint	Mitigation	Discussion
Deep seated slope failure	Minimum FS = 1.3 (static); 1.0 (pseudo-static 1:500 year event)	Facility is designed to the applicable guidelines.	Probability of exceedance of the design seismic event is 10% in 50 years.
Surface slope failure	Minimum FS = 1.1 (static)	Maintenance will be required during operation.	Surface failures can be repaired without major effort.
Toe Liquefaction	Reduce potential for toe liquefaction	Construct waste rock toe key.	Waste rock is not susceptible to liquefaction.
Blocking the existing drainage path	Allow water to drain through fill.	Use open graded waste rock for bottom 10 m of fill to allow for drainage.	Drainage blanket thickness should allow for adequate drainage through the fill.
Transportation of metals	Use relatively benign construction materials.	Only grade bin 0.00 rock fill will be used to construct the MVF Expansion.	Transportation of metals will be minimized by using the lowest available grade bin rock.
Existing water flow paths into Minto Creek will be blocked	Allow for drainage of existing inputs	Construct drainage paths from the existing inputs (culvert near W-13a and seep at W-8a) to tie into drainage blanket.	Monitoring wells may be required to maintain water quality sampling points.

3.3.2.4 Mill Valley Fill Expansion Closure Plan

At closure any buildings on the MVF Expansion will be removed and surface of the fill will be covered with overburden soil. The overburden will be vegetated with local vegetation to reduce the potential for erosion. The drainage structures will remain in place and be upgraded as required.

The closure plan for the MVF Expansion will also incorporate the closure plan for the existing MVF. Drainage works will be extended as necessary and tied into the drainage works constructed for the MVF Expansion.

3.3.3 Grade Bin 0.10 to 0.64 Disposal Area

The Grade Bin 0.10 to 0.64 Disposal Area (GBDA) was designed by EBA as a storage area for waste rock that contains between 0.10 and 0.64 % copper. The extent of this area can be seen on Figure WMP-09 and a typical section can be seen on Figure WMP-10. The section lines shown on Figure WMP-09 show the overall slope; bench design will be completed during detailed design.

The purpose of the GBDA is to provide an area inside the Area 1 Open Pit footprint to dispose of material that has a higher risk of leaching metals into the environment. By placing the material in the same facility as the tailings, mitigation efforts can be reduced. The design volume of the GBDA

is 1.38 M m³ but, approximately 2.55 M m³ of Grade Bin 0.10 – 0.64 material is expected during Area 2/118 development. Of this 2.55 M m³, 0.24 M m³ will be used during construction of the buttress, 1.38 M m³ will be placed in the GBDA and 0.93 M m³ will be disposed simultaneously with the tailings. It is expected that the lowest percent copper material will be disposed of in the GBDA, with the higher percentage material being disposed sub-aqueous in the Area 1 Open Pit. Expected volumes can be seen in Table 8.

TABLE 8: GRADE BIN 0.10 – 0.64 MATERIAL DISPOSAL LOCATIONS		
Grade Bin (% Copper)	Disposal Area	Total Expected Volume (M m ³)
0.10 – 0.64	Buttress	0.24
0.10 – 0.20	GBDA	0.44
0.20 – 0.64	GBDA	0.94 (maximum)
0.20 – 0.64	Area 1 Open Pit Tailings	0.93 (minimum)
Total		2.55

The volumes of 0.20 – 0.64 % copper in the GBDA and the Area 1 Open Pit shown in Table 8 may change during operations as tailings are deposited into the pit; however, the total should not change. The volumes shown indicate that there is enough storage space available in the footprint of the Area 1 Open Pit, either in the GBDA or the tailings disposal area, to dispose of the Grade Bin 0.10 – 0.64 material.

All underground waste scheduled to be disposed of on surface (0.16 M m³) has been included as Grade Bin 0.10 – 0.64 material. If testing conducted during mining activities shows that the material contains less than 0.10 % copper, it will be disposed of in the SWD Expansion.

3.3.3.1 Grade Bin 0.10 to 0.64 Disposal Area Design Assumptions

EBA used the following assumptions, provided by Minto, in the design of the GBDA.

- The volume of material in each grade bin shown in Table 2 (0.24 M m³ of this material has been accounted for in the Area 1 Open Pit Buttress); and
- Underground waste will contain at least 0.10 % copper.

EBA made the following assumptions during design.

- The disposal area will have 1.5H:1V side slopes;
- Long term stability of the disposal area will not be addressed at this time as the disposal area will be regraded at closure;
- The waste rock will be a cohesionless soil with a unit weight of 20 kN/m³ and an internal angle of friction of 35°;
- The foundation soils are a cohesionless soil with a unit weight of 19.2 kN/m³ and an internal angle of friction of 28°; and

- Any PAG material will be disposed of in the GBDA. It is expected that PAG material will contain at least 0.10 % copper; thus the PAG material will not increase the required storage volume.

3.3.3.2 Grade Bin 0.10 to 0.64 Disposal Area Conceptual Design

The GBDA is designed as a fill on the south side of the Area 1 Open Pit. Crests and toes can be seen on Figure WMP-09. A typical section can be seen on Figure WMP-06. The crest elevation is based on allowing water to drain to the east. The crest grades down to the 790 m bench of the Area 1 Open Pit Buttress at 1.5H:1V. A 15 m offset from the crest of the 790 m bench has been included to act as a catchment for surface sloughing of the material. A 30 m offset from the haul road has been included to allow for construction of a drainage ditch as part of the water management plan.

The GBDA will be graded to allow surface water to drain to the east.

EBA has assumed that the slope of the fill will be 33.5° (1.5H:1V). The stability of the fill was checked using GeoStudio 2007 Version 7.16. The factors of safety calculated for the GBDA and the guidelines set forth by the BC Mine Waste Rock Pile Research Committee guidelines (1991) are summarized in Table 9.

TABLE 9: GRADE BIN 0.10 TO 0.64 DISPOSAL AREA SLOPE STABILITY FACTOR OF SAFETY SUMMARY		
Stability Condition	Factor of Safety	
	Suggested Minimum	Calculated for GBDA
Stability of Surface		
Short Term (during construction)	1.0	1.0
Long-Term (reclamation – abandonment)	1.1	Not calculated ¹
Deep-Seated Stability		
Short Term (static)	1.1 – 1.3	1.3
Long-Term (static)	1.3	1.3
Pseudo-Static	1.0	1.0

Note 1: Long-term stability not calculated as the geometry of the dump will change at closure. The expected geometry is unknown at this time.

3.3.3.3 Grade Bin 0.10 to 0.64 Disposal Area Risks and Mitigation

The risks and mitigations associated with the GBDA are summarized in Table 10.

TABLE 10: GRADE BIN 0.10 TO 0.64 DISPOSAL AREA RISK AND MITIGATION SUMMARY TABLE			
Risk	Design Constraint	Mitigation	Discussion
Deep seated slope failure	Minimum FS = 1.3 (static); 1.0 (pseudo-static 1:500 year event)	Facility is designed to the applicable guidelines.	Probability of exceedance of the design seismic event is 10% in 50 years.
Surface slope failure	Minimum FS = 1.1 (static)	The geometry of the dump will change at closure. Closure design will be completed as part of detailed design.	Surface failures can be repaired without major effort during operations.
Sloughing material	Reduce risk of sloughing material causing damage	Construct benches and set back from Area 1 Open Pit Buttress	Benches and set backs will act as catchments for surface slough.
Transportation of metals	Minimize transportation of metals	Construct disposal area in footprint of Area 1 Open Pit.	Mitigation efforts will be reduced by constructing the disposal area in the same area as the tailings.
		Push material into Area 1 Open Pit at closure for sub-aqueous disposal.	Sub-aqueous disposal will reduce the potential for transportation of metals.

3.3.3.4 Grade Bin 0.10 to 0.64 Disposal Area Closure Plan

At closure the remainder of the materials in the GBDA will be transported into the Area 1 pit for flooding. Some of the relocation of the materials may involve pushing the materials into the pit, however, there will be a need to transport some of the materials to the pit to ensure they are able to be submerged when the pit floods. The rehandling of the remaining GBDA materials into the Area 1 pit may be conducted during winter months when there is less concern with the trafficking the surface of the deposited tailings due to frozen ground conditions.

Please note that the terms “Area 1” pit and “Main” pit are interchangeable and refer to the existing pit at Minto Mine.

3.3.4 Southwest Waste Dump Expansion

The purpose of the Southwest Waste Dump (SWD) Expansion is to provide additional storage area for overburden and waste rock mined from the Area 2 and Area 118 Open Pits. The location of the SWD Expansion can be seen on Figures WMP-01 and WMP-010. A typical section can be seen on Figure WMP-11. The waste rock deposited in the SWD Expansion will contain less than 0.10 % copper; waste rock that contains more than 0.10 % copper will be disposed of in the GBDA (discussed in Section 3.3.3).

The overburden placed in the SWD Expansion Overburden Area will be non ice-rich overburden. Ice rich overburden will be disposed of in the Ice-Rich Overburden Dump, which will be maintained throughout mine development.

The crests and toes shown on Figure WMP-10 are located as far west as possible. This location was chosen because the current data shows movement in the foundation soils at the toe of the SWD. This movement is believed to be associated with the south wall of the Area 1 Open Pit. In light of this data, Minto has elected to prepare to place the material as far up the slope as possible. These locations are located far enough west as to not affect the stability of the existing SWD.

Slope movement monitoring will continue after the Area 1 Open Pit Buttress is constructed and if the noted movement is at an acceptable rate, Minto may elect to place the material inside of the permitted SWD along with the SWD Expansion. A flow chart showing the two options is included on Figure WMP-010. The following sections discuss the SWD Expansion design that would be constructed as shown in Figures WMP-10 and WMP-11.

3.3.4.1 Southwest Waste Dump Expansion Design Assumptions

EBA used the following design assumptions, provided by Minto, during design of the SWD Expansion.

- The design volume of the SWD Expansion is 6.47 M m³;
- The dump will be constructed of waste rock containing less than 0.10 % copper (grade bin 0.00 - 0.10).

EBA made the following assumptions during design of the SWD Expansion.

- The waste rock will be a cohesionless soil with a unit weight of 20 kN/m³ and an internal angle of friction of 35°;
- The foundation soils will be a cohesionless soil with a unit weight of 19 kN/m³ and an internal angle of friction of 28°;
- The foundation soils will behave as an unfrozen soil in terms of shear resistance; and
- The bedrock surface grades from the known elevations to the elevation of the existing ground to the west (uphill) as shown on Figure WMP-11.

3.3.4.2 Southwest Waste Dump Expansion Conceptual Design

The SWD Expansion consists of two stages: Stage 1 includes an overburden area near the existing Reclamation Overburden Dump and a waste rock area to the east. Stage 2 consists of a fill on the south side of the existing SWD and west of the current placement. The design volumes of the stages can be seen in Table 11.

TABLE 11: SWD EXPANSION DESIGN VOLUMES BY STAGE	
Stage	Design Volume (M m ³)
1	4.91
2	1.56
Total	6.47

The SWD Expansion has been designed with an overall slope of 2.5H:1V. The SWD Expansion will be constructed with 1.5H:1V slopes and benches to achieve an overall slope of 2.5H:1V.

Surface water management will include drainage structures for the overburden area. Surface berms, ditches or swales will be constructed to promote positive drainage of precipitation and run-on water off the SWD Expansion. It is expected that drainage courses will not be required in the waste rock areas as the water should infiltrate the coarse grained waste rock and drain to the natural water course to the east of the existing SWD.

EBA has assumed that the slopes of the fills will be 33.5° (1.5H:1V). The overall slope of the fill will be 22° (2.5H:1V). The stability of the fill was checked using GeoStudio 2007 Version 7.16. The factors of safety calculated for the SWD Extension and the BC Mine Waste Rock Pile Research Committee guidelines (1991) are summarized in Table 12.

TABLE 12: SOUTHWEST WASTE DUMP EXPANSION SLOPE STABILITY FACTOR OF SAFETY SUMMARY			
Stability Condition	Factor of Safety		
	Suggested Minimum	Calculated for SWD Expansion Stage 1	Calculated for SWD Expansion Stage 2
Stability of Surface			
Short Term (during construction)	1.0	1.3	1.1
Long-Term (reclamation – abandonment)	1.1	1.3	1.3
Deep-Seated Stability			
Short Term (static)	1.1 – 1.3	2.0	1.8
Long-Term (static)	1.3	2.4	1.8
Pseudo-Static	1.0	2.0	1.5

3.3.4.3 Southwest Waste Dump Expansion Risks and Mitigation

The risks and mitigations associated with the SWD Expansion are summarized in Table 13.

TABLE 13: SOUTHWEST WASTE DUMP EXPANSION RISK AND MITIGATION SUMMARY TABLE			
Risk	Design Constraint	Mitigation	Discussion
Deep seated slope failure	Minimum FS = 1.3 (static); 1.0 (pseudo-static 1:500 year event)	Facility is designed to the applicable guidelines.	Probability of exceedance of the design seismic event is 10% in 50 years.
Surface slope failure	Minimum FS = 1.1 (static)	Maintenance will be required during operation.	Surface failures can be repaired without major effort. The catchment benches should catch sloughed material.
Filling existing drainage paths with overburden	Drain water from base of dump	Monitor surface water drainage. If ponding water is noted, surface water management structures (surface berms or ditches) may be required.	This will be monitored during operations.

3.3.4.4 Southwest Waste Dump Expansion Closure Plan

The closure plan for the SWD Expansion will include regrading the slopes to 2H:1V and placing overburden material over the structure. The overburden will be vegetated with local vegetation to reduce the potential for erosion.

3.3.5 Area 118 Open Pit

0.3 M m³ of waste rock will be disposed of in the Area 118 Open Pit once open pit mining activities are completed in July 2012. No geotechnical design was completed for this area as the material will be contained by the pit walls.

It is expected that the waste material disposed of in the Area 118 will contain less than 0.10 % copper.

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Minto Explorations Ltd. and their agents. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Minto Explorations Ltd, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in EBA's Services Agreement. EBA's General Conditions are provided in Appendix A of this report.

4.0 CLOSURE

We trust this report meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

Respectfully submitted,
EBA Engineering Consultants Ltd.

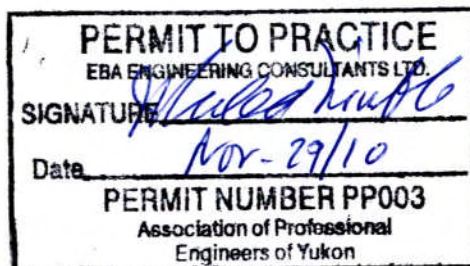


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Attachments:
Table 3
Figures WMP-01 to WMP-11
Appendix A





TABLES



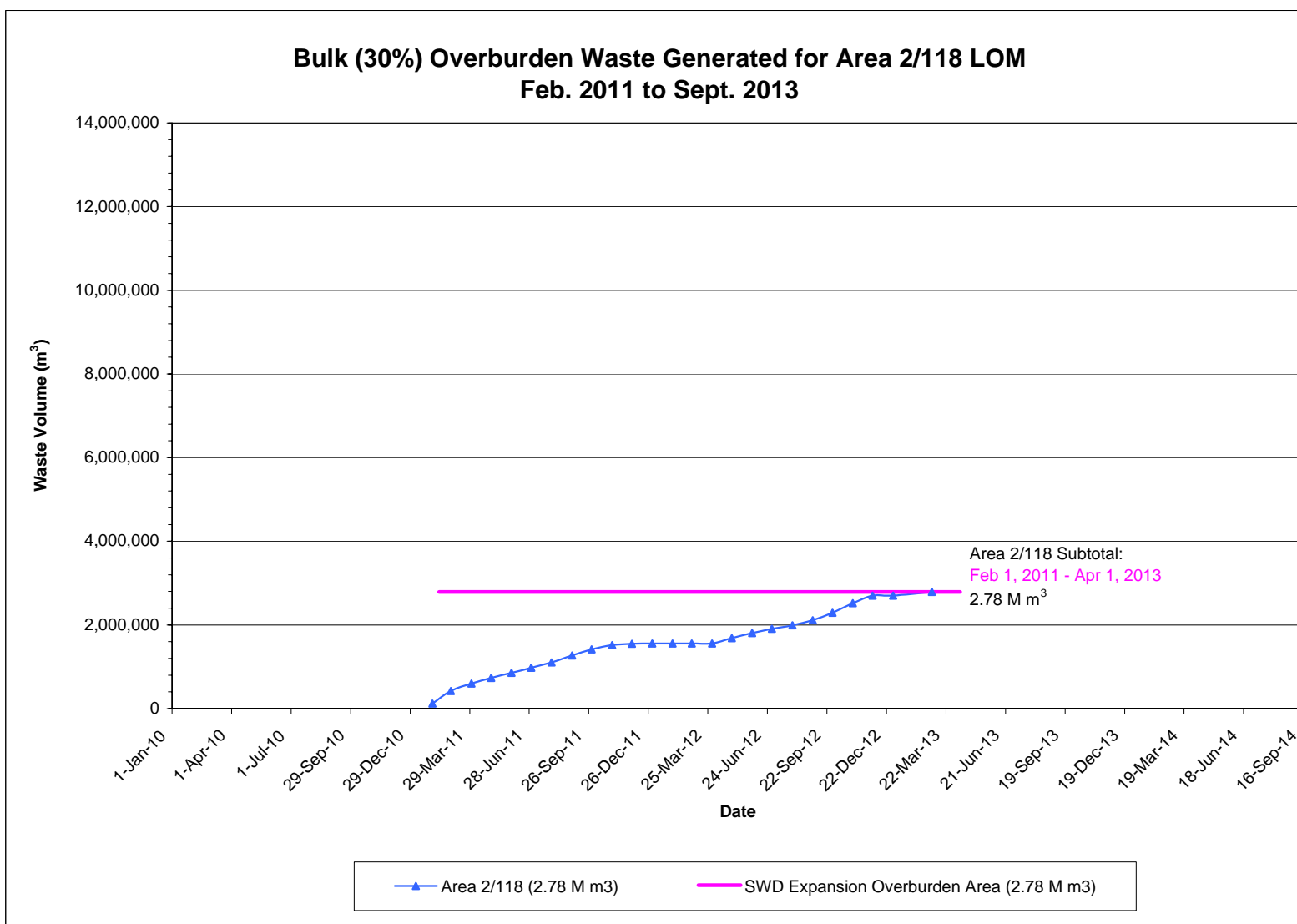
TABLE 3: DUMP RATING SCHEME

Key Factors Affecting Stability	Range of Conditions or Description		Point Rating	MVF Expansion	Rating	SWD Expansion	Rating
Dump Configuration							
Dump Height		< 50 m	0	~12 m	0	~20 m	0
		50 m - 100 m	50				
		100 m - 200 m	100				
		> 200 m	200				
Dump Volume	Small	< 1 million BCM's	0	1.3 million BCM's	50	5.8 million BCM's	50
	Medium	1 - 50 million BCM's	50				
	Large	> 50 million BCM's	100				
Dump Slope	Flat	< 26°	0	4:1	0	2.5:1	0
	Moderate	26° - 35°	50				
	Steep	> 35°	100				
Foundation Slope	Flat	< 10°	0	5°	0	2.6°	0
	Moderate	10° - 25°	50				
	Steep	22° - 32°	100				
	Extreme	> 32°	200				
Degree of Confinement		~Concave slope in plain or section					
	Confined	~Valley or Cross-Valley fill, toe buttressed against opposite valley wall ~Incised gullies which can be used to limit foundation slope during development	0	~ Confined valley fill	0	~ Moderately confined valley fill	50
	Moderately Confined	~Natural benches in planed or section ~Even slopes, limited natural topographic diversity ~Heaped, Side hill or broad Valley or Cross-Valley fills	50				
	Unconfined	~Convex slope in plan or section ~Side hill or Ridge Crest fill with no toe confinement ~No gullies or benches to assist development	100				
Foundation Type	Competent	~Foundation materials as strong or stronger than dump materials ~Not subject to adverse pore pressures ~No adverse geologic structure	0	~ Sand further underlain by bedrock (based on MCDS-01)	100	~Silt and sand further underlain by bedrock	100
	Intermediate	~Intermediate between competent and weak ~Soils gain strength with consolidation ~Adverse pore pressures dissipate if loading rate controlled	100				
	Weak	~Limited bearing capacity, soft soils ~Subject to adverse pore pressure generation upon loading ~Adverse groundwater conditions, springs or seeps ~Strength sensitive to shear strain, potentially liquefiable	200				
Dump Material Quality	High	~Strong, durable ~Less than about 10% fines	0	~ Strong waste rock	0	~ Variable durability overburden	100
	Moderate	~Moderately strong, variable durability ~10 to 25% fines	100				
	Poor	~Predominantly weak rocks of low durability ~Greater than about 25% fines, overburden	200				
Method of Construction	Favorable	~Thin lifts (< 25 m thick), wide platforms ~Dumping along contours ~Ascending construction ~Wrap-around or terraces	0	~Thin lifts <25 m	0	~ Thin lifts <25 m	0
	Mixed	~Moderately thick lifts (25 m - 50 m) ~Mixed construction methods	100				
	Unfavorable	~Thick lifts (> 50 m), narrow platform (sliver fill) ~Dumping down the fall line of the slope ~Descending construction	200				
Piezometric and Climatic Conditions	Favorable	~Low piezometric pressure, no seepage in foundation ~Development of phreatic surface within dump unlikely ~Limited precipitation ~Minimal infiltration into dump ~No snow or ice layers in dump or foundation	0	~Moderate precipitation, high infiltration, some seeps	100	~Moderate precipitation, high infiltration, some seeps	100
	Intermediate	~Moderate piezometric pressures, some seeps in foundation ~Limited development of phreatic surface in dump possible ~Moderate precipitation ~High infiltration into dump ~Discontinuous snow or ice lenses or layers into dump	100				
	Unfavorable	~High piezometric pressures, springs in foundation ~High precipitation ~Significant potential for development of phreatic surface or perched water tables in dump ~Continuous layers or lenses of snow or ice in dump or foundation	200				
Dumping Rate	Slow	~< 25 BCM's per lineal metre of crest per day ~Crest advancement rate < 0.1 m per day	0	~ Slow (covering large area)	0	~ Slow (covering large area)	0
	Moderate	~ 25-200 BCM's per lineal metre of crest per day ~Crest advancement rate 0.1 m- 1.0 m per day	100				
	High	~> 200 BCM's per lineal metre of crest per day ~Crest advancement > 1.0 m per day	200				
Seismicity	Low	~Seismic Risk Zones 0 and 1	0	~ Seismic zone 1	0	~ Seismic zone 1	0
	Moderate	~Seismic Risk Zones 2 and 3	50				
	High	~Seismic Risk Zones 4 or higher	100				
				Dump Stability Rating: 250		Dump Stability Rating: 400	
				Dump Stability Class: I		Dump Stability Class: II	

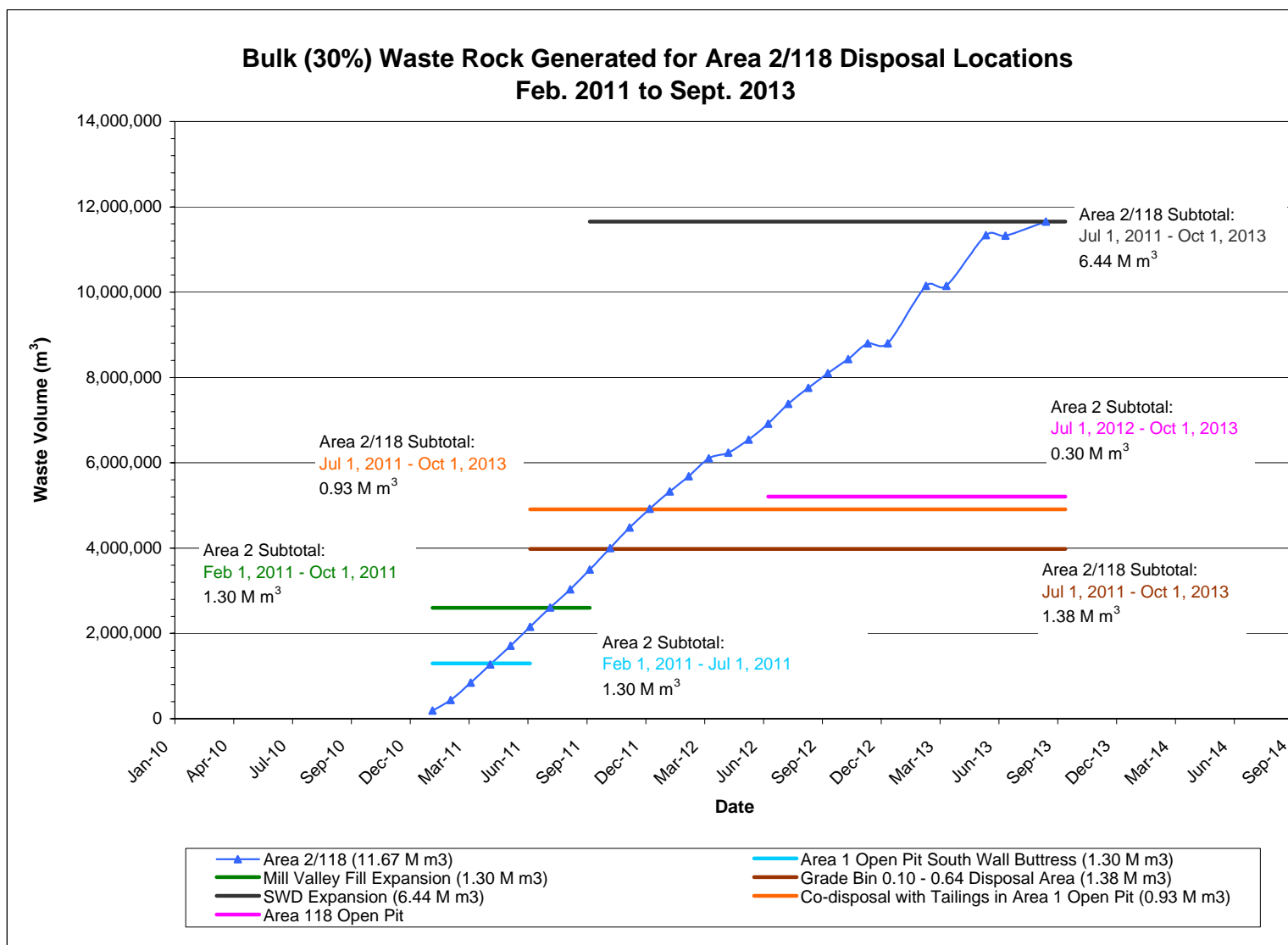


FIGURES

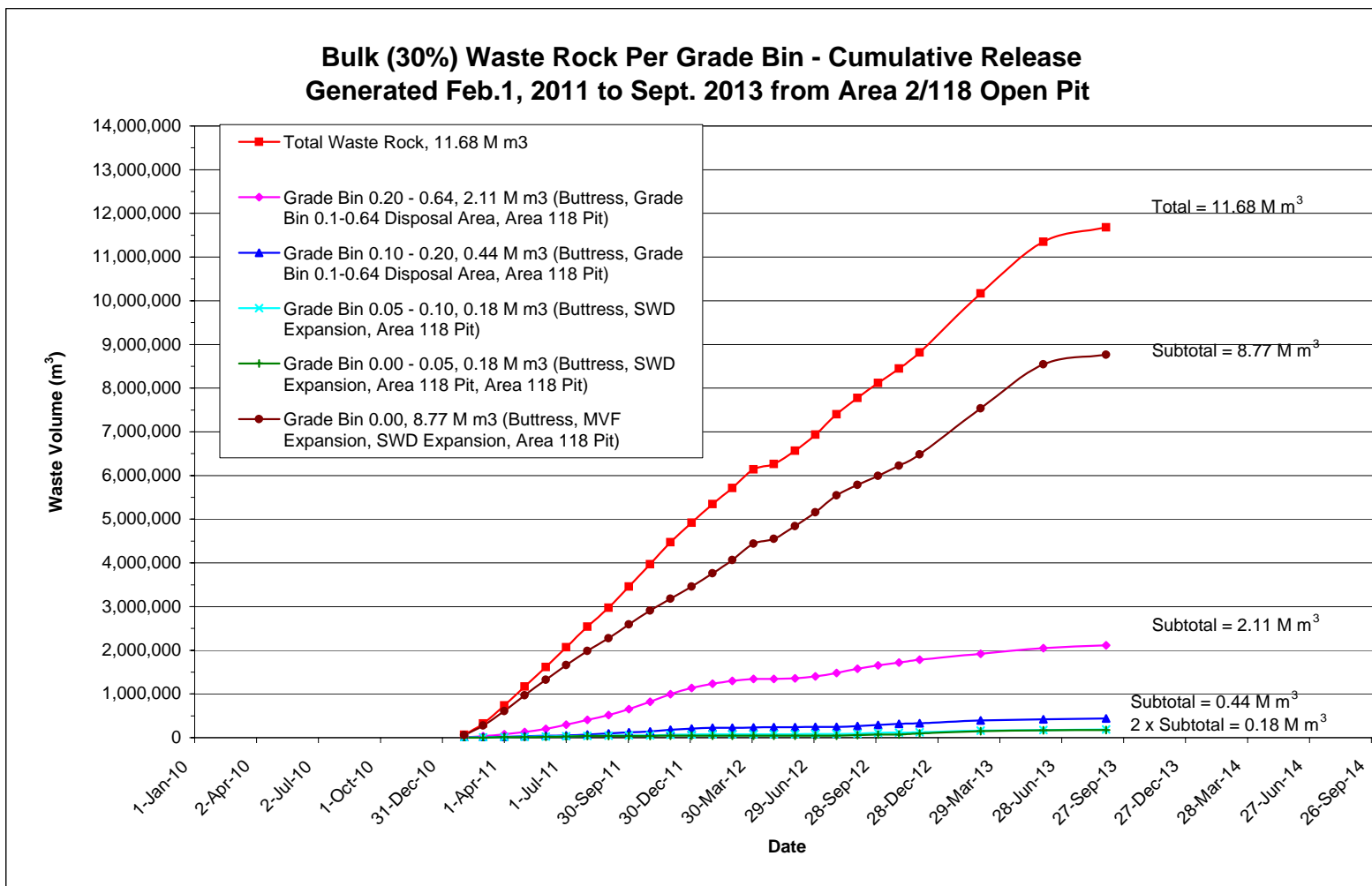




ISSUED FOR USE
Figure WMP-02: Overburden Schedule for Area 2/118 (Stage 1/2)
Phase IV Permit

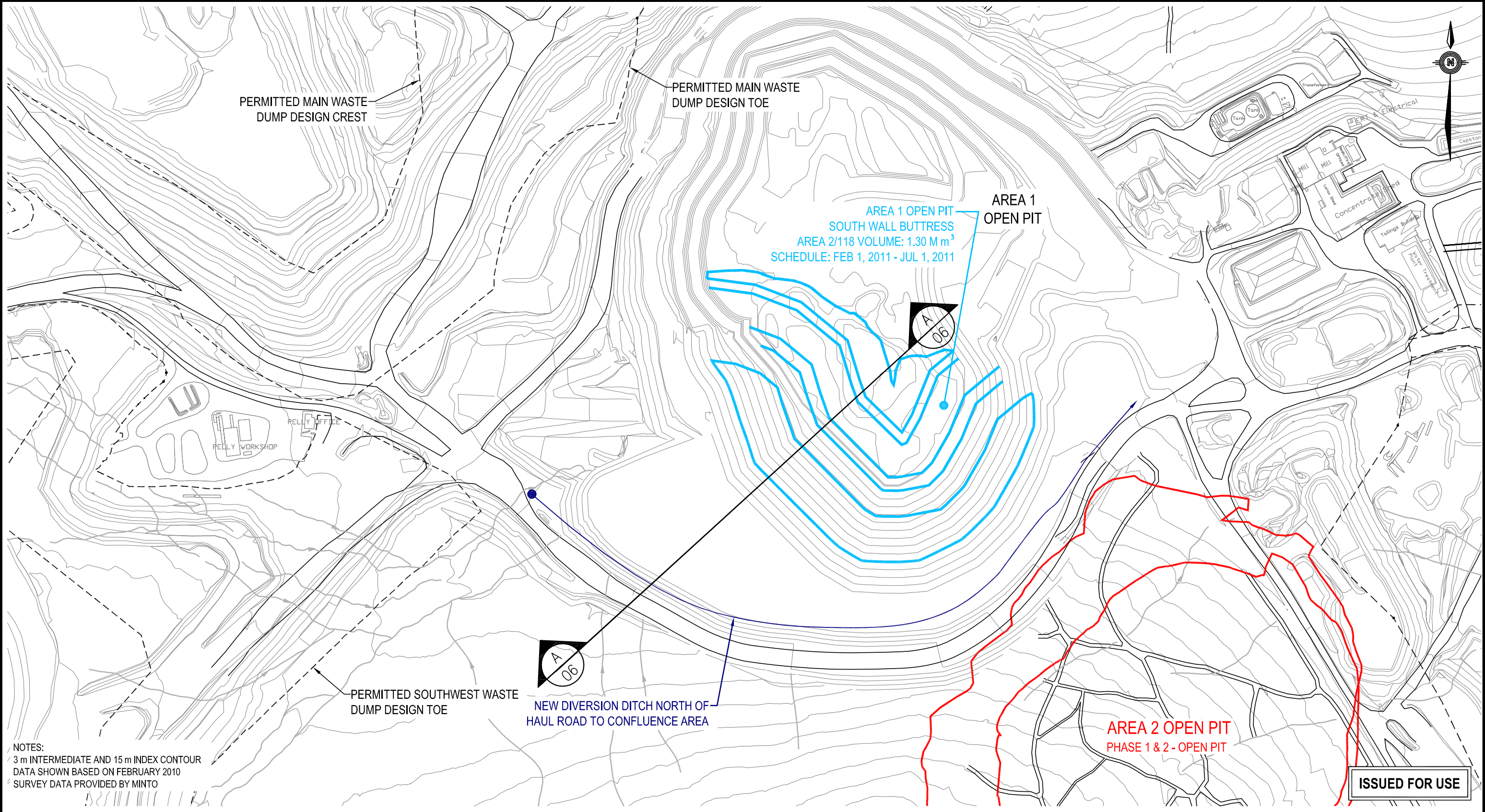


ISSUED FOR USE
Figure WMP-03: Rock Schedule for Area 2/118 (Stage 1/2)
Phase IV Permit



ISSUED FOR USE

Figure WMP-04: Bulk Rock Per Grade Bin - Cumulative Release
Phase IV Permit



NOTES:
3 m INTERMEDIATE AND 15 m INDEX CONTOUR
DATA SHOWN BASED ON FEBRUARY 2010
SURVEY DATA PROVIDED BY MINTO

LEGEND:


- SOUTH WALL BUTRESS BOUNDARY

0 200
Scale: 1: 4 000 (metres)

NUM	DATE	DWN	CKD	APR	DESCRIPTION	NUM	DATE	APR	DESCRIPTION
REVISIONS					DRAWING STATUS				

CLIENT

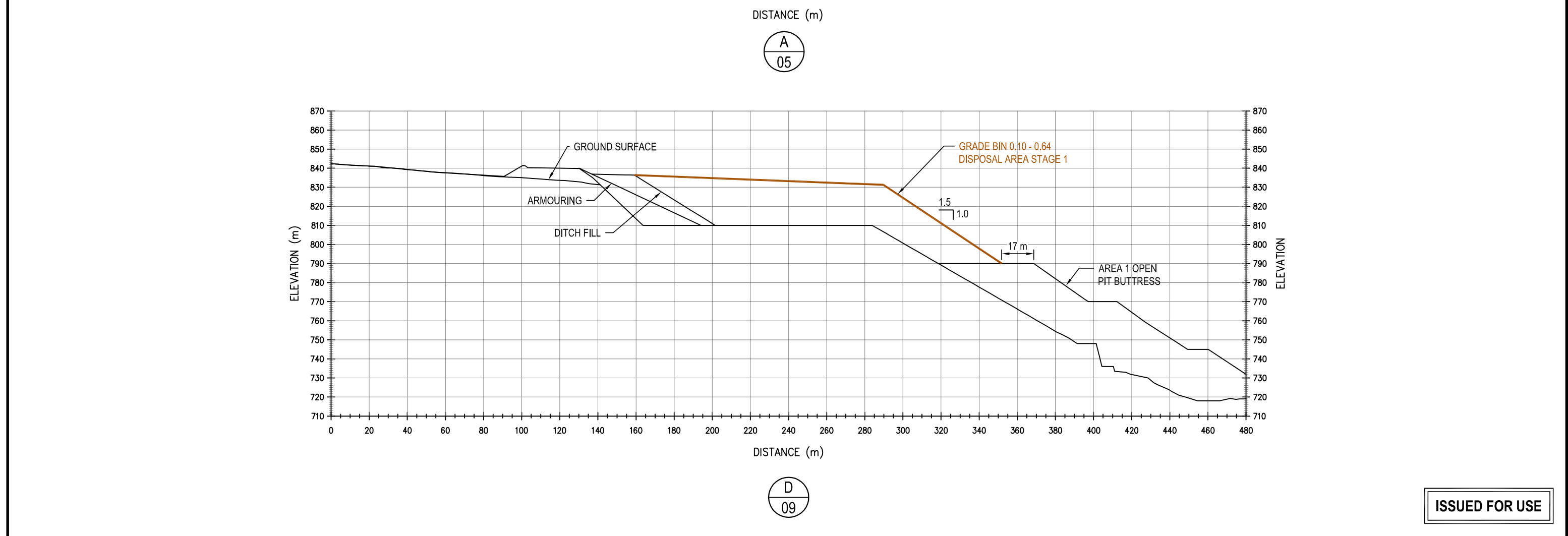
MINTO EXPLORATIONS LTD.

EBA Engineering Consultants Ltd. 

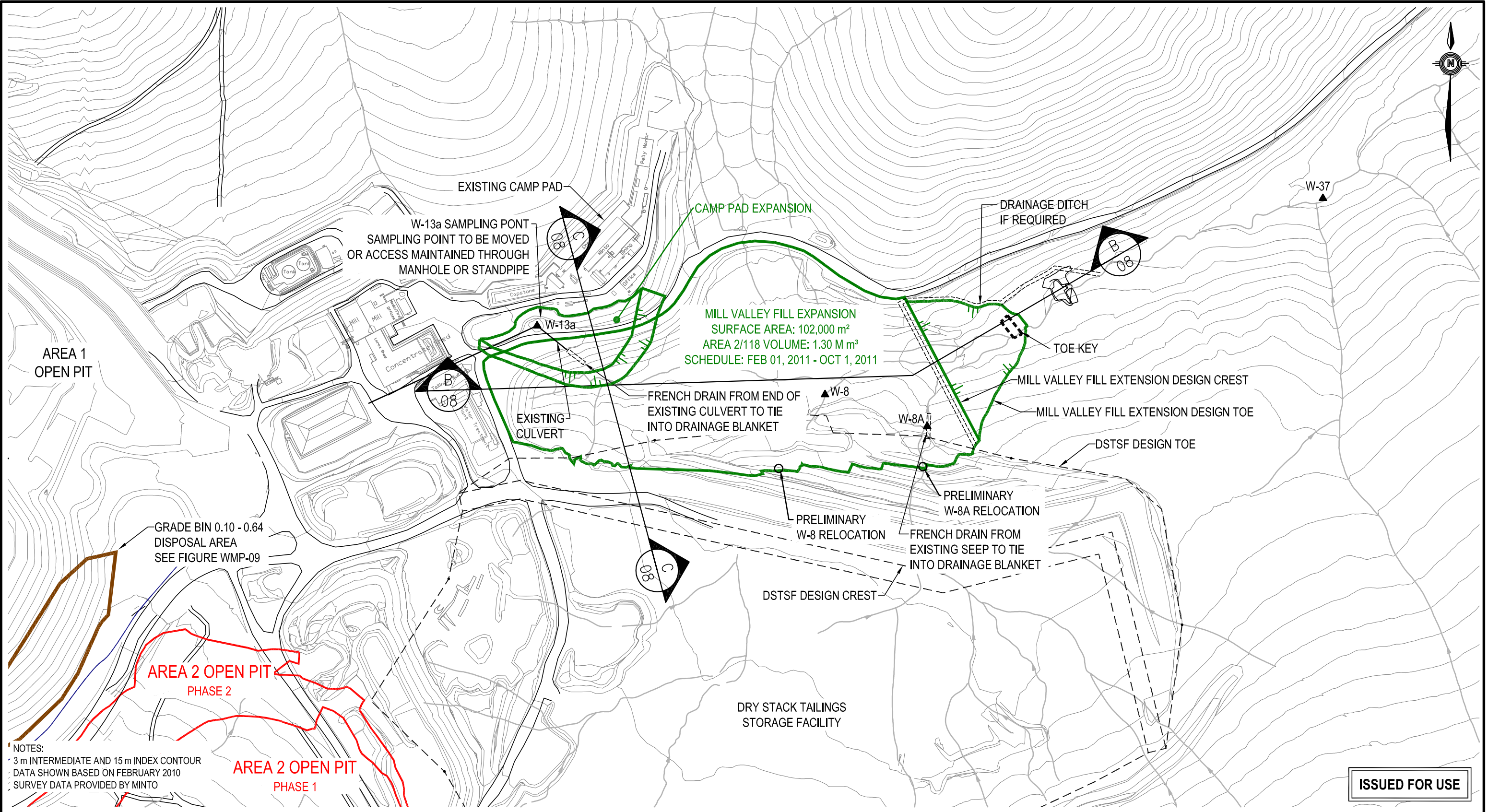
WASTE MANAGEMENT PLAN
MINTO MINE, YT

WASTE MANAGEMENT PLAN COMPONENTS
AREA 1 OPEN PIT SOUTH WALL BUTRESS PLAN

PROJECT NO. W14101068.015	DWN CB	CKD JGD	REV 0	WMP-05
OFFICE EBA-WHSE	DATE August 12, 2010			



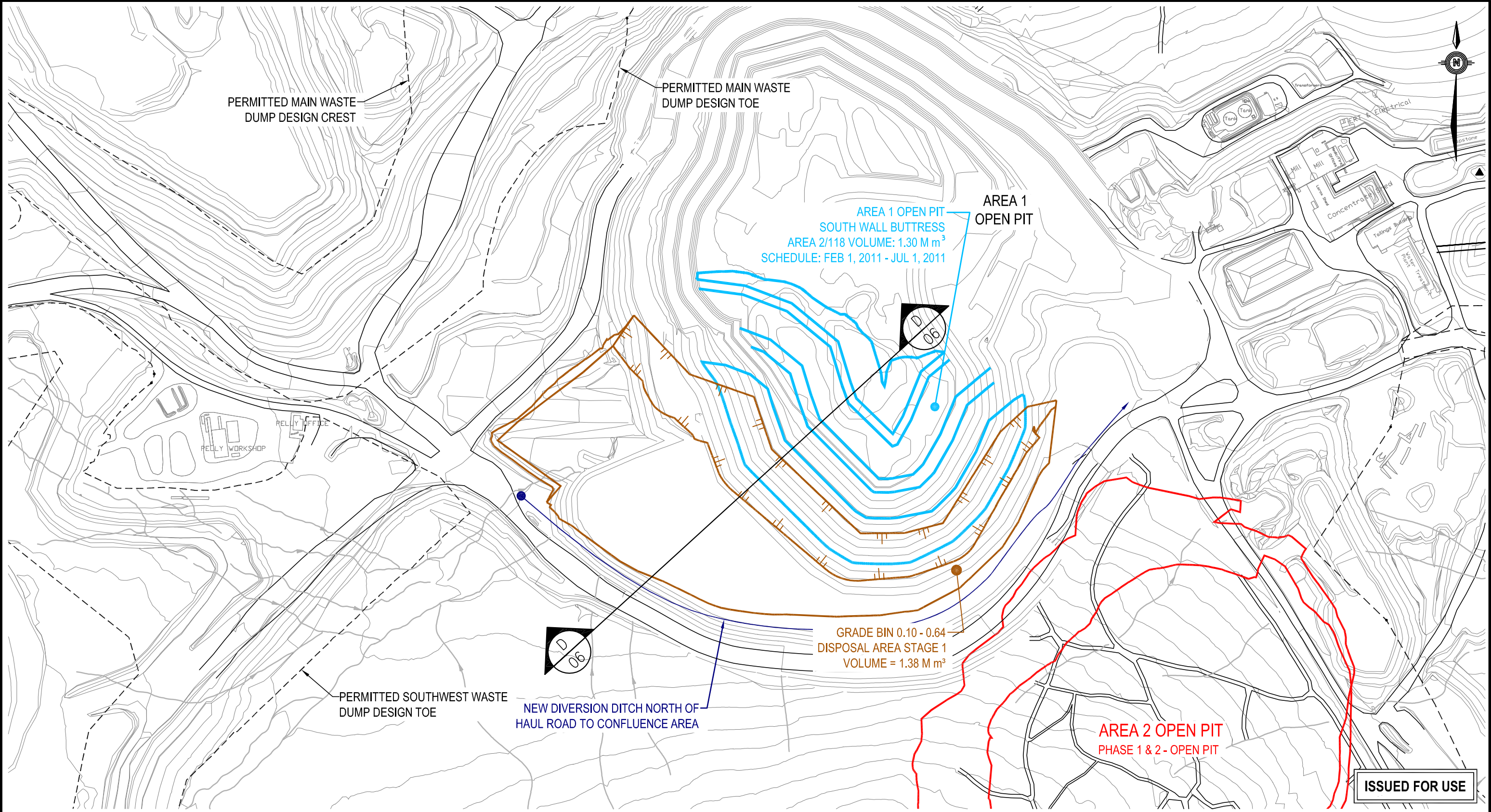
<p>0 100</p> <p>Scale: 1: 2 000 (metres)</p>												CLIENT MINTO EXPLORATIONS LTD.	WASTE MANAGEMENT PLAN MINTO MINE, YT								
														WASTE MANAGEMENT PLAN COMPONENTS AREA 1 OPEN PIT SECTIONS A AND D							
	NUM	DATE	DWN	CKD	APR	DESCRIPTION		NUM	DATE	APR	DESCRIPTION	EBA Engineering Consultants Ltd.		PROJECT NO. W14101068.015	DWN CB	CKD JGD	REV 0	WMP-06			
REVISIONS							DRAWING STATUS							OFFICE EBA-WHSE	DATE August 12, 2010						



NOTES:
3 m INTERMEDIATE AND 15 m INDEX CONTOUR
DATA SHOWN BASED ON FEBRUARY 2010
SURVEY DATA PROVIDED BY MINTO

<div>LEGEND:</div> <div><div></div> - MILL VALLEY FILL CRESTS AND TOES</div> <div><div>0</div><div></div><div>200</div></div> <div>Scale: 1: 4 000 (metres)</div>																								CLIENT MINTO EXPLORATIONS LTD.				WASTE MANAGEMENT PLAN MINTO MINE, YT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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REVISIONS										DRAWING STATUS										OFFICE EBA-WHSE		DATE August 12, 2010								



LEGEND:

— - GRADE BIN 0.10 - 0.64 DISPOSAL AREA STAGE 1

0 200

Scale: 1: 4 000 (metres)

NUM	DATE	DWN	CKD	APR	DESCRIPTION	NUM	DATE	APR	DESCRIPTION
REVISIONS					DRAWING STATUS				

CLIENT

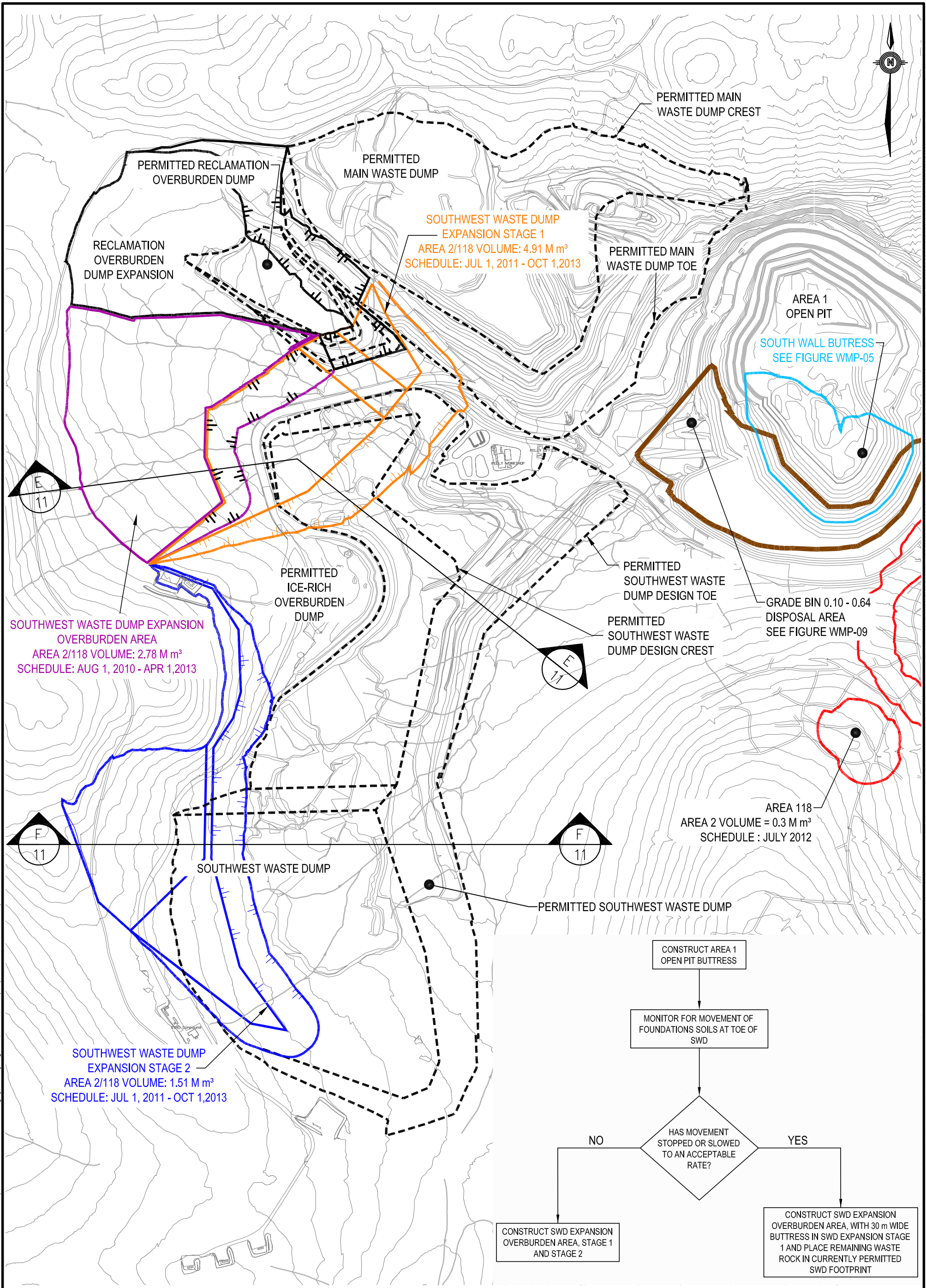
MINTO EXPLORATIONS LTD.

EBA Engineering Consultants Ltd.

WASTE MANAGEMENT PLAN
MINTO MINE, YT

WASTE MANAGEMENT PLAN COMPONENTS
GRADE BIN 0.10 - 0.64 DISPOSAL AREA PLAN

PROJECT NO. W14101068.015	DWN CB	CKD JGD	REV 0	WMP-09
OFFICE EBA-WHSE	DATE August 12, 2010			



NOTES :
3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN BASED ON FEBRUARY 2010
SURVEY DATA PROVIDED BY MINTO.

0 250
Scale: 1: 7 500 (metres)

ISSUED FOR USE

CLIENT
MINTO EXPLORATIONS LTD.

EBA Engineering
Consultants Ltd.



WASTE MANAGEMENT PLAN
MINTO MINE, YT

WASTE MANAGEMENT PLAN COMPONENTS
SOUTHWEST WASTE DUMP EXPANSION PLAN

PROJECT NO.
W14101068.015

OFFICE
EBA-WHSE



DWN
CB

DATE
August 12, 2010

CKD
JPD

REV
0

WMP-10

													CLIENT MINTO EXPLORATIONS LTD.	WASTE MANAGEMENT PLAN MINTO MINE, YT				
														WASTE MANAGEMENT PLAN COMPONENTS SOUTHWEST WASTE DUMP EXPANSION SECTIONS E AND F				
														PROJECT NO. W14101068.015	DWN CB	CKD JGD	REV 0	WMP-11
														OFFICE EBA-WHSE	DATE August 12, 2010			
														EBA Engineering Consultants Ltd. 				
	NUM	DATE	DWN	CKD	APR	DESCRIPTION	NUM	DATE	APR	DESCRIPTION								
	REVISIONS						DRAWING STATUS											

APPENDIX

APPENDIX A GENERAL CONDITONS

GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgemental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

8.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

9.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

10.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

11.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

12.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

13.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

14.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

15.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.